Southeast Data, Assessment, and Review

SEDAR 44
Stock Assessment Report

Atlantic Red Drum

September 2015

SEDAR
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SEDAR 44 Atlantic Red Drum Stock Assessment

PREFACE

The 2015 Benchmark Stock Assessment of Red Drum occurred through a joint Atlantic States Marine Fisheries Commission (ASMFC) and Southeast Data, Assessment and Review (SEDAR) process. The ASMFC conducted a Data Workshop from October 14-17, 2014 and two Assessment Workshops from March 17-20, 2015 and June 9-11, 2015. Participants of the Data Workshop included the ASMFC Red Drum Technical Committee and other invited individuals from state and federal partners. Participants of the Assessment Workshop included the ASMFC Red Drum Stock Assessment Subcommittee. SEDAR coordinated a Review Workshop from August 25-27, 2015. Participants included members of the Red Drum Stock Assessment Subcommittee and a Review Panel consisting of a chair, a reviewer appointed by ASMFC, and three reviewers appointed by the Center for Independent Experts. This report is the culmination of a one-year effort to gather and analyze available data for Atlantic red drum from fishery-independent sampling programs of the Atlantic States, and recreational and commercial fisheries.

Given the development of new Stock Synthesis (SS) models for red drum in the current assessment, the Review Workshop was a collaborative effort focusing on model improvements, where panelists reviewed and provided constructive comments on modifications to the SS models presented at the Workshop. The Stock Assessment Subcommittee conducted additional model runs at the Workshop based on panel recommendations, and plans to further refine SS models after SEDAR 44. The additional model runs, described in an addendum to the stock assessment report, resulted in significant changes to model results and stock status. Further work by the Stock Assessment Subcommittee will be completed and reviewed later in 2015 toward establishing a final model run and stock status. The Review Report and full Stock Assessment Report will be provided to the ASMFC South Atlantic State-Federal Management Board in November 2015.

The ASMFC and its committees thank the SEDAR 44 reviewers for their time and expertise in providing a thorough evaluation of the Atlantic red drum stock assessment. Additionally, ASMFC would also like to recognize the SEDAR staff for their dedicated work in coordinating the review. Finally, ASMFC thanks the Red Drum Stock Assessment Subcommittee, Technical Committee, and all of the individuals who contributed to the completion of the stock assessment.

S E D A R

Southeast Data, Assessment, and Review

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SEDAR 44
Data Workshop Report

Atlantic Red Drum

October 14-17, 2014

SEDAR is a Cooperative Initiative of:

The Caribbean Fishery Management Council
The Gulf of Mexico Fishery Management Council
The South Atlantic Fishery Management Council
NOAA Fisheries Southeast Regional Office
NOAA Fisheries Southeast Fisheries Science Center
The Atlantic States Marine Fisheries Commission
The Gulf States Marine Fisheries Commission

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Section I. Data Workshop Report

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1. Introduction

1.1 Workshop Time and Place

The SEDAR 44 Data Workshop was held October 14-17, 2014, in North Charleston, SC.

1.2 Terms of Reference

1. If possible, identify and prepare new data that could be used to inform the assessment of adult and/or spawning stock trends.

2. Characterize precision and accuracy of fishery-dependent and fishery-independent data considered for the assessment, including the following but not limited to:

   a) Provide descriptions of each data source (e.g., geographic location, sampling methodology, potential explanation for outlying or anomalous data).

   b) Describe calculation and potential standardization of abundance indices.

   c) Discuss trends and associated estimates of uncertainty (e.g., standard errors).

   d) Justify inclusion or elimination of available data sources.

   e) Discuss the effects of data strengths and weaknesses (e.g., temporal and spatial scale, gear selectivities, ageing accuracy, sample size) on model inputs and outputs.

3. Define and justify definition of stock structure.

4. Review recreational fishing estimates and PSEs. Compare historical and current data collection and estimation procedures and describe data caveats that may affect the assessment.

5. Estimate discards and size composition of discards in recreational and commercial fisheries where possible.

6. Evaluate the effects of stock enhancement program contributions on data inputs.

7. Develop models used to estimate population parameters (e.g., F, biomass, abundance) and biological reference points, and analyze model performance.

   a) Describe stability of model (e.g., ability to find a stable solution, invert Hessian)

   b) Assess estimated selectivity and discuss effects on population parameters.

   c) Justify choice of CVs, effective sample sizes, or likelihood weighting schemes.

   d) Perform sensitivity analyses for starting parameter values, priors, etc. and conduct other model diagnostics as necessary.

e) Clearly and thoroughly explain model strengths and limitations.

f) Briefly describe history of model usage, its theory and framework, and document associated peer-reviewed literature. If using a new model, test using simulated data.

g) If model structure differs from the model structure used in the previous assessment, preform a continuity run of the previous model and compare estimates. Discuss potential causes of any observed discrepancies.

h) If multiple models were considered, justify the choice of preferred model and the explanation of any differences in results among models.

8. State assumptions made for all models and explain the likely effects of assumption violations on synthesis of input data and model outputs. Examples of assumptions may include (but are not limited to):

a) Choice of stock-recruitment function.

b) Choice to use (or estimate) constant or time-varying M and catchability.

c) Choice of a plus group.

d) Constant ecosystem (abiotic and trophic) conditions.

9. Characterize uncertainty of model estimates and biological or empirical reference points.

10. Perform retrospective analyses, assess magnitude and direction of retrospective patterns detected, and discuss implications of any observed retrospective pattern for uncertainty in population parameters (e.g., F, SSB), reference points, and/or management measures.

11. Recommend stock status as related to reference points (if available). For example:

a) Is the sSPR above or below the 30% sSPR threshold?

12. Other potential scientific issues:

a) If possible, assess any temporal changes in distribution or stock structure. Discuss potential causes of any changes.

b) Compare reference points derived in this assessment with what is known about the general life history of the exploited stock. Explain any inconsistencies.

13. If a minority report has been filed, explain majority reasoning against adopting approach suggested in that report. The minority report should explain reasoning against adopting approach suggested by the majority.

14. Develop detailed short and long-term prioritized lists of recommendations for future

research, data collection, and assessment methodology. Highlight improvements to be made by next benchmark review.

15. Recommend timing of next benchmark assessment and intermediate updates, if necessary relative to biology and current management of red drum.

1.3 Participants

Life History Workgroup

Kirby Rootes-Murdy	Editor	ASMFC
Sally Roman	Data Provider	VMRC
Chris Kalinowsky	Data Provider	GA

Commercial Statistics Workgroup

Sally Roman	Data Provider	VMRC
Lee Paramore	Data Provider	NC DMF
Joe Myers	Data Provider	ACCSP

Recreational Statistics Workgroup

Jeff Kipp	Leader and Editor	ASMFC
Mike Murphy	Analyst	FL

Indices Workgroup

Steve Arnott	Leader and Editor	SC DNR
Carolyn Belcher	Rapporteur	GA DNR
Lee Paramore	Data Provider	NC DMF
Chris Kalinowsky	Data Provider	GA DNR

Analytical Team Representatives (all duplicates from workgroups)

Mike Murphy	Lead Analyst and	ASMFC
Steve Arnott	Analyst	ASMFC RD SAS
Lee Paramore	Analyst	ASMFC RD SAS
Angela Guiliano	Analyst	ASMFC
Carolyn Belcher	Analyst	ASMFC
Sally Roman	Analyst	ASMFC RD SAS

Commission Representatives

Jeff Kipp	Stock Assessment Scientist	ASMFC
Kirby Rootes-Murdy	Red Drum FMP Coordinator	ASMFC

Acronyms used in SEDAR 44 Participants List

ACCSP	Atlantic Coastal Cooperative Statistics Program
ASMFC TC	Atlantic States Marine Fisheries Commission Technical Committee
CIE	Center for Independent Experts
FL FWCC	Florida Fish and Wildlife Conservation Commission
FMP	Fishery Management Plan
GA DNR	Georgia Department of Natural Resources
IT	Information Technology
ME DNR	Maine Department of Natural Resources
MRFSS	Marine Recreational Fisheries Statistics System
MRIP	Marine Recreational Information Program
NC DMF	North Carolina Division of Marine Fisheries
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
RD SAS	Red Drum Stock Assessment Subcommittee
SEFSC	Southeast Fisheries Science Center, National Marine Fisheries Service
SC DNR	South Carolina Department of Natural Resources
SEDAR	Southeast Data, Assessment, and Review
TBN	To be named
TIP	Trip Interview Program, National Marine Fisheries Service
VMRC	Virginia Marine Resources Commission

1.4 Workshop Documents

SEDAR 44
Atlantic Red Drum Workshops
Document List

	Documents Prepared for the Data Workshop	
Document #	Title	Authors
SEDAR44-DW01	Adult Red Drum Genetic Diversity and Population Structure	Cushman, Jamison, and Darden 2014
SEDAR44-DW02	Red Drum Maturity Analysis	Arnott 2015 & South Carolina DNR
SEDAR44-DW03	Distance moved by red drum recaptured by recreational anglers	Arnott 2014
SEDAR44-DW04	Recreational Landings and Live Releases of Red drum (Sciaenops ocellatus) in the Southeast US using MRFSS-MRIP intercept data, 1981-2013.	Murphy 2014
SEDAR44-DW05	Sizes of tag recaptured red drum that were released alive by recreational anglers.	Arnott & Paramore 2015
SEDAR44-DW06	Estimating the age composition of the MRIP/MRFSS estimated landings and live-releases for red drum along the Atlantic coast, 1981-2013.	Murphy 2014
SEDAR44-DW07	Development of historical annual recreational landings of red drum from 1950 through 1980 for the Atlantic coast states from Florida through New Jersey.	Murphy 2015
SEDAR44-DW08	NC Biological Data Survey Descriptions and Background Information	Paramore 2014
SEDAR44-DW09	Fishery Independent Surveys of Sub-Adult Red Drum in South Carolina	Arnott 2014

SEDAR44-DW10	SCDNR adult red drum 1/3rd mile longline survey	Frazier and Shaw 2014
SEDAR44-DW11	Relative indices of abundance for Red drum (*Sciaenops ocellatus*) inhabiting estuarine waters along the Atlantic coast of Florida, 1997-2014.	Murphy 2014
SEDAR44-DW12	Relative indices of abundance for Red drum (*Sciaenops ocellatus*) inhabiting inland waters along the Atlantic coast based on 1991-2013 angler catch rate data.	Murphy 2014

2. Life History

2.1 Overview

The life history working group (LHG) reviewed information on stock structure and description, age, mortality, growth, reproduction, movement and migrations, and habitat. Within the life history working group, there was a Tagging Subgroup made of members of the LHG along with members of the ASMFC TC and RD SAS

2.1.1 Life History Group Membership

Kirby Rootes-Murdy	ASMFC
Sally Roman	VMRC
Chris Kalinowsky	GA DNR

2.1.2 Tagging Subgroup Membership

Genine Lipkey	MD DNR
Lee Paramore	NC DMF
Chris Kalinowsky	GA DNR
Steve Arnott	SC DNR
Angela Giuliano	MD DNR

2.2 Stock Definition and Description

The red drum, *Sciaenops ocellatus*, inhabits nearshore and estuarine waters of the U.S. Atlantic coast from Massachusetts to Florida and of the Gulf of Mexico (GoM) from Florida to northern Mexico (Lux & Mahoney 1969, in Mercer, 1984). The current distribution of red drum in the Atlantic Ocean, as indicated by commercial and recreational landings, primarily extends from southern Florida to Chesapeake Bay, with infrequent, low recreational landings from Maryland through New Jersey (SAFMC 1990; Ross et al. 1995). Previous stock assessments (Vaughan 1993, 1996; Vaughan and Carmichael 2000; Murphy et al. 2009) have divided this distribution into a northern region (North Carolina – New Jersey) and a southern region (South Carolina, Georgia, and the eastern coast of Florida), based on differences identified in life history characteristics.

Seyoum et al.'s (2000) initial mitochondrial genetic work on red drum indicated a weak subdivision of red drum into GoM and Atlantic components with a genetic transition occurring around the southern Florida peninsula between Sarasota Bay and Mosquito Lagoon, supporting the separate management of these populations. Large-scale genetic analyses have been conducted on red drum in the GoM by Gold et al. (2001) and Gold & Turner (2002). Based on mitochondrial and microsatellite data, estuaries within the GoM showed temporal, but not spatial, stability in allele frequencies. Further analyses of spatial patterns indicated that the variability was not able to be partitioned into discrete geographic subpopulations, instead showing a pattern of isolation by distance. The proposed model of population structure fits well with gene flow predicted by life-history and due to their estuarine-dependent recruitment, a stepping stone model where gene flow primarily occurred among adjacent estuaries was described with geographic neighborhoods limited to 700-900 km. Additionally, the degree of genetic divergence detected was similar between the two markers, indicating the occurrence of sex-biased gene flow, due to female mediated dispersal and/or male philopatry.

Only two published papers have addressed red drum population structure within the Atlantic (mitochondrial sequence data, Seyoum et al. 2000; microsatellite data, Chapman et al. 2002), both indicating little to no level of spatial structuring among estuaries. However, the Atlantic spatial scale of both projects were limited and likely confounded by low sample sizes. Additionally, an estuarine-collapsed analysis indicated temporal heterogeneity in the SC evaluation and was interpreted as a potential temporal instability of the reproductive pool (Chapman et al. 2002).

Chapman et al. (2002) estimated a variance effective population size (Ne) of Atlantic red drum utilizing the temporal method of Waples (1989) which was an order of magnitude lower than estimates of female Ne in the GoM (Turner et al. 1999). However, due to red drum overlapping generations, an estimate of Ne requires a modification based on age- specific life history information (Jorde & Ryman 1995). At that time, the only correction factor available for red drum was based on GoM fish (Turner et al. 1999); however the appropriateness of those data for Atlantic red drum is unlikely based on suspected age- structure differences resulting from differential commercial fishery impacts during the 1980s. Therefore, determination of age-specific survival and birth rates are needed to determine accurate estimates of Ne for Atlantic red drum.

More recently, SC DNR has utilized genetic samples from adult red drum collected from the multi-state longline surveys and other sampling efforts to evaluate genetic structure from NC to FL (SEDAR44-DW01). Temporal genetic differentiation was tested for within each of six sampling sites from NC to FL and found to be insignificant. Spatial genetic differentiation was then tested for between the six sampling sites during the spawning season and non-spawning season. Significant differentiation was detected between NC and all southern sample sites (SC-FL) during the spawning season, but not during the non-spawning season. This work suggests that a genetic break does exist between NC and locations south of NC during spawning, but some mixing of adults does occur during the non-spawning season. This mixing is less of a concern based on current management of the defined stocks which largely protects these adult fish from harvest (i.e., no mixed stock removals). Estimates of genetic effective population size (Ne) also supported the greater abundance of the southern stock estimated in the 2009 stock assessment (Murphy et al. 2009).

Based on the previous red drum assessments and the genetics work conducted by the SC DNR, the Atlantic red drum population will continue to be defined as two stocks, a Northern stock defined as North Carolina and north and a Southern stock defined as South Carolina and south, in this assessment.

2.3 Natural Mortality

2.3.1 Life-History Based Approaches

In stock assessments, natural mortality (*M*) is one of the most difficult parameters to determine. A variety of empirical methods to estimate M were explored by the panel and the results are summarized here.

Natural mortality of fishes is known to scale with body mass and size, resulting in higher M at earlier life stages and lower M as adults (Lorenzen, 1996). Therefore, both age-constant and age-varying methods were reviewed. The Schnute's 1981 reparmeterization of the von Bertalanffy growth model (VBGM) is the growth model used in the new modeling framework for this assessment (Stock Synthesis) and these growth parameters were used as input for estimation of M, when necessary. Separate estimates of M were provided for these two regions, based on region-specific growth and maximum age.

2.3.1.1 Age-Constant M Approaches

In this section, we describe several methods for determining an age-constant M based on life history characteristics, notably maximum age (t_{max}), von Bertalanffy growth parameters (k, L_∞), and average water temperature (T^{o}C). Results from the approaches below are summarized in Table 2.12.1.

Source	Equation
Alverson and Carney (1975)	$M = 3k/(exp(0.38*t_{max}*k)-1)$
Hoenig (1983; F ~ 0)	$M = exp(1.46 - 1.01*ln(t_{max}))$
Jensen (1996)	$M = 1.5*k$
Pauly (1980)	$M = exp(-0.0152+0.6543*ln(k)-0.279*ln(L_\infty,cm)$ $+0.4634*ln(T^oC))$
"Rule of thumb" (Hewitt & Hoenig 2005)	$M = 3/t_{max}$

Note that the Hoenig (1983) method provides an estimate of total mortality, Z. It is only when fishing mortality can be assumed small (F ~ 0) that this becomes an estimate of M, otherwise it is an upper bound on M. The version of the Hoenig (1983) equation used here was derived from fish species only. Average water temperature (ToC) used here for the Pauly (1980) equation was 19˚C, taken from Williams et al. (1973), as referenced in Ross et al. (1995). Quinn and Deriso (1999) have converted Pauly's equation from base 10 to natural logarithms as presented above. The "rule of thumb" method has a long history in fisheries science, but it is difficult to pin down its source. Hewitt and Hoenig (2005) are referenced here, who compare this approach to that of Hoenig (1983).

It was assumed that red drum close to their true maximum age were caught by the long-term adult red drum sampling programs in the north and south regions, allowing M to be estimated by empirical methods that require this parameter. Maximum observed age was 62 years the north region (unchanged from previous assessment) and 41.7 years in the south region (increased from 38 years in last assessment).

Because some of these approaches produce unrealistic estimates (either too large or too small, especially for methods requiring growth parameters, which fitted poorly), the Hoenig method was favored in consideration of previous SEDARs (e.g., S10, S15, and S17).

The Hoenig (1983) estimates of age-constant M were 0.067 for the north region and 0.0995 for the south region, with suggested ranges of ±0.03 (0.04-0.10 and 0.07-0.13, respectively).

2.3.1.2 Age-Varying M Approaches

To apply age-varying methods, length at age was initially calculated for the middle of the calendar year by adding 0.5 to each age in Schnute's reparameterization of the von Bertalanffy growth model (SVBGM) (see section 2.6 on growth). Length was then converted to weight at age using region-specific weight-length relationships for ages 1 and older (Section 2.6).

The Lorenzen (1996) ocean fit equation for estimating age-varying M used in the previous assessment was revisited. Due to VBGM parameter incompatibility, other methods of age-varying M (i.e. Lorenzen, 2005) were ruled out.

Unscaled and scaled estimates of M, based on the approaches of Lorenzen (1996), were developed from the SVBGM growth parameters applied to ages 1 through maximum age separately for each region.

When applying the method of Lorenzen (1996), estimates of age-varying M were scaled using survival from age 1 through the maximum age based on the Hoenig (1983) age-constant M (where % survival = 100*exp[-M*Tmax]), as described in Hewitt and Hoenig (2005). A range in Hoenig-based estimates of M (see above) was used to rescale the Lorenzen estimates of M so as to provide a range of age-varying M values.

The Hoenig-based estimate of M for the north region was 0.067, which produces a scaling to 1.5% survival from age 1 through age 62. The Hoenig-based M for the south region was 0.0095, which producing 1.6% survival from age 1 through age 41.7.

Corresponding survival percentages for the ranges of M in the north region were 8.4% and 0.2%, M = 0.04 and 0.10, respectively. In the south region, the range of survivals was 8.4% and 0.2% for M = 0.07 and 0.13, respectively Age-varying estimates of M are presented for subadult ages 1-5 (separately and averaged), and averaged over all adults (6+) ages, with range in parentheses (Table 2.12.2). Plots of age-varying M against age are presented in Figures 2.13.7 and 2.13.8.

2.4 Discard Mortality

Red drum are caught primarily by recreational fishing gear (hook-and-line) in the southeastern United States and are also discarded in NC commercial gill net fisheries. The numbers of fish released alive and discarded have increased over time as regulations have been implemented and fisher behavior has shifted. As this component of the fisheries has increased, discard mortality is assumed to represented an increasingly large portion of the overall annual removals from the red drum stocks and the need for developing estimates of mortality due to catch and release/discarding has become increasingly important.

The greatest factor likely to influence discard mortality is hooking mortality. Available mortality rates on discards that are attributable to hooking mortality can range from 2% to 15% depending on hook type and hook placement (Anguilar et al. 2002; Gearhart SD18- RD38; Vecchio & Wenner 2007). Overall hook utilization patterns in South Carolina have shown the majority of anglers use either J-hooks (47.5%), non-offset circle hooks (34.4%), and offset circle hooks (4.7%) (Vecchio & Wenner 2007). J-hooks have been shown to have much higher incidences of deep hooking in the gut which generally results in extensive damage and mortalities (Aguilar et al. 2002; Gearhart SD18-RD38; Vecchio & Wenner 2007). Higher gut hooking rates with J-hooks in North Carolina resulted in hooking mortality estimates approaching 15% (Aguilar et al. 2002). Overall hooking mortality of sub-adult fish in South Carolina was 2% for non-offset circle hooks while adult mortality was 1.9% for non-offset circle hooks and 3.3% for J-hooks.

In the previous stock assessment, SEDAR (2009) used an 8% mortality rate for fish released alive in recreational fisheries, based on a combination of the studies referenced above, and a 5% mortality rate for live discards in commercial gill net fisheries.

Earlier assessments assumed a 0% discard mortality for adult red drum because these large fish were above legal size and limited data existed on them. However, it's been demonstrated that hooking mortality does occur on adult red drum (Vecchio & Wenner 2007), so discard mortality was applied to all sizes in the 2009 stock assessment. There has been no additional work on discard mortality since the last assessment, so the same discard mortality rates of 8% and 5% were used to estimate dead discards in the recreational and commercial gill net fisheries, respectively.

2.5 Age

2.5.1 Age Information by State

Virginia:

The Old Dominion University Center for Quantitative Fisheries Ecology Laboratory (CQFE) processes and ages hard parts collected by the Virginia Biological Sampling Program (BSP). CQFE also assists in the processing of fish, from both the recreational and commercial sectors. Currently, the BSP collects otoliths from multiple species including red drum, *Sciaenops ocellatus*. The goal of otolith collection is to correspond to the frequency distribution in lengths from past seasons, according to 1-inch length bins. The age sampling is designed to achieve a CV of 0.2 (Quinn & Deriso 1999) at each length interval. Fish are then randomly selected from each length interval (bin) to process. The sampling design does not provide targets for cobia, sheepshead, red drum, or black drum, as very few specimens have been collected on an annual basis. CQFE produces an annual report for all samples processed.

North Carolina:

Red drum (*Sciaenops ocellatus*) otoliths were collected from commercial, recreational, and North Carolina Division of Marine Fisheries (NCDMF) catches (Table 2.12.3). Otoliths were removed from fish caught throughout state estuarine and coastal waters. The majority of fish sampled were from Pamlico Sound, its tributaries, and the coastal waters of the Outer Banks from Oregon Inlet to Cape Lookout. Fork length (FL) and total length (TL) in millimeters (mm) were recorded for most fish. When possible, whole weight to the nearest 0.1 kilogram (kg) or pound (later converted to kilograms), and sex were obtained.

Otoliths (sagittae) were excised from all fish and stored dry. Dorso-ventral sections of the left sagitta were made through the core to the nucleus perpendicular to the anterior- posterior plane with a Hilquist thin-sectioning machine as described by Cowan et al. (1995). Sections were mounted on slides with ultra-violet curing glue. All sections were read from a high resolution monitor coupled to a video camera mounted on a microscope. Age determination for red drum was based on the presence of annuli but had to be adjusted because the first annulus is not formed until 19-21 months after the hatching date. Additionally, a September 1 birthdate was used because this is the midpoint of the peak spawning season. Ages were incremented one year on this date. The system was calibrated with an ocular micrometer before each reading session. Validation of this technique is presented in Ross and Stevens (1992). Otolith sections were read independently by two readers. When disagreement occurred, ages were not assigned.

South Carolina:

Age data were available from a total of 86,782 red drum collected in South Carolina between 1984 and 2013 (Table 2.12.4). The majority of the data (n = 83,757) were from fishery independent surveys, while the remaining data (n = 3,025) were from fishery dependent sources (fishing tournaments and freezer drop-off program). A large number of fish (n = 51, 003) were aged based on their length, whereas the remainder were aged using either otoliths (n = 4,383) or scales (n = 32,296). Effective sample size was determined from the number of individual collections (e.g. several fish caught by a single angler in the freezer program, all anglers at a single tournament, or in a single fishery independent sampling unit, such as a net, were considered as a single sampling unit). Effective sampling size was 12,089 for the fishery independent data and 1,071 for fishery dependent data (Table 2.12.4).

Georgia:

Red drum (*Sciaenops ocellatus*) otoliths were collected from recreational and Georgia Department of Natural Resources catches. Otoliths were removed from fish caught throughout state estuarine and coastal waters. The majority of fish sampled were from Wassaw and Altamaha

Sound, its tributaries. Total length (TL) in millimeters (mm) were recorded for most fish. When possible, whole weight to the nearest 0.1 kilogram (kg) and sex were obtained. The left otolith (when available) was always selected for analysis. If the left otolith was not available due to damage or loss then the right was used. The otolith was mounted with hot glue to a piece of laminate with its distal surface upwards. The laminate was secured into a chuck to a Buehler Isomet saw equipped with two Norton diamond wafering blades separated with a 0.4 mm spacer that was positioned to straddle the focus of the otolith. Otoliths were examined using a Leica MZ-8 dissecting microscope with transmitted light and dark-field polarization at between 1.6 and 2 times magnification. All samples were aged in chronological order by collection date, without knowledge of previously estimated ages or the specimen lengths. Two readers independently read the sectioned otoliths. Age determination for red drum was based on the presence of annuli.

Florida:

The age and length data from Florida contained samples taken from a variety of sources, including commercial or recreational landings, scientific surveys and research studies, and tagging study mortalities. These are delineated in the dataset as: scientific, commercial, or recreational. All ages were determined from thin-sections of sagitta, using typical methodology developed for red drum beginning in the early 1980's. In general, these techniques have a high degree of agreement (>95%) among otolith section readers. To avoid the confusion due to different age-anniversary use, all fish are assigned to a year class using the year of their fall hatch date.

A total of 2,996 age-length samples have been taken from red drum captured along the waters off Florida's Atlantic coast. All ages were determined from sagittae otolith sections read under reflected light. The majority of sampled fish (n=2,247) came from scientific monitoring programs operating in the St Johns River/Nassau Sound, Northern Indian River/Mosquito Lagoon, and Southern Indian River areas using a variety of collecting gears. Total lengths of sampled fish ranged from 56 – 1,243 mm total length and biological ages ranged from 1-33 years.

For state-specific age-length annual sample size and age distribution see tables 2.12.5 and Table 2.12.6.

2.5.2 Aging Workshop

An Atlantic Croaker and Red Drum Aging Workshop was held at the South Carolina Department of Natural Resources, Marine Resources Center in Charleston, South Carolina on October 8, 2008. Participants were presented an overview of red drum otolith processing and reading conducted by SC DNR staff at the facility in Charleston. Participants from each state briefly described their otolith processing methods. Minor differences in cutting and polishing were noted but it was determined all produce easily readable otoliths. The group discussed reliability of scale aging. Scales appear to be accurate through Age 4 and are not reliable thereafter; otoliths should be used for Age 4 fish and older. The issue of determining "birth date" and proper assignment of correct year-class was discussed at length. For assessment modeling purposes, the decision was made to use January 1 as the birth date of all drum, regardless of differences between hatch dates among regions. For life history analyses (e.g., natural mortality estimation), a standard biological birth date of September 1 will be used.

2.5.3 Regional Age Analysis

The Data Workshop Panel decided that North Carolina and Virginia should be combined to represent the northern region and that South Carolina, Georgia, and Florida should be combined to represent the southern region based on differences in age structures present in data from each state and similarities in management of red drum between states. Fractional ages were calculated assuming a January 1 birth date. January 1 was subtracted from the capture date and divided by 365.25. Fractional ages for the northern region ranged from 0.81 to 62.81, while integer ages ranged from 0 to 62 years (n=10,731). Fractional ages for the southern region ranged from 0.60 to 41.68, while integer ages ranged from 0 to 41 (n=89,264).

2.6 Growth

The Schnute's 1981 reparmeterization of the von Bertalanffy growth model (VBGM) and a Schnute-Richards growth function (SRGF) were calculated by region (i.e., north and south) and sex (VBGM only). The two types of models were selected because they are compatible with the Stock Synthesis assessment model. Models were developed using fractional age and all observed data as well as calendar age and the mean length at age, excluding age 0 fish.

The VBGM parameters were estimated with nonlinear least-squares regression using the nlsLM function in the minpack.lm package (calendar age) in R (R Core Team, 2014). The parameters estimated were L1 = minimum total length (TL) in millimeters (mm), L2 = maximum TL (mm), and K = Brody growth coefficient, using the equation

$$L1 + (L3 - L1) * ((1 - \exp(-K * (t - t1)))/(1 - \exp(-K * (t3 - t1))))$$

where t is the observed age, t1 is the youngest observed age, and t3 is the oldest observed age, from the FSA package in R (Ogle). This equation is directly comparable to the SS Schnute growth model equation

$$L2 + (L1 - L2) * (\exp (-K * ((t - t1)).$$

Weighted and unweighted versions of the VBGM were calculated using fractional age, TL in mm, and the inverse of integer age as a weight. Starting parameter values were found using the vbStarts function in the FSA package in R (Ogle). VBGMs by sex were compared using a hierarchical approach by region. Parameter estimates were calculated by varying the number of parameters in common between sexes. Nested models were compared with an Anova and Akaike information criterion (AIC) value. Calendar age VBGMs were developed by using the mean annual length-at-age (TL in mm). Starting values were the minimum and maximum observed calendar ages, by region, and a K estimate from previous models. Input values for t1 and t3 were the youngest and oldest observed ages, by region.

The SRGF estimated the same three parameters (l1, L2, and K) and an additional parameter, the Richards' coefficient (R). Parameters were estimated with a nonlinear minimization function using the optimx package in R (Nash and Varadhan, 2011). Starting values were the K parameter estimate from the optimal weighted VBGM by region, the observed minimum TL in mm, the observed maximum TL in mm, and R = 1, by region. Age inputs were the youngest fractional age and the oldest fractional age, by region. Models were compared with AIC values and residual diagnostics.

All models were reviewed by the Data Workshop Panel and it was decided that calendar age mean length-at-age VBGMs by region were sufficient based on model fit and examination of residuals. The calendar age SRGFs by region did not have a better fit to the data compared to the calendar age mean length-at-age. VBGMs based on AIC value and the R parameters for both regions was equal to one, indicating the model fit was equal to a VBGM. Growth parameters for the northern region were L1 = 424.51 mm, L2 = 1176.12 mm, and K = 0.19 (Figure 2.13.1), and parameters for the southern region were L1 = 337.61 mm, L2 = 1042.32 mm, and K = 0.23 (Figure 2.13.2). Linf point estimates were calculated using parameter estimates by region for use in natural mortality calculations following Schute and Fournier (1980). Models by region were plotted together and showed similar growth patterns but visually different Linfs (Figure 2.13.3). This is most likely the result of smaller observed lengths and lower maximum ages from the southern region.

Recommendation: **Use weighted Schnute's 1981 re-parmeterization of the von Bertalanffy growth models for northern and southern regions.**

2.7 Reproduction

Much of the reproductive data is based on histological data as well as observations using hydroacoustic receivers. Most of the hydroacoustic data seems to be supported by the histological data (Lowerre-Barbieri 2008). Due to a limited amount of data from the Atlantic coastal region it was necessary to use both Gulf of Mexico and Atlantic coast data.

2.7.1 Spawning Seasonality

Spawning season on the Gulf and Atlantic coasts of Florida peaks between September and October (Murphy & Taylor, 1990). The northern Gulf of Mexico appears to have a spawning season between mid-August to September. Along the coast of North Carolina spawning peaked between August and September based on GSI (Ross et. al., 1995). Along the Georgia coast based on hydroacoustic data red drum appear to congregate and spawn between August and mid-October (Lowerre-Barbieri et al. 2008)

2.7.2 Sexual Maturity

Previously published information on red drum maturity were available from North Carolina, South Carolina, the Florida Atlantic coast (Indian Lagoon) and Florida Gulf of Mexico coast. Interpolated lengths of 50% maturity for male red drum were 529 mm for Florida's Gulf coast and 511 mm for the Atlantic coast of Florida and were mature between ages 1 and 3 (Murphy and Taylor 1990). Fifty percent of females were mature between 825 mm and 900 mm and all females were mature at age 6 in Florida (Murphy and Taylor 1990). In North Carolina, females were mature at 4 years while males were mature at 3 years (Ross et. al. 1995). Fifty percent of males were mature between 1 and 2 years of age while females did not mature until 3 years old (Ross et. al. 1995). The size of 50% maturity for females in SC was 792 mm TL and 713 mm TL for males. The age of 50% maturity for females was 4.3 years (52 months), while for males it was determined to be 3.5 years (43 months) (Wenner 2000). In South Carolina, all males were mature at 4 years and all females were mature at 5 years (Wenner 2000).

During the data workshop, additional analyses were performed using more recent data available from South Carolina (n = 5,540 fish). Raw data from the NC study of Ross et al (1995) were also obtained (n = 728 fish) so that maturity could be statistically compared between North and South Carolina. In the analysis of Ross et al (1995), developing fish were classified as immature, whereas as a recent study by Brown-Peterson et al (2011 (which has been widely accepted as a standardized reproductive methodology) classifies developing fish as mature. All NC and SC fish were therefore reclassified according to Brown-Peterson et al (2011). Results from the analysis are presented in SEDAR44-DW02.

The analyses found significant differences between NC and SC in relationships between both maturity at size and maturity at age, as well as significant differences between males and females. Results from the analyses are presented in Table 2.12.7 and Figures 2.13.8 through 2.13.13**.**

Among the SC fish, significant difference were also detected between time periods spanning 1984 through 2013. This apparent temporal effect may have been driven by data deficiency in some of the size, age or temporal categories. Also, most of the maturity assessments were made by gross (macroscopic) examination, so it was not possible to cross-check for consistent methodology across time. Therefore, temporal changes in maturity schedules were not considered any further.

2.7.3 Sex ratio

The sex ratio in North Carolina was 1:1 (349 males:373 females) (Ross et. al.. 1995). In the northern Gulf of Mexico, the sex ratio for spawning adults was also 1:1 (Wilson and Nieland 1994)

2.7.4 Spawning Frequencies

Wilson and Nieland (1994) estimated spawning frequencies for Northern Gulf of Mexico red drum from between 2 and 4 days.

2.7.5 Spawning Location

Spawning most likely occurs in the nearshore areas adjacent to channels and passes and may also occur over nearshore continental shelves (Lowerre-Barbieri et. al. 2008; Murphy and Taylor 1990). Spawning locations in South Carolina were also associated with passes and channels (Wenner 2000). More recent evidence suggests that in addition to nearshore vicinity habitats, red drum also utilize high-salinity estuarine areas along the coast (Murphy and Taylor 1990; Johnson and Funicelli 1991; Nicholson and Jordan 1994; Woodward 1994; Luczkovich et al. 1999; Beckwith et al. 2006).

2.7.6 Batch Fecundity

Batch fecundity estimates vs. fork length, gonad-free body weight, age in year, and BW were generated by Wilson and Nieland (1994) for red drum from the northern Gulf of Mexico from 1986 to 1992. The mean batch fecundity was 1.54 million ova. Fish ranged from 3-33 years of age, had a fork length range of 697-1005 mm, and a batch fecundity range of 0.16-3.27 (ova x 10^6).

2.8 Movements and Migrations

Tagging information provided the best insight into the movement and migration of red drum along the Atlantic coast. Each state, from Florida to Virginia, has participated in some form of tagging program. Volunteer angler programs are or have been active in each state in which trained volunteers participate by tagging fish and reporting tagged fish when recaptured. Other programs include agency staff tagging and cooperative projects with local commercial harvesters. Almost every program relies heavily on angler returns for recapture information.

Despite differences in state-to-state programs, there is evidence of adult drum movement between Virginia and North Carolina. Data suggest red drum movement into Virginia waters from North Carolina in late May. The fish appear to stay in the area during August through September when they ultimately move during fall months to North Carolina waters where the fish appear to overwinter. Movement of red drum tagged in North Carolina over 25 years is summarized in SEDAR44-WP01. The study, based on 6,173 tag returns for red drum of all sizes, found limited movement of red drum from North Carolina to adjacent states, although some adult red drum migrated seasonally to Virginia in the spring, returning the following fall. The study noted that the current stock split between North Carolina and South Carolina appeared to be an appropriate ecological division for the stock.

Programs in the southern states (Florida, Georgia, and South Carolina) provided evidence of limited movement as well. For example, of 1,780 fish tagged in Georgia, 85.3 % were recaptured within state waters (11.0 % were recaptured in South Carolina, and 3.7 % were recaptured in Florida). In South Carolina, fish tagged in the SC Department of Natural Resources sub-adult tagging program were primarily recaptured within 30 miles (96.4 %) (S18-DW02). An additional working document on movement distances by South Carolina red drum tags that were recaptured by recreational anglers SEDAR44-DW03 indicated that more than 95% of red drum were recaptured within 125 miles of their release location, even after 5 or more (up to 18) years at large. Of 12,754 tags with known recapture locations, 79 were recaptured from North Carolina, 12,657 from South Carolina, 13 from Georgia and 5 from Florida.

An interesting pattern of movement, or lack of movement, was observed from fish over-wintering in the area of power plants. The most productive of these areas was the Elizabeth River Hot Ditch area, in Virginia. Rather than migrating out of the Chesapeake Bay during fall to North Carolina waters (considered the usual pattern for sub-adult red drum), fish in this area were observed over-wintering in bay tributaries in the area of power plants. The cycling of river water through the plants resulted in discharges of warmed water sufficient to maintain adjacent areas at temperatures generally suitable for the fish (as well as forage the fish could use-crabs, finger mullet, mummichogs, etc.).Similar patterns were also observed, to a lesser degree, at another nearby power plant (SEDAR 2009).

The genetic work by SC DNR also suggests some movement of adult red drum between SC and NC during non-spawning seasons. However, these adult fish do appear to return to their respective stock during the spawning season.

2.9 Meristics and Conversion Factors

Equations for length-length and weight-length conversions were determined using the simple linear regression model and the power function, respectively, by region (Table 2.12.8). All weights are shown in grams and all lengths in millimeters. There were only 32 standard length measurements taken in the northern region, so conversions between total or fork length and standard length for the southern region were used for the northern region. Coefficients of determination (r2) ranged from 0.97 to 0.99 for these linear (length) and nonlinear (weight) regressions.

Recommendation: Use the conversion equations based on northern and southern regions.

2.10 Habitat

Spawning Habitat

Red drum (*Sciaenops ocellatus*) spawn from late summer to early fall in a range of habitats, including estuaries, near inlets, passes, and near bay mouths as opposed to further offshore or inland habitats (Peters and McMichael 1987). Earlier studies have illustrated that the spawning often occurred in nearshore areas relative to inlets and passes (Pearson 1929; Miles 1950; Simmons and Breuer 1962; Yokel 1966; Jannke 1971; Setzler 1977; Music and Pafford 1984; Holt et al. 1985). More recent evidence, however, suggests that in addition to nearshore vicinity habitats, red drum also utilize high-salinity estuarine areas along the coast (Murphy and Taylor 1990; Johnson and Funicelli 1991; Nicholson and Jordan 1994; Woodward 1994; Luczkovich et al. 1999; Beckwith et al. 2006). Coastal estuarine areas that have high salinity levels provide optimal conditions for eggs and larval development, as well as circulation patterns beneficial to transporting larvae to suitable nursery areas (Ross and Stevens 1992). Spawning in laboratory studies have also appeared to be temperature dependent, occurring in a range from 22° to 30° C but with optimal conditions between temperatures of 22° to 25° C (Holt et al.1981). Renkas (2010) was able to duplicate environmental conditions of naturally spawning red drum from Charleston Harbor, SC in a mariculture setting, and corroborated that active egg release occurred as water temperature dropped from a peak of ~30° C during August. Cessation of successful egg release was found at 25°C, with no spawning effort found at lower temperatures (Renkas 2010). Pelagic eggs, embryos, and larvae are transported by currents into nursery habitats for egg and larval stages, expectedly due to higher productivity levels in those environments (Peters and McMichael 1987; Beck et al. 2001)

Eggs and Larvae Habitat

Red drum eggs have been commonly encountered in several southeastern estuaries in high salinity, above 25 ppt (Nelson et al. 1991). Salinities above 25 ppt allow red drum eggs to float while lower salinities cause eggs to sink (Holt et al. 1981). In Texas, laboratory experiments conducted by Neill (1987) and Holt et al. (1981) concluded that an optimum temperature and salinity for the hatching and survival of red drum eggs and larvae was 25° C and 30 ppt. Spatial distribution and relative abundance of eggs in estuaries, as expected, mirrors that of spawning adults (Nelson et al. 1991); eggs and early larvae utilize high salinity waters inside inlets, passes, and in the estuary proper. Currents transport eggs and pelagic larvae into bays, estuaries and seagrass meadows (when present), where they settle (Levin et al. 2001) and remain throughout early and late juvenile stages (Pattillo et al. 1997; Holt et al. 1983; Rooker and Holt 1997, Rooker et al. 1998b; Levin et al. 2001). Larval size generally increases as distance from the mouth of the bay increases (Peters and McMichael 1987), possibly due to increased nutrient availability. Research conducted in Mosquito Lagoon, Florida, by Johnson and Funicelli (1991) found viable red drum eggs being collected in average daily water temperatures from 20° C to 25° C and average salinities from 30 to 32 ppt. During the experiment, the highest numbers of eggs were gathered in depths ranging from 1.5 to 2.1 m and the highest concentration of eggs was collected at the edge of the channel.

Upon hatching, red drum larvae are pelagic (Johnson 1978) and laboratory evidence indicates that development is temperature-dependent (Holt et al. 1981). Newly hatched red drum spend around twenty days in the water column before becoming demersal (Rooker et al. 1999; FWCC 2008). However, Daniel (1988) found much younger larvae already settled in the Charleston Harbor estuary. Transitions are made between pelagic and demersal habitats once settling in the nursery grounds (Pearson 1929; Peters and McMichael 1987; Comyns et al. 1991; Rooker and Holt 1997). Tidal currents (Setzler 1977; Holt et al. 1989) or density-driven currents (Mansueti 1960) may be utilized in order to reach a lower salinity nursery in upper areas of estuaries (Mansueti 1960; Bass and Avault 1975; Setzler 1977; Weinstein 1979; Holt et al. 1983; Holt et al. 1989; Peters and McMichael 1987; McGovern 1986; Daniel 1988). Once inhabiting lower salinity nurseries in upper areas of estuaries, red drum larvae grow rapidly, dependent on present environmental conditions (Baltz et al. 1998).

Red drum larvae along the Atlantic coast are reportedly common in southeastern estuaries, with the exception of Albemarle Sound, and are abundant in the St. Johns and Indian River estuaries in Florida (Nelson et al. 1991). Daniel (1988) and Wenner et al. (1990) found newly recruited larvae and juveniles through the Charleston harbor estuary over a wide salinity range. Mercer (1984) has also summarized spatial distribution of red drum larvae in the Gulf of Mexico. More recent studies conducted by Lyczkowski-Shutlz and Steen (1991) reported evidence of diel vertical stratification among red drum larvae found at lower depths less than 25 m at both offshore and nearshore locations. Larvae (ranging between 1.7 to 5.0 mm mean length) were found at lower depths during night and higher in the water column during the day. At the time of the study, water was well mixed and temperature ranged between 26° C to 28° C. There was no consistent relationship between distribution of larvae and tidal stage.

Survival during larval (and juvenile) stages in marine fish, such as the red drum, has been identified as a critical bottleneck determining their survival and contribution to adult populations (Cushing 1975; Houde 1987; Rooker et al. 1999).

Juvenile Habitat

Juvenile red drum utilize a variety of inshore habitats within the estuary, including seagrass meadows, tidal freshwater, low-salinity reaches of estuaries, estuarine emergent wetlands, estuarine scrub/shrub, submerged aquatic vegetation, oyster reefs, shell banks, and unconsolidated bottom (SAFMC 1998; ASMFC 2002). Smaller red drum seek out and inhabit rivers, bays, canals, boat basins, and passes within estuaries (Peters and McMichael 1987; FWCC 2008). Wenner's studies (1992) indicate that red drum juvenile habitats vary slightly seasonally: most often between August and early October, red drum inhabit small creeks that cut into emergent marsh systems and have some water in them at lower tides, while in winter, red drum reside in main channels of rivers ranging in depths from 10 to 50 feet with salinities from one-half to two-thirds that of seawater. In the winter of their first year, 3 to 5 month old juveniles migrate to deeper, more temperature-stable parts of the estuary during colder weather (Pearson 1929). In the spring, they move back into the estuary and shallow water environments. In the following spring, juveniles become more common in the shallow water habitats. Studies show that red drum inhabiting non-vegetated sand bottoms exhibit the greatest vulnerability to natural predators (Minello and Stunz 2001). Juvenile red drum in their first year generally avoid wave action by living in more protected waters (Simmons and Breuer 1962; Buckley 1984).

In the Chesapeake Bay, juveniles (20-90 mm Total Length, TL) were collected in shallow waters from September to November, but there is no indication as to the characteristics of the habitat (Mansueti 1960). Some southeastern estuaries where juvenile (and sub-adult) red drum are abundant are Bogue Sound, NC; Winyah Bay, SC; Ossabaw Sound, and St. Catherine/Sapelo Sound, GA; and the St. Johns River, FL (Nelson et al. 1991) and throughout SC (Wenner et al. 1990; Wenner 1992). They were highly abundant in the Altamaha River and St. Andrews/St. Simon Sound, GA, and the Indian River, FL (Nelson et al. 1991).

Peters and McMichael (1987) found in Tampa Bay that juvenile red drum were most abundant in protected backwater areas, such as rivers, tidal creeks, canals, and spillways with freshwater discharge, as well as in areas with sand or mud bottom and vegetated or non-vegetated cover. Juveniles found at stations with seagrass cover were generally smaller in size and fewer in number (Peters and McMichael 1987). Near the mouth of the Neuse River, as well as smaller bays and rivers between Pamilico Sound and the Neuse river, surveys from the North Carolina Division of Marine Fisheries (NCDMF) indicate that juvenile red drum were consistently abundant in shallow waters of less than 5 feet. Generally, habitats identified as supporting juvenile red drum in North Carolina can be characterized as detritus laden or mud-bottom tidal creeks (in Pamlico Sound) and mud or sand bottom habitat in other areas (Ross and Stevens, 1992). In a Texas estuary, young red drum (6-27 mm Standard Length, SL) were never present over non-vegetated muddy-sandy bottom; areas most abundant in red drum occurred in the ecotone between seagrass and non-vegetated sand bottom (Rooker and Holt 1997). In SC, Wenner (1992) indicated that very small red drum occupy small tidal creeks with mud/shell hash and live oyster as common substrates (since sub-aquatic vegetation is absent in SC estuaries).

Subadult Habitat

The subadult phase of the red drum's life cycle begins when late-stage juveniles leave shallow nursery habitats at a size of approximately 200 mm TL and 10 months of age. These subadults later attain sexual maturity, at about 3-5 years of age. Subadult red drum are most vulnerable to fishery exploitation (Pafford et al. 1990; Wenner 1992). They utilize many habitats within the estuary, including tidal creeks, rivers, inlets, and waters around barrier islands, jetties and sandbars (Pafford et al. 1990; Wenner 1992). While subadults are found in habitats similar to that of juvenile red drum, they are also found in large aggregations on seagrass beds, over oyster bars, mud flats, and sand bottoms (FWCC 2008). In a study conducted by Bacheler et al. (2009a), age-0 to age-3 red drum are commonly found in upper estuarine environments, but each fall a portion of age-1 and age-2 cohorts move to high-salinity coastal waters, while some red drum remain in upper estuarine habitat until age-3; at this age the last remaining red drum move to coastal environments. Tagging studies conducted throughout the species' range indicate that most subadult red drum generally remain in the vicinity of a given area (Beaumarriage 1969; Osburn et al. 1982; Music and Pafford 1984; Wenner et al. 1990; Pafford et al. 1990; Ross and Stevens 1992; Woodward 1994; Marks and DiDomenico 1996). Movement within estuaries is assumed to be related to temperature changes and food availability (Pafford et al. 1990; Woodward 1994). The following is taken from the Atlantic States Marine Fisheries Commission (ASMFC) Red Drum Fishery Management Plan (2002):

> "Hard, or live bottom (Struthsaker 1969), consists of aggregations of coral generated habitats that have a thinner layer of live corals (soft and hard), among other biota types, existing among different sediments, older reefs or rock bottom. Often these bottom assemblages of coral provide reef structure for aggregations of red drum. Coral assemblages vary with geographical area. On the South Atlantic coast, coral communities are dominated by ahermatypic species, which are not reef building species. In the South Atlantic Bight (SAB), hard or live bottom habitats are generally small outcropping areas scattered in a patchy distribution over the continental shelf north of Cape Canaveral, FL. These habitats are most numerous off the coast of northeastern Florida and typically occur at depths greater than 27 m. Benthic temperatures in deeper areas range from 11° C to 27° C, while nearshore temperatures are typically cooler (from SEAMAPs South Atlantic Bottom Mapping Work Group effort, beginning in 1992). Data suggest that red drum prefer higher salinities as they age (Neill et al. 2004), which could partially provide an explanation as to why red drum move more into coastal areas during their subadult and adult life stages (Bacheler et al. 2009b)."

In addition to natural hard/live bottom habitats, adult red drum also use artificial reefs and other natural benthic structures. As of 2002, 120,000 acres of ocean and estuarine bottom along the south Atlantic has been permitted for the development of artificial reefs (ASMFC 2002). In Florida alone, 34 out of 35 coastal counties have been involved in artificial reef development (FWCC 2012). Most Atlantic coast states are in the process of establishing or have already established artificial reef management programs in their coastal waters.

Red drum were found from late November until the following May at both natural and artificial reefs along tide rips or associated with the plume of major rivers in Georgia (Nicholson and Jordan 1994). Data from this study suggests that adult red drum exhibit high seasonal site fidelity to these features. Fish tagged in fall along shoals and beaches were relocated 9 to 22 km offshore during winter and then found back at the original capture site in the spring. In summer, fish moved up the Altamaha River nearly 20 km to what the authors refer to as "pre-spawn staging areas" and then returned to the same shoal or beach again in the fall.

2.11 Literature Cited

Adams, D. H., R. H. Lowers, E. A. Reiyer, and D. M. Scheidt. 2011. Movement patterns of adult red drum, *Sciaenops ocellatus*, in shallow Florida lagoons as inferred through autonomous acoustic telemetry. Environmental Biology of Fishes. Vol. 90, No. 4:343–360.

Aguilar, R., P. S. Rand, and G. H. Beckwith. 2002. Quantifying the catch-and-release mortality rate of adult red drum in the Neuse River estuary. North Carolina Fisheries Resource Grant Program, 01-FEG-07. Raleigh, North Carolina.

Alvarez, M. C. and L. A. Fuiman. 2005. Environmental levels of atrazine and its degradation products impair survival skills and growth of red drum larvae. Aquatic Toxicology 74: 229-241.

Alverson, D.L., and M.J. Carney. 1975. A graphic review of the growth and decay of population cohorts. J. Cons. Int. Explor. Mer 36:133-143.

ASMFC. 2002. Amendment 2 to the Interstate Fishery Management Plan for Red Drum; Fishery Management Report No. 38 of the Atlantic States Marine Fisheries Commission. ASMFC. pp.69-75.

ASMFC. 2007b. The Importance of Habitat Created by Molluscan Shellfish to Managed Species along the Atlantic Coast of the United States. Atlantic States Marine Fisheries Commission, Washington, D.C.

ASMFC. 2010. Living Shorelines: Impacts of Erosion Control Strategies on Coastal Habitats. Atlantic States Marine Fisheries Commission, Washington, D.C.

ASMFC. 2011. Spotlight on Habitat Restoration Projects: Oyster Reefs and Mosquito Ditches. Atlantic States Marine Fisheries Commission, Washington, D.C.

ASMFC-Habitat Committee. 2012. Offshore wind in my back yard? Draft ASMFC technical information document. 6 p.

Bacheler, N. M., Paramore, L.M., Buckel, J.A., and J.E. Hightower,. 2009a. Abiotic and biotic factors influence the habitat use of an estuarine fish. Mar Ecol Prog Ser. 377: 263-277.

Bacheler, N. M., Paramore, L.M., Burdick, S.M., Buckel, J.A., and J.E. Hightower. 2009b. Variation in movement patterns of red drum *Sciaenops ocellatus* inferred from conventional tagging and ultrasonic tracking." Fishery Bulletin. 107, 405-419.

Ballachey, B.E., J.L. Bodkin, D. Esler, D.B. Irons, C.H. Peterson, S.D. Rice, and J.W. Short. 2003. Review: Long-Term Ecosystem Response to the Exxon Valdez Oil Spill. Science. Vol. 302.

Baltz, D.M., J.W. Fleeger, C.F. Rakocinski and J.N. McCall. 1998. Food, density, and microhabitat: factors affecting growth and recruitment potential of juvenile saltmarsh fishes. Environ. Biol. Of Fish. 53: 89-103.

Bass, R.J. and J.W. Avault, Jr. 1975. Food habit, length-weight relationship, condition factor, and growth of juvenile red drum, *Sciaenops ocellatus*, in Louisiana. Trans. of the Am. Fish. Soc. 104(1): 35-45.

Beaumarriage, D.S. 1969. Returns from the 1965 Schlitz tagging program, including a cumulative analysis of previous results. Florida DNR Tech. Series 59: 1-38.

Beck, M.W., K.L. Heck, K.W. Able, D.L. Childers, D.B. Eggleston, B.M. Gillanders, B. Halpern, C.G. Hays, K. Hoshino, T.J. Minello, R.J. Orth, P.F. Sheridan, and M.P. Weinstein. 2001. The identification, conservation, and management of Estuarine and Marine Nurseries for Fish and Invertebrates. BioScience 51(8):633–641.

Boudreau, P.R., and L.M. Dickie. 1989. Biological model of fisheries production based on physiological and ecological scalings of body size. Can. J. Fish. Aquat. Sci. 46:614-623.

Brown-Peterson NJ, Wyanski DM, Saborido-Rey F, Macewicz BJ, Lowerre-Barbieri SK (2011) A Standardized Terminology for Describing Reproductive Development in Fishes. Mar Coast Fish Dynam Manag Ecosys Sci, 3: 52-70

Chapman, R. W., A. O. Ball and L. R. Mash. 2002. Spatial homogeneity and temporal heterogeneity of red drum (*Sciaenops ocellatus*) microsatellites: Effective population sizes and management implications. Marine Biotechnology 4:589-603.

Gearhart , J. 2002. Hooking mortality of spotted seatrout (*Cynoscion nebulosus*), weakfish (*Cynoscion regalis*), red drum (*Sciaenops ocellatus*), and southern flounder (*Paralichthys lethostigma*) in North Carolina. North Carolina Division of Marine Fisheries, Morehead City, NC. Completion Rept. For Cooperative Grant NA 87FG0367 /2.

Gold, J. R., C. P. Burridge and T. F. Turner. 2001. A modified stepping-stone model of population structure in red drum, *Sciaenops ocellatus* (Sciaenidae), from the northern Gulf of Mexico. Genetica 111: 305-317.

Gold, J. R. and T. F. Turner. 2002. Population structure of red drum (*Sciaenops ocellatus*) in the northern Gulf of Mexico, as inferred from variation in nuclear- encoded microsatellites. Marine Biology 140: 249-265.

Heimbuch, D.G., E. Lorda, D. Vaughan, L.W. Barnthouse, J. Uphoff, W. Van Winkle, A. Kahnle, B. Young, J. Young, and L. Kline. 2007. Assessing coastwide effects ofpower plant entrainment and impingement on fish populations: Atlantic menhaden example. No. Amer. J. Fish. Manage. 27:569-577.

Hewitt, D.A., and J.M. Hoenig. 2005. Comparison of two approaches for estimating natural mortality based on longevity. Fish. Bull. 103:433-437.

Hoenig, J.M. 1983. Empirical use of longevity data to estimate mortality rates. Fish. Bull. 82:898-903.

Hoese, H.D., D.W. Beckman, R.H. Blanchet, D. Drullinger and D.L. Nieland. 1991. A biological and fisheries profile of Louisiana red drum *Sciaenops ocellatus*.
Fishery Management Plan Series Number 4, Part 1. Louisiana Department of Wildlife and Fisheries, Baton Rouge, LA, 93 p.

Jensen, A.L. 1996. Beverton and Holt life history invariants result from optimal trade-off of reproduction and survival. Can. J. Fish. Aquat. Sci. 53:820-822.

Jorde, P. E. and N. Ryman. 1995. Temporal allele frequency change and estimation of effective population size in populations with overlapping generations. Genetics 139:1077-1090.

Lorenzen, K. 1996. The relationship between body weight and natural mortality in juvenile and adult fish: A comparison of natural ecosystems and aquaculture. J. Fish. Biol. 49:627-647.

Lowerre-Barbieri, S.K., L.R. Barbieri, J.R. Flanders, A.G. Woodward, C.F. Cotton, and M.K. Knowlton. 2008. Use of passive acoustics to determine red drum spawning in Georgia waters. Trans. Am. Fish. Soc. 137:562-575.

Lux, F.E. & J.V. Mahoney. 1969. First records of the channel bass, *Sciaenops ocellatus*, in the Gulf of Maine. Copeia 1969: 632–633.

Mercer, L.P. 1984. A biological and fisheries profile of red drum, *Sciaenops ocellatus*.
North Carolina Division of Marine Fisheries, Special Scientific Report 41, Morehead City. 89 pp.

Murphy, M. D. 2005. A stock assessment of red drum, *Sciaenops ocellatus* in Florida: status of the stocks through 2003. Report to the Florida Fish and Wildlife Conservation Commission from the Fish and Wildlife Research Institute, St.
Petersburg. FWRI In-House Report 2005-006.

Murphy, M.D. and R.G. Taylor. 1990. Reproduction, growth, and mortality of red drum
Sciaenops ocellatus in Florida waters. Fishery Bulletin. 88:531-542.

Pauly, D. 1980. On the interrelationships between natural mortality, growth parameters, and mean environmental temperature in 175 fish stocks. J. Cons. Int. Explor. Mer 39:175-192.

Peterson, I., and J.S. Wroblewski. 1984. Mortality rate of fishes in the pelagic ecosystem.
Can. J. Fish. Aquat. Sci. 41:1117-1120.

Quinn, T.J. II, and R.B. Deriso. 1999. Quantitative Fish Dynamics, Oxford University Press, New York, New York. 542 p.

Ross J.L., Stevens T.M. (1992) Life history and population dynamics of red drum (*Sciaenops ocellatus*) in North Carolina waters. Completion Report Project F-29, NC Div Mar Fish, Morehead City, NC.

Ross, J. L., T. M. Stevens, and D. S. Vaughan. 1995. Age, growth, mortality, and reproductive biology of red drum in North Carolina waters. Transactions of the American Fisheries Society 124:37–54.

SAFMC.1998a. Final Habitat Plan for the South Atlantic region: Essential Fish Habitat Requirements for Fishery Management Plans of the South Atlantic Fishery Management Council. South Atlantic Fishery Management Council, 1 Southpark Circle, Suite 306, Charleston, SC 29407-4699. 457 pp. plus appendices.

SAFMC (South Atlantic Fishery Management Council). 1990. The Atlantic coast red drum fishery management plan, including an environmental impact statement and regulatory impact review. South Atlantic Fishery Management Council, Charleston, South Carolina.

SEDAR. 2009. Stock Assessment Report Atlantic Red Drum. Southeast Data, Assessment, and Review. North Charleston, South Carolina.

Seyoum, S., M. D. Tringali and T. M. Bert. 2000. An analysis of genetic population structure in red drum, Sciaenops ocellatus, based on mtDNA control region sequences. Fishery Bulletin 98: 127-138.

Takade, H. and L.M. Paramore. 2007. Draft stock status of the northern red drum stock.
North Carolina Division of Marine Fisheries, Morehead City, NC. 47 pp. + appendices.

Turner, T. F., L. R. Richardson and J. R. Gold. 1999. Temporal genetic variation of mitochondrial DNA and the female effective population size of red drum (*Sciaenops ocellatus*) in the northern Gulf of Mexico. Molecular Ecology 8:1223-1229.

Vaughan, D. S. 1993. Status of the red drum stock of the Atlantic coast: stock assessment report for 1992. National Oceanic and Atmospheric Administration Technical Memorandum NMFS-SEFC-313.

Vaughan, D. S. 1996. Status of the red drum stock of the Atlantic coast: stock assessment report for 1995. National Oceanic and Atmospheric Administration Technical Memorandum NMFS-SEFC-380.

Vaughan, D. S., and J. T. Carmichael. 2000. Analysis of Atlantic red drum: northern and southern regions. National Oceanic and Atmospheric Administration Technical Memorandum NMFS-SEFC-447.

Vecchio, J. 2006. Catch and release in South Carolina"s red drum recreational fishery.
Master"s thesis. College of Charleston, Charleston, South Carolina.

Vecchio, J.L. and C.A. Wenner, 2007. Catch-and-release mortality in sub-adult and adult Red Drum captured with popular fishing hook types. N. A. J. Fish. Manage. 27:891–899.

Vetter, E.F. 1987. Estimation of natural mortality in fish stocks: A review. Fish. Bull.
86:25-43.

Waples, R. S. 1989. A generalized approach for estimating effective population size from temporal changes in allele frequencies. Genetics 121:379-391.

Wenner, C.A. Contributions to the biology of red drum *Sciaenops ocellatus*, in South Carolina. Marine Resources Research Institute South Carolina Department of Natural Resources Fort Johnson Road , Charleston, South Carolina. MARFIN:NA47FM0143

Williams, A.B., G.S. Posner, W.J. Woods, and E.E. Deubler. 1973. A hydrographic atlas of larger North Carolina sounds. University of North Carolina, Institute of Marine Science, Report UNC-SG-73-02, Morehead City.

Wilson, C.A. and D.L. Nieland. 1994. Reproductive biology of red drum, *Sciaenops ocellatus,*
from the neritic waters of the northern Gulf of Mexico. Fishery Bulletin. 92:841-850.

2.12 Tables

Table 2.12.1. US Atlantic red drum age-constant natural mortality estimates**.** M: instantaneous natural mortality, k: Schnute's reparameterization of the von Bertalanffy growth parameter, T: average water temperature (°C), L_2: Schnute's reparameterization of the von Bertalanffy asymptotic total length (cm), Maximum age: tmax = **62** years in north region, tmax = **41.7** years in south region; and average water temperature = **19**° C (Williams et al. 1973 as used in Ross et al. 1995).

Approach	Life History Parameters	North Region	South Region
Alverson & Carney	k, t_{max}	0.001	0.0009
Hoenig	t_{max}	0.066	0.0995
Jensen	k	0.435	0.6900
Pauly	k, L_2, T	0.458	0.6653
Rule of thumb	t_{max}	0.048	0.0720

Table 2.12.2. US Atlantic red drum age-varying instantaneous natural mortality rates for subadult red drum (ages 1-5, including average across ages) and average over adult ages (6+). Age-varying estimates are based on the Lorenzen (1996) approach for the north and south red drum regions. Age-specific estimates of natural mortality were scaled using age-constant *M* values derived by the method of Hoenig (1983), with range about them (values in parentheses), as discussed in the main text.

Age Grouping	Northern Region	Southern Region
Subadult Ages:		
1	0.20 (0.12, 0.30)	0.27 (0.19, 0.36)
2	0.13 (0.07, 0.19)	0.16 (0.11, 0.20)
3	0.10 (0.06, 0.15)	0.12 (0.09, 0.16)
4	0.09 (0.05, 0.13)	0.11 (0.08, 0.14)
5	0.08 (0.05, 0.12)	0.10 (0.07, 0.13)
Average 1-5	0.12 (0.07, 0.17)	0.15 (0.11, 0.20)
Ages 6+	0.06 (0.04, 0.09)	0.09 (0.06, 0.12)

Table 2.12.3. A summary of all age samples collected for red drum in North Carolina from 1987 to 2013. Ages adjusted to correspond with a January 1 birthdate.

	Age										
Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10+**	**All**
1987	7	3								1	11
1988	39	26	28	3	1	3		3		29	132
1989	30	64	60	22	1	1	6	3	2	68	257
1990	49	9	62	14	10	3	4	6	5	151	313
1991	98	53		14	8	6				49	228
1992	94	162	21	2	3				2	69	353
1993	45	130	58	1		2			1	43	280
1994	50	64	45	12	2	1	5	1	2	23	205
1995	129	213	34	5	2	1		2		40	426
1996	150	119	19	1	2	3			2	18	314
1997	343	36	8	5	1	1	1			25	420
1998	169	155	6	10	16	9	6	5		38	414
1999	131	138	11					1		2	283
2000	114	102	15	2						2	235
2001	89	67	24	1						0	181
2002	129	72	1							2	204
2003	16	85								0	101
2004	235	11	18							1	265
2005	151	162					1			5	319
2006	214	160	8						1	2	385
2007	46	111	5	8				2	1	84	257
2008	221	108	12	5	2		1	3	1	56	409
2009	121	155	5		1	1			2	32	317
2010	221	72	6	7	10	1	2			16	335
2011	73	28	1		6	7	2	2	1	56	176
2012	489	20		3	1	2	3	2	2	55	577
2013	109	270	1		2	2	2	9	1	52	448

Table 2.12.4. South Carolina red drum age data. n: number of fish; n' effective sample size**..**

Year	**Fishery dependent**		**Fishery independent**		**TOTAL**	
	n	***n'***	***n***	***n'***	***n***	***n'***
1984			3	2	3	
1985	10	1	157	41	167	42
1986	72	7	916	97	988	104
1987	187	12	2155	133	2342	145
1988	49	5	1025	81	1074	86
1989	36	2	1402	59	1438	61
1990	46	4	1229	79	1275	83
1991	52	5	2434	182	2486	187
1992	50	4	3051	233	3101	237
1993	26	2	3360	313	3386	315
1994	27	2	3336	350	3363	352
1995	129	31	4576	518	4705	549
1996	172	71	5000	507	5172	578
1997	148	60	4030	491	4178	551
1998	136	61	2617	426	2753	487
1999	117	40	2486	416	2603	456
2000	291	100	1656	347	1947	447
2001	141	61	3682	596	3823	657
2002	223	96	4541	693	4764	789
2003	180	81	5875	689	6055	770
2004	93	44	5721	698	5814	742
2005	67	42	4753	689	4820	731
2006	87	43	1525	439	1612	482
2007	113	52	1981	503	2094	555
2008	90	37	2798	582	2888	619
2009	82	41	3176	605	3258	646
2010	119	42	3514	665	3633	707
2011	111	47	2434	565	2545	612
2012	100	40	2112	539	2212	579
2013	71	38	2212	551	2283	589
TOTAL	**3025**	**1071**	**83757**	**12089**	**86782**	**13160**

Table 2.12.5. Number of red drum age-length data pairs available from each state each year.

Year	FL	GA	SC	NC	VA
1981	106	0	0	0	0
1982	340	0	0	0	0
1983	88	0	0	0	0
1984	0	0	3	0	0
1985	0	0	167	0	0
1986	0	0	813	0	0
1987	40	0	2,247	11	0
1988	28	0	1,074	164	0
1989	43	0	1,273	312	0
1990	0	0	1,103	344	0
1991	70	0	2,268	257	0
1992	3	0	3,101	438	0
1993	2	0	3,383	427	0
1994	36	0	3,544	297	0
1995	75	0	4,994	482	0
1996	26	0	5,465	381	0
1997	251	63	4,276	417	0
1998	155	94	2,908	523	0
1999	96	82	2,746	433	19
2000	84	48	2,006	319	6
2001	94	54	3,902	442	1
2002	112	91	4,777	347	0
2003	68	119	6,186	226	0
2004	71	100	5,919	332	0
2005	145	70	4,819	449	0
2006	140	71	1,609	626	0
2007	0	60	2,179	473	32
2008	141	125	2,976	571	20
2009	98	144	3,496	607	73
2010	142	102	3,952	508	34
2011	116	29	2,900	251	0
2012	172	41	2,782	583	4
2013	254	112	2,793	674	79

Table 2.12.6. Age-length pairs available from each state each year. Ages are incremented on January 1 each year so fall spawned red drum achieve age-1 two to three months after hatching.

Age	FL	GA	SC	NC	VA
1	605	727	30,327	3,256	18
2	1,082	621	27,912	4,908	193
3	745	52	14,229	1,149	34
4	290	4	8,978	167	2
5	63	0	3,122	85	0
6	31	0	362	46	1
7	20	0	75	43	1
8	4	0	49	45	1
9	10	0	32	27	2
10	17	0	41	57	1
11	13	0	22	44	0
12	12	0	25	61	1
13	4	0	18	29	1
14	4	0	19	43	0
15	4	0	19	83	0
16	6	0	20	65	0
17	7	0	30	86	1
18	2	0	23	69	0
19	4	0	23	61	1
20	0	1	22	67	0
21	2	0	25	50	1
22	1	0	27	52	0
23	1	0	17	33	0
24	0	0	17	36	1
25	2	0	20	22	0
26	2	0	18	25	0
27	0	0	16	26	3
28	3	0	14	12	1
29	0	0	12	32	0
30	0	0	6	15	0
31	0	0	11	13	0
32	0	0	4	20	0
33	1	0	6	8	0
34	0	0	11	23	0
35	0	0	3	21	0
36	0	0	2	15	0
37	0	0	2	12	0
38	0	0	5	15	0
39	0	0	3	12	0
40^+	0	0	3	61	0

Table 2.12.7. Relationships between length at maturity and age at maturity in red drum from North Carolina and South Carolina. Parameters a and b (± SE) are for the logistic function Proportion Mature=e^Z/(1+e^Z) where Z=a+b*Predictor.

Region	Sex	n	Predictor (independent variable)	*a* (const)	±se	*b* (slope)	±se	50% maturity	Data used
NC	Female	305	Length (TL, mm)	-38.8400	7.37006	0.0445117	0.0085605	872.6	Jul-Dec
NC	Female	334	Age (decimal years, Jan 1 birth date)	-29.8740	6.05016	7.2755200	1.5720700	4.1	Feb-Dec
NC	Male	340	Length (TL, mm)	-19.8010	3.76561	0.0294404	0.0054736	672.6	Jul-Dec
NC	Male	318	Age (decimal years, Jan 1 birth date)	-10.8147	1.88893	3.6662400	0.6152680	2.9	Feb-Dec
SC	Female	1,805	Length (TL, mm)	-17.8929	1.13022	0.0228056	0.0014545	784.6	Jul-Dec
SC	Female	2,613	Age (decimal years, Jan 1 birth date)	-9.0749	0.45404	1.7918600	0.1073900	5.1	Jan-Dec
SC	Male	2,927	Length (TL, mm)	-18.3791	1.14192	0.0264934	0.0016986	693.7	Jul-Dec
SC	Male	2,930	Age (decimal years, Jan 1 birth date)	-10.1218	0.45237	2.4274500	0.1250110	4.2	Jan-Dec

Table 2.12.8 Conversion table for SEDAR 44 red drum biological data.

Data Source	Dep Variable	Ind Variable	a	b	n	a SE	b SE	r^2	Ind Range	Units
Southern Region	Whole Wt	TL	0.00001	2.983	8,345	1.018	1.0030	0.99	51-1243	mm, g
Northern Region	Whole Wt	TL	0.00002	2.931	9,951	1.026	1.0042	0.98	152-1316	mm, g
Southern Region	TL	FL	-21.744	1.091	7,021	0.300	0.0004	1.00	88-1167	mm
	FL	TL	20.651	0.916	7,021	0.267	0.0004	1.00	88-1246	mm
	TL	SL	7.246	1.202	35,796	0.102	0.0003	1.00	4-1070	mm
	FL	SL	28.595	1.092	4,594	0.391	0.0009	1.00	70-1050	mm
Northern Region	TL	FL	-23.941	1.088	10,927	0.239	0.0004	1.00	149-1260	mm
	FL	TL	22.854	0.917	10,927	0.211	0.0004	1.00	152-1410	mm
	TL	SL	7.246	1.202	35,796	0.102	0.0003	1.00	4-1070	mm
	FL	SL	28.595	1.092	4,594	0.391	0.0009	1.00	70-1050	mm

2.13 Figures

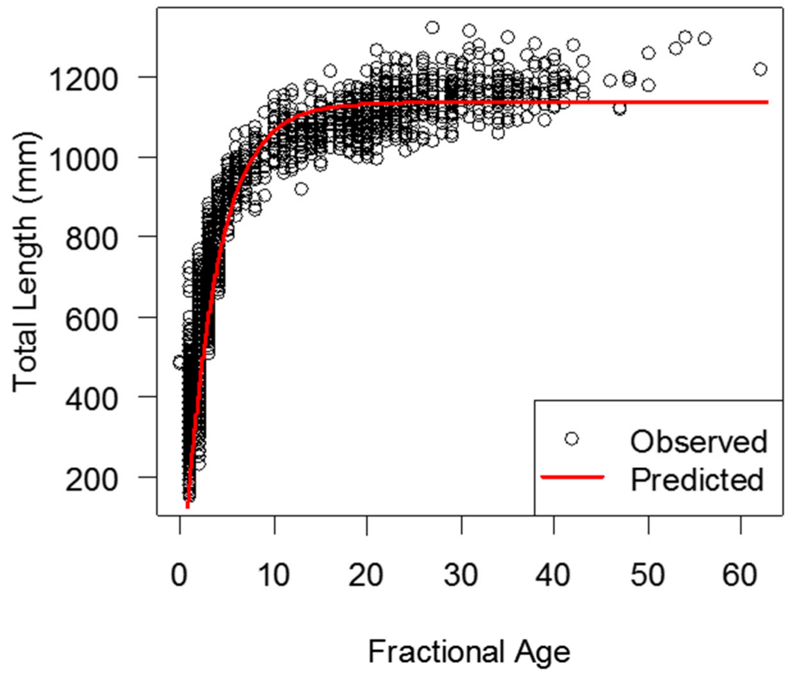


Figure 2.13.1. Observed and predicted total lengths (mm) from Schnute's 1981 reparameterization of the von Bertalanffy growth model for the northern region (NC/VA).

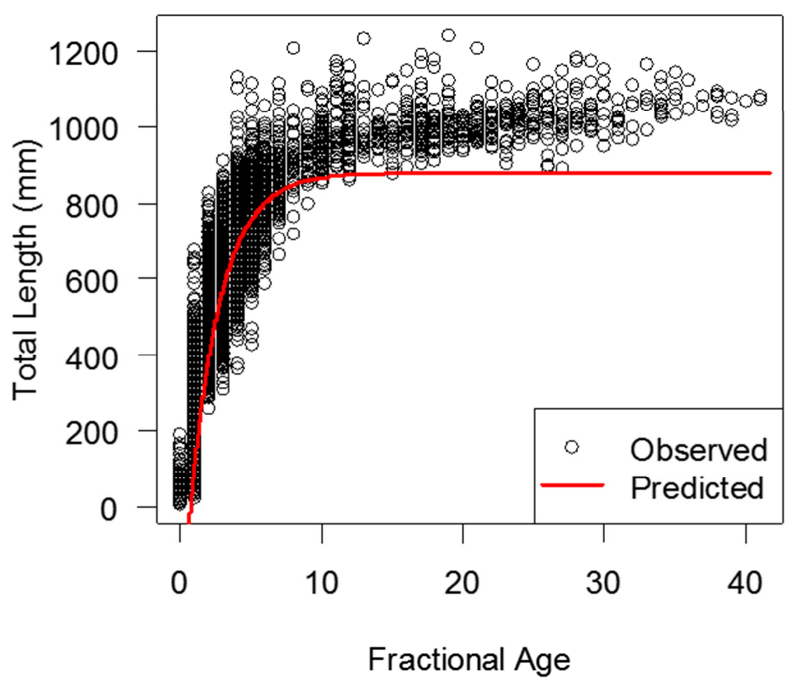


Figure 2.13.2 Observed and predicted total lengths (mm) from Schnute's 1981 reparameterization of the von Bertalanffy growth model for the southern region (SC/GA/FL).

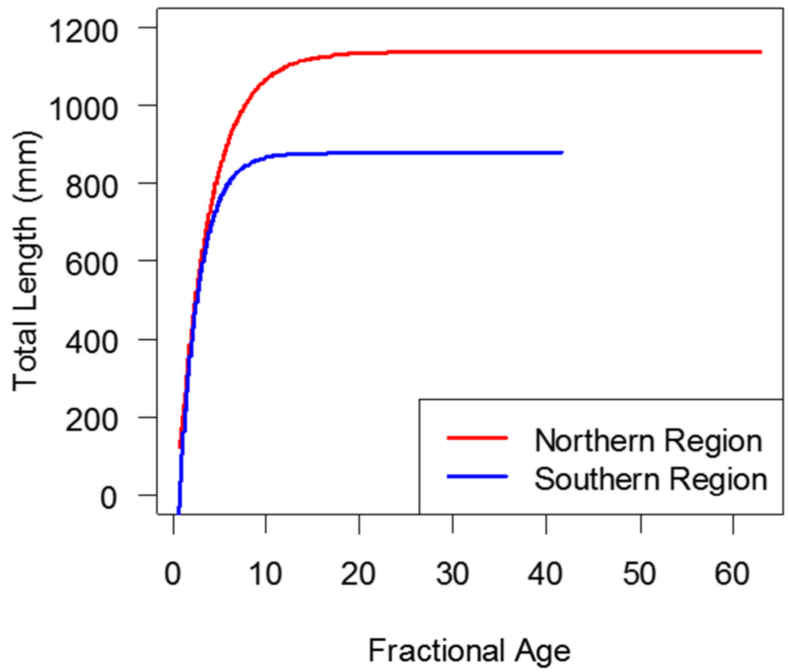


Figure 2.13.3. Comparison of predicted total lengths (mm) from Schnute's 1981 reparameterization of the von Bertalanffy growth model by region.

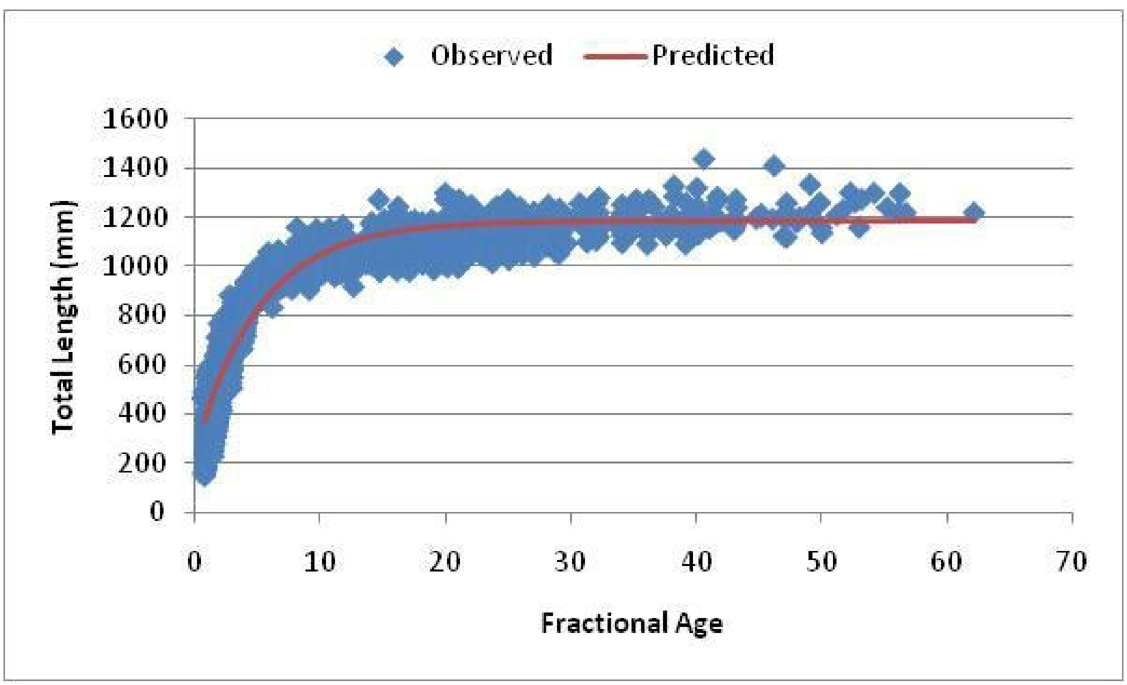


Figure 2.13.4. Observed and predicted total lengths from the regular von Bertalanffy growth model for the northern region (NC/VA).

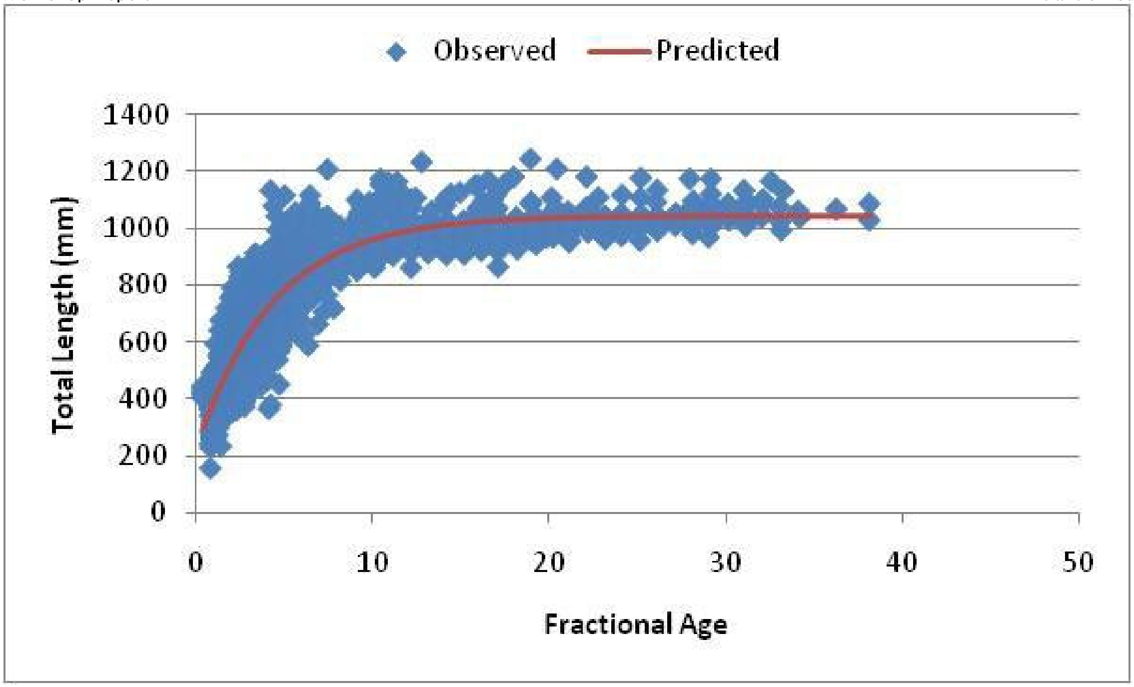


Figure 2.13.5. Observed and predicted total lengths from the regular von Bertalanffy growth model for the southern region (SC/GA/FL).

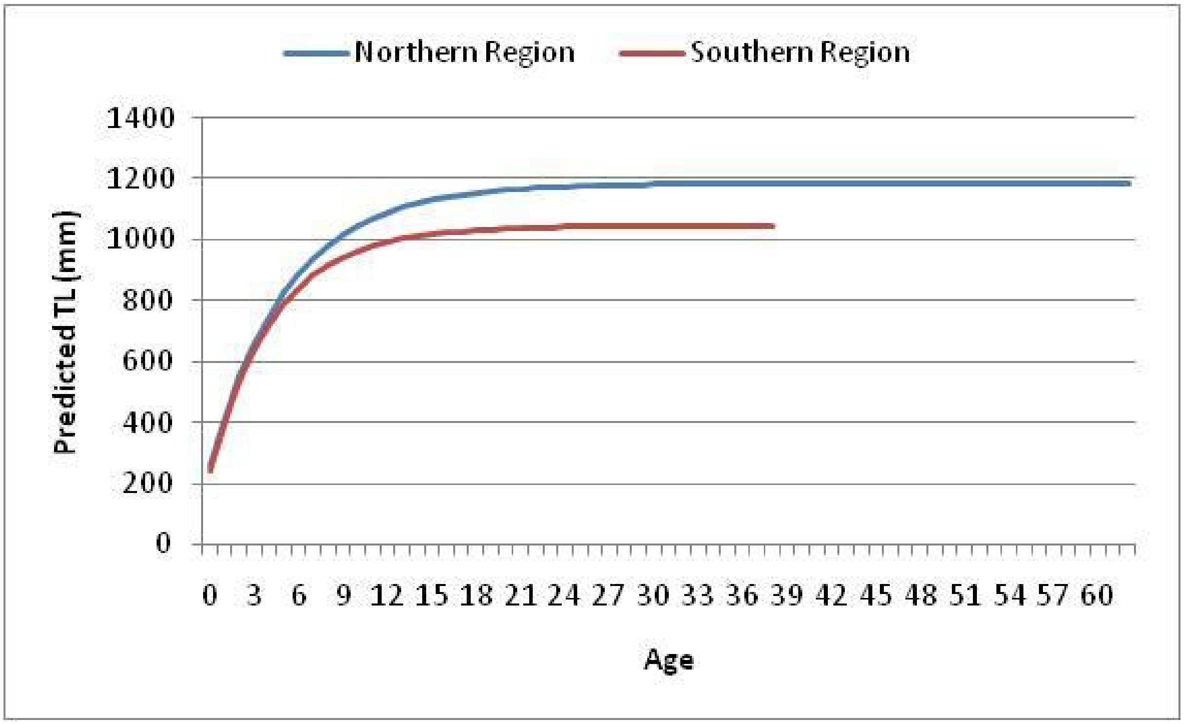


Figure 2.13.6. Comparison of predicted total lengths from von Bertalanffy models by region.

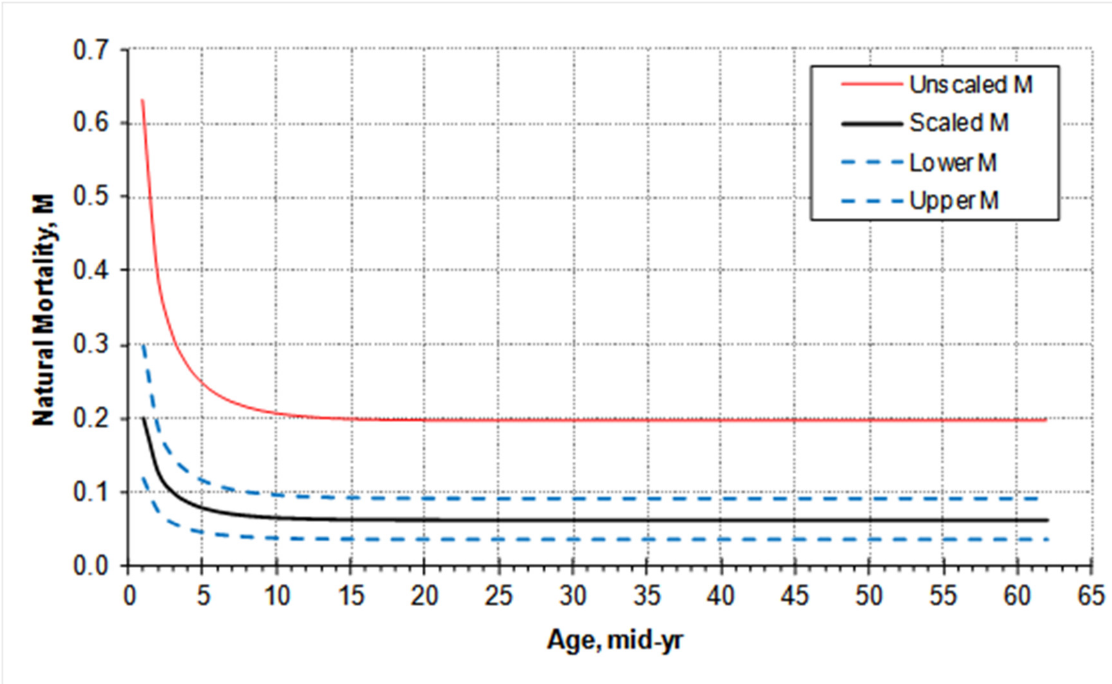


Figure 2.13.7 Comparison of North Region unscaled and scaled estimates of age-varying *M* from the methods of Lorenzen (1996) based on growth predicted by the Schnute's (1981) reparmeterization of the von Bertalanffy growth equation, as applied to mid-year age and length data. Scaled estimates assume a cumulative survival from age 1 through maximum age (62 years) of 1.5% (equivalent to an age-constant Hoenig *M* of 0.067). Lower and upper bounds are for survival of 0.2% and 8.4% (Hoenig *M* of 0.10 and 0.04, respectively).

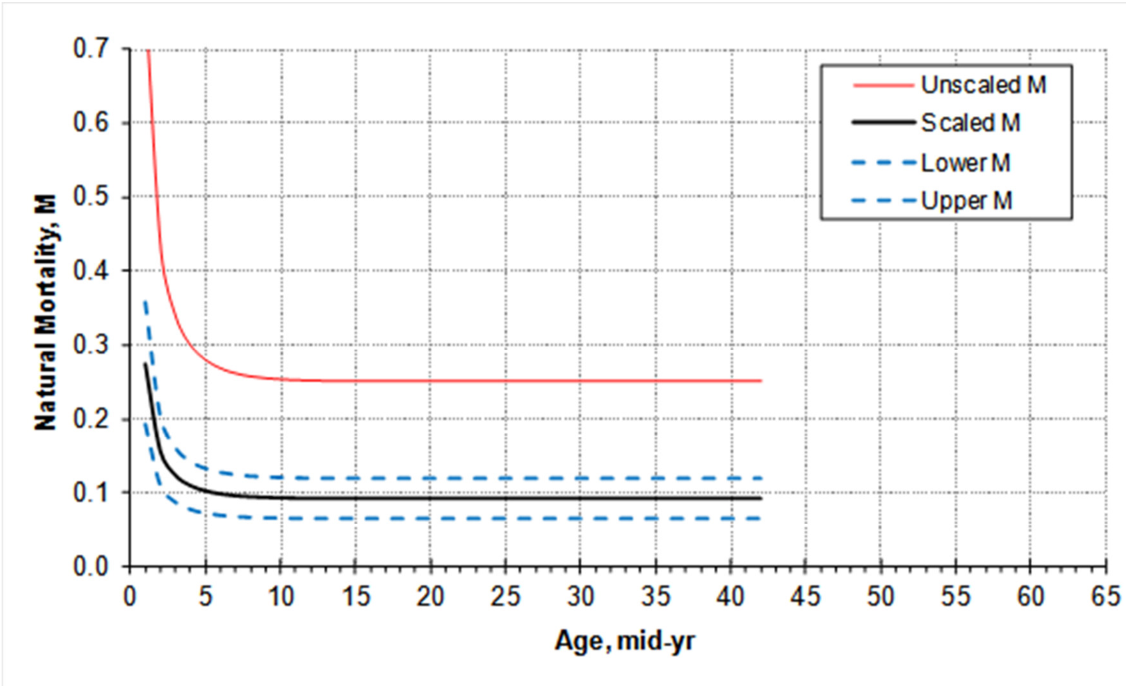


Figure 2.13.8 Comparison of South Region unscaled and scaled estimates of age-varying *M* from the methods of Lorenzen (1996) based on growth predicted by the Schnute's (1981) reparameterization of the von Bertalanffy growth equation, as applied to mid-year age and length data. Scaled estimates assume a cumulative survival from age 1 through maximum age (41.7 years) of 1.6% (equivalent to an age-constant Hoenig *M* of 0.0995). Lower and upper bounds are for survival of 0.2% and 12.4% (Hoenig *M* of 0.15 and 0.05, respectively).

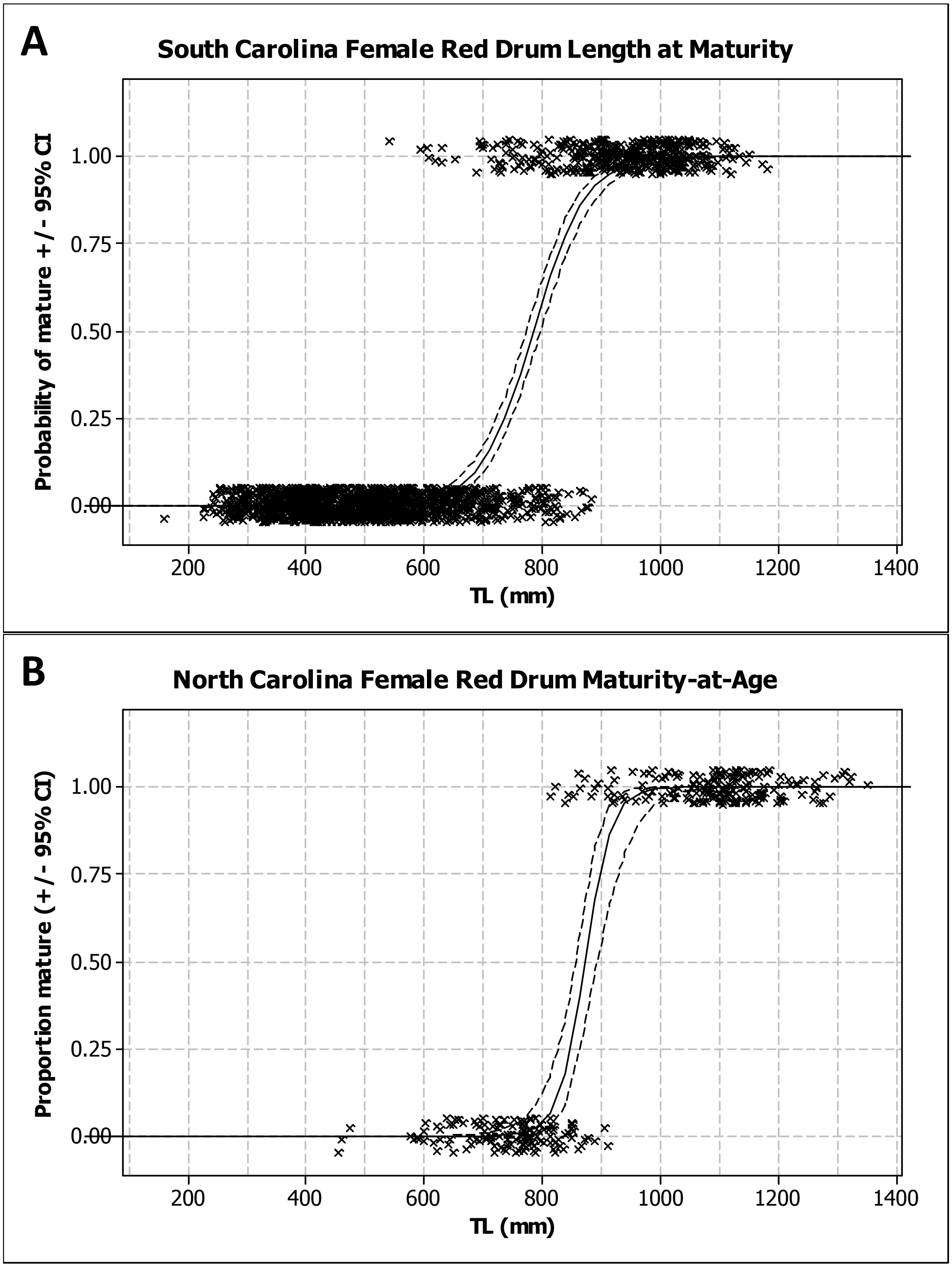


Figure 2.13.8 Female length at maturity for (A) South Carolina red drum, and (B) North Carolina red drum. Data points represent individual fish (binary immature/mature data, jittered around 0 = immature and 1 = mature to reduce overlap). Fitted lines (± 95% CI) are from logistic regressions fitted to data from fish captured during July-December**.**

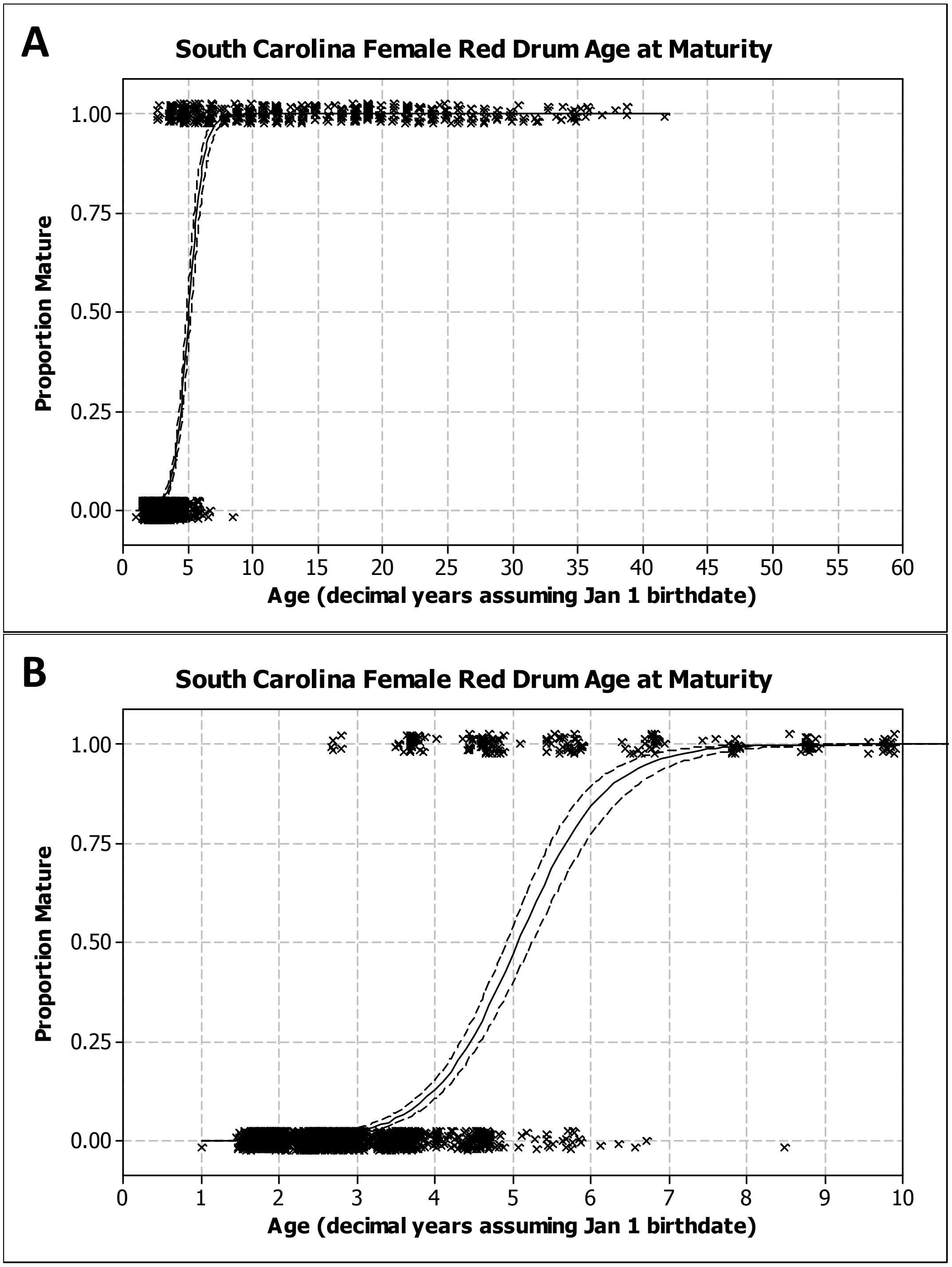


Figure 2.13.9 Female age at maturity for South Carolina red drum. (A) all data, and (B) zoomed in to show just ages 1-10 years. Data points represent individual fish (binary immature/mature data, jittered around 0 = immature and 1 = mature to reduce overlap). Fitted lines (± 95% CI) are from logistic regressions fitted to data from fish captured during any time of the year (January-December), although most of the older fish were captured during fall. Age is in decimal calendar years (i.e. assuming a Jan 1st birth date).

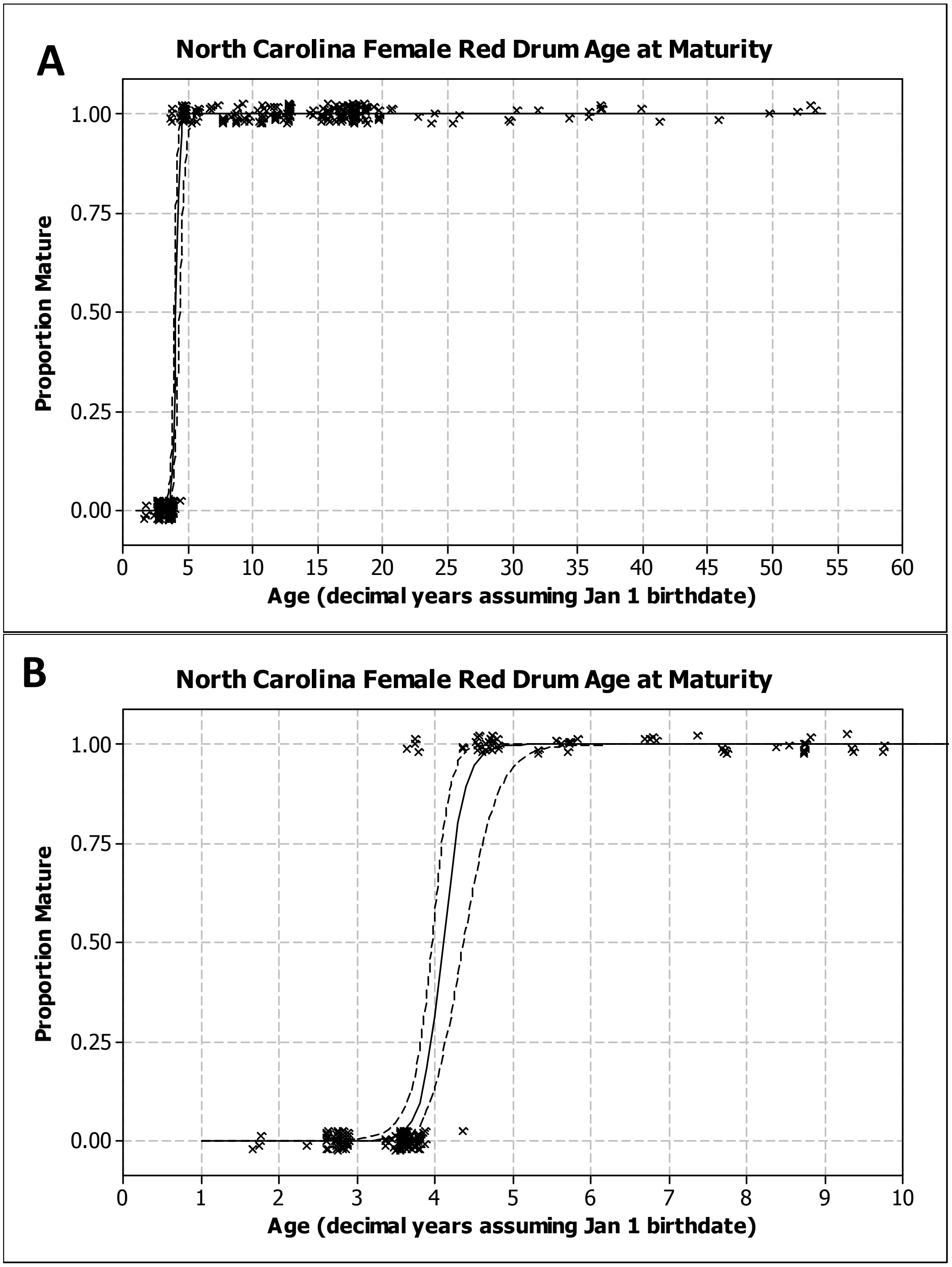


Figure 2.13.10 Female age at maturity for North Carolina red drum. (A) all data, and (B) zoomed in to show just ages 1-10 years. Data points represent individual fish (binary immature/mature data, jittered around 0 = immature and 1 = mature to reduce overlap). The fitted line (± 95% CI) is from a logistic regression fitted to data from fish captured during any time of the year (January-December), although most of the older fish were captured during fall. Age is in decimal calendar years (i.e. assuming a Jan 1st birth date).

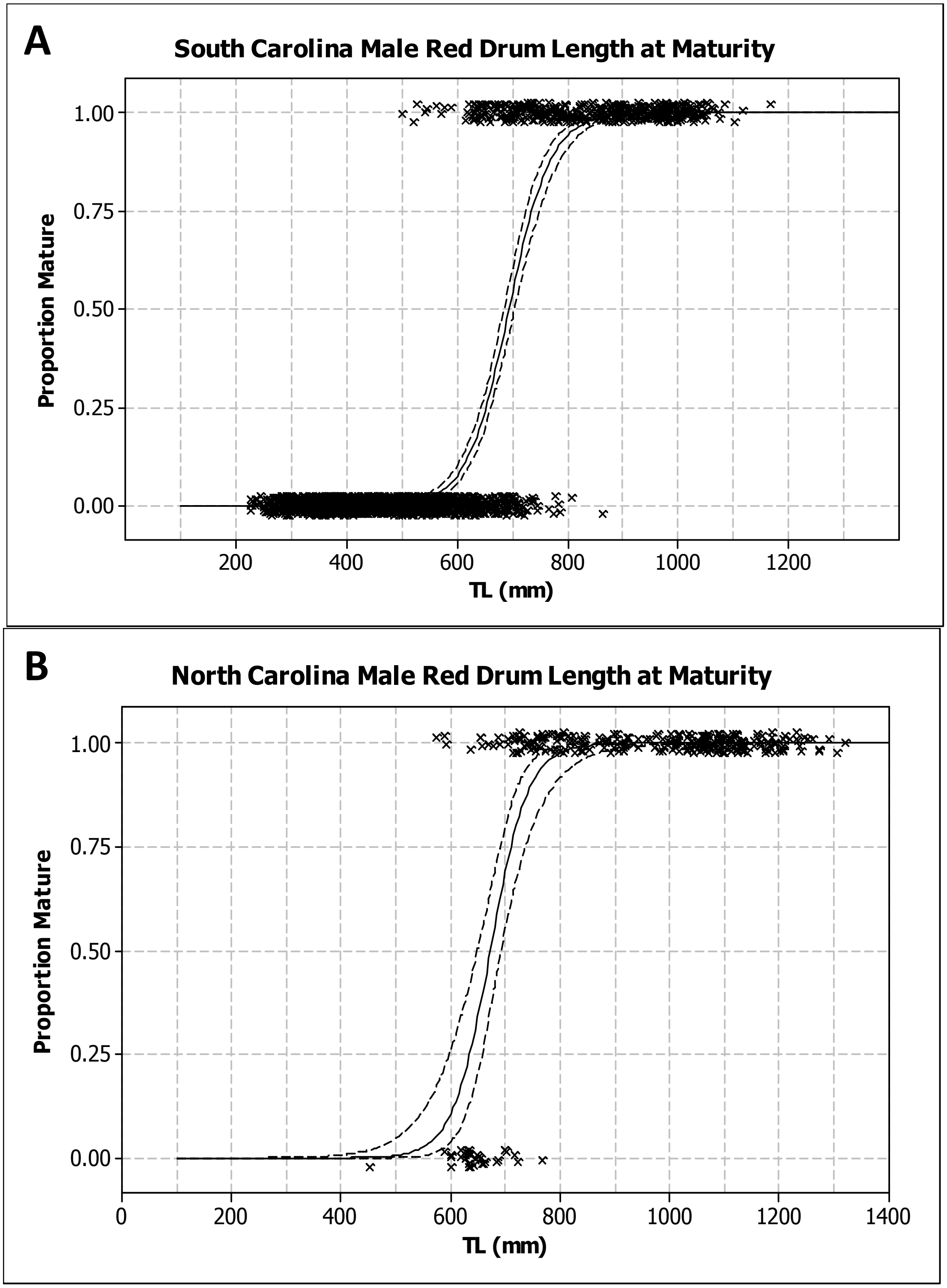


Figure 2.13.11 Male length at maturity for (A) South Carolina red drum, and (B) North Carolina red drum. Data points represent individual fish (binary immature/mature data, jittered around 0 = immature and 1 = mature to reduce overlap). Fitted lines (± 95% CI) are from logistic regressions fitted to data from fish captured during July-December.

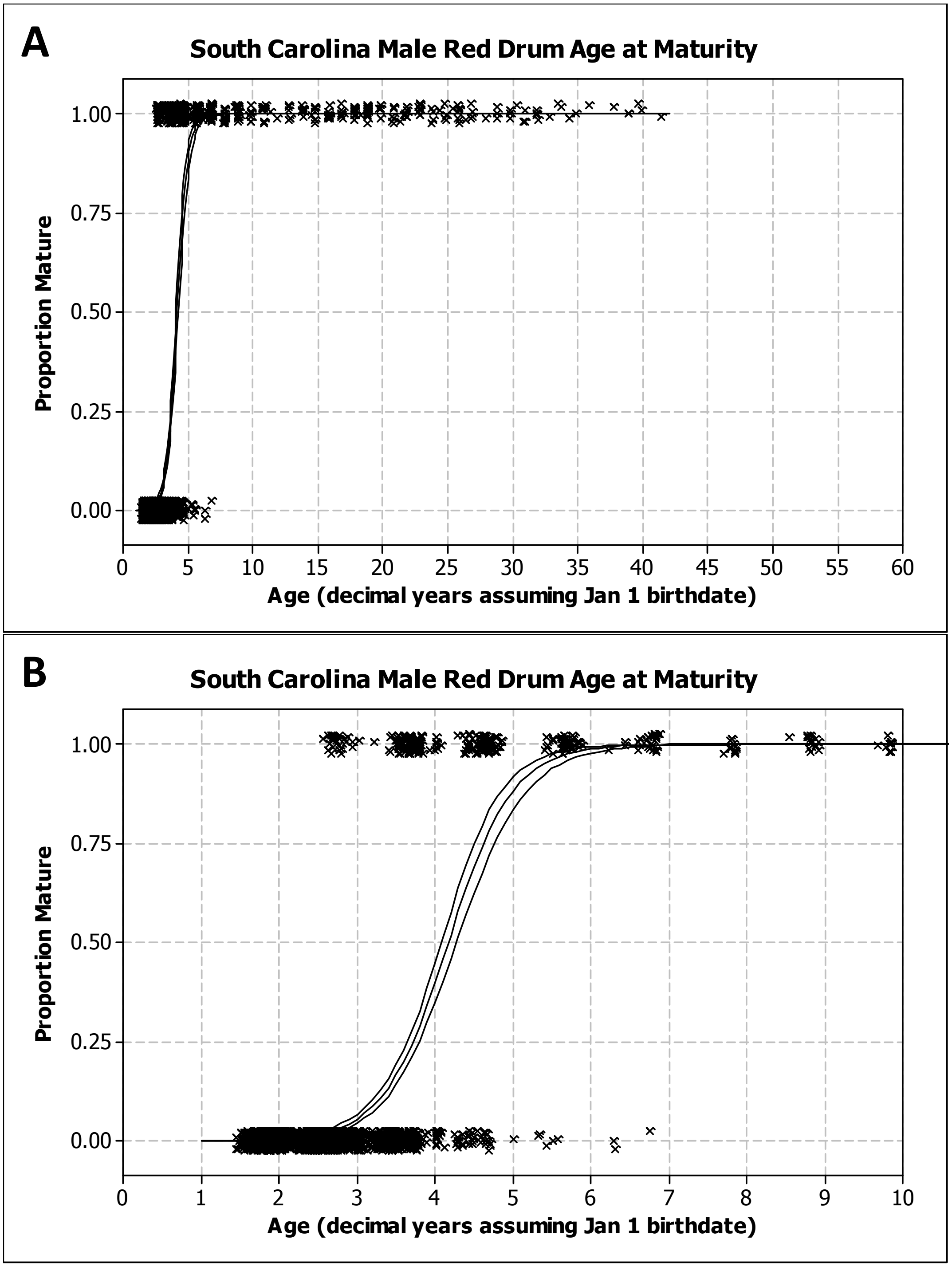


Figure 2.13.12 Male age at maturity for female South Carolina red drum. (A) all data, and (B) zoomed in to show just age 1-10 years. Data points represent individual fish (binary immature/mature fish jittered around 0 and 1 to reduce overlap). Fitted lines (± 95% CI) are from logistic regressions fitted to data from fish captured during any time of the year (January-December), although most of the older fish were captured during fall. Age is in decimal calendar years (i.e. assuming a Jan 1st birth date).

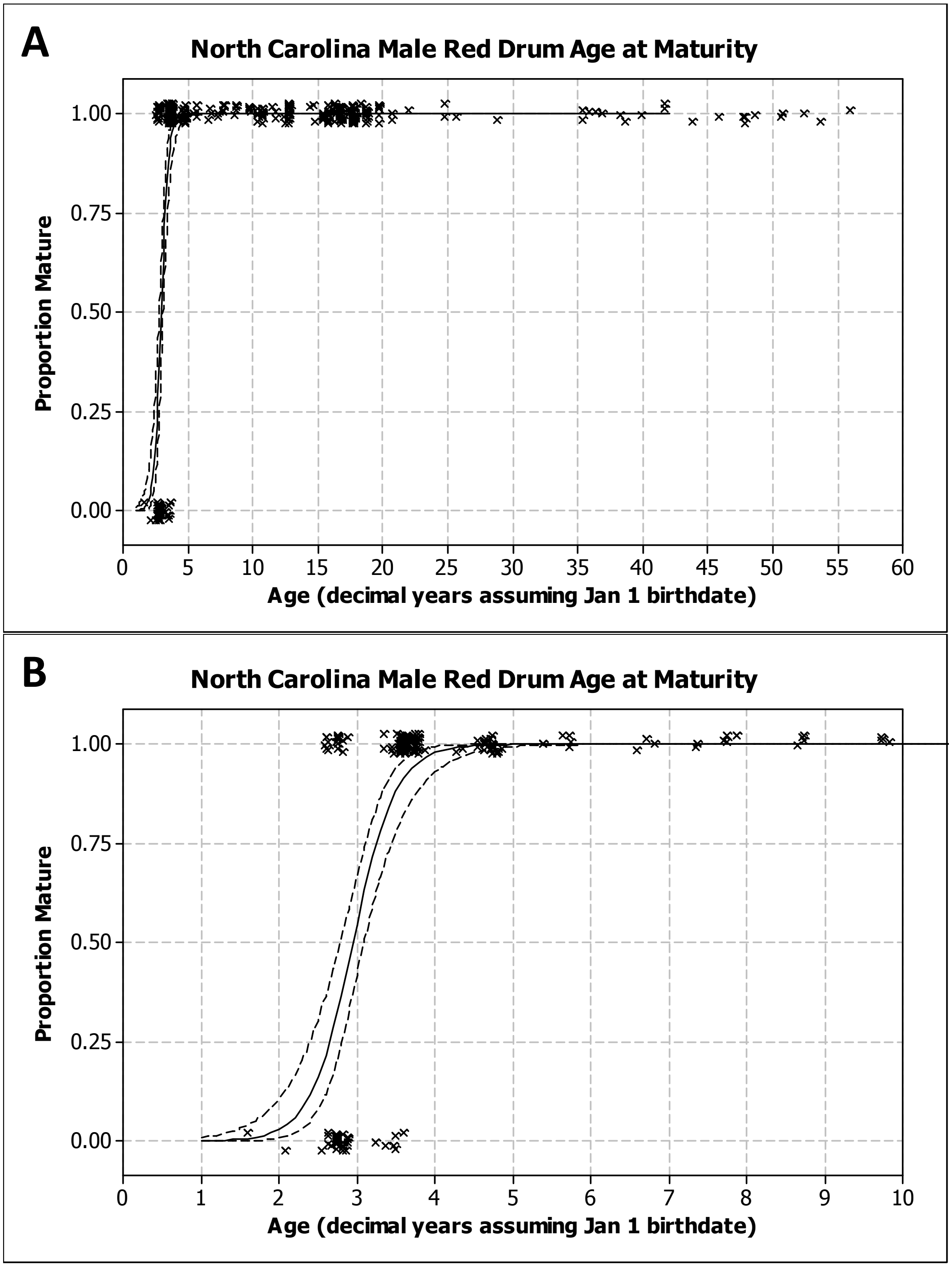


Figure 2.13.13 Male age at maturity for female North Carolina red drum. (A) all data, and (B) zoomed in to show just age 1-10 years. Data points represent individual fish (binary immature/mature data, jittered around 0 = immature and 1 = mature to reduce overlap). The fitted line (± 95% CI) is from a logistic regression fitted to data from fish captured during any time of the year (January-December), although most of the older fish were captured during fall. Age is in decimal calendar years (i.e. assuming a birthday of Jan 1st)

3. Commercial Fisheries

3.1 Overview

Commercial landings of red drum are available from all states located on the east coast of the United States from Florida to Massachusetts.

Group Membership
Lee Paramore (Leader) ....NCDMF
Joe Myers…………………...ACCSP
Julie Defilippi.........................ACCSP

3.2 Commercial Landings and Catch Trends

Decision 1. Because red drum landings rarely occur south of Martin County, the Dade/Monroe County line was recommended as the southern boundary for red drum landings along the US Atlantic coast. This avoids landings from the Gulf coast being counted towards the Atlantic stock.

Decision 2. Data were available for all states back to 1950. The Commercial Workgroup recommended that estimates of commercial landings be extended back to 1950 for potential use in assessments. Historical landings back to 1887 are available for some states and can be used to provide a historical perspective (i.e. North Carolina and Florida).

Decision 3. The Commercial Workgroup recommended that landings by fishing gear be reduced to six categories: gill nets, haul seines, pound nets, beach seines, trawls, and hook and line. The small percentage (typically less than 1%) from miscellaneous gears is provided as 'other'.

3.2.1 Atlantic Coastal Cooperative Statistics Program (ACCSP) Warehouse

Historical commercial landings (1950 to present) for the Atlantic coast are maintained in the Atlantic Coastal Cooperative Statistics Program (ACCSP) Data Warehouse. The Data Warehouse was queried on 06 November 2014 for all red drum landings (monthly summaries by state and gear category) from 1950 to 2013 for Florida (east coast), Georgia, South Carolina, Virginia, Maryland, Delaware, New Jersey, New York, Rhode Island, and Massachusetts (ACCSP 2014). The gear categories were decided upon by the working group based on knowledge of the fisheries and reporting tendencies. Gear categories were consistent with those used in SEDAR 18. The specific ACCSP gears included in each category can be found in Table 3.8.1. All landings data from ACCSP were reviewed and approved by state representative partners. Some discrepancies did occur and in these cases, state provided data was preferred to ACCSP values. This included North Carolina data from 1994 to 2013. During these years, North Carolina provided more accurate gear allocations for landings. North Carolina data were also substituted for ACCSP data from 1972 to 1977 due to rounding differences between the two sources. Virginia provided more accurate gear allocations for 2008 to 2013 landings. New Jersey provided more accurate gear allocations for 2009 to 2013 landings. New York provided more accurate gear allocations for 2013 landings. No commercial landings are attributed to South Carolina, Georgia or Florida after 1988. Georgia landings from

1989 to 2013 are hook-and-line and are considered recreational and all sale was restricted to the recreational bag limit. South Carolina landings subsequent to gamefish status in 1988 are considered non-wild caught fish and were removed from commercial harvest. Florida had no reported landings subsequent to 1988. Commercial landings by region and gear type in pounds is summarized in Tables 3.8.2. and 3.8.3

Decision - Some discrepancies occurred when landings data were allocated by gear between those reported by individual states and those reported by ACCSP. It was decided to use landings data provided directly by the states in cases of discrepancies.

3.2.2 Commercial Landings Developed from State Databases

North Carolina – The National Marine Fisheries Service, prior to 1978, collected commercial landings data for North Carolina. Port agents would conduct monthly surveys of the state's major commercial seafood dealers to determine the commercial landings for the state. Starting in 1978, the North Carolina Division of Marine Fisheries entered into a cooperative program with the National Marine Fisheries Service to maintain the monthly surveys of North Carolina's major commercial seafood dealers and to obtain data from more dealers. The North Carolina Division of Marine Fisheries Trip Ticket Program (NCTTP) began on 1 January 1994. The NCTTP was initiated due to a decrease in cooperation in reporting under the voluntary NMFS/North Carolina Cooperative Statistics Program in place prior to 1994, as well as an increase in demand for complete and accurate trip-level commercial harvest statistics by fisheries managers. The detailed data obtained through the NCTTP allows for the calculation of effort (i.e. trips, licenses, participants, vessels) in a given fishery that was not available prior to 1994 and provides a much more detailed record of North Carolina's seafood harvest. Annual landings of red drum were calculated for North Carolina and reported in pounds (whole weight) broken down by month and gear categories developed by the Commercial Workgroup. The annual landings are reported on an annual basis of January through December. Data used to calculate the annual landings for North Carolina from 1950 to 2013 included landings from the NCTTP (1994 to 2007), landings from NMFS (1978 to 1993), and landings from historical data (prior to 1978). Prior to 1972, monthly landings were not recorded for North Carolina.

North Carolina also has landings from the recreational use of commercial gear allowed through the possession of a recreational commercial gear license (RCGL). This license allows for limited use of commercial gear to obtain fish for personal consumption. No sale is allowed with this license. Additionally, users must adhere to recreational bag limits. In order to estimate landings with this gear, North Carolina conducted a random survey of license holders from 2002 to 2007. Questionnaires were mailed to 30% of license holders each month. Information was obtained on locations fished, gears used, species kept and species discarded. Estimates from this survey were used in the SEDAR 18 red drum assessment and a ratio to commercial gill net landings was used to estimate landings in years before and after the survey. Estimates of removals associated with the RCGL from 1989-2013 are summarized in Table 3.8.4

Virginia – The National Marine Fisheries Service (NMFS) collected landings data for Virginia from 1929 through the present. From 1973 to 1992, Virginia implemented a voluntary monthly inshore dealer reporting system. However, it was discovered that better inshore harvest data were required so the Virginia Marine Resources Commission (VMRC) implemented a Mandatory Reporting Program (MRP) that began January 1, 1993. The program currently is a complete census of all commercial inshore and offshore harvest in a daily format. Data collected are species type, date of harvest, species (unit and amount), gear type, gear (amount and length), area fished, dealer, vessel (name and number), hours fished (man and gear), crew amount, and county landed.

In 2001, several fields listed above (gear length, man hours, vessel information: name and number, and crew amounts) were added to come in compliance with the Atlantic Coastal Cooperative Statistical Program (ACCSP) identified critical data elements. Also data collection gaps in the NMFS offshore collection program were identified and all offshore harvest that was not a federally permitted species or sold to a federally permitted dealer was added to the MRP. The MRP reports are collected on daily trip tickets annually distributed to all commercially licensed harvesters and aquaculture product owners. All harvesters and product owners must report everything harvested and retained on the daily tickets. The daily tickets are put in monthly folders and submitted to VMRC. The monthly folders are provided by the VMRC and due by the 5th of the following month.

Florida – Commercial harvest information was obtained from the FWC's Marine Fisheries Information System data and from the Fisheries Statistics Division of the National Marine Fisheries Service (NMFS) for the years 1950 to 1988. Earlier records came from various publications of Fisheries Statistics of the United States. No commercial landings have been reported for Florida since 1988 when the sale of native-caught red drum was prohibited. These data include annual landings tallied from monthly dealer reports collected by the NMFS during the period 1950 to 1985 and trip-specific commercial landings reported within the FWC trip ticket program during the period 1986 to 1988. Florida trip tickets examined included edited batches 1 – 981.

Prior to 1986, landings of red drum were reported to the NMFS through monthly dealer reports made by major fish wholesalers in Florida. Since 1986, information on what is landed and by who in Florida's commercial fisheries comes from the FWC"s Marine Resources Information System, commonly known as the trip-ticket program. Wholesale dealers are required to use trip tickets to report their purchase of saltwater products from commercial fishers. Conversely, commercial fishers must have Saltwater Products Licenses to sell saltwater products to licensed wholesale dealers. In addition, red drum became a "restricted species" in late 1987 so only fishers who had Restricted Species Endorsements on their Saltwater Products License qualified to sell red drum (though commercial fishing effectively ended beginning in 1988). Each trip ticket includes the Saltwater Products License number, the wholesale dealer license number, the date of the sale, the gear used, trip duration (time away from the dock), area fished, depth fished, number of traps or number of sets where applicable, species landed, quantity landed, and price paid per pound. During the early years of the program some data field were deleted from the records, e.g. Saltwater Products License number for much of 1986, or were not collected, e.g., gear used was not a data field until about 1991. Annual commercial harvest of red drum in Florida was sporadically available between 1889 and the late 1920s and during the 1940s but consistently since 1950. There was a clear increase in landings between the historic period and the early 1980s; landings averaged 0.07 million pounds during 1927 to 1940 and 0.13 million pounds during 1975 to 1984. During the mid-1980s the commercial fisheries faced tightening restrictions resulting in declining landings prior to being prohibited after 1987.

The commercial fishery for red drum in Florida ended in 1989 when a 'no sale' provision was enacted into law. Available commercial landings up through 1985 came from monthly dealer reports of landings made to Federal port agents. These generally represented large-volume dealers found along the coast. In 1986, a Marine Resources

Information Program 'trip-ticket' system was established as the official record of commercial landings. This system required all wholesale buyers of commercial fisheries products to report purchases to the state conservation agency.

3.2.3 Coastwide Landings in Pounds

Commercial landings in pounds (whole weight) were summarized by state (Figure 3.9.1), region (Table 3.8.2 and Figure 3.9.2), and gear (Table 3.8.3 and Figure 3.9.3). From 1950 to 1988, the Southern region accounted for 51% of the commercial harvest and the Northern region, which includes coastal Atlantic US States from North Carolina to Massachusetts, landed 49%. No commercial landings have occurred in the Southern region since 1988. Landings of red drum were predominantly from North Carolina; however, Florida reported a large portion of the landings from 1950 to 1988 before the sale of native-caught red drum in Florida was prohibited (Figure 3.9.1). The dominant gear harvesting red drum was gill nets, however, beach seines appeared to dominate the landings from 1950 to 1962 (Figure 3.9.3). The decline in beach seine landings and the increase in gill net landings over the years from 1950 to 2013 may suggest a shift in gear preference by fishermen harvesting red drum. Pound nets, seines, and trawls were also on the decline during this time period. Overall, red drum commercial landings averaged 246,161 pounds (whole weight) between 1950 and 2013. Since 1989, commercial harvest is exclusively from the Northern region and has averaged 190,224 pounds per year with North Carolina accounting for 95% of all harvest during this period.

Estimated landings from RCGL gill nets ranged from a high of 23,105 pounds in 1999 to a low of 2,407 pounds in 1997(Table 3.8.4). 2013 was the second highest estimate in the time series.

3.2.4 Coastwide Landings in Numbers

Conversion of commercial landings in weight to numbers was based on mean weights obtained from dependent commercial sampling by North Carolina and Virginia for the northern region. When samples were inadequate (n<20) by gear and year, a weighted average was obtained by pooling across gears within a year. For hook and line gears, mean weights and length frequency distributions from the recreational fishery (MRIP) were used. Prior to 1989, sample sizes were sparse and pooling was required across years to obtain an adequate sample size in both North Carolina and Virginia. For this reason, the previous red drum assessment (SEDAR 18) began with 1989 as the beginning year. Since 1989, sampling was adequate for the majority of the landings (i.e. gill net landings in North Carolina) and pooling was limited to minor gears/landings (Table 3.8.5 and Table 3.8.7). Landings in numbers were reported for North Carolina (Table 3.8.6) and Virginia north (Table 3.8.8).

Estimated landings from RCGL gill nets ranged from a high of 5,934 fish in 2013 to a low of 504 fish in 1997 (Table 3.8.4).

Decision - It was agreed by the Workshop Panel that landings, mean weights, and conversions of lengths to ages for the commercial catch would be done annually with one inch size bins. Methods are consistent with SEDAR 18 with the exception that mean weights are derived from observed values and not length-weight conversions. Mean weights based on observed values was a recommendation by a SEDAR 18 reviewer and was endorsed by the Working Panel.

Decision – Consistent with SEDAR 18, the Workshop Panel recommended that length bins contain a minimum of 20 lengths per bin to describe commercial gears for any given year. When adequate lengths are not available, lengths were substituted from other sampled gears within the same year. Collapsing lengths across years within a management period was a final option and only occurred if no appropriate gear lengths were available for substitution.

Decision - Because of limited data prior to 1989, the work-up of mean weights and length frequency by fishery was for the period of 1989-2013. This is consistent with the final approved SEDAR 18 assessment. No commercial landings occurred in the Southern stock from 1989 to 2013.

Decision - The Workshop Panel accepted estimates of recreational landings from gill nets for the period of 2002 to 2007 and recommended that extrapolation using a ratio with commercial estuarine gill net landings be used to estimate for all remaining years. Red drum from recreational gill nets were assumed to have the same size distribution as those from commercial gill nets.

3.3 Commercial Discards and Discard Trends

The only available data on commercial discards for red drum were provided for the North Carolina estuarine gill net fishery. This fishery accounts for greater than 80% of all red drum commercial harvest from 1989 to 2013 and is considered the primary culprit of commercial discard mortality. Working paper S18-DW16 from SEDAR (2009) provided details from an observer program conducted in North Carolina and was the basis for discard estimates used in SEDAR 18. From this observer program, discard estimates were derived from observer data available from 2004 to 2006. During this period, North Carolina had coverage that was deemed adequate in terms of spatial and temporal coverage to provide a basis to estimate discards. A similar level of observer coverage was continued in North Carolina for the period from 2008 to 2013. Methods used in the prior assessment were replicated for all available years with expanded observer coverage. Discard estimates were calculated by area and season for both large and small mesh gill nets. Large mesh gill nets were defined as having a stretched mesh webbing of five inches or greater. CPUE was defined as the number (or weight) of dead red drum observed per trip. In addition, a release mortality (5%; consistent with SEDAR 18) was added for red drum released alive. Total gill net trips taken using estuarine gill nets in North Carolina were available through the NCTTP (NC Trip Ticket Program). Extrapolation by area and season was accomplished by multiplying the observed CPUE by the number trips made for either large or small mesh gill nets. Direct estimates from gill net observer data were available for the years of 2004 to 2006 and for 2008 to 2013. From these years, a ratio of harvest to discards was calculated and used to estimate discards in the remaining years. Estimated discard mortalities from estuarine gill nets ranged from a low of 5,515 lbs in 2011 to a high of 97,250 lbs in 1999 (Table 3.8.9). By number, dead red drum discards ranged from 2,136 in 2011 to 36,545 in 1999 (Table 3.8.10). On average, dead discards accounted for 33% of all removals by estuarine gill nets. Length frequency distributions were calculated annually by fate (dead discard or live release) and mesh size (large or small). An overall length distribution by fate and mesh size is provided in Figure 3.9.4. Discards were predominantly undersized (16 inch TL mode) for small mesh. Discards from large mesh nets had a more definitive bimodal distribution with the majority of the fish being around 16 inches TL and another mode around 27 inches TL.

For North Carolina, the period of 1999 to 2013 had consistent regulations dealing with commercial size limits (18 to 27 inches TL) and bycatch only fishery with a daily trip limit of four to ten fish. Prior to this period, from 1992 to 1998, North Carolina had the same slot limit but no trip limit. For the period of 1989 to 1991, North Carolina had no trip limit and a 14 inch to 32 inch slot limit. When calculating numbers at length, the length distributions from 1999 to 2013 were adjusted when applied to these prior management periods so that regulatory discards were not assumed to occur within the legal slot limit. Adjustments were only made to the assumed size distribution and not to the total estimated number of discards.

Decision - The Workshop Panel accepted estimates of discards from the North Carolina estuarine gill net fishery from 2004 to 2006 and 2008 to 2013 and recommended using a ratio with commercial gill net landings as a method to estimate discards in 2007 and prior to 2004.

3.4 Commercial Effort

Trip level commercial data were available from North Carolina (1994 to 2013) and Virginia (1993 to 2013), however, catch effort data from the red drum commercial fishery were confounded by trip limits put into place in 1992 for Virginia and in 1998 for North Carolina. Trip level information was also available in Florida but only for the years 1986 to 1988. After 1988, the sale of native caught red drum in Florida became prohibited.

3.5 Biological Sampling

3.5.1 Sampling Methods

All biological sampling available to describe the commercial fishery for the period of 1989 to 2013 came from North Carolina and Virginia. During this period, North Carolina accounted for 95% of the total harvest by weight and Virginia accounted for 4%.

North Carolina - Commercial length frequency data were obtained by the NCDMF commercial fisheries dependent sampling program. Red drum lengths were collected at local fish houses by gear, market grade (not typical for red drum), and area fished.

Individual fish were measured (mm, FL) and total weight (0.1 kg) of all fish measured in aggregate was obtained. Subsequent to sampling a portion of the catch, the total weight of the catch by species and market grade was obtained for each trip, either by using the trip ticket weights or some other reliable estimate. Length frequencies obtained from a sample were then expanded to the total catch using the total weights from the trip ticket. All expanded catches were then combined to describe a given commercial gear for a specified time period. Major commercial gears for North Carolina are gill net, long haul seine, and pound net. Commercial samples were taken throughout the year and from all areas where red drum were landed. Dependent length frequency data for red drum in North Carolina began in the early 1980's. Data adequate to describe the major fisheries is available beginning in the late 1980's. Work-up in this report begins with 1989.

Virginia - In 1989 a biological sampling program (BSP) was initiated, with the intention of establishing a long-term database with biological data (lengths, weights, sex and age composition) from the commercial finfish fishery in Virginia. Sampled species were chosen if there was a current or upcoming management plan, either for Virginia, the Chesapeake Bay or interstate or federal, or if the species was managed by regulation. Species were ranked, by commercial landings in Virginia, and the ranking was used as a second criterion for sampling. Red drum have been sampled (for length and weight) since the program's inception. Since 1998 VMRC has been in a cooperative agreement with Old Dominion University Center for Quantitative Fisheries Ecology Laboratory (CQFE). All ageing of finfish collected by the BSP are processed by CQFE.

Field sampling at fish processing houses or dealers involved multi-stage random sampling. Targets were set per species based on mandatory reporting of harvest data by harvesters from the previous years. A three year moving average of landings by gear and by month (or other temporal segment) provided a preliminary goal for the amount of length and weight samples to be collected. Real time landings were used to adjust the preliminary targets. Targets for aging samples were tracked and collection updates were done weekly. The goal of otolith collection was to correspond to the frequency distribution in lengths from past seasons, according to 1-inch length bins. Methods for processing and aging of otoliths are provided in the Life History Section.

Subsamples of a catch or batch were processed for sex information (gender and gonadal maturity or spawning condition index). Such subsamples were indexed by visual inspection of the gonads. Females were indexed as gonadal stage I-V with males as I-IV. Stage I represents an immature or resting stage of gonadal development and stages IV (males) and V (females) represent spent fish. Fish that cannot be accurately categorized, in terms of spawning condition, were not assigned a gonadal maturity stage.

Ancillary data, for fish sampled at dealers, were also collected and included: species grade or market category, harvest area, gear type used, and total catch by species market category. This information allowed for the expansion of sample size to the total harvest reported for a species. Market category and species grade are not typical for red drum.

Biological data to describe the commercial harvest for the states north of Virginia were limited and incomplete. Landings in this region are historically low and accounted for just 1% of the harvest from 1989 to 2013.

South Carolina – No biological sampling data were provided for South Carolina commercial landings. South Carolina had landings for the period of 1981 to 1987, primarily from gill nets, hook and line, and trawls. Annual landings (all gears combined) ranged from 808 lbs in 1981 to 14,689 lbs in 1987. After 1987, commercial sale of red drum in South Carolina was prohibited.

Georgia - No biological sampling data were provided for Georgia commercial landings. During the 1980's, landings were primarily from hook and line, gill nets, and trawls. Since 1989, landings are all considered to be from hook and line. Any estimates of landings are anticipated to be accounted for within the MRIP recreational harvest estimates.

Florida – Florida has had no commercial landings since 1987 and no summary is provided in this report. Commercial length frequency data from Florida in the 1980's are provided as part of SEDAR 18 and are summarized in the working paper S18-DW08. In summary, biostatistics data were opportunistically collected during a red drum life history study conducted during the period 1981to 1983 (Murphy and Taylor 1990) and during supplemental sampling of commercial gears in 1987 and 1988 while conducting tagging operations. Generally, individual fish lengths, gear type, and date were recorded at the very least, with more in depth sample processing for sex, weight, and aging parts for life history research and for mortalities observed during tagging operations.

3.5.2 Sampling Intensity Length/Age/Weight

Sampling intensity to describe the commercial harvest was evaluated based on the number of lengths collected by gear and year for each of the states providing commercial length data. A minimum threshold of 20 lengths was set by the Data Workshop Panel to describe a gear by year. This criterion was maintained as it was consistent with SEDAR 18 and was developed for the continuity run.

North Carolina - Since the late 1980's North Carolina has been the major commercial harvester of red drum, typically accounting for >90% of the coast wide annual landings (Figure 3.13.1). Since 1989, greater than 70% of the harvest has been represented by adequate length sampling (n $\geq$ 20). For most years, particularly since 1992, this total exceeded 95% (Table 3.12.11).

Virginia – Landings in Virginia were small relative to North Carolina and since 1989 have typically accounted for less than 5% of the coastwide total (Figure 3.9.1). As a result of the low landings, commercial sampling for lengths from Virginia was relatively poor throughout the time series of 1989 to 2013 (Table 3.8.12)

Available age and weight data were combined from both North Carolina and Virginia for the development of annual age length keys and length-weight conversions. A single length-weight conversion was calculated for the entire period (n=9,951 individuals). Annual age-length keys using 1-inch length bins were developed for each year where data were available. This included every year from 1989 to 2013. Annual age length keys had sample sizes ranging from 259 to 770 fish per year. A pooled key w as used to fill any wholes by size bin in the annual keys.

Florida – The adequacy of length, age, and weight data for Florida are described in working paper S18-DW08. In summary, Florida was a major contributor to commercial landings from 1981to 1987. Length, age, and weight data were sampled for major commercial gears (gill net, hook and line, seine, and trammel net) from 1981to 1983. Additional trammel net lengths were obtained in 1987 and 1988. Mean weight by gear and year was obtained from either fish that were directly weighed for whole weight or from all red drum measured (and then converted to weight). Sampling for length data only exceeded the minimum threshold (n> 20) from 1981 to 1983 for gill nets and trammel nets and in 1982 for hook and line and seines. Where sampling was deemed inadequate for either lengths or mean weights, extrapolations and interpolations by gear and year were required. Annual age length keys for Florida were not generated due to low sample sizes. Age data (n=593 individuals) for Florida were pooled across gears and years for the period of 1981to 1988. Missing data (age 10 and age 12 fish) were filled with age-length data from angler catches.

South Carolina and Georgia – No biological sampling of red drum occurred for either South Carolina or Georgia. Biological length data from Florida will be used to describe commercial landings from 1981 to 1985 during a time when size limits were similar between the states. All hook and line landings for the entire time series will be described from state specific recreationally sampled fish in the MRFSS survey. Additional commercial landings after 1985 will be described using available length data from North Carolina. While data are limited from South Carolina and Georgia, the overall contribution of these states is low for the southern region (South Carolina and south) where Florida accounted for >90% of the landings from 1981 to 1985. Annual age-length keys for the south region are described in the Life History Section (2.0) and will be used to derive the age composition for commercially captured red drum in these two states.

3.5.3 Length/Age Distributions

Length distributions for the northern region were derived from commercial length data provided from North Carolina and Virginia. All length distributions were described annually in one inch length bins with the length bin provided representing the floor (i.e. 15 inches = 15.0 to 15.99). As previously described, a minimum of 20 lengths by year and gear were required to represent a gear. Collapsing occurred first across gears within a year and secondly across years within a uniform management period (i.e. constant size limit). An annual age length key representing the northern region (North Carolina and north) was developed using all available age data from North Carolina and Virginia (see Life History Section 2.10 for details). Any "holes" in the age-length key were filled using a pooled (across all years) key.

Length and age distributions for the northern region are presented by major gears in Table
3.8.13 and Table 3.8.14. For the length distributions, all gears showed a notable shift towards larger fish, particularly after 1991 when both North Carolina and Virginia implemented a minimum size limit change from 14 to 18 inches total length (Figure 3.9.5). Likewise, the harvest of larger red drum has declined as harvest and sale of federally harvested adult red drum became illegal after 1992 in North Carolina. Similar to shifts in the length distributions, a notable shift in the age distribution from age-1 to age-2 fish was noted in 1992. Current commercial harvest of red drum within the existing slot limits is primarily on age-2 and to a lesser extent age-1 and age-3 fish. The combined CAA for all removals is provided in Table 3.8.15.

3.6.4 Adequacy for Characterizing Catch

Available length data by gear for the northern region are available in Table 3.8.11 for North Carolina and Table 3.8.12 for Virginia. Based on the minimum criteria of 20 lengths per year by gear, sampling was particularly poor prior to 1989. Since 1989, commercial sampling has been adequate to describe the vast majority of landings with length substitutions limited to minor gears. Age data from all sources (commercial, recreational, and independent) for the northern region were combined to generate annual age length keys. Weighted length frequency distributions by gear and year were then applied to the annual age length keys. Since 1989, annual age length keys have typically had sample sizes exceeding 300 fish. A pooled key (across years) was used to fill holes where the sample size in a single length bin was less than 10 fish.

3.6.5 Alternatives for Characterizing Discard Length/Age

Currently, the only available data to describe commercial discards are from an observer program for the North Carolina estuarine gill net fishery for the period of 2004 to 2006 and 2008 to 2013. Data work-up was consistent with methods applied in SEDAR 18. A detailed description is provided in the working paper S18-DW16. The North Carolina estuarine gill net fishery is presumed to be the primary culprit of commercial red drum discards in North Carolina. The commercial working group investigated available data and methods to extrapolate discard estimates out for the entire time series. In SEDAR 18 the ratio of discards to landings was used to extrapolate discard numbers for each year. This method was also employed in this report. Other methods considered included using relationship of independent indices to discards as a means to extrapolate. No satisfactory relationship was found and no available index provides a time series spanning back to 1989.

A generalized linear model (GLM) framework was also investigated in order to predict red drum discards in North Carolina's estuarine gill-net fishery based on data collected during 2004 through 2013. This model used effort data from the NC Trip Ticket Program and discard data from the observer program. Only those variables available to both data sources could be considered as potential covariates in the model. Available variables included mesh size, year, and area; these were all treated as categorical variables in the model. Mesh sizes were categorized as large (≥5 inches) or small (<5 inches). Effort was measured as soak time (days) multiplied by net length (yards). Live and dead discards were modeled separately; attempts at modeling total discards (live plus dead together) resulted in convergence issues.

All available covariates were included in the initial model and assessed for significance using the appropriate statistical test. Non-significant covariates were removed using backwards selection to find the best-fitting predictive model. The offset term was included in the model to account for differences in fishing effort among observations (Crawley 2007; Zuur et al. 2009, 2012). Using effort as an offset term in the model assumes that the number of red drum discards is proportional to fishing effort (A. Zuur, Highland Statistics Ltd., pers. comm.).

The best-fitting GLM for the model of live discards included year, mesh size, and area as significant covariates. For the model of dead discards, the best fitting model included year and area as significant covariates. Results of the GLM typically overestimated discards relative to either a direct estimate from years where observer data were available or from the ratio method (Figure 3.9.6). The GLM predicted a steady decreasing trend from 1989 to 2004 with little annual variability. This trend seems unlikely given that red drum recruitment is widely variable and discards predominantly from one or two year classes each year (predominately age-1). Data for the GLM was unavailable prior to 1994, the year the NC trip ticket program began. By comparison, the ratio method predicted a more variable trend as reflected by recruitment and landings. For this reason, the Workshop Group recommended continued use of the ratio method consistent with SEDAR 18.

3.7 Literature Cited

Atlantic Coastal Cooperative Statistics Program. 2009. (1950-2007) Annual landings by state and custom gear category; generated by Julie Defilippi; using ACCSP Data Warehouse, Washington, D.C: accessed February 9-13, 2009.

Crawley, M.J. 2007. The R book. John Wiley & Sons, Chischester, UK. 942 p.

Murphy, M. D. and R. G. Taylor. 1990. Reproduction, growth, and mortality of red drum *Sciaenops ocellatus* in Florida waters. Fishery Bulletin 88:531 542

Parsons, G.R. 1984. Description of the red drum and spotted seatrout commercial fisheries in Florida including a summary of landings trends. Unpublished manuscript, Florida Department of Natural Resources, St. Petersburg.

Vaughan, D. S., and J. T. Carmichael. 2000. Assessment of the Atlantic red drum stock for 1999: Northern and southern regions. **NOAA Technical Memorandum NMFS-SEFC-447**, Beaufort Laboratory, Beaufort, North Carolina 28516.

Zuur, A.F., E.N. Ieno, N.J. Walker, A.A. Saveliev, and G.M. Smith. 2009. Mixed effects models and extensions in ecology with R. Springer-Verlag, New York. 574 p.

Zuur, A.F., A.A. Saveliev, and E.N. Ieno. 2012. Zero inflated models and generalized linear mixed models with R. Highland Statistics Ltd, United Kingdom. 324 p.

3.8 Tables

Table 3.8.1 ACCSP gears included in each of the SEDAR 44 gear categories.

SEDAR18 CATEGORY	ACCSP		
	GEAR_CODE	GEAR_NAME	CATEGORY_NAME
Beach Seine	20	Other Seines	Other Seines
Beach Seine	76	Stop Net	Other Fixed Nets
Gill Nets	132	Pots and Traps, Blue Crab	Pots and Traps
Gill Nets	138	Pots and Traps, Eel	Pots and Traps
Gill Nets	139	Pots and Traps, Fish	Pots and Traps
Gill Nets	162	Pots and Traps, Lobster Offshore	Pots & Traps, Lobster
Gill Nets	180	Pots and Traps, Other	Pots & Traps, Other
Gill Nets	200	Gill Nets	Gill Nets
Gill Nets	201	Gill Nets, Floating Drift	Gill Nets
Gill Nets	204	Gill Nets, Sink Anchor	Gill Nets
Gill Nets	205	Gill Nets, Runaround	Gill Nets
Gill Nets	206	Gill Nets, Stake	Gill Nets
Gill Nets	207	Gill Nets, Other	Gill Nets
Gill Nets	210	Trammel Nets	Trammel Nets
Hook and Line	300	Hook and Line	Hook and Line
Hook and Line	301	Hook and Line, Manual	Hook and Line
Hook and Line	303	Electric/Hydraulic, Bandit Reels	Hook and Line
Hook and Line	320	Troll Lines	Troll Lines
Hook and Line	660	Spears	Spears
Hook and Line	700	Hand Line	Hand Line
Hook and Line	701	Troll and Hand Lines CMB	Hand Line
Other	0	Not Coded	Not Coded
Other	60	Fyke Nets	Fyke Nets
Other	73	Floating Traps (Shallow)	Other Fixed Nets
Other	74	Bag Nets	Other Fixed Nets
Other	400	Long Lines	Long Lines
Other	401	Long Lines, Vertical	Long Lines
Other	403	Long Lines, Bottom	Long Lines
Other	404	Long Lines, Surface, Midwater	Long Lines
Other	405	Long Lines, Trot	Long Lines
Other	500	Dredge	Dredge
Other	503	Dredge, Clam	Dredge
Other	511	Dredge, New Bedford	Dredge

Table 3.18.1 (cont.)

Other	551	Cast Nets	Dip Nets
Other	602	Patent Tongs	Tongs
Other	622	Rakes, Oyster	Rakes, Oyster
Other	800	Other Gears	Other Gears
Other	801	Unspecified Gear	Other Gears
Other	802	Combined Gears	Other Gears
Pound Net	50	Pound Nets	Pound Nets
Seine	10	Haul Seines	Haul Seines
Seine	22	Common Seine	Other Seines
Trawls	91	Otter Trawl Bottom, Crab	Otter Trawls
Trawls	92	Otter Trawl Bottom, Fish	Otter Trawls
Trawls	94	Otter Trawl Bottom, Scallop	Otter Trawls
Trawls	95	Otter Trawl Bottom, Shrimp	Otter Trawls
Trawls	96	Otter Trawl Bottom, Other	Otter Trawls
Trawls	97	Otter Trawl Midwater	Otter Trawls
Trawls	110	Other Trawls	Other Trawls

Table 3.8.2 Red drum commercial landings (pounds, whole weight) by region for the US Atlantic coast. Northern region includes states from Massachusetts to North Carolina. Southern region includes landings from South Carolina, Georgia, and east coast Florida.

Year	US Atlantic		
	North	South	Total
1950	385,100	242,700	627,800
1951	262,500	275,500	538,000
1952	271,100	216,600	487,700
1953	306,300	196,000	502,300
1954	310,200	169,800	480,000
1955	173,100	169,400	342,500
1956	51,100	164,900	216,000
1957	162,900	108,600	271,500
1958	44,400	102,500	146,900
1959	38,500	131,200	169,700
1960	108,900	133,600	242,500
1961	101,700	116,400	218,100
1962	73,800	162,200	236,000
1963	73,900	142,000	215,900
1964	106,100	133,000	239,100
1965	167,500	163,700	331,200
1966	38,500	158,200	196,700

Table 3.8.2 (cont.)

1967	13,900	154,900	168,800
1968	12,600	173,600	186,200
1969	5,000	122,700	127,700
1970	7,600	150,300	157,900
1971	17,900	88,400	106,300
1972	48,819	133,200	182,019
1973	77,364	171,900	249,264
1974	158,137	142,800	300,937
1975	234,036	105,700	339,736
1976	186,859	115,900	302,759
1977	20,137	109,400	129,537
1978	24,174	109,348	133,522
1979	128,517	95,386	223,903
1980	243,623	196,821	440,444
1981	93,620	259,443	353,063
1982	54,261	141,649	195,910
1983	261,671	108,564	370,235
1984	285,620	136,796	422,416
1985	153,776	95,982	249,758
1986	255,476	90,497	345,973
1987	252,257	62,215	314,472
1988	232,371	3,587	235,958
1989	283,556	-	283,556
1990	184,726	-	184,726
1991	128,349	-	128,349
1992	131,591	-	131,591
1993	246,857	-	246,857
1994	152,495	-	152,495
1995	251,788	-	251,788
1996	116,076	-	116,076
1997	56,618	-	56,618
1998	301,754	-	301,754
1999	386,305	-	386,305
2000	285,098	-	285,098
2001	155,733	-	155,733
2002	90,749	-	90,749
2003	98,800	-	98,800
2004	54,911	-	54,911
2005	130,528	-	130,528
2006	176,771	-	176,771
2007	257,438	-	257,438
2008	237,716	-	237,716
2009	210,247	-	210,247

Table 3.8.2 (cont.)

2010	235,847	-	235,847
2011	96,380	-	96,380
2012	77,695	-	77,695
2013	407,578	-	407,578

Table 3.8.3. Red drum commercial landings (pounds, whole weight) by gear for the US Atlantic coast (see text for gear descriptions). Landings included from Massachusetts to Florida.

Year	US Atlantic Coast							
	Beach Seine	Gill Nets	Hook-n-	Other Gears	Pound Net	Seines	Trawls	Total
1950	257,600	129,500	112,800		103,300		24,600	627,800
1951	273,900	94,800	85,300		54,500		29,500	538,000
1952	277,300	91,700	52,500		28,000		38,200	487,700
1953	326,500	103,800	32,400		9,100		30,500	502,300
1954	212,100	103,600	49,600		85,200		29,500	480,000
1955	128,100	69,400	92,900		43,600		8,500	342,500
1956	43,100	62,300	102,100		7,300		1,200	216,000
1957	157,700	40,900	59,300		13,200		400	271,500
1958	48,900	21,600	55,100		19,700		1,600	146,900
1959	29,500	49,400	77,100		12,200		1,500	169,700
1960	105,700	47,500	67,200		12,300		9,800	242,500
1961	113,400	72,900	23,600		2,900		5,300	218,100
1962	77,100	102,600	47,000		6,400		2,900	236,000
1963	82,900	91,500	39,200		800		1,500	215,900
1964	49,200	71,200	31,500		2,000	84,400	800	239,100
1965	59,600	88,600	53,500		71,500	58,000		331,200
1966	38,600	88,200	40,000	100	1,300	21,700	6,800	196,700
1967	23,900	100,400	37,000		2,000	4,900	600	168,800
1968	29,100	112,800	32,900		2,300	7,500	1,600	186,200
1969	9,500	86,200	28,400		2,400	1,200		127,700
1970	10,400	115,900	27,000		600	2,400	1,600	157,900
1971	10,400	73,900	12,200	100	3,700	3,100	2,900	106,300
1972	20,151	100,119	29,200	200	21,193	5,551	5,605	182,019
1973	24,333	153,749	27,400	138	11,664	21,100	10,880	249,264
1974	42,526	115,893	35,900		37,946	65,321	3,351	300,937
1975	46,965	92,548	23,638		33,809	66,740	76,036	339,736
1976	27,548	132,043	27,700	100	26,630	76,700	12,038	302,759
1977	12,118	79,697	24,400		301	11,759	1,262	129,537
1978	10,774	75,439	23,109	3,875	1,346	4,200	14,779	133,522
1979	9,361	128,282	20,306		9,741	43,200	13,013	223,903
1980	35,465	209,807	41,519		29,984	71,382	52,287	440,444
1981	26,589	207,871	54,261		36,357	11,254	16,731	353,063
1982	15,119	122,223	29,628	16	4,081	6,947	17,896	195,910
1983	26,860	215,303	23,552	97	36,247	21,065	47,111	370,235
1984	31,057	263,111	30,329	3,229	6,919	20,421	67,350	422,416
1985	12,391	149,306	22,343	2,216	3,227	13,738	46,537	249,758
1986	14,739	174,332	19,803	1,376	9,440	71,053	55,230	345,973
1987	11,481	167,161	19,351	322	60,832	35,567	19,758	314,472

Table 3.8.3. (cont.)

Year	US Atlantic Coast							
	Beach Seine	**Gill Nets**	**Hook-n-Line**	**Other**	**Pound Net**	**Seines**	**Trawls**	**Total**
1988	12,071	133,535	7,134	63	26,378	23,972	32,805	235,958
1989	15,898	142,572	4,260		40,354	56,11	24,362	283,556
1990	27,269	97,977	876	63	25,796	18,23	14,511	184,726
1991	13,987	78,606	674	154	19,734	4,348	10,846	128,349
1992	2,220	106,313	306		13,351	6,341	3,060	131,591
1993	10,443	204,504	3,108	31	11,617	10,74	6,406	246,857
1994	2,125	114,588	2,330	122	9,874	16,43	7,021	152,495
1995	6,208	181,241	3,133	130	21,285	38,63	1,162	251,788
1996	4,639	91,896	2,135	262	6,290	9,555	1,300	116,076
1997	2,824	37,452	1,956	196	4,343	9,688	160	56,618
1998	5,931	249,059	4,360	505	4,181	37,61	100	301,754
1999	4,355	358,622	3,499	143	13,627	4,014	2,044	386,305
2000	19,690	246,838	3,063	23	10,338	2,990	2,156	285,098
2001	2,424	141,762	1,489	14	8,638	981	425	155,733
2002	769	76,731	942	524	9,427	2,029	329	90,749
2003	979	87,589	369	94	3,786	1,365	4,620	98,800
2004	610	50,600	265	12	2,023	1,306	97	54,911
2005	1,661	117,755	351	533	9,540	638	50	130,528
2006	1,843	159,466	512	5,191	7,304	2,263	192	176,771
2007	1,031	233,920	615	6,731	11,390	3,109	642	257,438
2008	720	223,190	413	197	8,044	2,564	2,588	237,716
2009	547	194,739	1,383	730	8,310	4,206	332	210,247
2010	610	223,298	841	89	8,789	2,191	28	235,847
2011	210	88,351	260	3	6,144	1,412		96,380
2012	77	64,003	517	104	4,648	196	8,149	77,695
2013	449	357,413	4,065	4,449	34,507	6,323	372	407,578

Table 3.8.4. Summary of all estimated removals associated with Recreational Commercial License (RCGL) gill nets in North Carolina from 1989 to 2013. Underlined values were estimated using the ratio to harvest.

Year	RCGL Removals	
	Numbers	Pounds
1989	3,694	9,086
1990	2,730	6,388
1991	1,709	4,425
1992	1,480	6,869
1993	2,415	13,088
1994	1,555	7,464
1995	2,403	11,774
1996	1,242	5,938
1997	504	2,407
1998	5,025	16,132
1999	5,462	23,105
2000	3,247	15,715
2001	1,924	9,141
2002	3,047	12,736
2003	1,167	5,368
2004	1,357	7,084
2005	1,922	8,015
2006	1,889	9,048
2007	2,133	9,748
2008	1,653	8,215
2009	2,867	12,388
2010	2,856	14,451
2011	1,174	5,482
2012	953	4,032
2013	5,934	22,251

Table 3.12.5. North Carolina mean weights (in pounds) by gear based on individual weights obtained from fishery dependent sampling. Underlined numbers represent values that were obtained by pooling across gears within a year.

Year	Beach Seine	Gill Net	Haul Seine	Pound Net	Trawl	Lines	Other
1989	6.95	2.46	13.26	6.95	6.95	3.31	6.95
1990	3.23	2.34	12.08	3.23	7.60	2.76	3.23
1991	3.45	2.59	3.45	3.45	7.09	2.74	3.45
1992	4.79	4.64	4.98	4.79	6.22	4.57	4.79
1993	5.55	5.42	3.76	5.55	5.55	4.87	5.55
1994	5.13	4.80	5.11	5.13	5.13	6.95	5.13
1995	4.95	4.90	4.34	4.95	5.72	5.06	4.95
1996	4.90	4.78	4.64	5.65	4.90	5.09	4.9
1997	4.74	4.78	4.74	4.74	4.74	4.16	4.74
1998	3.09	3.21	2.75	3.09	3.09	5.43	3.09
1999	6.01	4.23	4.36	4.36	5.53	5.29	4.36
2000	5.54	4.84	3.82	4.93	4.93	5.72	4.93
2001	4.80	4.75	4.80	4.80	4.96	6.48	4.80
2002	4.33	4.18	4.97	4.33	4.68	3.72	4.33
2003	4.53	4.60	4.53	4.53	4.53	4.83	4.53
2004	4.73	5.22	5.09	5.09	5.09	4.47	5.09
2005	4.39	4.17	4.39	4.39	5.99	5.04	4.39
2006	5.12	4.79	5.27	4.91	6.26	4.69	4.91
2007	4.58	4.57	3.53	5.46	4.95	5.44	4.58
2008	5.11	4.97	5.11	5.11	6.52	4.56	5.11
2009	6.89	4.32	3.53	4.38	5.46	5.02	4.38
2010	5.15	5.06	5.15	5.15	6.46	4.42	5.15
2011	4.74	4.67	4.74	4.74	5.59	4.70	4.74
2012	4.14	4.23	4.14	4.14	3.14	4.50	4.14
2013	3.58	3.75	3.73	3.84	4.66	4.12	3.84

Table 3.8.6. Estimated commercial landings (numbers) of red drum from North Carolina during 1989 to 2013 by major gear category.

Year	Beach Seine	Gillnet	Haul Seine	Poundnet	Trawl	Lines	Other	Total
1989	1,928	56,655	4,232	5,519	3,419	1,015	-	72,767
1990	8,442	41,871	1,509	3,303	4,321	245	-	59,691
1991	1,550	26,176	1,260	1,111	2,908	191	43	33,239
1992	416	22,702	1,273	2,007	482	42	-	26,921
1993	1,534	37,032	2,859	1,618	1,105	618	-	44,766
1994	414	23,849	3,187	1,026	309	333	20	29,137
1995	1,254	36,873	8,732	3,430	100	613	23	51,025
1996	947	19,073	2,049	1,017	161	410	8	23,664
1997	596	7,718	2,004	296	33	383	31	11,061
1998	1,919	76,969	12,975	439	24	783	1	93,110
1999	725	83,689	424	1,725	160	465	12	87,199
2000	3,554	49,800	456	951	189	497	9	55,457
2001	505	29,517	103	1,090	29	143	4	31,392
2002	178	17,577	224	1,181	12	90	24	19,285
2003	216	18,638	236	542	-	46	15	19,693
2004	129	9,646	197	366	14	41	-	10,394
2005	378	28,048	135	1,542	6	53	6	30,168
2006	360	33,049	366	1,064	17	81	18	34,954
2007	225	50,516	624	1,850	43	27	6	53,291
2008	141	44,485	128	1,096	2	36	5	45,893
2009	79	43,953	779	1,270	1	32	5	46,120
2010	118	43,778	345	1,184	2	56	4	45,487
2011	44	18,021	296	1,080	-	36	-	19,478
2012	19	14,631	19	1,295	19	69	6	16,056
2013	125	91,026	501	5,869	4	183	42	97,751

Table 3.8.7. Virginia mean weights (in pounds) by gear based on individual weights obtained from fishery dependent sampling. Underlined numbers represent values that were obtained by pooling across gears within a year. Shaded with underline represent further pooling across years within a management period. Virginia mean weights were applied to all commercial landings from Virginia and north.

Year	Gill Net	Seine	Trawl	Pound Net	Lines	Other
1989	1.31	1.37	1.37	1.51	3.31	1.37
1990	.	1.35	1.35	1.35	2.76	1.35
1991	1.29	1.29	1.36	2.02	2.74	1.36
1992	2.03	2.03	2.03	2.03	4.57	2.03
1993	6.99	6.99	6.99	6.99	4.87	6.99
1994	9.96	8.41	9.96	9.96	6.95	9.96
1995	3.56	3.56	3.56	3.56	5.06	3.56
1996	3.56	3.56	3.56	3.56	5.09	3.56
1997	3.56	3.56	3.56	3.56	4.16	3.56
1998	3.54	3.54	3.54	2.53	5.43	3.54
1999	6.17	6.17	6.17	6.84	5.29	6.17
2000	7.73	7.73	7.73	6.24	5.72	7.73
2001	11.74	11.74	11.74	12.18	6.48	11.74
2002	8.64	4.23	8.64	9.69	3.72	8.64
2003	4.65	4.65	4.65	4.69	4.83	4.65
2004	4.21	4.21	4.21	4.21	4.47	4.21
2005	2.22	3.76	3.76	2.85	5.04	3.76
2006	3.54	3.54	3.54	3.54	4.69	3.54
2007	4.5	4.67	4.5	4.45	5.44	4.5
2008	3.89	2.91	3.89	3.89	4.56	3.89
2009	4.75	3.54	4.61	5.53	5.02	4.61
2010	4.91	4.91	4.91	4.91	4.42	4.91
2011	4.21	4.21	4.21	4.21	4.70	4.21
2012	6.55	4.8	4.8	4.8	4.50	4.8
2013	3.63	3.75	3.75	3.73	4.12	3.75

*Beach and Haul Seines were combined for Virginia and north.

Table 3.8.8. Estimated commercial landings (numbers) of red drum for all states from Virginia and north during 1989-2013 by major gear category.

Year	Gill Net	Seine	Trawl	Pound	Lines	Other	Total
1989	2,443	1,825	438	1,325	272	0	6,302
1990	0	0	410	513	72	47	1,043
1991	8,381	6,696	599	5,871	55	22	21,624
1992	481	112	371	503	25	0	1,493
1993	542	276	39	377	20	4	1,259
1994	12	18	546	463	2	0	1,040
1995	158	206	188	468	6	2	1,027
1996	204	14	110	367	10	60	765
1997	157	53	1	826	87	18	1,142
1998	562	547	7	1,116	20	142	2,395
1999	748	351	218	598	196	17	2,129
2000	751	161	159	905	38	0	2,014
2001	132	41	24	265	87	0	550
2002	377	216	32	402	163	49	1,240
2003	399	64	994	283	30	6	1,776
2004	59	71	6	38	18	3	195
2005	359	12	6	106	17	135	634
2006	328	95	31	181	29	1,464	2,128
2007	681	194	90	502	86	1,490	3,043
2008	540	656	662	231	55	44	2,189
2009	1,024	412	71	249	243	153	2,152
2010	363	85	3	232	135	14	832
2011	996	2	0	25	19	1	1,043
2012	323	25	1,682	121	46	17	2,214
2013	4,426	1,188	95	1,918	804	1,143	9,574

Table 3.8.9. Summary of all estimated mortalities in pounds associated with the commercial estuarine gill net fishery in North Carolina. Underlined values estimated using ratio to harvest.

	Commercial Estuarine Gill Net Discard Mortality				
	Dead Discards (lb)		Live Release Mortality (lb)		Combined (lb)
Year	Small Mesh	Large Mesh	Small Mesh	Large Mesh	All Mesh Sizes
1989	5,489	15,837	1,328	1,450	24,104
1990	4,056	11,704	982	1,072	17,814
1991	2,539	7,326	614	671	11,150
1992	4,685	15,380	634	1,135	21,834
1993	7,642	25,087	1,034	1,851	35,615
1994	4,921	16,154	666	1,192	22,933
1995	7,604	24,963	1,029	1,842	35,438
1996	3,932	12,906	532	952	18,322
1997	1,594	5,232	216	386	7,427
1998	15,905	52,211	2,152	3,852	74,120
1999	23,949	65,728	2,742	4,831	97,250
2000	14,236	39,071	1,630	2,871	57,808
2001	8,438	23,158	966	1,702	34,265
2002	5,020	13,778	575	1,013	20,386
2003	5,323	14,610	610	1,074	21,616
2004	1,370	13,117	490	1,205	16,182
2005	8,403	55,382	641	2,954	67,379
2006	7,106	27,146	469	1,459	36,180
2007	14,440	39,631	1,653	2,913	58,637
2008	15,185	79,728	1,403	2,507	98,824
2009	14,295	46,052	1,346	1,667	63,359
2010	1,274	12,195	574	1,478	15,522
2011	1,122	3,852	46	495	5,515
2012	9,288	7,567	754	1,397	19,005
2013	30,615	30,629	5,103	3,533	69,880

Table 3.8.10. Summary of all estimated mortalities in numbers associated with the commercial estuarine gill net fishery in North Carolina 1989 to 2013. Underlined values estimated using ratio to harvest.

Commercial Estuarine Gill Net Discard Mortality Numbers					
	Dead Discards		Live Release Mortality		Combined
Year	Small	Large Mesh	Small Mesh	Large	All Mesh Sizes
1989	7,128	15,228	977	1,381	24,713
1990	5,268	11,254	722	1,021	18,264
1991	3,297	7,044	452	639	11,432
1992	2,857	6,103	391	553	9,905
1993	4,660	9,955	638	903	16,156
1994	3,001	6,410	411	581	10,404
1995	4,637	9,906	635	898	16,076
1996	2,397	5,121	328	464	8,312
1997	972	2,076	133	188	3,369
1998	9,698	20,719	1,329	1,879	33,624
1999	10,541	22,518	1,444	2,042	36,545
2000	6,266	13,386	858	1,214	21,724
2001	3,714	7,934	509	720	12,876
2002	2,210	4,720	303	428	7,661
2003	2,343	5,005	321	454	8,123
2004	594	7,560	330	785	9,268
2005	3,830	18,279	474	1,415	23,997
2006	4,539	9,615	344	886	15,384
2007	6,356	13,578	871	1,231	22,035
2008	3,757	20,714	348	1,200	26,019
2009	6,246	9,615	490	453	16,804
2010	805	3,747	402	582	5,536
2011	380	1,603	29	125	2,136
2012	7,335	3,757	1,090	892	13,073
2013	13,619	12,923	2,125	1,627	30,294

Table 3.8.11. Red drum lengths sampled from the commercial fishery in North Carolina and the percent of harvest that a gear contributed to the overall annual commercial landings. Areas shaded in gray where less than 20 lengths were available by gear in a given year. Percent adequate column represents the percentage of landings that had adequate sampling based on a minimum of 20 lengths by gear and year.

	Beach Seine		Gill Nets		Long Haul		Trawls		Pound Net		Rod-n-Reel		Others		
Year	# meas	% Harv	# meas	% Harv	# meas	% Harv	# meas	% Harv	# meas	% Harv	# meas	% Harv	# meas	% Harv	% adequate
1989	0	5%	60	51%	44	20%	8	9%	11	14%	rec A+B1	1%	0	0%	72%
1990	0	15%	398	53%	47	10%	2	8%	69	14%	rec A+B1	0%	0	0%	77%
1991	18	6%	121	71%	10	5%	0	10%	34	8%	rec A+B1	1%	0	0%	79%
1992	6	2%	231	82%	94	5%	1	2%	55	10%	rec A+B1	0%	0	0%	97%
1993	3	4%	546	84%	41	5%	5	3%	8	4%	rec A+B1	1%	0	0%	90%
1994	9	1%	84	81%	42	11%	1	1%	6	4%	rec A+B1	2%	0	0%	94%
1995	0	3%	324	73%	96	15%	1	0%	75	8%	rec A+B1	1%	0	0%	97%
1996	0	4%	31	80%	58	8%	24	1%	7	4%	rec A+B1	2%	0	0%	91%
1997	7	5%	249	70%	7	18%	0	0%	9	3%	rec A+B1	3%	0	0%	73%
1998	0	2%	737	84%	340	12%	0	0%	5	0%	rec A+B1	1%	0	0%	97%
1999	35	1%	903	95%	16	0%	0	0%	54	3%	rec A+B1	1%	0	0%	99%
2000	69	7%	602	89%	23	1%	19	0%	12	2%	rec A+B1	1%	0	0%	98%
2001	1	2%	381	94%	2	0%	2	0%	33	4%	rec A+B1	1%	0	0%	98%
2002	1	1%	393	90%	35	1%	0	0%	38	7%	rec A+B1	0%	0	0%	99%
2003	8	1%	356	95%	18	1%	0	0%	2	3%	rec A+B1	0%	0	0%	95%
2004	57	1%	259	93%	6	2%	0	0%	6	3%	rec A+B1	0%	0	0%	95%
2005	7	1%	730	91%	2	0%	0	0%	72	7%	rec A+B1	0%	0	0%	98%
2006	40	1%	1164	94%	25	1%	0	0%	60	4%	rec A+B1	0%	0	0%	100%
2007	12	0%	1334	95%	22	1%	62	0%	126	4%	rec A+B1	0%	0	0%	100%
2008	8	0%	1124	96%	0	0%	0	0%	79	3%	rec A+B1	0%	0	0%	100%
2009	27	0%	1049	95%	47	1%	0	0%	45	3%	rec A+B1	0%	0	0%	100%
2010	13	0%	1015	96%	10	1%	0	0%	75	3%	rec A+B1	0%	0	0%	100%
2011	6	0%	593	91%	4	2%	0	0%	44	7%	rec A+B1	0%	0	0%	100%
2012	0	0%	329	93%	2	0%	0	0%	28	6%	rec A+B1	0%	0	0%	100%
2013	32	0%	1454	92%	23	1%	0	0%	168	7%	rec A+B1	0%	0	0%	100%

LESS THAN 20 LENGTHS

Table3.8.12. Red drum lengths sampled from the commercial fishery in Virginia and the percent of total harvest that a gear contributed to the overall annual commercial landings for all states Virginia and north. Areas shaded in gray are where less than 20 lengths were acquired in a year. Percent adequate column represents the percent of landings that had adequate sampling based on a minimum of 20 lengths by gear and year.

	Seines		Gillnets		Rod-n-Reel		Pound		Trawl		Other		
Year	# meas	% Harv	# meas	% Harv	# meas	% Harv	# meas	% Harv	# meas	% Harv	# meas	% Harv	% Adequate
1989	0	27%	31	35%	rec A+B1	10%	13	22%	0	7%	0	0%	45%
1990	0	0%	0	0%	rec A+B1	13%	0	46%	0	37%	0	4%	13%
1991	197	27%	412	33%	rec A+B1	0%	58	37%	0	3%	0	0%	97%
1992	5	7%	18	32%	rec A+B1	4%	3	33%	0	24%	0	0%	4%
1993	5	22%	13	43%	rec A+B1	1%	9	30%	0	3%	0	0%	1%
1994	49	1%	1	1%	rec A+B1	0%	5	45%	0	53%	0	0%	1%
1995	23	20%	0	15%	rec A+B1	1%	0	45%	0	18%	0	0%	21%
1996	1	2%	1	27%	rec A+B1	2%	5	48%	0	14%	0	8%	2%
1997	0	5%	3	14%	rec A+B1	9%	1	71%	0	0%	0	2%	9%
1998	5	26%	11	27%	rec A+B1	1%	36	38%	0	0%	4	7%	40%
1999	16	16%	11	35%	rec A+B1	8%	58	31%	0	10%	0	1%	38%
2000	19	9%	19	41%	rec A+B1	2%	35	40%	0	9%	0	0%	41%
2001	2	8%	0	25%	rec A+B1	9%	27	53%	0	5%	0	0%	62%
2002	27	10%	8	35%	rec A+B1	6%	59	42%	0	3%	4	4%	58%
2003	0	4%	2	22%	rec A+B1	2%	23	16%	0	56%	1	0%	18%
2004	1	36%	0	30%	rec A+B1	10%	5	19%	0	3%	0	1%	10%
2005	1	3%	26	45%	rec A+B1	5%	8	17%	0	1%	0	29%	50%
2006	15	4%	12	15%	rec A+B1	2%	4	8%	0	1%	0	69%	2%
2007	27	7%	7	22%	rec A+B1	3%	57	16%	0	3%	0	49%	26%
2008	25	24%	13	27%	rec A+B1	3%	15	11%	0	33%	0	2%	39%
2009	35	15%	53	49%	rec A+B1	12%	33	14%	0	3%	1	7%	90%
2010	12	10%	4	44%	rec A+B1	15%	9	28%	0	0%	6	2%	15%
2011	2	0%	4	95%	rec A+B1	2%	1	2%	0	0%	0	0%	2%
2012	9	1%	37	19%	rec A+B1	2%	13	5%	0	72%	7	1%	21%
2013	18	13%	68	45%	rec A+B1	9%	97	20%	0	1%	37	12%	86%

Table 3.8.13 Length frequencies for commercial red drum landings for the northern region (North Carolina and North) during 1989 to 2013.

Beach Seines

Length	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total
6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7	-	-	-	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3
8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
10	-	-	-	1	-	-	-	-	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8
11	47	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	47
12	-	16	8	-	-	-	-	-	2	2	-	-	-	0	-	-	-	-	-	-	-	-	-	-	-	29
13	31	213	51	-	-	-	-	-	4	-	-	-	-	-	-	-	-	-	-	0	-	-	-	-	-	299
14	360	1,571	119	-	8	3	-	-	4	-	-	-	-	-	-	-	0	9	-	0	-	0	-	-	-	2,075
15	251	2,536	102	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	0	-	0	-	-	-	2,891
16	219	1,522	42	6	-	15	-	8	9	2	-	-	-	-	-	-	0	-	0	1	-	0	-	0	-	1,825
17	188	1,096	212	90	5	-	13	-	13	34	-	-	-	2	4	7	12	9	2	1	-	1	0	0	4	1,695
18	157	425	508	54	84	18	56	39	107	472	-	103	47	26	31	23	64	9	16	4	-	8	3	6	4	2,263
19	47	245	280	16	105	12	58	32	120	598	-	52	20	31	26	16	39	-	17	4	-	4	5	3	43	1,772
20	47	33	59	14	105	24	73	24	114	435	-	103	25	18	18	9	24	18	19	6	-	4	3	1	20	1,194
21	-	16	59	12	148	35	144	87	39	186	-	-	35	19	20	2	34	27	24	8	-	7	2	0	12	917
22	31	-	25	30	158	44	177	103	7	90	62	258	51	17	28	16	40	18	34	20	-	13	5	1	24	1,251
23	63	-	-	37	252	44	256	229	4	69	124	618	87	15	31	11	35	126	42	31	3	25	9	1	8	2,120
24	31	49	-	39	245	53	236	205	11	12	207	979	86	21	29	25	56	54	32	28	3	24	8	2	8	2,441
25	-	65	25	37	178	50	129	103	46	9	166	773	83	14	17	9	43	45	19	21	21	18	5	2	-	1,877
26	-	49	-	23	138	41	81	87	59	7	124	515	41	10	11	9	21	27	12	10	18	10	3	1	4	1,300
27	-	-	-	14	43	38	10	32	33	2	21	155	27	3	-	2	7	9	6	3	24	3	1	1	-	432
28	78	33	25	1	13	6	8	-	7	-	-	-	2	1	2	-	1	-	1	2	3	1	1	1	-	185
29	16	49	-	2	10	6	5	-	-	-	21	-	1	-	1	-	1	-	0	1	3	0	-	0	-	116
30	-	16	-	4	-	3	-	-	-	-	-	-	-	0	-	-	-	9	0	0	3	0	-	-	-	36
31	16	-	-	6	-	-	3	-	2	-	-	-	-	0	-	-	-	-	0	-	-	-	-	-	-	27
32	16	-	-	10	-	-	5	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0	0	-	-	31
33	-	-	8	1	3	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15
34	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	-	-	-	-	5
35	-	-	-	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3
36	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
37	-	33	-	2	3	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	40
38	-	-	-	-	3	3	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7
39	31	49	-	2	5	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	91
40+	298	425	25	13	25	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	802
Total	1,928	8,442	1,550	416	1,534	414	1,254	947	596	1,919	725	3,554	505	177	216	129	378	360	225	141	79	118	44	19	125	25,798

Table 3.8.13 (cont.). Length frequencies for commercial red drum landings for the northern region (North Carolina and North) during 1989 to 2013.

Gill Nets

Length	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total
6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9	-	-	20	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	-	-	-	-	1	5	-	27
10	-	-	102	19	-	-	-	1	1	-	-	-	-	4	-	0	-	-	-	-	-	-	1	5	-	132
11	79	-	529	-	-	-	-	2	1	-	-	-	-	15	-	0	-	11	-	-	-	-	1	-	-	638
12	236	-	1,010	-	-	-	-	3	2	104	-	-	-	23	-	0	-	21	-	-	-	-	3	-	63	1,465
13	788	947	2,729	37	-	-	-	3	64	10	194	-	-	8	-	0	-	21	-	70	-	-	7	-	-	4,879
14	16,762	8,837	5,301	93	136	287	14	7	37	50	119	10	-	4	-	0	38	-	-	120	126	43	6	-	-	31,990
15	12,906	13,781	3,345	93	-	0	14	10	7	100	9	31	-	4	15	0	-	-	-	189	-	43	6	-	63	30,616
16	10,387	8,206	1,043	547	-	1,437	7	10	70	120	26	21	5	4	15	38	101	28	38	396	81	43	12	5	63	22,701
17	6,610	5,786	4,428	7,487	136	0	270	11	163	1,020	1,417	672	5	231	434	303	1,101	493	621	387	667	639	165	277	1,826	35,149
18	7,554	1,999	8,024	4,343	2,238	1,724	1,840	12	1,404	15,695	7,224	5,067	2,944	2,494	2,670	1,061	5,366	3,002	3,968	1,379	4,544	3,015	1,355	4,456	15,104	108,483
19	-	842	5,212	1,413	2,801	1,149	1,941	7	1,617	23,946	7,088	4,054	1,240	3,105	1,571	833	3,128	3,010	3,869	1,466	4,480	1,651	2,074	2,380	16,046	94,920
20	944	-	865	1,118	2,733	2,299	1,827	339	1,620	18,411	8,637	2,109	1,627	1,790	1,481	342	1,998	2,481	4,513	1,881	4,064	1,392	1,234	548	13,735	77,988
21	-	-	1,082	922	3,703	2,586	4,224	2,971	567	8,469	10,239	2,492	2,169	2,047	1,706	156	2,728	2,985	5,429	2,622	4,103	2,643	1,186	356	12,314	77,697
22	-	-	649	1,179	3,994	2,299	4,687	3,958	40	4,312	16,686	4,136	2,789	1,972	2,627	383	3,151	4,053	7,769	6,620	6,033	5,375	2,311	489	11,950	97,461
23	944	-	-	1,572	6,396	1,724	8,233	6,590	41	3,571	15,415	7,610	5,191	1,618	3,033	1,057	2,690	5,455	9,504	10,142	8,496	9,575	3,934	978	12,303	126,071
24	944	210	-	1,278	5,926	2,300	7,690	5,282	140	657	10,402	10,299	4,890	2,117	2,731	1,130	3,842	5,008	7,277	8,846	5,940	8,324	3,173	2,095	7,466	107,967
25	-	210	-	983	4,665	1,725	3,660	13	661	522	4,113	6,814	4,890	1,373	1,586	1,693	2,728	3,492	4,172	6,581	3,661	6,850	1,857	1,468	3,767	67,485
26	-	-	-	884	3,567	2,587	2,169	7	811	418	2,317	4,601	2,105	854	995	1,578	1,076	1,884	2,590	3,059	1,676	3,301	1,031	889	376	38,776
27	-	-	-	688	990	2,874	114	4	468	104	380	1,696	1,477	183	-	715	384	1,072	1,174	853	877	921	453	534	250	16,209
28	-	-	-	-	68	576	228	5	97	-	18	610	155	15	172	301	38	248	227	377	145	141	194	400	125	4,142
29	-	210	-	135	68	1	114	4	3	-	-	93	91	4	-	113	38	85	38	-	42	184	1	44	-	1,270
30	-	105	-	-	-	2	-	8	6	-	9	124	9	12	-	-	-	28	-	40	-	-	-	-	-	342
31	-	-	-	-	-	2	-	9	38	-	101	62	14	8	-	-	-	-	-	-	-	-	-	-	-	233
32	-	-	-	-	-	0	-	3	3	-	-	10	18	8	-	-	-	-	-	-	-	-	-	-	-	42
33	-	-	216	-	68	0	-	4	3	-	-	21	18	8	-	0	-	-	-	-	-	-	1	5	-	344
34	-	-	-	-	-	-	-	1	1	-	-	-	-	8	-	-	-	-	-	-	-	-	-	-	-	9
35	-	-	-	-	-	-	-	1	1	-	-	21	5	-	-	-	-	-	-	-	-	-	-	-	-	27
36	-	-	-	-	-	-	-	1	1	10	-	-	-	-	-	-	-	-	-	-	42	-	-	-	-	53
37	-	-	-	-	-	-	-	0	0	-	-	-	-	4	-	-	-	-	-	-	-	-	-	-	-	5
38	-	-	-	-	-	-	-	1	1	-	18	-	-	4	-	-	-	-	-	-	-	-	-	-	-	24
39	-	105	-	-	68	0	-	1	1	-	-	-	-	4	-	-	-	-	-	-	-	-	-	-	-	179
40+	944	631	-	393	20	288	-	10	8	10	26	-	9	42	-	1	-	-	7	-	-	-	9	20	-	2,419
Total	59,098	41,871	34,556	23,183	37,574	23,860	37,031	19,277	7,875	77,531	84,437	50,551	29,650	17,962	19,037	9,705	28,406	33,377	51,196	45,025	44,976	44,141	19,017	14,954	95,452	949,742

Table 3.8.13 (cont.). Length frequencies for commercial red drum landings for the northern region (North Carolina and North) during 1989 to 2013.

Haul Seine

Length	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total
6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7	-	-	-	-	71	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	71
8	-	-	34	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	34
9	-	-	68	-	-	-	-	-	7	-	-	-	-	-	-	0	-	-	-	-	-	-	-	-	-	76
10	-	-	68	18	-	-	-	-	22	-	-	-	-	8	-	0	-	-	-	-	-	-	-	-	-	117
11	330	-	748	-	-	-	-	-	-	-	-	-	-	16	-	0	-	3	-	-	-	-	-	-	-	1,098
12	166	32	1,570	-	-	-	-	-	8	-	-	-	-	-	-	0	-	6	-	-	-	-	-	-	-	1,783
13	607	64	1,095	9	-	-	-	-	15	10	5	-	-	-	-	1	-	6	-	79	-	-	-	-	-	1,891
14	1,061	128	1,524	22	71	-	18	-	17	49	13	2	-	-	-	0	-	-	-	105	-	-	-	-	-	3,012
15	731	353	1,136	22	-	-	18	1	10	98	4	7	-	-	2	0	-	-	-	79	-	-	-	-	-	2,462
16	41	96	612	13	-	-	9	1	32	155	12	4	1	-	2	1	2	-	-	1	-	-	-	-	-	986
17	138	64	206	45	-	1	145	1	47	460	20	22	1	-	7	10	8	3	7	27	65	12	2	1	16	1,309
18	96	64	447	45	-	-	18	1	364	4,456	75	104	10	6	33	38	29	31	107	161	175	42	20	17	126	6,463
19	192	96	227	22	10	-	364	0	407	4,151	53	99	4	27	28	27	14	29	199	30	193	16	31	12	246	6,480
20	96	64	48	36	82	-	1,092	33	386	2,662	47	49	5	131	23	14	9	18	121	58	185	13	18	2	355	5,545
21	-	32	48	36	306	228	1,728	326	136	926	69	20	7	86	26	10	12	68	86	7	198	22	17	0	350	4,742
22	192	-	21	217	316	531	1,919	423	25	411	125	57	10	6	40	19	14	79	57	44	86	55	35	1	257	4,942
23	289	-	-	190	153	532	1,473	651	18	58	136	18	18	26	58	28	13	126	92	28	62	72	61	1	164	4,265
24	-	-	-	163	582	686	1,327	619	42	67	113	49	20	40	42	30	20	18	43	25	90	66	52	3	109	4,205
25	-	32	21	95	204	382	646	1	158	-	43	66	20	51	21	35	16	15	36	19	45	63	33	2	49	2,052
26	-	64	-	14	20	306	91	-	201	-	14	51	13	14	12	30	8	18	36	35	50	34	18	1	16	1,046
27	-	-	-	-	92	76	91	-	112	-	7	29	7	-	-	15	3	21	28	56	24	23	7	1	-	592
28	481	32	21	-	214	1	-	-	24	-	9	7	0	6	4	6	0	21	-	28	-	5	4	1	-	865
29	96	-	-	22	214	1	-	-	1	-	1	2	5	-	1	3	0	-	-	1	-	4	-	-	-	351
30	-	-	-	54	-	3	-	1	2	-	4	9	3	6	-	-	-	-	-	0	-	-	-	-	-	82
31	96	-	-	81	-	3	-	1	10	-	5	13	4	6	-	-	-	-	-	-	17	-	-	-	-	235
32	96	-	-	108	-	0	-	-	1	-	-	2	6	-	-	-	-	-	-	-	-	-	1	-	-	215
33	-	-	7	14	-	-	-	-	1	-	-	4	6	8	-	-	-	-	-	-	-	-	-	-	-	40
34	-	-	-	27	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	27
35	-	-	-	-	-	-	-	-	-	-	-	4	1	-	-	-	-	-	-	-	-	-	-	-	-	6
36	-	-	-	-	-	-	-	-	-	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10
37	-	32	-	14	-	-	-	-	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	53
38	-	-	-	-	71	76	-	-	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	156
39	192	-	-	27	71	76	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	367
40+	1,154	353	55	95	653	304	-	1	3	10	12	-	3	-	-	1	-	-	7	-	-	-	0	2	-	2,652
Total	6,056	1,509	7,956	1,386	3,134	3,205	8,938	2,063	2,057	13,522	775	618	145	440	300	269	147	460	817	784	1,190	429	298	43	1,689	58,231

Table 3.8.13 (cont.). Length frequencies for commercial red drum landings for the northern region (North Carolina and North) during 1989 to 2013.

Trawl

Length	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total
6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
8	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
9	-	2	3	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	-	25	-	31
10	-	5	5	16	-	-	-	0	0	-	-	-	-	0	-	0	-	-	-	-	-	-	-	25	-	52
11	93	28	31	-	-	-	-	1	0	-	-	-	-	1	-	0	-	1	-	-	-	-	-	-	-	155
12	37	60	72	-	-	-	-	1	0	0	-	-	-	2	-	0	-	2	-	-	-	-	-	-	0	172
13	147	182	175	29	-	-	-	1	0	0	3	-	-	1	-	0	-	2	-	37	-	-	-	-	-	573
14	774	918	353	71	6	2	16	4	0	1	8	2	-	0	-	0	0	0	-	50	0	0	-	-	-	2,203
15	568	1,383	288	71	-	10	16	5	0	2	2	7	-	0	38	0	-	-	-	37	-	0	-	-	0	2,437
16	402	817	126	50	-	21	8	5	1	2	7	5	1	0	38	0	1	0	0	0	1	0	-	26	0	1,518
17	346	570	430	119	4	20	50	6	1	2	10	5	1	1	38	1	2	1	2	38	4	0	-	51	1	1,693
18	281	220	1,012	76	61	23	21	7	6	6	38	21	3	5	-	3	4	11	12	138	6	1	-	745	11	2,681
19	84	126	556	47	77	9	5	4	7	7	25	13	1	4	-	2	1	1	14	50	5	0	-	589	17	1,632
20	84	17	118	45	77	18	6	5	6	5	21	16	1	5	38	1	0	2	10	25	2	0	-	77	17	597
21	-	8	118	42	109	26	12	6	2	2	31	29	2	4	76	1	0	4	16	13	5	0	-	0	16	526
22	56	-	50	35	118	33	22	13	0	2	59	33	3	2	153	1	1	4	17	13	12	1	-	1	18	648
23	112	-	-	42	183	43	37	27	0	1	65	45	5	2	382	2	1	6	18	13	15	0	-	1	10	1,018
24	56	25	-	45	188	119	68	44	1	1	55	46	7	3	153	2	1	4	22	25	10	0	-	28	4	915
25	-	33	50	42	137	97	18	47	3	0	21	31	6	4	38	3	1	2	15	63	7	1	-	2	4	630
26	-	25	-	26	102	90	6	37	3	0	6	29	5	1	-	2	0	2	4	63	2	0	-	1	1	415
27	-	-	-	16	34	38	1	29	2	0	4	15	2	1	-	1	0	3	1	75	3	1	-	1	0	230
28	140	17	50	1	9	44	1	3	0	-	5	9	0	1	38	0	0	2	0	25	1	0	-	1	0	349
29	28	25	-	31	7	34	0	2	0	-	0	3	3	0	-	0	0	0	0	0	0	0	-	0	-	137
30	-	8	-	5	-	82	-	4	0	-	2	10	2	1	-	-	-	0	0	0	0	0	-	-	-	116
31	28	-	-	7	-	79	0	5	0	-	3	15	2	1	-	-	-	-	0	-	0	-	-	-	-	143
32	28	1	1	11	-	10	0	2	0	-	-	3	3	1	-	-	-	-	0	-	-	0	-	-	-	60
33	-	-	17	1	2	12	-	2	0	-	-	5	3	1	-	0	-	-	-	-	-	-	-	25	-	69
34	-	-	-	2	-	-	-	0	0	-	-	-	-	1	-	-	-	-	-	-	0	-	-	-	-	4
35	-	-	-	-	2	-	-	1	0	-	-	5	1	-	-	-	-	-	-	-	-	-	-	-	-	9
36	-	-	-	-	-	-	-	0	0	0	-	-	-	-	-	-	-	-	-	-	0	-	-	-	-	1
37	-	17	-	2	2	-	-	0	0	-	-	-	-	0	-	-	-	-	-	-	-	-	-	-	-	22
38	-	-	-	-	2	2	-	1	0	0	5	-	-	0	-	-	-	-	-	-	-	-	-	-	-	10
39	56	25	-	2	4	12	-	0	0	-	-	-	-	0	-	-	-	-	-	-	-	-	-	-	-	101
40+	534	218	51	15	20	31	-	5	0	0	7	-	2	3	-	0	0	-	1	-	-	-	-	102	-	993
Total	3,857	4,731	3,506	853	1,144	855	288	271	34	31	378	347	53	45	994	20	12	48	133	665	72	6	-	1,700	99	20,140

Table 3.8.13 (cont.). Length frequencies for commercial red drum landings for the northern region (North Carolina and North) during 1989 to 2013.

PoundNet

Length	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total
6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7	-	-	-	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3
8	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
9	-	3	107	-	-	-	-	-	1	-	-	-	-	-	-	0	-	-	-	-	-	-	-	2	-	150
10	-	6	107	44	-	-	-	2	7	-	-	-	-	-	-	0	-	-	-	-	-	-	-	2	-	202
11	165	35	-	-	-	-	-	3	7	-	-	-	-	15	-	0	-	6	-	-	-	-	-	-	-	224
12	130	65	107	-	-	-	-	5	11	1	-	-	-	75	-	0	-	12	-	-	-	-	-	-	-	434
13	413	187	427	38	-	-	-	5	12	28	-	-	-	15	-	0	-	12	-	13	-	-	-	-	-	1,272
14	1,467	525	854	96	8	7	41	13	31	111	-	-	-	7	-	0	-	-	-	17	-	-	-	-	-	3,386
15	1,127	729	1,541	96	-	8	41	17	40	195	-	-	-	7	12	0	-	-	-	13	-	-	-	-	-	4,253
16	648	622	1,922	94	-	45	20	27	45	196	-	-	10	7	12	2	10	-	-	-	-	-	-	48	-	4,278
17	560	489	924	128	5	17	213	19	49	65	42	36	10	7	24	15	23	6	9	13	-	22	-	96	20	3,035
18	440	242	492	19	89	52	315	64	103	219	87	145	33	240	77	54	63	58	73	62	-	100	-	608	671	4,327
19	132	192	116	38	124	29	91	46	87	228	56	80	33	241	64	39	24	-	97	17	9	23	-	458	421	2,612
20	132	-	46	38	124	58	46	44	98	181	11	65	-	45	46	18	-	6	94	50	-	7	-	6	729	1,748
21	-	-	23	38	184	87	46	114	67	81	96	114	33	22	74	9	22	18	270	18	18	7	-	-	905	2,140
22	88	-	-	-	209	109	386	131	49	110	236	199	165	38	107	24	87	65	347	74	144	45	-	-	1,622	4,098
23	176	-	-	145	280	118	635	269	53	48	506	272	132	15	188	41	87	124	438	129	490	95	-	-	1,385	5,480
24	88	48	-	397	370	198	671	257	87	59	693	315	275	188	122	49	392	237	437	189	289	253	-	2	908	6,428
25	-	48	70	578	272	174	569	134	76	3	364	172	175	143	54	59	416	302	314	216	335	291	-	139	716	5,721
26	-	48	-	397	173	152	549	106	58	2	93	196	196	211	27	54	348	290	126	147	117	283	-	-	270	3,816
27	-	-	-	217	74	103	91	41	33	1	31	127	109	98	-	26	131	47	59	165	63	180	-	-	70	1,637
28	220	48	70	36	13	48	46	10	25	-	53	82	-	90	17	11	22	65	15	92	-	71	-	46	70	1,153
29	44	48	-	38	11	40	46	8	17	-	-	4	31	7	1	5	22	-	15	111	55	23	-	-	-	505
30	-	-	-	-	-	75	-	14	31	-	11	1	20	15	-	-	-	-	29	-	-	16	-	-	-	204
31	44	-	-	-	-	67	46	16	37	-	-	23	31	15	-	-	-	-	15	-	-	-	-	-	-	280
32	44	1	107	36	-	8	46	6	14	-	-	1	41	7	-	-	-	-	15	-	-	-	-	-	-	402
33	-	-	-	-	3	16	-	7	15	-	-	23	41	7	-	0	-	-	-	-	-	-	-	2	-	107
34	-	-	-	-	-	-	-	2	3	-	-	-	-	7	-	-	-	-	-	-	-	-	-	-	-	12
35	-	-	-	-	3	-	-	2	5	-	-	-	10	-	-	-	-	-	-	-	-	-	-	-	-	19
36	-	-	-	-	-	-	-	2	3	28	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	26
37	-	48	-	-	3	-	-	1	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	52
38	-	-	-	-	3	7	-	2	5	1	11	-	-	7	-	-	-	-	-	-	-	-	-	-	-	35
39	88	96	-	-	5	16	-	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	203
40+	836	336	70	36	41	53	-	18	41	-	33	-	20	52	-	0	3	-	-	-	-	-	-	7	-	1,527
Total	6,843	3,816	6,982	2,510	1,995	1,489	3,898	1,384	1,122	1,555	2,323	1,856	1,365	1,583	826	404	1,648	1,246	2,352	1,327	1,519	1,416	1,105	1,416	7,788	59,769

Table 3.8.13 (cont.). Length frequencies for commercial red drum landings for the northern region (North Carolina and North) during 1989 to 2013.

Lines (hook and line)

Length	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total
6	-	-	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
7	-	-	-	-	-	-	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7
8	-	-	-	-	-	-	8	-	29	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	39
9	3	-	-	-	-	-	2	-	29	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	35
10	7	-	5	-	2	-	-	-	15	2	-	-	-	-	-	-	-	-	-	2	-	-	-	1	-	32
11	10	9	1	-	-	2	1	-	-	-	-	-	-	-	-	-	-	-	-	2	-	0	-	2	-	27
12	24	-	4	0	-	4	-	-	-	-	-	-	-	-	-	-	-	-	1	2	-	-	-	2	-	37
13	25	16	6	1	2	2	-	7	-	-	-	-	-	2	-	-	-	-	-	2	-	-	-	2	-	64
14	97	42	5	-	21	2	11	20	15	0	10	-	-	2	-	1	-	2	-	-	-	0	-	2	-	230
15	185	63	16	1	2	-	0	24	29	0	5	-	-	4	-	-	-	6	0	-	-	-	-	1	10	348
16	112	49	26	2	27	7	5	6	-	-	10	4	5	4	-	1	-	5	-	1	8	0	-	0	5	276
17	113	55	19	3	40	9	4	33	59	0	9	0	3	4	-	-	-	-	1	2	-	11	-	0	28	393
18	180	31	95	5	64	9	38	47	29	15	38	12	23	74	4	7	2	4	7	7	19	26	4	20	87	846
19	61	18	24	2	4	14	31	39	44	40	51	29	3	70	9	8	5	7	8	7	19	31	5	22	122	674
20	43	-	16	5	24	16	25	16	-	36	48	17	2	31	8	7	8	15	17	10	63	23	8	17	232	686
21	23	1	5	3	20	27	65	12	29	101	65	32	7	3	6	5	5	7	12	9	59	18	6	5	150	676
22	22	-	2	6	74	15	54	-	29	148	42	36	14	10	12	5	8	10	21	6	67	14	8	6	145	756
23	26	1	4	12	155	16	107	26	-	148	79	32	22	13	8	1	5	15	21	14	32	19	11	6	117	892
24	84	-	4	5	81	28	142	38	15	158	83	82	32	18	4	7	25	12	20	15	29	23	4	7	102	1,016
25	116	2	-	13	31	48	75	26	29	80	53	91	33	6	8	7	7	6	17	11	23	21	5	3	31	741
26	57	-	2	6	23	25	10	52	-	35	87	120	25	8	12	4	3	10	14	6	17	7	5	10	17	552
27	38	1	5	1	39	21	7	24	-	19	30	52	18	0	2	3	3	5	7	5	12	2	1	10	4	308
28	28	8	2	2	18	19	4	17	44	2	34	21	27	3	2	1	-	2	2	1	3	0	1	5	3	248
29	11	-	-	-	-	5	1	12	15	-	3	5	5	-	1	-	-	3	-	-	1	-	0	-	1	62
30	4	7	-	-	-	7	2	-	-	-	4	0	-	0	-	-	-	-	-	-	1	-	0	-	-	25
31	-	-	0	-	-	7	7	-	-	2	-	-	3	-	-	1	-	1	-	-	-	-	-	-	-	22
32	-	-	4	-	-	11	2	12	-	-	-	-	-	2	1	-	-	-	-	-	1	-	-	-	-	32
33	-	1	-	-	-	4	0	-	15	1	-	0	-	0	-	-	-	-	-	-	-	-	-	-	-	22
34	-	-	-	-	-	-	9	6	15	4	-	-	-	-	-	-	-	-	-	0	-	-	-	-	-	33
35	-	-	-	-	-	-	-	-	-	1	-	-	3	-	-	-	-	-	-	-	-	-	-	-	-	4
36	-	-	-	0	1	4	-	-	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	19
37	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	0	-	-	-	2
38	2	-	-	-	2	4	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9
39	16	2	-	-	-	7	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	28
40+	3	11	2	0	7	25	1	5	15	5	10	2	6	-	-	-	-	-	-	-	-	15	-	2	-	108
Total	1,287	317	246	67	638	335	619	419	470	803	661	535	230	253	76	59	70	109	150	101	353	212	60	123	1,052	9,248

Table 3.8.14. Estimated age frequencies of red drum harvested from all major commercial gear categories for the northern region combined (North Carolina and north) for the period of 1989 to 2013.

Gear	YEAR	age1	age2	age3	age4	age5	age6	age7	age8	age9	age10+	Total
Beach Seine	1989	733	728	118	18	2	3	2	4	9	311	1,928
	1990	5,012	2,754	166	4	6	6	6	19	11	459	8,442
	1991	910	575	32	8	0	0	0	1	0	25	1,551
	1992	7	348	30	12	2	1	1	1	1	14	416
	1993	21	1,061	413	3	2	2	2	2	1	29	1,534
	1994	18	226	140	10	1	1	1	1	1	16	414
	1995	25	1,039	182	7	0	0	-	-	-	-	1,254
	1996	49	746	150	2	-	-	-	-	-	-	947
	1997	154	344	92	4	1	0	1	0	0	0	596
	1998	161	1,749	8	0	0	0	0	0	0	1	1,920
	1999	3	508	207	6	-	-	-	-	-	-	725
	2000	23	1,837	1,661	33	-	-	-	-	-	-	3,554
	2001	13	195	295	2	-	-	-	-	-	-	505
	2002	19	144	14	1	-	-	-	-	-	-	178
	2003	4	182	30	0	-	-	-	-	-	-	216
	2004	31	51	47	0	-	-	-	-	-	-	129
	2005	22	343	13	1	-	-	-	-	-	-	378
	2006	14	233	111	2	-	-	-	-	-	-	360
	2007	5	175	44	1	-	-	-	-	-	-	225
	2008	3	75	62	1	-	-	-	-	-	-	141
	2009	-	27	47	4	1	0	-	0	-	-	79
	2010	5	61	51	1	-	-	-	-	-	-	118
	2011	2	33	10	0	-	-	-	-	-	-	44
	2012	9	7	3	0	-	-	-	-	-	-	19
	2013	1	121	3	0	-	-	-	-	-	-	125
Gill Net	1989	31,436	26,462	256	-	-	-	-	-	-	944	59,098
	1990	26,921	13,753	440	20	-	-	-	27	5	704	41,870
	1991	23,886	10,269	239	149	9	5	-	-	-	-	34,556
	1992	723	21,156	853	58	-	-	-	1	1	392	23,183
	1993	436	27,086	9,913	47	5	7	4	9	9	58	37,574
	1994	1,774	14,073	7,283	442	0	5	3	16	5	259	23,860
	1995	754	31,149	5,050	78	-	-	-	-	-	-	37,031
	1996	305	17,417	1,528	12	2	1	1	1	0	11	19,277
	1997	1,803	4,703	1,295	62	2	1	1	0	0	9	7,875
	1998	6,269	70,765	470	8	5	2	2	0	-	10	77,531
	1999	7,005	64,463	12,832	93	4	3	4	2	1	33	84,437
	2000	1,382	30,774	17,926	452	12	3	1	1	1	-	50,551
	2001	844	11,721	16,938	132	4	1	0	0	0	9	29,650
	2002	1,914	14,768	1,180	41	5	3	2	2	1	45	17,962
	2003	321	15,847	2,843	27	-	-	-	-	-	-	19,037
	2004	1,536	3,000	5,089	79	-	-	-	-	-	1	9,705
	2005	1,903	25,775	699	29	-	-	-	-	-	-	28,406
	2006	857	24,217	8,211	93	-	-	-	-	-	-	33,377
	2007	1,269	40,111	9,727	82	-	-	0	0	0	7	51,196
	2008	1,127	24,509	19,270	119	-	-	-	-	-	-	45,025
	2009	1,278	35,585	7,988	91	21	6	6	-	-	1	44,976
	2010	2,104	23,363	18,540	133	-	-	-	-	-	-	44,141
	2011	1,016	14,118	3,818	56	0	-	-	0	-	9	19,017
	2012	6,662	5,461	2,728	84	0	0	0	0	0	19	14,954
	2013	1,204	91,306	2,908	35	-	-	-	-	-	-	95,452

Table 3.8.14 (cont.). Estimated age frequencies of red drum harvested from all major commercial gear categories for the northern region combined (North Carolina and north) for the period of 1989 to 2013.

Gear	YEAR	age1	age2	age3	age4	age5	age6	age7	age8	age9	age10+	Total
Haul Seine	1989	2,305	1,614	672	111	13	16	12	25	39	1,250	6,056
	1990	604	433	87	1	6	6	6	11	9	348	1,509
	1991	7,316	553	26	6	0	0	0	1	0	54	7,957
	1992	70	870	157	132	21	9	7	6	6	109	1,386
	1993	131	1,297	910	-	10	20	21	28	19	698	3,134
	1994	7	1,727	994	21	11	20	23	27	20	356	3,205
	1995	211	7,904	817	6	-	-	-	-	-	-	8,938
	1996	29	1,871	160	1	0	0	-	-	-	1	2,062
	1997	533	1,178	319	16	2	2	2	1	1	3	2,057
	1998	1,411	12,091	-	2	5	2	2	0	-	10	13,522
	1999	72	556	123	4	1	1	2	1	1	15	775
	2000	38	387	172	17	3	1	0	0	0	-	618
	2001	4	44	82	11	1	0	0	0	-	3	145
	2002	42	356	32	10	0	0	-	-	-	-	440
	2003	6	251	42	1	-	-	-	-	-	-	300
	2004	55	98	114	2	-	-	-	-	-	1	269
	2005	11	130	5	0	-	-	-	-	-	0	147
	2006	25	338	95	3	-	-	-	-	-	-	461
	2007	29	678	102	1	-	-	0	0	0	7	817
	2008	287	345	147	6	-	-	-	-	-	-	784
	2009	52	984	146	9	0	-	-	-	-	-	1,190
	2010	30	219	177	3	-	-	-	-	-	-	429
	2011	15	218	64	2	-	-	-	-	-	-	298
	2012	29	10	4	0	-	-	-	-	-	2	43
	2013	16	1,628	45	0	-	-	-	-	-	-	1,689
Trawl	1989	1,615	1,415	209	32	4	5	4	7	15	552	3,857
	1990	2,887	1,497	85	2	3	3	3	10	6	236	4,731
	1991	2,288	1,093	61	15	1	0	0	1	0	47	3,506
	1992	187	567	58	19	2	1	1	1	1	16	853
	1993	15	787	311	2	2	1	1	1	1	22	1,144
	1994	36	305	386	79	3	2	2	2	2	37	855
	1995	79	181	27	1	-	-	-	-	-	-	288
	1996	28	152	74	8	1	0	0	0	0	6	271
	1997	9	19	5	0	-	-	-	-	-	0	34
	1998	4	27	0	-	0	-	-	-	-	0	31
	1999	37	267	59	2	1	1	1	1	0	10	378
	2000	13	186	129	16	3	1	0	0	0	-	347
	2001	1	13	29	6	1	0	-	-	-	2	53
	2002	7	26	5	2	0	0	0	0	0	4	45
	2003	22	823	145	3	-	-	-	-	-	-	994
	2004	4	7	8	0	-	-	-	-	-	0	20
	2005	2	10	0	-	-	-	-	-	-	0	12
	2006	7	31	10	0	-	-	-	-	-	-	48
	2007	4	104	24	0	-	-	-	-	-	1	133
	2008	159	310	189	6	-	-	-	-	-	-	665
	2009	2	55	15	0	-	-	-	-	-	-	72
	2010	1	3	2	0	-	-	-	-	-	-	6
	2011	-	-	-	-	-	-	-	-	-	-	-
	2012	1,357	205	17	18	1	1	1	1	1	100	1,700
	2013	1	95	3	-	-	-	-	-	-	-	99

Table 3.8.14 (cont.). Estimated age frequencies of red drum harvested from all major commercial gear categories for the northern region combined (North Carolina and north) for the period of 1989 to 2013.

Gear	YEAR	age1	age2	age3	age4	age5	age6	age7	age8	age9	age10+	Total
Pound Net	1989	3,051	2,457	338	52	6	8	6	12	24	891	6,843
	1990	1,916	1,263	157	1	9	9	9	24	18	411	3,816
	1991	5,569	1,121	121	66	5	2	0	2	1	95	6,982
	1992	287	1,801	346	38	2	1	-	-	-	36	2,510
	1993	23	1,346	571	3	2	2	2	2	1	44	1,995
	1994	65	676	585	85	4	3	3	4	3	62	1,489
	1995	305	2,636	884	69	3	1	-	-	-	-	3,898
	1996	145	962	227	23	4	2	1	1	1	20	1,384
	1997	300	501	208	51	9	4	3	2	1	45	1,122
	1998	408	1,114	2	5	16	5	5	-	-	1	1,555
	1999	70	1,702	501	9	1	2	2	1	1	34	2,323
	2000	43	1,010	748	53	2	1	-	-	-	-	1,856
	2001	15	338	892	79	9	3	1	1	0	20	1,356
	2002	236	917	336	36	4	2	2	1	1	50	1,583
	2003	17	687	120	2	-	-	-	-	-	-	826
	2004	76	136	189	3	-	-	-	-	-	0	404
	2005	37	1,405	191	12	-	-	-	-	-	3	1,648
	2006	42	552	644	8	-	-	-	-	-	-	1,246
	2007	38	1,670	616	27	1	0	-	-	-	-	2,352
	2008	59	509	722	37	-	-	-	-	-	-	1,327
	2009	3	988	513	15	-	-	-	-	-	-	1,519
	2010	61	501	829	25	-	-	-	-	-	-	1,416
	2011	35	654	378	35	3	1	-	-	-	0	1,105
	2012	1,128	177	99	5	0	-	-	0	-	7	1,416
	2013	69	7,052	653	14	-	-	-	-	-	-	7,788
Hook & Line	1989	416	669	178	3	1	2	2	2	2	13	1,287
	1990	168	117	16	2	-	-	-	0	0	14	317
	1991	158	74	9	3	0	0	-	-	-	2	246
	1992	4	59	4	0	0	-	-	-	-	0	67
	1993	42	428	158	0	1	0	1	0	0	8	638
	1994	22	142	112	19	3	2	2	2	2	29	335
	1995	46	472	85	10	3	1	0	0	-	1	619
	1996	121	188	87	15	3	1	0	0	-	5	419
	1997	199	139	71	26	13	3	2	1	-	15	470
	1998	16	705	66	5	2	1	1	1	0	6	803
	1999	52	421	172	7	-	0	-	0	0	10	661
	2000	6	243	273	11	-	-	-	-	-	2	536
	2001	9	66	141	6	1	0	0	0	-	6	230
	2002	51	188	11	2	0	0	1	0	0	0	253
	2003	1	56	19	1	-	-	-	-	-	-	77
	2004	12	25	22	1	-	-	-	-	-	-	59
	2005	0	66	3	0	-	-	-	-	-	-	69
	2006	8	72	28	1	-	-	-	-	-	-	109
	2007	4	107	39	0	-	-	-	-	-	-	150
	2008	9	57	35	1	-	-	-	-	-	-	101
	2009	7	281	63	2	-	-	-	-	-	-	353
	2010	25	124	48	0	-	-	0	0	0	14	212
	2011	3	45	12	0	-	-	-	-	-	-	60
	2012	50	48	23	1	-	-	-	-	-	2	124
	2013	18	994	40	1	-	-	-	-	-	-	1,052

Table 3.8.14 (cont.). Estimated age frequencies of red drum harvested from all major commercial gear categories for the northern region combined (North Carolina and north) for the period of 1989 to 2013.

Gear	YEAR	age1	age2	age3	age4	age5	age6	age7	age8	age9	age10+	Total
Recreational	1989	1,931	1,685	17	-	-	-	-	-	-	62	3,694
Gill Nets	1990	1,755	897	29	1	-	-	-	2	0	46	2,730
	1991	1,021	661	16	10	1	0	-	-	-	-	1,709
	1992	32	1,366	54	3	-	-	-	-	-	26	1,480
	1993	28	1,745	634	3	0	0	0	1	1	3	2,415
	1994	116	917	474	29	-	0	0	1	0	17	1,555
	1995	45	2,024	328	5	-	-	-	-	-	-	2,403
	1996	17	1,129	97	-	-	-	-	-	-	-	1,242
	1997	115	303	83	4	-	-	-	-	-	-	504
	1998	397	4,597	31	0	-	-	-	-	-	-	5,025
	1999	452	4,175	830	6	0	-	-	-	-	-	5,462
	2000	88	1,984	1,151	25	-	-	-	-	-	-	3,247
	2001	55	763	1,100	6	-	-	-	-	-	-	1,924
	2002	320	2,527	197	3	-	-	-	-	-	-	3,047
	2003	20	972	174	2	-	-	-	-	-	-	1,167
	2004	214	418	714	11	-	-	-	-	-	-	1,357
	2005	122	1,750	48	2	-	-	-	-	-	-	1,922
	2006	45	1,373	466	5	-	-	-	-	-	-	1,889
	2007	53	1,671	406	4	-	-	-	-	-	-	2,133
	2008	37	901	710	4	-	-	-	-	-	-	1,653
	2009	82	2,270	507	6	1	0	0	-	-	0	2,868
	2010	133	1,513	1,202	8	-	-	-	-	-	-	2,856
	2011	57	873	240	3	-	-	-	-	-	-	1,174
	2012	417	353	178	5	-	-	-	-	-	-	953
	2013	75	5,673	184	2	-	-	-	-	-	-	5,934
Gill Net	1989	20,465	3,093	325	520	49	16	0	0	1	244	24,714
Discards	1990	15,124	2,286	240	384	36	12	-	1	-	181	18,264
	1991	10,880	17	150	241	23	8	0	1	0	112	11,432
	1992	4,533	3,921	1,229	204	5	1	-	0	0	12	9,905
	1993	7,162	6,463	2,344	158	9	1	0	0	-	19	16,157
	1994	5,330	3,567	1,208	280	6	1	-	0	-	12	10,404
	1995	12,109	1,749	1,813	376	9	1	-	0	-	19	16,076
	1996	6,143	972	991	190	5	1	-	0	-	10	8,311
	1997	2,708	177	402	77	2	0	-	-	-	4	3,369
	1998	14,672	14,114	4,010	768	19	3	-	0	-	40	33,624
	1999	10,357	21,135	4,484	529	12	2	-	0	-	27	36,545
	2000	6,102	11,732	3,508	358	7	1	-	0	-	16	21,724
	2001	2,712	7,409	2,563	177	4	1	-	0	-	9	12,876
	2002	2,653	4,040	848	111	3	0	-	-	-	6	7,661
	2003	1,556	5,298	1,143	118	3	0	-	-	-	6	8,123
	2004	8,402	260	522	78	3	1	-	0	-	2	9,268
	2005	11,498	11,349	1,070	77	0	-	-	-	-	3	23,997
	2006	8,830	4,541	1,830	181	3	0	-	-	-	-	15,384
	2007	3,167	15,165	3,376	303	7	1	-	0	-	16	22,035
	2008	12,550	7,797	5,279	383	0	0	-	0	-	10	26,019
	2009	4,318	10,085	2,082	296	18	5	-	-	-	-	16,804
	2010	2,383	2,260	887	7	-	-	-	-	-	-	5,536
	2011	766	1,215	129	23	1	-	-	0	-	2	2,136
	2012	11,152	1,599	299	23	0	-	-	-	-	-	13,073
	2013	10,310	18,994	883	15	0	0	-	0	-	91	30,294

Table 3.8.14 (cont.). Estimated age frequencies of red drum harvested from all major commercial gear categories for the northern region combined (North Carolina and north) for the period of 1989 to 2013.

Gear	YEAR	age1	age2	age3	age4	age5	age6	age7	age8	age9	age10+	Total
Other	1989	-	-	-	-	-	-	-	-	-	-	-
Commercial	1990	37	10	-	-	-	-	-	-	-	0	47
	1991	47	17	1	0	-	-	-	-	-	1	65
	1992	-	-	-	-	-	-	-	-	-	-	-
	1993	-	3	2	-	-	-	-	-	-	0	5
	1994	1	11	7	1	-	-	-	0	-	1	20
	1995	1	20	3	0	-	-	-	-	-	-	25
	1996	16	33	12	4	1	0	0	0	0	3	68
	1997	13	25	8	1	0	0	0	-	-	1	49
	1998	47	91	-	0	1	0	0	-	-	3	143
	1999	3	20	5	0	-	0	0	-	-	1	29
	2000	0	6	3	0	-	-	-	-	-	-	9
	2001	0	2	3	-	-	-	-	-	-	-	4
	2002	12	44	8	3	1	0	0	0	0	6	73
	2003	0	17	3	-	-	-	-	-	-	-	21
	2004	1	1	1	-	-	-	-	-	-	-	3
	2005	41	95	0	-	-	-	-	-	-	4	141
	2006	315	904	252	12	-	-	-	-	-	-	1,482
	2007	44	1,174	262	-	-	0	0	1	0	15	1,495
	2008	11	23	15	0	-	-	-	-	-	-	49
	2009	5	121	33	1	-	-	-	-	-	-	159
	2010	3	9	6	0	-	-	-	-	-	-	18
	2011	0	1	0	-	-	-	-	-	-	-	1
	2012	16	4	1	0	-	-	-	-	-	1	22
	2013	12	1,136	37	-	-	-	-	-	-	-	1,185

Table 3.8.15. Estimated age frequencies of red drum harvested for all major commercial gears combined for the northern region (North Carolina and north) during 1989-2013.

YEAR	age1	age2	age3	age4	age5	age6	age7	age8	age9	age10+	Total
1989	61,950	38,122	2,114	736	74	49	25	50	91	4,267	107,476
1990	54,424	23,008	1,220	416	59	35	23	94	49	2,399	81,727
1991	52,075	14,379	655	497	39	15	1	5	2	335	68,003
1992	5,842	30,086	2,731	466	32	12	9	8	8	604	39,799
1993	7,859	40,215	15,256	215	31	33	31	43	33	881	64,596
1994	7,369	21,643	11,189	965	27	34	33	54	33	789	42,136
1995	13,575	47,175	9,190	552	16	3	0	1	-	20	70,531
1996	6,852	23,470	3,327	253	15	4	2	2	1	56	33,982
1997	5,834	7,388	2,483	241	28	10	9	4	2	76	16,076
1998	23,385	105,253	4,587	789	48	12	9	2	1	70	134,154
1999	18,050	93,246	19,212	655	19	8	9	5	3	129	131,335
2000	7,694	48,159	25,569	967	26	6	1	2	1	18	82,442
2001	3,653	20,551	22,043	419	21	6	1	1	0	49	46,743
2002	5,253	23,010	2,630	208	13	6	5	4	2	111	31,242
2003	1,945	24,132	4,520	153	3	0	-	-	-	6	30,759
2004	10,330	3,997	6,706	174	3	1	-	0	-	3	21,213
2005	13,637	40,923	2,029	120	0	-	-	-	-	11	56,721
2006	10,142	32,261	11,646	305	3	0	-	-	-	-	54,356
2007	4,612	60,854	14,595	417	8	2	0	2	0	46	80,537
2008	14,242	34,526	26,429	557	0	0	-	0	-	10	75,764
2009	5,746	50,397	11,394	423	41	12	7	0	-	1	68,020
2010	4,744	28,053	21,743	177	-	-	0	0	0	14	54,732
2011	1,893	17,157	4,651	120	4	1	-	0	-	11	23,835
2012	20,817	7,864	3,351	137	2	1	1	1	1	131	32,304
2013	11,705	126,997	4,756	68	0	0	-	0	-	91	143,618

Table 3.8.16. Florida estimated observed mean weights (pounds) from all red drum measured for length (and converted to weight) or directly weighed for whole weight. The "Used" mean weights were those actually applied to the estimated gear-specific landings to calculate the numbers of landed red drum by gear. Differences between the observed and Used" were due to inadequate sampling or sampling that was known or judged to be biased relative to the commercial landings.

	Gill Net			Hook and Line			Seine			Trammel Net		
Year	N	Obs	Used	N	Obs	Used	N	Obs	Used	N	Obs	Used
1981	649	2.808	2.808	8	19.148	3.98	0		4.759	90	7.154	7.154
1982	1,149	3.731	3.731	80	11.898	6.55	51	4.277	4.277	377	9.416	9.416
1983	108	2.448	2.448	0		5.265	15	6.397	4.277	276	7.213	7.213
1984	0		2.996	0		5.265	0		4.277	0		5.483
1985	0		2.996	0		5.265	0		4.277	0		5.483
1986	0		2.996	0		5.265	0		4.277	0		5.483
1987	0		2.996	0		5.265	0		4.277	14	3.754	3.754
1988	0		2.996	0		5.265	0		4.277	10	4.645	4.645

Table 3.8.17. Estimated commercial landings (numbers) of red drum for the Atlantic coast of Florida during 1981-1988 by collapsed gear category.

Year	Gill Net	Hook&Line	Seine	Trammel Net	Totals
1981	76,614	10,323	109	229	87,276
1982	29,488	4,230	112	102	33,931
1983	32,310	4,714	121	104	37,248
1984	31,308	5,469	635	1,018	38,431
1985	21,248	4,029	144	629	26,050
1986	19,304	3,205	100	0	22,609
1987	10,547	1,782	464	0	12,793
1988	44	29	0	0	73

3.9 Figures

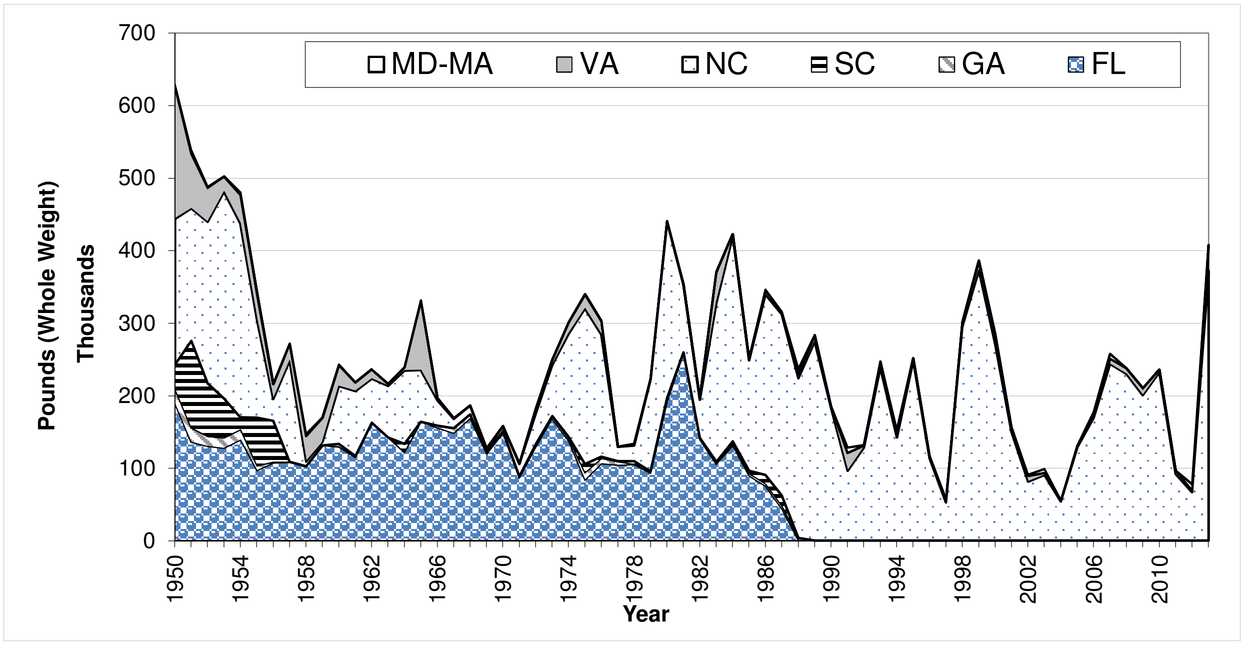


Figure 3.9.1. Red drum commercial landings in pounds (whole weight) by state from the US Atlantic coast, 1950-2013 (see text for data sources). MD-MA includes state landings from Maryland to Massachusetts excluding Virginia. Virginia landings were reported separately.

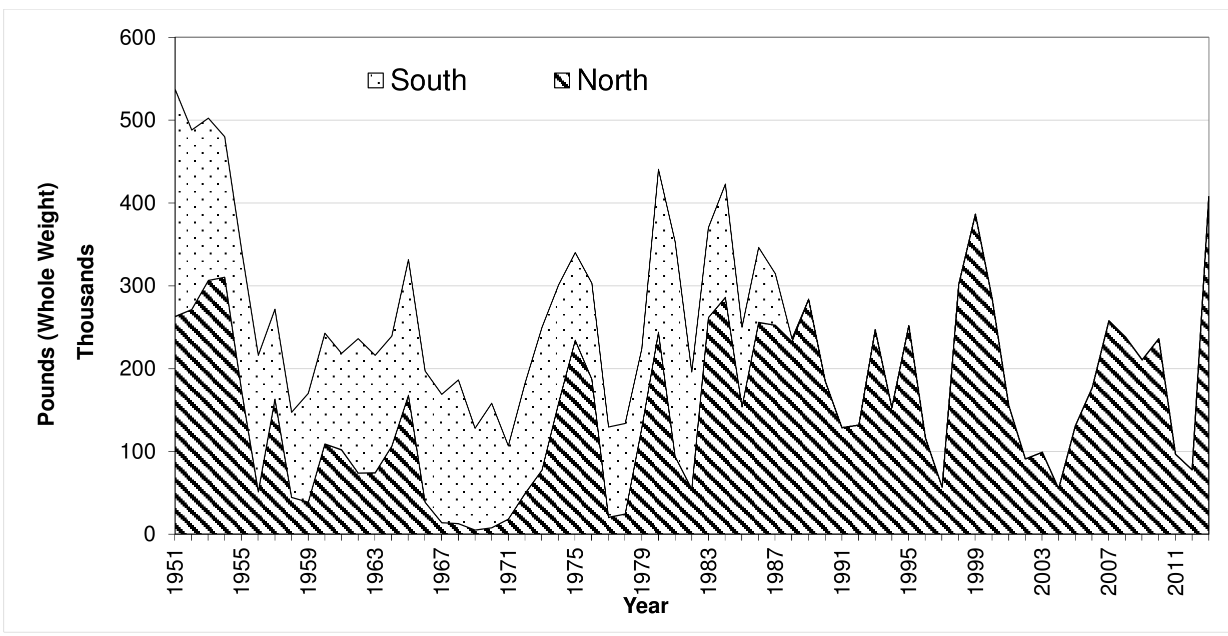


Figure 3.9.2. Red drum commercial landings in pounds (whole weight) by region from the US Atlantic coast, 1950-2013. Northern region includes states from Massachusetts to North Carolina. Southern region includes landings from South Carolina, Georgia, and Florida.

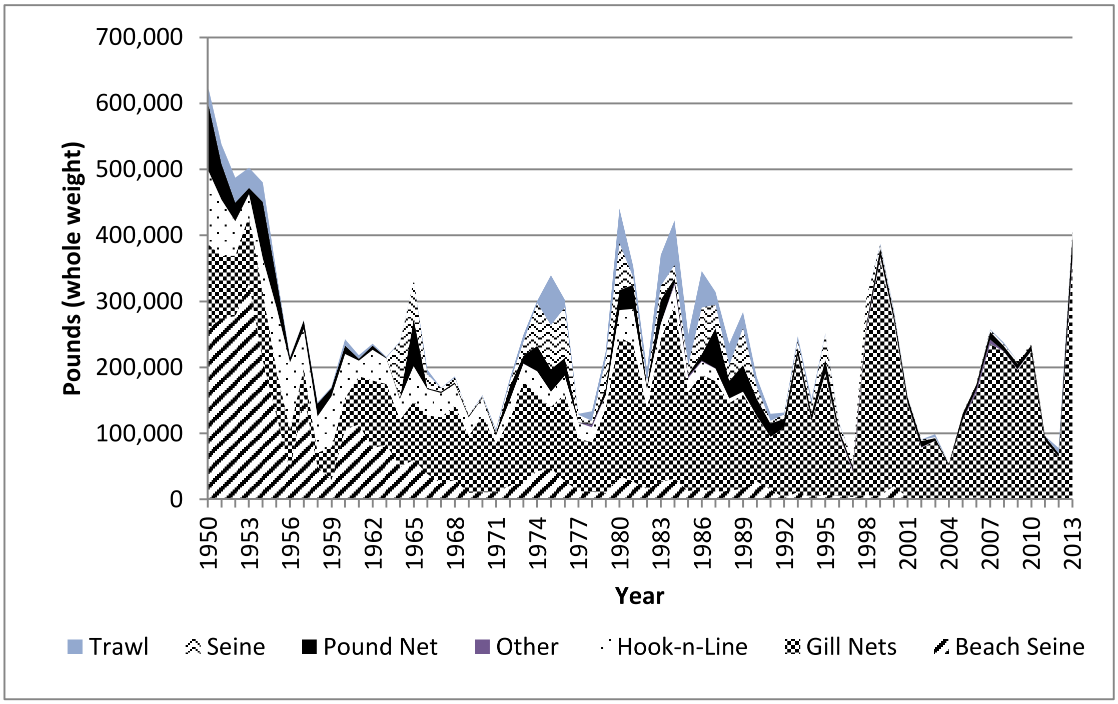


Figure 3.9.3. Red drum commercial landings in pounds (whole weight) by gear from the US Atlantic coast, 1950-2013 (see text for gear descriptions).

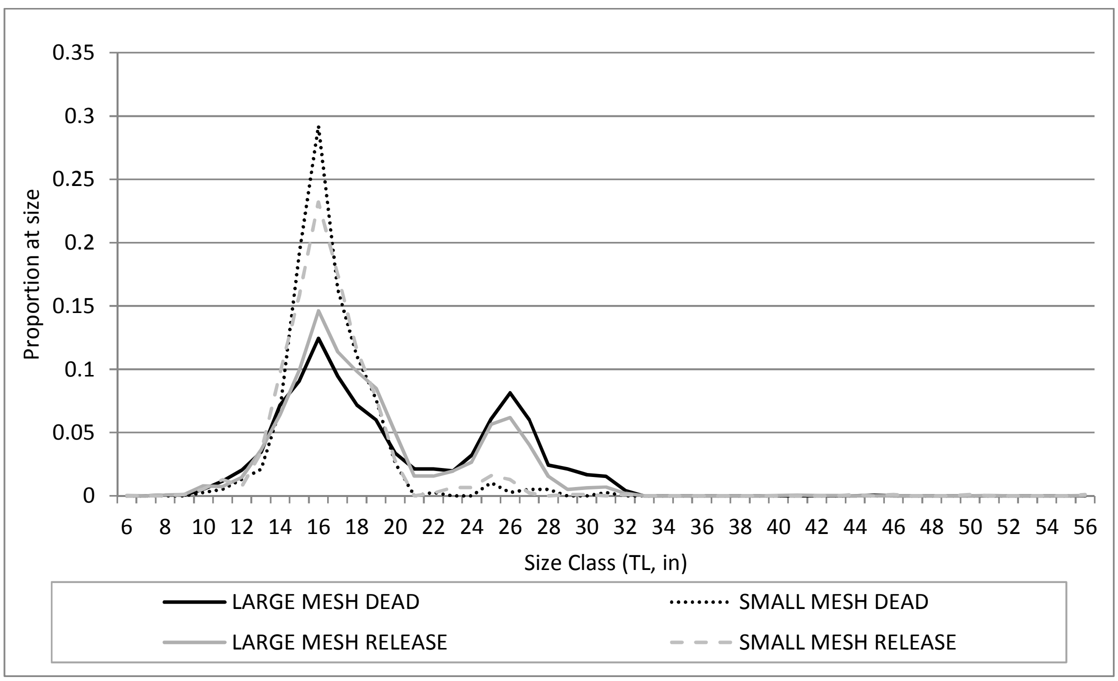


Figure 3.9.4. Size distribution of red drum observed from 2004 to 2013 in the North Carolina estuarine gillnet fishery. Size distributions are separated by dead and live releases and by large and small mesh gill net observations (large mesh defined as 5-inch and greater stretch mesh).

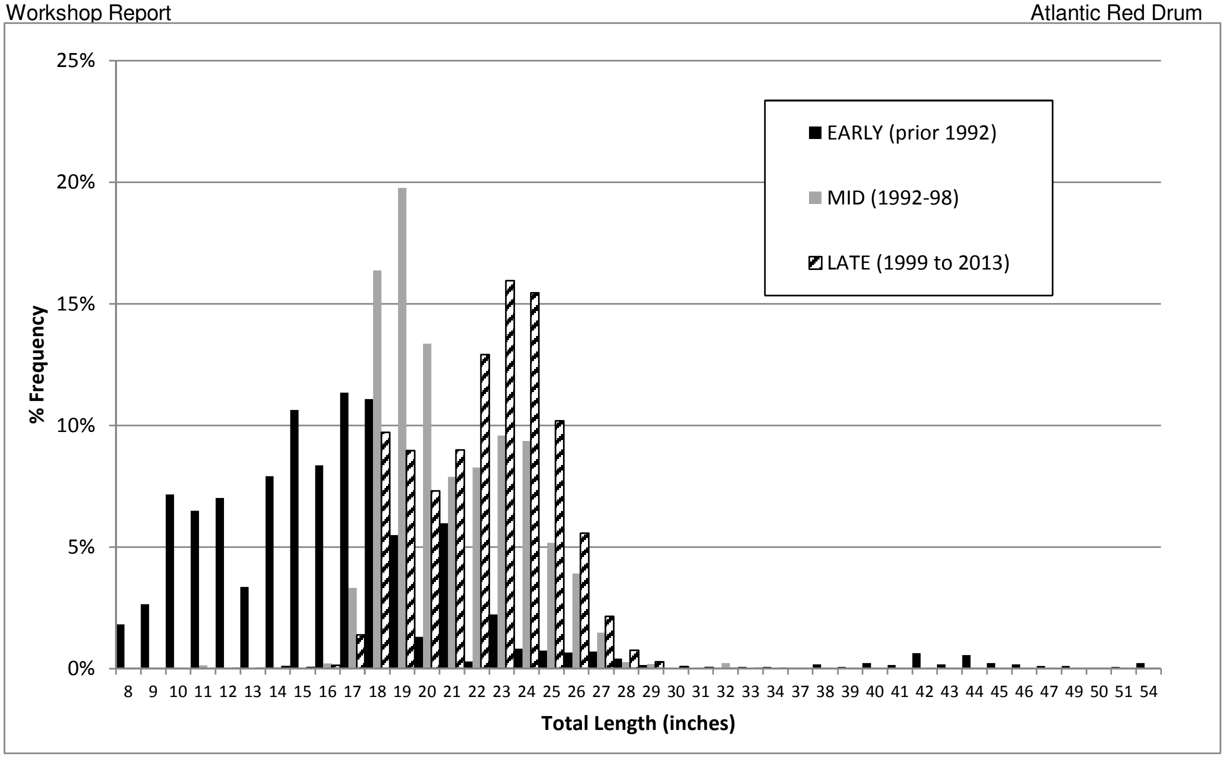


Figure 3.9.5. Size distributions for red drum harvested by commercial gears for North Carolina and north. Year groupings were determined by the management periods having different size restrictions and harvest limits for red drum.

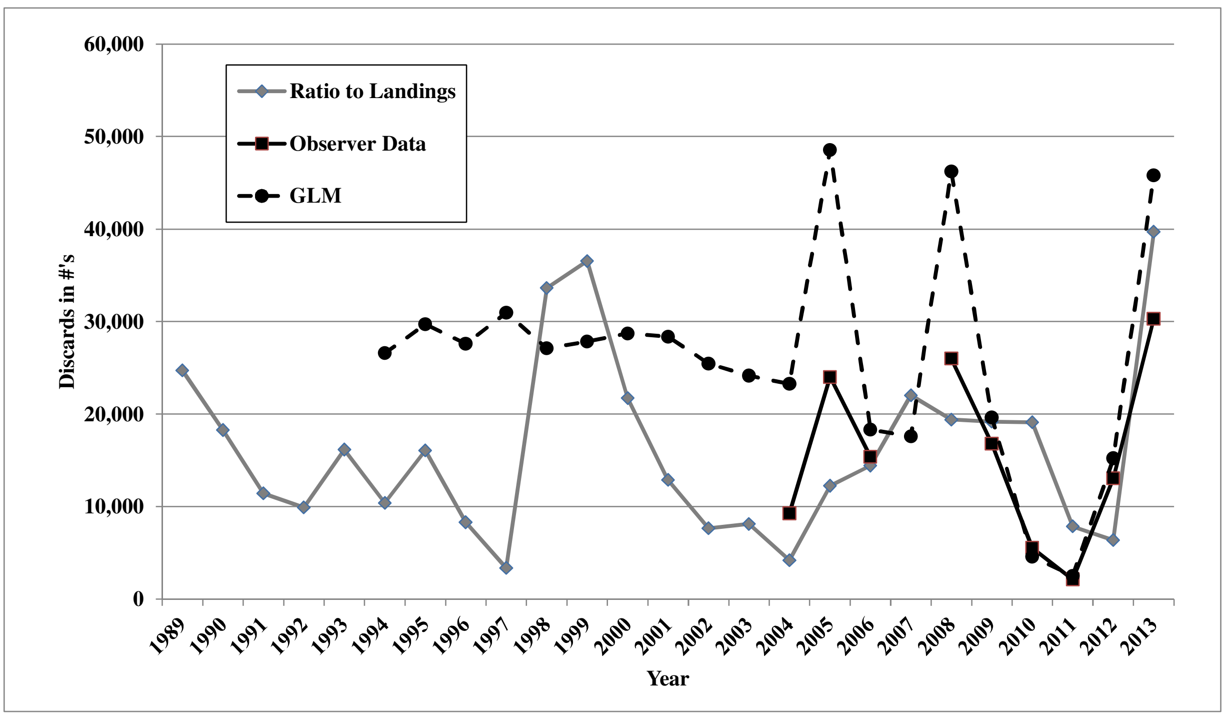


Figure 3.9.6. Estimates of discards from North Carolina's estuarine gill net fishery derived from observer data (2004-2006; 2008-2013). Other methods of extrapolation provided for comparison (ratio discard: landings; GLM using observer data and NC trip ticket data).

4. Recreational Fishery Statistics

4.1 Overview

4.1.1 Group Membership

Mike Murphy	FL FWCC
Jeff Kipp	ASMFC

4.2 Recreational Surveys

4.2.1 MRFSS/MRIP Introduction

The Marine Recreational Fishery Statistics Survey (MRFSS) was established to create a reliable database for estimating catch and effort by the marine recreational fishery (http://www.st.nmfs.gov/st1/recreational/survey/overview.html). In the traditional MRFSS methodology, data are collected by a telephone survey of households in coastal counties and by interviewing anglers at fishing access sites.

A review of the Marine Recreational Fisheries Statistics Survey (National Research Council 2006) found that its catch estimation did not account for several complexities in the survey design and recommended changes. After implementation of the new survey (Marine Resources Information Program, MRIP), previously collected MRFSS data have been used to calculate re-estimates beginning in 2004. The simultaneous estimates made under MRFSS and MRIP during this overlap period were used to calibrate the historic estimates (1981-2003) to an MRIP basis (Boreman 2012). Before running this calibration, several adjustments within the MRFSS-only time series needed to be made to account for within survey modifications: 1) during 1981-1985 MRFSS included headboat fishery landings which were separately estimated (Southeast Headboat Fishery Survey) beginning in 1986, and 2) new For-Hire surveys were introduced during the early 2000's to improve the effort estimation for this fishing mode. The adjustment factors needed for converting the data to be consistent with the most modern MRFSS survey design can be found in Sminkey (2008) and Matter (2012). Once the MRFSS time series was adjusted to be internally consistent, these consistent MRFSS data were calibrated to provide MRIP-survey-design-consistent estimates (SEDAR44-DW04).

4.2.2 MRFSS/MRIP General Recreational Harvest

Harvest numbers by state and associated PSEs are in table 4.5.1 and working paper (SEDAR44-DW04). The total harvest estimates for the northern and southern stocks are in Table 4.5.2 and figures 4.6.1 and 4.6.2. Harvest from the northern stock is highly variable in the 1980s, with the two greatest annual harvests during the time series (525,703 fish in 1983 and 281,614 fish in 1988). Harvest remains variable after the 1980s, but at lower magnitudes. Harvest in 2013 increases significantly to 292,194 fish. Harvest from the southern stock is also greatest during the 1980s. Harvest decreases in the late 1980s, before an increasing trend over the remaining time series.

4.2.3 MRFSS General Recreational Discards and Discards Trends

The access-point recreational fisheries surveys (angler intercept) ask anglers about any fish that was caught and then either landed with its body incomplete (gutted, filleted, etc), or not landed at all (released alive). Those that were released alive were designated as discards and the raw reported data were expanded to the estimated totals following the same procedures as the landed fish. Released alive estimates by state with associated PSEs are in table 4.5.1 and working paper SEDAR44-DW04. Released alive estimates by stock are in figures 4.6.3 and 4.6.4. Releases generally increase throughout the time series, with the greatest annual estimates occurring after 2009.

4.2.4 MRFSS/MRIP Biological Sampling

4.3.1.1.1 Sampling Methods

The only biological data collected during the routine MRFSS/MRIP/FHS surveys are length of fish and weight of landed fish. Both are collected opportunistically but field interviewers are instructed to measure and weigh up to fifteen fish of each available species from each angler interviewed. The individual fish are to be selected from the total landed catch at random to avoid any size-bias in the resultant sample. Fish are measured to the nearest mm fork length (center-line total length in non-forked fish) and weighed to the nearest 1/8 or ½ kg, depending on scale precision. Sample sizes of fish measured for length by year, state, and wave are in Table 4.12.3.No age samples are taken from MRFSS/FHS surveys.

4.3 Supplemental Recreational Sampling Sources

4.3.1 North Carolina Tag-Recapture Lengths

A major data-limitation for red drum is the lack of size data on fish released alive in recreational fisheries. In attempts to characterize the size composition of fish released alive in the recreational fishery, length data was obtained from tagging efforts in NC (SEDAR44-DW05). Lengths of tagged red drum that had been recaptured + measured + released alive + reported by recreational anglers in North Carolina were available from two tagging programs run by the North Carolina Division of Marine Fisheries: (i) tags applied by volunteer anglers and (ii) tags applied by the NCDMF fishery-independent surveys. Additional lengths were available in cases where multiple recaptures occurred subsequent to the release of a tagged fish from either a commercial or recreational entity not associated with the NCDMF tagging programs.

Length measurements were available from 753 fish that had been tagged by the volunteer angler program (angler recaptures occurred from 1987-2013), 1,438 fish that were tagged by NCDMF surveys (recaptured during 1986-2013) and 116 fish that were recaptured subsequent to a prior capture and release by either a recreational or commercial entity.

Most of the length data (n = 1,818) were from inland (estuarine) fishing areas (by MRIP definition), with less recreational releases reported from ocean waters (n = 571). Nineteen releases were reported for fish tagged in North Carolina, but recaptured and released in another state. These data were assumed to be representative of the overall catch and release component of the recreational fishery for northern stock fish. Additional details with tables are provided in working paper SEDAR44-DW05.

4.3.2 South Carolina Tag-Recapture Lengths

Similar efforts to characterize the size compositions of fish released alive in southern stock recreational fisheries were made utilizing SC tagging data (SEDAR44-DW05). Lengths of tagged red drum that had been recaptured + measured + released alive + reported by recreational anglers in South Carolina were available from three tagging programs run by the South Carolina Department of Natural Resources: (i) tags applied by volunteer anglers, (ii) tags applied by the SCDNR fishery-independent surveys of estuarine sub-adult red drum (primarily the stop net, electrofishing and trammel net surveys), and (iii) tags applied by SCDNR longline surveys of coastal adult red drum.

Length measurements were available from 5,097 fish that had been tagged by the volunteer angler program (angler recaptures occurred from 1988-2013), 7,813 fish that were tagged by sub-adult surveys (recaptured during 1987-2013) and 169 fish that were tagged by longline surveys (recaptured during 1997-2013).

Most of the length data (n = 12,018) were from inland fishing areas (by MRIP definition), with less data from areas ≤ 3 miles (n = 1,081), and very few from federal waters (> 3 miles, n = 33). These data were assumed to be representative of the overall catch and release component of the recreational fishery for southern stock fish. Additional details with tables are provided in working paper SEDAR44-DW05.

4.3.3 South Carolina Finfish Survey (SFS)

4.3.3.1 SC-SFS Description and Sampling design

The collection of inshore finfish intercept data in South Carolina is conducted through a non-random intercept survey at public boat landings and piers in the following areas: 1) Georgetown/Murrells Inlet, 2) Metropolitan Charleston, and 3) Beaufort/Hilton Head.

The survey focuses on known productive sample sites and, when it first started, was conducted during January – December using a questionnaire and interview procedures similar to those of the MRFSS. Since 2013 (when SCDNR was contracted to perform the March – December MRIP survey), the SC-SFS has only operated during the months January – February.

4.3.3.2 SC-SFS Background

Implemented in 1988, the SC-SFS was designed to address specific gaps within the MRFSS data, as identified by SCDNR staff. These data gaps were initially addressed by interviewing inshore anglers who were targeting red drum at specific sample locations. Since 2002, more emphasis has been placed on acquiring length data from all finfish retained by anglers, canvassing at additional sampling locations, and interviewing all private fishing boats within each area of the coast. Broadening the scope of the survey may decrease some of the bias associated with the previous SC-SFS protocol, which could potentially allow for better catch estimates and length frequency data.

4.3.3.3 SC-SFS Protocols

Sampling is conducted at public and selected private (with owner's permission) boat landings using a questionnaire and interview protocol similar to MRFSS/MRIP.

However, the SC-SFS questionnaire focuses on vessel surveys rather than individual angler surveys and primarily targets private boats.

Interviews are obtained from cooperative anglers at each sampling site. If an angler is unwilling to participate, they can decline to be interviewed. Assigned creel clerks interview as many anglers as time allows at any given site.

The sampling schedule is determined by "needs assessments" of the SCDNR Marine Resources Division and creel clerks. Individual creel clerks are assigned to a sampling region and will determine their daily sampling schedules based on local conditions (i.e. weather, landing closures, or events), additional job duties, and research and management initiatives. Attempts are made to assess all sampling sites equally, and individual creel clerks randomly rotate between all sampling locations within their region. Creel clerks will remain at boat landings with fishing activity. If boat landings have little or no fishing activity, creel clerks move to alternative sampling locations in close proximity.

4.3.3.4 SC-SFS Landings

Table 4.5.8 shows summary information from the SC-SFC for 1988 through 2013, including number of interviews (total number = 8,004), numbers of red drum caught, (total = 25,724) and estimates of CPUE.

4.3.3.5 SC-SFS Biological Sampling

Samples numbers for red drum length data are presented in Table 4.5.9, with a total of 11,256 fish measured on 2,427 separate dates from 1988 through 2013.

4.3.3.6 SC-SFS Comments on Adequacy for Characterizing Catch

Length data from the SFS could be helpful if there are gaps in the MRFSS/MRIP length data for SC. However, since there are only biased estimates from directed sampling in non-random locations, estimates of total catch and harvest that are equivalent to MRFSS/MRIP cannot be produced.

4.3.4 South Carolina Captains' Logbook -

4.3.4.1 SC Logbook Landings

Trip level red drum catch data are available from 1993-2013 (36,540 records) with an average of ~1,700 records per year (Table 4.5.10). Strata include area fished, number of anglers, pounds landed and number released.

4.3.4.2 SC Logbook Biological Sampling

Length data of harvested and released data are available from 2007-2008 from a short-term, targeted study. Over 3,500 red drum lengths (total length in inches and converted to mm) are available by area fished.

4.3.4.3 SC Logbook Comments on Adequacy for Characterizing Catch

Since the logbook is a census, estimates of total catch and harvest could be produced in additional to SC data generated through MRFSS/MRIP. Length data of B2 red drum are probably biased compared to the behavior of recreational anglers in general because charter boat captains release a higher portion of fish in the slot limit.

4.3.5 South Carolina Freezer Program

The SCDNR freezer program collects filleted fish carcasses that have been donated to SCDNR by recreational anglers at conveniently located drop-off freezers. It enables scientists to collect biological information needed for population assessments, such as the size, age and sex composition of harvested fish.

Data were available from a total of 2,071 harvested red drum caught during 939 fishing trips from the period 1995 – 2013 (Table 4.5.11).

4.3.6 South Carolina Tournament Program

Like the SC freezer program, the tournament program enables information on the size, age and sex composition of harvested fish to be gathered. SCDNR staff members attend weekend tournaments and collect measurements and biological samples from certain species of interest, including red drum. To minimize bias in the sizes of fish sampled, all of a cooperating angler's harvested fish are examined, rather than just the trophy fish. Note, however, that red drum became less frequently targeted by tournaments since the introduction of the size slot limit.

Data were available from a total of 873 harvested red drum from 125 tournaments that were attended between 1986 and 2013.

4.3.7 GA DNR Sportfish Carcass Recovery Project

4.3.7.1 Methods, Gears, and Coverage:

In the fall of 1997 the Georgia Department of Natural Resources (DNR) initiated the Marine Sportfish Carcass Recovery Project. This project takes advantage of the fishing efforts of hundreds of anglers by turning filleted fish carcasses that anglers would normally discard into a source of much needed data on Georgia's marine sportfish. Chest freezers are placed near the fish cleaning stations at 17 locations along coastal Georgia. Each freezer is marked with an identifying sign and a list of target fish species. Cooperating anglers place the filleted carcasses, with head and tail intact, in a bag, drop in a completed angler information card, and then place the bag in the freezer. Each fish is identified to species, the fish length is measured, sex is determined when possible, and the otoliths are removed. A subsection of otoliths are aged annually.

4.3.7.2 Sampling Intensity:

It was decided during the assessment that each day would be considered an independent sampling event.

4.3.7.3 Size/Age

The majority of fish aged are age-1.

4.3.7.4 Catch Rates – Number and Biomass

The number of red drum collected by the Carcass Recovery Project ranged from 229 in 2006 to 1336 in 2010 with an average of 581 fish collected each year. A total of 9884 red drum have been processed by staff since the project began. These fish ranged in size from 225-950 mm FL with an average of 402 mm FL.

4.3.8 FL Recreational Logbooks (methods, intensity, length/age distributions)

Records of the lengths of live-release red drum were collected from volunteer anglers who were randomly chosen from a list of Florida's licensed fishermen during 2002-2010. Each cooperating fisherman completed entrees into a one-day fishing logbook. This data collection was changed to a 'catch card' survey in 2012. The new survey instrument was a postpaid card left on a suspected-angler vehicles at boat ramps and fishing structures during normal MRIP creel survey operations. The instruction on this card requested information on lengths and numbers of red drum, snook, and spotted seatrout captured (both kept and released). These programs were not very successful on the Atlantic coast of Florida, collecting fewer than 25 fish each year, except in 2012 when a large number of large (>30 inches) fish were recorded (Table 4.5.12). Newer information available data entered via mobile device program (Angler Action, http://www.snookfoundation.org) was made available late in this assessment cycle but holds promise for valuable information on the lengths of angler-live-released fish.

4.1.1 Length composition

The calibrated MRFSS/MRIP survey provides estimates of the number of red drum caught by anglers that were available for inspection (Type A), the numbers that were caught and killed but were not available (Type B1), and the number of red drum that the angler indicated were released alive (Type B2). When feasible, the fish in the Type A category are measured for length (midline or fork length in red drum) and weighed. Additional red drum length data from the identifiable catch of red drum were provided by the FL Recreational Logbooks, Georgia carcass recovery program (1999-2013), the South Carolina sportfishing survey (1991-2013), SC tag-recapture data, NC tag-recapture data, and the Virginia marine sportfish collection (2007-2013). All lengths were converted to total length using the length-length relations reported in the Meristics and Conversion Section of this report.

The Type A length samples of red drum need to be weighted or expanded to reflect the estimated number of red drum of this type within each strata of the MRIP survey. Strata included in the sampling design are: state, year, wave (2-month period), and fishing mode (shore-based, partyboat, charterboat, party/charterboat, and private/rental boat). During the angler interview an additional stratum is identified: area fished (inshore, ocean in state waters, ocean in federal waters). These strata were identified for each sample from the South Carolina sportfishing survey. For the carcass recovery data from Georgia and Virginia it was assumed that the mode of fishing was private/rental boat and the area fished was inshore. The difficulty encountered in expanding the length data is the sparse sampling for some strata, though often these strata have low estimates of fish caught also. A hierarchical pooling scheme was developed to objectively assign length samples to strata when data pooling was required (see SEDAR44-DW06 for additional details). As a first step, all individual strata with at least 20 length measurements were expanded to the strata estimate directly. For strata with inadequate length samples, the catch estimate and length frequencies were pooled across boat-based fishing modes (charter boat/partyboat/private/rental boat) while maintaining the other strata identification, i.e., state, year, wave, area fished. Those with pooled length samples of at least 20 were expanded to the strata's estimated catch. This continued using the same criteria to accept the length sample as adequate (at least 20 length measurements) by sequentially adding an additional level of pooling : 1) all ocean strata (ocean in state waters/ocean in federal waters), then 2) collapse waves to seasons (January-June, July-December), then 3) all states within a region as long as the size limit management is the same within that region that year, and then 4) region/management as in (3) but for all data that year, without regard to the collapsed fishing mode, area fished or seasonal strata. To assign lengths to the remaining estimates, data were pooled within a region/ management block across years, or were manual assigned if there were no length data for an estimate after this entire process was conducted. Final length frequencies by state are provided in Table 4.5.4.

The same hierarchical pooling scheme was performed for Type B2 fish using the lengths of fish reported to be released from logbook, angler card surveys and from live releases reported for tagged fish. The minimum sample threshold was set lower to 5 fish. The final category of lengths (Type B1) in MRFSS/MRIP were estimated to have a length composition that reflected to sum of the final Type A and Type B2 length frequencies.

4.1.2 Recreational Removals Age composition

The length frequencies developed from biological sampling programs were converted to ages using annual age-length keys derived from all available age-length data (SEDAR44-DW06). These data were not exclusively collected from fish sampled from the recreational landings but also included red drum sampled for length and age from scientific surveys and commercial landings. Age-length keys had the dimensions of integer inch total length (5-50+) and model age (1-10+). Annual age-length keys were developed by state when there were at least 300 age-length data pairs available, otherwise within-state keys were developed from data collected across a group of years. In the northern region, age-length data were combined across states each year because of the reduced level of estimated catch and age-length sampling north of North Carolina. Besides pooling across years when annual keys were not available, the extremes in the range of lengths were often under-sampled for ages so some ad hoc across-year pooling was required, especially for fish greater than 35" TL or those less than 10" TL. Many of these fish were in the 10+ age group or the age 1 group, respectively. Age compositions for harvest and release recreational fisheries by state are provided in working paper SEDAR44-DW06.

Historical Data

Estimates of recreational removals for years prior to the start of the MRFSS in 1981 were developed to provide historical information on the red drum stocks, which are assumed to already have experienced intense fishing as the MRFSS began. Estimates were developed back to 1950 with methods described by ASMFC (2014). This year also coincides with the beginning of the time series of commercial landings from NMFS. Data on fishing effort were available from the USFWS National Fishing License Reports (http://wsfrprograms.fws.gov/Subpages/LicenseInfo/Fishing.htm) from 1958-2013 for each state and the National Survey of Fishing, Hunting, and Wildlife-Associated Recreation (FHWAR). Estimate of the percentage of license holders fishing in saltwater from the FHWAR are applied to total number of licensed anglers in each state to estimate total anglers fishing in a given year and state. Participation data were extrapolated to years when estimates were unavailable between 1950 and 1980. The average MRFSS CPUE from 1981-1985, or the first three years with catch estimates, for each state is applied to the number of participants to estimate historical harvest and releases. Additional details are provided in working paper SEDAR44-DW07

On average, Florida had the highest number of saltwater anglers followed by

Virginia, North Carolina, New Jersey, Georgia, South Carolina, Maryland, and Delaware (Table 4.5.5). The number of participants accelerated faster in Florida from 1950 to mid-1970s than in any other state. Recreational harvest in the southern stock increased steadily through the mid-1970s to a peak of 666,620 fish and then declined through 1980 (Table 4.5.6, Figure 4.6.5). Recreational harvest in the northern stock was much lower than the southern stock and does not exceed 100,000 fish during this historical period Recreational releases followed the same trend as the harvest (same effort estimates), but at much lower magnitudes due to lower CPUE estimates from the release fishery (Table 4.5.7, figure 4.6.6). There are no biological data to characterize the size composition of historical recreational harvest or releases.

4.4 Literature Cited

Boreman, J. 2012. Consultant's report: summary of the MRFSS/MRIP calibration workshop. Meeting held 27-29 March 2012, Raleigh, NC. (https://www.st.nmfs.noaa.gov/Assets/recreational/pdf/MRFSS_MRIP_Calibration_Workshop_Report_2012.pdf)

Clark, J.R. 1962. The 1960 Salt-Water Angling Survey. U.S. Department of the Interior, Bureau of Sport Fisheries and Wildlife, Circular 153, 36 pp.

Deuel, D.G. 1973. The 1970 Salt-Water Angling Survey. U.S. Department of Commerce, National Marine Fisheries Service, Current Fishery Statistics No. 6200, 54 pp.

Deuel, D.G. and J.R. Clark. 1968. The 1965 Salt-Water Angling Survey. U.S. Department of the Interior, Bureau of Sport Fisheries and Wildlife, Resource Publication 67, 51 pp.

Matter, V. 2012. Recreational survey data for Spanish Mackerel and Cobia in the Atlantic and Gulf of Mexico from the MRFSS and TPWD surveys. SEDAR28-DW14. (http://sedarweb.org/docs/wpapers/SEDAR28-DW14%20v3%20Matter%202012.pdf)

National Research Council. 2006. Review of Recreational Fisheries Survey Methods. Committee on the Review of Recreational Fisheries Survey Methods, National Academy of Sciences, National Academy Press, Washington, D.C. (http://www.nap.edu/catalog/11616.html).

Salz, R., T. Miller, E. Williams, J. Walter, K. Drew, and G. Bray. 2012. MRFSS/MRIP Calibration Workshop Ad-hoc Working Group Report. (http://sedarweb.org/docs/supp/MRFSS_MRIP%20Calibration%20Ad-hoc%20Working%20Group%20FINAL%20report.pdf)

Sminkey, T. 2008. Estimated conversion factors for calibrating MRFSS charterboat landings and effort estimates from the southeastern US (North Carolina to Florida-east coast) in 1981-2003 with For-Hire Survey estimates with application to King Mackerel landings. SEDAR16-DW-15. (http://sedarweb.org/docs/wpapers/S16_DW_15.pdf).

4.5 Tables

Table 4.5.1. Adjusted MRIP landings and live-release estimates and proportional standard errors for Florida and Georgia. *Unadjusted for missing wave 1 estimate.

	Florida				Georgia			
	Landings		Live-release		Landings		Live-release	
Year	Est	PSE	Est	PSE	Est	PSE	Est	PSE
1981	63,205*	0.433	9,455	1.425	5,717	0.389	0	
1982	212,426	0.500	10,458	1.244	27,757	0.443	3,173	0.734
1983	342,716	0.357	57,084	0.811	52,148	0.312	1,297	0.667
1984	548,085	0.298	49,229	0.766	238,013	0.231	5,969	0.936
1985	245,078	0.349	202,117	0.586	172,639	0.197	6,512	0.378
1986	117,682	0.353	104,373	0.442	93,162	0.197	53,523	0.264
1987	54,595	0.550	395,026	0.426	123,801	0.203	220,926	0.225
1988	7,211	0.816	243,685	0.545	127,641	0.441	167,972	0.276
1989	32,985	0.396	179,873	0.427	46,346	0.234	67,025	0.315
1990	45,209	0.386	71,680	0.365	69,122	0.236	146,765	0.437
1991	99,336	0.240	670,400	0.451	146,835	0.245	88,127	0.358
1992	98,176	0.181	296,862	0.229	76,290	0.182	121,190	0.243
1993	66,971	0.184	486,498	0.238	96,151	0.193	132,405	0.313
1994	119,696	0.163	720,918	0.209	121,655	0.223	137,075	0.276
1995	95,198	0.187	712,927	0.184	124,357	0.223	336,888	0.285
1996	144,798	0.298	522,494	0.188	55,991	0.220	67,978	0.272
1997	69,369	0.214	585,029	0.194	35,337	0.202	21,041	0.328
1998	105,163	0.173	506,364	0.175	23,449	0.229	32,152	0.244
1999	128,499	0.141	602,572	0.160	61,662	0.245	17,336	0.570
2000	193,962	0.136	739,877	0.145	85,222	0.212	121,659	0.251
2001	182,701	0.142	894,528	0.150	81,656	0.317	234,752	0.284
2002	124,550	0.155	698,270	0.183	83,356	0.201	158,656	0.210
2003	156,213	0.147	772,792	0.169	110,621	0.178	255,956	0.185
2004	136,728	0.128	1,006,814	0.140	138,893	0.242	141,972	0.220
2005	195,550	0.177	1,405,967	0.181	105,655	0.187	334,521	0.229
2006	145,860	0.130	847,269	0.123	68,813	0.228	136,306	0.178
2007	161,427	0.140	758,684	0.138	113,237	0.220	225,985	0.201
2008	159,246	0.168	889,550	0.159	133,107	0.187	313,743	0.248
2009	79,635	0.146	521,659	0.109	68,857	0.205	167,704	0.218
2010	175,828	0.145	1,414,115	0.132	194,826	0.218	483,650	0.196
2011	180,001	0.128	1,051,143	0.140	106,962	0.220	213,781	0.264
2012	238,191	0.149	799,428	0.100	45,766	0.259	90,237	0.173
2013	297,527	0.121	1,541,541	0.162	73,827	0.194	198,722	0.301

Table 4.5.1. (cont'd) Continued Adjusted MRIP landings and live-release estimates and proportional standard errors for South Carolina and North Carolina. ^No intercepts so interpolated from adjacent year estimates.

	South Carolina				North Carolina			
	Landings		Live-release		Landings		Live-release	
Year	Est	PSE	Est	PSE	Est	PSE	Est	PSE
1981	25,718	0.586	428	1.180	70,732	3.482	13,213	3.566
1982	143,738	0.234	2,403	1.206	54,360	1.316	0	
1983	95,429	0.500	9,490	0.737	499,727	0.984	2,078	1.475
1984	122,808	0.405	12,916^	0.000	195,136	3.479	205,178	10.230
1985	384,598	0.226	16,343	0.456	53,586	1.323	0	
1986	182,790	0.254	24,142	0.416	48,839	1.073	0	
1987	477,051	0.225	84,499	0.317	115,759	0.405	41,866	0.847
1988	270,587	0.255	274,598	0.283	277,597	0.450	37,187	1.065
1989	119,686	0.267	43,797	0.484	104,094	0.486	11,188	0.733
1990	113,270	0.386	104,113	0.481	44,606	0.347	39,651	1.406
1991	112,968	0.309	102,471	0.541	50,738	0.249	206,767	0.467
1992	103,249	0.199	46,889	0.336	34,170	0.379	89,651	0.422
1993	113,460	0.332	149,686	0.703	83,076	0.233	492,422	0.673
1994	119,561	0.542	331,065	0.225	39,273	0.291	206,239	0.576
1995	183,302	0.728	365,623	0.269	127,074	0.219	307,199	0.347
1996	124,906	0.316	197,765	0.317	55,441	0.226	50,571	0.382
1997	125,771	0.226	192,560	0.305	10,928	0.393	603,821	0.402
1998	45,791	0.212	85,512	0.208	148,268	0.193	346,735	0.239
1999	43,140	0.308	93,425	0.223	85,536	0.189	344,234	0.229
2000	35,425	0.294	99,415	0.222	81,340	0.170	275,547	0.219
2001	59,147	0.343	225,632	0.223	28,663	0.216	316,790	0.246
2002	39,694	0.273	154,847	0.230	78,890	0.244	1,232,930	0.350
2003	154,111	0.294	441,356	0.208	24,232	0.210	85,447	0.249
2004	107,803	0.206	438,173	0.182	30,017	0.241	181,252	0.128
2005	130,655	0.216	493,595	0.135	51,807	0.215	378,541	0.234
2006	48,703	0.282	539,936	0.174	55,714	0.159	510,264	0.156
2007	72,261	0.234	436,797	0.162	66,789	0.293	416,352	0.162
2008	119,471	0.227	552,217	0.177	50,809	0.165	658,887	0.123
2009	70,326	0.198	751,123	0.167	57,543	0.165	429,776	0.152
2010	172,708	0.174	786,452	0.135	64,024	0.108	635,876	0.103
2011	161,503	0.182	664,291	0.108	45,143	0.152	207,697	0.127
2012	121,068	0.244	543,618	0.103	52,948	0.126	1,533,010	0.104
2013	97,386	0.182	673,377	0.102	164,218	0.112	654,030	0.112

Table 4.5.1. Contd Adjusted MRIP landings and live-release estimates and proportional standard errors for Virginia and Maryland.

	Virginia				Maryland			
	Landings		Live-release		Landings		Live-release	
Year	Est	PSE	Est	PSE	Est	PSE	Est	PSE
1981	33,460	0.560	0		0		0	
1982	0		0		0		0	
1983	24,986	0.660	0		990	1.243	0	
1984	1,358	1.470	0		0		0	
1985	0		1,396	1.557	0		0	
1986	21,308	0.331	7,222	0.804	0		0	
1987	1,875	0.855	0		0		0	
1988	4,017	1.040	4,413	1.378	0		0	
1989	9,353	0.413	6,692	0.678	1,065	1.243	3,936	1.643
1990	0		888	1.182	1,486	1.243	0	
1991	12,217	0.482	18,105	1.617	3,008	0.769	5,971	1.808
1992	8,950	0.357	14,628	0.516	0		0	
1993	10,797	0.720	60,504	0.960	0		0	
1994	929	0.563	10,159	0.412	0		0	
1995	2,471	0.496	34,252	0.574	0		0	
1996	533	1.459	2,649	0.892	0		0	
1997	1,540	0.898	121,617	0.699	0		0	
1998	9,593	0.347	96,438	0.334	0		3,734	1.731
1999	8,632	0.376	228,878	0.376	0		2,897	1.594
2000	16,154	0.280	188,323	0.423	0		1,964	2.714
2001	4,697	0.369	32,918	0.604	0		0	
2002	43,303	0.352	945,683	0.317	6,273	0.915	24,825	0.843
2003	9,952	0.394	41,927	0.478	0		3,954	2.043
2004	5,005	0.861	33,777	0.332	0		0	
2005	2,766	1.000	28,351	0.460	0		0	
2006	12,665	0.627	185,859	0.375	6,362	1.000	12,357	0.716
2007	46,405	0.282	110,566	0.282	0		0	
2008	20,847	0.326	236,787	0.181	0		217	0.901
2009	38,670	0.274	178,396	0.437	0		14,754	0.726
2010	11,076	0.315	28,580	0.302	0		2,182	0.980
2011	0		61,330	0.590	0		0	
2012	28,159	0.622	2,503,456	0.286	17,869	1.000	280,171	0.476
2013	124,156	0.341	220,305	0.349	2,134	0.426	2,207	0.701

Table 4.5.2 Calibrated MRFSS/MRIP Recreational Harvest (A+B1) estimates of Red Drum in numbers of fish for the Northern Stock (Maryland, Virginia, and North Carolina) and the Southern Stock (South Carolina, Georgia, and Florida).

	Northern Stock	Southern Stock
Year	**NC/VA/MD rec harvest (A+B1)**	**FL/GA/SC rec harvest (A+B1)**
1981	104,192	94,640
1982	83,583	383,921
1983	525,703	490,293
1984	196,494	908,906
1985	53,586	802,315
1986	70,147	393,635
1987	117,634	655,446
1988	281,614	405,439
1989	114,512	199,017
1990	46,091	227,601
1991	65,963	359,139
1992	43,120	277,715
1993	93,873	276,582
1994	40,203	360,912
1995	129,545	402,857
1996	55,973	325,695
1997	12,468	230,477
1998	157,861	174,403
1999	94,168	233,301
2000	97,493	314,609
2001	33,538	323,503
2002	128,606	247,600
2003	34,184	420,945
2004	35,021	383,424
2005	54,574	431,860
2006	75,209	263,375
2007	113,195	346,925
2008	71,656	411,825
2009	96,213	218,818
2010	75,100	543,361
2011	46,098	448,466
2012	99,272	405,026
2013	292,194	468,739

Table 4.5.3. Sample size of lengths collected by MRFSS and MRIP biological sampling by year, state, and wave. Cells with NA indicate no recreational harvest. (Florida and Georgia)

	Year	Wave							Year	Wave					
		1	2	3	4	5	6			1	2	3	4	5	6
Florida	1981	NA	NA	6	4	14	1	Georgia	1981	NA	NA	1	19	NA	NA
	1982	0	NA	8	9	52	33		1982	NA	NA	4	0	18	2
	1983	4	2	8	24	57	56		1983	NA	NA	NA	34	61	13
	1984	20	11	34	33	40	40		1984	NA	NA	4	183	13	18
	1985	4	18	8	25	6	4		1985	17	6	71	282	232	161
	1986	1	1	17	25	18	2		1986	32	23	25	71	98	35
	1987	11	1	1	NA	4	5		1987	2	7	13	68	231	167
	1988	NA	NA	NA	2	0	NA		1988	14	1	8	16	130	53
	1989	1	NA	1	1	10	2		1989	7	2	9	16	79	46
	1990	1	NA	2	5	3	7		1990	NA	17	1	8	50	0
	1991	2	1	2	5	21	16		1991	NA	6	3	1	41	17
	1992	3	1	7	16	11	18		1992	NA	23	2	11	81	59
	1993	8	1	5	18	20	15		1993	NA	2	7	10	35	56
	1994	17	5	14	20	39	5		1994	NA	20	10	11	43	76
	1995	15	5	5	22	28	6		1995	NA	3	18	5	59	47
	1996	10	11	16	19	36	22		1996	NA	28	12	5	23	10
	1997	2	0	9	12	24	12		1997	NA	2	2	0	8	7
	1998	4	17	18	12	32	36		1998	NA	4	3	3	16	0
	1999	27	24	33	37	80	29		1999	NA	1	0	2	11	13
	2000	33	29	32	33	80	60		2000	NA	4	9	4	69	25
	2001	23	20	40	66	88	42		2001	NA	2	NA	8	70	70
	2002	24	26	20	27	71	35		2002	NA	22	8	18	89	52
	2003	18	19	36	50	46	42		2003	NA	48	21	17	90	122
	2004	16	29	27	30	58	22		2004	NA	25	23	11	55	83
	2005	18	23	31	40	63	40		2005	NA	6	5	16	169	76
	2006	47	28	25	30	49	35		2006	NA	13	10	5	64	31
	2007	24	34	29	43	51	22		2007	NA	11	4	2	154	127
	2008	20	21	21	31	59	32		2008	NA	39	12	5	104	101
	2009	13	19	16	22	61	21		2009	NA	15	12	9	68	61
	2010	6	37	38	54	54	30		2010	NA	21	23	11	142	282
	2011	23	24	25	47	31	29		2011	NA	24	16	13	93	52
	2012	49	42	25	38	59	44		2012	NA	15	0	8	30	36
	2013	29	7	30	34	26	18		2013	NA	9	18	4	45	25

Table 4.5.3. Cont'd Sample size of lengths collected by MRFSS and MRIP biological sampling by year, state, and wave. Cells with NA indicate no recreational harvest. (South Carolina and North Carolina)

South Carolina

Year	Wave					
	1	2	3	4	5	6
1981	NA	NA	NA	0	26	NA
1982	NA	1	3	38	31	2
1983	NA	NA	NA	2	35	NA
1984	NA	2	0	9	23	23
1985	NA	NA	1	11	41	63
1986	NA	3	5	27	38	5
1987	NA	21	3	13	151	99
1988	NA	13	19	18	55	92
1989	NA	5	40	43	80	25
1990	NA	19	12	18	21	31
1991	NA	9	4	2	12	17
1992	NA	5	4	27	79	60
1993	NA	11	NA	19	61	42
1994	NA	9	4	27	22	33
1995	NA	4	2	43	86	58
1996	NA	27	39	18	86	31
1997	NA	6	20	5	93	93
1998	NA	10	6	7	68	37
1999	NA	17	8	12	43	18
2000	NA	3	15	8	5	23
2001	NA	2	5	6	12	30
2002	NA	4	15	17	12	16
2003	NA	15	0	7	9	6
2004	NA	3	20	11	48	46
2005	NA	0	8	14	30	18
2006	NA	10	3	7	17	13
2007	NA	1	2	2	15	16
2008	NA	15	7	7	16	33
2009	NA	6	8	8	25	20
2010	NA	20	22	30	57	91
2011	NA	15	39	40	39	35
2012	NA	17	14	13	14	14
2013	NA	8	14	45	41	39

North Carolina

Year	Wave					
	1	2	3	4	5	6
1981	NA	NA	NA	2	8	NA
1982	NA	2	NA	2	4	NA
1983	NA	NA	3	1	5	NA
1984	NA	NA	1	NA	6	6
1985	NA	NA	NA	1	2	8
1986	NA	NA	NA	NA	4	NA
1987	NA	NA	NA	14	31	5
1988	NA	9	2	18	50	18
1989	1	5	6	15	44	30
1990	NA	0	3	20	40	10
1991	NA	7	2	14	57	21
1992	NA	NA	3	8	25	6
1993	NA	13	18	9	62	15
1994	NA	5	22	23	31	9
1995	NA	7	14	47	123	49
1996	NA	2	25	26	55	6
1997	NA	7	3	2	10	8
1998	NA	1	17	142	346	28
1999	NA	6	56	53	69	15
2000	NA	22	16	42	36	14
2001	NA	15	13	6	33	6
2002	NA	4	9	19	41	13
2003	NA	4	16	14	11	7
2004	NA	3	10	12	14	1
2005	NA	1	5	8	22	12
2006	1	3	16	14	32	13
2007	NA	2	6	8	14	41
2008	1	2	14	25	28	22
2009	2	12	25	19	54	24
2010	12	29	31	61	49	11
2011	8	12	29	30	34	34
2012	3	15	21	29	35	29
2013	9	7	29	70	148	70

Table 4.5.3. Cont'd Sample size of lengths collected by MRFSS and MRIP biological sampling by year, state, and wave. Cells with NA indicate no recreational harvest.(Virginia and Maryland)

Virginia

Year	Wave 1	2	3	4	5	6
1981	NA	NA	10	NA	NA	NA
1982	NA	NA	NA	NA	NA	NA
1983	NA	NA	NA	NA	9	NA
1984	NA	NA	NA	NA	1	NA
1985	NA	NA	NA	NA	NA	NA
1986	NA	NA	2	18	39	1
1987	NA	NA	2	NA	NA	NA
1988	NA	NA	NA	NA	1	NA
1989	NA	NA	NA	3	12	1
1990	NA	NA	NA	NA	NA	NA
1991	NA	NA	NA	6	6	NA
1992	NA	14	2	NA	6	NA
1993	NA	3	NA	NA	1	2
1994	NA	1	NA	NA	1	NA
1995	NA	NA	1	1	1	1
1996	NA	NA	NA	NA	1	NA
1997	NA	NA	0	NA	1	1
1998	NA	NA	0	5	7	NA
1999	NA	2	NA	3	4	2
2000	NA	9	2	NA	10	0
2001	NA	2	2	1	1	NA
2002	NA	0	2	1	23	12
2003	NA	2	7	1	6	NA
2004	NA	3	NA	NA	1	NA
2005	NA	NA	NA	NA	NA	3
2006	NA	0	NA	NA	2	9
2007	NA	5	6	6	22	47
2008	NA	7	5	9	4	3
2009	NA	3	4	7	20	1
2010	NA	7	NA	4	4	12
2011	NA	NA	NA	NA	NA	NA
2012	NA	NA	NA	4	9	2
2013	NA	NA	30	9	34	13

Maryland

Year	Wave 1	2	3	4	5	6
1981	NA	NA	1	NA	NA	NA
1982	NA	NA	NA	NA	NA	NA
1983	NA	NA	NA	0	3	NA
1984	NA	NA	NA	NA	NA	NA
1985	NA	NA	NA	NA	NA	NA
1986	NA	NA	NA	10	NA	NA
1987	NA	NA	NA	NA	NA	NA
1988	NA	NA	NA	NA	NA	NA
1989	NA	NA	NA	NA	2	NA
1990	NA	NA	2	NA	NA	NA
1991	NA	NA	NA	1	1	3
1992	NA	NA	NA	NA	NA	NA
1993	NA	NA	NA	NA	NA	NA
1994	NA	NA	NA	NA	NA	NA
1995	NA	NA	NA	NA	NA	NA
1996	NA	NA	NA	NA	NA	NA
1997	NA	NA	NA	NA	NA	NA
1998	NA	NA	NA	NA	NA	NA
1999	NA	NA	NA	NA	NA	NA
2000	NA	NA	NA	NA	NA	NA
2001	NA	NA	NA	NA	NA	NA
2002	NA	NA	NA	NA	2	1
2003	NA	NA	NA	NA	NA	NA
2004	NA	NA	NA	NA	NA	NA
2005	NA	NA	NA	NA	NA	NA
2006	NA	NA	NA	0	NA	NA
2007	NA	NA	NA	NA	NA	NA
2008	NA	NA	NA	NA	NA	NA
2009	NA	NA	NA	NA	NA	NA
2010	NA	NA	NA	NA	NA	NA
2011	NA	NA	NA	NA	NA	NA
2012	NA	NA	NA	0	NA	NA
2013	NA	NA	NA	5	1	NA

Table 4.5.3. **Cont'd** Sample size of lengths collected by MRFSS and MRIP biological sampling by year, state, and wave. Cells with NA indicate no recreational harvest.(Delaware and New Jersey)

Delaware

Year	Wave 1	Wave 2	Wave 3	Wave 4	Wave 5	Wave 6
1981	NA	NA	NA	NA	NA	NA
1982	NA	NA	NA	NA	NA	NA
1983	NA	NA	NA	NA	NA	NA
1984	NA	NA	NA	NA	NA	NA
1985	NA	NA	NA	NA	NA	NA
1986	NA	NA	NA	NA	NA	NA
1987	NA	NA	NA	NA	NA	NA
1988	NA	NA	NA	NA	NA	NA
1989	NA	NA	NA	NA	NA	NA
1990	NA	NA	NA	NA	NA	NA
1991	NA	NA	NA	NA	NA	NA
1992	NA	NA	NA	NA	NA	NA
1993	NA	NA	NA	NA	NA	NA
1994	NA	NA	NA	NA	NA	NA
1995	NA	NA	NA	NA	NA	NA
1996	NA	NA	NA	NA	NA	NA
1997	NA	NA	NA	NA	NA	NA
1998	NA	NA	NA	NA	NA	NA
1999	NA	NA	NA	NA	NA	NA
2000	NA	NA	NA	NA	NA	NA
2001	NA	NA	NA	0	NA	NA
2002	NA	NA	NA	NA	1	NA
2003	NA	NA	NA	NA	NA	NA
2004	NA	NA	NA	NA	NA	NA
2005	NA	NA	NA	NA	NA	NA
2006	NA	NA	NA	NA	NA	0
2007	NA	NA	NA	NA	NA	NA
2008	NA	NA	NA	NA	NA	NA
2009	NA	NA	NA	NA	NA	NA
2010	NA	NA	NA	NA	NA	NA
2011	NA	NA	NA	NA	NA	NA
2012	NA	NA	NA	NA	0	1
2013	NA	NA	1	1	4	NA

New Jersey

Year	Wave 1	Wave 2	Wave 3	Wave 4	Wave 5	Wave 6
1981	NA	NA	NA	NA	NA	NA
1982	NA	NA	NA	NA	NA	NA
1983	NA	NA	NA	NA	NA	NA
1984	NA	NA	NA	NA	NA	NA
1985	NA	NA	NA	NA	NA	NA
1986	NA	NA	NA	NA	NA	NA
1987	NA	NA	NA	NA	NA	NA
1988	NA	NA	NA	NA	NA	NA
1989	NA	NA	NA	NA	NA	NA
1990	NA	NA	NA	NA	NA	NA
1991	NA	NA	NA	NA	NA	NA
1992	NA	NA	NA	NA	NA	NA
1993	NA	NA	NA	NA	NA	NA
1994	NA	NA	NA	NA	NA	NA
1995	NA	NA	NA	NA	NA	NA
1996	NA	NA	NA	NA	NA	NA
1997	NA	NA	NA	NA	NA	NA
1998	NA	NA	NA	NA	NA	NA
1999	NA	NA	NA	NA	NA	NA
2000	NA	NA	NA	NA	NA	NA
2001	NA	NA	NA	NA	NA	NA
2002	NA	NA	NA	NA	NA	NA
2003	NA	NA	NA	NA	NA	NA
2004	NA	NA	NA	NA	NA	NA
2005	NA	NA	NA	NA	NA	NA
2006	NA	NA	NA	NA	NA	NA
2007	NA	NA	NA	NA	NA	NA
2008	NA	NA	NA	NA	NA	NA
2009	NA	NA	NA	NA	NA	NA
2010	NA	NA	NA	NA	NA	NA
2011	NA	NA	NA	NA	0	NA
2012	NA	NA	NA	NA	NA	NA
2013	NA	NA	NA	NA	NA	NA

Table 4.5.4. Annual length-frequency (2 cm total length classes) samples from retained red drum captured by the recreational fishery in Florida

TLcm	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10
≤12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16	0	4	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18	1	2	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20	2	1	0	6	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
22	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24	0	4	2	1	2	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
26	0	2	0	8	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
28	0	2	16	7	10	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
30	0	6	22	19	8	0	0	0	0	1	0	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
32	0	7	16	21	4	3	0	0	2	0	0	2	0	0	1	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0
34	1	9	12	16	9	7	2	0	1	1	1	5	2	11	0	22	8	0	0	0	1	1	0	0	1	0	1	0	0	0
36	3	16	5	15	13	2	0	1	0	0	0	0	1	1	0	0	1	1	0	0	0	0	0	0	2	0	0	0	0	0
38	1	9	10	11	1	4	0	0	0	0	0	0	0	0	0	2	0	0	1	0	0	0	0	0	1	0	0	0	0	0
40	2	10	16	14	1	2	1	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	2	0	0	1	0	0	1
42	1	6	12	5	2	1	0	0	0	0	1	1	0	0	0	2	0	0	1	0	2	1	0	1	2	1	2	3	0	0
44	0	1	9	6	1	1	0	0	0	0	0	0	1	0	1	1	0	2	4	2	2	1	0	0	4	1	2	2	3	4
46	1	1	0	3	1	1	1	0	0	0	0	1	3	1	2	3	0	5	7	10	7	7	6	6	7	5	10	5	6	9
48	0	1	1	4	1	6	0	0	0	0	2	1	5	6	2	4	1	9	16	10	10	13	16	15	15	16	8	12	12	14
50	0	4	1	2	0	1	0	0	1	0	3	0	5	4	1	2	3	5	11	20	22	15	10	15	12	9	12	17	9	16
52	5	2	1	0	0	9	0	0	3	0	1	4	2	2	8	5	2	8	21	9	24	9	13	20	19	19	17	12	13	17
54	2	1	2	0	1	3	1	0	2	0	5	6	6	4	3	7	5	12	9	22	16	14	18	20	20	19	21	16	9	17
56	1	0	1	0	1	1	0	0	0	2	2	5	1	3	5	7	4	11	14	21	27	15	12	13	22	16	15	16	19	21
58	2	0	2	3	0	4	0	0	1	0	1	0	4	6	6	5	5	8	24	29	21	11	12	9	17	11	18	11	18	25
60	1	0	1	0	0	3	0	0	0	2	3	3	2	4	4	9	5	9	29	27	28	16	25	19	15	15	14	19	11	21
62	2	3	1	0	0	1	0	0	0	2	1	4	5	7	4	3	3	6	19	24	21	14	24	15	25	17	19	15	14	25
64	0	1	2	1	0	3	2	0	1	0	2	1	2	1	7	5	0	12	19	15	24	15	20	13	12	16	12	10	8	13
66	0	1	1	0	1	2	1	0	0	1	8	4	3	6	5	6	5	11	19	22	17	22	24	15	11	14	20	14	10	16
68	0	0	2	0	0	1	0	0	1	3	1	3	7	4	5	10	3	3	7	17	18	9	10	6	4	6	9	11	8	7
70	0	0	0	0	0	2	1	0	0	4	6	4	0	10	5	5	0	5	0	5	10	11	7	5	10	3	3	2	0	5
72	0	1	0	6	0	3	0	0	1	1	8	1	5	6	3	6	2	5	0	1	4	4	0	1	0	2	1	0	0	0
74	0	1	2	1	2	1	1	0	0	0	0	0	2	1	1	0	2	2	2	0	0	0	1	0	0	0	0	0	0	2
76	0	0	3	0	0	1	0	0	0	0	0	1	1	0	1	0	4	0	0	0	1	1	0	0	0	0	1	0	0	0
78	0	1	2	0	0	0	1	0	0	0	0	2	0	2	1	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0
80	0	1	1	3	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
82	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

84	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
86	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
88	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
90	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
92	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
94	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
96	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
98	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
100	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
102	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
104	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
106	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
108	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
≥110	0	0	0	2	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	25	102	147	158	61	63	11	2	14	17	45	53	59	83	66	104	57	115	203	234	256	179	198	177	200	170	186	165	141	213

Table 4.5.4 (con't). Annual length-frequency (2-cm total length classes) samples from retained red drum captured by the recreational fishery in Georgia

TLcm	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12	13
≤12	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22	0	1	2	1	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24	0	1	2	6	51	1	4	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
26	2	0	7	28	94	8	8	1	0	1	0	0	0	0	1	0	0	0	0	0	0	0	2	2	0	0	0	0	0	1	1	0	0
28	7	0	9	30	92	9	6	0	1	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	1	0	0
30	3	1	9	57	115	13	27	0	2	4	0	1	0	1	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	5	0	0	0
32	2	1	12	33	92	14	35	2	5	2	0	0	1	0	1	0	0	0	0	1	2	3	2	6	1	0	1	2	5	2	4	3	3
34	1	4	3	20	50	12	29	3	7	4	1	3	5	1	15	11	2	6	1	13	26	21	35	23	12	1	21	30	30	38	21	10	15
36	1	4	20	8	57	41	111	27	11	4	13	37	27	41	27	7	15	16	5	37	60	38	68	50	55	14	57	83	58	116	44	21	44
38	1	4	28	5	39	31	93	45	27	10	12	41	20	28	27	10	9	12	9	29	46	67	61	49	70	21	70	53	35	146	47	21	23
40	1	4	6	2	29	22	45	37	15	17	14	19	14	33	16	12	8	4	6	11	28	37	56	41	61	32	72	53	38	97	41	12	18
42	1	0	5	7	24	24	34	30	33	13	11	21	7	17	15	17	4	0	4	16	10	36	34	24	29	24	39	31	23	62	24	19	13
44	0	1	2	2	36	23	10	16	15	4	0	17	5	9	7	6	3	4	2	7	2	18	23	24	25	12	21	14	13	10	29	11	8
46	0	0	0	3	16	12	10	8	3	2	5	4	2	2	4	2	0	3	3	4	6	13	16	10	12	4	7	13	4	11	20	13	5
48	0	1	0	5	15	11	8	6	7	1	2	0	3	2	2	2	0	1	2	3	1	8	15	7	11	4	9	3	5	6	12	2	3
50	0	0	0	4	13	8	11	8	0	2	2	0	2	2	0	1	1	1	2	1	2	3	6	7	3	4	2	3	4	7	4	1	3
52	1	1	0	2	6	8	6	4	6	0	4	3	1	1	2	0	0	0	2	2	1	3	4	8	4	2	1	3	5	7	5	2	4
54	0	0	0	0	1	1	7	3	3	0	0	4	1	4	0	0	0	0	1	2	1	4	10	6	3	0	5	7	1	7	9	0	4
56	0	0	0	1	2	3	7	4	2	0	0	2	2	5	2	2	0	0	1	1	0	0	7	5	3	2	2	10	3	5	7	2	1
58	0	0	0	1	2	0	5	3	5	0	0	6	3	0	4	3	1	0	1	2	1	3	10	3	5	1	1	2	1	8	8	3	1
60	0	0	0	1	1	4	7	0	3	1	0	2	2	5	0	1	0	1	1	4	3	4	11	5	1	4	3	2	2	2	2	2	1
62	0	0	1	0	5	1	3	3	2	0	0	5	1	3	2	2	0	0	1	3	1	2	1	0	0	0	1	1	0	3	2	1	1
64	0	0	0	0	1	1	5	2	1	0	1	2	1	1	3	1	0	0	0	1	0	0	1	0	0	1	1	0	1	0	0	0	0
66	0	0	0	0	1	3	3	1	1	0	0	3	3	1	1	0	1	2	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0
68	0	0	0	1	0	1	3	1	0	2	0	1	2	2	1	0	0	0	0	3	1	0	0	0	0	0	0	1	1	0	0	0	0
70	0	0	1	1	0	0	0	1	0	1	1	0	1	0	0	0	0	0	0	1	1	0	1	1	0	0	0	0	0	0	0	0	0
72	0	0	0	0	1	0	4	1	1	2	0	0	3	1	1	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0
74	0	0	0	0	1	0	2	1	0	3	0	2	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
76	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
78	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
80	0	0	0	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
82	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
84	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
86	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
88	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
90	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
92	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
94	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
96	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
98	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
102	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
104	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
106	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
108	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
≥110	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	20	24	108	218	752	252	486	208	152	76	68	176	110	160	132	78	44	50	41	146	195	261	363	271	295	126	313	311	229	537	281	123	147

Table 4.5.4 (con't). Annual length-frequency (2-cm total length classes) samples from retained red drum captured by the recreational fishery in South Carolina.

TLcm	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12	13
≤12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18	0	0	0	2	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	2	2	0	0	0	2	0	0	1	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22	0	4	0	1	1	1	0	1	0	1	1	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24	0	7	0	2	0	0	3	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26	0	11	0	0	6	1	1	2	2	0	2	1	0	1	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
28	1	3	1	3	16	3	6	1	1	0	3	1	0	1	1	0	1	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	1
30	0	12	2	4	8	4	27	2	2	5	14	1	7	1	0	1	1	1	1	1	0	2	1	1	0	0	0	0	0	5	0	0	0
32	2	8	5	6	8	4	42	5	6	0	14	9	9	0	0	0	1	0	0	0	1	1	0	1	0	0	0	0	1	5	0	0	0
34	7	7	5	1	6	6	46	12	6	2	25	12	14	6	6	9	17	16	8	4	2	1	0	3	0	0	2	0	1	7	1	1	0
36	5	9	5	7	16	7	47	33	31	13	37	71	59	30	64	54	80	65	65	51	20	11	4	4	5	4	5	2	4	11	6	6	0
38	6	5	4	0	8	10	38	32	18	22	41	113	85	66	118	134	160	109	112	110	64	69	37	38	28	24	37	46	77	104	128	92	26
40	2	1	1	6	10	7	20	30	15	22	28	99	71	47	82	200	152	108	144	83	123	92	82	69	46	49	65	91	97	130	148	129	26
42	0	1	2	6	3	11	10	27	10	25	51	93	69	39	59	178	101	80	132	64	110	109	83	98	49	47	66	118	97	125	163	153	30
44	0	1	1	8	7	4	5	13	13	13	20	51	37	20	26	138	34	52	65	63	57	117	54	77	57	40	50	91	80	91	113	81	38
46	0	1	0	4	3	3	2	5	7	5	8	13	31	9	5	76	18	36	29	40	30	98	55	56	45	24	31	42	71	93	73	58	18
48	0	1	0	4	4	0	1	6	13	4	8	18	30	10	22	137	53	38	26	29	20	89	56	60	45	23	39	43	81	59	112	74	25
50	0	1	1	1	4	0	4	4	12	11	13	15	28	10	7	127	35	32	36	30	15	76	62	53	35	44	42	66	52	54	97	61	24
52	0	0	3	0	2	5	2	2	4	5	12	16	37	14	11	99	25	36	33	34	9	57	51	51	30	35	24	40	37	78	59	43	8
54	0	0	1	0	1	4	6	6	5	3	7	22	32	11	8	98	35	47	20	34	10	44	44	37	24	19	18	20	19	59	54	41	14
56	0	0	2	0	1	0	1	5	3	3	8	8	8	9	4	41	21	27	20	26	12	43	68	40	19	28	33	35	28	65	48	40	5
58	1	0	0	0	0	1	3	4	7	5	4	11	22	3	16	38	20	30	10	30	19	28	38	46	25	34	17	26	13	31	21	16	11
60	0	0	1	0	1	0	4	7	4	6	1	12	16	5	7	32	25	36	27	31	12	33	48	47	33	38	14	24	3	9	6	9	2
62	1	0	0	0	2	1	4	2	9	11	3	6	19	6	13	17	23	13	14	22	5	19	33	28	22	28	6	6	0	2	1	1	0
64	0	0	1	0	0	2	5	4	8	6	2	11	15	3	12	14	19	30	25	25	14	3	15	19	8	5	1	1	0	0	1	0	0
66	0	0	1	0	2	0	5	1	5	5	5	6	18	6	2	15	10	23	6	16	13	0	1	7	0	0	0	1	0	0	0	0	0
68	0	0	0	0	3	3	1	1	3	3	1	5	6	2	7	9	13	11	5	12	2	0	1	2	2	0	0	0	0	2	1	0	0
70	0	0	0	0	0	0	1	2	2	0	2	3	2	1	4	7	6	14	2	5	5	0	1	2	0	0	0	0	0	0	1	0	0
72	1	0	1	0	1	0	0	1	1	2	1	2	6	2	5	6	1	8	2	2	3	0	0	0	1	0	0	0	0	0	0	0	1
74	0	0	0	0	1	0	1	3	4	3	1	6	7	2	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
76	0	0	0	0	0	1	2	1	3	1	1	2	6	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
78	0	0	0	0	0	0	0	4	1	1	1	1	1	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
80	0	0	0	0	0	0	0	0	1	0	0	1	4	0	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
82	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
84	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
86	0	0	0	0	0	0	0	0	1	1	0	2	3	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
88	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
90	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
92	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
94	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
96	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
98	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
100	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
102	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
104	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
106	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
108	0	1	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
≥110	0	0	0	0	0	0	0	0	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	29	75	37	57	116	78	287	217	201	178	319	618	657	305	483	1434	854	814	782	716	547	892	735	739	474	443	450	652	661	931	1033	805	230

Table 4.12.4 (con't). Annual length-frequency (2-cm total length classes) samples from retained red drum captured by the recreational fishery in North Carolina.

TLcm	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12	13
≤12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16	0	0	0	0	0	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18	1	0	0	0	0	0	3	4	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	1	0	0	1	6	0	0	0	0	0	0	1	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22	0	0	0	0	0	0	0	2	0	0	0	0	0	0	1	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24	0	0	0	1	0	0	0	1	2	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26	0	0	0	0	0	0	0	1	0	0	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
28	0	0	0	0	0	0	1	0	1	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
30	0	0	1	1	0	0	2	0	2	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
32	0	1	1	1	2	0	2	5	1	0	1	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
34	0	2	1	1	0	0	1	3	6	5	2	1	1	1	1	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
36	1	1	1	0	0	1	3	7	14	6	3	0	3	1	2	3	1	0	2	0	0	0	0	1	0	1	0	0	0	1	0	2	0
38	0	2	1	0	0	1	5	5	3	8	5	1	0	0	0	3	1	0	2	0	0	0	0	0	0	1	0	0	0	0	0	0	0
40	1	0	2	0	1	0	10	12	7	9	2	0	4	0	3	4	0	0	1	0	1	1	0	1	0	1	0	1	0	0	0	1	0
42	3	0	0	4	0	1	6	9	6	7	9	1	3	2	1	4	1	0	1	3	0	0	0	0	0	0	0	0	0	2	0	0	2
44	1	0	0	0	2	0	1	2	9	5	8	3	4	4	4	1	3	1	4	0	2	2	0	0	0	0	1	1	0	3	1	4	3
46	2	0	0	0	1	0	2	3	4	6	30	1	8	1	21	14	2	9	7	2	7	11	3	5	2	3	1	8	2	12	8	14	17
48	1	1	0	0	2	1	2	4	3	4	8	0	3	3	17	8	1	20	11	10	3	13	5	5	6	8	4	9	5	18	6	25	21
50	0	0	0	0	0	0	0	2	2	0	8	2	0	4	12	6	1	17	14	2	0	19	4	3	5	7	2	9	11	12	15	13	45
52	0	0	0	0	0	0	1	2	2	0	0	1	4	3	14	4	1	26	8	4	1	4	5	3	1	7	5	8	3	15	11	11	35
54	0	0	0	0	0	0	0	1	2	1	3	2	4	6	16	4	1	55	16	7	2	2	2	4	3	4	5	5	7	13	12	6	47
56	0	0	0	0	0	0	1	2	3	0	1	3	10	3	15	0	2	90	13	9	4	3	8	3	6	7	1	2	15	11	18	7	40
58	0	0	0	0	0	0	1	1	3	0	1	5	14	3	21	5	0	84	19	8	4	4	2	2	3	6	4	10	15	11	16	5	35
60	0	0	0	0	0	0	1	0	9	1	0	4	14	3	23	2	1	74	16	14	7	8	5	3	8	9	4	6	18	22	14	4	23
62	0	0	0	0	1	0	1	2	8	0	1	4	7	8	36	8	1	71	21	9	12	4	3	2	7	5	10	7	13	17	9	6	19
64	0	0	0	0	0	0	0	3	1	1	0	6	8	9	18	6	1	29	14	18	8	6	3	3	2	3	8	9	15	14	11	2	17
66	0	0	1	0	0	0	0	1	5	0	1	2	5	5	6	9	0	19	21	20	8	1	8	2	3	4	13	6	13	13	10	6	9
68	0	1	0	0	1	0	1	4	2	1	5	4	5	4	5	13	0	10	16	14	5	1	1	0	1	5	5	4	8	10	3	14	9
70	0	0	0	0	1	0	0	0	1	0	1	0	7	5	6	4	0	3	6	5	4	3	2	2	1	2	8	3	8	4	1	5	0
72	0	0	0	0	0	0	0	0	1	1	0	0	1	1	4	3	3	0	5	4	3	0	0	1	0	1	0	3	1	2	2	3	1
74	0	0	0	0	0	0	0	1	1	0	0	0	0	1	2	2	1	0	1	1	1	0	0	0	0	1	0	0	0	0	1	0	1
76	0	0	0	0	0	0	0	0	0	3	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	2	0	0	0	0	1	0	0
78	0	0	0	1	0	0	0	4	0	0	1	0	0	3	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
80	0	0	0	0	0	0	0	1	0	0	0	0	0	3	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
82	0	0	0	0	0	0	0	2	0	0	1	0	0	1	2	1	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0
84	0	0	0	0	0	0	0	3	0	1	0	0	0	0	1	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
86	0	0	0	1	0	0	0	0	0	0	0	0	0	2	0	2	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
88	0	0	0	0	0	0	2	0	0	0	0	0	0	0	2	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
90	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
92	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
94	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
96	0	0	0	0	0	0	0	0	1	0	0	0	2	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
98	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
100	0	0	0	0	0	0	0	0	0	1	0	0	1	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
102	0	0	0	0	0	0	0	0	0	4	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
104	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
106	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
108	0	0	1	0	0	0	0	0	0	3	1	0	1	1	0	1	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
≥110	0	0	0	1	0	0	1	2	1	2	5	1	6	2	1	3	1	6	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
Totals	10	8	9	13	11	4	50	97	100	73	101	42	117	90	240	114	30	534	199	130	73	86	52	40	48	78	71	91	134	181	139	129	324

Table 4.5.5 Estimated number of pre-MRFSS saltwater fishing participants by state.

Year	DE	FL	GA	MD	NJ	NC	SC	VA	**Total**
1950	5,926	265,900	58,689	45,387	80,422	95,637	44,789	130,062	**726,810**
1951	6,110	274,187	60,518	46,801	82,928	98,618	46,185	134,116	**749,463**
1952	6,295	282,475	62,347	48,216	85,435	101,598	47,581	138,169	**772,116**
1953	6,480	290,762	64,176	49,630	87,941	104,579	48,977	142,223	**794,769**
1954	6,665	299,049	66,006	51,045	90,448	107,560	50,373	146,277	**817,421**
1955	6,849	307,337	67,835	52,459	92,954	110,541	51,769	150,330	**840,074**
1956	7,034	315,624	69,664	53,874	95,461	113,521	53,165	154,384	**862,727**
1957	7,219	323,911	71,493	55,289	97,968	116,502	54,561	158,438	**885,380**
1958	7,403	332,199	73,322	56,703	100,474	119,483	55,957	162,491	**908,032**
1959	7,895	365,676	83,528	56,631	179,199	77,808	58,865	150,237	**979,841**
1960	8,087	374,577	84,808	58,010	183,561	79,702	60,298	153,894	**1,002,936**
1961	8,702	414,720	87,064	58,511	104,646	113,602	64,063	142,102	**993,410**
1962	8,196	391,199	89,882	73,867	103,705	112,338	69,651	148,620	**997,458**
1963	7,332	399,699	99,412	69,019	107,664	112,518	77,411	152,512	**1,025,567**
1964	8,372	418,956	104,567	74,949	113,146	129,586	79,839	161,955	**1,091,369**
1965	8,120	442,416	117,125	82,622	116,827	143,987	86,452	172,459	**1,170,008**
1966	7,952	453,819	131,537	88,934	119,166	149,296	79,277	182,655	**1,212,636**
1967	8,911	493,510	120,220	90,285	121,613	160,514	103,793	191,333	**1,290,179**
1968	8,650	496,090	114,606	100,562	141,187	167,869	105,401	206,204	**1,340,569**
1969	9,776	521,289	114,150	86,776	149,627	175,485	118,824	217,011	**1,392,938**
1970	6,699	562,752	118,638	85,161	145,519	176,272	88,347	232,996	**1,416,384**
1971	8,196	705,592	126,846	92,728	158,116	176,823	94,301	233,635	**1,596,238**
1972	6,456	731,204	130,360	97,156	158,416	181,544	101,932	252,805	**1,659,873**
1973	10,093	772,865	134,834	101,476	173,348	199,445	107,716	272,907	**1,772,684**
1974	11,735	834,392	144,253	112,040	174,222	217,449	117,847	295,247	**1,907,185**
1975	11,581	870,670	149,037	104,120	191,718	220,220	123,102	248,908	**1,919,355**
1976	11,199	821,995	144,075	97,919	172,519	207,841	128,982	233,888	**1,818,417**
1977	11,160	739,438	133,881	113,261	154,994	190,099	121,552	242,880	**1,707,265**
1978	11,236	667,847	128,013	96,774	132,414	183,570	116,870	226,124	**1,562,849**
1979	11,414	716,261	132,393	101,510	150,084	183,452	116,626	242,359	**1,654,099**
1980	11,935	588,882	129,388	99,517	145,920	175,120	116,110	247,867	**1,514,739**

Table 4.5.6 Estimated historical recreational harvest in numbers of fish by state and stock (1950-1980)

Year	DE	FL	GA	MD	NJ	NC	SC	VA	Northern	Southern
1950	87	120,050	42,126	508	562	32,261	60,597	9,483	42,902	222,773
1951	90	123,792	43,439	524	580	33,267	62,485	9,779	44,239	229,716
1952	92	127,534	44,751	540	597	34,272	64,374	10,074	45,576	236,659
1953	95	131,275	46,064	556	615	35,278	66,263	10,370	46,913	243,602
1954	98	135,017	47,377	572	632	36,283	68,151	10,665	48,251	250,546
1955	101	138,759	48,690	587	650	37,289	70,040	10,961	49,588	257,489
1956	103	142,500	50,003	603	668	38,294	71,928	11,257	50,925	264,432
1957	106	146,242	51,316	619	685	39,300	73,817	11,552	52,262	271,375
1958	109	149,984	52,629	635	703	40,305	75,706	11,848	53,599	278,318
1959	116	165,098	59,955	634	1,253	26,247	79,641	10,954	39,204	304,694
1960	119	169,117	60,873	650	1,284	26,886	81,579	11,221	40,159	311,569
1961	128	187,241	62,493	655	732	38,322	86,673	10,361	50,197	336,407
1962	120	176,621	64,515	827	725	37,895	94,234	10,836	50,404	335,370
1963	108	180,459	71,356	773	753	37,956	104,732	11,120	50,709	356,547
1964	123	189,153	75,056	839	791	43,713	108,017	11,809	57,275	372,227
1965	119	199,745	84,070	925	817	48,571	116,964	12,574	63,007	400,779
1966	117	204,894	94,415	996	833	50,362	107,257	13,318	65,626	406,565
1967	131	222,814	86,291	1,011	850	54,146	140,425	13,951	70,089	449,530
1968	127	223,978	82,262	1,126	987	56,628	142,600	15,035	73,903	448,841
1969	143	235,355	81,935	972	1,046	59,197	160,761	15,823	77,181	478,051
1970	98	254,07	85,156	954	1,01	59,46	119,52	16,98	78,520	458,760

		6			8	2	8	8		
1971	120	318,566	91,047	1,038	1,106	59,648	127,584	17,035	78,947	537,197
1972	95	330,130	93,570	1,088	1,108	61,240	137,907	18,433	81,964	561,607
1973	148	348,939	96,781	1,136	1,212	67,279	145,732	19,898	89,674	591,452
1974	172	376,718	103,542	1,255	1,218	73,352	159,440	21,527	97,525	639,699
1975	170	393,097	106,975	1,166	1,341	74,287	166,548	18,149	95,112	666,620
1976	164	371,120	103,414	1,097	1,206	70,111	174,504	17,053	89,632	649,038
1977	164	333,847	96,097	1,268	1,084	64,126	164,452	17,709	84,351	594,396
1978	165	301,525	91,885	1,084	926	61,924	158,118	16,487	80,586	551,528
1979	168	323,383	95,029	1,137	1,050	61,884	157,788	17,671	81,909	576,200
1980	175	265,873	92,872	1,114	1,020	59,073	157,089	18,073	79,456	515,834

Table 4.5.7 Estimated historical recreational releases in numbers of fish by state and stock (1950-1980).

Year	DE	FL	GA	MD	NJ	NC	SC	VA	Northern	Southern
1950	374	13,643	1,457	742	135	2,343	3,289	131	3,726	18,389
1951	386	14,068	1,503	766	139	2,416	3,391	135	3,842	18,962
1952	398	14,493	1,548	789	144	2,489	3,494	139	3,958	19,535
1953	409	14,918	1,593	812	148	2,562	3,596	143	4,074	20,108
1954	421	15,344	1,639	835	152	2,635	3,699	147	4,190	20,681
1955	433	15,769	1,684	858	156	2,708	3,801	151	4,306	21,254
1956	444	16,194	1,730	881	160	2,781	3,904	155	4,422	21,827
1957	456	16,619	1,775	904	165	2,854	4,006	159	4,539	22,400
1958	468	17,044	1,821	928	169	2,927	4,109	163	4,655	22,974
1959	499	18,762	2,074	926	301	1,906	4,322	151	3,784	25,158
1960	511	19,219	2,106	949	308	1,953	4,427	155	3,876	25,752
1961	550	21,278	2,162	957	176	2,783	4,704	143	4,609	28,144
1962	518	20,072	2,232	1,208	174	2,752	5,114	149	4,802	27,417
1963	463	20,508	2,468	1,129	181	2,757	5,684	153	4,683	28,660
1964	529	21,496	2,596	1,226	190	3,175	5,862	163	5,283	29,954
1965	513	22,699	2,908	1,352	196	3,527	6,348	173	5,762	31,955
1966	502	23,284	3,266	1,455	200	3,658	5,821	184	5,999	32,371
1967	563	25,321	2,985	1,477	204	3,932	7,621	192	6,369	35,927
1968	547	25,453	2,846	1,645	237	4,113	7,739	207	6,749	36,038
1969	618	26,746	2,834	1,420	251	4,299	8,725	218	6,806	38,305
1970	423	28,874	2,946	1,393	244	4,318	6,487	234	6,614	38,306
1971	518	36,202	3,150	1,517	266	4,332	6,924	235	6,867	46,276
1972	408	37,516	3,237	1,589	266	4,448	7,484	254	6,965	48,238
1973	638	39,654	3,348	1,660	291	4,886	7,909	274	7,750	50,911
1974	741	42,811	3,582	1,833	293	5,327	8,653	297	8,491	55,046
1975	732	44,672	3,701	1,703	322	5,395	9,039	250	8,402	57,411
1976	708	42,175	3,577	1,602	290	5,092	9,471	235	7,926	55,223
1977	705	37,939	3,324	1,853	260	4,657	8,925	244	7,720	50,188
1978	710	34,266	3,179	1,583	222	4,497	8,581	227	7,240	46,026
1979	721	36,750	3,287	1,661	252	4,494	8,563	244	7,372	48,600
1980	754	30,214	3,213	1,628	245	4,290	8,525	249	7,167	41,952

Table 4.5.8. South Carolina State Finfish Survey data for recreational catch and effort of trips targeting red drum.

Year	Interviews	Total Angler Hours	Red Drum Released	Red Drum Harvested	Red Drum Caught	Proportion positive trips	CPUE (Fish/Hr)	SE	PSE
1988	19	105	1	30	31	0.26	0.24	0.14	58.9
1989	15	120	16	7	23	0.40	0.20	0.11	54.4
1990	51	358	60	97	157	0.55	0.64	0.16	24.9
1991	132	1,269	43	211	254	0.55	0.27	0.04	16.4
1992	140	1,154	165	305	470	0.66	0.59	0.08	14.0
1993	472	3,801	395	382	777	0.46	0.26	0.02	9.6
1994	140	982	269	188	457	0.71	0.56	0.06	10.2
1995	180	1,291	328	144	472	0.68	0.46	0.06	13.2
1996	576	4,571	1,502	932	2,434	0.75	0.60	0.03	4.4
1997	352	3,208	835	395	1,230	0.68	0.43	0.03	7.1
1998	220	1,952	442	422	864	0.64	0.48	0.05	9.5
1999	301	2,190	616	401	1,017	0.55	0.51	0.05	10.0
2000	251	2,063	480	218	698	0.53	0.37	0.04	11.0
2001	250	1,813	783	242	1,025	0.60	0.68	0.07	11.0
2002	356	2,474	1,129	305	1,434	0.63	0.68	0.06	8.4
2003	488	3,959	1,454	292	1,746	0.54	0.66	0.06	9.1
2004	571	4,700	1,279	317	1,596	0.56	0.43	0.03	8.0
2005	422	3,070	778	236	1,014	0.53	0.41	0.04	9.3
2006	470	3,537	929	202	1,131	0.52	0.38	0.03	8.0
2007	335	2,725	698	219	917	0.53	0.44	0.04	9.1
2008	417	3,551	1,179	312	1,491	0.61	0.54	0.05	8.7
2009	343	2,791	1,051	329	1,380	0.60	0.66	0.06	8.8
2010	427	3,358	1,484	417	1,901	0.65	0.70	0.06	7.9
2011	515	3,959	1,205	499	1,704	0.62	0.55	0.04	7.7
2012	533	3,876	953	433	1,386	0.55	0.41	0.03	6.7
2013	28	121	94	21	115	0.57	0.76	0.21	27.5
	8,004	62,991	18,168	7,556	25,724	0.57	0.50	0.06	14.39

Table 4.5.9. Red drum fish length data collected by the South Carolina State Finfish Survey. *N*: number of red drum measured; *n*: number of angler trips (effective sample size).

Year	*N*	*n*
1988	21	5
1989	8	4
1990	77	18
1991	276	61
1992	456	56
1993	541	109
1994	211	36
1995	305	54
1996	1075	127
1997	518	102
1998	573	101
1999	599	106
2000	391	92
2001	358	90
2002	623	146
2003	542	121
2004	543	155
2005	345	105
2006	326	108
2007	314	82
2008	517	136
2009	526	138
2010	635	156
2011	780	162
2012	667	149
2013	29	8
	11,256	2,427

Table 4.5.10 Number of fishing trips targeting red drum, and catches, as reported by South Carolina charter boat logbooks

	NUMBER OF TRIPS			PROPORTION +VE CATCHES			CPUE (FISH/HR)			SE		
Year	Estuarine	0-3 miles	>3 miles	Estuarine	0-3 miles	>3 miles	Estuarine	0-3 miles	>3 miles	Estuarine	0-3 miles	>3 miles
1993	127	43	7	0.76	0.84	0.57	0.99	0.42	0.13	0.15	0.07	0.07
1994	319	66	7	0.90	0.79	0.86	0.72	0.29	0.95	0.04	0.03	0.52
1995	785	84	24	0.84	0.81	0.88	0.67	0.47	0.47	0.03	0.06	0.10
1996	1,064	60	6	0.88	0.57	0.67	0.82	0.22	0.24	0.03	0.05	0.09
1997	1,071	21	13	0.86	0.86	0.85	0.72	0.52	0.34	0.03	0.11	0.08
1998	1,278	112	23	0.85	0.83	0.91	0.59	0.58	0.30	0.02	0.07	0.07
1999	1,460	49	18	0.88	0.82	0.89	0.75	0.57	0.34	0.02	0.09	0.08
2000	1,651	67	1	0.87	0.82	1.00	0.81	0.60	0.75	0.02	0.08	0.00
2001	2,185	89	4	0.89	0.82	0.75	0.88	0.42	0.58	0.02	0.05	0.35
2002	2,296	204	4	0.91	0.89	1.00	1.12	0.62	1.68	0.03	0.05	0.99
2003	2,678	158	7	0.94	0.87	0.86	1.04	0.60	1.46	0.02	0.05	0.53
2004	2,352	225	13	0.92	0.80	1.00	0.96	0.50	0.95	0.02	0.04	0.28
2005	2,264	224	16	0.91	0.82	0.50	0.80	0.46	0.32	0.02	0.04	0.15
2006	2,044	188	16	0.91	0.79	0.81	0.76	0.44	0.58	0.02	0.04	0.26
2007	2,215	246	25	0.88	0.83	0.84	0.74	0.51	0.51	0.02	0.04	0.11
2008	2,105	261	21	0.93	0.88	0.38	0.84	0.53	0.23	0.02	0.06	0.08
2009	2,037	303	25	0.91	0.84	0.76	0.98	0.67	0.23	0.03	0.06	0.05
2010	1,413	246	18	0.93	0.92	0.78	1.02	0.49	0.19	0.03	0.04	0.04
2011	1,360	275	10	0.92	0.91	0.50	0.82	0.50	0.47	0.02	0.04	0.23
2012	970	301	24	0.87	0.88	0.79	0.71	0.67	0.43	0.03	0.04	0.13
2013	955	376	31	0.85	0.89	0.81	0.65	0.59	0.48	0.03	0.03	0.15
	32,629	3,598	313	0.89	0.83	0.78	0.83	0.51	0.55	0.03	0.06	0.21

Table 4.5.11. Harvested red drum sampled for sex, total length and age by the SCDNR freezer fish program. *N*: number of red drum; *n*: number of angler trips (effective sample size).

Year	*N*	*n*
1995	91	28
1996	162	67
1997	142	58
1998	113	56
1999	97	37
2000	271	95
2001	134	58
2002	205	91
2003	156	75
2004	68	39
2005	59	37
2006	67	38
2007	100	47
2008	57	32
2009	68	37
2010	76	34
2011	85	43
2012	66	34
2013	54	33
	2,071	939

Table 4.5.12 Angler-volunteered total lengths of red drum released alive on the Atlantic coast of Florida during 2003-2013.

TL(inch)	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
≤8	2	0	0	1	0	0	0	0	0	5	0
9	2	1	0	1	0	0	0	0	0	2	1
10	1	0	0	0	0	0	0	0	0	8	2
11	1	0	0	0	0	0	1	0	0	3	3
12	2	0	0	0	1	0	0	0	0	17	0
13	0	1	0	0	0	0	0	0	0	13	0
14	1	1	0	0	1	0	1	0	0	13	0
15	3	0	1	1	0	0	0	0	0	9	0
16	3	1	2	0	1	0	2	0	0	13	0
17	0	3	0	0	1	0	2	0	0	8	0
18	1	0	0	2	0	0	0	0	0	6	0
19	1	0	0	0	0	0	1	0	0	4	0
20	0	1	0	1	0	0	0	0	0	5	0
21	0	0	2	0	2	0	0	0	0	8	0
22	3	0	0	0	1	0	1	0	0	7	0
23	1	0	0	0	0	0	0	0	0	3	0
24	0	0	0	0	0	0	0	0	0	6	0
25	0	0	1	0	0	0	0	0	0	4	0
26	0	2	0	0	0	0	0	0	0	3	0
27	0	0	0	0	1	0	0	0	0	1	0
28	0	0	0	0	1	0	0	0	0	1	0
29	0	0	0	0	2	1	1	0	0	2	0
30	0	0	0	0	1	0	0	0	0	1	0
31	1	0	0	0	0	0	0	0	0	0	0
32	0	0	0	0	1	0	0	0	0	1	0
33	0	0	0	0	0	0	0	0	0	1	0
34	0	0	0	0	0	0	0	0	0	1	0
35	0	0	0	0	0	0	0	0	0	2	0
36	0	1	0	0	0	0	0	0	0	2	0
37	0	0	0	0	0	0	0	0	0	1	0
38	0	0	0	0	0	0	0	0	0	0	0
39	0	0	0	0	0	0	0	0	0	1	0
40	0	0	0	0	0	0	0	0	0	1	0
41	0	1	0	0	0	0	0	0	0	2	0
42	0	0	0	0	0	0	0	0	0	4	0
43	0	0	0	0	0	0	0	0	0	4	0
44	0	0	0	0	0	0	0	0	0	4	0
45	0	0	0	0	0	0	0	0	0	2	0
46	0	0	0	0	0	0	0	0	0	3	0
47	0	0	0	0	0	0	0	0	0	3	0
48	0	0	0	0	0	0	0	0	0	0	0
	22	12	6	6	13	1	9	0	0	174	6

4.6 Figures

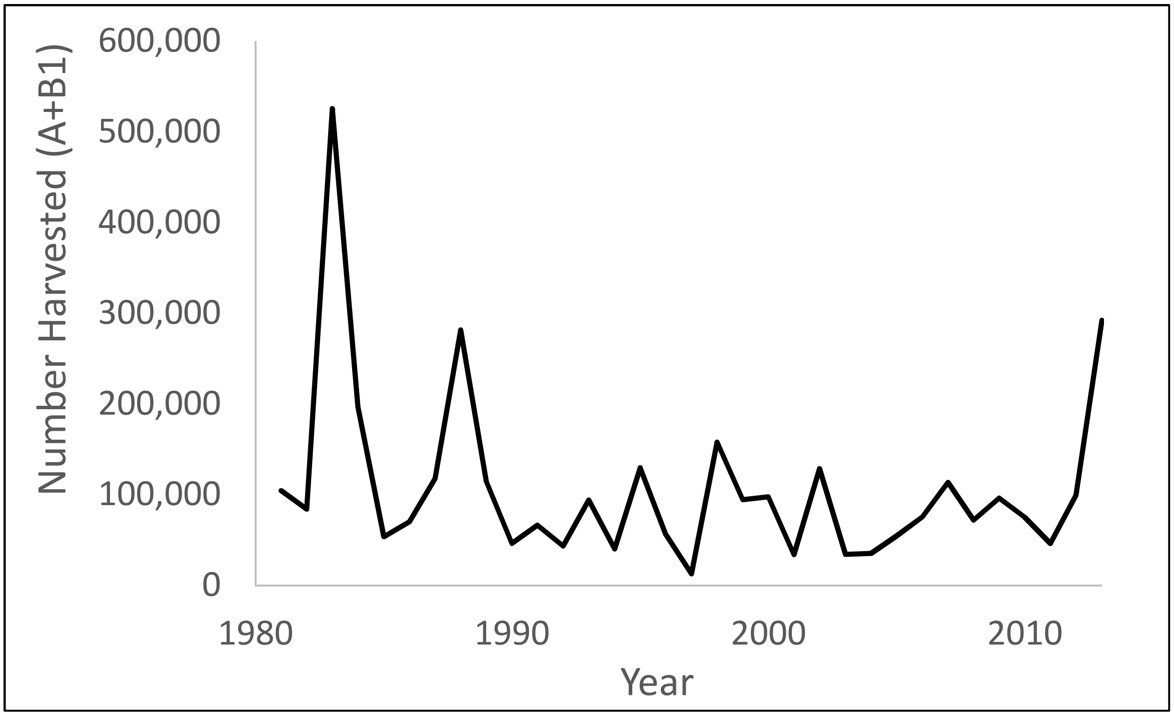


Figure 4.6.1. Recreational harvest estimates from the MRFSS/MRIP for the northern stock (NC-NJ).

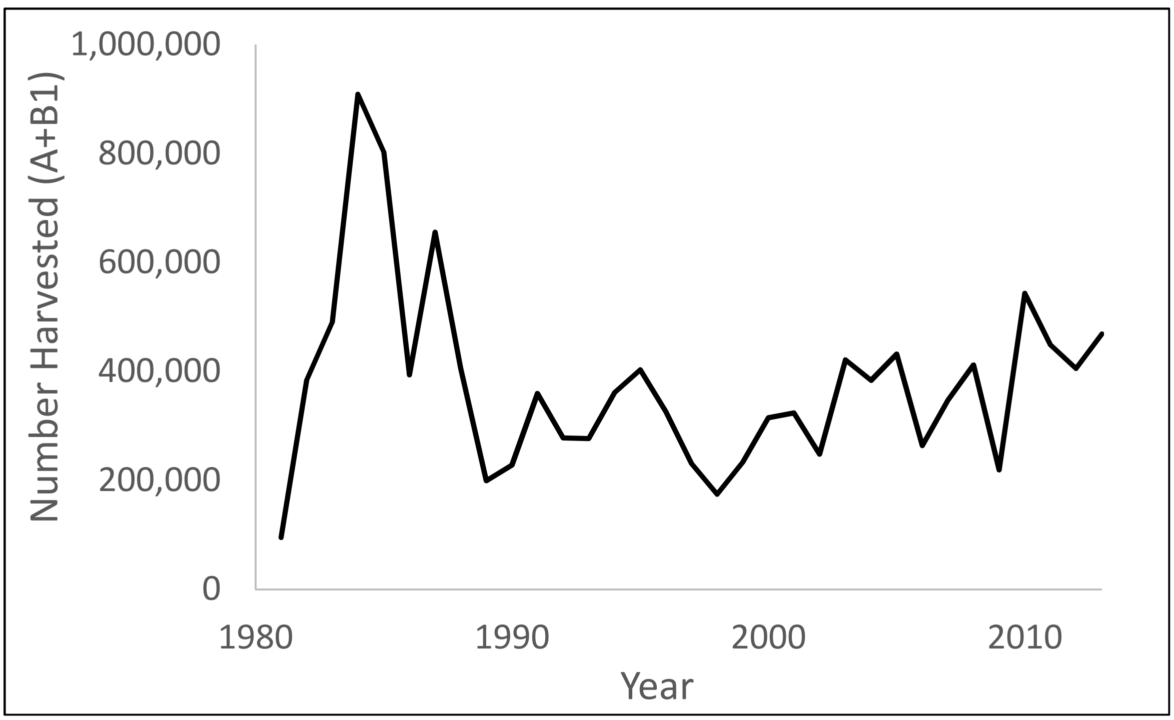
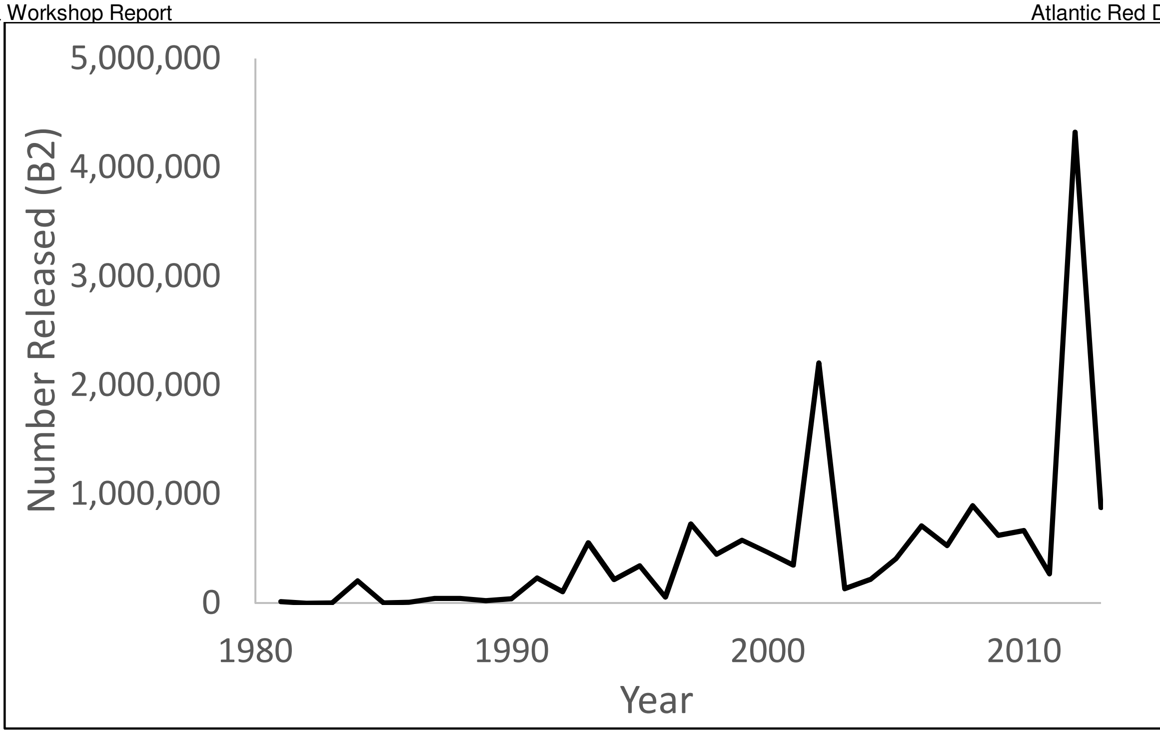
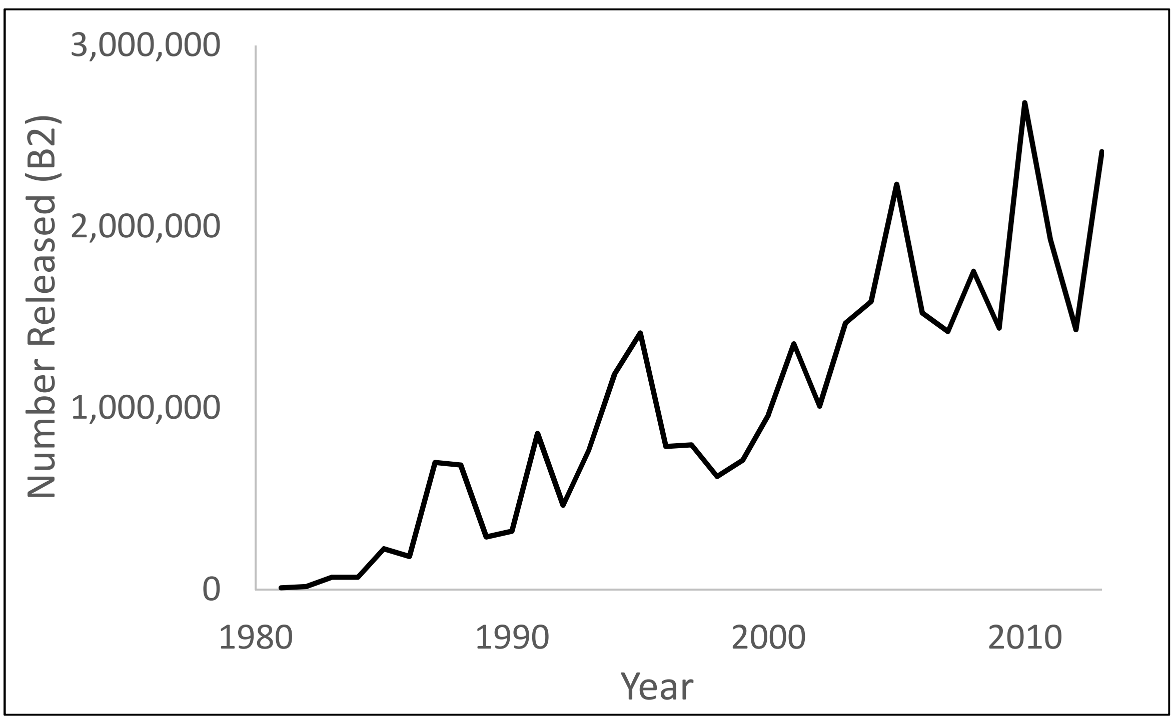


Figure 4.6.2. Recreational harvest estimates from the MRFSS/MRIP for the southern stock (SC-FL).



4.6.3. Released alive (numbers) estimates from the MRFSS/MRIP for the northern stock (NC-NJ).



4.6.4. Released alive (numbers) estimates from the MRFSS/MRIP for the southern stock (SC-FL).

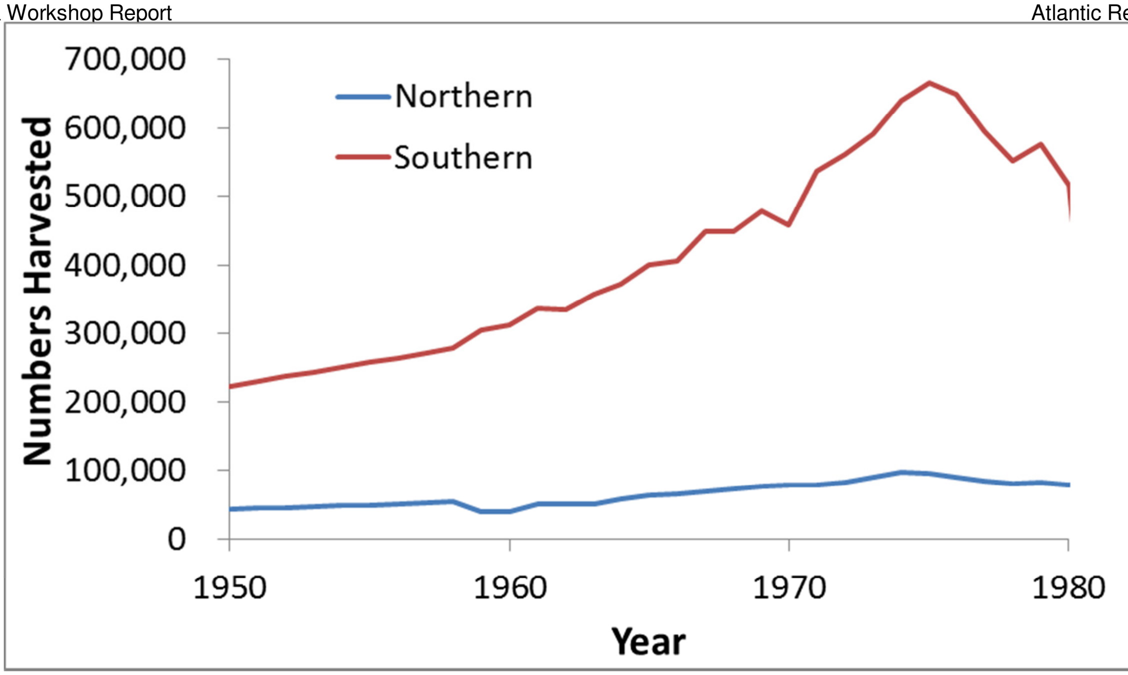


Figure 4.6.5. Historical recreational harvest estimates by stock.

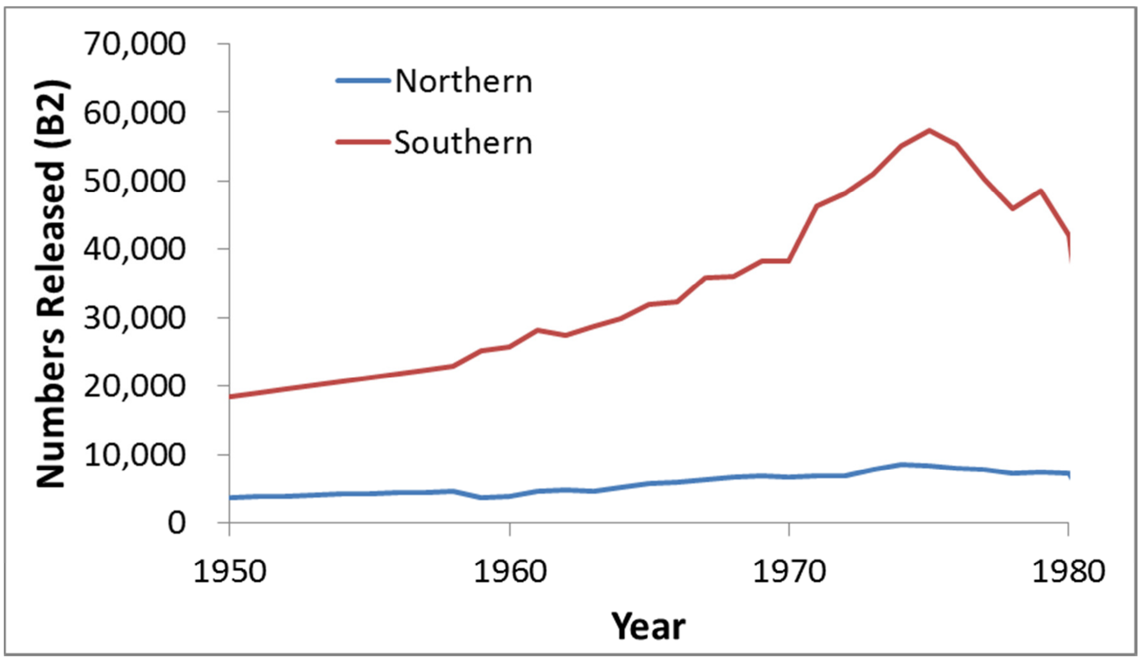


Figure 4.6.6. Historical Recreational Release estimates by stock.

5. Indices of Population Abundance

5.1 Overview

The Indices workgroup representatives were Carolyn Belcher (GADNR), Chris Kalinowsky (GA DNR), Steve Arnott (SC DNR) and Lee Paramore (NCDMF). Several issues were discussed by the group, including how to reconcile different trends in the two southern region young-of-the-year indices.

Several red drum indices of abundance were considered for use in the assessment model. The index working group evaluated all available index options and made recommendations for indices to use in the assessment based on the guidelines below.
Consider rejecting an index if it:

a) contains less than 5 consecutive years of red drum captures with consistent survey methodology
b) contains low proportion positive samples
c) unrealistic magnitude changes for unexplained reason
d) for unexplained reason does not track strong year classes, if not single age index
e) for unexplained reason does not correlate with trends observed in nearby surveys
f) covers a small geographic area relative to the spatial extent regional model(s)
g) is in some other way not representative of the regional stocks.

The working group recommended five indices of abundance for the northern stock and eleven indices of abundance for the southern stock. All index options, pros and cons, and ultimate decisions are in table 5.9.1(a) and 5.9.1(b) for the northern and southern stocks, respectively. Additional details on indices and the surveys they are developed from are below.

5.2 Fishery-Independent Surveys

5.2.1 Survey One – Florida young-of-the-year bag seine survey index

An index for young-of-the-year (beginning of continuity model-age 1) abundance was developed from the catches of small red drum (≤40 mm SL) made during the September-March recruitment window in the Northeast Florida area. Sampling has been conducted since May 2001 in the lower St. Mary's River/lower Nassau River/lower St Johns River basins areas and since late 1997 in the Mosquito Lagoon/Indian River Lagoon area using a 21.3 m seine stratified-random design. A detailed description of the survey program is provided in the FWC-FWRI Fishery Independent Monitoring Program's annual reports (e.g., McMichael et al. 2014).

Standardized catch rates were estimated using a delta lognormal modeling approach (Lo et al. 1992) to account for the effect of environmental variables, location, and time on the availability of red drum and isolate the year effect as an index of true abundance change. Factors utilized in the model development were surface temperature and salinity, bay-zone location (approximate ecological zones set as part of sampling design and logistics) , year, month, bottom type category (mud or sand), bottom vegetation type (submerged aquatic vegetation, other), shore category (emergent vegetation, terrestrial managed, other), gr (various 21-m seine configurations), and effort (area coverage). The final year-specific marginal means estimates and standard errors of the two sub-models (binomial for presence/absence, lognormal for positive catches) were used to generate distributions of estimates for each sub-model from a Monte Carlo simulation (5000 Student's t distributed realizations). The product of these distributions provided an estimate of the mean catch rate with year-specific variability. All analyses were done using R 3.0.1 (R Core Team 2013).

The delta lognormal model factors (lognormal positive catches and binomial presence/absence) that explained greater than 0.5% of the residual deviance/DF were retained in the models. The retained factors included: bay zone, shore vegetation type, and water temperature for the lognormal model and month, bay zone, bottom type, and salinity for the binomial model (Table 5.6.2). The nominal and standardized indices showed similar patterns with reduced abundance of recruits for 2006 and 2011 and a large year class recruiting in 2013 (Table 5.6.3, Fig. 5.7.2)

5.2.1.1 Methods, Gears, and Coverage

The FWC's Fishery Independent Monitoring (FIM) program uses a stratified, random design to collect information on animal populations (Fisheries-Independent Monitoring Program Staff. 2008). Strata are primarily defined by depth, shore type (overhanging or not), and bottom vegetation (sea grass or not). This program also supplies length, weight, sex and material for the determination of age while monitoring abundance of young-of-the-year (biological-age-0; model-age 1) and larger fishes. Annual Atlantic coast young-of-the-year (red drum smaller than or equal to 40 mm standard length) indices were estimated from collections of red drum made using 21.3-m (3.1mm bar mesh) center-bag seines. Sets used to develop these indices were made from September through March during the periods 1997-2013 in the northern Indian River Lagoon and during 2001-2013 in the St. Johns River/Nassau Sound region (Fig. 5.7.1). Though data were available since 1990 few or no red drum were captured during these "start-up" years; the survey changed from seasonal sampling (spring and fall) to year round in 1996, and consistent sampling zones have been randomly surveyed since 1997.

5.2.1.2 Sampling Intensity

At least 100 sets were made each year after 1997. Up to 20 red drum-per-size-class captured during 21.3-m bag seine sampling were measured for standard length (SL) and all were counted within each size class. When more than 20 red drum were encountered then length frequencies of the 20 fish were expanded to the total number caught to estimate the sample catch length frequency. All red drum used in the analysis from the young-of-the-year survey, 21.3-m bag seines, were less than or equal to 40 mm SL and were assumed to be age 1 (defined as beginning the first January 1st after fall hatching season).

5.2.1.3 Size/Age data

All red drum considered for this index were clearly age 0 based on the sizes of fish considered, less than or equal to 40 mm SL.

5.2.1.4 Catch Rates

The complete fishery-independent dataset was used to develop the relative abundance estimates. Standardized annual catch rates for red drum were estimated using a delta lognormal model (dual Generalized Linear Models, Lo et al. 1992). All factors used in the analyses were simplified categorical effects: bayzone (region within sampled estuary), bottom sediment type (sand, mud), month, shore type (overhanging vegetation, structure, other), bottom vegetation (seagrass, none), salinity (low,<8ppt; medium,8-33ppt; high,>33ppt), and temperature (low,<15degreesC; medium,16-25degreesC; high,>25 degrees C). Only main effects were used in the model.

The indices generated for young-of-the-year red drum indicate strong year-classes occurred periodically but the strongest of these occurred during the fall/winter of 2004 (January 1, 2005). A string of three consecutive, above-average year classes occurred during the period 2003-2005 (Table 5.6.3, Fig. 5.7.2). Weak year-classes have occurred recently; young-of-the-year were at low levels of abundance in 2000 and possibly again in 2011-12.

5.2.1.5 Uncertainty and Measures of Precision

The standardization process provided estimates of the asymptotic standard errors for the year-specific least squares mean for the binomial (presence/absence) component and the lognormal (positive catches) component. Model diagnostics for the positive-catch analysis showed a slight positive skew to the residuals and this will lead to slight under-estimation of the CV's of the annual index values (figure 5.7.3). A final combined annual index value and its CV was estimated using a Monte Carlo simulation of the individual component distributions. The analysis contained comparisons between the trends in the empirical average catch rates (arithmetic), the standardized full dataset catch rates, and the species- association subset dataset (Stephens and McCall 2004). The group decided that because the survey included estuarine stations that were all potential habitat for juvenile red drum, the standardized full dataset index should be used. After the data workshop, during development of the index standardization diagnostics, the analysis (S 18 DW-10) was revised to include only those data collected since fall 1997. Estimates of coefficients of variation exceeded 100% for the original 1993-1996 index estimates and sampling design changes that occurred prior to 1997 justified dropping these early data from the analysis.

Another level of uncertainty not addressed results from the potential highly variable natural mortality rates experienced by such small red drum. The group was concerned that the year-class signals from fish this small could be modified by extreme levels of natural mortality early in the fish's first year of life, i.e., the „critical period" could occur in older fish.

5.2.1.6 Comments on Adequacy for assessment

This index was deemed adequate for use in the assessment. The group decided that the delta lognormal standardization for the entire dataset was more useful than the species-association subset analysis. The survey area was conducted within the general habitat of young-of-the-year red drum. With multiple young-of-the-year indices in the southern red drum region, the group decided that, beside the year-specific estimates of precision, the survey weights should be made using the relative areal extent of each survey.

5.2.2 Survey Two- South Carolina stopnet survey

5.2.2.1 Methods, Gears, and Coverage

A net was used to enclose a section of flooded intertidal habitat (~0.2 km2) during high tide. It was set just above the low water mark with each end anchored on shore, enabling fish to be collected as they became stranded by the retreating tide. Net dimensions were 366 m x 2.4 m at one of the sites that was visited repeatedly (site 0001), and 274 m x 2.4 m at another (site 0270). Nets were fitted with a float line and lead-core bottom line and were made of 50.8 mm stretched-mesh dipped nylon multifilament.

5.2.2.2 Sampling Intensity- time series

A total of 150 collections were made at nine stations between 1985 and 1998. Sites 0001 (Grice Cove, Charleston Harbor, SC) and 0270 (Bulls Island, Bulls Bay, SC) were sampled most frequently (Table 5.6.4). Although collections occurred in all months across the full duration of the survey, each month was not necessarily sampled within each calendar year.

5.2.2.3 Size/Age data

Captured red drum were counted and measured (TL and SL). TL ranged between 33 mm and 910 mm (mean = 431 mm, median = 390 mm). For red drum caught during the months Jul-Dec, age 1 red drum were assigned based on size ranges shown in Table Stop-3 (assuming age transition from 0 to 1 at the first Jan 1 of life, several months after settling from the plantkon).

Otoliths and/or scales were taken from a sub-sample of red drum for aging. Red drum TL ≥ 350 mm were tagged before releasing them. Ages were assigned to 7,756 red drum based on length (L), otoliths (O) or scales (S).Sex and maturity data were obtained from a total of 1,656 and 305 red drum, respectively.

5.2.2.4 Catch Rates- Number and Biomass

The survey captured a total of 8,132 red drum between 1985 and 1998. Based on available data, indices of abundance for age 1 red drum were calculated separately for Sites 0001 and 0270 using age 1 catch data from the months Jul-Dec (Table 5.6.5, Fig.5.75). Indices of abundance for all red drum (all sizes/ages) were calculated for just site 0001 using data from all catch data from the months Jan-Sep (Table 5.6.5).

5.2.2.5 Uncertainty and Measures of Precision

Age 1 indices from Site 0001 covered the longest time period (1986 – 1994) and had lower PSE values that those from site 0270 (Table 5.6.5). PSE values at Site 0001 were less than 20% in four of the years sampled, below 30% in a further three years, and greater (up to 51.7%) in the remaining two years. In years when both sites were sampled, similar trends were observed (Fig 5.7.5). PSE values for the index of all red drum (all sizes/ages) were similar.

5.2.2.6 Comments on Adequacy for assessment

The survey used a fixed station survey design, concentrating mainly on just two sites, so spatial coverage is poor and the indices are less statistically robust. Sampling was monthly in some years, but sporadic in others.

Despite the data being from fixed stations, there is reasonable agreement in year class strength when compared with overlapping years from the SCDNR rotenone and trammel net surveys, and also when compared with relative year class composition derived from otoliths of adult red drum (Arnott et al., 2010). Due to this agreement, the group thought the age 1 index from Site 0001 (the longest time series with most complete sampling coverage) would be useful to include in the stock assessment models, since very few fishery independent data were available from the 1980s and early 1990s.

5.2.3 Survey Three – Georgia Gillnet survey (model age-1)

5.2.3.1 Methods, Gears, and Coverage

To determine red drum relative abundance, the gill net survey was conducted in Altamaha and Wassaw Sounds from June through August 2003-2013. In the Altamaha River Region, 36 stations were sampled each month from a pool of 60 total stations using a hybrid random stratified and fixed station design (Figure 5.7.8). In a given survey month, each selected station is sampled one time. There were 8 SEDAR fixed stations; twenty-eight stations were then randomly selected from the remaining 52 stations. In the Wassaw Sound region, 36 stations were selected and sampled from a pool of 70 total stations using a hybrid, random stratified and fixed station design (Figure 5.7.9). In a given survey month, each selected station is sampled one time. There were five fixed SEDAR stations and 31 stations were randomly selected from the remaining 65 stations.

5.2.3.2 SEDAR vs. "All Stations"

From 2003-2008 strata were based on high affinity sites for red drum (Pool = F) and unknown affinity sites (Pool = R). There were four QUADS in Wassaw with these two POOL observations, 8 strata total. Altamaha originally had the same POOL configuration with 15 QUADS split between Hampton River, Altamaha Sound, and Doboy Sound (30 strata). The purpose of these QUADS was to insure sampling across the entire estuarine system. Strata were collapsed in the Altamaha system sampling due to effort cuts over the years while still maintained the overall sample design. Unfortunately, during this time, some stations were re-designated from F to R and vice versa. At SEDAR 18, the committee had concerns with stations being switched from one designation to another (R vs F) and decided only to use the stations that did not change and had the highest sampling frequency; these 13 sites became the pool for the Georgia

"SEDAR Index".

After SEDAR 18, GADNR staff reassessed the universe of available stations and only selected sites that had caught a least one red drum through 2008. This dramatically reduced the overall number of stations available for sampling each year but provided a better representation of red drum optimum habitat. Monthly station selection remained the same in Wassaw with 4 QUADS (or strata), Altamaha was collapsed further into just Hampton, Doboy, and Altamaha strata. Catch and effort data prior to 2009 were also reevaluated using this new pool of stations. This became the Georgia "NEW 09 Index" which the SAC referred to as "All Stations".

All sampling occurred during the last three hours of ebb tide and only during daylight hours. Station pools in both survey areas were determined by initial surveys, which identified locations that could be effectively sampled with survey gear.

Survey gear is a single panel gillnet. The net is 91.4 m (300 ft.) long by 2.7 m (9 ft.) deep. The panel has 6.4 cm (2.5 in.) stretch mesh. The net has a 1.3 cm (0.5 in.) diameter float rope and a 34 kg (75 lb.) lead line. A 11.3 kg (25 lb.) anchor chain is attached to each end of the lead line, and a large orange bullet float is attached to each end of the float line.

A sampling event consists of a single net set. The net is deployed by boat starting at the bank following a semicircular path and ending back on the same bank. Net deployment is performed against the tidal current. Immediately after deployment, the net is actively fished by making two to three passes with the boat in the area enclosed by the net. After the last pass is made, the net is retrieved starting with the end that was first set out. As the net is retrieved, catch is removed and put inside a holding pen tied to the side of the boat. After the net is fully retrieved, all catch is processed for information and released. The catch is identified to species and counted. All finfish specimens are measured, centerline in millimeters. In addition to catch information, temporal, spatial, weather, hydrographic and physio-chemical data are collected during each sampling event.

5.2.3.3 Sampling Intensity

A minimum of 36 stations are sampled in each sound system during each month of the sampling season (June – August). The time series covers 2003-present. The number of sites visited by month and year are outlined in Table 5.6.5.

5.2.3.4 Size/Age

The majority of fish sampled are age-1 individuals. Length cutoffs are applied to the data to exclude larger fish from the index.

5.2.3.5 Catch Rates – Number and Biomass

Catch per unit effort by year for 2003 through 2013 are given (Table 5.6.5 and Figure 5.7.10).

5.2.3.6 Uncertainty and Measures of Precision

Annual CPUEs and their associated 95% confidence limits / CVs were provided (Table 5.6.5).

5.2.3.7 Comments on Adequacy for assessment

The group accepted both the SEDAR Index for continuity as well as the "All Stations" index. During the assessment workshop it was decided that Georgia's "All Stations" index was an improvement over the SEDAR index and would be included in both the continuity run and the new model.

5.2.4 Survey Four – North Carolina young-of-the-year index

5.2.4.1 Methods, Gears, and Coverage

A red drum seine survey was conducted at 21 fixed sampling sites throughout coastal North Carolina (Figure 5.7.11) during September through November for each year from 1991 through 2013. Each of these sites was sampled in approximately two week intervals for a total of six samples with an 18.3 m (60 ft) x 1.8 m (6 ft) beach seine with 3.2 mm (1/8 in) mesh in the 1.8 m x 1.8 m bag. One "quarter sweep" pull was made at each location. This was done by stationing one end of the net onshore and stretching it perpendicularly as far out as water depth allowed. The deep end was brought ashore in the direction of the tide or current, resulting in the sweep of a quarter circle quadrant. All species were counted and identified; red drum were counted and measured to the nearest

mm FL. Salinity (ppt), water temperature (^{o}C), tidal state or water level, and presence of aquatic vegetation were recorded. Locations of fixed stations were determined in 1990 based on previous catch rates and practicality for beach seining (Ross and Stevens 1992). The juvenile index, or CPUE, is the arithmetic mean catch/seine haul of young-of-the-year (YOY) individuals.

5.2.4.2 Sampling Intensity – time series-

Under the sampling design, complete survey coverage occurred at 120 seine sets per year. Only in 1994 and 1999 did the number of seine sets fall below 100.

5.2.4.3 Size/Age data

The size distribution of red drum caught during this survey indicated most fish were age-0. Size cutoff for age-0 was 100mm and only age-0 fish were used in the index.

5.2.4.4 Catch Rates – Number and Biomass

Catch rates were variable early in the survey with apparent strong year classes in 1991, 1993, and 1997 (Table 5.6.6). During 1999-2001 there was a consistent series of low annual catch rates followed by an increase through 2005, before another decrease from 2006-2009. 2011 marked the 4th largest CPUE during the time series, indicating a strong year class. Since 2011, catch has decreased for 2012 and 2013.

5.2.4.5 Uncertainty and Measures of Precision

The estimated standard errors for the arithmetic mean catch rates were largest for the peak catch rates during the 1990's and lower since then especially for the years of lower catch rates. Hurricanes during this year caused extreme high and low water conditions and may have altered survey results. For this reason it was recommended that the 1996 data point be deleted from the index. The proportional standard errors (PSE is the same as CV of the mean) indicate that the estimated arithmetic mean catch rates were at least as precise as other indices for young-of-the-year red drum in the southern region, ranging from 13 to 31.

5.2.4.6 Comments on Adequacy for assessment

The group agreed that catch rates for this survey would be useful as an index of abundance for young-of-the-year red drum and agreed with the recommendation that 1996 data point not be used.

5.2.5 Survey Five – Florida subadult survey

Indices of abundance for subadult red drum in Florida were developed using fishery-independent survey data from Northeast Florida and the Northern and Southern Indian River Lagoon. These fish were caught using a 183-m seine deployed year-round under a stratified random design. Analyses of these data followed the delta-lognormal approached as explained above for the young-of-the-year index, with the exception that a year-age categorical variable was included in the null model rather than just year. This allowed retrieval of the marginal mean for each age group across years. Sampled fish were assigned age groups based on their specific length and a sub-sample of the catch chosen for age determination. Length alone was used to separate ages 1 from age 2 and length and aged samples were used to assign ages to late age-2 fish and age 3's. Indices were developed separately for SS3 model-age 1 (second full calendar year of life) and SS3 model-age 2. The retained factors adjusted for in the model included: bay zone and trimester (December-March, April-July, August-November) for the lognormal model and bay zone, trimester, and salinity for the binomial model (Table 5.6.7). The nominal and standardized indices showed some similar trends with a one year offset but were generally quite noisy (Tables 5.9.8 and 5.9.9, Fig. 5.10.12)

5.2.5.1 Methods, Gears, and Coverage.

This survey is a stratified random sampling, much like survey 5.3.1 above, except with 183-m seine sampling gear. This survey has operated in the southern and northern Indian River Lagoon since 1997 and in the St Johns/Nassau Sound area since 2001 (Fig. 5.7.1).

5.2.5.2 Sampling Intensity – time series

The calendar year sampling intensity ranged from 360 sets in 1997 to over 600 samples per year after 2002 (Tables 5.9.8 and 5.9.9). Annual random samples of aging parts were taken from between about 60 and 150 fish each year.

5.2.5.3 Size/Age data

Estimated annual length frequencies for red drum caught in the 183-m haul seine showed a wide size range was captured by the gear. Most captured red drum were between 14 and 24 inches TL, also with a secondary mode at 5 or 6 inches. During 2004 there was an abundant group of red drum between 4 and 12 inches long. The ages of red drum captured in haul-seine sets was mostly model-age 2 and 3 years olds, with occasional high numbers of age-1 or age-4 fish.

5.3.5.1 Catch Rates – Number and Biomass

Subadult red drum along the Florida coast fluctuated in abundance during 1997-2003, increased slightly during the mid-2000's before declining in abundance through 2013, except for 2012 (Fig. 5.10.12). Age-specific indices seemed to show some correspondence year-to-year, with consistent abundant or rare year classes of red drum passing through model age 2 one year and model-age 3 the next. There was less correspondence seen between these relative abundance indices and that seen in the young-of-the-year (model-age 1) index.

5.2.5.4 Uncertainty and Measures of Precision

The estimated CV's for the pooled index ranged 12-17%. Age-specific partitioning uncertainty still needs to be incorporated into the final age-specific indices (variance summation). Model diagnostics for the positive-catch analysis showed a slight positive skew to the residuals (Fig. 5.7.13) and this will lead to slight under-estimation of the true

CV's of the annual index values.

5.2.5.5 Comments on Adequacy for assessment

The working group agreed that catch rates for this survey would be useful for age-specific indices of abundance for model ages 2 and 3. The group also recommended using the delta lognormal standardization for the entire dataset.

5.3.6 Survey Six – South Carolina trammel net survey

5.3.6.1 Methods, Gears, and Coverage

The trammel net survey uses a stratified random sampling design. On each sampling day, trammel nets are typically set at 10-12 sites per stratum, although weather, tide or other constraints sometimes hinder this target. Sites are selected at random (without replacement) from a pool of 22-30 possible sites per stratum, with the exception that adjacent sites (unless separated by a creek mouth) cannot be sampled on the same day to avoid sampling interference.

Fish are collected using a 183 x 2.1 m trammel net fitted with a polyfoam float line (12.7 mm diameter) and a lead core bottom line (22.7 kg). The netting comprises an inner panel (0.47 mm #177 monofilament; 63.5 mm stretched-mesh; height = 60 diagonal meshes) sandwiched between a pair of outer panels (0.9 mm #9 monofilament; 355.6 mm stretch-mesh; height = 8 diagonal meshes). The trammel net is set along the shoreline (10-20 m from an intertidal marsh flat, <2 m depth) during an ebbing tide using a fast moving boat. Each end is anchored on the shore, or in shallow marsh. Once the net has been set, the boat makes two passes along the length of the enclosed water body at idle speed (taking <10 minutes), during which time the water surface is disturbed with wooden poles to promote fish entrapment. The net is then immediately retrieved and netted fish are removed from the webbing as they are brought on board and placed in a live-well. Once the net has been fully retrieved, all fish are identified to species and counted. Measurements (TL and SL) are taken from all individuals of target species (including red drum), and up to 25 individuals of non-target species. Any red drum between 350 and 549 mm TL are tagged with disc belly tags, and any greater than 549 mm TL are tagged with a steel shoulder tag. The majority of all fish caught (>95%) are released alive at the site of capture.

5.2.5.6 Sampling Intensity – time series

At present (2014), seven strata are surveyed monthly: Ace Basin (AB); Ashley River (AR); Charleston Harbor (CH); Lower Wando River (LW); McBanks (MB); Cape Romain Harbor (RH); and Winyah Bay (WB) see Figure 5.10.2). The two quarterly strata (strata CT and BR) are sampled less frequently due to the extra time and costs involved.

Historical data also exist from an additional seven strata that were sampled over varying periods of time (strata AC, CP, CR, CS, LB, MI and UW). Stratum CR (Cape Romain) covered some of the sites incorporated in the present-day strata MB and RH strata (allowing time-series from the latter strata to be extended back to 1994).

A total of 17,853 random trammel set were made at 549 sites along the South Carolina coastline between November 1990 and December 2013. An additional 2,840 non-random sets were made between 1987 and 2013, primarily for the purpose of biological sampling and tagging). The combined random and non-random sets caught a total of 73,013 red drum.

5.2.5.7 Size/Age data

All red drum were measured for total and standard length. Sizes of captured red drum varied between approximately 200 and 900 mm and comprised mostly sub-adult red drum less than ~5 years old (Fig-5.7.14). Numbers of red drum sampled for sex, maturity, weight and age shown in Table 5.6.10.

5.2.5.8 Catch Rates – Number and Biomass

Monthly aggregate CPUE of red drum in each of the currently surveyed strata are shown in Fig-5.10.15. Age 1 fish were identified in the catches from their cohort-specific size, enabling annual CPUE indices to be calculated using data from July – December, when they are vulnerable to the gear (Fig-5.7.16). Age 1 red drum that had been stocked by the SCDNR Mariculture Section were removed from these analyses using estimates of stocked fish, as identified by genotyping fin-clip samples (Table 5.6.11). Similar analyses were performed for the aggregate catches of all red drum (all sizes and ages combined) using January – December data (Fig-5.7.17). Indices of abundance of age 2 red drum in different strata were calculated using age-length keys derived over three month periods within each year of sampling (Jan-Mar, Apr-Jun, etc.) (Fig-5.7.18).

Arnott et al (2010) found that trammel net CPUE of red drum is reasonably synchronous along the South Carolina coastline. For the stock assessment, combined (statewide) indices of abundance for age 1 and 2 red drum were derived using data from just 1994 through 2013, and from just five strata that had been sampled for the entirety of that period: ACE Basin, Charleston Harbor, Wando River, Muddy & Bulls Bays and Cape Romain (Tables 5.6.12-5.6.13, Fig- 5.7.19). The years 1991-1993 were not included because of unbalance sampling among strata, and due to concerns about changes in the gear (see below).

5.2.5.9 Uncertainty and Measures of Precision

There is less confidence in the earlier years of the survey because fewer estuarine systems and strata were covered, fewer trammels were set, and the 1989 year class was only sampled over three months (rather than 9). Values for the 2007 year class are preliminary because neither the most recent trammel data nor the percentage contribution of stocked fish to the AR, LW and CH strata are available yet. Evidence from previous years suggests that the effect of stocking is probably negligible to the SC-wide values

Coefficients of variation were above 20 early in the time series and generally less than 15 after this.

5.2.5.10 Comments on Adequacy for assessment

The randomized stratified design of the trammel net survey is a statistically robust sampling protocol. There is good agreement in CPUE trends across strata, as well as with indices from the South Carolina red drum electroshock survey, which covers lower salinity areas of the trammel survey estuary systems (SC DNR 2009).

5.3.7 Survey Eight – North Carolina Sub-Adult Survey

5.3.7.1 Methods, Gears, and Coverage

The Divisions independent gill net study (Program 915) started as the presence and absence of disease sampling in 1998 on the Neuse, Pamlico and Pungo River systems

(River Independent Gill Net Survey (RIGNS). Sampling in Pamlico Sound (The Pamlico Sound Independent Gill Net Survey (PSIGNS)) was initiated in May of 2001. Sampling in the RIGNS was dropped after 2000 and resumed in 2003 to present. The PSIGNS has sampled continuously since 2001. A primary objective of both the PSIGNS and the RIGNS is to provide independent relative abundance indices for key estuarine species including red drum.

Sampling locations for the IGNS were selected using a stratified random sampling design based on area and water depth (Figure 2). The Sound was divided into eight areas: Hyde County 1 – 4 and Dare County 1 – 4. The Neuse River was divided into four areas (Upper, Upper-Middle, Middle-Lower, Lower) and the Pamlico River was divided into four areas (Upper, Middle, Lower and Pungo River). A one minute by one minute grid (i.e., one square nautical mile) was overlaid over all areas and each grid was classified as either shallow (< 6 ft), deep (≥ 6ft) or both based on bathymetric maps.

Physical and environmental conditions, including surface and bottom water temperature (oC), salinity (ppt), dissolved oxygen (mg/L), bottom composition, as well as, a qualitative assessment of sediment size, were recorded upon retrieval of the nets on each sampling trip. All attached submerged aquatic vegetation (SAV) in the immediate sample area was identified to species and density of coverage was estimated visually when possible. Additional habitat data recorded included distance from shore, presence or absence of sea grass or shell, and substrate type.

Note: the time series in the rivers is inconsistent with the Pamlico Sound as the results have typically been analyzed for two areas: 1) Hyde and Dare counties (PSIGNS) only, beginning 2001, and 2) Rivers (Pamlico, Pungo and Neuse; RIGNS), beginning 2003. The CPUE represents the number of red drum captured per sample and can be expressed overall or for a given age. A sample was one array of nets (shallow and deep combined) fished for 12 hours. Due to disproportionate sizes of each stratum and region, the final CPUE estimate is weighted. The total area of each region by stratum was quantified using the one-minute by one-minute grid system and then used to weight the observed catches for calculating the abundance indices.

5.3.7.2 Sampling Intensity –

Each area was sampled twice a month. For each random grid selected, both a shallow and deep sample were collected. Sets in the Pamlico Sound were made over a part of the year in 2001 (237 sets), and thereafter was sampled between 300 and 320 sets per year. Sets in the Rivers (Pamlico, Pungo and Neuse) were made over a part of the year in 2003 (156 sets) and thereafter was sampled between 304 and 320 samples per year.. Sample areas and coveraged included in the PSIGNS and RIGNS surveys from 2001-2006 are provided in Figure 5.10.20.

5.3.7.3 Size/Age data

Each collection of fish per mesh size (30-yard net) was sorted into individual species groups. All species groups were enumerated and an aggregate weight (nearest 0.01 kilogram (kg)) was obtained for most species, including damaged (partially eaten or decayed) fish. The condition of each individual was recorded as live, dead, spoiled, or parts. Individuals were measured to the nearest millimeter for either fork or total length according to the morphology of the species. Ages were assigned based on length cutoffs derived seasonal ALK's (6-month: Jan-Jun, Jul-Dec). A large range of sizes were caught (range 220-1260 mm TL), but the vast majority of sizes were associated with age-1 or age-2 fish (mean of ~400 mm TL). An overall age-aggregated index, as well as, an age specific index for age-1 and age-2 fish were generated

5.3.7.4 Catch Rates – Number and Biomass

The Pamlico Sound overall (age-aggregated) weighted CPUE showed an increasing trend over the time series with highest value occurring in 2013 (Table 5.9.14). Age-1 fish varied throughout the time series with a time series high was captured in 2012. Age-2 fish exhibited an overall increasing trend during the time series, although low values did occur in 2010 through 2012. Age-2 abundance peaked in 2013, corresponding with the peak in age-1 fish in 2012.

Comparisons in catch rates were made between the Pamlico Sound and Rivers portions of the survey (Figure 5.10.21). Trends in age-1 fish were similar between those calculated from the Pamlico Sound and Rivers. Trends in age-2 abundance were similar, although age-2 fish were captured less frequently in the Rivers. The overall abundance from the combined index closely tracked the abundance from the Pamlico Sound portion of the survey.

5.3.7.5 Uncertainty and Measures of Precision

Standard errors and CVs were presented for the Pamlico Sound portion of the survey by age (age-1 and age-2) and for all ages aggregated (Table 5.9.14). The aggregated CVs indicate the precision of this index is slightly less than the southern region's Florida subadult survey and similar to the South Carolina trammel net survey. Precision decreased for age-specific indices and higher for age-1 relative to age-2 fish.

5.3.7.6 Comments on Adequacy for assessment

The group agreed that catch rates for this survey would be useful as an index of abundance. An age-1 and age-2 index consistent with SEDAR 18 along with an age-aggregated index of abundance. The group agreed to continue to limit the index to only the Pamlico Sound portion of the survey. This decision maximizes the length of the time series and the strong similarity in trends between the areas combined just the Pamlico Sound portion of the index

5.3.8 Survey Nine – South Carolina Adult Longline Survey

5.3.8.1 Methods, Gears, and Coverage (Include a map of the survey area.)

The data from the South Carolina Adult Red Drum Survey have been amended to include 1-mile long sets using a cable mainline. A cable mainline was used during the project exclusively in 1994, the first year of the study. Following discussion that sharks may be deterred by the cable (sharks were also a target species), in 1995 a monofilament mainline was also used. Both gear types were used until 1997. In 1998, the survey switched to monofilament mainline for all sets, since it was concluded that while the cable gear decreased the catch of sharks, red drum catches were unaffected by the gear. Both gear are now included in these updated data upon agreement by the Indices Sub-committee.

Since most catches of red drum occur in the fall, when they are most available to the gear, only sets made August through December have been included. Until 2007, most sampling occurred in the Charleston Harbor, using fixed stations, with occasional trips north and south, so these data only include samples from Charleston Harbor (Figure 5.10.22). In 2007, sampling was changed in order to cover more of the coast of South

Carolina, geographically and temporally, and stations were chosen randomly from a predetermined list of sites. The new sampling utilized gear with a mainline 1/3-mile long; these sets are not represented in the data since only one season would be available (Figure 5.10.23).

Furthermore, due to the change in sampling, only a few (n=7) 1-mile long sets were made in 2007. These sets were utilized primarily to obtain red drum for broodstock. The sets were made in areas previously sampled with the fixed station design. Samples in 2005 and 2006 were also lower than previous years (n=29, n=51 respectively), because the vessel used for the survey broke down both years during the sampling season.

5.3.7.1 Sampling Intensity – time series

Sampling consistently occurred during three fixed sampling periods, August 1 to September 15, September 16 to October 31 and November 1 to December 15. A total of 2,054 collections (sets) occurred from 2007 to 2013 across 250 sites from the four strata (Table 5.9.15). Of the 250 sites, 226 had positive catches of red drum and 761 of the 2054 sets (37.0%) captured at least one red drum. Not every site was sampled every period or year due to the stratified random design. Sampling occurred from August through December each year.

5.3.7.2 Size/Age data

From 2007 to 2013 a total of 539 red drum were sacrificed for age estimation and reproductive assessment. Age estimates ranged from 3 to 40 ($\bar{x}$=17.3) and ages were significantly different between strata. (Table 5.9.15)

5.3.8.2 Catch Rates – Number and Biomass

Catch per unit effort by year for 1994 through 2006 and 2007 through 2013 are given in Tables 5.9.16.-5.9.17 and Figure 5.10.24

5.3.8.3 Uncertainty and Measures of Precision

Standard errors and variances were presented for the annual estimates of CPUE (Tables 5.9.16-5.9.17 and Figure 5.10.24). Apparent coefficients of variation was relatively low, <10, for most years.

5.3.8.4 Comments on Adequacy for assessment

The WG recommended using this survey but only for those index stations in the Charleston Harbor area.

5.2.6 Survey Ten- North Carolina Adult Longline Survey

5.2.6.1 Methods, Gears, and Coverage (Include a map of the survey area.)

In order to begin a long-term index of abundance for red drum, this study employs a stratified-random sampling design based on area and time. Areas chosen for sampling were based on prior North Carolina Division of Marine Fisheries (NCDMF) mark and recapture studies, which indicate the occurrence of adult red drum within Pamlico Sound during the months of July through October (Bacheler et al., 2009; Burdick et al., 2007). The sample area was overlaid with a one-minute by one-minute grid system (equivalent to one square nautical mile). Grids across the area were selected for inclusion in the sampling universe if they intercepted with the 1.8 m (6 ft) depth contour based on the use of bathymetric data from National Oceanic and Atmospheric Association (NOAA) navigational charts and field observations. Other factors, such as obstructions, accessibility, and logistics, were considered when grids were selected. Finally, the sample area was divided into twelve similarly sized regions (Figure 5.10.25). In order to stratify samples through space and time, two samples were collected from each of the twelve regions during each of three periods from mid-July to mid-October.

A standardized sampling protocol that is replicated each year has been consistently utilized in the survey since 2007. All sampling was conducted using bottom longline gear. Lines were set and retrieved using a hydraulic reel. Ground lines consisted of 227 kg (500 lb) test monofilament. Samples were conducted with a 1,500-meter mainline with gangions placed at 15 meter intervals (100 hooks/set). Stop sleeves were placed at 30 m intervals in order to aid in accurate hook spacing and to prevent gangions from sliding down the ground line and becoming entangled when large species were encountered. Terminal gear was clip-on, monofilament gangions consisting of a 2.5 mm diameter stainless steel longline clip with a 4/0 swivel. Leaders on gangions were 0.7 m in length and consisted of 91 kg (200 lb) monofilament rigged with a 15/0 Mustad tuna circle hook. Hooks were baited with readily available baitfish (striped mullet is the primary bait and longline squid is the first alternative). Sets were anchored and buoyed at each end. Anchors consisted of a 3.3 kg window sash weight. Multiple sash weights were used in high current areas. All soak times were standardized and kept as close to 30 minutes as logistically possible. Soak times were measured from the last hook set to the first hook retrieved. Short soak times were designed to minimize bait loss, ensure that the red drum were tagged in good condition, and to minimize negative impacts to any endangered species interactions.

Within each randomly selected grid two samples are taken. In order to maintain consistency, all samples were made in the vicinity of the 1.8 m depth contour with sample depths typically ranging from 1.2 to 4.6 m in depth. All random sampling occurred during nighttime hours starting at sunset. On average, a total of four sets were made per night.

Physical and environmental conditions, including surface and bottom water temperature (^{o}C), salinity (ppt) and dissolved oxygen (mg/L), were recorded for each longline sample. Bottom composition and sediment size were recorded in the instances where they could be ascertained. Location of each sample was noted by recording the beginning and ending latitude and longitude.

All individuals captured were processed at the species level and were measured to the nearest millimeter for either fork or total length according to the morphology of the species. Most red drum were tagged and released, but a random sample was retained for age and other biological data. Catch rates were calculated annually and expressed as an overall catch per unit effort (CPUE), along with corresponding length class distributions. The overall CPUE provides a relative index of abundance showing availability of red drum to the study. The overall CPUE was defined as the number of red drum captured per sample. Longline sets, were standardized to 100 hooks set at 15 m intervals for 30 minutes (measured as time elapsed from last hook set to first hook fished).

5.2.6.2 Sampling Intensity – time series

Continuous standardized sampling since 2007. Sampling intensity includes 72 stratified random sets per year taken over a 12 week period from mid-July to mid-October. All samples taken with protocol for stratified random sample design.

5.2.6.3 Size/Age data

Red drum captured in the longline survey ranged from 25 to 49 inches fork length (Figure 5.10.26). The annual length frequency distribution showed little variation. The majority of the captured fish ranged from 36 to 45 inches fork length. Ages of sampled fish ranged from 3 to 43 years of age (Table 5.9.18).

5.2.6.4 Catch Rates – Number and Biomass

Catch per unit effort by year for 2007 through 2013 are vary little with no apparent trend (Table 5.9.19).

5.2.6.5 Uncertainty and Measures of Precision

Standard errors and variances were presented for the annual estimates of CPUE (Table 5.9.19). Apparent coefficients of variation was relatively low, <20, for most years.

5.2.6.6 Comments on Adequacy for assessment

The group recommended using this survey as an indicator of adult abundance.

5.4 Fishery-Dependent Indices

5.4.1 MRFSS/MRIP total catch rates

Indices of relative abundance were developed from MRFSS and MRIP recreational intercepts for each state from North Virginia south through Florida and a composites for the northern (North Carolina north) and southern stocks (South Carolina through Florida).

Separate indices were estimated for each state and for the composite sample of interviews within the stock region. MRFSS intercepts were used for the period of 1981-2003, while MRIP was used for 2004-2013 to develop criteria for choosing fishing trips categorized as trips that had caught species associated with red drum (defined as red drum fishing trips). Only those data for the years from 1991-2013 were used for the estimating standardized total catch per trip because before 1991 interviews done on multiple individuals from the same trip could not be assigned to the same trip. Additional details can be found in working paper SEDAR44-DW12.

5.4.2 Identification of Appropriate Survey Samples

This analysis included selected inland fishing trips made using hook-and-line gear. Fishing trips that were deemed appropriate for measuring subadult red drum abundance trends were identified using a cluster analysis. By identifying those trips that caught associated species but failed to catch red drum, one can infer zero-catch trips that were appropriate to include in the analysis (Stephens and MacCall 2004). Affinity propagation clustering (APC) was chosen to determine associated species, because it has been shown to perform well relative to other cluster techniques and does not require that the number of cluster be pre-specified (Frey and Dueck 2007). APC automatically chooses an optimal number of clusters in the dataset, thereby providing an objective criterion for which to group associated species. To conduct the cluster analysis, the data were first filtered to remove all uncommon species that occurred on only a small proportion (<1.0%) of the total fishing trips made in a given state. The APC procedure was then applied using the Morisita measure of similarity, since this measure is recommended for count data and is insensitive to sample sizes (Krebs 1999). Once the associated species within the red drum cluster were identified for each state, all trips on which red drum of these associated species were caught were used as representative trips in the subsequent analyses. The APC technique was done in R 3.0.1 (R Core Team 2013) using the apcluster package (Bodenhofer et al. 2011).

5.4.3 Standardization Model

Standardized indices of abundance were calculated using a generalized linear modeling procedure that combined the analysis of the binomial information on presence/absence with the lognormal-distributed positive catch data (also known as two-part, hurdle, or zero-adjusted models, Zuur et al. 2009) as:

$$I_y = c_y p_y \quad [1]$$

where c_y are estimated annual mean CPUEs of non-zero catches modeled as lognormal distributions and p_y are estimated annual mean probabilities of capture modeled as binomial distributions. The lognormal submodel considers only trips in which a red drum was caught (*i.e.*, non-zero catches). The binomial model considers all trips in which red drum or associated species were caught. To determine the most appropriate submodels, categorical variables (2-month wave, mode of fishing, area fished, time period of day, angler avidity, and state [in multi-state models]) and covariates (hours fished and number of anglers on trip) were sequentially added to a null model which included year. The factor resulting in the largest decline in deviance per degree of freedom (dev/df) was added to the model for the next step in the evaluation if the dev/df was reduced by at least 0.5% of the base model dev/df. We assume that there were no significant interaction terms with year in this model and consider only the main effects. The final year-specific marginal means estimates and standard errors of the two sub-models were used to generate distributions of estimates for each sub-model from a Monte Carlo simulation (5000 Student's t distributed realizations). The product of these distributions (eq. 1) provided an estimate of the median catch rate with year-specific variability.

5.4.4 Catch Rates – number and biomass

The APC technique was performed separately for each state but in all states fishing trips where two species, spotted seatrout and southern flounder, were caught clustered with trips catching red drum. Of the 18 commonly caught inshore species in east Florida, five clusters were delineated by APC with three species in the cluster occupied by red drum (Table 5.9.20). In Georgia, trips where five of the twelve common inshore species were caught were categorized as trips with the potential to catch red drum. In North and South Carolina, three species were associated with trips that reported red drum catches (Table 5.9.20).

Standardized indices of abundance were developed for Florida, Georgia, South Carolina, North Carolina, and Virginia. Diagnostics for the model components of the combined south (FL-SC) and north (NC-VA) regions are shown in Table 5.9.21 and Figures. 5.10.27 and 5.10.28. Within each region the state-specific trends in catch rate were quite similar so the combined regional models were used for the assessment. In the northern model, significant factors were: binomial model, fishing mode, wave, area, and hours fished; lognormal, fishing mode, wave, hours fished, avidity, and number of anglers. In the southern region the significant factors accounted for were: binomial, fishing mode, wave, hours fished, state, avidity, and area fished; lognormal, , fishing mode, wave, hours fished, state, avidity, area fished, number of anglers, and time period of day.

The standardized trip catch rates show fluctuations in the South but with an overall increase between 1991 and 2013. Significant peaks occurred in 1995 and 2010. In the northern region, there was also a general increase over the time period with peak catch rates in 2002 and 2012 and significant lows in 1996, 2003-4, and 2011.

5.4.4.1 Uncertainty and Measures of Precision

The distribution of the total catch rates were generated using a Monte Carlo simulation using of the estimated annual least square means and their asymtotic standard errors, backtransforming into the arithmetic scale. Generally less precision is seen in the higher catch rate estimates.

5.5 Literature Cited

Bacheler, N.M., Paramore, L.M., Burdick, S.M., Buckel, J.A., Hightower, J.E., 2009c. Variation in movement patterns of red drum *Sciaenops ocellatus* inferred from conventional tagging and ultrasonic tracking. Fish. Bull. 107, 405–419.

Burdick, S.M., J.E. Hightower, J.A. Buckel, K.H. Pollock, and L.M. Paramore. 2007. Movement and selectivity of red drum and survival of adult red drum: an analysis of 20 years of tagging data. NCDMF, Final Report, Morehead City, NC.

Bannerot, S. P. and C. B. Austin. 1983. Using frequency distributions of catch per unit effort to measure fish-stock abundance. Transactions of the American Fisheries Society. 112: 608–617.

Fisheries-Independent Monitoring Program Staff. 2008. Fisheries-independent monitoring program 2007 annual data summary report. Florida Fish and Wildlife Conservation Commission Fish and Wildlife Research Institute, In-House Report 2008- 006.

Lo, N.C., L.D. Jacobson, and J.L. Squire. 1992. Indices of relative abundance from fish spotter data based on delta-lognormal models. Can. J. Fish. Aquat. Sci. 49: 2515-2526.

McMichael, R.J. and others. 2014. Fisheries-Independent Monitoring Program 2013 Annual Data Summary Report. Florida Fish and Wildlife Conservation Commission FWRI In-House Report IHR 2014-XX. St Petersburg.

Morris, L.J. and R.W. Virnstein. 2004. The demise and recovery of seagrass in the northern Indian River Lagoon, Florida. Estuaries 27(6):915-922.

Phlips, E.J., and ten others. 2015. From red tides to green and brown tides: bloom dynamics in a restricted subtropical lagoon under shifting climatic conditions. Estuaries and Coasts 38(3):886-904

Ross, J.L. and T.M. Stevens. 1992. Life history and population dynamics of red drum (*Sciaenops ocellatus*) in North Carolina waters. North Carolina Division of Marine Fisheries, Marine Fisheries Completion Report Project F-29, Morehead City.

SC DNR (2009). SC red-drum electro-fishing survey. (Report prepared by Wenner, C.A.). SEDAR18-DW11.

Smith, T.I.J., Jenkins, W.E., Denson, M.R. (1997). Overview of an experimental stock enhancement program for the red drum in South Carolina. Bull. Natl. Res. Inst. Aquacult., Suppl. 3: 109-115. SEDAR18-RD68.

Stephens, A. and A. McCall. 2004. A multispecies approach to subsetting logbook data for purposes of estimating CPUE. Fisheries Research 70:299-310.

Wenner, C.A. (2000). Contributions to the biology of red drum, *Sciaenops ocellatus*, in South Carolina. Final Report, Federal number NA47FM0143. SEDAR 18-RD36.

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5.6 Tables

Table 5.6.1(a). Evaluation information and ultimate decision for including or excluding index options for the northern stock. See the survey description section for additional details on surveys used to develop indices of abundance accepted for the assessment.

Data Source	Include in Assessment	Pros	Cons	Justification for Inclusion/Exclusion
MD Coastal Bays Seine Survey	N		~rarely encounters red drum (27 red drum over entire time series)	~Red drum rarely encountered ~does not provide 5 consistent years of red drum captures ~Northern extreme of stock range
MD Striped Bass Seine Survey	N	~consistently sampled methodology for 22 fixed stations	~rarely encounters red drum (22 red drum over entire time series) ~designed to sample YOY striped bass (may not be red drum nursery habitats)	~Red drum rarely encountered ~does not provide 5 consistent years of red drum captures ~Northern extreme of stock range
MD Charter Boat Logbooks	N	~better estimate of recreational fishing for red drum in MD than MRIP; many years where MRIP estimates no recreational catch, when logbooks indicate contrary results	~small sample size ~no length or age data ~difficulty determining which trips are targeting red drum ~changes in regulations bias index, catchability changes	~Northern extreme of stock range ~No size data ~difficulty determining which trips are targeting red drum and selecting zero catch trips informative of red drum abundance
VA Citation Program	N	~potential coverage of little known adult relative abundance	~only one citation recorded regardless of the number of trophy fish registered	~only one citation recorded regardless of the number of trophy fish registered ~no records of zero catch effort ~difficulty defining unit of effort
VIMS Longline Survey	N		~small sample size	~does not correspond with NC longline survey ~red drum rarely encountered

VIMS Trawl Survey	N		~small sample size, inconsistent encounters throughout station history	~does not correspond with NC seine survey ~red drum rarely encountered
NEAMAP	N		~small sample size and short time series	~red drum rarely encountered
ChesMMAP	N		~small sample size	~red drum rarely encountered ~does not provide 5 consistent years of red drum captures
MRFSS/MRIP VA	N		~smaller spatial scale relative to aggregate MRFSS/MRIP index	~use aggregate MRFSS/MRIP index due to greater spatial coverage
NC Trip Ticket	N	~large number of observations	~changes in regulations bias index, catchability changes ~difficulty determining which trips are targeting red drum	~changes in regulations bias index, catchability changes ~bycatch species, not targeted effort
NC Citation Program	N	~potential coverage of little known adult relative abundance	~changes in popularity of red drum fishing and angler-defined trophy sizes	~changes in popularity of red drum fishing and angler-defined trophy sizes ~no records of zero catch effort ~difficulty defining unit of effort
NC Juvenile Seine Survey	Y	~consistently sampled methodology for 21 fixed stations chosen based on historic relative abundance work ~all fish are YOY based on survey time and size ~fair agreement with IGNS based on correlation	~Hurricane effects in 1996 ~possible changes in fixed station habitats during extreme climatic events	~consistent sampling methodology for long time series ~corresponds with NC gill net survey and commercial landings

NC Age 1 Gill Net - Pamlico Sound	Y	~stratified random survey design using gill nets of various mesh sizes ~continuous sampling in Pamlico Sound since 2001	~started a s a disease sampling survey and dropped in river areas during 2001-2002	~corresponds with NC seine survey and commercial landings ~longer time series by dropping river samples - river samples have minimal effect on trend
NC Age 1 Gill Net - Rivers	N	~stratified random survey design using gill nets of various mesh sizes ~continuous sampling in rivers since 2003 ~correlated with Pamlico Sound IGNS	shorter time series	~would drop two years of data from sound sampling and has minimal effect on trend
NC Age 1 Gill Net - Pamlico Sound and Rivers Combined	N		shorter time series	~would drop two years of data from sound sampling and has minimal effect on trend
NC Age 2 Gill Net - Pamlico Sound	Y	~stratified random survey design using gill nets of various mesh sizes ~continuous sampling in Pamlico Sound since 2001	~started a s a disease sampling survey and dropped in river areas during 2001-2003	~corresponds with NC seine survey and commercial landings ~longer time series by dropping river samples - river samples have minimal effect on trend
NC Age 2 Gill Net - Rivers	N	~stratified random survey design using gill nets of various mesh sizes ~continuous sampling in rivers since 2003 ~correlated with Pamlico Sound IGNS	shorter time series	~would drop two years of data from sound sampling and has minimal effect on trend
NC Age 2 Gill Net - Pamlico Sound and Rivers Combined	N		shorter time series	~would drop two years of data from sound sampling and has minimal effect on trend

NC Aggregate Gill Net - Pamlico Sound	N	~avoids uncertainty introduced from ad hoc age disaggregation		~length cutoffs for the ages regularly encountered by the survey are very clear
NC Southern Gill Net Survey	N	~increases geographical coverage for southern NC	~inconsistent sampling methodology (soak times changed) ~does not have five years of consistent data	~does not have 5 years of data collected with consistent methodology
NC Longline Survey	Y	~good precision and consistent catches; only adult survey for northern stock	~short time series	~only index reliably tracking mature, adult fish ~stable index as expected for an aggregate index tracking many year classes
MRFSS/MRIP NC	N		~smaller spatial scale relative to aggregate MRFSS/MRIP index	~use aggregate MRFSS/MRIP index due to greater spatial coverage
MRFSS/MRIP Aggregate	Y	~large spatial coverage, consistent design.	~relies on angler volunteered data, sometimes unseen catch id.	~Large spatial coverage ~Long time series ~Corresponds with state-specific MRIP indices

Table 5.6.1(b). Evaluation information and ultimate decision for including or excluding index options for the southern stock. See the survey description section for additional details on surveys used to develop indices of abundance accepted for the assessment.

Data Source	Include in Assessment	Pros	Cons	Justification for Inclusion/Exclusion
SC Stop Net - Age 1	Y	~prior to mid-1990s major indicator of relative abundance in SC	~discontinued after mid 1990s ~not used in assessment previous to SEDAR 18	~Corresponds with other inshore surveys and age composition of longline survey (see Arnott et al 2010) ~Provides historical information on abundance
SC Trammel Net - Age 1	Y			~Longer time series than electroshock age-1 survey ~Corresponds with other inshore surveys and age composition of longline survey (see Arnott et al 2010)

SC Trammel Net - Age 2	Y			~Age specific due to ageing methods (lengths for ages 0-2, scales for age 3+) ~Corresponds with other inshore surveys and age composition of longline survey (see Arnott et al 2010)
SC Trammel Net - Ages 2-5	N			~Age 3+ aged with scales, not confident in age data for older ages
SC Trammel Net Aggregate	N	~stratified random sampling design ranging throughout most major SC estuaries ~CPUE trends across strata agree	~later age-1 survey that corresponds only somewhat with electroshock survey ~overall CPUE must be adjusted to exclude contributions from stocked fish	~Age 3+ aged with scales, not confident in age data for older ages
SC Electroshock - Age 1	N	~five strata sampled randomly ~good agreement with SC trammel net survey	~limited to low salinity areas where electro-shocking is effective	~Shorter time series than trammel survey ~Same signal as trammel net survey
SC Rotenone - Age 1	N	~Corresponds with other inshore surveys and age composition of longline survey (see Arnott et al 2010) ~Provides historical information on abundance	~Nonrandom sampling	~Nonrandom sampling ~Same signal as stop net survey ~Higher CVs than stop net survey
SC Longline Survey 1 mile	Y	~apparent CVs for mean catch rate is often low ~long time series	~potential sampling complications since this was modified from a shark survey ~some potential difficulty in determining	~Provides only historical information on abundance of mature, adult fish

			adult contribution to the total catch rate since some selectivity in sampling for age	
SC Longline Survey 1/3 mile	Y			~Provides information on abundance of mature, adult fish
SC Charter Logbook	N		No associated size data	~No size composition data
SC SFS	N			~Repetitive with MRFSS/MRIP survey, reduced spatial scale
MRFSS/MRIP SC	N		~smaller spatial scale relative to aggregate MRFSS/MRIP index	~use aggregate MRFSS/MRIP index due to greater spatial coverage
GA Age 1 Gill Net Survey (13 SEDAR Sites)	N	~consistent sampling methodology for 13 fixed stations	~complex hybrid random stratified survey with underlying complex probability model	~Limited spatial coverage
GA Age 1 Gill Net Survey (All Sampling Sites)	Y			~Builds on SEDAR recommendations from last assessment ~Larger spatial coverage than 13 SEDAR sites
GA Longline	Y		~Catches few red drum, spatially limited (only lower Ga. & only 10 stations in NE FL)	~Provides information on abundance of mature, adult fish
MRFSS/MRIP GA	N		~smaller spatial scale relative to aggregate MRFSS/MRIP index	~use aggregate MRFSS/MRIP index due to greater spatial coverage
Aggregate FL Haul Seine Survey	N	~stratified random survey with large number of sets made each year ~complete time series		~length cutoffs for the ages regularly encountered by the survey are very clear
Age 1 FL Haul Seine Survey	N	~stratified random survey with large number of sets made		~not fully selected by the survey gear

		each year ~complete time series		
Age 2 FL Haul Seine Survey	Y	~stratified random survey with large number of sets made each year ~complete time series		~commonly encounters red drum with consistent methodology
Age 3 FL Haul Seine Survey	Y	~stratified random survey with large number of sets made each year ~complete time series		~commonly encounters red drum with consistent methodology
FL Coastwide Bagged Seine Survey	N	~consistent SR sampling design since 1997 in IR Lagoon ~at least 100 sets made each year	~does not reflect final year-class strength (highly variable survival at <40mm) ~areal coverage small relative to stock unit ~St. John's River/Nassau Sound sampling started in 2001	~Concerns with the Indian River system being isolated from the rest of the southern stock and not reflective of stock conditions ~Other ecological concerns affecting red drum in the Indian River system
FL Jacksonville Bagged Seine Survey	Y	~relatively consistent survey design	~not a long time series	~Corresponds with other indices
FL Indian River Bagged Seine Survey	N		~large seagrass die-offs, algae blooms and other events that have affected the Indian River Lagoon populations of fish and gear collection efficiency	~Concerns with the Indian River system being isolated from the rest of the southern stock and not reflective of stock conditions ~Other ecological concerns affecting red drum in the Indian River system
MRFSS/MRIP FL	N		~smaller spatial scale relative to aggregate MRFSS/MRIP index	~use aggregate MRFSS/MRIP index due to greater spatial coverage

MRFSS/MRIP Aggregate	Y	~large spatial coverage, consistent design.	~relies on angler volunteered data, sometimes unseen catch id.	~Large spatial coverage ~Long time series ~Corresponds with other indices

Table 5.6.2. Deviance table for the lognormal and binomial components of the Florida young-of-the-year relative abundance model. The null model with year as a predictor is listed as step 0, and subsequent steps list the most predictive factors.

Binomial model						
Step	Variable	Dev chng	Resid. Df	Resid. Dev	AIC	Percent reduction
0	year		2,650	1438.67	1462.67	
1	month	137.72	2,644	1300.95	1336.95	9.37
2	bay zone	102.13	2,641	1198.82	1240.82	7.02
3	bottom	15.44	2,640	1183.37	1227.37	1.05

Lognormal model						
Step	Variable	Dev chng	Resid. Df	Resid. Dev	AIC	Percent reduction
0	year		199	146.90	548.39	
1	bay zone	4.66	196	142.23	547.58	1.69
2	shore type	2.93	195	139.30	545.18	1.53

Table 5.6.3. Standardized index of abundance from the Florida seine young-of-the-year model.

Year	Total num trips	Num pos	Mean	Std dev	CV
2002	208	14	0.0441	0.0223	0.5047
2003	216	19	0.0988	0.0438	0.4433
2004	224	17	0.0932	0.0452	0.4850
2005	224	14	0.0377	0.0199	0.5267
2006	224	5	0.0112	0.0100	0.8970
2007	224	16	0.0711	0.0346	0.4870
2008	224	20	0.0791	0.0354	0.4475
2009	224	22	0.0563	0.0243	0.4317
2010	224	27	0.0799	0.0316	0.3948
2011	224	9	0.0243	0.0160	0.6579
2012	222	17	0.0504	0.0240	0.4756
2013	224	31	0.2153	0.0778	0.3616

Table 5.6.4 Number of collections taken per year at different sites by the SCDNR stop net survey.

Number of Collections	Sites									
Year	**0001**	**0039**	**0041**	**0063**	**0086**	**0198**	**0270**	**0275**	**0340**	**Grand Total**
1985	1									1
1986	6									6
1987	14	1	1							16
1988	13			1						14
1989	13			5	4	1	1	1	2	27
1990	12						7		1	20
1991	13						4			17
1992	13						4			17
1993	12						5			17
1994	9						2			11
1995	1									1
1996	1						1			2
1998	1									1
Grand Total	**109**	**1**	**1**	**6**	**4**	**1**	**24**	**1**	**3**	**150**

Table 5.6.5 Arithmetic mean CPUE of age 1 red drum in the SCDNR stop net survey during July-December. (Age assignment assumes a Jan 1 transition).

SITE 0001 (Grice Cove, Charleston Harbor, SC)

YEARCLASS	SampleYear	Catch.ArithMean	SD	Sets	SE	PSE(%)
1985	1986	43.60	29.17	5	13.04	29.92
1986	1987	105.00	45.67	6	18.64	17.76
1987	1988	62.83	24.85	6	10.14	16.14
1988	1989	56.17	42.46	6	17.33	30.86
1989	1990	56.33	71.40	6	29.15	51.74
1990	1991	82.57	53.44	7	20.20	24.46
1991	1992	54.83	20.76	6	8.48	15.46
1992	1993	36.50	12.72	6	5.19	14.23
1993	1994	43.67	16.77	3	9.68	22.18

SITE 0270 (Bulls Island, Bulls Bay, SC)

YEARCLASS	SampleYear	Catch.ArithMean	SD	Sets	SE	PSE(%)
1989	1990	48.00	62.00	3	35.80	74.57
1990	1991	78.00	73.54	2	52.00	66.67
1991	1992	21.50	7.78	2	5.50	25.58
1992	1993	17.67	17.50	3	10.11	57.20

Table 5.6.6. Annual arithmetic and geometric mean CPUEs and percent positive sets for age-1 red drum captured during Georgia's gillnet survey (2003-2013).

YEAR	GEOMETRIC MEAN	L.C.I. GEO. MEAN	U.C.I. GEO. MEAN	C.V. E(Yst)	Arithmetic Mean	L.C.I. Arith. Mean	U.C.I. Arith. Mean	CV Arith. Mean	Total Fish	Freq. Occur.	# SETS	Fish Per Net Set	CV Ratio Estimate	Sites for Weight Factor
2003	1.2429	0.7659	1.8487	14.8	2.9586	1.1186	4.7987	31.1	225	48	84	2.6786	22.46	110
2004	1.0567	0.6882	1.5055	13.69	2.1472	1.2067	3.0876	21.9	214	58	115	1.8609	20.15	131
2005	1.4002	1.0384	1.8262	9.33	2.5453	1.8067	3.284	14.51	331	73	128	2.5859	15.89	131
2006	0.6271	0.4488	0.8273	11.92	1.0894	0.7469	1.4318	15.72	136	54	123	1.1057	15.48	131
2007	0.9409	0.6684	1.2579	11.41	1.8966	1.1657	2.6276	19.27	206	55	105	1.9619	19.67	131
2008	1.4373	1.0819	1.8532	8.84	3.2724	1.9712	4.5736	19.88	496	84	137	3.6204	24.11	131
2009	0.8243	0.6207	1.0534	9.84	2.1126	1.0809	3.1442	24.42	404	92	216	1.8704	21.76	131
2010	1.5454	1.1991	1.9461	7.83	4.3827	2.943	5.8224	16.42	826	112	216	3.8241	15.92	131
2011	0.6132	0.4611	0.7812	10.36	1.2689	0.8231	1.7148	17.57	254	82	216	1.1759	15.86	131
2012	0.4095	0.2838	0.5475	13.61	0.9764	0.5412	1.4117	22.29	182	56	216	0.8426	21.06	131
2013	0.5554	0.4029	0.7246	11.69	1.2846	0.7755	1.7938	19.82	254	79	216	1.1759	18.18	131
2014	0.7171	0.5088	0.9541	11.96	2.3468	1.3195	3.3741	21.89	434	77	216	2.0093	21.24	131

Table 5.6.7. Annual arithmetic mean or geometric mean CPUE for YOY red drum captured during the North Carolina seine survey 1991 - 2013.

Year	N	CPUE	lci	uci	SE	MIN	MAX	SUM	CV
1991	105	15.12	10.85	19.40	2.182	0	122	1588	0.144
1992	116	3.71	1.48	5.93	1.135	0	125	430	0.306
1993	117	12.65	8.30	17.00	2.217	0	130	1480	0.175
1994	93	8.29	3.56	13.02	2.412	0	180	771	0.291
1995	119	4.61	3.19	6.03	0.724	0	44	549	0.157
1996	104	2.63	1.70	3.55	0.472	0	32	273	0.180
1997	126	13.13	7.10	19.15	3.074	0	236	1654	0.234
1998	124	8.23	6.03	10.42	1.121	0	85	1020	0.136
1999	98	1.84	1.02	2.65	0.415	0	29	180	0.226
2000	123	3.14	2.01	4.27	0.576	0	38	386	0.184
2001	122	0.97	0.60	1.34	0.188	0	11	118	0.194
2002	120	2.23	1.20	3.27	0.528	0	39	268	0.236
2003	120	5.01	2.60	7.42	1.231	0	113	601	0.246
2004	120	8.32	6.10	10.54	1.133	0	75	998	0.136
2005	120	9.02	6.26	11.77	1.404	0	80	1082	0.156
2006	120	3.44	2.02	4.86	0.726	0	63	413	0.211
2007	119	5.46	2.48	8.44	1.521	0	149	650	0.278
2008	120	1.58	0.99	2.17	0.301	0	23	190	0.190
2009	120	1.89	0.60	3.19	0.661	0	74	227	0.349
2010	120	4.69	2.79	6.59	0.968	0	74	563	0.206
2011	116	10.82	4.40	17.24	3.276	0	344	1255	0.303
2012	120	2.69	1.30	4.09	0.712	0	65	323	0.264
2013	120	1.11	0.52	1.70	0.302	0	23	133	0.272

Table 5.6.8. Deviance table for the lognormal and binomial components of the Florida haul-seine relative abundance model for age-1 and -2 red drum. The null model with year as a predictor is listed as step 0, and subsequent steps list the most predictive factors.

Binomial model						
Step	Variable	Dev chng	Resid. Df	Resid. Dev	AIC	Percent reduction
0	Year-age		11,156	12,603.93	12,705.93	
1	bay zone	1,153.89	11,149	11,450.04	11,566.04	9.10
2	trimester	799.42	11,147	10,650.62	10,770.62	6.33
3	salinity	108.91	11,146	10,541.71	10,663.71	0.86

Lognormal model						
Step	Variable	Dev chng	Resid. Df	Resid. Dev	AIC	Percent reduction
0	Year-age		2,903	1,344.88	6,162.73	
1	bay zone	19.01	2,896	1,325.88	6,134.68	1.17
2	trimester	7.76	2,894	1,318.12	6,121.35	0.51

Table 5.6.9. Standardized index of abundance from the Florida haul seine survey catch rate model for (second full) calendar age-1 red drum.

Year	Total num	Num pos	Mean	Std dev	CV
1997	146	39	0.0081	0.0020	0.2450
1998	143	51	0.0113	0.0024	0.2151
1999	142	45	0.0067	0.0016	0.2319
2000	158	62	0.0102	0.0020	0.1972
2001	151	45	0.0064	0.0015	0.2355
2002	260	70	0.0100	0.0017	0.1750
2003	258	62	0.0080	0.0015	0.1873
2004	251	82	0.0123	0.0020	0.1603
2005	276	100	0.0143	0.0020	0.1418
2006	275	77	0.0110	0.0018	0.1666
2007	288	108	0.0137	0.0019	0.1403
2008	263	83	0.0131	0.0021	0.1592
2009	264	76	0.0097	0.0017	0.1715
2010	258	75	0.0101	0.0017	0.1706
2011	278	77	0.0092	0.0015	0.1659
2012	289	87	0.0113	0.0018	0.1622
2013	253	63	0.0080	0.0015	0.1855

Table 5.6.10. Standardized index of abundance from the Florida haul seine survey catch rate model for (third full) calendar age-2 red drum.

Year	Total num	Num pos	Mean	Std dev	CV
1997	138	31	0.0058	0.0016	0.2700
1998	133	41	0.0095	0.0023	0.2447
1999	128	31	0.0052	0.0015	0.2835
2000	127	31	0.0057	0.0016	0.2836
2001	151	45	0.0073	0.0017	0.2354
2002	243	53	0.0072	0.0015	0.2057
2003	248	52	0.0078	0.0016	0.2097
2004	230	61	0.0088	0.0017	0.1895
2005	215	39	0.0049	0.0012	0.2487
2006	246	48	0.0075	0.0016	0.2122
2007	215	35	0.0052	0.0013	0.2511
2008	223	43	0.0061	0.0014	0.2284
2009	217	29	0.0043	0.0012	0.2796
2010	228	45	0.0053	0.0012	0.2222
2011	236	35	0.0049	0.0013	0.2613
2012	233	31	0.0041	0.0011	0.2708
2013	214	24	0.0039	0.0012	0.3085

Table 5.6.11. Biological sampling of red drum caught by the SCDNR trammel net survey. Aging is performed either using otoliths (O), scales (S) or by length (L, for distinct cohort sizes).

Year	Sex	Maturity	Weight	Age_O	Age_S	Age_L
1987	-	-	-	-	-	28
1988	-	-	-	-	5	6
1990	-	-	-	-	9	94
1991	26	24	33	21	211	604
1992	80	79	97	57	605	1,092
1993	238	236	297	187	1,249	1,061
1994	181	186	200	38	1,404	1,243
1995	133	123	141	76	1,412	1,216
1996	100	96	103	46	1,925	1,029
1997	111	111	109	65	1,724	1,259
1998	71	71	70	26	1,383	926
1999	62	62	58	22	1,373	942
2000	52	52	53	17	1,040	598
2001	195	191	191	24	1,396	1,743
2002	172	168	173	25	1,253	2,409
2003	210	207	211	90	2,507	2,384
2004	240	229	231	105	3,071	1,659
2005	84	81	80	65	2,971	906
2006	43	43	43	37	438	723
2007	43	42	43	33	405	1,203
2008	67	65	65	51	390	1,754
2009	182	179	180	106	401	1,884
2010	102	102	109	76	512	2,313
2011	105	99	101	96	660	1,272
2012	72	72	71	67	772	1,000
2013	62	59	60	tbd	tbd	901
Total	2,631	2,577	2,719	1,330	27,116	30,249

Table 5.6.12. Estimates of the percent contribution of stocked red drum in South Carolina from different year classes and in different trammel net strata. Abbreviations of present-day strata: AB ACE Basin, AR Ashley River, CH Charleston Harbor, LW Lower Wando River, MB Muddy & Bulls Bays, RH Romain Harbor, WB Winyah Bay.

Year Class	Year Sampling	AB	AR	CH	LW	MB	RH	WB
1990	1991			12.5				
1991	1992				1.8			
1992	1993				2.3			
1993	1994							
1994	1995							
1995	1996			1.4	1.8			
1996	1997							
1997	1998							
1998	1999							
1999	2000		90.0	31.0	15.0			
2000	2001		35.6	6.7	13.5			
2001	2002		29.0	1.6	2.0			
2002	2003		0.0	0.0	0.0			
2003	2004							
2004	2005							
2005	2006	13.6	3.1	3.2	0.0			35.3
2006	2007		0.0	0.0	0.0			
2007	2008		30.2	3.8	2.0			14.7
2008	2009		29.9	0.8	0.0			16.1
2009	2010		76.0	9.4	3.1			
2010	2011		44.0	13.1	56.3			
2011	2012							
2012	2013							

Table 5.6.13. Indices of abundance for wild-spawned age 1 red drum in the SCDNR trammel net survey during the months July-December. Data are from the ACE Basin, Charleston Harbor, Wando River, Muddy & Bulls Bays and Cape Romain strata, which were all surveyed from 1994 through 2013.

Sampling Year	Sets	Positive Catch Sets	Nominal CPUE	SE	PSE	Total Catch
1994	182	70	1.962	0.418	21.3%	357
1995	231	102	2.840	0.456	16.1%	656
1996	242	78	1.262	0.222	17.6%	305
1997	311	116	2.267	0.575	25.4%	705
1998	300	82	1.180	0.219	18.5%	354
1999	317	102	1.271	0.206	16.2%	403
2000	292	74	0.542	0.075	13.9%	158
2001	299	161	3.503	0.474	13.5%	1047
2002	278	138	2.856	0.334	11.7%	793
2003	286	157	3.965	0.516	13.0%	1134
2004	313	104	1.633	0.312	19.1%	511
2005	291	114	1.344	0.171	12.7%	391
2006	282	81	0.952	0.140	14.7%	268
2007	294	136	2.153	0.292	13.6%	633
2008	279	137	2.456	0.342	13.9%	685
2009	283	140	2.756	0.384	13.9%	780
2010	310	175	3.630	0.404	11.1%	1125
2011	298	105	1.307	0.217	16.6%	389
2012	301	94	1.086	0.153	14.1%	327
2013	271	99	1.391	0.192	13.8%	377

Table 5.6.14. Indices of abundance for age 2 red drum in the SCDNR trammel net survey during the months January-December. Data are from the ACE Basin, Charleston Harbor, Wando River, Muddy & Bulls Bays and Cape Romain strata, which were all surveyed from 1994 through 2013**.**

Sampling Year	Sets	Positive Catch Sets	Nominal CPUE	SE	PSE	Total Catch
1994	328	99	1.460	0.353	24.2%	479
1995	439	141	0.993	0.158	15.9%	436
1996	464	143	1.659	0.279	16.8%	770
1997	546	148	0.678	0.106	15.6%	370
1998	601	168	0.892	0.138	15.5%	536
1999	626	166	0.635	0.116	18.3%	397
2000	595	157	0.697	0.096	13.8%	415
2001	586	134	0.385	0.047	12.1%	226
2002	586	227	2.426	0.490	20.2%	1421
2003	582	246	1.887	0.227	12.0%	1098
2004	610	272	1.941	0.216	11.1%	1184
2005	589	240	1.006	0.117	11.6%	593
2006	584	228	1.111	0.131	11.8%	649
2007	587	119	0.539	0.096	17.8%	316
2008	586	173	1.114	0.159	14.3%	653
2009	576	170	1.141	0.186	16.3%	657
2010	597	181	1.096	0.146	13.3%	655
2011	599	128	0.761	0.153	20.1%	456
2012	605	108	0.526	0.120	22.8%	318
2013	558	146	0.385	0.050	13.1%	215

Table 5.6.14. North Carolina Pamlico Sound IGNS CPUE (arithmetic) for red drum during 2001-2013 (age aggregated and by age for age-1 and age-2). Note that the 2001 survey for only part of the year.

PAMLICO SOUND AGE-AGGREGATED				
Year	***N***	**CPUE**	**SE**	**PSE**
2001	237	1.56	0.31	28
2002	320	3.22	0.43	16
2003	320	1.25	0.22	26
2004	320	1.99	0.29	16
2005	304	2.76	0.41	21
2006	320	2.91	0.34	15
2007	320	3.19	1.02	17
2008	320	2.31	0.34	18
2009	320	4.17	1.27	17
2010	320	2.42	0.32	18
2011	300	0.45	0.07	27
2012	308	3.13	0.59	19
2013	308	6.59	1.12	24

PAMLICO SOUND AGE-1 INDEX				
Year	***N***	**Age-1 CPUE**	**SE**	**PSE**
2001	237	1.03	0.29	28
2002	320	2.63	0.42	16
2003	320	0.27	0.07	26
2004	320	1.85	0.29	16
2005	304	1.37	0.29	21
2006	320	1.64	0.25	15
2007	320	0.53	0.09	17
2008	320	1.61	0.29	18
2009	320	0.66	0.11	17
2010	320	1.49	0.27	18
2011	300	0.15	0.04	27
2012	308	3.03	0.59	19
2013	308	1.24	0.3	24

PAMLICO SOUND AGE-2 INDEX				
Year	***N***	**Age-2 CPUE**	**SE**	**PSE**
2001	237	0.44	0.1	23
2002	320	0.55	0.12	22
2003	320	0.97	0.2	21
2004	320	0.06	0.02	33
2005	304	1.36	0.24	18
2006	320	1.21	0.22	18
2007	320	2.54	0.99	39
2008	320	0.61	0.15	25
2009	320	3.26	1.17	36
2010	320	0.64	0.12	19
2011	300	0.24	0.05	21
2012	308	0.01	0.01	100
2013	308	5.3	1.03	19

Table 5.6.15. Size-frequency distribution of red drum in the South Carolina Department of Natural Resources Adult Red Drum longline survey by strata and sampling period (periods 1 and 2 combined).

Sampling Period	Charleston Harbor 1 & 2	Charleston Harbor 3	Port Royal Sound 1 & 2	Port Royal Sound 3	St. Helena Sound 1 & 2	St. Helena Sound 3	Winyah Bay 1 & 2	Winyah Bay 3	
Fork Length (mm)									Total
601-650	1	0	0	0	0	0	0	0	1
651-700	1	1	2	0	1	0	0	0	5
701-750	2	1	2	1	1	1	7	1	16
751-800	9	4	2	4	4	3	17	4	47
801-850	39	12	4	0	4	10	40	5	114
851-900	42	46	8	6	35	15	102	10	264
901-950	83	103	33	34	76	28	206	31	594
951-1000	72	91	89	110	98	60	213	69	802
1001-1050	45	55	74	76	72	32	142	87	583
1051-1100	14	14	18	23	27	14	46	44	200
1101-1150	2	2	2	3	0	1	12	16	38
1151-1200	0	0	0	0	0	0	1	1	2
1201-1250	1	0	0	0	0	0	0	0	1
Total	310	329	234	257	318	164	760	268	2666

Table 5.6.16. Effort data (sets and positive sets), catch, arithmetic mean (red drum/set) and associated standard deviation (SD), standard error (SE) and coefficient of variation (CV) from the South Carolina Department of Natural Resources Adult Red Drum Longline Survey (August-December, 1994-2006).

Year	Sets	Pos sets	Catch	Arith Mean	SD	SE	CV
1994	58	26	183	3.16	5.8	0.76	1.84
1995	92	47	294	3.2	4.45	0.46	1.39
1996	112	66	325	2.92	6.08	0.57	2.08
1997	105	47	121	1.15	1.99	0.19	1.73
1998	114	60	219	1.92	3.62	0.34	1.89
1999	102	75	274	2.69	2.93	0.29	1.09
2000	89	51	182	2.04	3.79	0.4	1.86
2001	93	65	237	2.57	3.31	0.34	1.29
2002	91	71	380	4.18	5.47	0.57	1.31
2003	100	80	439	4.39	4.5	0.45	1.03
2004	87	56	256	2.94	3.58	0.38	1.22
2005	73	54	236	3.23	3.33	0.39	1.03
2006	52	32	99	1.9	2.12	0.31	1.12
Total	**1168**	**730**	**3258**				

Table 5.6.17. Arithmetic mean (catch per unit effort) of red drum by year in the South Carolina Department of Natural Resources Adult Red Drum Longline Survey (2007-2013). Mean, standard deviation (SD) number of sets, number of positive sets, standard error (SE) and coefficient of variation (CV) by year are presented.

Year	CPUE	SD	Sets	Positive Sets	SE	CV
2007	0.62	1.92	184	42	0.14	3.10
2008	0.66	1.59	209	55	0.11	2.41
2009	1.35	3.54	233	79	0.23	2.62
2010	1.21	2.81	354	125	0.15	2.32
2011	1.12	2.29	360	143	0.12	2.04
2012	1.85	3.41	358	157	0.18	1.84
2013	1.76	3.08	356	160	0.16	1.75

Table 5.6.18. Age frequency from the North Carolina longline survey for red drum collected from stratified random samples from 2007-2013.

Age	2007	2008	2009	2010	2011	2012	2013	Total
3	4	1		1				6
4	4	2		6		3		15
5		2	1	10	5	1	2	21
6			1	1	7	2	2	13
7				2	2	3	2	9
8	3	2			2	2	9	18
9	1		2		1	2	1	7
10	3	2						5
11	1	2	2		4			9
12			2	1	1	4		8
13			1	2	4	3	2	12
14	5					4	1	10
15	1	2			3	7		13
16	1		1		1		1	4
17	1	1		1	1		2	6
18		2			4	3	1	10
19			2	2		4	1	9
20	1	1		2	1	1	7	13
21	4				3	3		10
22	8	2	2			3	1	16
23			4	1			2	7
24	4		1	1	1	1	2	10
25	2					2		4
26	2		1		9		2	14
27	9			1	1	3	3	17
28	1	1			2		1	5
29	16	2	3	1	2	1		25
30				1	2	1	5	9
31	1		3		1	2	2	9
32	1			3	2	2	1	9
33					6		2	8
34	9			1		4		14
35	3	3	1				6	13
36			3	1				4
37	1	1	2	1	3	1		9
38	1			2	3			6
39						5		5
40			1				5	6
41							2	2
43	1							1
All	88	26	33	41	71	67	65	391

Table 5.6.19. NC red drum longline survey results for 2007-2013 based on random sets.

Descriptive Statistics	2007	2008	2009	2010	2011	2012	2013	2014
Mean per set (CPUE)	5.68	3.79	5.97	5.56	5.64	5.22	4.94	4.47
Standard Error	0.925	0.677	1.082	1.142	1.000	0.930	0.777	0.634
CV	0.163	0.179	0.181	0.206	0.177	0.178	0.157	0.142
Minimum in set	0	0	0	0	0	0	0	0
Maximum in set	42	28	36	53	35	44	29	31
# red drum captured	403	273	418	400	406	376	356	322
% Positive Sets	68%	61%	63%	57%	61%	69%	68%	78%
# sets made	71	72	70	72	72	72	72	72

Table 5.6.20. Species clusters used to select those trips where a red drum was likely to occur**.**

Florida East	**Georgia**	**South Carolina**	**North Carolina**	**Virginia**
SPOTTED SEATROUT	SILVER PERCH	SPOTTED SEATROUT	STRIPED BASS	SPOTTED SEATROUT
SOUTHERN FLOUNDER	SPOTTED SEATROUT	SOUTHERN FLOUNDER	SPOTTED SEATROUT	RED DRUM
BLACK DRUM	SOUTHERN FLOUNDER	BLACK DRUM	RED DRUM	
RED DRUM	BLUEFISH	RED DRUM	SOUTHERN FLOUNDER	
	RED DRUM			

Table 5.6.21. Standardized total catch rates per angler-hour for anglers. The number of observations made each year, *N*, and number with positive catches for red drum are given.

Northern region

Year	Total num sets	Num positive	Mean	std.dev	CV
1991	631	153	0.414	0.0560	0.135
1992	371	91	0.329	0.0567	0.172
1993	521	184	0.525	0.0649	0.124
1994	833	178	0.270	0.0341	0.126
1995	1,111	410	0.504	0.0440	0.087
1996	890	161	0.190	0.0261	0.138
1997	969	285	0.514	0.0531	0.103
1998	1,045	452	0.709	0.0574	0.081
1999	917	408	0.733	0.0614	0.084
2000	788	291	0.488	0.0491	0.101
2001	765	237	0.491	0.0536	0.109
2002	1,155	648	1.219	0.0844	0.069
2003	669	126	0.275	0.0410	0.149
2004	1,075	229	0.288	0.0327	0.114
2005	836	228	0.536	0.0585	0.109
2006	1,013	345	0.662	0.0599	0.091
2007	1,155	405	0.664	0.0557	0.084
2008	1,258	545	0.802	0.0597	0.074
2009	1,059	457	0.767	0.0606	0.079
2010	1,621	700	0.727	0.0497	0.068
2011	1,617	325	0.340	0.0332	0.098
2012	2,618	1,486	1.368	0.0686	0.050
2013	1,727	840	0.910	0.0556	0.061

Table 5.6.21.(continued) Standardized total catch rates per angler-hour for anglers. The number of observations made each year, *N*, and number with positive catches for red drum are given.

Southern Region

Year	Total num sets	Num positive	Mean	std.dev	CV
1991	647	205	0.747	0.0642	0.086
1992	1,107	404	0.784	0.0473	0.060
1993	1,047	363	0.864	0.0536	0.062
1994	1,271	472	1.042	0.0565	0.054
1995	1,305	563	1.171	0.0566	0.048
1996	1,238	553	0.998	0.0499	0.050
1997	1,304	524	0.829	0.0432	0.052
1998	1,501	567	0.753	0.0381	0.051
1999	2,027	765	0.747	0.0328	0.044
2000	2,144	850	0.736	0.0309	0.042
2001	2,058	931	0.990	0.0394	0.040
2002	2,059	872	0.855	0.0355	0.042
2003	1,882	805	0.976	0.0409	0.042
2004	1,759	824	1.062	0.0439	0.041
2005	1,884	907	1.046	0.0410	0.039
2006	2,273	899	0.815	0.0330	0.040
2007	2,145	805	0.789	0.0338	0.043
2008	1,953	836	0.868	0.0359	0.041
2009	1,843	843	1.021	0.0417	0.041
2010	2,042	1,138	1.417	0.0489	0.034
2011	1,990	1,105	1.217	0.0415	0.034
2012	2,051	943	0.912	0.0354	0.039
2013	1,363	660	1.116	0.0503	0.045

5.7 Figures

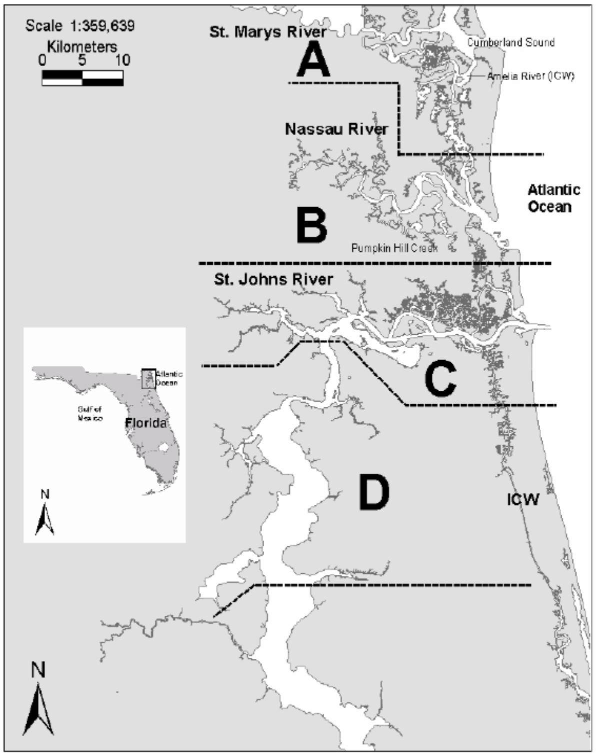


Figure JX05-01. Map of northeast Florida sampling area. Zones are labeled A-D.

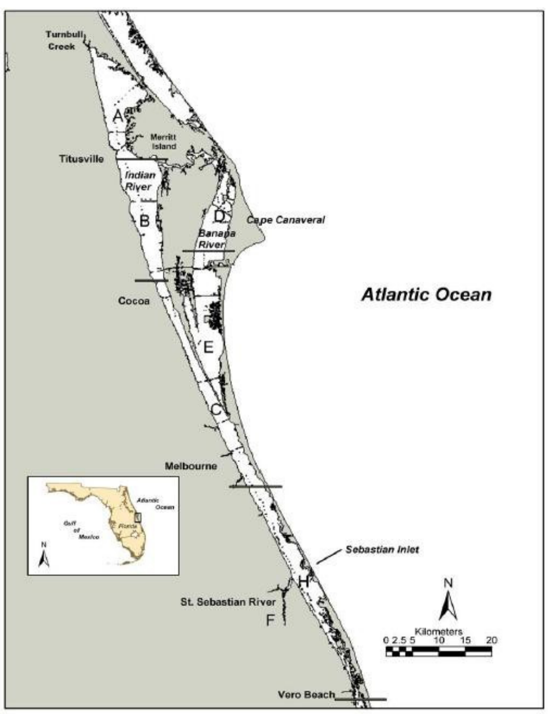


Figure IR05-01. Map of the Northern Indian River Lagoon sampling area. Zones are labeled A-F and H.

Figure 5.7.1 Caption is on following page.

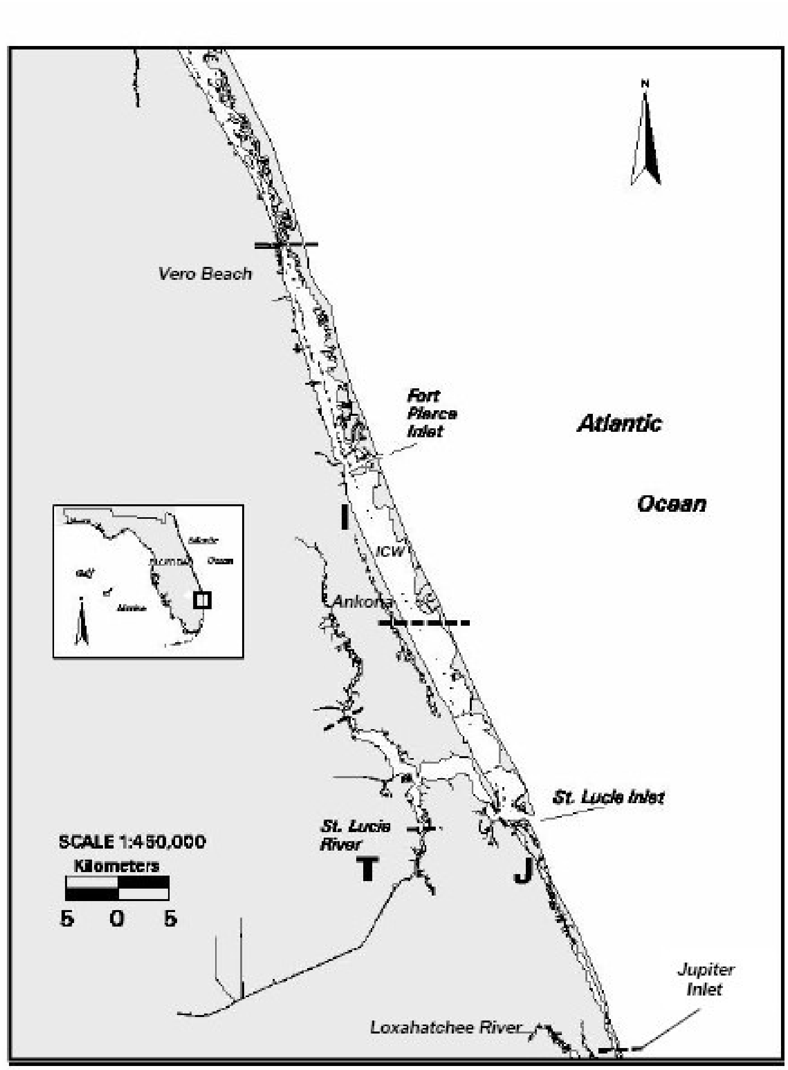


Figure TQ05-01. Map of southern Indian River Lagoon sampling area.
Zones are I, J, and T.

Figure 5.7.1 Areas encompassing the Florida Fish and Wildlife Conservation Commission‟s Fishery Independent Monitoring Program‟s stratified random surveys for marine organisms along the Atlantic coast. Only the northeast (left) and northern Indian River Lagoon (center) areas are sampled using 21.3 m seines that effectively catch young-of-the-year red drum. In all three areas, including the southern Indian River Lagoon, 183 m seines that are used. This gear is effective in capturing subadult red drum.

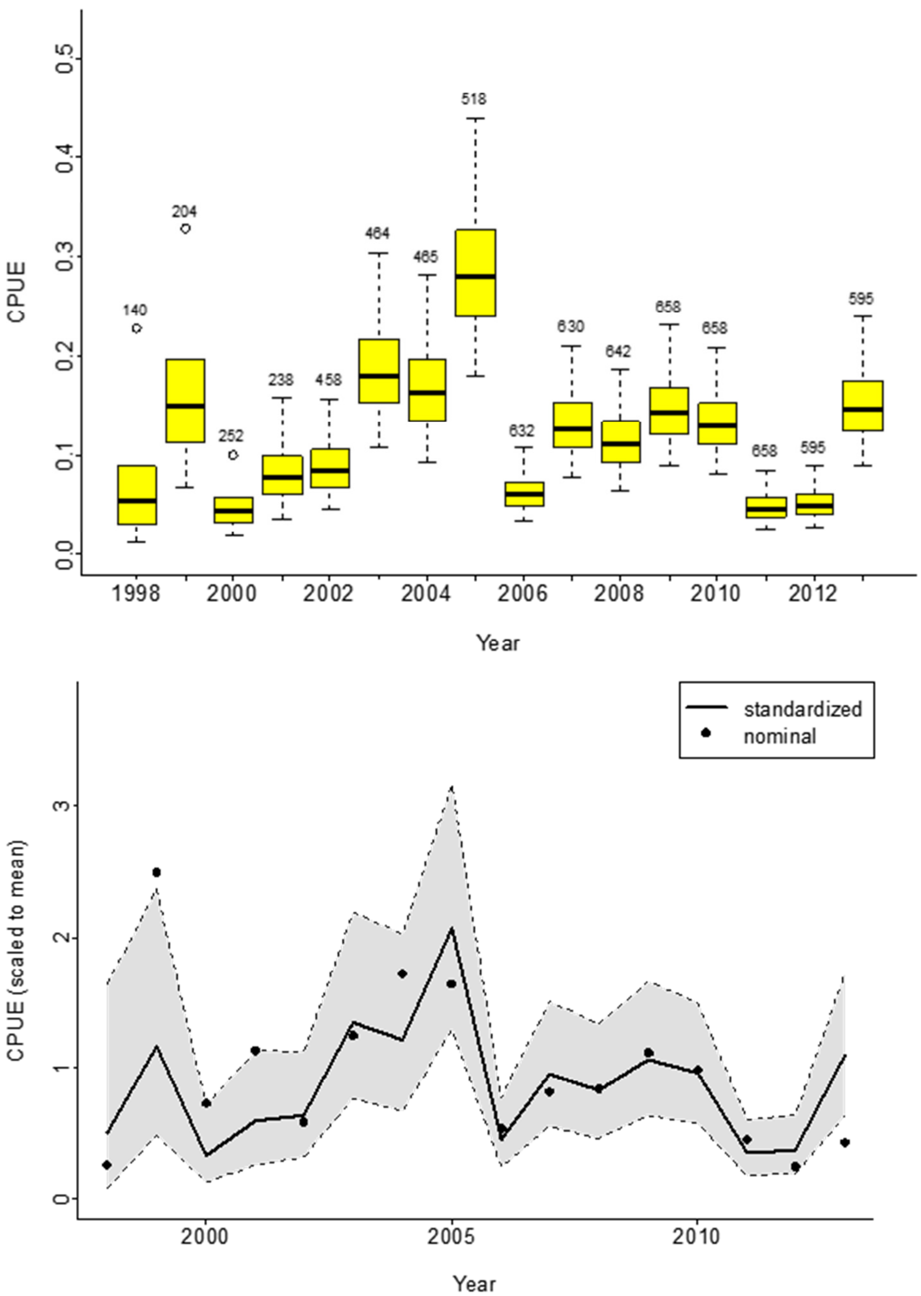


Figure 5.7.2. Distribution of a delta lognormal standardization for fall 1997 (fall 1997 through spring 1998 is labeled 1998) through spring 2013 data on the abundance for young-of-the-year red drum on the Atlantic coast of Florida. The dash shows the median, the box the inter-quartile range and the whiskers the 95% confidence interval. The number of sets made are given for each year. The bottom graph shows the nominal (point) and predicted (line and shaded 95% confidence interval) indices.

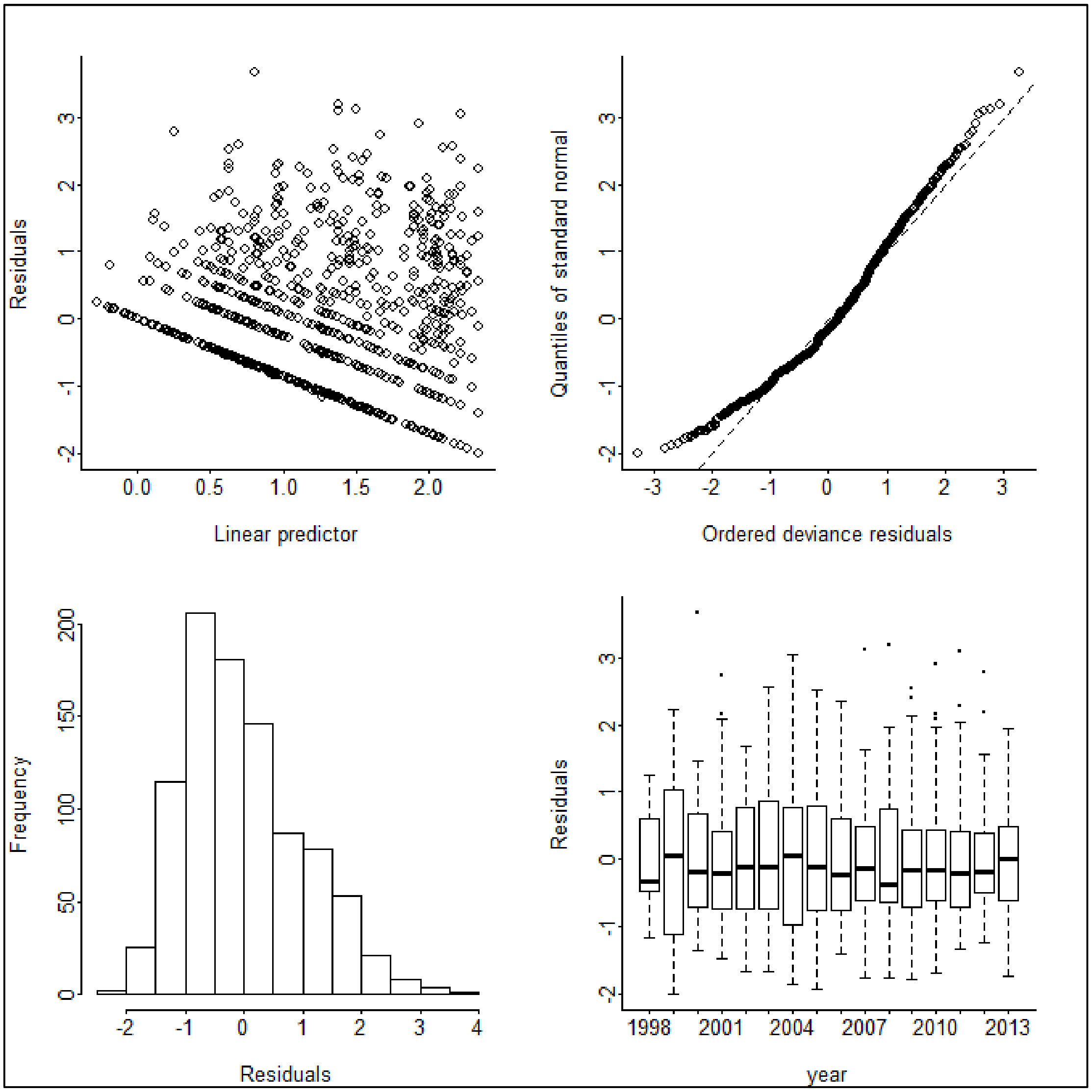


Figure 5.7.3. Diagnostics for fit to final lognormal standardization models for positive catch observations for young-of-the-year red drum from Florida's fisheries-independent monitoring dataset.. By agreement, age 1 is assumed to begin on the first January 1st of the fish‟s life, at about 2-4 months of true age.

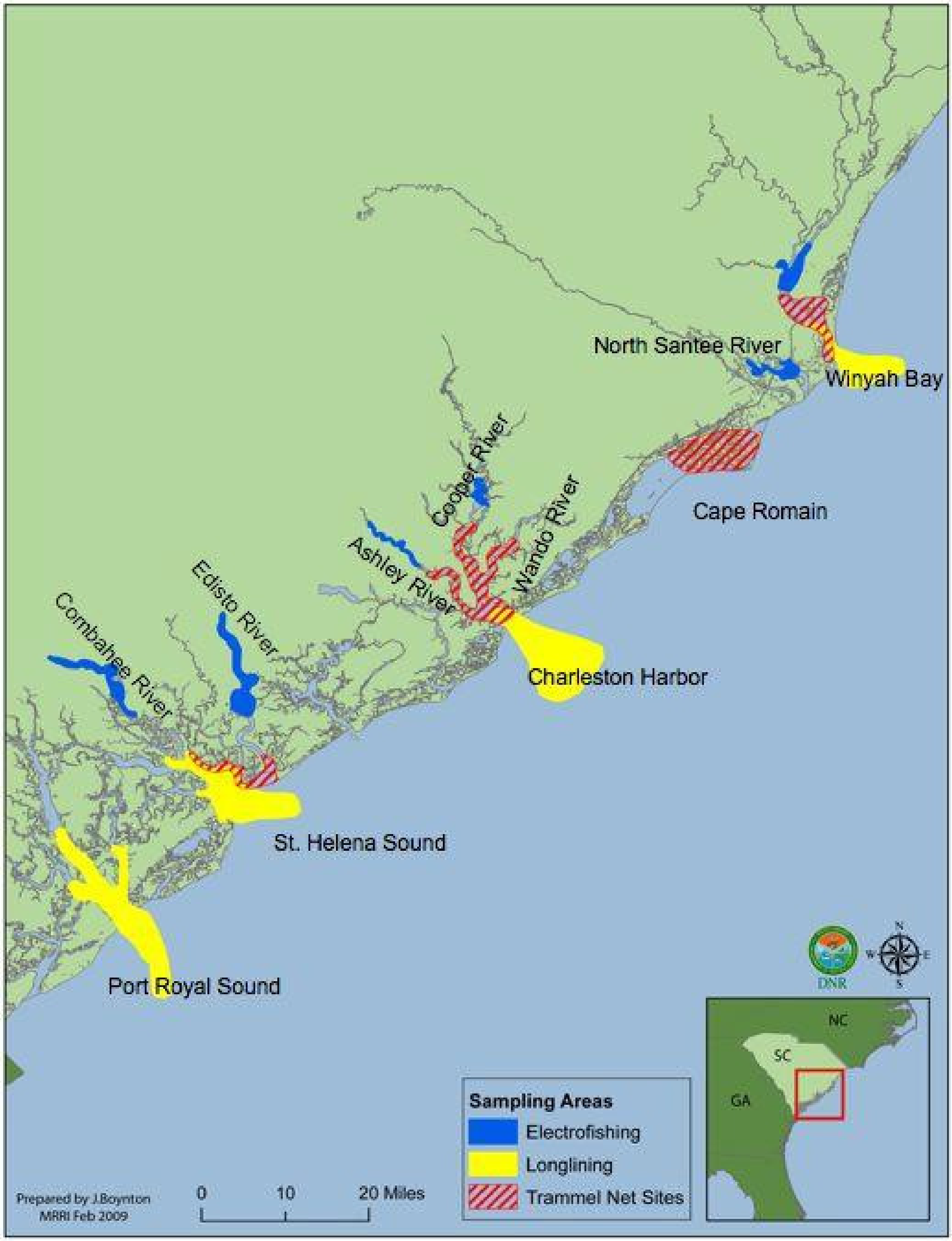


Figure 5.7.4. South Carolina fishery-independent sampling areas.

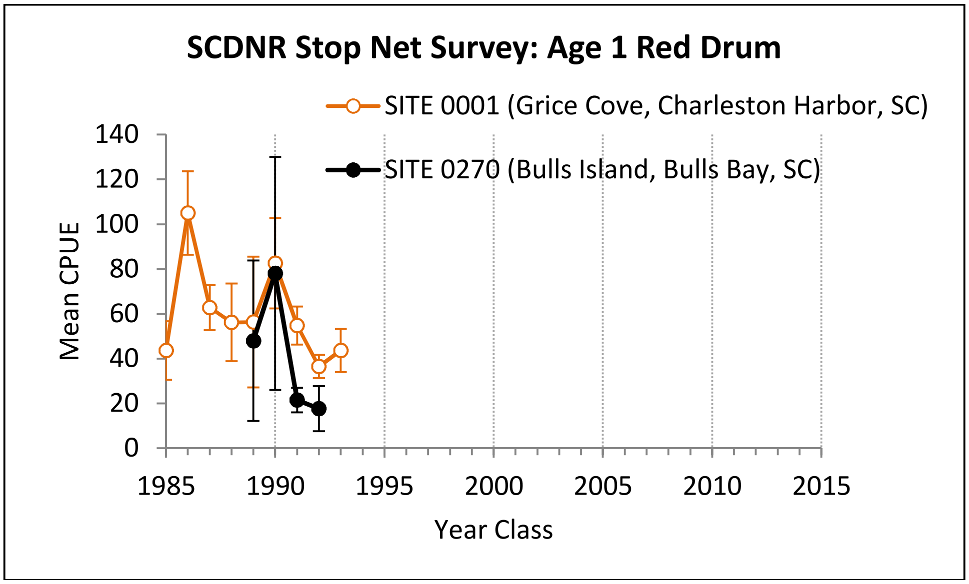


Figure 5.7.5 Arithmetic mean CPUE (±SE) of age 1 red drum in the SCDNR stop net survey during the months Jul-Dec. (Age assignment assumes a Jan 1 transition).

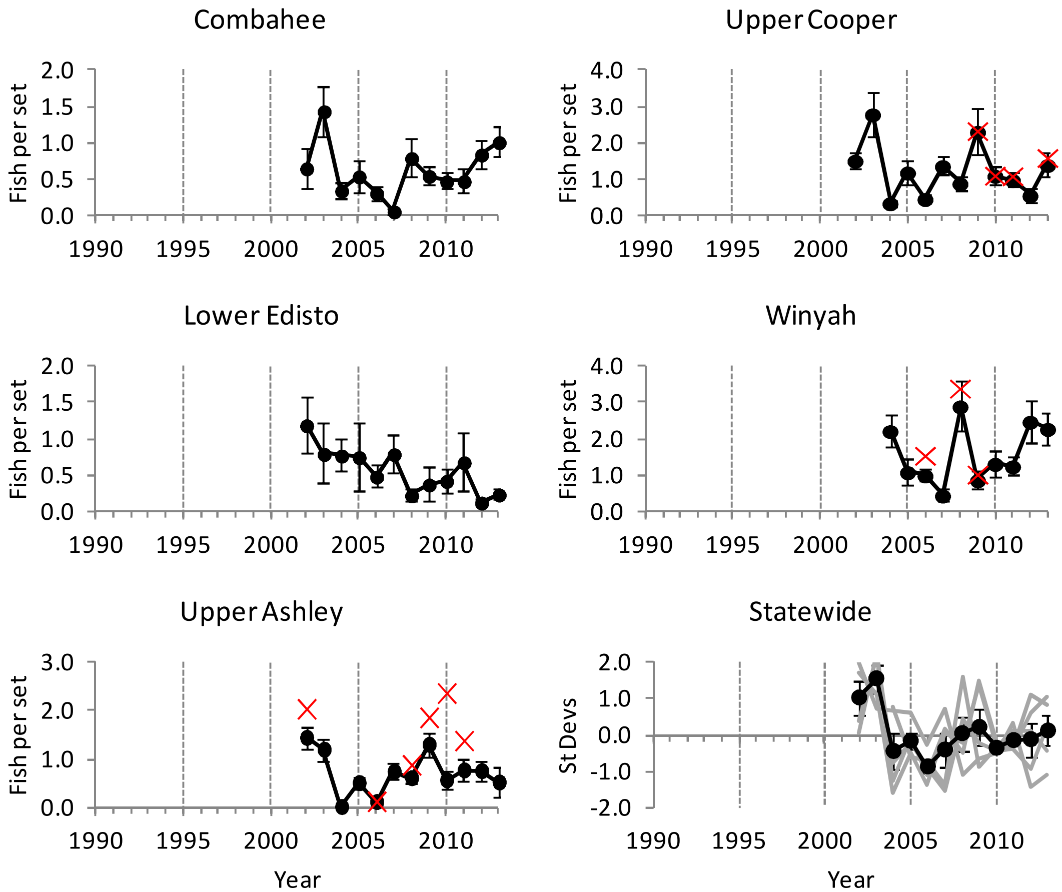


Figure 5.7.6 Jan-Dec CPUE (arithmetic mean ± SE) of wild (non-stocked) age 1 red drum in the SCDNR electrofishing net survey. (Red crosses show CPUE of wild + stocked red drum). The 'statewide' panel (bottom right) is a compilation of all strata expressed as z-scores (standard deviations from the 2002-2013 mean; statewide black line is the mean across all strata).

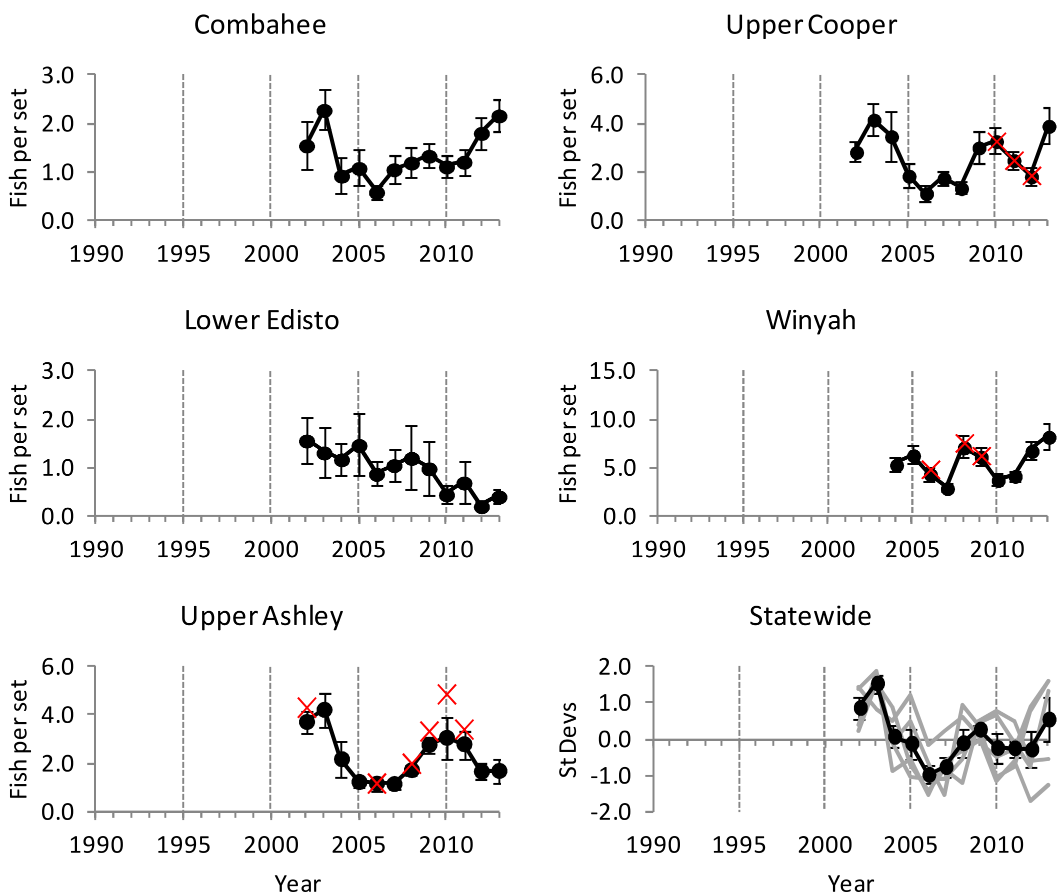


Figure 5.7.7 Jan-Dec CPUE of all red drum (arithmetic mean ± SE) in the SCDNR electrofishing survey. The 'statewide' panel (bottom right) is a compilation of all strata expressed as z-scores (standard deviations from the 2002-2013 mean; statewide black line is the mean across all strata).

Altamaha Stations

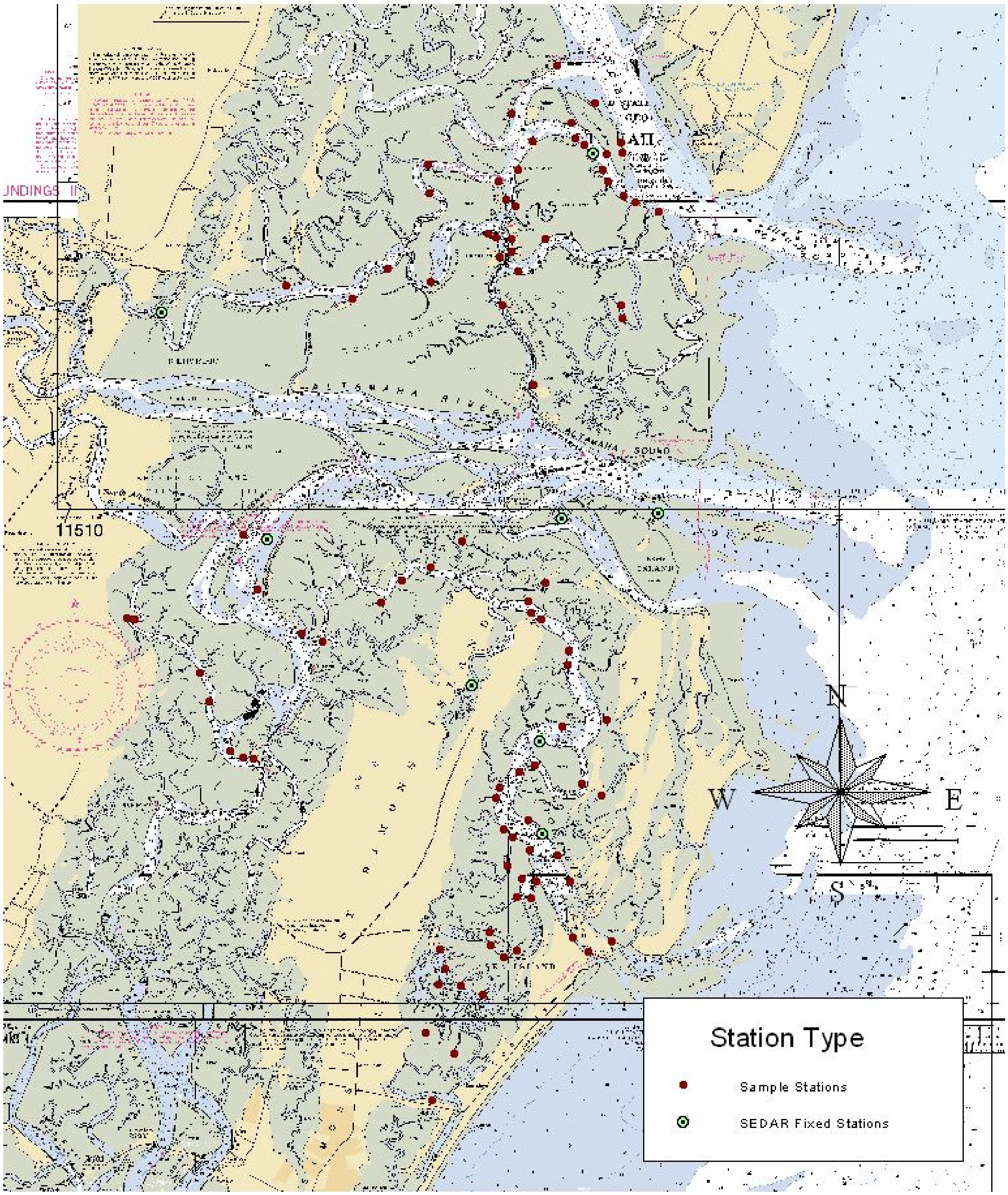
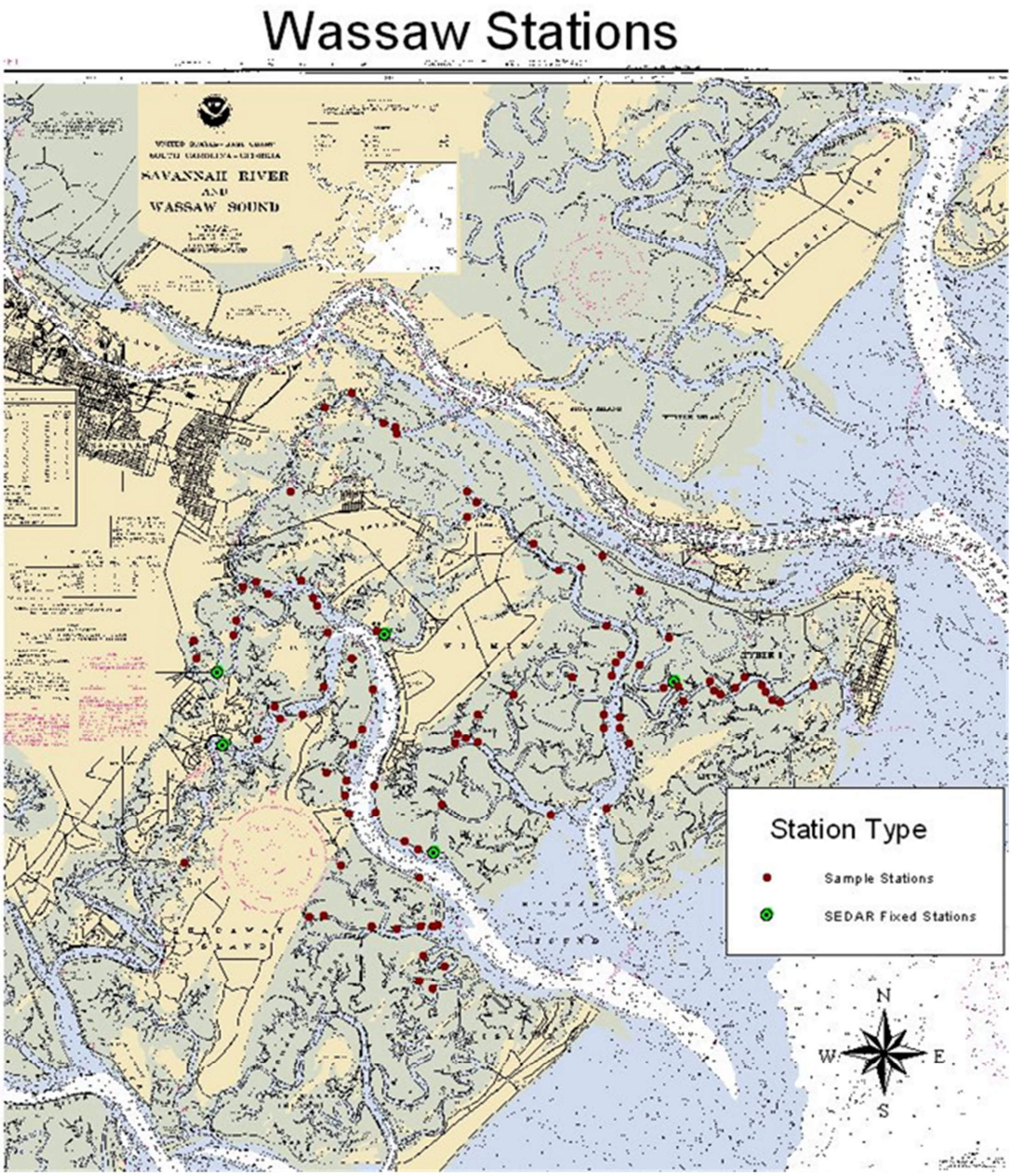


Figure 5.7.8. Altamaha stations including active and SEDAR fixed stations.



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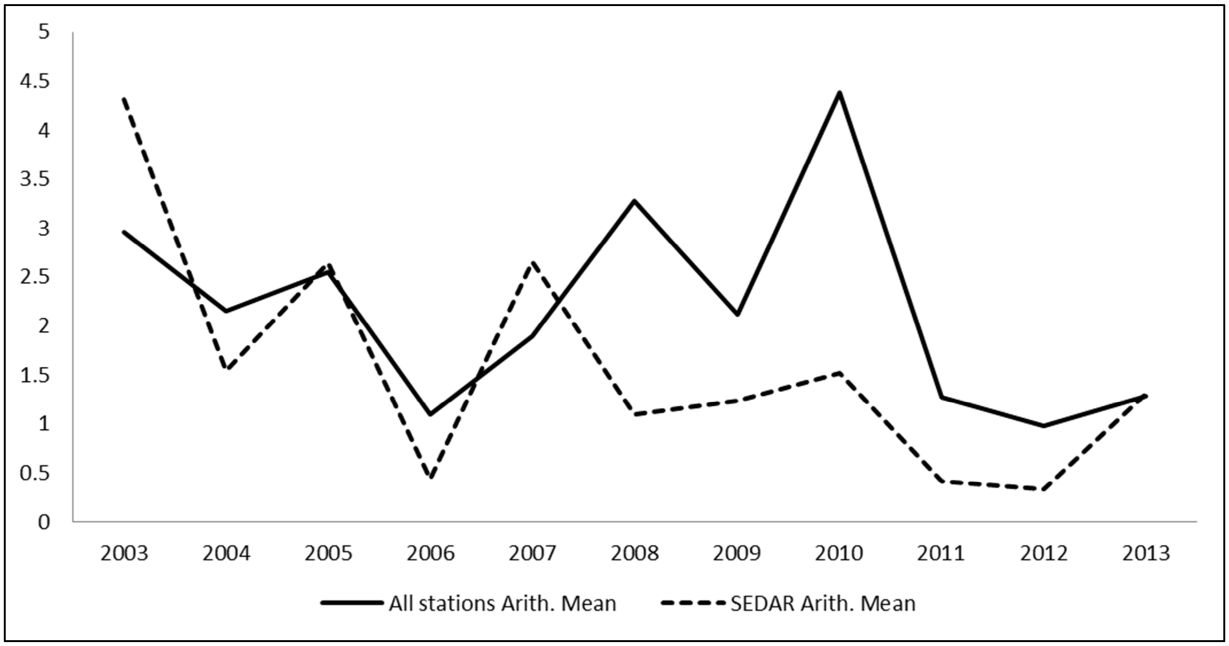

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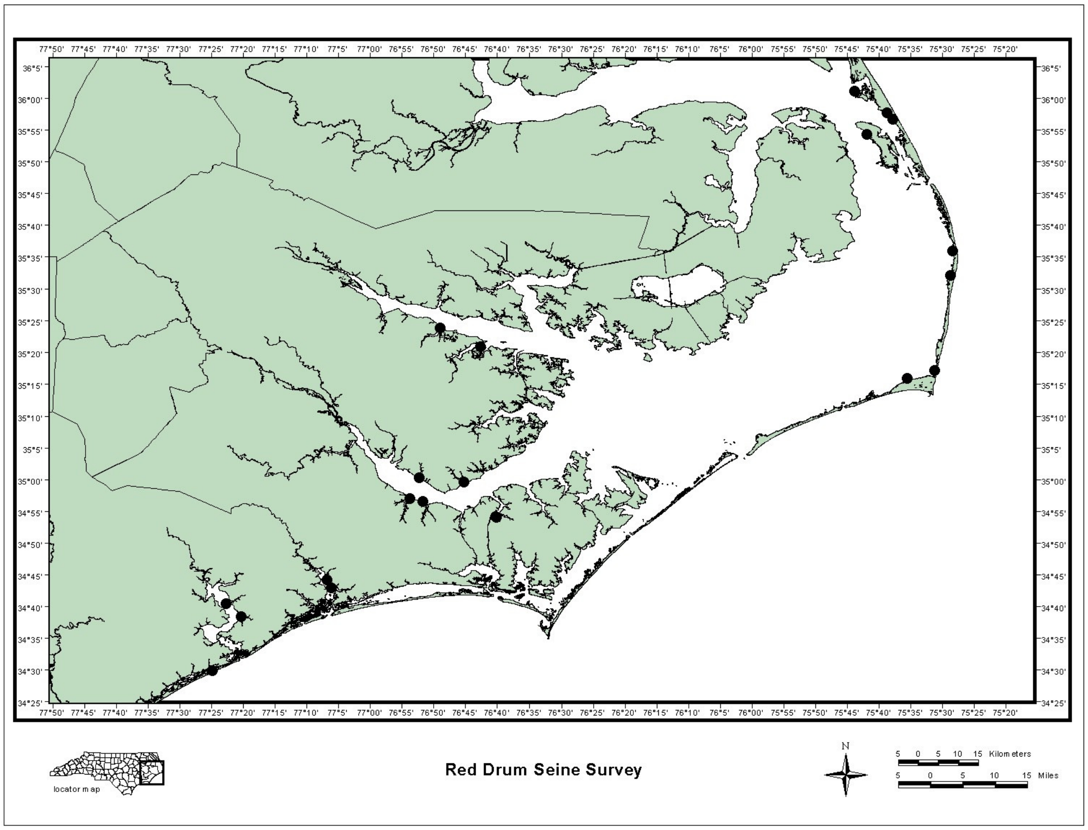

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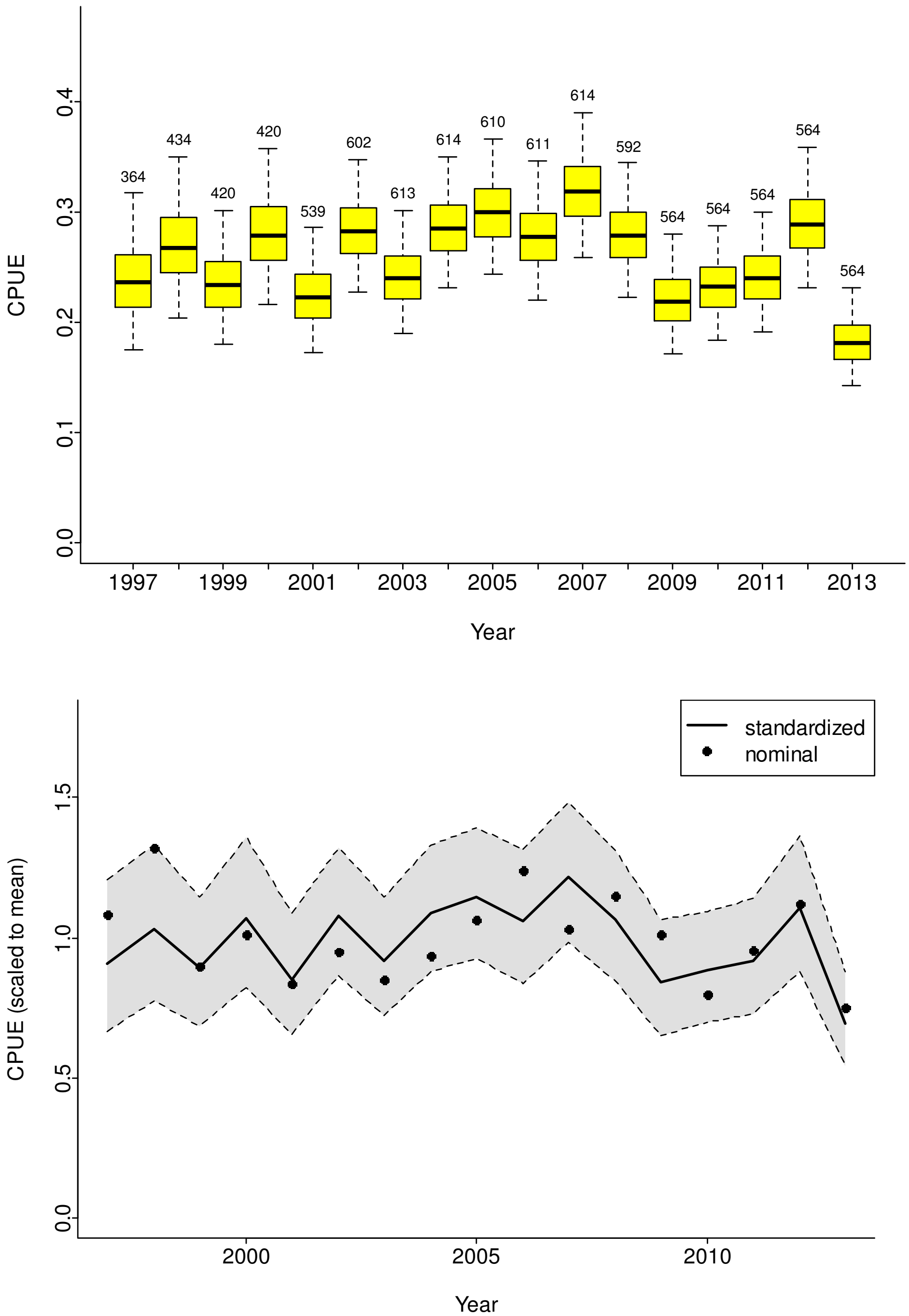

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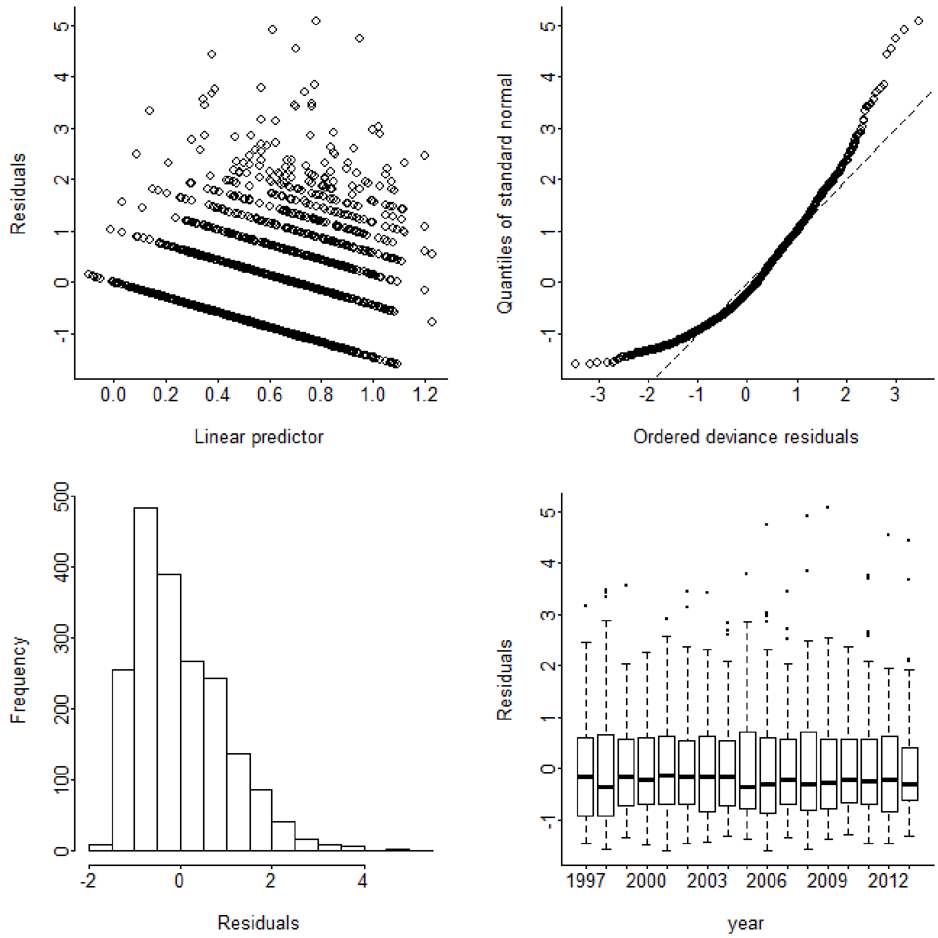

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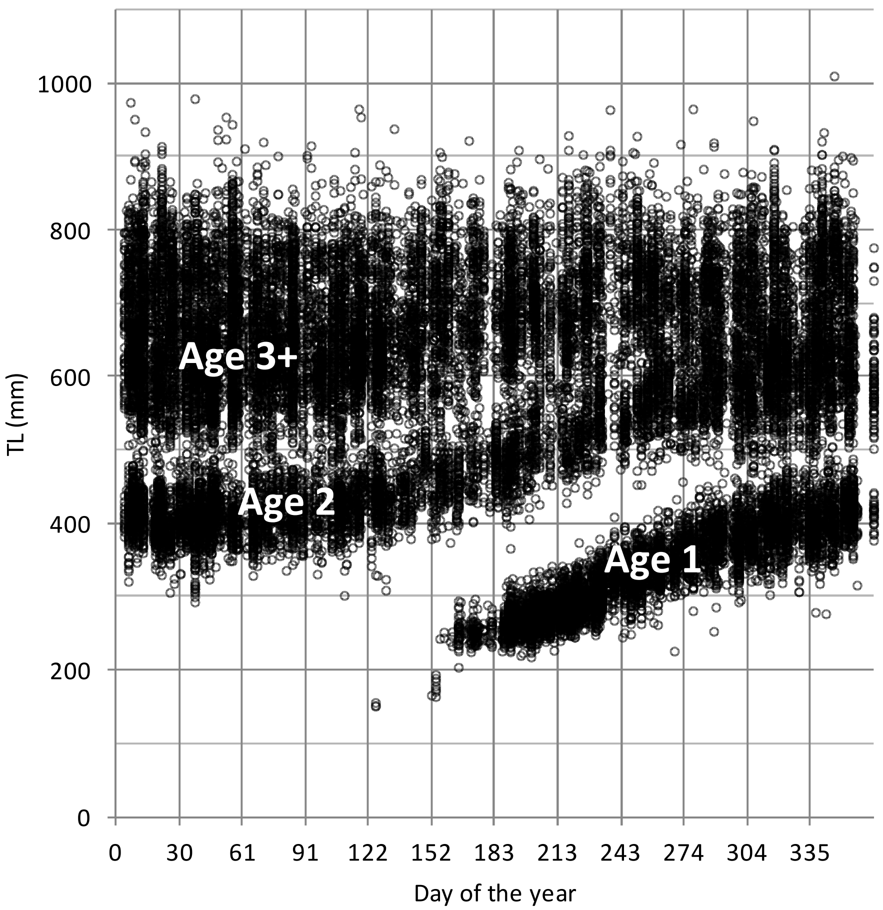

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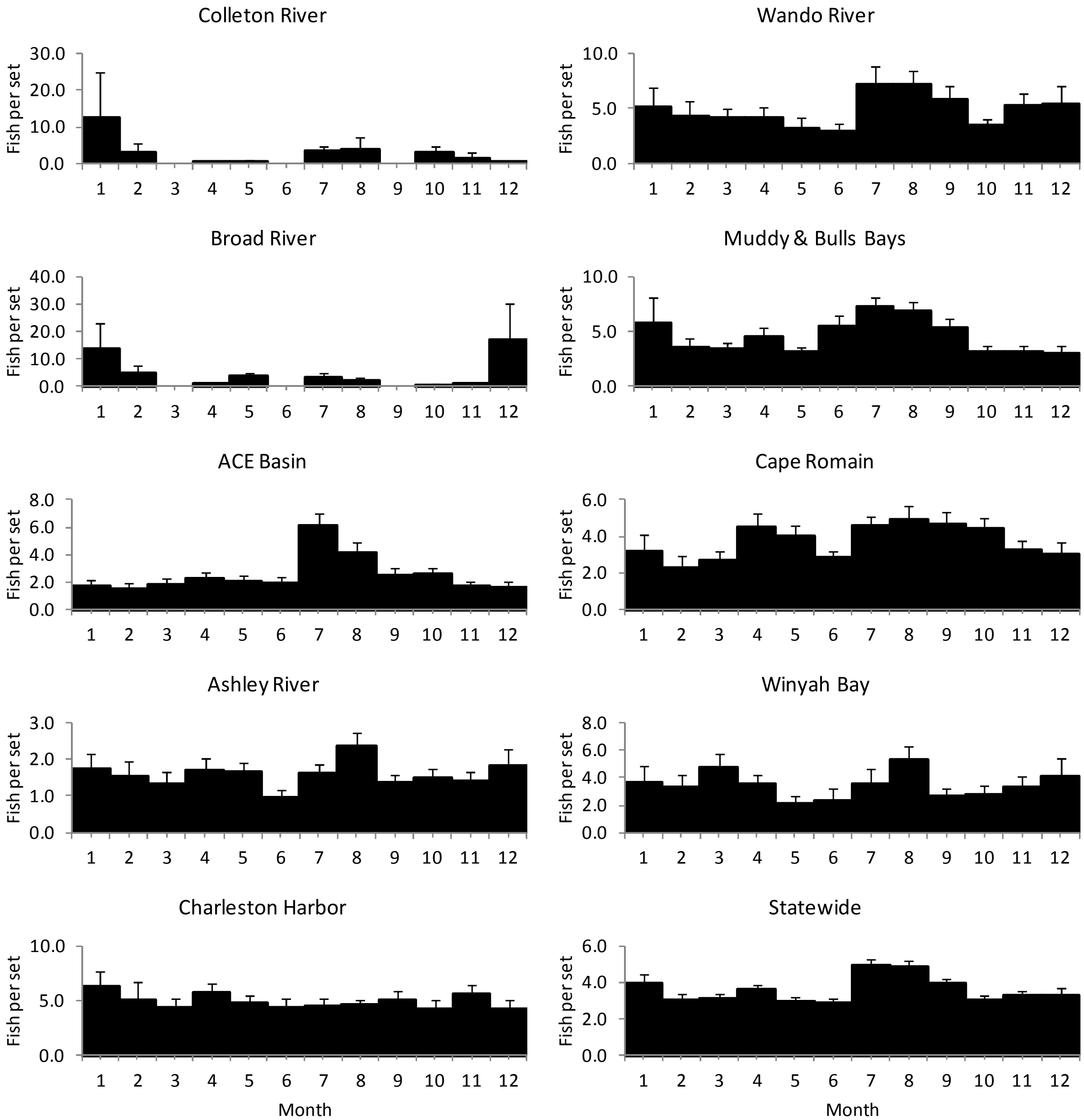

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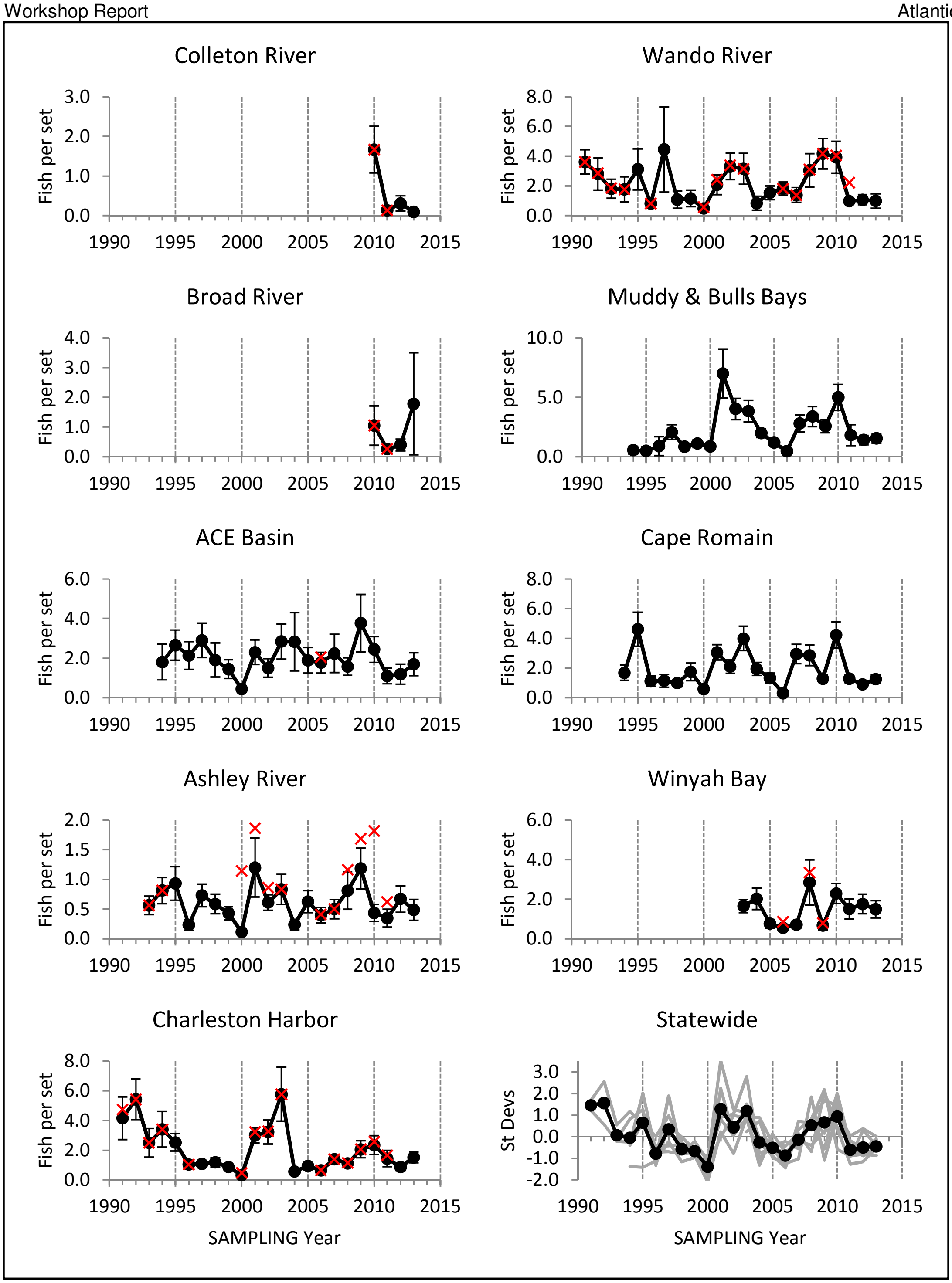

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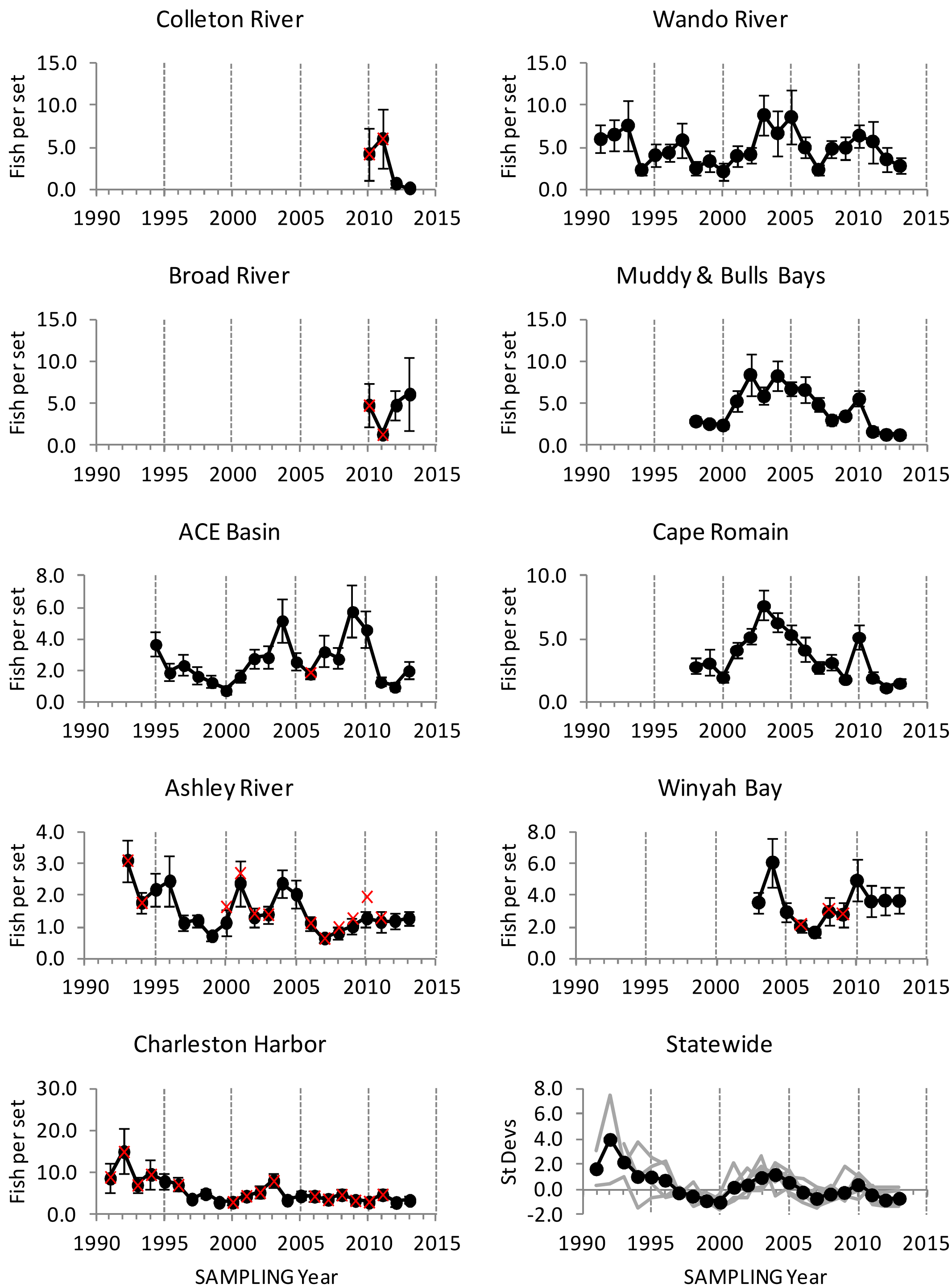

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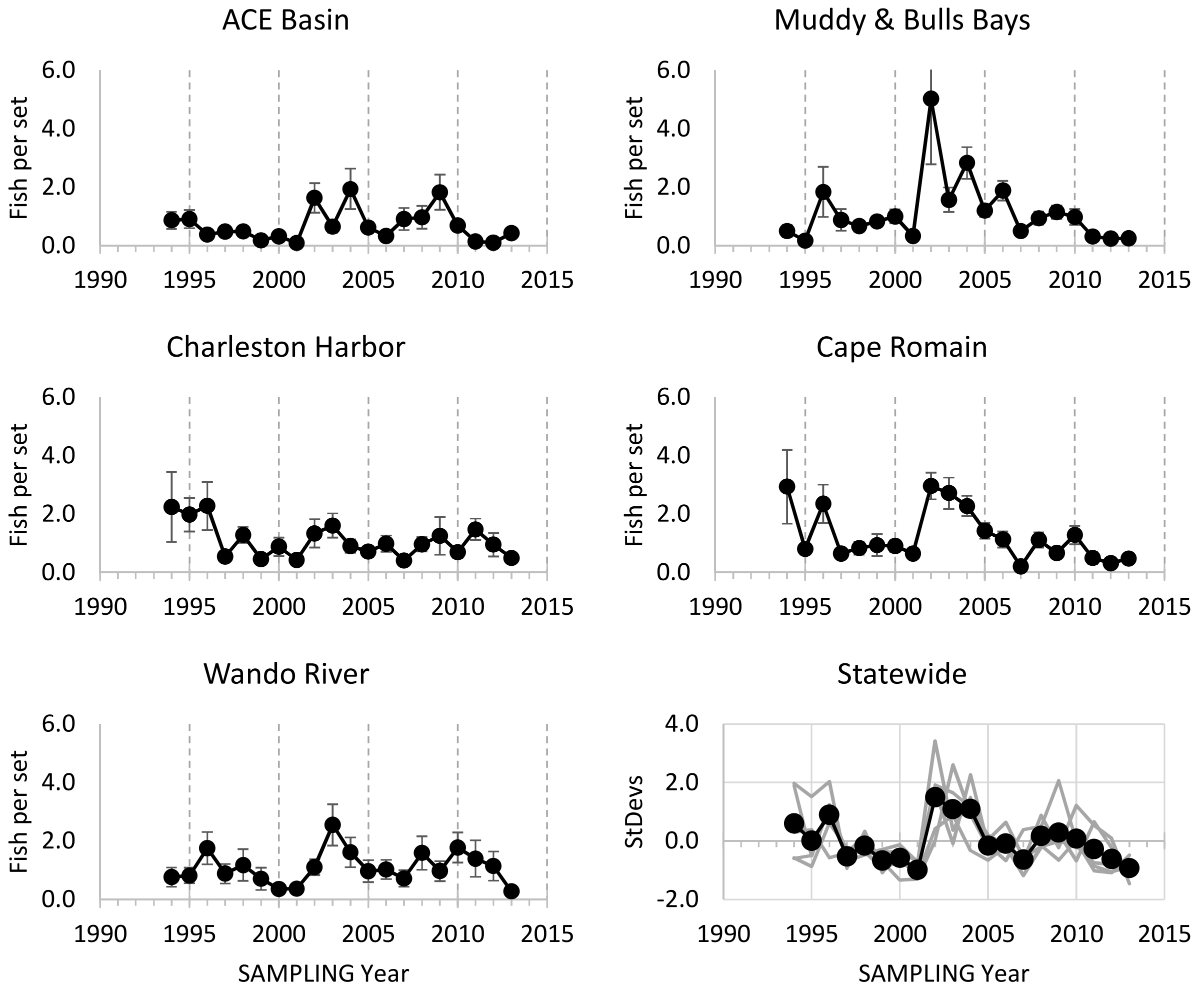

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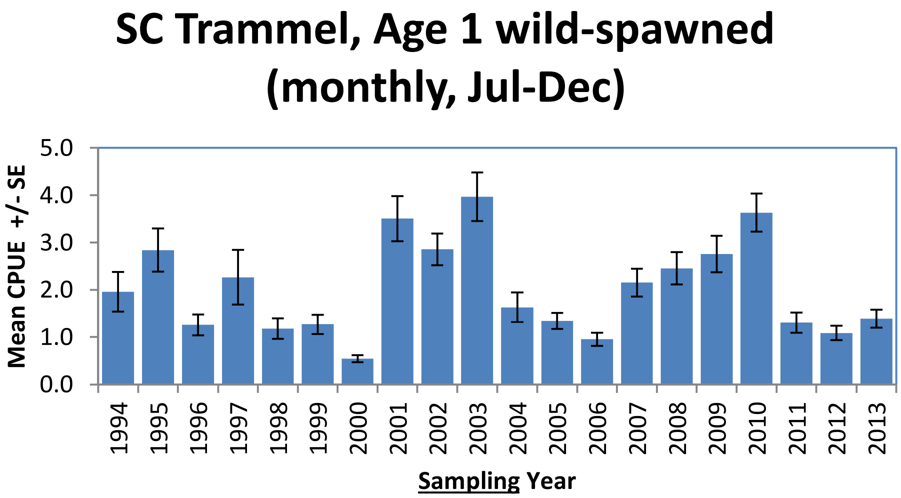

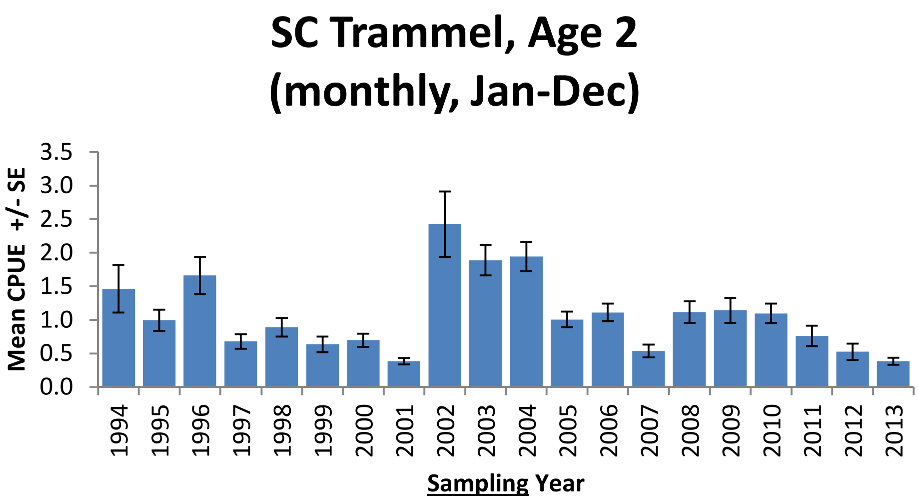

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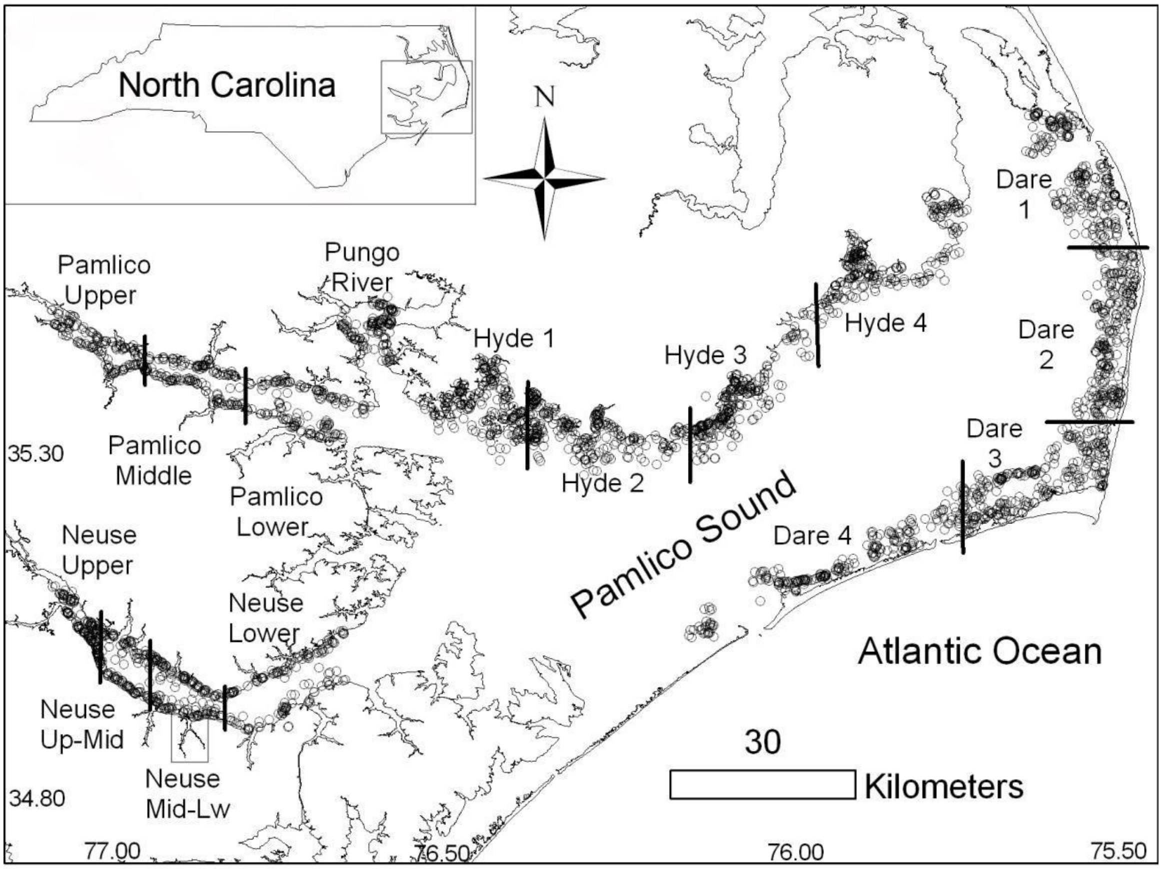

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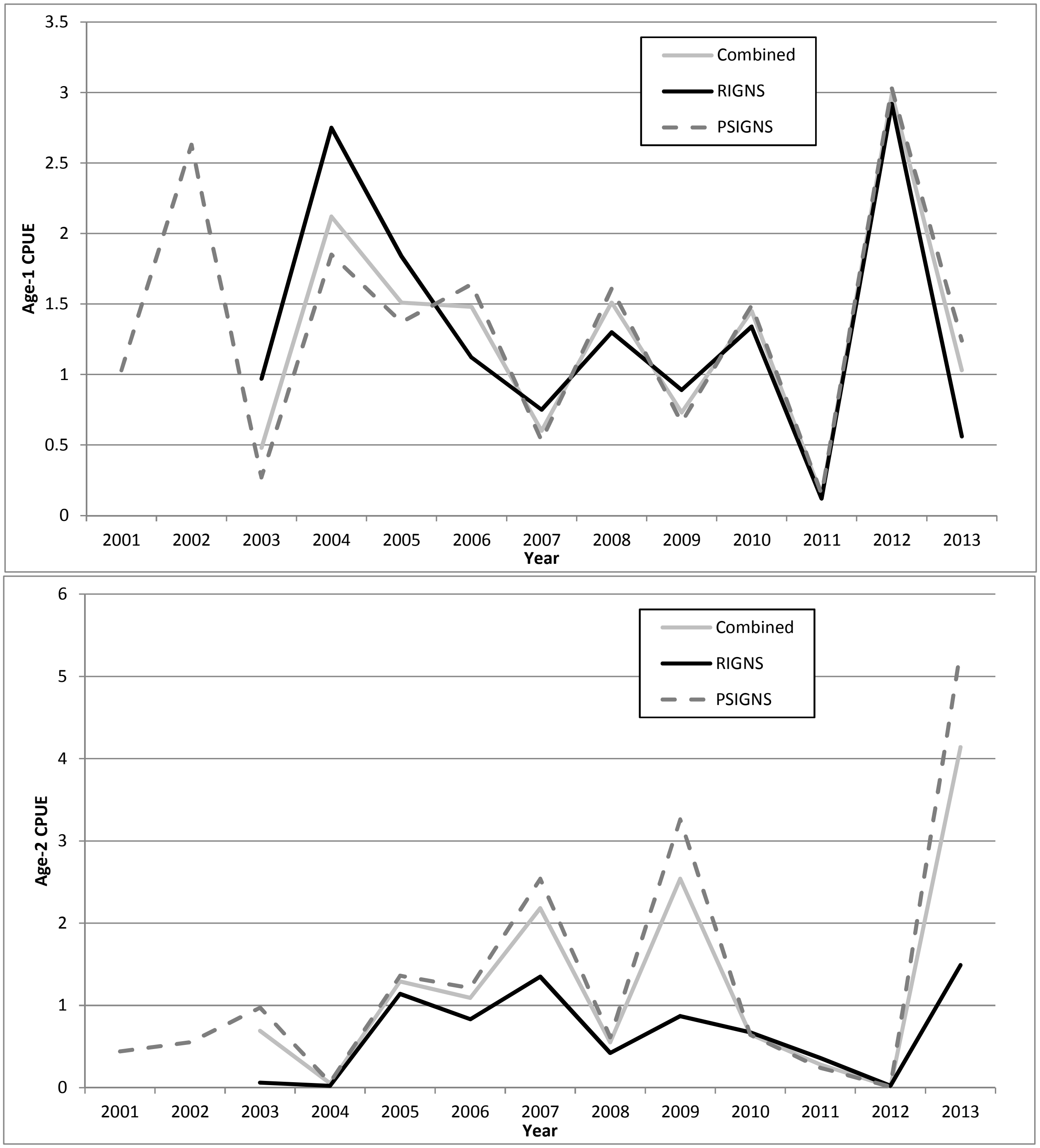

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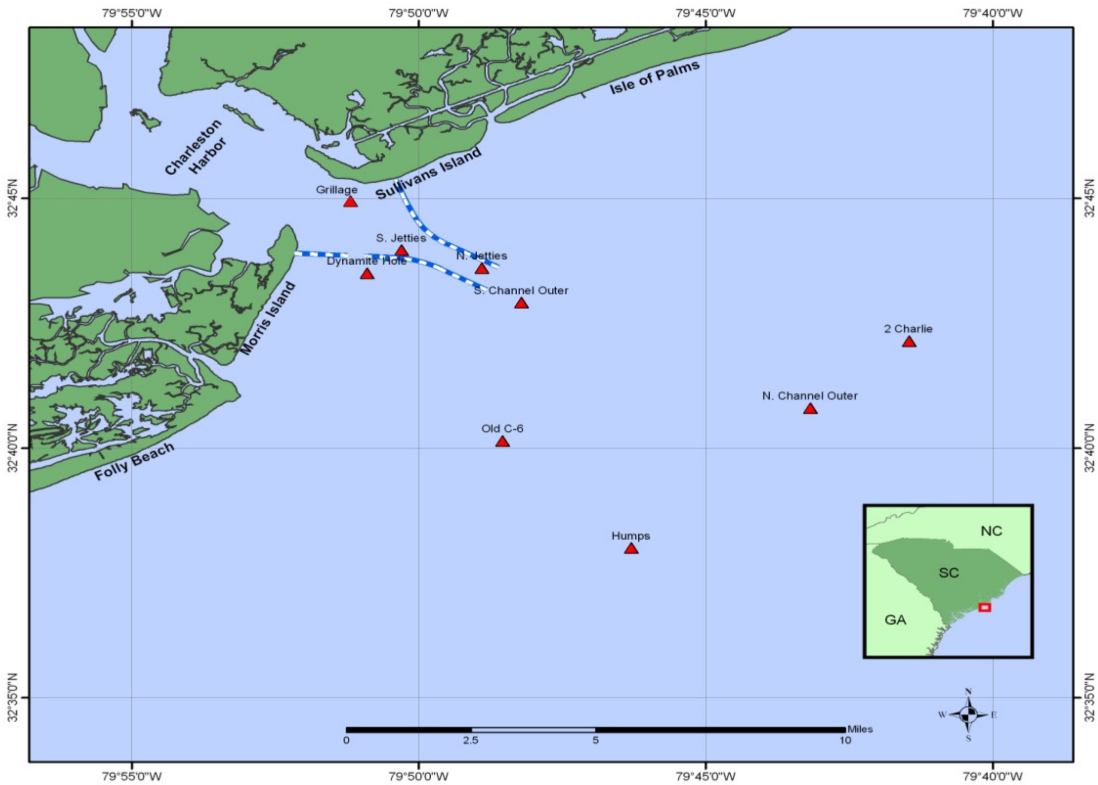

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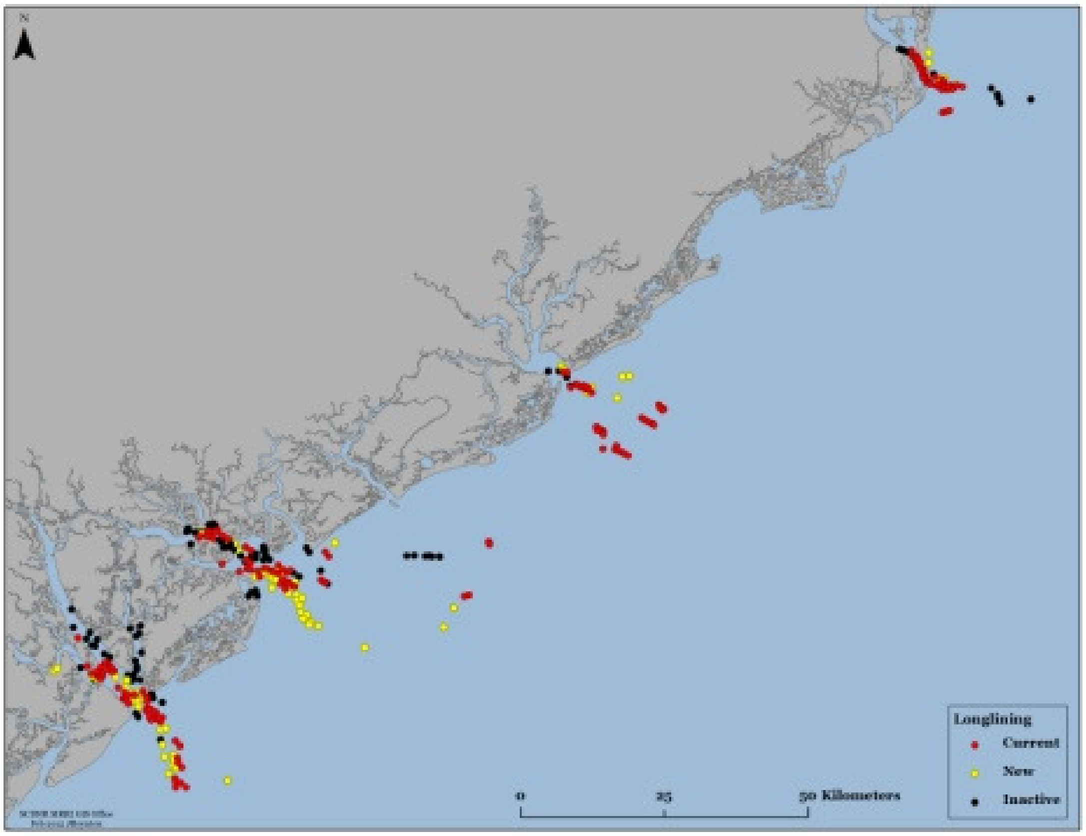

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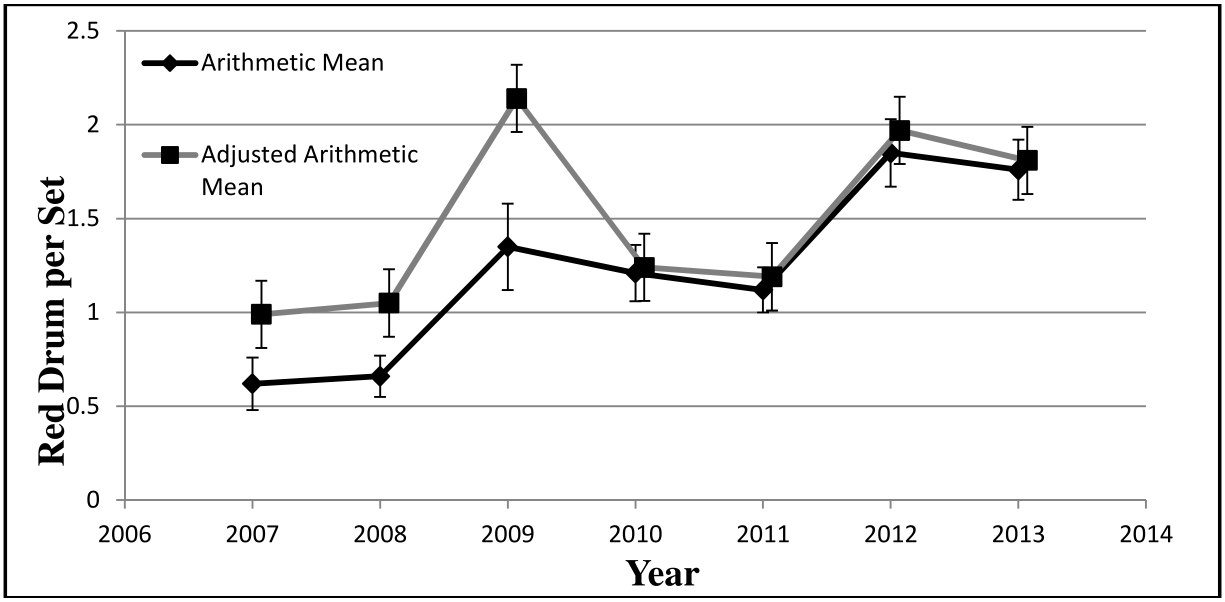

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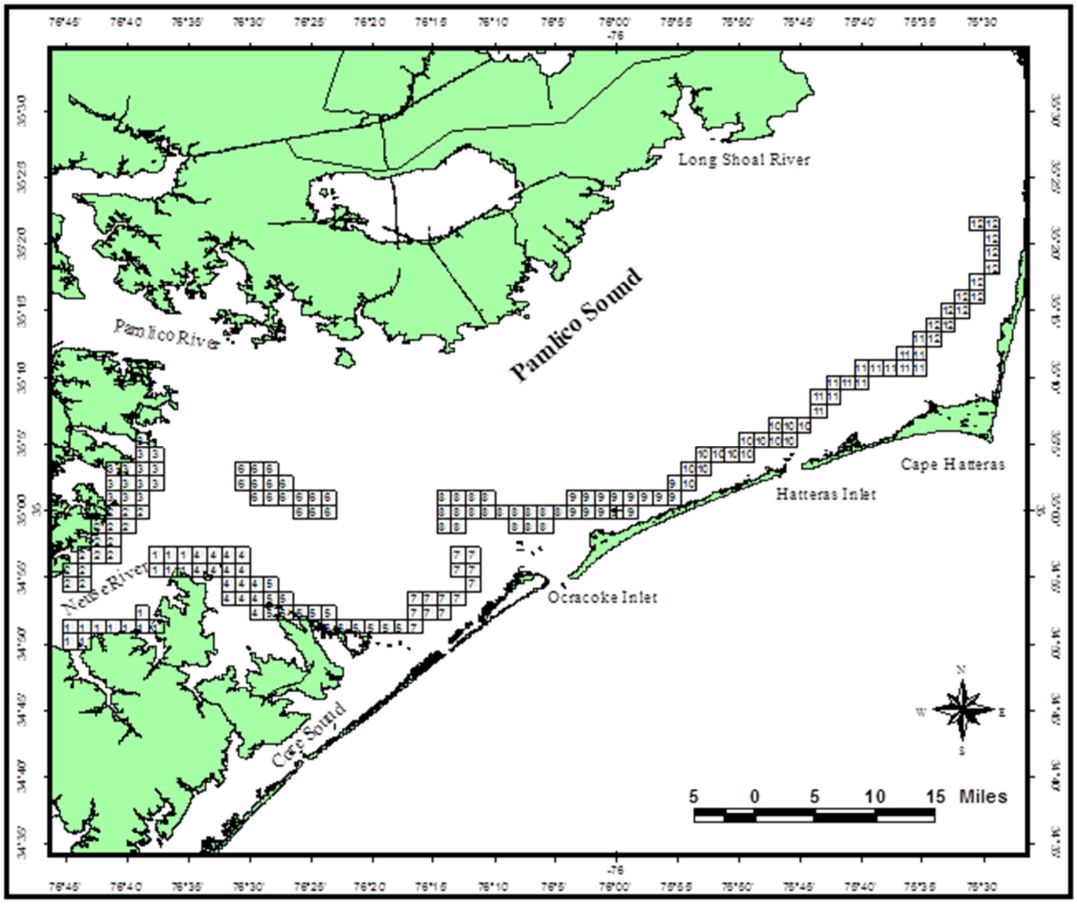

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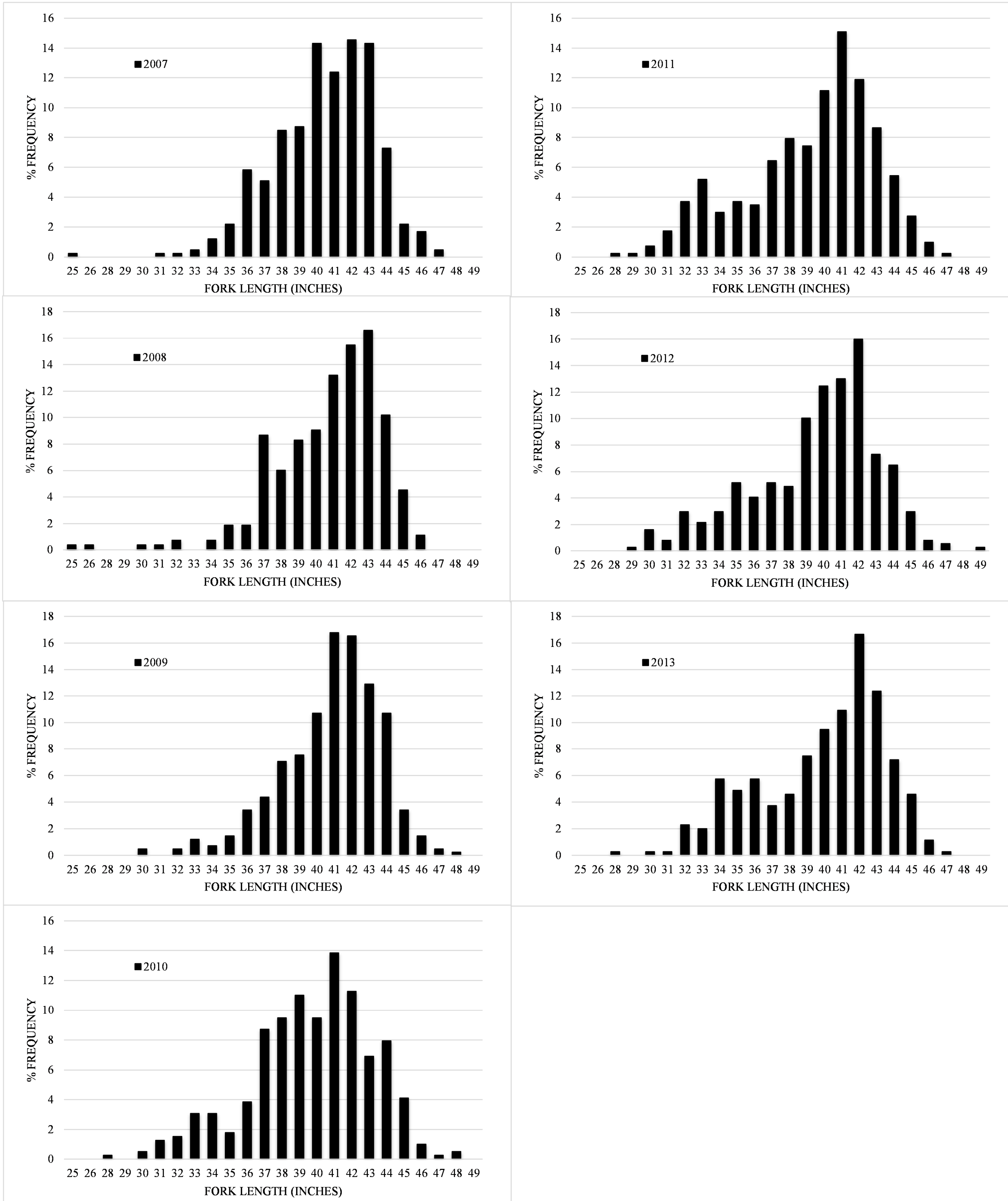

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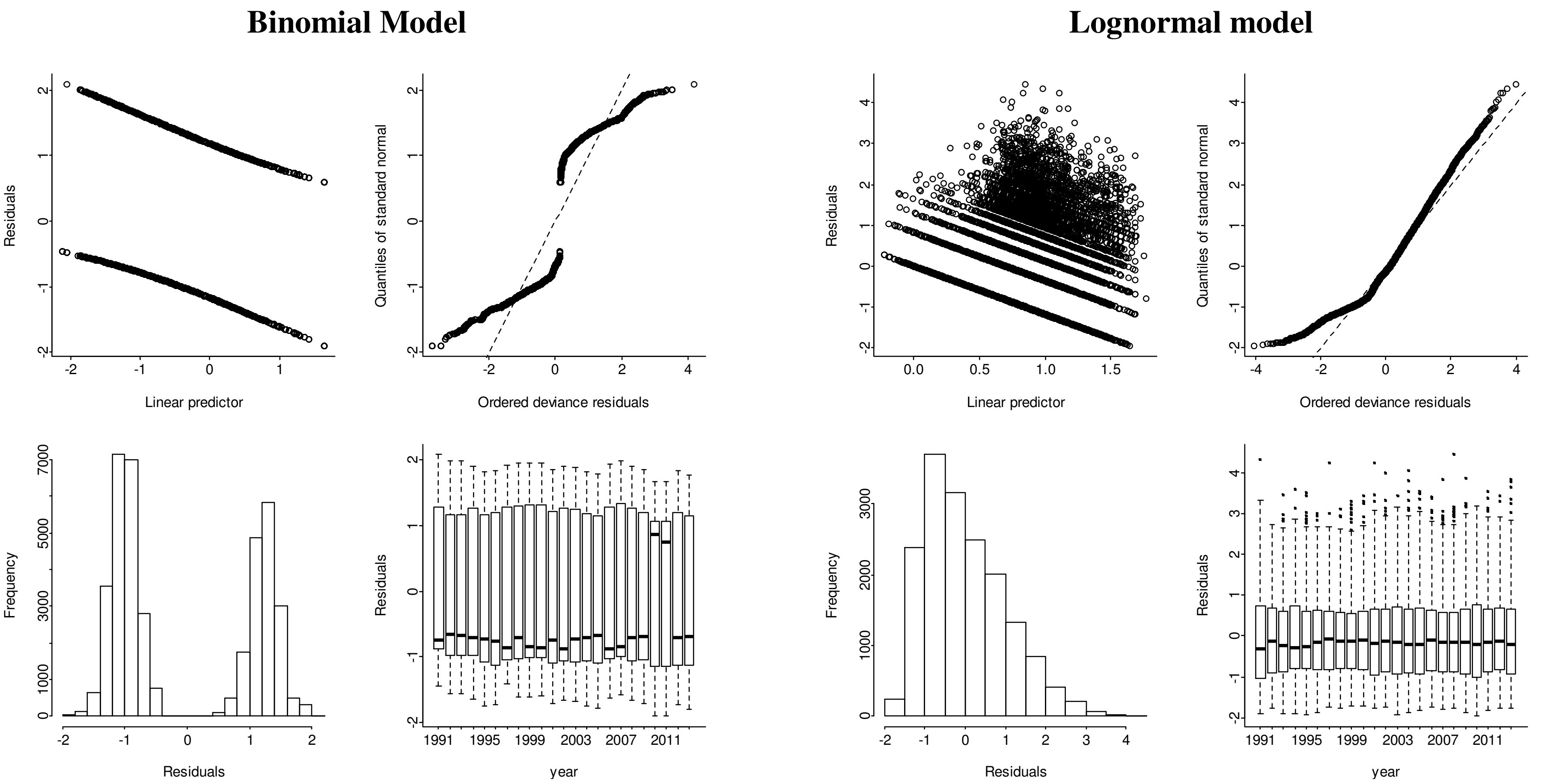

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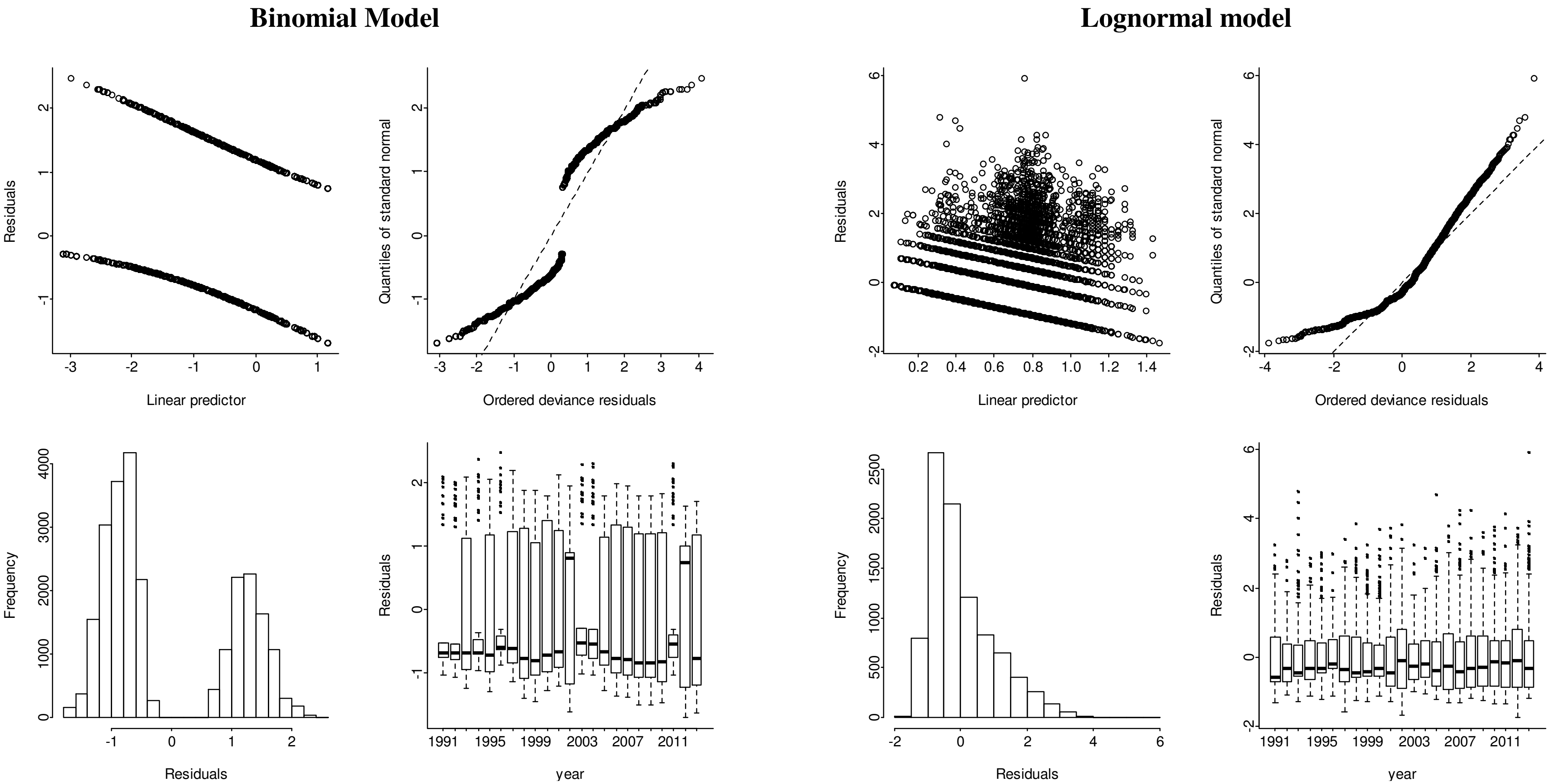

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6. Submitted Comment

No comments were submitted.

S E D A R

Southeast Data, Assessment, and Review

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SEDAR 44

Assessment Report

Atlantic Red Drum

August 2015

SEDAR is a Cooperative Initiative of:

The Caribbean Fishery Management Council
The Gulf of Mexico Fishery Management Council
The South Atlantic Fishery Management Council
NOAA Fisheries Southeast Regional Office
NOAA Fisheries Southeast Fisheries Science Center
The Atlantic States Marine Fisheries Commission
The Gulf States Marine Fisheries Commission

SEDAR
The South Atlantic Fishery Management Council 4055
Faber Place #201
North Charleston, SC 29405 (843) 571-4366

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Stock Assessment Terms of Reference

1. If possible, identify and prepare new data that could be used to inform the assessment of adult and/or spawning stock trends.
2. Characterize precision and accuracy of fishery-dependent and fishery-independent data considered for the assessment, including the following but not limited to:
    a. Provide descriptions of each data source (e.g., geographic location, sampling methodology, potential explanation for outlying or anomalous data).
    b. Describe calculation and potential standardization of abundance indices.
    c. Discuss trends and associated estimates of uncertainty (e.g., standard errors).
    d. Justify inclusion or elimination of available data sources.
    e. Discuss the effects of data strengths and weaknesses (e.g., temporal and spatial scale, gear selectivities, ageing accuracy, sample size) on model inputs and outputs.
3. Define and justify definition of stock structure.
4. Review recreational fishing estimates and PSEs. Compare historical and current data collection and estimation procedures and describe data caveats that may affect the assessment.
5. Estimate discards and size composition of discards in recreational and commercial fisheries where possible.
6. Evaluate the effects of stock enhancement program contributions on data inputs.
7. Develop models used to estimate population parameters (e.g., F, biomass, abundance) and biological reference points, and analyze model performance.
    a. Describe stability of model (e.g., ability to find a stable solution, invert Hessian)
    b. Assess estimated selectivity and discuss effects on population parameters.
    c. Justify choice of CVs, effective sample sizes, or likelihood weighting schemes.
    d. Perform sensitivity analyses for starting parameter values, priors, etc. and conduct other model diagnostics as necessary.
    e. Clearly and thoroughly explain model strengths and limitations.
    f. Briefly describe history of model usage, its theory and framework, and document associated peer-reviewed literature. If using a new model, test using simulated data.
    g. If model structure differs from the model structure used in the previous assessment, preform a continuity run of the previous model and compare estimates. Discuss potential causes of any observed discrepancies.
    h. If multiple models were considered, justify the choice of preferred model and the explanation of any differences in results among models.
8. State assumptions made for all models and explain the likely effects of assumption violations on synthesis of input data and model outputs. Examples of assumptions may include (but are not limited to):
    a. Choice of stock-recruitment function.
    b. Choice to use (or estimate) constant or time-varying M and catchability.
    c. Choice of a plus group.
    d. Constant ecosystem (abiotic and trophic) conditions.
9. Characterize uncertainty of model estimates and biological or empirical reference points.
10. Perform retrospective analyses, assess magnitude and direction of retrospective patterns detected, and discuss implications of any observed retrospective pattern for uncertainty in population parameters (e.g., F, SSB), reference points, and/or management measures.
11. Recommend stock status as related to reference points (if available). For example:
    a. Is the sSPR above or below the 30% sSPR threshold?
12. Other potential scientific issues:

   a. If possible, assess any temporal changes in distribution or stock structure. Discuss potential causes of any changes.
   b. Compare reference points derived in this assessment with what is known about the general life history of the exploited stock. Explain any inconsistencies.
13. If a minority report has been filed, explain majority reasoning against adopting approach suggested in that report. The minority report should explain reasoning against adopting approach suggested by the majority.
14. Develop detailed short and long-term prioritized lists of recommendations for future research, data collection, and assessment methodology. Highlight improvements to be made by next benchmark review.
15. Recommend timing of next benchmark assessment and intermediate updates, if necessary relative to biology and current management of red drum.

Acronyms used in SEDAR 44 Participants List

ACCSP	Atlantic Coastal Cooperative Statistics Program
ASMFC TC	Atlantic States Marine Fisheries Commission Technical Committee
CIE	Center for Independent Experts
FL FWCC	Florida Fish and Wildlife Conservation Commission
FMP	Fishery Management Plan
GA DNR	Georgia Department of Natural Resources
IT	Information Technology
ME DNR	Maine Department of Natural Resources
MRFSS	Marine Recreational Fisheries Statistics System
MRIP	Marine Recreational Information Program
NC DMF	North Carolina Division of Marine Fisheries
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
RD SAS	Red Drum Stock Assessment Subcommittee
SEFSC	Southeast Fisheries Science Center, National Marine Fisheries Service
SC DNR	South Carolina Department of Natural Resources
SEDAR	Southeast Data, Assessment, and Review
TBN	To be named
TIP	Trip Interview Program, National Marine Fisheries Service
VMRC	Virginia Marine Resources Commission

1.0 Introduction

The last benchmark stock assessment (SEDAR 18, 2009) of red drum was based on a statistical catch-at-age model configured to incorporate removals from the stock, age compositions of the removals, indices of abundance, life history characteristics, and tagging information on fishing mortality and selectivity. Several limitations of this modeling framework and the available data were noted by the peer-review. In summary, the assessment was able to provide reliable estimates of spawning potential ratio and escapement, but estimates of abundance and biomass were considered too uncertain for advice to manage the two red drum stocks.

Efforts have been made since the last assessment to address some of these limitations, most notably the implementation of adult longline surveys measuring abundance of the spawning stock in North Carolina (NC) and Georgia (GA) and the continuation and improvement of the SC DNR longline survey. In preliminary discussions of assessment approaches, the Red Drum Stock Assessment Subcommittee (SAS) focused on the Stock Synthesis modeling framework (SS3) to incorporate this new information and other sources of data in attempts to reliably estimate fishing mortality status and biomass status for both stocks. This assessment model is widely used and accepted by the marine fisheries assessment community (Methot and Wetzel 2013). It is an integrated statistical catch-at-age model designed to incorporate basic observed data as a means of accounting for as much of the uncertainty in the data as possible. The integrated design requires less processing and/or assumptions about the data external to the model and can handle various missing data. The generalizable framework allows for varying levels of model complexity, depending on the types, resolution, and quantity of data available. Major appeals of using SS3 to assess red drum, in addition to the integrated framework, are the ability to incorporate tag-recapture data and the options to estimate size selectivities of fishing fleets and indices of abundance (i.e., double normal selectivity).

The SAS encountered several difficulties developing stable SS3 models that estimate plausible stock conditions and dynamics. The generalizable framework of SS3 allows many options for model configurations and exploration of alternative configurations are detailed in section 2.3. The SS3 model results provided in this report are not intended to be evaluated in the current state for management use, but rather to provide the peer-review panel with background information on efforts to transition to the SS3 modeling framework. It is the hope of the SAS that the peer-review panel can provide alternative perspectives and expertise to modify, stabilize, and improve the SS3 models for management use following the peer-review workshop.

Implications of changing modeling approaches were evaluated by conducting continuity model runs of the statistical catch-at-age model developed in SEDAR 18. Some modifications were made to align the inputs as much as possible with SS3 inputs, including the addition of length composition data for fish released alive and assumed to die post-release in recreational fisheries. A brief overview of the assessment history, results from the current configurations of the SS3 models for both stocks, the continuity models for both stocks, and discussion follow.

1.1 Assessment History

There have been five previous coastwide assessments for red drum inhabiting Atlantic coast waters of the U.S. (Vaughan and Helser 1990; Vaughan 1992, 1993, 1996; Vaughan and Carmichael 2000; South Atlantic Fishery Management Council 2009). The early assessment (through Vaughan 1993) mainly analyzed red drum as one coastwide stock and were primarily based on catch curve and separable virtual population analyses of subadult red drum (ages 0-5, see note below on age definitions) only. This early work was designed to remove the effect of emigration on the apparent decline (mortality) in catches of red drum as they moved from heavily fished inshore subadult habitats to more lightly fished offshore adult habitats. For the most part, the condition of the stock was inferred from the calculated level of escapement through the subadult stage though static SPR was also calculated as a management benchmark despite little information on adult catches. Beginning with Vaughan (1996), the assessments broke the analyses into two stocks: one inhabiting Atlantic waters from Florida through South Carolina and another in more northern waters. Major concerns beginning in this assessment were: increasing number of live-releases in the highly regulated recreational fisheries, the effects of minimum/maximum size restrictions complications to estimating selectivity, and 3) the introduction of calibrated (indices included) virtual population analyses. It should be noted that there was a change in the definition of the age designation after Vaughan (1996). The first calendar-year age in early assessments was designated age-0 (January-December for biologically 4-16 month old fish). This was redefined as age-1 (given the convention of incrementing age on January 1) in more recent assessments and continues through the current continuity model runs. Also, given the difficulties estimating the decline in vulnerability associated with the subadult transition to offshore waters, a series of pre-defined linkages between age-specific selectivities were used to constrain the analyses.

A summary of the Vaughan and Carmichael (2000) coastwide assessment and some recent state-specific assessments are given in Vaughan (2009 - SEDAR 18 DW-01). This assessment utilized two virtual population analyses (separable, FADAPT) and a spreadsheet-implemented statistical catch-at-age analysis. Uncertainty in the age structure of live-released mortalities was investigated by manipulating the lengths of red drum measured from angler creels. A range of release mortalities and selectivity linkage constraints were utilized in all analyses.

The last ASMFC assessment was completed in 2009 using data through 2007. It utilized a forward-calculating statistical catch at age analysis configured without a spawner-recruit curve (recruitment as lognormal deviations from a mean) and estimated constant selectivity relation between model age 3 and model ages 4 and 5. Information from tag/recapture studies conducted in North Carolina were used to further guide the selectivity of landed or live-release fisheries. More details on the configuration of the model are given in Murphy (2009 – SEDAR 18 AW09rev)

2.0 Stock Synthesis

2.1 Model Configuration

General details on the configuration of the SS3 modeling framework are described by Methot and Wetzel (2013), with more technical details available in Appendix A of that publication. Details specific to the red drum model configurations are included below. Four input files are required for a Stock Synthesis model: a starter file with details on output reporting, a data file with data inputs, a control file with specifications of model parameterization, and a forecast file with details on projections subsequent to the terminal model data year. Input file details are provided in the User Manual for Stock Synthesis (2012). The manual provides specifications and some guidance on options available for model configurations. The input files for base models of both stocks are in appendices 1-8.

The modeled time period was 1950-2013 for each stock. Commercial removals are available back to 1950, but recreational removal estimates prior to 1981 were not available and had to be developed by the Red Drum SAS (SEDAR44-DW07). The year 1950 was selected as the model start year to provide some contrast in removals and the stocks' reaction to these removals to inform the model of stock productivity, as both stocks are assumed to have been relatively depleted when the MRFSS recreational removal estimates start in 1981. The models for each stock were configured to model a single season with twelve months (annual time step), a single area, and aggregated sexes. The resolution of the data and time constraints precluded the development of a more complex model.

2.1.1 Life History

An important distinction to be made between the SS3 model and the continuity model is the difference in model-age assignments. The continuity model-ages are age 1 to 7+ with age-1 being red drum after their first January 1 of life to December 31 (see section 1.1). The first model age in SS3 is age-0, which are red drum from their first January 1 of life to December 31 of that year. Therefore, all ages in description of the continuity models as well as the Data Workshop Report are SS3 model-age plus one.

All life history parameters are assumed time invariant.

2.1.1.1 Growth

Poor fit of von Bertalanffy growth to red drum growth was documented in SEDAR 18 and during the Data Workshop of this assessment. Early analyses of red drum age-length data showed a pattern in residuals that indicated the simple von Bertalanffy growth model overestimated the lengths of middle-aged fish in the northern stock and younger fish in the southern stock and underestimated length of older fish in the southern stock. However, the use of SS3 limits the model to a parameterization of the von Bertalanffy growth function. The Schnute (1981) parametrization of the von Bertalanffy growth function was selected to model length-at-age. Fits to a generalized Schnute growth model (i.e., Richards (1959) growth curve) were investigated at the Data Workshop, but the coefficient estimated (1) suggested the original Schnute parameterization is the best fit growth function available in SS3. The length at the first age well represented in the data (model age 0.5), Linf, Brody's growth coefficient (K), and CVs of length-at-age for the youngest and oldest ages are estimated growth parameters in the model. An alternative option in SS3 to address the bias noted at the Data Workshop is to estimate two conjoined growth curves with a K for younger ages and a second K that changes at a specified older age. The second K was estimated for fish 5+ in the northern model and fish 9+ in the southern model. Estimation of the growth curve was made possible by fitting age data conditioned within length categories for various fleets and surveys. Growth was assumed linear from the lower edge of the smallest population length bin (6 cm) on January 1 to July 1 (model age of 0.5 years).

2.1.1.2 Natural Mortality

Natural mortality (M) was related to age through a Lorenzen (1996) curve standardized to a cumulative lifetime mortality equal to a Hoenig-type (1983) constant M. M was input as a stock-specific vector based on external estimates from SEDAR 18, rather than estimated within the model with a Lorenzen curve. Alternative M estimates based on von Bertalanffy growth were explored at the Data Workshop, though the M estimates from SEDAR 18 were ultimately selected due to the better growth estimates used to estimate these M values (non-parametric growth, SEDAR 18 working paper S18AW02).

2.1.1.3 Length-Weight Conversions

Alpha and beta parameters of the length-weight relationship are fixed at the northern or southern stocks' external parameter estimates (see meristics conversion section of Data Workshop Report).

2.1.1.4 Maturity, Reproduction, and Recruitment

The sex ratio was assumed to be 0.5, consistent with SEDAR 18. Maturity was input as maturity-at-age on September 1. Maturity-at-age was used so maturity of fish on September 1 could be fixed in the model. Spawning stock biomass is estimated at the beginning of the year with equation 1, but the September maturity vector defines the proportion of fish mature-at-age during the spawning season.

Equation 1: $$SSB_y = \sum_{a=0}^{A} 0.5 N_{t,a} Mat_a wt_a$$

A Beverton-Holt spawner-recruit relationship was assumed in the model. As a proxy for egg production, overall mature female biomass was used in the Beverton-Holt spawner-recruit configuration. Steepness (h) of the spawner-recruit relationship was not estimated but assumed to be 0.99. The log of unexploited equilibrium recruitment (ln(R0)) and annual recruitment deviations (ln(R dev)) from the expected recruitment are estimated in the model. The standard deviation of ln(R dev) (R sigma) was estimated in the northern model, but fixed at 0.6 (Beddington and Cooke 1983) in the southern model due to model instability. Recruitment deviations were estimated in separate periods, as a vector of early recruitment deviations and a vector of main recruitment deviations, based on the amount of data available to inform these deviations in the two time periods. Deviation vectors are constrained to sum to 0 so the expected recruitment form the spawner-recruit relationship is the central tendency of the deviations. Recruitment deviations can be estimated prior to the model start year to adjust the initial population estimates. Bias adjustments were applied to recruitment estimates to ensure mean unbiased recruitment from the lognormally distributed estimates following methods of Methot and Taylor (2011). The bias adjustment was ramped up to the full bias adjustment as the available data informing recruitment deviations increased.

Northern

The first year of the main recruitment deviation period was 1992, the first year of the NC_JAI index and three years after consistent length composition data begins. Recruitment deviations were estimated prior to the model start year in early model development, but were very close to 0 for all estimates suggesting there was not enough data informative of recruitment in the beginning of the model. Therefore, this configuration was not used for the base model. Bias adjustments were ramped in according to the calculations suggested in Methot and Taylor 2011 (Figure 2.4.55).

Southern

The main recruitment deviation period was set to 1983-2013 beginning a few years after catch data and catch length data (1981) were available but a few years before the start of the earliest age-0 index (1984, SCstopn). Bias adjustment was ramped beginning in 1958 and ending in full adjustment in 1984 (Figure 2.4.58). Early recruitment deviations were estimated to apply to each age in the initial age structure of the population. These deviations consistently suggested that recruitment was below that predicted strictly from the spawning stock biomass calculated during the early years.

2.1.2 Selectivity

Selectivity can be modeled as a function of length, age, or both with several different patterns and parameterizations. A double normal selectivity pattern was used to model selectivity-at-length for each fishing fleet and the recreational CPUE. The double normal selectivity function is the recommended selectivity function and is parameterized to predict various selectivity patterns (i.e., dome shaped or logistic). The double normal selectivity function is defined by six parameters controlling the initial selectivity at the first population length bin, the ascending slope of selectivity, the peak of the ascending slope, the width of maximum selectivity, the descending slope of selectivity, and the selectivity of larger fish. Starting values were specified based on visual inspection of length compositions. Some of the parameters for this function were constrained using a symmetric beta prior to keep the parameter away from an illogical space (peak of ascending slope below 15 cm) or away from an area where large changes in the parameter had little impact on the function value (selectivity at largest sizes near zero over wide range of parameter values, e.g., -5 to -∞). The initial selectivity level parameter was fixed for all functions to -10 (logistic ~ 0) because the smallest size classes never occurred in the length data for the fishing fleets or the recreational CPUE. Selectivity-at-length for fishery-independent, adult indices of abundance was modeled as a two-parameter logistic function.

Selectivities-at-age of all fishery-independent recruit and subadult indices of abundance were fixed at the age at which catch data were subset to develop the index. Selectivities-at-age for the fishing fleets, recreational CPUE, and fishery-independent adult indices of abundance is derived from the estimated selectivity-at-length, conditional age composition data (with the exception of the recreational discard fleets), and estimated growth parameters.

Length selectivities of fishing fleets were assumed to reflect the increasing vulnerability to the gear as red drum grew larger followed by a reduction in vulnerability to the mostly estuarine-based fleets as the fish spent more time in coastal waters. This natural change in vulnerability was further modified by changes or enactment of minimum and maximum size limits. New selectivity parameters are estimated for new selectivity periods (with the exception of the initial selectivity that remains fixed near 0) and replace the selectivity parameters from the previous selectivity period. The selectivities of the dead live-releases were inferred from the lengths of tagged red drum that were subsequently reported captured and released by anglers and some volunteer logbook data on sizes of released fish (SEDAR44-DW06). Selectivities of all indices of abundance are assumed constant.

2.1.2.1 Northern

Selectivities of fishing fleets were assumed to change in 1976, 1992, and 1999 due to regulations implemented in NC and VA. The states from MD north make negligible contributions to removals in most years and regulation changes in these states are assumed to have negligible effects on the overall selectivity of northern stock fish. There was no minimum size limit in VA prior to 1986, but this is assumed to have negligible effects on the overall selectivity. Selectivity parameters are fixed for the first time period (1950-1975) due to lack of length composition data for the removals and unrealistic, highly correlated estimates when estimated (very high selectivity of older ages).

2.1.2.2. Southern

Regulatory changes were assumed to change selectivity in 1986 in Florida, in 1986, 1992, and 2003 in Georgia, and in 1986, 1993, 2002, and 2008 in South Carolina. Lengths of red drum in the landed-fishery catches were generally available beginning in 1981. Selectivity for earlier years was assumed equal to that estimated using the data available during the early-mid 1980s prior to many management actions.

2.1.3 Fishing Mortality

A continuous fishing mortality parameter is estimated for each fishing fleet and year (equation 2). Fishing mortality-at-age is calculated as the product of this estimated apical F and the estimated selectivity-at-age.

Equation 2: $$Z_{t,a} = M_a + \sum_{f=1}^{Af}(S_{y,f,a}F_{t,y})$$

This parameterization was selected because of the imprecise recreational harvest and discard estimates and the assumed high fishing mortality the stock experienced in the 1980s (Methot 2012).

2.1.4 Tag-Recapture

Additional information on annual fleet- and age-specific fishing mortality is provided by fitting fleet- and age-specific recapture histories of fish of the same age tagged in the same year with the same tag types (tag groups). Number of tagged fish is a negligible fraction of the total population, so tagging data has no impact on total population abundance and mortality estimates (Methot and Wetzel 2013). No migration between stock units is assumed (closed stocks).

Tagged fish are assumed to be released at the beginning of the season (year). However, red drum were tagged throughout the year, often with peaks of tagging activity in the fall. Several approaches were evaluated for addressing this assumption including: assuming a January 1 tag date and immediate mixing in the population, shifting all initial tag events to January 1 and shifting recapture dates accordingly, shifting all initial tag events that occurred before July 1 to January 1 of the original tag year and shifting all initial tag events that occurred on or after July 1 to January 1 of the following year (original tag year+1), and assuming a January 1 tag date and a latency period of 0.75 to allow fish to mix in the population for nine months before estimating recaptures. The shifting methods resulted in bias due to deletion of recapture events that were shifted into new years and the assumption of a January 1 tag date with immediate mixing would bias recapture estimates due to the tagging of fish throughout the year. Assuming a January 1 tag date and setting the latency period to 0.75 was identified as the best approach to address the tag date assumption. Recaptures of each tag group are estimated for three years post-release (excluding the first ¾ of the first year due to the latency period), after which recaptures accumulate for a final recapture estimate. Only fleet reporting rates for harvest fleets were estimated due to prior information/assumptions available for the other tag parameters. The recreational discard ‘recaptures’ were assumed based on the 8% hook and release mortality and assumed reporting rate of these ‘recaptures’ is fixed at 100%. Overdispersion parameters defining the relationship between the mean and variance of recaptures were fixed at 2, indicating slightly over-dispersed recaptures (negative binomial distribution, i.e., clumped (schooling/aggregating) vs. random recaptures). This reduces the penalty on the objective function for estimating greater variability in recaptures.

2.1.5 Initial Population

Equilibrium catches for each fleet in the model start year are fit in the model to estimate the fishing mortality necessary to achieve these catches. These fishing mortality estimates are applied to an unfished equilibrium population to estimate the initial population abundance and age structure. In addition, the model was allowed to estimate recruitment deviations for the period before the initial year in the model and these were applied to the appropriate year class to reflect variations in early recruitment (southern model only). Robust commercial fisheries and recreational fisheries already existed for red drum by 1950, so this configuration was necessary to estimate realistic initial populations for initial years in each model. The selectivity used to estimate the fished initial population is equal to the model start year selectivity. The bounds for initial fishing mortalities were set wide with a lower bound set at zero. Efforts to determine initial fishing mortality based on information in the catch and length/age composition using the method described in Methot (2012) where not successful.

2.1.6 Likelihood Components

The objective function consists of likelihood components for the removals, indices of abundance, length compositions of fleets and surveys, age compositions of fleets and surveys, recaptures of tags, the overdispersion of the recaptures, the recruitment deviations, and the priors on selectivity parameters. The weighting factors (lambda) for all components are set to unity.

2.1.7 Benchmarks

SS3 calculates fishing intensities that result in a specified SPR target, specified biomass target, and MSY. The SSB (for SPR and MSY benchmarks), SPR (for biomass benchmark), and yield associated with fishing sustained at the level to achieve the SPR target, biomass target, and MSY are also calculated. Fishing intensities to achieve the biomass target and MSY rely on the spawner-recruit relationship. Red rum are currently managed under a target SPR level of 0.4, as defined by Amendment 2 to the ASMFC Interstate Fishery Management Plan (ASMFC 2002). The steepness of the spawner-recruit relationships in the SS3 models are assumed to be 0.99, indicating essentially no relationship between recruits and spawning stock biomass, and, therefore, the SPR benchmarks are provided in the results.

Consistent with SEDAR 18, static (sEsc) and hohort-specific (tEsc) escapement through SS model age-4 were calculated with equations 3 and 4, repectively.

Equation 3:

$$sEsc_y = e^{\sum_{a=0}^{a=4} -F_{y,a}}$$

Equation 4:

$$tEsc_y = e^{\sum_{a=0}^{a=4} -F_{y-4+a,a}}$$

2.2. Inputs

The input data are summarized by type and year in Figures 2.2.1 and 2.2.2 for the northern and southern models, respectively.

2.2.1 Stock Removals

Fishing fleets were determined for each stock based on expected similarities in selectivity of gears and removals of red drum were aggregated into these fleets for input in the models. All fleets were consistent with fleet designations in the previous assessment (Murphy et al. 2009). Commercial landings were input in metric tons and recreational removals (harvest and discards) were input in numbers (thousands of fish). Recreational harvest and discards were configured as separate fishing fleets because there is no retention function capable of modeling discards due to reduced vulnerability of the older ages (i.e., a slot limit and migration offshore). Retention can only be modeled as a logistic function. Assumed dead discards were calculated external to the model (i.e., total number of fish released alive * 8% assumed discard mortality) and input as retained catch to avoid adding eight fixed parameters necessary to define retention and discard mortality within the model. Recreational dead discard input as retained catch also enables the estimate of an initial fishing mortality for these fleets. Removals were assumed lognormally distributed. Since no within-year seasonal component was used, removals were assumed to occur at midyear.

Standard errors of the catch estimates in log space were assumed for commercial fleets (time invariant) and derived from proportional standard errors (PSEs) for recreational removals. The PSEs of the harvest and discard estimates were converted to the standard errors of log(catch) with the equation $\sqrt{\log(1+CV^2)}$, and scaled to a range of 0.15-0.25 in the northern stock and scaled relative to fleet-specific means. They were then multiplied by the input fleet-specific constant standard error. Prior to 1981, a constant standard error equal to the mean of the 1982-1985 estimates of standard error was assumed. Commercial landings reporting is considered a census and is assumed to be highly precise.

2.2.1.1 Northern Stock

There are two commercial fishing fleets (gillnet & beach seine gears – Comm_GNBS and all other gears – Comm_OTHER), a recreational harvests fleet (Rec_Harv), and a recreational discard fleet (Rec_Discard). The Comm_GNBS fleet included estimated dead discards from commercial gill net fisheries and the recreational commercial gill net fishery in NC. Due to the inclusion of these discard estimates, the assumed standard error for this fleet was increased from 0.05 to 0.1. Recreational discards in 1982 were estimated to be zero, so a negligible value of 100 dead discards was input due to the assumption of a lognormal distribution for these removals. Wave 1 was not sampled by the MRFSS in 1981, but wave 1 catch was not estimated consistently in NC until 2006 and there are no wave 1 estimates north of NC, so the 1981 estimate was not adjusted to account for wave 1 removals.

2.2.1.2 Southern Stock

The fishing fleets were combined commercial landings (FLcom), state-specific angler landings (SC_AB1, GA_AB1, FL_AB1), Florida live-release deaths (FL_B2), and a combined Georgia-South Carolina live-release deaths (GASC_B2). No estimates of commercial bycatch or discards are available so these are assumed negligible for this stock as the commercial fisheries were active only before the recent restrictive management measures were enacted.

The catch data for all of the recreational fisheries, especially the retained-catch fisheries, show a sharp drop in 1981, the first year for the MRFSS survey estimates even after adjusting for no estimates from wave 1 (Jan-Feb). The missing 1981 wave 1 landings and releases from Florida were estimated using the proportion of annual landings seen during wave 1 in previous three years. The high degree of variability in estimates in the early 1980s may be an artifact of the initial stages of the recreational survey giving potentially poorly defined biased estimates.

2.2.2. Equilibrium catch

The assumption made was that equilibrium recreational catches expected under the 1950 rates of fishing mortality were equal to the fishing mortalities associated with the average catch made during the first 10 years (1950-1959) due to stable landings and assumed stable biomass. For the commercial catch fleets, the equilibrium catch was assumed to be 50% of the 1950-1959 average catch for commercial fleets due to variable, but high catches relative to the removal history.

These high levels of initial equilibrium catch and the associated initial F's assured that there was little 'cryptic biomass' in the older age groups at the beginning of the reconstruction of abundance at age.

2.2.3 Indices of Abundance

Indices of abundance were developed in units of number of fish per unit effort. All indices were assumed to follow lognormal distributions and CVs were converted to standard errors of the index in log space with the equation $\sqrt{\log(1 + CV^2)}$. Timing of surveys occurring in the model is based on the midpoint of the annual survey duration.

2.2.3.1 Northern Stock

Five indices of abundance were included in the model: the NC seine survey (NC_JAI), NC gill net indices for age-0 (NC_IGNS_0) and age-1 (NC_IGNS_1) fish, the NC longline survey (NC_LL) and the recreational CPUE (Rec_CPUE).

2.2.3.2 Southern Stock

Eleven indices of abundance were included in the model. The index for beginning-of-the-year (January 1) new recruits (age-0) was East Florida bag seine survey (1997-2013; FL_IRJXsn). Indices of later-in-the-year age-0 recruits came from the Georgia gillnet (2003-13; GAgn), South Carolina stop net (1986-2004; SCstopn) and South Carolina trammel net surveys (1994-2013; SCtn1). Subadult surveys of abundance included those for age-1, South Carolina trammel net (SCtn2) and Florida haul seine (1997-2013; FLhs2), and those for age 2, Florida haul seine (FLhs3). Longline surveys that capture adult red drum were available from Georgia (GAll) and South Carolina. The latter survey was redesigned in 1994 so it was broken into separate 1986-1994 (SCll_1 and 1994-2013 (SCll.3) surveys.

2.2.4 Length Composition

Annual length compositions by fleet are input in 2 cm length bins with the 'observed' sample sizes equal to the number of trips sampled. Commercial length sampling is assumed to be proportional to landings throughout the year. Length compositions for the recreational harvest and discard fleets were developed using a weighting scheme that attempts to account for different length-sample sizes (or lack of samples) and different contributions to the annual landings made within recreational survey strata as described in working paper SEDAR44-DW06. 'Observed' sample sizes were initially set at the number of trips with a minimum sample size (for the southern stock) of 10. For length data available prior to 1989 the sample size was set to the minimum sample size seen during 1989-2013. An exception was the Florida commercial landings lengths which were simply the square root of the number of fish measured.

2.2.5 Age Composition

Age compositions by fleet are input as proportion-at-age conditioned on length bins. Some age samples have been collected from non-random designed sampling (carcass donation programs) and age data conditioned on length are designed to address these types of sampling protocols. Ageing imprecision was assumed negligible (sd = 0.001) and age data are assumed unbiased. Age data bins include ages 0 to 40 in the north and 0 to 30 in the south with data bins aggregated ages older than 10 into 5 age bins (i.e., 10,15,20,25,30). Southern model aggregates ages older than 10 into 5 age bins (i.e., 10,15,20,25,30+) and has a plus group of 40. The plus group is 41+ in the north and 40+ in the south and all observed ages in this plus group are included in the final age data bin. There is negligible variation in growth at subsequent ages greater than 41 and sample size of age data become very small after age 40. Only 0.6% and 0.07% of age observations are older than 40 in the northern stock and southern stock, respectively. Because the age composition data were entered as conditional on 2 –cm length bins, it was assumed that the observed number of age samples size was appropriate for the multinomial function (not correlated).

2.2.6 Tag-Recapture Data

Tag and recapture data were developed for input in the models with the steps below.

1. Excluded fish with no length at tagging record.
2. Excluded fish recaptured 7 days or less.
3. Excluded fish recaptured and killed by FI source or recaptured by undetermined fleet.
4. Excluded fish recaptured and released without a tag. Included fish released with partial tags and released with new tags as fish released with a tag intact.
5. Separated tags into 3 types, internal anchor tags, plastic dart tags, and stainless steel tags, due to expected differences in chronic tag loss.
6. Assigned age to 4+ group based on median length of tagged fish converted to integer age using the SSVB growth function.
7. Assumed 8% initial hook and release mortality on all fish tagged by recreational anglers. Assumed no initial mortality on fish tagged by FI sources. Adjusted number of tagged fish (init.Nrelease) for the number of initial mortalities (adj.Nrelease). Fix initial tag loss at 0 in the tag-recapture model.
8. Assumed 8% hook and release mortality on all fish recaptured and released by recreational anglers. These "recaptures" are assigned to the recreational discard fleets. Assumed no catch and release mortality on fish recaptured and released by other fleets or FI sources.
9. Only included tag groups (age/year/tag/type) with 300 tagged fish and recaptures observed over the first three years after tagging. Any tag groups with no observed

recaptures were dropped from the final data. Only included first three years of recapture history for each tag group (Hendrix 2010).

2.2.6.1 Northern Stock

Thirty one tag groups met the 300 tag threshold and were included in the model. There were 197 fleet-specific recapture events of these tag groups. All tag groups after 2002 were excluded from the data due to expected changes in reporting rate with release of high reward tags in 2005 (Bacheler et al 2008). Reporting rate cannot be time-varying.

2.2.6.2 Southern Stock

One-hundred and twelve tagging events were tracked for recaptures in the southern region. These provided 403 age-, tag-type- ,fleet-specific recapture events used in the analysis. Only two fleets reported tag recaptures, the South Carolina landings fleet (238 annual events) and the South Carolina release fleet (165 annual events)

2.3 Concerns with SS3 Configurations and Model Stability for Red Drum

Model development was hindered by extreme instability of models and hypersensitivity to minor changes in model configurations. Various configurations were attempted to stabilize models that resulted in plausible estimates.

Alternative configurations attempted for the southern stock model included: 1) simplifying size selectivity 6-parameter double normal functions with 3-parameter exponential-logistic, 2) change the block setup parameters from new estimated parameters to estimation of simple deviations from initial parameters, 3) including starting values for estimated F's to include year-specific starting values and error terms, 4) delete tag-recapture information, 5) drop various retained-catch catch per unit effort series, 6) increase the SE for these retained CPUE's, 7) increase/reduce the equilibrium catch or initial fishing mortality, 8) change the beginning-of-year age-0 index to a special selectivity that makes the expected value equal recruitment., 9) investigate a number of recruitment bias correction ramping schemes, 10) include a 'environmental' regime change to steepness, R0, or recruitment deviations, 11) estimate using recruitment deviations as simple deviations rather than a deviation vector (constrained to sum to one), 12) eliminate the advanced recruitment options details, 13) change the starting year from 1950 to 1981, 13) change the maturity schedule to the northern stock equation, 14) rescale M to another multiplier, 15) change the lower limit to the effective sample size (also implement a sqrt option) for the length composition data, 16) force fit to often aberrant 1981 South Carolina AB1 catch, 17) estimate year-specific instantaneous rates of F directly or via the hybrid approach (the latter not allowing year-specific errors for catch, 18) estimating growth using the "K-devs" method to reduce the residual pattern seen with the straight von Bertalanffy growth model. Many of these options were investigated because of the 'unusual behavior of the model consistently returning very high SPR values.

Alternative configurations attempted for the northern stock model included: 1)hybrid F parameterization, 2) hybrid F parameterization with F ballpark activated to restrain the model from estimating an extremely large stock and very small Fs, 3) several age structures (plus group of 6 to match SEDAR 18 age structure, plus group equal to 22 due to little variation in growth between subsequent ages, plus group equal to max age of 61), 4) changed length bins from 4cm to 2cm due to illogical selectivity parameter combinations, 5) truncated model period (1981 & 1989) to more data rich years, 6) different assumptions for catch SEs (year-specific, different constant values), 7) fixed selectivities for various fleets and indices based on SEDAR 18 estimates, 8) fixed growth parameters, 9) recreational discard fleet as a discard only fleet, 10) without tag data, 11) with nil emphasis on negative binomial component of recaptures, 12) estimate overdispersion parameters, 13) with nil emphasis on equilibrium catch to estimate mortality from early data, 14) an unfished equilibrium population, an unfished initial population adjusted based on pre-model period recruitment deviations, 15) estimating steepness, R sigma, and R offset, 16) changing phases of estimation for different parameters, 17) estimated selectivity of first regulation period, 18) year-specific F starting values based on SEDAR 18, 19) different M vectors, and 20) different equilibrium catches. Many alternatives were explored due to the highly depleted stock and low SPR estimates with the base configuration. Visual evaluation of model results suggested negligible changes to depletion and SPR for all alternative configurations that did not result in undefined calculations, except for the hybrid F method.

2.3.1 Initial Population and Model Time Series

A difficult problem to overcome was the estimates of the initial equilibrium condition of the stock. As discussed in the model configuration section, these stock conditions can be configured as an unfished equilibrium population, or adjusted from an unfished equilibrium based on initial fishing mortality estimates and/or recruitment deviations estimated before the model start year. Some of trends estimated in the base SS3 models are intuitive, but the initial population numbers and biomass are projected forward from unlikely starting conditions. One potential explanation for these estimates is the lack of data in the early time series of the base model (1950). Only removals are available for the first thirty to forty years. The SAS decided to start the model in 1950 to provide the model with more information on the contrast of stock conditions, but it is unclear if this is an appropriate trade off with the limitations of data in the early time period. Another potential explanation for the unlikely starting conditions is the lack of data on the mature portion of the stock until the very end of the time series. The northern model may be estimating a highly depleted adult stock early in the time series, so the model can fit the data, which almost exclusively pertains to the subadult portion of the stock, later in the time series. As would be expected, there is little contrast in the brief adult indices of abundance that index many year classes (40+).

Attempts were made to evaluate the decisions pertaining to model time series and initial population configuration with model development and sensitivity analysis where possible (i.e., the northern model).

2.3.2 Selectivity

The model would often estimate illogical parameter combinations of the double normal selectivity function during model development. This made exploring alternative configurations very difficult, as these estimates would lead to undefined calculations (e.g., log of a negative number). What started as a workaround, and remained in the model configuration, was to include symmetric beta priors around the selectivity parameters. There is an option in the starter file to include these priors, but direct configuration in the control file seems to work better.

2.3.3 Fishing Mortality Parameterization

The northern model was very sensitive to the parameterization of fishing mortality. F can be estimated as continuous model parameters (equation 2) or with a hybrid method that starts with Pope's approximation to calculate Fs as tuning coefficients to match the observed catch that are subsequently converted to approximations of continuous Fs. The continuous F method (base model) estimates a highly depleted stock that does not recover throughout the time series. The hybrid F method estimates a much larger stock that has experienced much lower fishing mortality throughout the time series and never declines to a depleted state. The parameterization that estimates F as continuous parameters is more justifiable, given the imprecise recreational removals and the decreased restraint on matching these removals. The estimates from this parameterization were also closer to F estimates from the previous assessment, which were accepted by the peer review for management use.

2.3.4 Tag-Recapture Data

The models appear to be insensitive to the tag-recapture components, as evaluated in early model development and with sensitivity analysis. These are large data sources for both the northern (NC) and southern stocks (SC). It is unclear if the tag-recapture component is configured with the best approach and these data modeled appropriately (i.e., fixed vs estimated parameters, overdispersion).

2.3.5 Recruitment

Given little information on recruitment, no management mandate to estimate MSY, and 'often' assumed steepness ~ 1.0, it may be more appropriate to parameterize recruitment with a CAGEAN-like spawner-recruit configuration (recruitment parameter vector only). Previous attempts at this configuration were attempted for the southern model with little change to model stability and results, but it is unclear if other aspects of model configuration were hindering model stability with this recruitment configuration. There also concerns about the recruitment era set up and ramping of bias adjustments to recruitment estimates, as many model solutions for the southern model involve long periods of large negative recruitment deviations.

2.3.6 Catch Standard Errors

As mentioned above, the imprecise recreational removals contribute to model instability when SEs derived from MRIP/MRFSS PSEs are input in the model. When these values are input, much less weight is given to these data in the likelihood and the model tends to estimate extremely large spikes and residuals in the recreational harvest and discards, and consequently extremely large spikes in F. The SEs were later scaled in the base model to a specified range.

2.3.5 Model Version

A slightly older version of SSs was used for northern model development. It was recently discovered that calculations with age-specific K growth were not done as expected. The age-specific K growth was applied to the midpoint (year for our model) season age, but not the beginning season age. When switching to the newer version being used for the southern stock (3.24f) to correct for this miscalculation, very similar results in terms of the population estimates were produced with a better fit to observed growth, but model stability decreased.

2.4 Results

2.4.1 Northern Stock

2.4.1.1 Overall Fit

The base model converged on a solution with a final maximum gradient of 0.0131871 and a total negative log-likelihood of 14,645.0 (Table 2.1.1). There were a total of 402 parameters estimated in the model (Table 2.4.1) and 2,386 data points fit in the model (Table 2.4.2).

Jittered starting values were calculated for 50 model runs with a jitter factor of 0.1. This type of analysis does not prove convergence on a global minimum, but does not support non-convergence (SEDAR 2013). The analysis did not support convergence on a global minimum (Table 2.4.3). Rather, the model consistently converged on two different solutions, a total negative log-likelihood within two likelihood units from the base model likelihood of 14,645 (30 of 50 runs) or within two likelihood units from 14,634 (11 of 50 runs). Three runs were greater than 2 likelihood units from the base run. The remaining six runs resulted in an undefined likelihood. Estimates of R0 and virgin SSB of all runs with defined likelihoods are within 2% of the base run estimates. Estimates of relative SSB trajectories of all runs are in Figure 2.4.1.

2.4.1.2 Data Fits

Growth

The estimated von Bertalanffy growth curve did not fit observed red drum growth well, particularly for ages 12-28 (figure 2.4.3). The age 5+ K resulted in smaller raw residuals than observed with the standard growth curve, but the pattern in residuals (consistent overestimation of length-at-age for ages 12-28) remains. Growth parameters and CVs are in table 2.4.5 and are precisely estimated (CV<0.05).

Removals

The removals by each fleet are fit well in the early time series when no other data are modeled (table 2.4.7, Figures 2.4.5-2.4.8). The removals by the Comm_OTHER fleet are fit particularly well, as expected with the lowest input standard errors. There are some large standardized residuals (±2) for the other three fleets. The model tends to overestimate the harvest by the Rec_Harv fleet in the 1990s and early 2000s, and underestimate the harvest in the late 2000s. Conversely, the model tends to underestimate the dead releases by the Rec_Discard fleet in the 1990s and 2000s, including several very large underestimates in 2002 and 2012 (underestimates of about 158,000 and 188,000 fish, respectively).

Indices of Abundance

The trends in the indices are predicted well, though there are several large residuals for each index, as the model struggles to pick up some of the extreme inter-annual variability in the indices (table 2.4.9, Figures 2.4.15-2.4.19). The model tends to underestimate the large year classes in the NC_IGNS_1. The Rec_CPUE index trend is not predicted well in the first few years and the model tends to underestimate the index in the late 1990s and 2000s. There are no apparent trends in residuals in the other indices.

Length Composition

Residuals for the proportion-at-length of removals and indices are in Figures 2.4.30 and 2.4.31, respectively. The model does predict the annual mean lengths well (Figures 2.4.33), but does tend to underestimate the proportion-at larger lengths for the Rec_Discard fleet and Rec_CPUE.

Age Composition

Most large residuals in the fits to the conditional age-at-length compositions are positive residuals at older ages.

Tag-Recapture Model

The model predicts observed recaptures well for most tag groups as well as the trend of aggregated recaptures (Figure 2.4.37). There is an apparent trend in residuals with the model tending to underestimate recaptures for the early tag groups and overestimate recaptures for the later tag groups (Figure 2.4.38). The highest reporting rate is estimated for the Comm_OTHER fleet, followed by the Comm_GNBS fleet, and the Rec_Harv fleet (Table 2.4.11).

2.4.1.3 Stock Dynamic Estimates

Selectivity

Selectivity parameters and CVs are in Table 2.4.13. Several selectivity parameters were estimated at or near their bounds (Table 2.4.13). Six of these parameters are the parameters controlling selectivity of older fish and they are being estimated near zero. Correlation of the peak of the ascending slope and width of maximum selectivity parameters for the Rec_Discard fleet from 1992-1998 was above the general threshold for high correlation (>±0.95). Selectivities of all fishing fleets were estimated to be dome shaped in all selectivity periods (Figure 2.4.41). Derived age selectivities of the fishing fleets in 2013 are in Figure 2.4.42. Selectivities of all harvest fleets decline to/close to zero for ages 6+. Selectivity of the Rec_Discard fleet declines to low, but positive selectivity of all older ages. The shifts in selectivity generally follow the expected shifts in reaction to implemented size and possession limits. Selectivity of the

Rec_CPUE index was also estimated as dome shaped, with a constant, but low selectivity of older ages (Figure 2.4.43). Logistic selectivity of the NC_LL survey is in Figure 2.4.43.

Fishing Mortality

The initial fishing mortality estimates are in Table 2.4.15. Estimates for the Comm_OTHER and Rec_Discard fleets were estimated near the lower bounds. Fishing mortality of ages 0-10 is relatively low in the 1950s and then increases through the 1960s. Fishing mortality decreases and stabilizes in the 1970s, followed by increases through the 1980s. Fishing mortality remains high through most of the 1990s before decreasing and becoming relatively stable through the 2000s (Figure 2.4.48). Fishing mortality of ages 0-10 is poorly estimated (CV>0.25) until the mid-1980s as additional data become available and standard errors of the recreational fleets decrease (Table 2.4.17). CVs for fishing mortality estimates after 1985 are generally less than 0.15. The Rec_Harv fleet generally exerts the greatest fishing pressure (Table 2.4.21, Figure 2.4.49). The fishing mortality increased through the 1950s and 1960s, before declining sharply in the early 1970s. Fishing mortality increased rapidly in the late 1970s and was highly variable through the 1990s. There was a decreasing trend through the 2000s before increasing in the final two years of the time series. Rec_Harv fishing mortality is poorly estimated (CV>0.25) until the mid-1980s as standard errors decrease. CVs after 1985 are generally less than 0.20. The fishing mortality of the Rec_Discard fleet is relatively low until after 2000, then steadily increases through the remaining time series (Table 2.4.22, Figure 2.4.49). CVs are generally greater than 0.25 through the 1980s and generally less than 0.20 in the 1990s and 2000s. Fishing mortality of the Comm_OTHER fleet is low, but variable until the late 1970s. Fishing mortality increases through the 1980s, before decreasing and stabilizing in the 1990s and 2000s (Table 2.4.20, Figure 2.4.49). CVs are generally less than 0.15 through the time series. Fishing mortality of the Comm_GNBS fleet is relatively low and stable, before significantly increasing in the 1980s (Table 2.4.19, Figure 2.4.49). The fishing mortality decreases slightly in the 1990s and remains at these levels through the 2000s. CVs are generally less than 0.15 after the mid-1980s. Fishing mortality is primarily directed on ages 0-3, after which it declines and then becomes constant over the older age classes in the stock (Table 2.4.29).

Recruitment, Abundance, and Biomass

The unfished equilibrium recruitment (ln(R0)) is estimated as 5.82 with a CV of 0.009. R sigma is estimated at 0.76 with a CV of 0.08. There is a period of low recruitment from the mid-1950s to the early 1970s. Recruitment deviations vary around the spawner-recruit expected recruitment in other years with no apparent trend (Figure 2.4.53). There were particularly strong year classes (>200% of R0) in 1974, 1983, 1997, and 2012 (Figure 2.4.54). There were particularly weak year classes (<20% of R0) in 1958, 1959, 1969, 1978, 1985 and 2003. CVs for recruitment estimates are generally greater than 0.25 before 1985 and less than 0.15 after 1985 (Table 2.4.31).

The initial spawning stock biomass is estimated to be about 17% of unfished spawning stock biomass (Table 2.4.33). Biomass increases through the 1950s, before declining through the 1960s. Biomass increases slightly in the late 1970s, is steady in the early 1980s, and then declines steadily through the remaining time series (Figure 2.4.59). CVs are less than 0.10 after the 1970s. The numbers-at-age are predicted to decline rapidly after age 1, as these age classes are experiencing the highest fishing mortality (Figure 2.4.61, table 2.4.35). The unfished plus group abundance is high relative to other ages, resulting in large unfished biomass estimates (Figure 2.4.62).

SPR

The spawning potential ratio is relatively high in the 1950s and decreases through the 1960s (table 2.4.37, Figure 2.4.65). SPR averaged around 0.4 through the 1970s and early 1980s, before declines to very low levels in the mid and late 1980s and early 1990s. SPR increases and then stabilizes around 0.2 through the 2000s. SPR declines again to very low levels in the final two years of the time series. CVs are less than 0.10 through much of the time series. Due to the highly variable nature of red drum recruitment, the three year average SPR was also calculated (SEDAR 18). The three year average SPR follows the same pattern as annual SPR, but smooths over the variability (Figure 2.4.65). The three year average shows a slow, but steady increasing trend since the mid-1980s.

Escapement

Escapement follows a similar trend in SPR, with high periods of escapement in the 1950s, 1970s, and early 1980s, and low periods of escapement in the 1960s, mid-1980s, and 1990s. Escapement does increase in the 2000s, but remains at relatively low levels (Figure 2.4.67).

2.4.1.4 Uncertainty

Likelihood Profiles

Likelihood profiling was done on key parameters to identify conflicts between the likelihood components about the most likely estimate and to qualitatively evaluate precision of the estimate of these parameters.

The unfished equilibrium log(recruitment) parameter was evaluated at fixed values between ~25% below (4.4) and above (7.4) the base model estimate of 5.82. Fixed values were incremented by 0.2 for each model run in the analysis.

The total likelihood surface is well defined for the low end of the range evaluated, but not well defined at the high end of the range (Figure 2.4.72). The total likelihood is driven by the catch likelihood component. The other likelihood components are much less informative.

The standard deviation of the recruitment deviations was evaluated at fixed values between ~25% below (0.57) and above (0.92) the base model estimate of 0.76. Fixed values were incremented by 0.025 for each model run in the analysis

The total likelihood surface is well defined and smooth at the evaluated precision (Figure 2.4.73). The recruitment deviations support the total likelihood surface. However, there are several conflicting signals from the different likelihood components, most notably the age data conditioned on length and the equilibrium catches. The age data, length compositions, and catches support an R sigma at the high end of the range while the equilibrium catches and indices support an estimate at the low end of the range. The tag-recapture components are uninformative about the R sigma estimate over the range evaluated.

The steepness of the stock-recruitment relationship was evaluated at fixed values between 0.8 and 1.0. Fixed values were incremented by 0.015 for each model run in the analysis.

Most likelihood components support an increasing likelihood of a steepness value near the high end of the range (Figure 2.4.74). However, there is a similar decrease in the negative log-likelihood among several components near a value of 0.92. The catch likelihood component and recruitment deviations support a value at the lower end of the range evaluated. There are several jagged peaks indicating model instability.

Sensitivity Analysis

Several assumptions made for the base model configurations were evaluated in a sensitivity analysis. Some configurations did not converge (hybrid F method, no length composition data for the Rec_Discard fleet, and no Recreational_CPUE index).

The only data available in the early years of the base model are removals from the stock. The previous assessment models started in 1989 due to the lack of various data types. The SAS selected 1950 as the model start year to provide greater contrast in stock conditions and the stock's reaction to these conditions. This was also a more appropriate assumption during model development when S-R steepness was being estimated, as recruitment during this year would have been closer to the R0 than in later years. During model development one issue identified as a potential cause for poor model stability was the lack of data in the early years. This lack of data could give the model too much latitude to estimate initial stock conditions that are more responsive to available data in the more data rich period in later years. Particularly, the lack of data on mature fish throughout the time series may influence the model to estimate a depleted mature stock, so the model can better fit the relative 'wealth' of data characterizing the sub-adult component of the stock in later years. To evaluate these conditions, the model time period was truncated to 1981 and 1989. The equilibrium catches in both sensitivities were adjusted to the average catch of the preceding ten year period to estimate initial populations reflective of recent fishing mortality.

Natural mortality is a notoriously difficult stock dynamic parameter that can have significant effects on model estimates. Lower and higher natural mortality vectors were evaluated by decreasing and increasing the base model vector by 10%, respectively.

Steepness of the Stock-Recruit relationship can be another highly influential parameter on model estimates. During model development, this parameter was always estimated at the upper bound (1), so it was fixed at 0.99. The fixed steepness causes an R0 estimate that can essentially be interpreted as the mean recruitment. If steepness is less than 1, the R0 is virgin unfished recruitment in the model start year, even if fishing has occurred for some time. Only the SSB is adjusted by the initial fishing mortality. Steepness was fixed at 0.92 in an alternative configuration to evaluate sensitivity to this parameter. There was a decline in the negative log-likelihood for several likelihood components at this parameter value identified during likelihood profiling.

Peer review of the last assessment noted concern with the northern model's dependence on tag-derived F estimates input as data. There were also several assumptions made to develop tag groups and associated recapture histories for the SS models (see tag-recapture configuration and data descriptions). Two alternative configurations were explored to evaluate sensitivities of model estimates to the tag-recapture model, a configuration with no tag-recapture data and a configuration with nil emphasis on the negative binomial component of the tag-recapture model (likelihood lambda equal to zero).

A major difficulty with model development were the assumptions about equilibrium catch levels to inform the model of initial population conditions. There were no direct data to inform these input 'data', so sensitivity to greater and lesser equilibrium catches was evaluated. The base model equilibrium catches were halved and increased by 200% for two sensitivity configurations. Due to the tendency of the model to estimate a very depleted stock in the start year, a configuration assuming an unfished equilibrium initial population was evaluated. The assumption of fixed selectivity in the initial regulation period (1950-1975) was also evaluated. The initial selectivities were estimated with symmetric beta priors.

Terminal year and reference point estimates are in Table 2.4.41. The model estimated a slightly smaller stock (SSB virgin 13% smaller than base model) in slightly better condition (SSB 2013 4% greater than base model) when the truncated to start in 1989. Truncating the model to start in 1981 resulted in similar estimates to the base model. Increasing the equilibrium catch resulted in greater abundance/biomass estimates, while reducing the equilibrium catch resulted in estimates similar to the base model. The equilibrium catch reduction (-50%) was less drastic than the increase (+200%) in these sensitivity configurations. Estimating the initial selectivities resulted in only minor changes to the estimates. Excluding the tag components resulted in lower abundance/biomass estimates and higher fishing mortality estimates. Decreasing the spawner-recruitment relationship steepness to 0.92 resulted in greater abundance/biomass estimates. Assuming an unfished population in 1950 did result in more optimistic stock condition estimates, but still suggests a highly depleted stock.

Retrospective analysis description

Retrospective analysis was completed to identify any systematic bias resulting in a pattern of diverging estimates as data are removed. Retrospective runs were completed for four alternative terminal years prior to the terminal year of 2013 (2009-2012).

There are some patterns in the terminal year estimates of each retrospective year from 2009-2011 (Table 2.4.42). The 2012 restrospective model tends to estimate the opposite sign residual than the other retrospective models. The retrospective models generally underestimate SSB and overestimate SPR relative to the base mode. Variability in other estimates remains prior to the model terminal years, but the patterns tend to fall apart (Figure 2.4.75).

The fishing mortality to achieve the 0.4 SPR target is estimated at 0.11 with a CV of 0.015 (Table 2.4.39). The spawning stock biomass and yield associated with fishing mortality sustained at 0.11 are 8,512 metric tons and 442 metric tons, respectively. The fishing mortality target has been exceeded in most years, leading to low SPR levels (Figure 2.4.69). The biomass has been below the biomass associated with the fishing mortality target for the entire time series. (Figure 2.4.71).

2.4.2 Southern Stock

2.4.2.1 Overall Fit

The base model converged on a solution with a final gradient of 0.00112057 and a total negative log-likelihood of 11,175.6 (Table 2.1.2). There were a total of 580 parameters estimated in the model (Table 2.4.1) and 2,023 data points fit in the model (Table 2.4.2).

This base model is very unsTable and only three of fifty model runs with jittered starting values were within two likelihood units of the base model likelihood (Table 2.4.4, Figure 2.4.2).

2.4.2.2 Data Fits

Growth

The growth curve in the southern region was a two segmented von Bertalanffy growth curve broken at age 8. The segmented growth curve allowed for a better fit accounting for the sudden decrease in growth in length at maturity as the fish leave estuarine waters at about age 8 (Figure 2.4.4). Growth parameters and CVs are in 2.4.5.

Removals

The removals by each fleet are in Table 2.4.8 and Figures 2.4.9-2.4.14. Removals by the FL_AB1, FL_B2, and GA_AB1 fleets are consistently underestimated in the 2000s. Harvest by the SC_AB1 fleet is consistently overestimated in the 2000s.

Indices of Abundance

Trends in indices of abundance are poorly fit (Table 2.4.10, Figures 2.4.20-2.4.29). The model tends to most closely predict the trends of the GAgn, MRIP, SCtn1, and SCtn2 indices. There are several large residuals for all indices, most notably the MRIP index.

Length Composition

Residuals for the proportion-at-length of removals and indices are in Figure 2.4.32. There are several more pronounced residual patterns in the fishing fleets and MRIP index. The model expects a lower proportion of small fish (<45cm TL) caught by the FL_AB1 fleet in the late 1980s and early 1990s. The model also expects a lower proportion of small fish (<40cm TL) released dead by the FL_B2 fleet in the late 1980s, early 1990s, and mid-2000s. The model overestimates the proportion of fish caught by the GA_AB1 fleet in the most recent slot limit, and underestimates the proportion caught just outside the slot limit. The model expects the GASC_B2 fleet to release a lower proportion of small dead fish in the beginning of the length composition data time series (early 1980s). The model expects a lower proportion of small fish (<40cm TL) in the MRIP index in the 1980s and early 1990s, and a lower proportion of large fish (>60cm TL) in the 2000s.

Age Composition

Most large residuals of the fits to the conditional age data are positive residuals at larger sizes and young ages.

Tag-Recapture Model

The model predicts observed recaptures well for most tag groups as well as the trend of aggregated recaptures (Figure 2.4.37). There is an apparent trend in residuals with the model tending to underestimate recaptures for the early recapture events of early tag groups and overestimate later recapture events, particularly later in the time series (Figure 2.4.40). Reporting rate is only estimated for the SC_AB1 and GASC_B2 fleets, as all tagging data are from SC. The reporting rate for the SC_AB1 fleet is estimated near the bound of 1 (Table 2.4.12).

2.4.2.3 Stock Dynamic Estimates

Selectivity

Selectivities of all fishing fleets were estimated to be dome shaped in all selectivity periods (Figures 2.4.44 and 2.4.45). Estimates for some periods result in illogical patterns (i.e., GASC_B2 and FL_B2 release fleets), hence the attempt to constrain these parameters with symmetric beta priors. Derived age selectivities of the fishing fleets in 2013 are in Figure 2.4.46. Selectivities of all harvest fleets and the GASC_B2 release fleet decline very close to zero for ages 6+. Selectivity of the FL_B2 release fleet declines, but levels off at about 0.20 for ages older than 6. The peak selectivity and descending slope parameters of the GASC_B2 fleet in the initial time period (1950-1985) are estimated near their bounds. Selectivity of the Rec_CPUE index was also estimated as dome shaped (Figure 2.4.47), with selectivity that declines to near zero at around 100cm TL. Logistic selectivities of the adult longline surveys are in Figures 2.4.47. Selectivity parameters and CVs are in Table 2.4.14.

Fishing Mortality

The initial fishing mortality estimates are in Table 2.4.16. The initial fishing mortality of the FLcom fleet was estimated near the lower bound. Fishing mortality on ages 0-10 was very low in the 1950s, steadily increased through the 1960s and 1970s to time series highs in the late 1970s (Figure 2.4.50). Fishing mortality then steadily decreases through the 1980s and becomes low and stable through the remaining time series. CVs are large in the early time series (>0.25) and then decline to less than 0.10 after 1990 (Table 2.4.18). Fleet-specific annual fishing mortalities are in Tables 2.4.23-2.4.28 and Figures 2.4.51-2.4.52. The FL_AB1 fleets generally exerts the greatest fishing mortality, followed by the SC_AB1 fleet, and the GA_AB1 fleet. Fishing mortality for all these fleets follows that same trend as the overall F.

Recruitment, Abundance, and Biomass

The unfished equilibrium recruitment (ln(R0)) is estimated as 8.80 with a CV of 0.003. R sigma was not estimated in this configuration due to model sensitivity and was fixed at 0.6. There is a period of low recruitment from the mid-1950s to the early 1970s and the 2000s (Table 2.4.32). Recruitment deviations were estimated for each cohort in the initial population (Figure 2.4.56). The pre-data time period recruitment deviations are estimated near zero in the 1910s and 1920s, and then trend downward to negative estimates. Recruitment trends down from the start of the data period (1950) through the 1970s (Figure 2.4.57. Recruitment then increases sharply in the early1980s, declines slightly in the late 1980s, and fluctuates around R0 through the 1990s and 2000s.

Initial spawning stock biomass is estimated to be about 69% of unfished biomass (Table 2.4.34). Biomass increases slightly in the late 1950s and early 1960s, before declining through the early 1980s (Figure 2.4.60). Biomass then increases steadily through the remaining time series. CVs of biomass estimates are generally greater than 0.25 in the early time series and less than 0.10 after 1991. The numbers-at-age are in Table 2.4.36 and Figure 2.4.63. The unfished plus group abundance is in Figure 2.4.64.

SPR

The spawning potential ratio is close to 1 (unfished conditions) in the 1990s, declines rapidly through the 1970s to near zero, and then increases rapidly through the 1990s (Figure 2.4.66). The SPR is then stable near 0.85 through the remaining time series. CVS are in Table 2.4.38. The three year average SPR follows the same trend as the annual SPR.

Escapement

Static escapement through age-4 follows the same trend as SPR and the cohort-specific escapement through age-4 remains near one through the entire time series (2.4.68).

Uncertainty

Due to the instability of the southern stock model, no uncertainty analyses were completed ahead of the peer review workshop.

Benchmarks

The fishing mortality to achieve the 0.4 SPR target is estimated at 0.106 with a CV of 0.001 (Table 2.4.40). The spawning stock biomass and yield associated with fishing mortality sustained at 0.106 are 55,961 metric tons and 4,841 metric tons, respectively. Fishing mortality peaked and exceeded the target in the 1970s and early 1980s, before declining and remaining below the target through the 2000s (Figure 2.4.70). The biomass fell below the target in the 1980s due to intense fishing, and then rebuilt to levels above the target biomass and remained above through the remaining time series (Figure 2.4.72).

3.0 Continuity Model

3.1 Background

Continuity runs of the statistical catch-at-age models used in SEDAR 18 were completed to compare the results to SS3 model results and evaluate the implications of transitioning to the SS3 modeling framework. For more details on the general configuration of the statistical catch-at-age models, see the assessment report from SEDAR 18.

There are several differences between the inputs of the continuity models and the base models in SEDAR 18, in addition to the new time series of data from 2008-2013. Selectivities of the recreational discard fleets for both the north and south stocks are now estimated and not assumed equal to selectivities estimates from the NC tagging study. Catch-at-age by these discard fleets is based on length composition data from releases of tagged fish in SC and NC and was developed according to the scheme in the working paper SEDAR44-DW06. The maturity schedule for the northern stock is slightly different, based on analysis of raw data from Ross, and the maturity scheduled for the southern stock is not assumed equal to the northern stock, but based on SC maturity data (SEDAR44-DW02). The effective sample sizes for age compositions of the catch are based on the number of trips sampled, not the square root of the number of fish in the age-length key. The catch-at-age of commercial fleets in the northern stock was developed based on the mean observed weight instead of the length frequency converted to weight. The northern model includes a new adult index of abundance from the NC longline survey and the southern model includes two new indices of abundance, an adult index from the GA longline survey and a model-age-1 index from the SC stop net survey. The MRFSS recreational estimates of harvest and discards have been calibrated to the estimates using the new MRIP methodology. Selectivities at model-ages 4 and 5 for the discard fleets were estimated separately from the retained fisheries but using the same setup, i.e., estimated as constant proportion of fleet- and selectivity-block-specific model-age-3 selectivity. This proportion was restricted to the 0-1 interval using a logistic transform.

3.2 Results

3.2.3 Northern

The model converged on a solution with a total negative log likelihood of 1,284 (Table 3.2.1). There were 176 estimated parameters and 985 input data points (Table 3.2.2). The fits to the observed data relative to their observed standard errors were much better than expected (SDNR<<<1) for the commercial catch data, despite the assumed low CV's, (0.01). Other fits judged poorer than expected based on the input CVs (SDNR>>1) were the indices for the NC Juvenile Abundance Index and the MRFSS ages 1-3 and the F-kept-at-age data from the tagging studies.

3.2.3.1. Indices of Abundance

There was fairly close correspondence between the age-specific index values and the model predicted changes in abundance for these ages, with most predicted values falling within the 95% confidence intervals of the observed values (Fig. 3.2.1). The model-age-1 juvenile abundance index (NCJAI) and the later-in-the-year model-age-1 gill net surveys in North Carolina both lent support to a large year class in 2012 which also appeared in abundance in the gill net survey at age 2.

3.2.3.2 Catch

Catches were fit nearly exactly for the commercial fleets. The recreational fleet catches showed large deviations between observed and expected in some years, e.g., 1992-3 retained recreational catches were overestimated in the model and 2002 discard deaths were underestimated by the model (Fig. 3.2.2).

3.2.3.3. Proportion-at-Age

The fits to the proportion-at-age data for the fleets were all fit better than expected given the observed sample sizes, i.e., calculated effective sample sizes were generally larger than these observed sizes (Fig. 3.2.3).

3.2.3.4 Tag-Recapture Fishing Mortality Estimates

The F-at-age estimated using the North Carolina State University tag-recapture study for the retained fleets were not fit as well as would be inferred from the input CV's but the full-F's for the live-release fleets were fit well.

3.2.3.4 Selectivity

Selectivity-at-age increases to peak for all retained-fish fleets in all regulation periods at model-age 2 and the selectivity domes generally steepen as new restrictions were made on the retention of shorter and longer red drum (Fig. 3.2.4). Selectivity for the discard fleet peaked at model-age 1 prior to 1999 but shifted to model-ages 2 and 3 more recently.

3.2.3.5 Fishing Mortality

Overall F generally decreases over the time series, especially for model-age 1 fish (Fig. 3.2.5). Fishing mortality for the harvest fleets is relatively high in the first few years of the model period, before declining and stabilizing for the remaining time series.

3.2.3.6 Abundance

Recruitment varies around a mean of with no apparent trend. There are large recruitment events in 1997, 2007, and especially 2012 (Fig. 3.2.6). The population showed the abundance of age classes increasing and 'filling in' as fishing mortality declined in the early 1990's and recruitment varied without trend. The initial abundance-at-age was poorly estimated in the first year of the model and showed a large abundance of adult red drum in the model-age 7^+ group.

3.2.3.7 Spawning potential ratio

The static spawning potential ratio estimated for the continuity run agreed closely with the values estimated for the years 1989-2007 in SEDAR 18. The SS3 analysis resulted in much lower spawning potentials during the 1989-2007 overlap with the SEDAR 18 analysis and with the 1989-2013 continuity run. SS3 generally showed SPR's of less than 20% whereas the continuity runs were mostly greater than 20%.

3.2.4 Southern

The model converged on a solution with a total negative log likelihood of 2,072 (Table 3.2.1). There were 201 estimated parameters and 1,151 input data points (Table 3.2.3). The fits to the observed data relative to their observed standard errors were much better than expected (SDNR<<<1) for any of the fleet's catch data. The fits to the indices were only slightly poorer than expected given their input CV's with standard deviations of standardized residuals mostly close to 2.0.

3.2.4.1 Indices of Abundance

The MRIP/MRFSS total catch rate index was fit tightly, though the FL young-of-the-year index was the best fit relative to the input CV's (Fig. 3.2.8). There was strong support for the trends seen in the MRIP index from all of the estuarine surveys except the FL haul seine for model-ages 2 and 3. The dynamics seen in the longline indices could not be matched by predicted changes in the adult stock because the many age classes dampened changes in abundance resulting from large year classes.

3.2.4.2 Catch

Catches were fit nearly exactly for all but the SC recreational harvest fleet (Fig. 3.2.9).

3.2.4.3 Proportion-at-Age

The fits to the proportion-at-age data for the fleets were all fit better than expected given the observed sample sizes, i.e., calculated effective sample sizes were generally larger than those observed sizes (Fig. 3.2.10). Early in the time series (1989-1992), the proportion at age for the discard fisheries was not matched for model-ages 1 and 2, possibly resulting in an under-estimation of fishing mortality on these ages during those years.

3.2.4.4 Selectivity

Because many of the modern restrictions to sizes at harvest occurred prior to 1989 in the south, selectivities did not show large changes during the 1989-20013 model period. Peak selectivity in FL was model-age 3 for the retained fishery and model-age 3 and 4 for the discard fishery (remember model-age 4 selectivity is assumed to be no greater than model-age 3 selectivity). The harvest fisheries in GA and SC selected for model-age 1 and 2 fish respectively. The discard selectivity in GA+SC changed significantly between 1991 and 1992, with the 1992-2013 selectivity being similar to that for FL.

3.2.4.5 Fishing Mortality

Overall fishing mortality fluctuated between years but has not shown a strong trend between 1989 and 2013 in the southern region (Fig. 3.2.12). Fishing mortality was generally greater on model –age 2 and 3 fish.

3.2.4.6. Abundance

Recruitment varies around a mean of with no apparent trend in the southern stock. Large recruitment events in 1995, 2010, and possibly in 2013 (Fig. 3.2.13). The population showed increasing abundance through 1995 for most age classes. The initial abundance-at-age was poorly estimated in the first year of the model and showed a large abundance of adult red drum in the model-age 7^{+} group.

3.2.4.7 Spawning potential ratio

The static spawning potential ratio estimated for the continuity run agreed closely with the more recent values estimated for the years 1996-2007 in SEDAR 18 (Fig. 3.2.14). The SS3 analysis resulted in much higher spawning potentials during the 1989-2007 overlap with the SEDAR 18 analysis or during 1989-2013 of the present continuity run. SS3 generally showed SPR's of greater than 80% whereas the continuity runs were mostly less than 60%.

4.0 Discussion

The SS3 models are not currently stable enough to infer stock status or to use the results to inform management. There are vastly different pictures provided by the northern and southern models that are equally unlikely, given the general understanding of the biology and management of the two stocks. However, there are some intuitive results from the current base models and benefits of switching to the SS3 modeling framework. The northern SS3 model is also somewhat robust to some model and data assumptions (see sensitivity analysis). The SAS feels the best approach to inform management with this stock assessment is to make final attempts with the expertise of the peer-review panel to improve the configuration/stability of the SS3 models leading up to and during the peer-review workshop, as opposed to continuing with the models developed and used in SEDAR 18 (continuity models). The limitations of the continuity models highlighted by the SEDAR 18 peer-review are unlikely to be addressed within the confines of this modeling approach. The continuity model does provide results in line with the last accepted benchmark assessment, but does not allow more comprehensive management of the stocks (i.e., management action in response to a robust biomass status determination). The SS3 modeling framework is more likely to provide a reliable picture of the entire red drum stocks (i.e., increased plus group age, earlier model start year) and the reaction of the stocks to fishing and management changes (i.e., double normal selectivity). This framework also allows utilization of all available data to inform the model of stock conditions (i.e., tag-recapture data). The ongoing development of the SS3 framework will allow for continued improvements to models developed with this framework and complexities of red drum models can be increased as available data increase.

5.0 References

ASMFC. 2002. Amendment 2 to the Interstate Fishery Management Plan for Red Drum. ASMFC. Washington, D.C. 142 pp.

Bacheler, N.M., J.E. Hightower, L.M. Paramore, J.A. Buckel, and K.H. Pollock. 2008. An age-dependent tag return model for estimating mortality and selectivity of an estuarine-dependent fish with high rates of catch and release. *Transactions of American Fisheries Society.* 137: 1422-1432.

Beddington, J.R. and Cooke, J.G. 1983. The potential yield of fish stocks. FAO Fisheries Technical Paper. 242: 1-47.

Hendrix, C. 2010. Retention of three types of tags applied to adult red drum (Sciaenops ocellatus). M.S. Thesis, College of Charleston, Charleston, SC.

Hoenig, J.M.1983. Empirical use of longevity data to estimate mortality rates. Fish. Bull. 82:898–903.

Lorenzen, K. 1996. The relationship between body weight and natural mortality in juvenile and adult fish: A comparison of natural ecosystems and aquaculture. J. Fish. Biol. 49:627-647.

Methot, Jr., R.D. 2012. User manual for Stock Synthesis, Model Version 3.24f. NOAA Fisheries, Seattle, WA.

Methot, Jr., R.D. and Taylor, I.G. 2011. Adjusting for bias due to variability of estimated recruitments in fisheries assessment models. *Canadian Journal of Fisheries and Aquatic Sciences*. 68: 1744-1760.

Methot, Jr., R. D. and Wetzel, C.R. 2013. Stock Synthesis: A biological and statistical framework for fish stock assessment and fishery management. *Fisheries Research*. http://dx.doi.org/10.1016/j.fishres.2012.10.012

Richards, F. J.1959. A flexible growth function for empirical use. J. Exp. Botany 10:290–300.

Schnute, J.T. 1981. A versatile growth model with statistically stable parameters. *Canadian Journal of Fisheries and Aquatic Sciences*. 38: 1128-1140.

SEDAR. 2009. Assessment Workshop Report Atlantic Red Drum. SEDAR. North Charleston, SC.

SEDAR 18. 2009. History of Red Drum Assessments of the U.S. South Atlantic. 6 p. (SEDAR 18 DW-01)

SEDAR 18. 2009. Description of the age-structured model used to estimate parameters describing the population dynamics of the southern and northern red drum stocks during 1982-2007. 56 p. (SEDAR 18 AW09rev)

SEDAR. 2013. SEDAR 28 – Gulf of Mexico Cobia Stock Assessment Report. SEDAR, North Charleston SC. 616 pp.

South Atlantic Fishery management Council (SAFMC). 2009. Southeast Data, Assessment and Review 18, Stock Assessment Report, Atlantic Red Drum. North Charleston, SC. 544 p.

Vaughan, D. S., and T. E. Helser.1990. Status of the red drum stock of the Atlantic Coast: stock assessment report for 1989. U.S. Dep. Commer.,NOAA Tech. Memo. NMFS-SEFC-263, 53 p.

Vaughan, D. S. 1992. Status of the red drum stock of the Atlantic coast: Stock assessment report for 1991. NOAA Technical Memorandum NMFS-SEFC-297, Beaufort Laboratory, Beaufort, North Carolina 28516, 117 p.

Vaughan, D. S. 1993. Status of the red drum stock on the Atlantic coast: Stock assessment report for 1992. NOAA Technical Memorandum NMFS-SEFC-313, Beaufort Laboratory, Beaufort, North Carolina 28516, 65 p.

Vaughan, D. S. 1996. Status of the red drum stock on the Atlantic coast: Stock assessment report for 1995. NOAA Technical Memorandum NMFS-SEFC-380, Beaufort Laboratory, Beaufort, North Carolina 28516, 50 p.

Vaughan, D. S., and J. T. Carmichael. 2000. Assessment of the Atlantic red drum stock for 1999: Northern and southern regions. NOAA Technical Memorandum NMFS-SEFC-447, Beaufort Laboratory, Beaufort, North Carolina 28516.

6.0 Tables

Table 2.1.1 Northern base Stock Synthesis model likelihood components and total negative log-likelihood.

	Fleet									
Component	Comm_GNBS	Comm_OTHER	Rec_Harv	Rec_Discard	NC_JAI	NC_IGNS_0	NC_IGNS_1	NC_LL	Rec_CPUE	Total
Catch	25	1	115	236	0	0	0	0	0	376
Equilibrium Catch	0	0	0	0	0	0	0	0	0	10
Indices	0	0	0	0	50	30	30	-10	135	235
Length Composition	2,289	842	662	1,279	0	0	0	224	2,155	7,451
Age Composition	1,042	799	1,464	0	0	0	0	761	0	4,066
Tag (recaptures)	0	0	0	0	0	0	0	0	0	1,713
Tag (negative binomial)	0	0	0	0	0	0	0	0	0	384
Recruitment	0	0	0	0	0	0	0	0	0	26
Priors	0	0	0	0	0	0	0	0	0	21
Total negative log-likelihood										**14,281.5**

Table 2.1.2 Southern base Stock Synthesis model likelihood components and total negative log-likelihood.

	Fleet									
Component	FLcom	FL_AB1	FL_B2	GA_AB1	SC_AB1	GASC_B2	SCstopn	SCtn1	SCtn2	Total
Catch	0	64	23	66	228	4	0	0	0	385
Equilibrium Catch	0	0	0	0	0	0	0	0	0	0
Indices	0	0	0	0	0	0	4	41	43	88
Length Composition	316	392	243	694	897	306	0	0	0	2,849
Age Composition	295	62	0	0	994	0	0	0	0	1,351
Tag (recaptures)	0	0	0	0	0	0	0	0	0	0
Tag (negative binomial)	0	0	0	0	0	0	0	0	0	0
Recruitment	0	0	0	0	0	0	0	0	0	0
Priors	0	0	0	0	0	0	0	0	0	0
F ballpark	0	0	0	0	0	0	0	0	0	0

	Fleet								
Component	SCll_1	SCll.3	GAgn	GAll	FLhs2	FLhs3	FL_IRJXsn	MRIP	Total
Catch	0	0	0	0	0	0	0	0	0
Equilibrium Catch	0	0	0	0	0	0	0	0	24
Indices	9	0	-1	6	-3	-4	2	35	43
Length Composition	219	113	0	103	0	0	0	247	682
Age Composition	69	516	0	0	0	0	0	0	584
Tag (recaptures)	0	0	0	0	0	0	0	0	2,785
Tag (negative binomial)	0	0	0	0	0	0	0	0	2,290
Recruitment	0	0	0	0	0	0	0	0	6
Priors	0	0	0	0	0	0	0	0	87
F ballpark	0	0	0	0	0	0	0	0	1
Total negative log-likelihood									**11,175.6**

Table 2.4.1 Number and type of parameters in the northern (left) and southern (right) base Stock Synthesis models.

Parameter Type	N
Estimated Parameters	402
Independent Parameters	338
Deviation Parameters	64
Fixed Parameters	143
Total Parameters	545

Parameter Type	N
Estimated Parameters	580
Independent Parameters	477
Deviation Parameters	103
Fixed Parameters	417
Total Parameters	997

Table 2.4.2. Data types and sample size of observations input in the northern (left) and southern (right) base Stock Synthesis models.

Data Type	N
Removals	260
Indices	77
Length Composition	149
Age Composition	1,672
Initial Tags	31
Recaptures	197
Total	2,386

Data Type	N
Removals	384
Indices	158
Length Composition	233
Age Composition	733
Initial Tags	112
Recaptures	403
Total	2,023

Table 2.4.3 Jitter analysis results for the northern base Stock Synthesis model.
Each run started with jittered initial parameter values that were adjusted by a random deviation from the base initial values.

Run	Total Negative Log-Likelihood	R0 (1,000s)	Virgin SSB (1000 mt)	Run	Total Negative Log-Likelihood	R0 (1,000s)	Virgin SSB (1000 mt)
Base	14,645.0	339	21.36	26	14,645.0	339	21.36
1	14,645.0	339	21.36	27	14,634.4	343	21.66
2	14,674.3	337	21.26	28	14,634.4	343	21.66
3	14,644.2	338	21.34	29	14,634.4	343	21.66
4	14,645.0	339	21.36	30	14,645.0	339	21.36
5	14,645.0	339	21.36	31	14,651.5	338	21.31
6	NA	396	0.00	32	14,646.2	338	21.33
7	14,645.0	339	21.36	33	14,633.2	343	21.64
8	14,645.0	339	21.36	34	14,634.4	343	21.66
9	14,645.0	339	21.36	35	14,645.0	339	21.36
10	NA	419	0.00	36	14,645.0	339	21.36
11	14,645.0	339	21.36	37	NA	312	0.00
12	14,633.2	343	21.64	38	14,634.4	343	21.66
13	14,645.0	339	21.36	39	NA	471	0.00
14	14,644.2	338	21.34	40	14,644.2	338	21.34
15	14,645.0	339	21.36	41	14,645.0	339	21.36
16	14,645.0	339	21.36	42	14,645.0	339	21.36
17	14,634.4	343	21.66	43	14,674.3	337	21.26
18	14,645.0	339	21.36	44	14,645.0	339	21.36
19	14,644.2	338	21.34	45	14,634.4	343	21.66
20	NA	344	0.00	46	14,645.0	339	21.36
21	14,645.0	339	21.36	47	14,644.2	338	21.34
22	14,634.4	343	21.66	48	14,645.0	339	21.36
23	NA	324	0.00	49	14,634.4	343	21.66
24	14,645.0	339	21.36	50	14,645.0	339	21.36
25	14,644.2	338	21.34				

Table 2.4.4 Jitter analysis results for the southern base Stock Synthesis model.
Each run started with jittered initial parameter values that were adjusted by a random deviation from the base initial values.

Run	Total Negative Log-Likelihood	R0 (1,000s)	Virgin SSB (1000 mt)	Run	Total Negative Log-Likelihood	R0 (1,000s)	Virgin SSB (1000 mt)
Base	11,175.6	6,656	140.44	26	11,175.6	6,656	140.44
1	10,925.0	6,885	145.27	27	10,946.2	7,150	142.02
2	11,082.4	6,798	143.54	28	10,925.3	6,913	145.78
3	11,511.0	6,409	134.52	29	11,898.7	6,132	126.09
4	11,491.7	6,357	133.44	30	10,925.0	6,885	145.27
5	10,925.0	6,885	145.27	31	10,925.0	6,885	145.27
6	11,641.4	5,938	124.20	32	11,175.6	6,656	140.44
7	11,318.6	6,662	140.43	33	10,925.0	6,885	145.27
8	11,775.8	5,631	115.63	34	11,563.0	6,516	136.79
9	10,925.0	6,885	145.27	35	10,925.3	6,913	145.78
10	10,925.3	6,913	145.78	36	11,318.6	6,662	140.43
11	10,925.3	6,913	145.78	37	11,344.7	6,307	132.26
12	11,270.3	6,428	136.28	38	11,902.6	5,090	94.65
13	11,344.7	6,307	132.26	39	10,925.3	6,913	145.78
14	11,430.1	6,292	132.59	40	11,617.9	6,435	134.21
15	11,442.6	6,522	137.02	41	NA	1,481	0.00
16	11,175.6	6,656	140.44	42	10,925.0	6,885	145.27
17	10,925.3	6,913	145.78	43	11,437.7	6,444	134.37
18	12,224.3	4,915	94.31	44	10,925.3	6,913	145.78
19	11,641.4	5,938	124.20	45	45,611.5	2,763	0.00
20	11,795.4	5,567	113.81	46	10,925.0	6,885	145.27
21	11,566.0	6,565	137.64	47	11,636.1	6,363	133.30
22	NA	4,313	0.00	48	11,739.2	5,792	119.26
23	NA	3,897	0.00	49	11,705.9	6,157	128.37
24	11,344.7	6,307	132.26	50	NA	2,543	0.00
25	11,962.9	5,814	119.00				

Table 2.4.5 Growth parameter estimates for the northern base Stock Synthesis model.

Parameter	Initial Value	Estimate	CV
L_at_Amin_Fem_GP_1	32.14	32.15	0.006
L_at_Amax_Fem_GP_1	119.24	119.01	0.002
VonBert_K_Fem_GP_1	0.27	0.29	0.010
Age_K_Fem_GP_1_a_4	0.43	0.50	0.040
CV_young_Fem_GP_1	0.23	0.24	0.014
CV_old_Fem_GP_1	0.03	0.04	0.025

Table 2.4.6 Growth parameter estimates for the southern base Stock Synthesis model.

Parameter	Initial Value	Estimate	CV
L_at_Amin_Fem_GP_1	34	16.41	0.014
L_at_Amax_Fem_GP_1	104	109.10	0.007
VonBert_K_Fem_GP_1	0.23	0.25	0.015
Age_K_Fem_GP_1_a_9	1	0.10	0.212
CV_young_Fem_GP_1	0.05	0.18	0.016
CV_old_Fem_GP_1	0.05	0.04	0.037

Table 2.4.7 Observed and predicted removals by fishing fleets in the northern stock.

Fleet	Year	Observed	Expected	Input SE	Fleet	Year	Observed	Expected	Input SE
Comm_GNBS	1950	97.66	97.96	0.1	Comm_OTHER	1950	77.02	77.06	0.05
Comm_GNBS	1951	68.4	68.56	0.1	Comm_OTHER	1951	50.67	50.69	0.05
Comm_GNBS	1952	92.49	92.82	0.1	Comm_OTHER	1952	30.48	30.49	0.05
Comm_GNBS	1953	120.79	121.17	0.1	Comm_OTHER	1953	18.14	18.14	0.05
Comm_GNBS	1954	88.36	88.38	0.1	Comm_OTHER	1954	52.35	52.35	0.05
Comm_GNBS	1955	48.08	48.09	0.1	Comm_OTHER	1955	30.44	30.44	0.05
Comm_GNBS	1956	14.65	14.66	0.1	Comm_OTHER	1956	8.53	8.53	0.05
Comm_GNBS	1957	65.18	65.38	0.1	Comm_OTHER	1957	8.71	8.71	0.05
Comm_GNBS	1958	10.43	10.44	0.1	Comm_OTHER	1958	9.71	9.71	0.05
Comm_GNBS	1959	10.8	10.81	0.1	Comm_OTHER	1959	6.67	6.67	0.05
Comm_GNBS	1960	39.55	39.67	0.1	Comm_OTHER	1960	9.84	9.84	0.05
Comm_GNBS	1961	41.32	41.42	0.1	Comm_OTHER	1961	4.81	4.81	0.05
Comm_GNBS	1962	28.49	28.53	0.1	Comm_OTHER	1962	4.99	4.99	0.05
Comm_GNBS	1963	32.39	32.45	0.1	Comm_OTHER	1963	1.13	1.13	0.05
Comm_GNBS	1964	8.89	8.90	0.1	Comm_OTHER	1964	39.24	39.26	0.05
Comm_GNBS	1965	16.15	16.17	0.1	Comm_OTHER	1965	59.83	59.87	0.05
Comm_GNBS	1966	3.54	3.54	0.1	Comm_OTHER	1966	13.93	13.93	0.05
Comm_GNBS	1967	2.99	2.99	0.1	Comm_OTHER	1967	3.31	3.31	0.05
Comm_GNBS	1968	1.27	1.27	0.1	Comm_OTHER	1968	4.45	4.45	0.05
Comm_GNBS	1969	0.64	0.64	0.1	Comm_OTHER	1969	1.63	1.63	0.05
Comm_GNBS	1970	1.77	1.77	0.1	Comm_OTHER	1970	1.68	1.68	0.05
Comm_GNBS	1971	4.4	4.40	0.1	Comm_OTHER	1971	3.72	3.72	0.05
Comm_GNBS	1972	9.42	9.42	0.1	Comm_OTHER	1972	12.72	12.72	0.05
Comm_GNBS	1973	16.14	16.14	0.1	Comm_OTHER	1973	18.95	18.95	0.05
Comm_GNBS	1974	24.19	24.18	0.1	Comm_OTHER	1974	47.55	47.55	0.05
Comm_GNBS	1975	30.53	30.52	0.1	Comm_OTHER	1975	75.63	75.62	0.05
Comm_GNBS	1976	38.99	38.99	0.1	Comm_OTHER	1976	50.88	50.88	0.05
Comm_GNBS	1977	3.77	3.77	0.1	Comm_OTHER	1977	5.77	5.77	0.05
Comm_GNBS	1978	1.85	1.85	0.1	Comm_OTHER	1978	9.42	9.42	0.05
Comm_GNBS	1979	35.21	35.28	0.1	Comm_OTHER	1979	29.86	29.87	0.05
Comm_GNBS	1980	49.87	50.05	0.1	Comm_OTHER	1980	68.81	68.86	0.05
Comm_GNBS	1981	16.48	16.50	0.1	Comm_OTHER	1981	29.12	29.13	0.05
Comm_GNBS	1982	14.11	14.11	0.1	Comm_OTHER	1982	13.12	13.12	0.05
Comm_GNBS	1983	84.79	84.99	0.1	Comm_OTHER	1983	47.45	47.46	0.05
Comm_GNBS	1984	104.74	106.03	0.1	Comm_OTHER	1984	43.41	43.44	0.05
Comm_GNBS	1985	50.33	50.83	0.1	Comm_OTHER	1985	28.8	28.81	0.05
Comm_GNBS	1986	66.38	74.40	0.1	Comm_OTHER	1986	61.6	64.71	0.05
Comm_GNBS	1987	72.52	84.38	0.1	Comm_OTHER	1987	55.21	53.62	0.05
Comm_GNBS	1988	80.33	97.58	0.1	Comm_OTHER	1988	39.47	39.17	0.05
Comm_GNBS	1989	86.94	89.67	0.1	Comm_OTHER	1989	56.74	56.60	0.05
Comm_GNBS	1990	67.79	71.44	0.1	Comm_OTHER	1990	26.98	27.08	0.05
Comm_GNBS	1991	49.06	56.13	0.1	Comm_OTHER	1991	16.22	16.24	0.05
Comm_GNBS	1992	62.25	87.54	0.1	Comm_OTHER	1992	10.46	10.50	0.05
Comm_GNBS	1993	119.59	129.83	0.1	Comm_OTHER	1993	14.47	14.95	0.05
Comm_GNBS	1994	66.73	66.90	0.1	Comm_OTHER	1994	16.23	16.59	0.05
Comm_GNBS	1995	106.44	105.15	0.1	Comm_OTHER	1995	29.18	28.38	0.05
Comm_GNBS	1996	54.79	60.18	0.1	Comm_OTHER	1996	8.86	8.85	0.05
Comm_GNBS	1997	22.73	29.47	0.1	Comm_OTHER	1997	7.41	7.41	0.05
Comm_GNBS	1998	156.6	174.66	0.1	Comm_OTHER	1998	21.21	21.09	0.05
Comm_GNBS	1999	219.24	161.60	0.1	Comm_OTHER	1999	10.58	10.49	0.05
Comm_GNBS	2000	154.25	113.96	0.1	Comm_OTHER	2000	8.42	8.33	0.05
Comm_GNBS	2001	85.09	83.72	0.1	Comm_OTHER	2001	5.24	5.22	0.05
Comm_GNBS	2002	50.18	49.11	0.1	Comm_OTHER	2002	6.01	5.99	0.05
Comm_GNBS	2003	52.41	55.65	0.1	Comm_OTHER	2003	4.64	4.64	0.05
Comm_GNBS	2004	33.78	35.17	0.1	Comm_OTHER	2004	1.68	1.68	0.05
Comm_GNBS	2005	88.37	87.87	0.1	Comm_OTHER	2005	5.04	5.04	0.05
Comm_GNBS	2006	93.69	97.32	0.1	Comm_OTHER	2006	7.01	7.02	0.05
Comm_GNBS	2007	137.59	121.33	0.1	Comm_OTHER	2007	10.2	10.19	0.05
Comm_GNBS	2008	150.12	132.43	0.1	Comm_OTHER	2008	6.26	6.25	0.05
Comm_GNBS	2009	122.94	106.77	0.1	Comm_OTHER	2009	6.79	6.78	0.05
Comm_GNBS	2010	115.16	101.10	0.1	Comm_OTHER	2010	5.42	5.41	0.05
Comm_GNBS	2011	45.16	42.10	0.1	Comm_OTHER	2011	3.55	3.55	0.05
Comm_GNBS	2012	39.52	38.17	0.1	Comm_OTHER	2012	6.18	6.17	0.05
Comm_GNBS	2013	204.12	210.11	0.1	Comm_OTHER	2013	22.55	22.57	0.05

continued

Fleet	Year	Observed	Expected	Input SE	Fleet	Year	Observed	Expected	Input SE
Rec_Harv	1950	42.9	43.82	0.25	Rec_Discard	1950	0.3	0.30	0.25
Rec_Harv	1951	44.24	45.60	0.25	Rec_Discard	1951	0.31	0.31	0.25
Rec_Harv	1952	45.58	47.19	0.25	Rec_Discard	1952	0.32	0.32	0.25
Rec_Harv	1953	46.91	47.82	0.25	Rec_Discard	1953	0.33	0.33	0.25
Rec_Harv	1954	48.25	48.31	0.25	Rec_Discard	1954	0.34	0.34	0.25
Rec_Harv	1955	49.59	49.72	0.25	Rec_Discard	1955	0.35	0.35	0.25
Rec_Harv	1956	50.92	52.26	0.25	Rec_Discard	1956	0.35	0.35	0.25
Rec_Harv	1957	52.26	55.83	0.25	Rec_Discard	1957	0.36	0.36	0.25
Rec_Harv	1958	53.6	60.25	0.25	Rec_Discard	1958	0.37	0.37	0.25
Rec_Harv	1959	39.2	43.96	0.25	Rec_Discard	1959	0.3	0.30	0.25
Rec_Harv	1960	40.16	43.33	0.25	Rec_Discard	1960	0.31	0.31	0.25
Rec_Harv	1961	50.2	53.71	0.25	Rec_Discard	1961	0.37	0.37	0.25
Rec_Harv	1962	50.4	53.45	0.25	Rec_Discard	1962	0.38	0.38	0.25
Rec_Harv	1963	50.71	54.82	0.25	Rec_Discard	1963	0.38	0.38	0.25
Rec_Harv	1964	57.28	62.91	0.25	Rec_Discard	1964	0.42	0.42	0.25
Rec_Harv	1965	63.01	70.01	0.25	Rec_Discard	1965	0.46	0.46	0.25
Rec_Harv	1966	65.63	73.02	0.25	Rec_Discard	1966	0.48	0.48	0.25
Rec_Harv	1967	70.09	80.69	0.25	Rec_Discard	1967	0.51	0.51	0.25
Rec_Harv	1968	73.9	82.41	0.25	Rec_Discard	1968	0.54	0.54	0.25
Rec_Harv	1969	77.18	90.14	0.25	Rec_Discard	1969	0.54	0.54	0.25
Rec_Harv	1970	78.52	99.97	0.25	Rec_Discard	1970	0.53	0.53	0.25
Rec_Harv	1971	78.95	86.57	0.25	Rec_Discard	1971	0.55	0.55	0.25
Rec_Harv	1972	81.96	83.58	0.25	Rec_Discard	1972	0.56	0.56	0.25
Rec_Harv	1973	89.67	89.96	0.25	Rec_Discard	1973	0.62	0.62	0.25
Rec_Harv	1974	97.52	96.35	0.25	Rec_Discard	1974	0.68	0.68	0.25
Rec_Harv	1975	95.11	93.76	0.25	Rec_Discard	1975	0.67	0.67	0.25
Rec_Harv	1976	89.63	89.24	0.25	Rec_Discard	1976	0.63	0.63	0.25
Rec_Harv	1977	84.35	90.73	0.25	Rec_Discard	1977	0.62	0.62	0.25
Rec_Harv	1978	80.59	107.00	0.25	Rec_Discard	1978	0.58	0.58	0.25
Rec_Harv	1979	81.91	84.93	0.25	Rec_Discard	1979	0.59	0.59	0.25
Rec_Harv	1980	79.46	83.16	0.25	Rec_Discard	1980	0.57	0.57	0.25
Rec_Harv	1981	104.19	112.57	0.238	Rec_Discard	1981	1.06	1.06	0.224
Rec_Harv	1982	83.58	82.81	0.191	Rec_Discard	1982	0.1	0.10	0.21
Rec_Harv	1983	525.7	530.22	0.196	Rec_Discard	1983	0.17	0.17	0.197
Rec_Harv	1984	196.49	281.49	0.25	Rec_Discard	1984	16.41	16.55	0.25
Rec_Harv	1985	53.59	57.89	0.21	Rec_Discard	1985	0.11	0.11	0.199
Rec_Harv	1986	70.15	82.89	0.191	Rec_Discard	1986	0.58	0.52	0.179
Rec_Harv	1987	117.63	126.09	0.168	Rec_Discard	1987	3.35	2.74	0.181
Rec_Harv	1988	281.61	243.73	0.171	Rec_Discard	1988	3.33	2.58	0.188
Rec_Harv	1989	114.51	101.01	0.172	Rec_Discard	1989	1.75	1.67	0.182
Rec_Harv	1990	46.09	58.35	0.165	Rec_Discard	1990	3.24	3.19	0.195
Rec_Harv	1991	65.96	99.49	0.162	Rec_Discard	1991	18.47	6.25	0.171
Rec_Harv	1992	43.12	81.09	0.165	Rec_Discard	1992	8.37	4.92	0.165
Rec_Harv	1993	93.87	210.77	0.16	Rec_Discard	1993	44.23	6.67	0.175
Rec_Harv	1994	40.2	99.61	0.16	Rec_Discard	1994	17.31	6.90	0.17
Rec_Harv	1995	129.55	311.75	0.155	Rec_Discard	1995	27.32	10.83	0.162
Rec_Harv	1996	55.97	136.08	0.156	Rec_Discard	1996	4.26	3.72	0.164
Rec_Harv	1997	12.47	23.37	0.17	Rec_Discard	1997	58.15	17.49	0.166
Rec_Harv	1998	157.86	568.05	0.154	Rec_Discard	1998	35.75	13.92	0.158
Rec_Harv	1999	94.17	169.21	0.154	Rec_Discard	1999	46.08	11.69	0.159
Rec_Harv	2000	97.49	134.49	0.153	Rec_Discard	2000	37.27	8.74	0.159
Rec_Harv	2001	33.54	79.50	0.157	Rec_Discard	2001	27.98	8.40	0.158
Rec_Harv	2002	128.61	93.97	0.162	Rec_Discard	2002	176.34	18.11	0.161
Rec_Harv	2003	34.18	46.98	0.158	Rec_Discard	2003	10.54	8.66	0.162
Rec_Harv	2004	35.02	64.58	0.162	Rec_Discard	2004	17.2	14.24	0.152
Rec_Harv	2005	54.57	55.48	0.158	Rec_Discard	2005	32.55	26.54	0.157
Rec_Harv	2006	75.21	114.79	0.162	Rec_Discard	2006	56.75	50.01	0.155
Rec_Harv	2007	113.19	84.67	0.16	Rec_Discard	2007	42.15	35.77	0.154
Rec_Harv	2008	71.66	57.31	0.155	Rec_Discard	2008	71.68	54.82	0.151
Rec_Harv	2009	96.21	66.03	0.155	Rec_Discard	2009	49.83	39.18	0.156
Rec_Harv	2010	75.1	54.45	0.15	Rec_Discard	2010	53.33	41.35	0.15
Rec_Harv	2011	46.1	34.37	0.152	Rec_Discard	2011	21.52	18.79	0.156
Rec_Harv	2012	99.27	61.90	0.168	Rec_Discard	2012	345.8	157.73	0.156
Rec_Harv	2013	292.19	385.34	0.155	Rec_Discard	2013	70.16	71.39	0.153

Table 2.4.8 Observed and predicted removals by fishing fleets in the southern stock.

Fleet	Year	Observed	Expected	Input SE	Fleet	Year	Observed	Expected	Input SE
FLcom	1950	110.089	110.09	0.1	FL_AB1	1950	120.05	120.08	0.172
FLcom	1951	124.967	124.97	0.1	FL_AB1	1951	123.792	123.83	0.172
FLcom	1952	98.25	98.25	0.1	FL_AB1	1952	127.534	127.58	0.172
FLcom	1953	88.906	88.91	0.1	FL_AB1	1953	131.275	131.33	0.172
FLcom	1954	77.021	77.02	0.1	FL_AB1	1954	135.017	134.98	0.172
FLcom	1955	76.84	76.84	0.1	FL_AB1	1955	138.759	138.68	0.172
FLcom	1956	74.799	74.80	0.1	FL_AB1	1956	142.5	142.42	0.172
FLcom	1957	49.261	49.26	0.1	FL_AB1	1957	146.242	146.18	0.172
FLcom	1958	46.494	46.49	0.1	FL_AB1	1958	149.984	149.91	0.172
FLcom	1959	59.512	59.51	0.1	FL_AB1	1959	165.098	165.22	0.172
FLcom	1960	60.601	60.60	0.1	FL_AB1	1960	169.117	169.42	0.172
FLcom	1961	52.799	52.80	0.1	FL_AB1	1961	187.241	187.76	0.172
FLcom	1962	67.722	67.73	0.1	FL_AB1	1962	176.621	177.11	0.172
FLcom	1963	60.873	60.88	0.1	FL_AB1	1963	180.459	181.16	0.172
FLcom	1964	59.195	59.20	0.1	FL_AB1	1964	189.153	189.58	0.172
FLcom	1965	66.362	66.37	0.1	FL_AB1	1965	199.745	200.15	0.172
FLcom	1966	70.716	70.73	0.1	FL_AB1	1966	204.894	205.46	0.172
FLcom	1967	69.764	69.78	0.1	FL_AB1	1967	222.814	223.95	0.172
FLcom	1968	78.246	78.26	0.1	FL_AB1	1968	223.978	224.70	0.172
FLcom	1969	55.521	55.53	0.1	FL_AB1	1969	235.355	235.72	0.172
FLcom	1970	67.768	67.77	0.1	FL_AB1	1970	254.076	253.99	0.172
FLcom	1971	39.781	39.78	0.1	FL_AB1	1971	318.566	319.05	0.172
FLcom	1972	60.329	60.33	0.1	FL_AB1	1972	330.13	332.10	0.172
FLcom	1973	77.475	77.49	0.1	FL_AB1	1973	348.939	352.64	0.172
FLcom	1974	64.729	64.73	0.1	FL_AB1	1974	376.718	372.05	0.172
FLcom	1975	47.946	47.96	0.1	FL_AB1	1975	393.097	406.28	0.172
FLcom	1976	52.572	52.58	0.1	FL_AB1	1976	371.12	379.19	0.172
FLcom	1977	49.578	49.59	0.1	FL_AB1	1977	333.847	341.02	0.172
FLcom	1978	49.601	49.64	0.1	FL_AB1	1978	301.525	313.00	0.172
FLcom	1979	43.267	43.33	0.1	FL_AB1	1979	323.383	343.98	0.172
FLcom	1980	89.278	89.11	0.1	FL_AB1	1980	265.873	258.92	0.172
FLcom	1981	53.161	53.34	0.1	FL_AB1	1981	239.149	261.95	0.173
FLcom	1982	28.635	28.70	0.1	FL_AB1	1982	212.426	237.59	0.201
FLcom	1983	21.638	21.68	0.1	FL_AB1	1983	342.716	381.69	0.143
FLcom	1984	26.93	26.98	0.1	FL_AB1	1984	548.085	577.60	0.12
FLcom	1985	18.297	18.31	0.1	FL_AB1	1985	245.078	246.24	0.14
FLcom	1986	19.852	19.86	0.1	FL_AB1	1986	117.682	118.73	0.141
FLcom	1987	8.839	8.84	0.1	FL_AB1	1987	54.595	54.74	0.22
FLcom	1988	0.059	0.06	0.1	FL_AB1	1988	7.211	7.22	0.327
FLcom	1989	0	0.00	0.1	FL_AB1	1989	32.985	32.24	0.159
FLcom	1990	0	0.00	0.1	FL_AB1	1990	45.209	43.23	0.155
FLcom	1991	0	0.00	0.1	FL_AB1	1991	99.336	93.64	0.096
FLcom	1992	0	0.00	0.1	FL_AB1	1992	98.176	79.46	0.072
FLcom	1993	0	0.00	0.1	FL_AB1	1993	66.971	54.05	0.074
FLcom	1994	0	0.00	0.1	FL_AB1	1994	119.696	89.54	0.066
FLcom	1995	0	0.00	0.1	FL_AB1	1995	95.198	76.60	0.075
FLcom	1996	0	0.00	0.1	FL_AB1	1996	144.798	76.52	0.119
FLcom	1997	0	0.00	0.1	FL_AB1	1997	69.369	55.03	0.086
FLcom	1998	0	0.00	0.1	FL_AB1	1998	105.163	79.94	0.069
FLcom	1999	0	0.00	0.1	FL_AB1	1999	128.499	114.14	0.057
FLcom	2000	0	0.00	0.1	FL_AB1	2000	193.962	173.82	0.054
FLcom	2001	0	0.00	0.1	FL_AB1	2001	182.701	166.69	0.057
FLcom	2002	0	0.00	0.1	FL_AB1	2002	124.55	112.37	0.062
FLcom	2003	0	0.00	0.1	FL_AB1	2003	156.213	133.01	0.059
FLcom	2004	0	0.00	0.1	FL_AB1	2004	136.728	121.20	0.051
FLcom	2005	0	0.00	0.1	FL_AB1	2005	195.55	157.55	0.071
FLcom	2006	0	0.00	0.1	FL_AB1	2006	145.86	132.15	0.052
FLcom	2007	0	0.00	0.1	FL_AB1	2007	161.427	148.80	0.056
FLcom	2008	0	0.00	0.1	FL_AB1	2008	159.246	143.54	0.067
FLcom	2009	0	0.00	0.1	FL_AB1	2009	79.635	75.84	0.059
FLcom	2010	0	0.00	0.1	FL_AB1	2010	175.828	161.14	0.058
FLcom	2011	0	0.00	0.1	FL_AB1	2011	180.001	168.53	0.051
FLcom	2012	0	0.00	0.1	FL_AB1	2012	238.191	211.28	0.06
FLcom	2013	0	0.00	0.1	FL_AB1	2013	297.527	261.22	0.049

Continued

Fleet	Year	Observed	Expected	Input SE	Fleet	Year	Observed	Expected	Input SE
FL_B2	1950	1.091	1.09	0.159	GA_AB1	1950	42.126	42.13	0.147
FL_B2	1951	1.125	1.13	0.159	GA_AB1	1951	43.439	43.44	0.147
FL_B2	1952	1.159	1.16	0.159	GA_AB1	1952	44.751	44.76	0.147
FL_B2	1953	1.193	1.19	0.159	GA_AB1	1953	46.064	46.07	0.147
FL_B2	1954	1.227	1.23	0.159	GA_AB1	1954	47.377	47.37	0.147
FL_B2	1955	1.262	1.26	0.159	GA_AB1	1955	48.69	48.68	0.147
FL_B2	1956	1.296	1.30	0.159	GA_AB1	1956	50.003	50.00	0.147
FL_B2	1957	1.33	1.33	0.159	GA_AB1	1957	51.316	51.31	0.147
FL_B2	1958	1.364	1.36	0.159	GA_AB1	1958	52.629	52.62	0.147
FL_B2	1959	1.501	1.50	0.159	GA_AB1	1959	59.955	59.97	0.147
FL_B2	1960	1.537	1.54	0.159	GA_AB1	1960	60.873	60.91	0.147
FL_B2	1961	1.702	1.70	0.159	GA_AB1	1961	62.493	62.54	0.147
FL_B2	1962	1.606	1.61	0.159	GA_AB1	1962	64.515	64.56	0.147
FL_B2	1963	1.641	1.64	0.159	GA_AB1	1963	71.356	71.43	0.147
FL_B2	1964	1.72	1.72	0.159	GA_AB1	1964	75.056	75.09	0.147
FL_B2	1965	1.816	1.82	0.159	GA_AB1	1965	84.07	84.12	0.147
FL_B2	1966	1.863	1.86	0.159	GA_AB1	1966	94.415	94.50	0.147
FL_B2	1967	2.026	2.03	0.159	GA_AB1	1967	86.291	86.42	0.147
FL_B2	1968	2.036	2.04	0.159	GA_AB1	1968	82.262	82.32	0.147
FL_B2	1969	2.14	2.14	0.159	GA_AB1	1969	81.935	81.96	0.147
FL_B2	1970	2.31	2.31	0.159	GA_AB1	1970	85.156	85.14	0.147
FL_B2	1971	2.896	2.90	0.159	GA_AB1	1971	91.047	91.09	0.147
FL_B2	1972	3.001	3.00	0.159	GA_AB1	1972	93.57	93.71	0.147
FL_B2	1973	3.172	3.17	0.159	GA_AB1	1973	96.781	96.99	0.147
FL_B2	1974	3.425	3.42	0.159	GA_AB1	1974	103.542	103.19	0.147
FL_B2	1975	3.574	3.58	0.159	GA_AB1	1975	106.975	107.94	0.147
FL_B2	1976	3.374	3.37	0.159	GA_AB1	1976	103.414	103.76	0.147
FL_B2	1977	3.035	3.04	0.159	GA_AB1	1977	96.097	96.49	0.147
FL_B2	1978	2.741	2.74	0.159	GA_AB1	1978	91.885	92.61	0.147
FL_B2	1979	2.94	2.94	0.159	GA_AB1	1979	95.029	96.10	0.147
FL_B2	1980	2.417	2.42	0.159	GA_AB1	1980	92.872	92.19	0.147
FL_B2	1981	1.627	1.63	0.162	GA_AB1	1981	60.315	62.23	0.196
FL_B2	1982	0.837	0.84	0.185	GA_AB1	1982	27.757	27.81	0.078
FL_B2	1983	4.567	4.57	0.13	GA_AB1	1983	52.148	53.09	0.167
FL_B2	1984	3.938	3.94	0.096	GA_AB1	1984	238.013	242.64	0.136
FL_B2	1985	16.169	16.17	0.082	GA_AB1	1985	172.639	172.60	0.076
FL_B2	1986	8.35	8.35	0.082	GA_AB1	1986	93.162	93.14	0.085
FL_B2	1987	31.602	31.60	0.085	GA_AB1	1987	123.801	123.69	0.075
FL_B2	1988	19.495	19.50	0.184	GA_AB1	1988	127.641	127.80	0.085
FL_B2	1989	14.39	14.32	0.098	GA_AB1	1989	46.346	45.07	0.089
FL_B2	1990	5.734	5.72	0.098	GA_AB1	1990	69.122	64.91	0.129
FL_B2	1991	53.632	51.11	0.102	GA_AB1	1991	146.835	114.40	0.103
FL_B2	1992	23.749	22.39	0.076	GA_AB1	1992	76.29	63.45	0.067
FL_B2	1993	38.92	33.81	0.08	GA_AB1	1993	96.151	53.62	0.111
FL_B2	1994	57.673	46.05	0.093	GA_AB1	1994	121.655	42.41	0.181
FL_B2	1995	57.034	47.86	0.093	GA_AB1	1995	124.357	40.73	0.244
FL_B2	1996	41.799	34.54	0.092	GA_AB1	1996	55.991	38.39	0.106
FL_B2	1997	46.802	41.07	0.084	GA_AB1	1997	35.337	32.47	0.076
FL_B2	1998	40.509	31.65	0.096	GA_AB1	1998	23.449	21.56	0.071
FL_B2	1999	48.206	40.88	0.102	GA_AB1	1999	61.662	51.19	0.103
FL_B2	2000	59.19	53.48	0.088	GA_AB1	2000	85.222	72.28	0.098
FL_B2	2001	71.562	59.71	0.132	GA_AB1	2001	81.656	74.24	0.115
FL_B2	2002	55.862	49.91	0.084	GA_AB1	2002	83.356	64.99	0.091
FL_B2	2003	61.823	56.09	0.074	GA_AB1	2003	110.621	78.97	0.098
FL_B2	2004	80.545	63.49	0.101	GA_AB1	2004	138.893	108.73	0.069
FL_B2	2005	112.477	97.86	0.078	GA_AB1	2005	105.655	95.27	0.072
FL_B2	2006	67.782	57.93	0.095	GA_AB1	2006	68.813	56.37	0.094
FL_B2	2007	60.695	55.51	0.092	GA_AB1	2007	113.237	100.90	0.078
FL_B2	2008	71.164	66.26	0.078	GA_AB1	2008	133.107	115.50	0.076
FL_B2	2009	41.733	39.45	0.085	GA_AB1	2009	68.857	63.83	0.066
FL_B2	2010	113.129	99.50	0.091	GA_AB1	2010	194.826	175.63	0.058
FL_B2	2011	84.091	76.14	0.092	GA_AB1	2011	106.962	100.52	0.061
FL_B2	2012	63.954	56.78	0.108	GA_AB1	2012	45.766	41.94	0.082
FL_B2	2013	123.323	107.69	0.081	GA_AB1	2013	73.827	68.08	0.061

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Fleet	Year	Observed	Expected	Input SE	Fleet	Year	Observed	Expected	Input SE
SC_AB1	1950	60.597	60.63	0.345	GASC_B2	1950	0.38	0.38	0.293
SC_AB1	1951	62.485	62.52	0.345	GASC_B2	1951	0.392	0.39	0.293
SC_AB1	1952	64.374	64.42	0.345	GASC_B2	1952	0.403	0.40	0.293
SC_AB1	1953	66.263	66.32	0.345	GASC_B2	1953	0.415	0.41	0.293
SC_AB1	1954	68.151	68.11	0.345	GASC_B2	1954	0.427	0.43	0.293
SC_AB1	1955	70.04	69.96	0.345	GASC_B2	1955	0.439	0.44	0.293
SC_AB1	1956	71.928	71.85	0.345	GASC_B2	1956	0.451	0.45	0.293
SC_AB1	1957	73.817	73.76	0.345	GASC_B2	1957	0.463	0.46	0.293
SC_AB1	1958	75.706	75.64	0.345	GASC_B2	1958	0.474	0.47	0.293
SC_AB1	1959	79.641	79.78	0.345	GASC_B2	1959	0.512	0.51	0.293
SC_AB1	1960	81.579	81.87	0.345	GASC_B2	1960	0.523	0.52	0.293
SC_AB1	1961	86.673	87.11	0.345	GASC_B2	1961	0.549	0.55	0.293
SC_AB1	1962	94.234	94.76	0.345	GASC_B2	1962	0.588	0.59	0.293
SC_AB1	1963	104.732	105.66	0.345	GASC_B2	1963	0.652	0.65	0.293
SC_AB1	1964	108.017	108.51	0.345	GASC_B2	1964	0.677	0.68	0.293
SC_AB1	1965	116.964	117.48	0.345	GASC_B2	1965	0.74	0.74	0.293
SC_AB1	1966	107.257	107.87	0.345	GASC_B2	1966	0.727	0.73	0.293
SC_AB1	1967	140.425	142.26	0.345	GASC_B2	1967	0.848	0.85	0.293
SC_AB1	1968	142.6	143.69	0.345	GASC_B2	1968	0.847	0.85	0.293
SC_AB1	1969	160.761	161.39	0.345	GASC_B2	1969	0.925	0.93	0.293
SC_AB1	1970	119.528	119.43	0.345	GASC_B2	1970	0.755	0.76	0.293
SC_AB1	1971	127.584	127.94	0.345	GASC_B2	1971	0.806	0.81	0.293
SC_AB1	1972	137.907	139.37	0.345	GASC_B2	1972	0.858	0.86	0.293
SC_AB1	1973	145.732	148.45	0.345	GASC_B2	1973	0.901	0.90	0.293
SC_AB1	1974	159.44	155.69	0.345	GASC_B2	1974	0.979	0.98	0.293
SC_AB1	1975	166.548	177.59	0.345	GASC_B2	1975	1.019	1.02	0.293
SC_AB1	1976	174.504	181.11	0.345	GASC_B2	1976	1.044	1.04	0.293
SC_AB1	1977	164.452	170.97	0.345	GASC_B2	1977	0.98	0.98	0.293
SC_AB1	1978	158.118	170.43	0.345	GASC_B2	1978	0.941	0.94	0.293
SC_AB1	1979	157.788	179.30	0.345	GASC_B2	1979	0.948	0.95	0.293
SC_AB1	1980	157.089	147.46	0.345	GASC_B2	1980	0.939	0.94	0.293
SC_AB1	1981	150.413	257.97	0.424	GASC_B2	1981	0.692	0.69	0.364
SC_AB1	1982	143.738	191.69	0.37	GASC_B2	1982	0.446	0.45	0.289
SC_AB1	1983	95.429	103.49	0.241	GASC_B2	1983	0.863	0.86	0.225
SC_AB1	1984	122.808	127.49	0.228	GASC_B2	1984	1.511	1.51	0.091
SC_AB1	1985	384.598	386.98	0.174	GASC_B2	1985	1.828	1.83	0.134
SC_AB1	1986	182.79	182.83	0.132	GASC_B2	1986	6.213	6.21	0.096
SC_AB1	1987	477.051	474.36	0.127	GASC_B2	1987	24.434	24.43	0.077
SC_AB1	1988	270.587	273.34	0.162	GASC_B2	1988	35.406	35.42	0.087
SC_AB1	1989	119.686	167.95	0.127	GASC_B2	1989	8.866	8.95	0.118
SC_AB1	1990	113.27	150.56	0.109	GASC_B2	1990	20.07	18.51	0.141
SC_AB1	1991	112.968	315.67	0.134	GASC_B2	1991	15.248	14.55	0.141
SC_AB1	1992	103.249	221.91	0.068	GASC_B2	1992	13.446	13.61	0.083
SC_AB1	1993	113.46	206.73	0.071	GASC_B2	1993	22.567	18.78	0.161
SC_AB1	1994	119.561	189.68	0.062	GASC_B2	1994	37.451	33.89	0.074
SC_AB1	1995	183.302	236.75	0.055	GASC_B2	1995	56.201	49.23	0.085
SC_AB1	1996	124.906	190.56	0.056	GASC_B2	1996	21.259	22.83	0.094
SC_AB1	1997	125.771	148.85	0.058	GASC_B2	1997	17.088	18.31	0.095
SC_AB1	1998	45.791	62.73	0.052	GASC_B2	1998	9.413	9.74	0.067
SC_AB1	1999	43.14	48.18	0.047	GASC_B2	1999	8.861	9.32	0.086
SC_AB1	2000	35.425	37.53	0.043	GASC_B2	2000	17.686	17.98	0.073
SC_AB1	2001	59.147	61.02	0.044	GASC_B2	2001	36.831	36.43	0.078
SC_AB1	2002	39.694	50.42	0.054	GASC_B2	2002	25.08	24.54	0.068
SC_AB1	2003	154.111	183.62	0.05	GASC_B2	2003	55.785	57.36	0.062
SC_AB1	2004	107.803	129.93	0.042	GASC_B2	2004	46.412	47.28	0.059
SC_AB1	2005	130.655	140.84	0.054	GASC_B2	2005	66.249	64.73	0.053
SC_AB1	2006	48.703	53.29	0.037	GASC_B2	2006	54.099	54.92	0.054
SC_AB1	2007	72.261	75.09	0.041	GASC_B2	2007	53.022	53.27	0.054
SC_AB1	2008	119.471	127.33	0.047	GASC_B2	2008	69.277	68.80	0.063
SC_AB1	2009	70.326	72.81	0.032	GASC_B2	2009	73.506	72.51	0.054
SC_AB1	2010	172.708	180.79	0.039	GASC_B2	2010	101.608	102.12	0.049
SC_AB1	2011	161.503	166.58	0.042	GASC_B2	2011	70.246	70.43	0.045
SC_AB1	2012	121.068	124.95	0.03	GASC_B2	2012	50.708	50.85	0.035
SC_AB1	2013	97.386	106.04	0.048	GASC_B2	2013	69.768	71.37	0.045

Table 2.4.9 Observed and predicted indices of the northern stock.

Index	Year	Observed	Expected	Input SE	Index	Year	Observed	Expected	Input SE
NC_JAI	1992	2.504	1.191	0.144	NC_LL	2007	1.08	0.960	0.162
NC_JAI	1993	0.614	0.552	0.299	NC_LL	2008	0.721	0.957	0.177
NC_JAI	1994	2.094	1.941	0.174	NC_LL	2009	1.136	0.969	0.18
NC_JAI	1995	1.373	0.836	0.285	NC_LL	2010	1.057	0.989	0.203
NC_JAI	1996	0.764	0.465	0.156	NC_LL	2011	1.073	1.020	0.176
NC_JAI	1998	2.173	2.024	0.231	NC_LL	2012	0.993	1.020	0.177
NC_JAI	1999	1.362	1.173	0.136	NC_LL	2013	0.941	1.007	0.156
NC_JAI	2000	0.304	0.612	0.223	Rec_CPUE	1991	0.694	0.633	0.135
NC_JAI	2001	0.52	0.683	0.182	Rec_CPUE	1992	0.551	1.003	0.171
NC_JAI	2002	0.16	0.614	0.192	Rec_CPUE	1993	0.879	0.694	0.123
NC_JAI	2003	0.37	0.152	0.233	Rec_CPUE	1994	0.452	0.963	0.126
NC_JAI	2004	0.829	1.001	0.242	Rec_CPUE	1995	0.845	0.783	0.087
NC_JAI	2005	1.377	1.129	0.136	Rec_CPUE	1996	0.318	0.528	0.137
NC_JAI	2006	1.493	1.385	0.155	Rec_CPUE	1997	0.862	1.434	0.103
NC_JAI	2007	0.57	0.980	0.209	Rec_CPUE	1998	1.189	1.489	0.081
NC_JAI	2008	0.904	1.333	0.273	Rec_CPUE	1999	1.228	1.444	0.084
NC_JAI	2009	0.262	0.534	0.189	Rec_CPUE	2000	0.818	1.199	0.1
NC_JAI	2010	0.313	0.798	0.339	Rec_CPUE	2001	0.823	0.960	0.109
NC_JAI	2011	0.777	0.313	0.204	Rec_CPUE	2002	2.042	0.811	0.069
NC_JAI	2012	1.791	3.844	0.296	Rec_CPUE	2003	0.461	0.683	0.148
NC_JAI	2013	0.446	0.950	0.26	Rec_CPUE	2004	0.482	0.636	0.113
NC_IGNS_0	2001	0.765	0.688	0.276	Rec_CPUE	2005	0.898	0.968	0.109
NC_IGNS_0	2002	1.954	0.614	0.159	Rec_CPUE	2006	1.109	1.138	0.09
NC_IGNS_0	2003	0.201	0.154	0.255	Rec_CPUE	2007	1.113	1.282	0.084
NC_IGNS_0	2004	1.374	0.986	0.156	Rec_CPUE	2008	1.345	1.338	0.074
NC_IGNS_0	2005	1.018	1.128	0.209	Rec_CPUE	2009	1.285	1.325	0.079
NC_IGNS_0	2006	1.218	1.364	0.152	Rec_CPUE	2010	1.219	1.054	0.068
NC_IGNS_0	2007	0.394	0.983	0.169	Rec_CPUE	2011	0.57	0.997	0.098
NC_IGNS_0	2008	1.196	1.324	0.179	Rec_CPUE	2012	2.293	1.606	0.05
NC_IGNS_0	2009	0.49	0.541	0.166	Rec_CPUE	2013	1.525	1.616	0.061
NC_IGNS_0	2010	1.107	0.792	0.18					
NC_IGNS_0	2011	0.111	0.324	0.262					
NC_IGNS_0	2012	2.251	3.738	0.193					
NC_IGNS_0	2013	0.921	0.919	0.239					
NC_IGNS_1	2001	0.333	0.455	0.224					
NC_IGNS_1	2002	0.416	0.467	0.216					
NC_IGNS_1	2003	0.734	0.481	0.204					
NC_IGNS_1	2004	0.045	0.094	0.325					
NC_IGNS_1	2005	1.029	0.739	0.175					
NC_IGNS_1	2006	0.915	0.761	0.18					
NC_IGNS_1	2007	1.921	1.034	0.376					
NC_IGNS_1	2008	0.461	0.756	0.242					
NC_IGNS_1	2009	2.465	1.070	0.348					
NC_IGNS_1	2010	0.484	0.407	0.186					
NC_IGNS_1	2011	0.182	0.696	0.206					
NC_IGNS_1	2012	0.008	0.229	0.833					
NC_IGNS_1	2013	4.008	2.079	0.193					

Table 2.4.10 Observed and predicted indices of the southern stock.

Index	Year	Observed	Expected	Input SE
SCstopn	1986	0.7287	1.467	0.2883
SCstopn	1987	1.7767	1.224	0.1774
SCstopn	1988	1.0649	0.848	0.1604
SCstopn	1989	0.8954	0.830	0.3103
SCstopn	1990	0.9519	0.865	0.4891
SCstopn	1991	1.3001	0.787	0.228
SCstopn	1992	0.9265	0.751	0.1548
SCstopn	1993	0.6158	0.910	0.1424
SCstopn	1994	0.74	1.358	0.2191
SCtn1	1994	0.9721	1.329	0.2108
SCtn1	1995	1.4074	0.700	0.1597
SCtn1	1996	0.6253	0.797	0.1746
SCtn1	1997	1.1234	0.788	0.2498
SCtn1	1998	0.5848	0.874	0.1838
SCtn1	1999	0.63	0.696	0.1612
SCtn1	2000	0.2685	0.807	0.1385
SCtn1	2001	1.736	1.022	0.1348
SCtn1	2002	1.4154	1.173	0.1167
SCtn1	2003	1.965	1.179	0.1296
SCtn1	2004	0.8091	0.954	0.1897
SCtn1	2005	0.6659	0.814	0.1269
SCtn1	2006	0.472	0.765	0.1464
SCtn1	2007	1.067	1.115	0.1351
SCtn1	2008	1.2174	1.249	0.1387
SCtn1	2009	1.366	1.394	0.1386
SCtn1	2010	1.7991	1.189	0.111
SCtn1	2011	0.6478	0.806	0.1646
SCtn1	2012	0.5384	0.557	0.1405
SCtn1	2013	0.6894	0.661	0.1376
SCtn2	1994	1.3687	0.849	0.2384
SCtn2	1995	0.9314	1.268	0.1585
SCtn2	1996	1.5553	0.669	0.1667
SCtn2	1997	0.6357	0.764	0.1553
SCtn2	1998	0.8361	0.759	0.1539
SCtn2	1999	0.5953	0.841	0.1817
SCtn2	2000	0.6539	0.667	0.137
SCtn2	2001	0.3613	0.771	0.121
SCtn2	2002	2.2741	0.982	0.2
SCtn2	2003	1.7696	1.120	0.1197
SCtn2	2004	1.8201	1.127	0.1111
SCtn2	2005	0.9432	0.910	0.1155
SCtn2	2006	1.0413	0.782	0.1177
SCtn2	2007	0.5054	0.730	0.1764
SCtn2	2008	1.0443	1.062	0.1423
SCtn2	2009	1.0694	1.202	0.1618
SCtn2	2010	1.028	1.326	0.1328
SCtn2	2011	0.7134	1.137	0.1989
SCtn2	2012	0.4929	0.774	0.2252
SCtn2	2013	0.3608	0.529	0.1307

Index	Year	Observed	Expected	Input SE
SCll_1	1994	1.4675	0.877	0.2238
SCll_1	1995	1.5837	0.917	0.1267
SCll_1	1996	1.2194	0.945	0.21
SCll_1	1997	0.5282	0.968	0.1793
SCll_1	1998	0.8117	0.999	0.2011
SCll_1	1999	0.9279	1.040	0.1436
SCll_1	2000	0.573	1.077	0.1981
SCll_1	2001	0.822	1.103	0.2145
SCll_1	2002	0.6576	1.120	0.4489
SCll_1	2003	1.346	1.131	0.1776
SCll_1	2004	1.0631	1.138	0.2622
SCll.3	2007	0.6621	0.963	0.2253
SCll.3	2008	0.7057	0.989	0.1659
SCll.3	2009	1.4403	1.008	0.1707
SCll.3	2010	0.8394	1.017	0.12
SCll.3	2011	0.8063	1.026	0.1066
SCll.3	2012	1.3249	1.043	0.095
SCll.3	2013	1.2213	1.070	0.0927
GAgn	2003	1.3596	1.163	0.3038
GAgn	2004	0.9867	0.941	0.2164
GAgn	2005	1.1696	0.804	0.1443
GAgn	2006	0.5006	0.755	0.1562
GAgn	2007	0.8715	1.100	0.1909
GAgn	2008	1.5038	1.232	0.1969
GAgn	2009	0.9708	1.376	0.2407
GAgn	2010	2.014	1.173	0.1631
GAgn	2011	0.5831	0.795	0.1744
GAgn	2012	0.45	0.549	0.2198
GAgn	2013	0.5903	0.652	0.1963
GAll	2007	0.4709	0.869	0.3246
GAll	2008	0.7347	0.895	0.2635
GAll	2009	1.3659	0.917	0.2127
GAll	2010	0.6813	0.928	0.2462
GAll	2011	1.8101	0.934	0.2612
GAll	2012	0.4241	0.945	0.2406
GAll	2013	1.5129	0.966	0.2224
FLhs2	1997	0.7933	0.873	0.2414
FLhs2	1998	1.1058	0.868	0.2127
FLhs2	1999	0.6595	0.961	0.2289
FLhs2	2000	1.0035	0.762	0.1953
FLhs2	2001	0.631	0.882	0.2323
FLhs2	2002	0.9772	1.122	0.1737
FLhs2	2003	0.7822	1.280	0.1857
FLhs2	2004	1.2067	1.288	0.1592
FLhs2	2005	1.4048	1.040	0.1411
FLhs2	2006	1.0805	0.894	0.1654
FLhs2	2007	1.3382	0.834	0.1396
FLhs2	2008	1.2855	1.213	0.1582
FLhs2	2009	0.9491	1.374	0.1703
FLhs2	2010	0.993	1.515	0.1694
FLhs2	2011	0.9016	1.299	0.1648
FLhs2	2012	1.1059	0.884	0.1612
FLhs2	2013	0.7821	0.605	0.1839

Continued

Index	Year	Observed	Expected	Input SE	Index	Year	Observed	Expected	Input SE
FLhs3	1997	0.9595	0.755	0.2653	MRIP	1991	0.7895	0.968	0.0858
FLhs3	1998	1.5607	0.867	0.2411	MRIP	1992	0.8293	0.886	0.0602
FLhs3	1999	0.8468	0.863	0.2781	MRIP	1993	0.9136	0.835	0.062
FLhs3	2000	0.9345	0.948	0.2781	MRIP	1994	1.1011	0.859	0.0542
FLhs3	2001	1.2028	0.747	0.2322	MRIP	1995	1.2379	1.014	0.0483
FLhs3	2002	1.1822	0.868	0.2036	MRIP	1996	1.0555	0.960	0.0499
FLhs3	2003	1.2746	1.100	0.2074	MRIP	1997	0.8768	0.943	0.0521
FLhs3	2004	1.4459	1.254	0.1878	MRIP	1998	0.7959	0.911	0.0506
FLhs3	2005	0.8039	1.258	0.2449	MRIP	1999	0.7896	0.908	0.0439
FLhs3	2006	1.2315	1.022	0.2099	MRIP	2000	0.7776	0.857	0.042
FLhs3	2007	0.8624	0.878	0.2472	MRIP	2001	1.047	0.854	0.0398
FLhs3	2008	1.0089	0.810	0.2255	MRIP	2002	0.9038	0.923	0.0416
FLhs3	2009	0.7122	1.194	0.2744	MRIP	2003	1.0315	1.028	0.0418
FLhs3	2010	0.8631	1.347	0.2195	MRIP	2004	1.1231	1.113	0.0413
FLhs3	2011	0.8053	1.475	0.257	MRIP	2005	1.1057	1.103	0.0392
FLhs3	2012	0.6674	1.273	0.2661	MRIP	2006	0.862	1.039	0.0404
FLhs3	2013	0.6383	0.858	0.3015	MRIP	2007	0.8343	0.964	0.0428
FL_IRJXsn	1998	0.4684	0.927	0.8082	MRIP	2008	0.9178	1.006	0.0413
FL_IRJXsn	1999	1.5122	0.738	0.3993	MRIP	2009	1.0789	1.104	0.0409
FL_IRJXsn	2000	0.3902	0.856	0.4391	MRIP	2010	1.498	1.233	0.0345
FL_IRJXsn	2001	0.7937	1.083	0.3657	MRIP	2011	1.2868	1.262	0.034
FL_IRJXsn	2002	0.7672	1.243	0.3215	MRIP	2012	0.9644	1.156	0.0388
FL_IRJXsn	2003	1.6598	1.249	0.2599	MRIP	2013	1.1798	0.969	0.0451
FL_IRJXsn	2004	1.3869	1.011	0.278					
FL_IRJXsn	2005	2.2509	0.863	0.2267					
FL_IRJXsn	2006	0.5961	0.811	0.2929					
FL_IRJXsn	2007	1.1251	1.182	0.2717					
FL_IRJXsn	2008	0.9148	1.323	0.289					
FL_IRJXsn	2009	1.1839	1.478	0.258					
FL_IRJXsn	2010	1.2063	1.260	0.2455					
FL_IRJXsn	2011	0.447	0.854	0.3203					
FL_IRJXsn	2012	0.4122	0.590	0.3354					
FL_IRJXsn	2013	0.8851	0.700	0.2853					

Table 2.4.11 Tag reporting rate parameter estimates from the northern base Stock Synthesis model.
Parameters have been converted to original scale.

Parameter	Initial Value	Estimate	CV
Comm_GNBS	0.219	0.216	0.062
Comm_OTHER	0.401	0.398	0.414
Rec_Harv	0.089	0.100	0.022

Table 2.4.12 Tag reporting rate parameter estimates from the southern base Stock Synthesis model.
Parameters have been converted to original scale.

Parameter	Initial Value	Estimate	CV
TG_report_fleet:_5	0.490	1.000	0.110
TG_report_fleet:_6	0.490	0.660	0.098

Table 2.4.13 Selectivity parameter estimates form the northern base Stock Synthesis model.
Parameters highlighted in yellow were estimated at lower bounds.

Parameter	Initial Value	Estimate	CV
SizeSel_8P_1_NC_LL	92.1	96.25	0.009
SizeSel_8P_2_NC_LL	12.9	14.99	0.061
SizeSel_9P_1_Rec_CPUE	46.1	45.34	0.011
SizeSel_9P_2_Rec_CPUE	-1	-1.09	0.061
SizeSel_9P_3_Rec_CPUE	4.5	4.47	0.019
SizeSel_9P_4_Rec_CPUE	4.6	4.64	0.041
SizeSel_9P_6_Rec_CPUE	-2.3	-2.31	0.040
SizeSel_1P_1_Comm_GNBS_BLK1repl_1976	35.8	34.91	0.058
SizeSel_1P_1_Comm_GNBS_BLK1repl_1992	48.9	46.73	0.022
SizeSel_1P_1_Comm_GNBS_BLK1repl_1999	59.4	59.02	0.006
SizeSel_1P_2_Comm_GNBS_BLK1repl_1976	-2.8	-2.67	0.240
SizeSel_1P_2_Comm_GNBS_BLK1repl_1992	-2.3	-2.14	0.103
SizeSel_1P_2_Comm_GNBS_BLK1repl_1999	-7.3	-8.99	0.044
SizeSel_1P_3_Comm_GNBS_BLK1repl_1976	4.1	4.00	0.137
SizeSel_1P_3_Comm_GNBS_BLK1repl_1992	4.6	4.38	0.043
SizeSel_1P_3_Comm_GNBS_BLK1repl_1999	5.8	5.78	0.006
SizeSel_1P_4_Comm_GNBS_BLK1repl_1976	6	5.92	0.044
SizeSel_1P_4_Comm_GNBS_BLK1repl_1992	5.3	5.16	0.046
SizeSel_1P_4_Comm_GNBS_BLK1repl_1999	4.1	4.08	0.021
SizeSel_1P_6_Comm_GNBS_BLK1repl_1976	-5	-5.00	0.000
SizeSel_1P_6_Comm_GNBS_BLK1repl_1992	-5	-5.00	0.000
SizeSel_1P_6_Comm_GNBS_BLK1repl_1999	-5	-5.00	0.000
SizeSel_2P_1_Comm_OTHER_BLK1repl_1976	42.3	42.21	0.030
SizeSel_2P_1_Comm_OTHER_BLK1repl_1992	63.2	62.43	0.026
SizeSel_2P_1_Comm_OTHER_BLK1repl_1999	60.9	60.80	0.012
SizeSel_2P_2_Comm_OTHER_BLK1repl_1976	-6	-8.91	0.290
SizeSel_2P_2_Comm_OTHER_BLK1repl_1992	-5.6	-8.88	0.415
SizeSel_2P_2_Comm_OTHER_BLK1repl_1999	-5.3	-8.33	1.988
SizeSel_2P_3_Comm_OTHER_BLK1repl_1976	5.2	5.23	0.040
SizeSel_2P_3_Comm_OTHER_BLK1repl_1992	5.6	5.56	0.026
SizeSel_2P_3_Comm_OTHER_BLK1repl_1999	4.8	4.83	0.021
SizeSel_2P_4_Comm_OTHER_BLK1repl_1976	5.6	5.58	0.041
SizeSel_2P_4_Comm_OTHER_BLK1repl_1992	6	5.33	0.072
SizeSel_2P_4_Comm_OTHER_BLK1repl_1999	4.2	4.23	0.040

Continued

Parameter	Initial Value	Estimate	CV
SizeSel_2P_6_Comm_OTHER_BLK1repl_1976	-3.4	-3.52	0.046
SizeSel_2P_6_Comm_OTHER_BLK1repl_1992	-3.8	-3.55	0.062
SizeSel_2P_6_Comm_OTHER_BLK1repl_1999	-4.9	-5.00	0.001
SizeSel_3P_1_Rec_Harv_BLK1repl_1976	45	44.67	0.026
SizeSel_3P_1_Rec_Harv_BLK1repl_1992	62.7	62.51	0.019
SizeSel_3P_1_Rec_Harv_BLK1repl_1999	54.4	53.94	0.017
SizeSel_3P_2_Rec_Harv_BLK1repl_1976	-6.1	-8.93	0.239
SizeSel_3P_2_Rec_Harv_BLK1repl_1992	-6.1	-8.93	0.228
SizeSel_3P_2_Rec_Harv_BLK1repl_1999	-2.4	-2.36	0.105
SizeSel_3P_3_Rec_Harv_BLK1repl_1976	5.2	5.20	0.038
SizeSel_3P_3_Rec_Harv_BLK1repl_1992	5.6	5.64	0.019
SizeSel_3P_3_Rec_Harv_BLK1repl_1999	4.4	4.35	0.034
SizeSel_3P_4_Rec_Harv_BLK1repl_1976	5.6	5.60	0.034
SizeSel_3P_4_Rec_Harv_BLK1repl_1992	4.2	4.19	0.081
SizeSel_3P_4_Rec_Harv_BLK1repl_1999	4.6	4.50	0.056
SizeSel_3P_6_Rec_Harv_BLK1repl_1976	-4.8	-5.00	0.002
SizeSel_3P_6_Rec_Harv_BLK1repl_1992	-4.7	-4.68	0.036
SizeSel_3P_6_Rec_Harv_BLK1repl_1999	-4.6	-4.73	0.042
SizeSel_4P_1_Rec_Discard_BLK1repl_1976	43.3	45.24	0.035
SizeSel_4P_1_Rec_Discard_BLK1repl_1992	37.7	37.52	0.025
SizeSel_4P_1_Rec_Discard_BLK1repl_1999	45.4	44.92	0.019
SizeSel_4P_2_Rec_Discard_BLK1repl_1976	-5	-8.56	1.355
SizeSel_4P_2_Rec_Discard_BLK1repl_1992	-2.6	-2.57	0.052
SizeSel_4P_2_Rec_Discard_BLK1repl_1999	-0.8	-0.88	0.079
SizeSel_4P_3_Rec_Discard_BLK1repl_1976	5.5	5.60	0.083
SizeSel_4P_3_Rec_Discard_BLK1repl_1992	3.6	3.57	0.080
SizeSel_4P_3_Rec_Discard_BLK1repl_1999	4.2	4.13	0.040
SizeSel_4P_4_Rec_Discard_BLK1repl_1976	2	0.01	31.863
SizeSel_4P_4_Rec_Discard_BLK1repl_1992	0.5	0.00	33.656
SizeSel_4P_4_Rec_Discard_BLK1repl_1999	4.4	4.20	0.072
SizeSel_4P_6_Rec_Discard_BLK1repl_1976	-4.4	-5.00	0.006
SizeSel_4P_6_Rec_Discard_BLK1repl_1992	-2.6	-2.78	0.061
SizeSel_4P_6_Rec_Discard_BLK1repl_1999	-2	-2.15	0.049

Table 2.4.14 Selectivity parameter estimates form the southern base Stock Synthesis model.

Parameter	Initial Value	Estimate	CV
SizeSel_1P_1_FLcom	30	30.58	0.035
SizeSel_1P_2_FLcom	0	-0.43	-0.153
SizeSel_1P_3_FLcom	5	3.41	0.066
SizeSel_1P_4_FLcom	5	3.69	0.100
SizeSel_1P_6_FLcom	-1	-6.25	-0.075
SizeSel_2P_1_FL_AB1	30	29.14	0.052
SizeSel_2P_2_FL_AB1	0	-6.06	-0.556
SizeSel_2P_3_FL_AB1	5	3.29	0.128
SizeSel_2P_4_FL_AB1	5	6.14	0.066
SizeSel_2P_6_FL_AB1	-1	-5.69	-0.157
SizeSel_3P_1_FL_B2	30	28.08	0.016
SizeSel_3P_2_FL_B2	0	-7.20	-0.350
SizeSel_3P_3_FL_B2	5	3.02	0.065
SizeSel_3P_4_FL_B2	5	1.31	0.230
SizeSel_3P_6_FL_B2	-1	-5.16	-0.097
SizeSel_4P_1_GA_AB1	30	27.07	0.038
SizeSel_4P_2_GA_AB1	0	-6.60	-0.442
SizeSel_4P_3_GA_AB1	5	2.77	0.137
SizeSel_4P_4_GA_AB1	5	5.38	0.079
SizeSel_4P_6_GA_AB1	-1	-5.23	-0.186
SizeSel_5P_1_SC_AB1	30	26.65	0.037
SizeSel_5P_2_SC_AB1	0	-6.90	-0.393
SizeSel_5P_3_SC_AB1	5	2.17	0.200
SizeSel_5P_4_SC_AB1	5	6.02	0.044
SizeSel_5P_6_SC_AB1	-1	-5.00	-0.136
SizeSel_6P_1_GASC_B2	30	9.06	0.005
SizeSel_6P_2_GASC_B2	0	-9.52	-0.150
SizeSel_6P_3_GASC_B2	5	4.00	0.375
SizeSel_6P_4_GASC_B2	5	1.03	0.028
SizeSel_6P_6_GASC_B2	-1	-4.25	-0.038
SizeSel_10P_1_SCll_1	60	87.48	0.009
SizeSel_10P_2_SCll_1	20	8.56	0.129
SizeSel_11P_1_SCll.3	60	85.48	0.010
SizeSel_11P_2_SCll.3	20	13.90	0.076

Continued

Parameter	Initial Value	Estimate	CV
SizeSel_13P_1_GAll	60	87.57	0.016
SizeSel_13P_2_GAll	20	10.62	0.194
SizeSel_17P_1_MRIP	30	27.11	0.048
SizeSel_17P_2_MRIP	0	-0.53	-0.145
SizeSel_17P_3_MRIP	5	2.84	0.151
SizeSel_17P_4_MRIP	5	5.03	0.049
SizeSel_17P_6_MRIP	-1	-3.78	-0.095
SizeSel_2P_1_FL_AB1_BLK1repl_1986	30	54.50	0.014
SizeSel_2P_2_FL_AB1_BLK1repl_1986	0	-2.87	-0.095
SizeSel_2P_3_FL_AB1_BLK1repl_1986	5	4.93	0.016
SizeSel_2P_4_FL_AB1_BLK1repl_1986	5	4.46	0.028
SizeSel_2P_6_FL_AB1_BLK1repl_1986	-1	-5.80	-0.057
SizeSel_3P_1_FL_B2_BLK1repl_1986	30	29.59	0.033
SizeSel_3P_2_FL_B2_BLK1repl_1986	0	-0.56	-0.208
SizeSel_3P_3_FL_B2_BLK1repl_1986	5	1.95	0.209
SizeSel_3P_4_FL_B2_BLK1repl_1986	5	4.48	0.139
SizeSel_3P_6_FL_B2_BLK1repl_1986	-1	-1.23	-0.285
SizeSel_4P_1_GA_AB1_BLK2repl_1986	30	39.08	0.040
SizeSel_4P_1_GA_AB1_BLK2repl_1992	30	36.26	0.007
SizeSel_4P_1_GA_AB1_BLK2repl_2003	30	35.80	0.003
SizeSel_4P_2_GA_AB1_BLK2repl_1986	0	-6.37	-0.484
SizeSel_4P_2_GA_AB1_BLK2repl_1992	0	-8.47	-0.224
SizeSel_4P_2_GA_AB1_BLK2repl_2003	0	-8.83	-0.197
SizeSel_4P_3_GA_AB1_BLK2repl_1986	5	4.15	0.068
SizeSel_4P_3_GA_AB1_BLK2repl_1992	5	1.49	0.155
SizeSel_4P_3_GA_AB1_BLK2repl_2003	5	1.13	0.071
SizeSel_4P_4_GA_AB1_BLK2repl_1986	5	4.36	0.160
SizeSel_4P_4_GA_AB1_BLK2repl_1992	5	5.33	0.026
SizeSel_4P_4_GA_AB1_BLK2repl_2003	5	5.05	0.011
SizeSel_4P_6_GA_AB1_BLK2repl_1986	-1	-3.19	-0.149
SizeSel_4P_6_GA_AB1_BLK2repl_1992	-1	-4.40	-0.051
SizeSel_4P_6_GA_AB1_BLK2repl_2003	-1	-5.14	-0.031
SizeSel_5P_1_SC_AB1_BLK3repl_1986	30	33.98	0.049
SizeSel_5P_1_SC_AB1_BLK3repl_1993	30	41.39	0.009

continued

Parameter	Initial Value	Estimate	CV
SizeSel_5P_1_SC_AB1_BLK3repl_2002	30	40.88	0.008
SizeSel_5P_1_SC_AB1_BLK3repl_2008	30	39.74	0.007
SizeSel_5P_2_SC_AB1_BLK3repl_1986	0	-6.68	-0.431
SizeSel_5P_2_SC_AB1_BLK3repl_1993	0	-8.25	-0.242
SizeSel_5P_2_SC_AB1_BLK3repl_2002	0	-7.58	-0.307
SizeSel_5P_2_SC_AB1_BLK3repl_2008	0	-8.22	-0.245
SizeSel_5P_3_SC_AB1_BLK3repl_1986	5	5.36	0.052
SizeSel_5P_3_SC_AB1_BLK3repl_1993	5	4.61	0.016
SizeSel_5P_3_SC_AB1_BLK3repl_2002	5	2.00	0.111
SizeSel_5P_3_SC_AB1_BLK3repl_2008	5	1.59	0.139
SizeSel_5P_4_SC_AB1_BLK3repl_1986	5	6.16	0.019
SizeSel_5P_4_SC_AB1_BLK3repl_1993	5	6.05	0.007
SizeSel_5P_4_SC_AB1_BLK3repl_2002	5	5.55	0.010
SizeSel_5P_4_SC_AB1_BLK3repl_2008	5	5.92	0.010
SizeSel_5P_6_SC_AB1_BLK3repl_1986	-1	-5.68	-0.120
SizeSel_5P_6_SC_AB1_BLK3repl_1993	-1	-6.64	-0.046
SizeSel_5P_6_SC_AB1_BLK3repl_2002	-1	-6.07	-0.051
SizeSel_5P_6_SC_AB1_BLK3repl_2008	-1	-5.12	-0.054
SizeSel_6P_1_GASC_B2_BLK2repl_1986	30	25.40	0.056
SizeSel_6P_1_GASC_B2_BLK2repl_1992	30	34.32	0.134
SizeSel_6P_1_GASC_B2_BLK2repl_2003	30	53.63	0.049
SizeSel_6P_2_GASC_B2_BLK2repl_1986	0	-6.49	-0.462
SizeSel_6P_2_GASC_B2_BLK2repl_1992	0	-0.44	-0.371
SizeSel_6P_2_GASC_B2_BLK2repl_2003	0	-1.47	-0.235
SizeSel_6P_3_GASC_B2_BLK2repl_1986	5	2.43	0.278
SizeSel_6P_3_GASC_B2_BLK2repl_1992	5	3.76	0.187
SizeSel_6P_3_GASC_B2_BLK2repl_2003	5	5.17	0.036
SizeSel_6P_4_GASC_B2_BLK2repl_1986	5	5.02	0.072
SizeSel_6P_4_GASC_B2_BLK2repl_1992	5	4.34	0.125
SizeSel_6P_4_GASC_B2_BLK2repl_2003	5	4.70	0.109
SizeSel_6P_6_GASC_B2_BLK2repl_1986	-1	-4.03	-0.141
SizeSel_6P_6_GASC_B2_BLK2repl_1992	-1	-3.61	-0.213
SizeSel_6P_6_GASC_B2_BLK2repl_2003	-1	-3.89	-0.145

Table 2.4.15 Initial fishing mortality estimates for each fishing fleet in the northern stock.

Parameter	Initial Value	Estimate	CV
InitF_1Comm_GNBS	0.08	0.080	0.187
InitF_2Comm_OTHER	0.02	0.025	0.178
InitF_3Rec_Harv	0.45	0.500	0.127
InitF_4Rec_Discard	0.001	0.001	0.283

Table 2.4.16 Initial fishing mortality estimates for each fishing fleet in the southern stock.

Parameter	Initial Value	Estimate	CV
InitF_1FLcom	0.238	0.003	0.144
InitF_2FL_AB1	0.408	0.031	0.218
InitF_3FL_B2	0.004	0.002	0.194
InitF_4GA_AB1	0.144	0.016	0.215
InitF_5SC_AB1	0.205	0.018	0.165
InitF_6GASC_B2	0.001	0.001	0.000

Table 2.4.17 Fishing mortality estimates for age 0-10 fish in the northern stock.

Quantity	Estimate	CV	Quantity	Estimate	CV
F_1950	0.134	0.196	F_1982	0.112	0.181
F_1951	0.112	0.214	F_1983	0.585	0.143
F_1952	0.118	0.212	F_1984	0.551	0.157
F_1953	0.130	0.195	F_1985	0.260	0.164
F_1954	0.115	0.169	F_1986	0.472	0.095
F_1955	0.085	0.202	F_1987	0.536	0.087
F_1956	0.069	0.265	F_1988	0.734	0.081
F_1957	0.094	0.239	F_1989	0.593	0.099
F_1958	0.090	0.290	F_1990	0.566	0.106
F_1959	0.074	0.292	F_1991	0.440	0.086
F_1960	0.089	0.250	F_1992	0.282	0.107
F_1961	0.113	0.253	F_1993	0.799	0.073
F_1962	0.108	0.259	F_1994	0.255	0.096
F_1963	0.120	0.263	F_1995	0.857	0.065
F_1964	0.146	0.264	F_1996	0.614	0.096
F_1965	0.214	0.254	F_1997	0.071	0.105
F_1966	0.211	0.284	F_1998	0.779	0.063
F_1967	0.251	0.291	F_1999	0.418	0.076
F_1968	0.244	0.285	F_2000	0.398	0.076
F_1969	0.310	0.285	F_2001	0.277	0.090
F_1970	0.394	0.277	F_2002	0.312	0.093
F_1971	0.310	0.264	F_2003	0.248	0.124
F_1972	0.224	0.243	F_2004	0.211	0.131
F_1973	0.195	0.227	F_2005	0.235	0.090
F_1974	0.130	0.186	F_2006	0.331	0.093
F_1975	0.127	0.180	F_2007	0.296	0.086
F_1976	0.136	0.185	F_2008	0.264	0.081
F_1977	0.108	0.264	F_2009	0.281	0.088
F_1978	0.145	0.258	F_2010	0.265	0.087
F_1979	0.138	0.169	F_2011	0.159	0.103
F_1980	0.165	0.168	F_2012	0.204	0.094
F_1981	0.155	0.215	F_2013	0.674	0.085

Table 2.4.18 Fishing mortality estimates for age 0-10 fish in the southern stock.

Quantity	Estimate	CV	Quantity	Estimate	CV
F_1950	0.013	0.388	F_1982	0.113	0.282
F_1951	0.014	0.387	F_1983	0.085	0.209
F_1952	0.013	0.389	F_1984	0.095	0.166
F_1953	0.012	0.392	F_1985	0.058	0.160
F_1954	0.011	0.389	F_1986	0.022	0.132
F_1955	0.011	0.381	F_1987	0.033	0.131
F_1956	0.011	0.371	F_1988	0.021	0.137
F_1957	0.011	0.365	F_1989	0.012	0.113
F_1958	0.012	0.360	F_1990	0.012	0.097
F_1959	0.014	0.356	F_1991	0.024	0.086
F_1960	0.016	0.352	F_1992	0.016	0.066
F_1961	0.019	0.350	F_1993	0.015	0.060
F_1962	0.021	0.347	F_1994	0.014	0.054
F_1963	0.025	0.345	F_1995	0.017	0.054
F_1964	0.030	0.341	F_1996	0.014	0.054
F_1965	0.037	0.336	F_1997	0.012	0.048
F_1966	0.043	0.327	F_1998	0.009	0.050
F_1967	0.054	0.322	F_1999	0.011	0.050
F_1968	0.059	0.314	F_2000	0.015	0.050
F_1969	0.064	0.308	F_2001	0.016	0.051
F_1970	0.066	0.289	F_2002	0.011	0.049
F_1971	0.080	0.278	F_2003	0.018	0.043
F_1972	0.092	0.269	F_2004	0.017	0.043
F_1973	0.106	0.259	F_2005	0.021	0.044
F_1974	0.129	0.253	F_2006	0.014	0.046
F_1975	0.161	0.252	F_2007	0.016	0.046
F_1976	0.182	0.244	F_2008	0.018	0.046
F_1977	0.196	0.240	F_2009	0.011	0.043
F_1978	0.213	0.228	F_2010	0.023	0.042
F_1979	0.208	0.196	F_2011	0.020	0.042
F_1980	0.195	0.184	F_2012	0.018	0.046
F_1981	0.188	0.276	F_2013	0.024	0.046

Table 2.4.19 Fishing mortality estimates of the Comm_GNBS fleet.

Parameter	Estimate	CV	Parameter	Estimate	CV
F_fleet_1_YR_1950_s_1	0.123	0.177	F_fleet_1_YR_1982_s_1	0.055	0.172
F_fleet_1_YR_1951_s_1	0.090	0.186	F_fleet_1_YR_1983_s_1	0.253	0.159
F_fleet_1_YR_1952_s_1	0.133	0.185	F_fleet_1_YR_1984_s_1	0.475	0.161
F_fleet_1_YR_1953_s_1	0.172	0.179	F_fleet_1_YR_1985_s_1	0.431	0.152
F_fleet_1_YR_1954_s_1	0.104	0.166	F_fleet_1_YR_1986_s_1	0.535	0.111
F_fleet_1_YR_1955_s_1	0.047	0.163	F_fleet_1_YR_1987_s_1	0.431	0.120
F_fleet_1_YR_1956_s_1	0.015	0.162	F_fleet_1_YR_1988_s_1	0.431	0.117
F_fleet_1_YR_1957_s_1	0.082	0.160	F_fleet_1_YR_1989_s_1	0.607	0.141
F_fleet_1_YR_1958_s_1	0.015	0.162	F_fleet_1_YR_1990_s_1	0.678	0.133
F_fleet_1_YR_1959_s_1	0.018	0.164	F_fleet_1_YR_1991_s_1	0.302	0.112
F_fleet_1_YR_1960_s_1	0.067	0.162	F_fleet_1_YR_1992_s_1	0.276	0.117
F_fleet_1_YR_1961_s_1	0.069	0.161	F_fleet_1_YR_1993_s_1	0.432	0.111
F_fleet_1_YR_1962_s_1	0.047	0.159	F_fleet_1_YR_1994_s_1	0.265	0.119
F_fleet_1_YR_1963_s_1	0.055	0.159	F_fleet_1_YR_1995_s_1	0.301	0.115
F_fleet_1_YR_1964_s_1	0.016	0.157	F_fleet_1_YR_1996_s_1	0.291	0.135
F_fleet_1_YR_1965_s_1	0.031	0.157	F_fleet_1_YR_1997_s_1	0.094	0.132
F_fleet_1_YR_1966_s_1	0.007	0.157	F_fleet_1_YR_1998_s_1	0.272	0.107
F_fleet_1_YR_1967_s_1	0.006	0.158	F_fleet_1_YR_1999_s_1	0.366	0.104
F_fleet_1_YR_1968_s_1	0.003	0.156	F_fleet_1_YR_2000_s_1	0.315	0.102
F_fleet_1_YR_1969_s_1	0.002	0.157	F_fleet_1_YR_2001_s_1	0.339	0.110
F_fleet_1_YR_1970_s_1	0.005	0.156	F_fleet_1_YR_2002_s_1	0.233	0.117
F_fleet_1_YR_1971_s_1	0.013	0.153	F_fleet_1_YR_2003_s_1	0.288	0.126
F_fleet_1_YR_1972_s_1	0.022	0.147	F_fleet_1_YR_2004_s_1	0.280	0.130
F_fleet_1_YR_1973_s_1	0.028	0.141	F_fleet_1_YR_2005_s_1	0.356	0.120
F_fleet_1_YR_1974_s_1	0.028	0.134	F_fleet_1_YR_2006_s_1	0.313	0.122
F_fleet_1_YR_1975_s_1	0.024	0.132	F_fleet_1_YR_2007_s_1	0.329	0.114
F_fleet_1_YR_1976_s_1	0.068	0.196	F_fleet_1_YR_2008_s_1	0.380	0.114
F_fleet_1_YR_1977_s_1	0.012	0.218	F_fleet_1_YR_2009_s_1	0.278	0.114
F_fleet_1_YR_1978_s_1	0.011	0.221	F_fleet_1_YR_2010_s_1	0.381	0.117
F_fleet_1_YR_1979_s_1	0.138	0.147	F_fleet_1_YR_2011_s_1	0.162	0.122
F_fleet_1_YR_1980_s_1	0.146	0.165	F_fleet_1_YR_2012_s_1	0.143	0.123
F_fleet_1_YR_1981_s_1	0.066	0.172	F_fleet_1_YR_2013_s_1	0.352	0.125

Table 2.4.20 Fishing mortality estimates of the Comm_OTHER fleet.

Parameter	Estimate	CV	Parameter	Estimate	CV
F_fleet_2_YR_1950_s_1	0.066	0.170	F_fleet_2_YR_1982_s_1	0.032	0.123
F_fleet_2_YR_1951_s_1	0.044	0.167	F_fleet_2_YR_1983_s_1	0.099	0.120
F_fleet_2_YR_1952_s_1	0.028	0.164	F_fleet_2_YR_1984_s_1	0.115	0.124
F_fleet_2_YR_1953_s_1	0.017	0.157	F_fleet_2_YR_1985_s_1	0.103	0.134
F_fleet_2_YR_1954_s_1	0.042	0.141	F_fleet_2_YR_1986_s_1	0.220	0.121
F_fleet_2_YR_1955_s_1	0.022	0.132	F_fleet_2_YR_1987_s_1	0.158	0.112
F_fleet_2_YR_1956_s_1	0.006	0.130	F_fleet_2_YR_1988_s_1	0.110	0.108
F_fleet_2_YR_1957_s_1	0.007	0.131	F_fleet_2_YR_1989_s_1	0.201	0.121
F_fleet_2_YR_1958_s_1	0.008	0.133	F_fleet_2_YR_1990_s_1	0.115	0.132
F_fleet_2_YR_1959_s_1	0.006	0.135	F_fleet_2_YR_1991_s_1	0.054	0.111
F_fleet_2_YR_1960_s_1	0.010	0.133	F_fleet_2_YR_1992_s_1	0.025	0.119
F_fleet_2_YR_1961_s_1	0.005	0.130	F_fleet_2_YR_1993_s_1	0.033	0.114
F_fleet_2_YR_1962_s_1	0.005	0.127	F_fleet_2_YR_1994_s_1	0.047	0.126
F_fleet_2_YR_1963_s_1	0.001	0.126	F_fleet_2_YR_1995_s_1	0.063	0.107
F_fleet_2_YR_1964_s_1	0.041	0.125	F_fleet_2_YR_1996_s_1	0.027	0.123
F_fleet_2_YR_1965_s_1	0.066	0.125	F_fleet_2_YR_1997_s_1	0.021	0.123
F_fleet_2_YR_1966_s_1	0.016	0.125	F_fleet_2_YR_1998_s_1	0.030	0.094
F_fleet_2_YR_1967_s_1	0.004	0.125	F_fleet_2_YR_1999_s_1	0.026	0.082
F_fleet_2_YR_1968_s_1	0.006	0.123	F_fleet_2_YR_2000_s_1	0.023	0.082
F_fleet_2_YR_1969_s_1	0.002	0.123	F_fleet_2_YR_2001_s_1	0.021	0.086
F_fleet_2_YR_1970_s_1	0.003	0.124	F_fleet_2_YR_2002_s_1	0.029	0.086
F_fleet_2_YR_1971_s_1	0.006	0.122	F_fleet_2_YR_2003_s_1	0.024	0.086
F_fleet_2_YR_1972_s_1	0.019	0.114	F_fleet_2_YR_2004_s_1	0.014	0.096
F_fleet_2_YR_1973_s_1	0.023	0.107	F_fleet_2_YR_2005_s_1	0.024	0.086
F_fleet_2_YR_1974_s_1	0.043	0.097	F_fleet_2_YR_2006_s_1	0.025	0.083
F_fleet_2_YR_1975_s_1	0.050	0.093	F_fleet_2_YR_2007_s_1	0.030	0.084
F_fleet_2_YR_1976_s_1	0.085	0.140	F_fleet_2_YR_2008_s_1	0.019	0.085
F_fleet_2_YR_1977_s_1	0.014	0.146	F_fleet_2_YR_2009_s_1	0.018	0.084
F_fleet_2_YR_1978_s_1	0.031	0.143	F_fleet_2_YR_2010_s_1	0.020	0.089
F_fleet_2_YR_1979_s_1	0.075	0.115	F_fleet_2_YR_2011_s_1	0.014	0.089
F_fleet_2_YR_1980_s_1	0.143	0.112	F_fleet_2_YR_2012_s_1	0.030	0.091
F_fleet_2_YR_1981_s_1	0.075	0.124	F_fleet_2_YR_2013_s_1	0.042	0.086

Table 2.4.21 Fishing mortality estimates of the Rec_Harv fleet.

Parameter	Estimate	CV	Parameter	Estimate	CV
F_fleet_3_YR_1950_s_1	0.136	0.330	F_fleet_3_YR_1982_s_1	0.507	0.238
F_fleet_3_YR_1951_s_1	0.184	0.357	F_fleet_3_YR_1983_s_1	1.925	0.182
F_fleet_3_YR_1952_s_1	0.208	0.357	F_fleet_3_YR_1984_s_1	2.054	0.186
F_fleet_3_YR_1953_s_1	0.172	0.340	F_fleet_3_YR_1985_s_1	1.218	0.206
F_fleet_3_YR_1954_s_1	0.106	0.310	F_fleet_3_YR_1986_s_1	0.872	0.146
F_fleet_3_YR_1955_s_1	0.118	0.307	F_fleet_3_YR_1987_s_1	0.850	0.134
F_fleet_3_YR_1956_s_1	0.182	0.310	F_fleet_3_YR_1988_s_1	1.401	0.120
F_fleet_3_YR_1957_s_1	0.281	0.319	F_fleet_3_YR_1989_s_1	1.309	0.133
F_fleet_3_YR_1958_s_1	0.406	0.333	F_fleet_3_YR_1990_s_1	1.008	0.180
F_fleet_3_YR_1959_s_1	0.354	0.344	F_fleet_3_YR_1991_s_1	0.622	0.150
F_fleet_3_YR_1960_s_1	0.276	0.335	F_fleet_3_YR_1992_s_1	0.670	0.160
F_fleet_3_YR_1961_s_1	0.312	0.325	F_fleet_3_YR_1993_s_1	1.901	0.094
F_fleet_3_YR_1962_s_1	0.300	0.317	F_fleet_3_YR_1994_s_1	1.049	0.144
F_fleet_3_YR_1963_s_1	0.351	0.321	F_fleet_3_YR_1995_s_1	2.315	0.081
F_fleet_3_YR_1964_s_1	0.416	0.321	F_fleet_3_YR_1996_s_1	1.832	0.126
F_fleet_3_YR_1965_s_1	0.502	0.320	F_fleet_3_YR_1997_s_1	0.184	0.211
F_fleet_3_YR_1966_s_1	0.539	0.316	F_fleet_3_YR_1998_s_1	2.175	0.082
F_fleet_3_YR_1967_s_1	0.693	0.320	F_fleet_3_YR_1999_s_1	0.747	0.110
F_fleet_3_YR_1968_s_1	0.614	0.311	F_fleet_3_YR_2000_s_1	0.729	0.101
F_fleet_3_YR_1969_s_1	0.850	0.308	F_fleet_3_YR_2001_s_1	0.649	0.128
F_fleet_3_YR_1970_s_1	1.260	0.300	F_fleet_3_YR_2002_s_1	0.914	0.126
F_fleet_3_YR_1971_s_1	0.691	0.275	F_fleet_3_YR_2003_s_1	0.499	0.189
F_fleet_3_YR_1972_s_1	0.359	0.269	F_fleet_3_YR_2004_s_1	1.180	0.203
F_fleet_3_YR_1973_s_1	0.273	0.267	F_fleet_3_YR_2005_s_1	0.457	0.169
F_fleet_3_YR_1974_s_1	0.140	0.272	F_fleet_3_YR_2006_s_1	0.739	0.167
F_fleet_3_YR_1975_s_1	0.133	0.271	F_fleet_3_YR_2007_s_1	0.449	0.155
F_fleet_3_YR_1976_s_1	0.295	0.280	F_fleet_3_YR_2008_s_1	0.324	0.160
F_fleet_3_YR_1977_s_1	0.690	0.286	F_fleet_3_YR_2009_s_1	0.332	0.153
F_fleet_3_YR_1978_s_1	1.987	0.250	F_fleet_3_YR_2010_s_1	0.411	0.154
F_fleet_3_YR_1979_s_1	0.391	0.280	F_fleet_3_YR_2011_s_1	0.261	0.161
F_fleet_3_YR_1980_s_1	0.409	0.265	F_fleet_3_YR_2012_s_1	0.495	0.169
F_fleet_3_YR_1981_s_1	0.799	0.257	F_fleet_3_YR_2013_s_1	1.222	0.129

Table 2.4.22 Fishing mortality estimates of the Rec_Discard fleet.

Parameter	Estimate	CV	Parameter	Estimate	CV
F_fleet_4_YR_1950_s_1	0.001	0.396	F_fleet_4_YR_1982_s_1	0.001	0.326
F_fleet_4_YR_1951_s_1	0.002	0.411	F_fleet_4_YR_1983_s_1	0.001	0.312
F_fleet_4_YR_1952_s_1	0.002	0.425	F_fleet_4_YR_1984_s_1	0.171	0.329
F_fleet_4_YR_1953_s_1	0.001	0.382	F_fleet_4_YR_1985_s_1	0.004	0.283
F_fleet_4_YR_1954_s_1	0.001	0.332	F_fleet_4_YR_1986_s_1	0.005	0.273
F_fleet_4_YR_1955_s_1	0.001	0.330	F_fleet_4_YR_1987_s_1	0.021	0.261
F_fleet_4_YR_1956_s_1	0.002	0.344	F_fleet_4_YR_1988_s_1	0.017	0.264
F_fleet_4_YR_1957_s_1	0.003	0.372	F_fleet_4_YR_1989_s_1	0.037	0.238
F_fleet_4_YR_1958_s_1	0.004	0.392	F_fleet_4_YR_1990_s_1	0.062	0.279
F_fleet_4_YR_1959_s_1	0.004	0.411	F_fleet_4_YR_1991_s_1	0.039	0.247
F_fleet_4_YR_1960_s_1	0.002	0.385	F_fleet_4_YR_1992_s_1	0.025	0.177
F_fleet_4_YR_1961_s_1	0.003	0.368	F_fleet_4_YR_1993_s_1	0.057	0.201
F_fleet_4_YR_1962_s_1	0.003	0.360	F_fleet_4_YR_1994_s_1	0.027	0.155
F_fleet_4_YR_1963_s_1	0.004	0.368	F_fleet_4_YR_1995_s_1	0.069	0.162
F_fleet_4_YR_1964_s_1	0.004	0.372	F_fleet_4_YR_1996_s_1	0.041	0.193
F_fleet_4_YR_1965_s_1	0.005	0.374	F_fleet_4_YR_1997_s_1	0.043	0.185
F_fleet_4_YR_1966_s_1	0.005	0.371	F_fleet_4_YR_1998_s_1	0.042	0.149
F_fleet_4_YR_1967_s_1	0.006	0.382	F_fleet_4_YR_1999_s_1	0.030	0.151
F_fleet_4_YR_1968_s_1	0.005	0.365	F_fleet_4_YR_2000_s_1	0.027	0.153
F_fleet_4_YR_1969_s_1	0.007	0.376	F_fleet_4_YR_2001_s_1	0.033	0.153
F_fleet_4_YR_1970_s_1	0.009	0.383	F_fleet_4_YR_2002_s_1	0.082	0.205
F_fleet_4_YR_1971_s_1	0.004	0.325	F_fleet_4_YR_2003_s_1	0.047	0.176
F_fleet_4_YR_1972_s_1	0.002	0.300	F_fleet_4_YR_2004_s_1	0.088	0.168
F_fleet_4_YR_1973_s_1	0.002	0.292	F_fleet_4_YR_2005_s_1	0.108	0.168
F_fleet_4_YR_1974_s_1	0.001	0.285	F_fleet_4_YR_2006_s_1	0.166	0.169
F_fleet_4_YR_1975_s_1	0.001	0.286	F_fleet_4_YR_2007_s_1	0.107	0.166
F_fleet_4_YR_1976_s_1	0.005	0.314	F_fleet_4_YR_2008_s_1	0.159	0.157
F_fleet_4_YR_1977_s_1	0.011	0.355	F_fleet_4_YR_2009_s_1	0.113	0.163
F_fleet_4_YR_1978_s_1	0.021	0.346	F_fleet_4_YR_2010_s_1	0.149	0.158
F_fleet_4_YR_1979_s_1	0.003	0.343	F_fleet_4_YR_2011_s_1	0.074	0.173
F_fleet_4_YR_1980_s_1	0.006	0.302	F_fleet_4_YR_2012_s_1	0.413	0.143
F_fleet_4_YR_1981_s_1	0.010	0.318	F_fleet_4_YR_2013_s_1	0.142	0.178

Table 2.4.23 Fishing mortality estimates of the FLcom fleet.

Parameter	Initial Value	Estimate	CV
F_fleet_1_YR_1950_s_1	NA	0.005	0.472
F_fleet_1_YR_1951_s_1	NA	0.006	0.471
F_fleet_1_YR_1952_s_1	NA	0.005	0.472
F_fleet_1_YR_1953_s_1	NA	0.004	0.473
F_fleet_1_YR_1954_s_1	NA	0.003	0.468
F_fleet_1_YR_1955_s_1	NA	0.003	0.461
F_fleet_1_YR_1956_s_1	NA	0.002	0.451
F_fleet_1_YR_1957_s_1	NA	0.001	0.437
F_fleet_1_YR_1958_s_1	NA	0.001	0.422
F_fleet_1_YR_1959_s_1	NA	0.002	0.416
F_fleet_1_YR_1960_s_1	NA	0.002	0.419
F_fleet_1_YR_1961_s_1	NA	0.003	0.422
F_fleet_1_YR_1962_s_1	NA	0.004	0.421
F_fleet_1_YR_1963_s_1	NA	0.005	0.422
F_fleet_1_YR_1964_s_1	NA	0.006	0.424
F_fleet_1_YR_1965_s_1	NA	0.007	0.423
F_fleet_1_YR_1966_s_1	NA	0.009	0.418
F_fleet_1_YR_1967_s_1	NA	0.009	0.406
F_fleet_1_YR_1968_s_1	NA	0.011	0.391
F_fleet_1_YR_1969_s_1	NA	0.008	0.382
F_fleet_1_YR_1970_s_1	NA	0.009	0.379
F_fleet_1_YR_1971_s_1	NA	0.006	0.365
F_fleet_1_YR_1972_s_1	NA	0.009	0.341
F_fleet_1_YR_1973_s_1	NA	0.013	0.324
F_fleet_1_YR_1974_s_1	NA	0.013	0.325
F_fleet_1_YR_1975_s_1	NA	0.012	0.339
F_fleet_1_YR_1976_s_1	NA	0.019	0.349
F_fleet_1_YR_1977_s_1	NA	0.028	0.339
F_fleet_1_YR_1978_s_1	NA	0.046	0.300
F_fleet_1_YR_1979_s_1	NA	0.057	0.242
F_fleet_1_YR_1980_s_1	NA	0.089	0.185
F_fleet_1_YR_1981_s_1	NA	0.032	0.196
F_fleet_1_YR_1982_s_1	NA	0.010	0.222
F_fleet_1_YR_1983_s_1	NA	0.005	0.235
F_fleet_1_YR_1984_s_1	NA	0.004	0.233
F_fleet_1_YR_1985_s_1	NA	0.002	0.213
F_fleet_1_YR_1986_s_1	NA	0.001	0.188
F_fleet_1_YR_1987_s_1	NA	0.000	0.168
F_fleet_1_YR_1988_s_1	NA	0.000	0.156

Table 2.4.24 Fishing mortality estimates of the FL_AB1 fleet.

Parameter	Initial Value	Estimate	CV	Parameter	Initial Value	Estimate	CV
F_fleet_2_YR_1950_s_1	NA	0.034	0.568	F_fleet_2_YR_1982_s_1	NA	0.205	0.308
F_fleet_2_YR_1951_s_1	NA	0.029	0.561	F_fleet_2_YR_1983_s_1	NA	0.233	0.271
F_fleet_2_YR_1952_s_1	NA	0.027	0.555	F_fleet_2_YR_1984_s_1	NA	0.210	0.223
F_fleet_2_YR_1953_s_1	NA	0.026	0.551	F_fleet_2_YR_1985_s_1	NA	0.055	0.225
F_fleet_2_YR_1954_s_1	NA	0.023	0.551	F_fleet_2_YR_1986_s_1	NA	0.025	0.212
F_fleet_2_YR_1955_s_1	NA	0.022	0.535	F_fleet_2_YR_1987_s_1	NA	0.008	0.270
F_fleet_2_YR_1956_s_1	NA	0.024	0.518	F_fleet_2_YR_1988_s_1	NA	0.001	0.374
F_fleet_2_YR_1957_s_1	NA	0.027	0.513	F_fleet_2_YR_1989_s_1	NA	0.004	0.193
F_fleet_2_YR_1958_s_1	NA	0.034	0.520	F_fleet_2_YR_1990_s_1	NA	0.007	0.183
F_fleet_2_YR_1959_s_1	NA	0.049	0.522	F_fleet_2_YR_1991_s_1	NA	0.018	0.121
F_fleet_2_YR_1960_s_1	NA	0.064	0.519	F_fleet_2_YR_1992_s_1	NA	0.016	0.093
F_fleet_2_YR_1961_s_1	NA	0.088	0.518	F_fleet_2_YR_1993_s_1	NA	0.011	0.092
F_fleet_2_YR_1962_s_1	NA	0.096	0.515	F_fleet_2_YR_1994_s_1	NA	0.019	0.083
F_fleet_2_YR_1963_s_1	NA	0.109	0.507	F_fleet_2_YR_1995_s_1	NA	0.014	0.090
F_fleet_2_YR_1964_s_1	NA	0.119	0.500	F_fleet_2_YR_1996_s_1	NA	0.012	0.124
F_fleet_2_YR_1965_s_1	NA	0.130	0.486	F_fleet_2_YR_1997_s_1	NA	0.010	0.099
F_fleet_2_YR_1966_s_1	NA	0.139	0.470	F_fleet_2_YR_1998_s_1	NA	0.016	0.086
F_fleet_2_YR_1967_s_1	NA	0.159	0.462	F_fleet_2_YR_1999_s_1	NA	0.023	0.076
F_fleet_2_YR_1968_s_1	NA	0.156	0.462	F_fleet_2_YR_2000_s_1	NA	0.034	0.073
F_fleet_2_YR_1969_s_1	NA	0.157	0.456	F_fleet_2_YR_2001_s_1	NA	0.035	0.077
F_fleet_2_YR_1970_s_1	NA	0.167	0.428	F_fleet_2_YR_2002_s_1	NA	0.023	0.081
F_fleet_2_YR_1971_s_1	NA	0.232	0.413	F_fleet_2_YR_2003_s_1	NA	0.023	0.076
F_fleet_2_YR_1972_s_1	NA	0.286	0.425	F_fleet_2_YR_2004_s_1	NA	0.018	0.069
F_fleet_2_YR_1973_s_1	NA	0.361	0.431	F_fleet_2_YR_2005_s_1	NA	0.023	0.084
F_fleet_2_YR_1974_s_1	NA	0.431	0.384	F_fleet_2_YR_2006_s_1	NA	0.021	0.071
F_fleet_2_YR_1975_s_1	NA	0.758	0.423	F_fleet_2_YR_2007_s_1	NA	0.027	0.075
F_fleet_2_YR_1976_s_1	NA	1.024	0.361	F_fleet_2_YR_2008_s_1	NA	0.028	0.085
F_fleet_2_YR_1977_s_1	NA	1.182	0.291	F_fleet_2_YR_2009_s_1	NA	0.012	0.079
F_fleet_2_YR_1978_s_1	NA	1.223	0.246	F_fleet_2_YR_2010_s_1	NA	0.022	0.076
F_fleet_2_YR_1979_s_1	NA	1.104	0.211	F_fleet_2_YR_2011_s_1	NA	0.022	0.070
F_fleet_2_YR_1980_s_1	NA	0.319	0.215	F_fleet_2_YR_2012_s_1	NA	0.029	0.078
F_fleet_2_YR_1981_s_1	NA	0.285	0.260	F_fleet_2_YR_2013_s_1	NA	0.045	0.070

Table 2.4.25 Fishing mortality estimates of the FL_B2 fleet.

Parameter	Initial Value	Estimate	CV	Parameter	Initial Value	Estimate	CV
F_fleet_3_YR_1950_s_1	NA	0.002	0.495	F_fleet_3_YR_1982_s_1	NA	0.003	0.295
F_fleet_3_YR_1951_s_1	NA	0.001	0.500	F_fleet_3_YR_1983_s_1	NA	0.013	0.258
F_fleet_3_YR_1952_s_1	NA	0.001	0.494	F_fleet_3_YR_1984_s_1	NA	0.007	0.222
F_fleet_3_YR_1953_s_1	NA	0.001	0.494	F_fleet_3_YR_1985_s_1	NA	0.019	0.196
F_fleet_3_YR_1954_s_1	NA	0.001	0.498	F_fleet_3_YR_1986_s_1	NA	0.001	0.152
F_fleet_3_YR_1955_s_1	NA	0.001	0.479	F_fleet_3_YR_1987_s_1	NA	0.002	0.140
F_fleet_3_YR_1956_s_1	NA	0.001	0.460	F_fleet_3_YR_1988_s_1	NA	0.001	0.221
F_fleet_3_YR_1957_s_1	NA	0.002	0.452	F_fleet_3_YR_1989_s_1	NA	0.001	0.135
F_fleet_3_YR_1958_s_1	NA	0.002	0.445	F_fleet_3_YR_1990_s_1	NA	0.000	0.132
F_fleet_3_YR_1959_s_1	NA	0.003	0.425	F_fleet_3_YR_1991_s_1	NA	0.004	0.131
F_fleet_3_YR_1960_s_1	NA	0.003	0.416	F_fleet_3_YR_1992_s_1	NA	0.002	0.107
F_fleet_3_YR_1961_s_1	NA	0.004	0.412	F_fleet_3_YR_1993_s_1	NA	0.003	0.108
F_fleet_3_YR_1962_s_1	NA	0.004	0.409	F_fleet_3_YR_1994_s_1	NA	0.004	0.114
F_fleet_3_YR_1963_s_1	NA	0.005	0.403	F_fleet_3_YR_1995_s_1	NA	0.003	0.113
F_fleet_3_YR_1964_s_1	NA	0.005	0.402	F_fleet_3_YR_1996_s_1	NA	0.002	0.113
F_fleet_3_YR_1965_s_1	NA	0.006	0.392	F_fleet_3_YR_1997_s_1	NA	0.003	0.109
F_fleet_3_YR_1966_s_1	NA	0.006	0.382	F_fleet_3_YR_1998_s_1	NA	0.002	0.121
F_fleet_3_YR_1967_s_1	NA	0.007	0.379	F_fleet_3_YR_1999_s_1	NA	0.003	0.128
F_fleet_3_YR_1968_s_1	NA	0.007	0.383	F_fleet_3_YR_2000_s_1	NA	0.004	0.119
F_fleet_3_YR_1969_s_1	NA	0.007	0.376	F_fleet_3_YR_2001_s_1	NA	0.004	0.157
F_fleet_3_YR_1970_s_1	NA	0.008	0.357	F_fleet_3_YR_2002_s_1	NA	0.003	0.113
F_fleet_3_YR_1971_s_1	NA	0.011	0.350	F_fleet_3_YR_2003_s_1	NA	0.004	0.102
F_fleet_3_YR_1972_s_1	NA	0.013	0.353	F_fleet_3_YR_2004_s_1	NA	0.004	0.119
F_fleet_3_YR_1973_s_1	NA	0.015	0.343	F_fleet_3_YR_2005_s_1	NA	0.006	0.102
F_fleet_3_YR_1974_s_1	NA	0.018	0.325	F_fleet_3_YR_2006_s_1	NA	0.004	0.119
F_fleet_3_YR_1975_s_1	NA	0.028	0.333	F_fleet_3_YR_2007_s_1	NA	0.004	0.123
F_fleet_3_YR_1976_s_1	NA	0.031	0.324	F_fleet_3_YR_2008_s_1	NA	0.004	0.111
F_fleet_3_YR_1977_s_1	NA	0.032	0.315	F_fleet_3_YR_2009_s_1	NA	0.002	0.114
F_fleet_3_YR_1978_s_1	NA	0.030	0.305	F_fleet_3_YR_2010_s_1	NA	0.005	0.114
F_fleet_3_YR_1979_s_1	NA	0.027	0.283	F_fleet_3_YR_2011_s_1	NA	0.004	0.116
F_fleet_3_YR_1980_s_1	NA	0.012	0.249	F_fleet_3_YR_2012_s_1	NA	0.003	0.132
F_fleet_3_YR_1981_s_1	NA	0.008	0.266	F_fleet_3_YR_2013_s_1	NA	0.007	0.114

Table 2.4.26 Fishing mortality estimates of the GA_AB1 fleet.

Parameter	Initial Value	Estimate	CV	Parameter	Initial Value	Estimate	CV
F_fleet_4_YR_1950_s_1	NA	0.018	0.569	F_fleet_4_YR_1982_s_1	NA	0.033	0.229
F_fleet_4_YR_1951_s_1	NA	0.015	0.565	F_fleet_4_YR_1983_s_1	NA	0.044	0.287
F_fleet_4_YR_1952_s_1	NA	0.014	0.561	F_fleet_4_YR_1984_s_1	NA	0.119	0.250
F_fleet_4_YR_1953_s_1	NA	0.013	0.558	F_fleet_4_YR_1985_s_1	NA	0.052	0.210
F_fleet_4_YR_1954_s_1	NA	0.012	0.561	F_fleet_4_YR_1986_s_1	NA	0.018	0.175
F_fleet_4_YR_1955_s_1	NA	0.012	0.544	F_fleet_4_YR_1987_s_1	NA	0.020	0.160
F_fleet_4_YR_1956_s_1	NA	0.013	0.527	F_fleet_4_YR_1988_s_1	NA	0.023	0.159
F_fleet_4_YR_1957_s_1	NA	0.015	0.521	F_fleet_4_YR_1989_s_1	NA	0.010	0.165
F_fleet_4_YR_1958_s_1	NA	0.019	0.522	F_fleet_4_YR_1990_s_1	NA	0.016	0.184
F_fleet_4_YR_1959_s_1	NA	0.029	0.509	F_fleet_4_YR_1991_s_1	NA	0.028	0.147
F_fleet_4_YR_1960_s_1	NA	0.037	0.498	F_fleet_4_YR_1992_s_1	NA	0.018	0.096
F_fleet_4_YR_1961_s_1	NA	0.045	0.492	F_fleet_4_YR_1993_s_1	NA	0.016	0.123
F_fleet_4_YR_1962_s_1	NA	0.053	0.489	F_fleet_4_YR_1994_s_1	NA	0.011	0.182
F_fleet_4_YR_1963_s_1	NA	0.064	0.480	F_fleet_4_YR_1995_s_1	NA	0.008	0.238
F_fleet_4_YR_1964_s_1	NA	0.068	0.477	F_fleet_4_YR_1996_s_1	NA	0.009	0.121
F_fleet_4_YR_1965_s_1	NA	0.079	0.464	F_fleet_4_YR_1997_s_1	NA	0.009	0.101
F_fleet_4_YR_1966_s_1	NA	0.093	0.449	F_fleet_4_YR_1998_s_1	NA	0.006	0.096
F_fleet_4_YR_1967_s_1	NA	0.089	0.442	F_fleet_4_YR_1999_s_1	NA	0.013	0.121
F_fleet_4_YR_1968_s_1	NA	0.081	0.446	F_fleet_4_YR_2000_s_1	NA	0.021	0.117
F_fleet_4_YR_1969_s_1	NA	0.078	0.439	F_fleet_4_YR_2001_s_1	NA	0.021	0.134
F_fleet_4_YR_1970_s_1	NA	0.080	0.411	F_fleet_4_YR_2002_s_1	NA	0.015	0.109
F_fleet_4_YR_1971_s_1	NA	0.097	0.398	F_fleet_4_YR_2003_s_1	NA	0.018	0.108
F_fleet_4_YR_1972_s_1	NA	0.119	0.405	F_fleet_4_YR_2004_s_1	NA	0.024	0.084
F_fleet_4_YR_1973_s_1	NA	0.144	0.398	F_fleet_4_YR_2005_s_1	NA	0.024	0.089
F_fleet_4_YR_1974_s_1	NA	0.169	0.358	F_fleet_4_YR_2006_s_1	NA	0.017	0.110
F_fleet_4_YR_1975_s_1	NA	0.292	0.367	F_fleet_4_YR_2007_s_1	NA	0.033	0.096
F_fleet_4_YR_1976_s_1	NA	0.371	0.323	F_fleet_4_YR_2008_s_1	NA	0.029	0.092
F_fleet_4_YR_1977_s_1	NA	0.414	0.284	F_fleet_4_YR_2009_s_1	NA	0.014	0.085
F_fleet_4_YR_1978_s_1	NA	0.431	0.261	F_fleet_4_YR_2010_s_1	NA	0.034	0.076
F_fleet_4_YR_1979_s_1	NA	0.361	0.236	F_fleet_4_YR_2011_s_1	NA	0.021	0.080
F_fleet_4_YR_1980_s_1	NA	0.139	0.221	F_fleet_4_YR_2012_s_1	NA	0.012	0.101
F_fleet_4_YR_1981_s_1	NA	0.092	0.291	F_fleet_4_YR_2013_s_1	NA	0.027	0.086

Table 2.4.27 Fishing mortality estimates of the SC_AB1 fleet.

Parameter	Initial Value	Estimate	CV	Parameter	Initial Value	Estimate	CV
F_fleet_5_YR_1950_s_1	NA	0.020	0.645	F_fleet_5_YR_1982_s_1	NA	0.190	0.489
F_fleet_5_YR_1951_s_1	NA	0.017	0.644	F_fleet_5_YR_1983_s_1	NA	0.073	0.330
F_fleet_5_YR_1952_s_1	NA	0.016	0.639	F_fleet_5_YR_1984_s_1	NA	0.053	0.299
F_fleet_5_YR_1953_s_1	NA	0.015	0.636	F_fleet_5_YR_1985_s_1	NA	0.099	0.236
F_fleet_5_YR_1954_s_1	NA	0.014	0.639	F_fleet_5_YR_1986_s_1	NA	0.021	0.186
F_fleet_5_YR_1955_s_1	NA	0.013	0.624	F_fleet_5_YR_1987_s_1	NA	0.048	0.168
F_fleet_5_YR_1956_s_1	NA	0.014	0.607	F_fleet_5_YR_1988_s_1	NA	0.030	0.196
F_fleet_5_YR_1957_s_1	NA	0.017	0.600	F_fleet_5_YR_1989_s_1	NA	0.023	0.147
F_fleet_5_YR_1958_s_1	NA	0.021	0.601	F_fleet_5_YR_1990_s_1	NA	0.023	0.128
F_fleet_5_YR_1959_s_1	NA	0.028	0.594	F_fleet_5_YR_1991_s_1	NA	0.049	0.115
F_fleet_5_YR_1960_s_1	NA	0.037	0.586	F_fleet_5_YR_1992_s_1	NA	0.037	0.080
F_fleet_5_YR_1961_s_1	NA	0.048	0.582	F_fleet_5_YR_1993_s_1	NA	0.039	0.066
F_fleet_5_YR_1962_s_1	NA	0.060	0.581	F_fleet_5_YR_1994_s_1	NA	0.033	0.064
F_fleet_5_YR_1963_s_1	NA	0.073	0.576	F_fleet_5_YR_1995_s_1	NA	0.032	0.062
F_fleet_5_YR_1964_s_1	NA	0.077	0.574	F_fleet_5_YR_1996_s_1	NA	0.028	0.063
F_fleet_5_YR_1965_s_1	NA	0.087	0.563	F_fleet_5_YR_1997_s_1	NA	0.025	0.066
F_fleet_5_YR_1966_s_1	NA	0.084	0.550	F_fleet_5_YR_1998_s_1	NA	0.011	0.067
F_fleet_5_YR_1967_s_1	NA	0.115	0.546	F_fleet_5_YR_1999_s_1	NA	0.008	0.065
F_fleet_5_YR_1968_s_1	NA	0.114	0.549	F_fleet_5_YR_2000_s_1	NA	0.007	0.063
F_fleet_5_YR_1969_s_1	NA	0.123	0.545	F_fleet_5_YR_2001_s_1	NA	0.011	0.063
F_fleet_5_YR_1970_s_1	NA	0.090	0.519	F_fleet_5_YR_2002_s_1	NA	0.013	0.071
F_fleet_5_YR_1971_s_1	NA	0.107	0.504	F_fleet_5_YR_2003_s_1	NA	0.039	0.062
F_fleet_5_YR_1972_s_1	NA	0.138	0.511	F_fleet_5_YR_2004_s_1	NA	0.025	0.059
F_fleet_5_YR_1973_s_1	NA	0.174	0.513	F_fleet_5_YR_2005_s_1	NA	0.029	0.068
F_fleet_5_YR_1974_s_1	NA	0.204	0.470	F_fleet_5_YR_2006_s_1	NA	0.013	0.060
F_fleet_5_YR_1975_s_1	NA	0.375	0.491	F_fleet_5_YR_2007_s_1	NA	0.020	0.064
F_fleet_5_YR_1976_s_1	NA	0.531	0.439	F_fleet_5_YR_2008_s_1	NA	0.027	0.067
F_fleet_5_YR_1977_s_1	NA	0.623	0.395	F_fleet_5_YR_2009_s_1	NA	0.013	0.056
F_fleet_5_YR_1978_s_1	NA	0.694	0.372	F_fleet_5_YR_2010_s_1	NA	0.027	0.058
F_fleet_5_YR_1979_s_1	NA	0.618	0.363	F_fleet_5_YR_2011_s_1	NA	0.025	0.062
F_fleet_5_YR_1980_s_1	NA	0.198	0.366	F_fleet_5_YR_2012_s_1	NA	0.022	0.058
F_fleet_5_YR_1981_s_1	NA	0.319	0.542	F_fleet_5_YR_2013_s_1	NA	0.025	0.072

Table 2.4.28 Fishing mortality estimates of the GASC_B2 fleet.

Parameter	Initial Value	Estimate	CV	Parameter	Initial Value	Estimate	CV
F_fleet_6_YR_1950_s_1	NA	0.000	0.510	F_fleet_6_YR_1982_s_1	NA	0.001	0.360
F_fleet_6_YR_1951_s_1	NA	0.000	0.510	F_fleet_6_YR_1983_s_1	NA	0.002	0.296
F_fleet_6_YR_1952_s_1	NA	0.000	0.514	F_fleet_6_YR_1984_s_1	NA	0.002	0.183
F_fleet_6_YR_1953_s_1	NA	0.000	0.525	F_fleet_6_YR_1985_s_1	NA	0.002	0.207
F_fleet_6_YR_1954_s_1	NA	0.000	0.515	F_fleet_6_YR_1986_s_1	NA	0.002	0.229
F_fleet_6_YR_1955_s_1	NA	0.000	0.498	F_fleet_6_YR_1987_s_1	NA	0.006	0.214
F_fleet_6_YR_1956_s_1	NA	0.000	0.484	F_fleet_6_YR_1988_s_1	NA	0.010	0.215
F_fleet_6_YR_1957_s_1	NA	0.001	0.472	F_fleet_6_YR_1989_s_1	NA	0.003	0.231
F_fleet_6_YR_1958_s_1	NA	0.001	0.456	F_fleet_6_YR_1990_s_1	NA	0.007	0.237
F_fleet_6_YR_1959_s_1	NA	0.001	0.447	F_fleet_6_YR_1991_s_1	NA	0.006	0.229
F_fleet_6_YR_1960_s_1	NA	0.001	0.441	F_fleet_6_YR_1992_s_1	NA	0.001	0.109
F_fleet_6_YR_1961_s_1	NA	0.001	0.438	F_fleet_6_YR_1993_s_1	NA	0.002	0.160
F_fleet_6_YR_1962_s_1	NA	0.001	0.434	F_fleet_6_YR_1994_s_1	NA	0.003	0.097
F_fleet_6_YR_1963_s_1	NA	0.001	0.434	F_fleet_6_YR_1995_s_1	NA	0.004	0.104
F_fleet_6_YR_1964_s_1	NA	0.001	0.429	F_fleet_6_YR_1996_s_1	NA	0.002	0.108
F_fleet_6_YR_1965_s_1	NA	0.002	0.424	F_fleet_6_YR_1997_s_1	NA	0.001	0.112
F_fleet_6_YR_1966_s_1	NA	0.002	0.420	F_fleet_6_YR_1998_s_1	NA	0.001	0.092
F_fleet_6_YR_1967_s_1	NA	0.002	0.421	F_fleet_6_YR_1999_s_1	NA	0.001	0.110
F_fleet_6_YR_1968_s_1	NA	0.002	0.421	F_fleet_6_YR_2000_s_1	NA	0.002	0.098
F_fleet_6_YR_1969_s_1	NA	0.002	0.414	F_fleet_6_YR_2001_s_1	NA	0.003	0.103
F_fleet_6_YR_1970_s_1	NA	0.002	0.404	F_fleet_6_YR_2002_s_1	NA	0.002	0.095
F_fleet_6_YR_1971_s_1	NA	0.002	0.398	F_fleet_6_YR_2003_s_1	NA	0.006	0.104
F_fleet_6_YR_1972_s_1	NA	0.003	0.393	F_fleet_6_YR_2004_s_1	NA	0.005	0.098
F_fleet_6_YR_1973_s_1	NA	0.003	0.386	F_fleet_6_YR_2005_s_1	NA	0.006	0.091
F_fleet_6_YR_1974_s_1	NA	0.004	0.382	F_fleet_6_YR_2006_s_1	NA	0.005	0.094
F_fleet_6_YR_1975_s_1	NA	0.005	0.378	F_fleet_6_YR_2007_s_1	NA	0.005	0.098
F_fleet_6_YR_1976_s_1	NA	0.005	0.376	F_fleet_6_YR_2008_s_1	NA	0.007	0.108
F_fleet_6_YR_1977_s_1	NA	0.005	0.375	F_fleet_6_YR_2009_s_1	NA	0.007	0.101
F_fleet_6_YR_1978_s_1	NA	0.005	0.370	F_fleet_6_YR_2010_s_1	NA	0.009	0.093
F_fleet_6_YR_1979_s_1	NA	0.004	0.357	F_fleet_6_YR_2011_s_1	NA	0.006	0.088
F_fleet_6_YR_1980_s_1	NA	0.004	0.361	F_fleet_6_YR_2012_s_1	NA	0.004	0.081
F_fleet_6_YR_1981_s_1	NA	0.003	0.434	F_fleet_6_YR_2013_s_1	NA	0.007	0.090

Table 2.4.29 Annual fishing mortality-at-age for northern stock fish ages 0-5.

	Age							Age					
Year	0	1	2	3	4	5	Year	0	1	2	3	4	5
1950	0.220	0.257	0.139	0.066	0.041	0.033	1982	0.289	0.406	0.147	0.035	0.013	0.008
1951	0.217	0.251	0.135	0.064	0.039	0.031	1983	1.114	1.556	0.563	0.134	0.048	0.030
1952	0.251	0.292	0.156	0.073	0.045	0.035	1984	1.418	1.851	0.658	0.159	0.058	0.036
1953	0.245	0.286	0.153	0.071	0.043	0.033	1985	0.911	1.197	0.433	0.106	0.039	0.024
1954	0.171	0.200	0.108	0.051	0.032	0.025	1986	0.887	1.106	0.398	0.100	0.039	0.025
1955	0.127	0.147	0.079	0.037	0.023	0.018	1987	0.780	0.984	0.354	0.088	0.034	0.022
1956	0.139	0.160	0.085	0.040	0.024	0.019	1988	1.005	1.330	0.480	0.117	0.043	0.027
1957	0.252	0.291	0.155	0.072	0.044	0.034	1989	1.142	1.451	0.522	0.129	0.049	0.031
1958	0.295	0.337	0.179	0.083	0.051	0.040	1990	1.016	1.246	0.448	0.112	0.042	0.026
1959	0.259	0.296	0.157	0.073	0.045	0.035	1991	0.540	0.678	0.243	0.060	0.022	0.014
1960	0.241	0.277	0.147	0.069	0.042	0.033	1992	0.129	0.681	0.510	0.167	0.055	0.027
1961	0.263	0.303	0.161	0.075	0.046	0.036	1993	0.280	1.607	1.241	0.404	0.129	0.063
1962	0.240	0.276	0.146	0.068	0.042	0.033	1994	0.161	0.927	0.717	0.237	0.077	0.038
1963	0.278	0.320	0.170	0.079	0.048	0.037	1995	0.294	1.782	1.412	0.463	0.149	0.073
1964	0.323	0.371	0.197	0.093	0.058	0.046	1996	0.236	1.435	1.128	0.366	0.116	0.056
1965	0.408	0.469	0.250	0.118	0.074	0.058	1997	0.057	0.222	0.161	0.056	0.021	0.011
1966	0.384	0.440	0.233	0.109	0.067	0.053	1998	0.261	1.640	1.300	0.422	0.133	0.064
1967	0.481	0.550	0.291	0.136	0.083	0.065	1999	0.109	0.829	0.597	0.187	0.061	0.031
1968	0.425	0.487	0.258	0.121	0.074	0.058	2000	0.098	0.776	0.562	0.177	0.058	0.029
1969	0.584	0.667	0.353	0.165	0.101	0.079	2001	0.100	0.741	0.533	0.168	0.056	0.029
1970	0.865	0.990	0.524	0.245	0.150	0.117	2002	0.109	0.906	0.683	0.234	0.085	0.046
1971	0.484	0.554	0.294	0.137	0.084	0.066	2003	0.087	0.613	0.443	0.145	0.051	0.027
1972	0.272	0.313	0.166	0.078	0.048	0.038	2004	0.131	1.125	0.846	0.287	0.102	0.054
1973	0.221	0.254	0.136	0.064	0.039	0.031	2005	0.110	0.688	0.501	0.178	0.070	0.041
1974	0.142	0.165	0.089	0.042	0.027	0.021	2006	0.133	0.913	0.690	0.256	0.104	0.060
1975	0.140	0.163	0.088	0.042	0.027	0.021	2007	0.105	0.665	0.488	0.174	0.069	0.040
1976	0.232	0.304	0.108	0.027	0.011	0.007	2008	0.120	0.655	0.481	0.184	0.080	0.049
1977	0.340	0.493	0.178	0.042	0.015	0.009	2009	0.092	0.546	0.403	0.150	0.063	0.037
1978	0.953	1.394	0.503	0.117	0.041	0.025	2010	0.122	0.708	0.520	0.194	0.081	0.049
1979	0.316	0.411	0.148	0.036	0.014	0.009	2011	0.059	0.374	0.280	0.104	0.043	0.025
1980	0.370	0.472	0.169	0.042	0.017	0.012	2012	0.152	0.852	0.707	0.335	0.167	0.108
1981	0.460	0.643	0.231	0.055	0.020	0.013							

Table 2.4.30 Annual fishing mortality-at-age for southern stock fish ages 0-5.

	Age							Age					
Year	0	1	2	3	4	5	Year	0	1	2	3	4	5
1950	0.002	0.064	0.027	0.011	0.006	0.003	1982	0.008	0.363	0.147	0.047	0.018	0.008
1951	0.001	0.055	0.024	0.011	0.006	0.003	1983	0.007	0.299	0.121	0.037	0.013	0.005
1952	0.001	0.051	0.021	0.009	0.005	0.002	1984	0.008	0.314	0.116	0.034	0.012	0.005
1953	0.001	0.047	0.020	0.008	0.004	0.002	1985	0.004	0.167	0.057	0.016	0.005	0.003
1954	0.001	0.042	0.017	0.007	0.003	0.001	1986	0.005	0.040	0.040	0.023	0.009	0.003
1955	0.001	0.041	0.016	0.006	0.003	0.001	1987	0.011	0.067	0.042	0.019	0.008	0.004
1956	0.001	0.043	0.017	0.006	0.003	0.001	1988	0.007	0.052	0.026	0.009	0.004	0.002
1957	0.001	0.049	0.019	0.006	0.002	0.001	1989	0.005	0.032	0.020	0.009	0.004	0.002
1958	0.002	0.061	0.023	0.007	0.003	0.001	1990	0.005	0.039	0.024	0.011	0.004	0.002
1959	0.002	0.087	0.033	0.010	0.004	0.002	1991	0.011	0.077	0.055	0.027	0.011	0.005
1960	0.003	0.114	0.043	0.013	0.005	0.002	1992	0.008	0.052	0.043	0.022	0.008	0.003
1961	0.004	0.150	0.056	0.017	0.006	0.003	1993	0.000	0.045	0.049	0.026	0.011	0.005
1962	0.004	0.173	0.065	0.020	0.008	0.004	1994	0.000	0.041	0.052	0.031	0.014	0.006
1963	0.005	0.204	0.076	0.023	0.009	0.004	1995	0.000	0.038	0.046	0.028	0.013	0.006
1964	0.005	0.219	0.082	0.026	0.010	0.005	1996	0.000	0.033	0.039	0.022	0.010	0.004
1965	0.006	0.245	0.092	0.029	0.012	0.005	1997	0.000	0.030	0.035	0.020	0.009	0.004
1966	0.007	0.262	0.098	0.031	0.013	0.006	1998	0.000	0.018	0.027	0.017	0.007	0.003
1967	0.007	0.302	0.114	0.036	0.014	0.007	1999	0.000	0.022	0.034	0.022	0.009	0.003
1968	0.007	0.294	0.113	0.037	0.016	0.007	2000	0.000	0.030	0.047	0.031	0.013	0.005
1969	0.007	0.297	0.113	0.035	0.014	0.006	2001	0.000	0.035	0.053	0.036	0.016	0.006
1970	0.007	0.284	0.110	0.036	0.015	0.007	2002	0.000	0.024	0.038	0.024	0.010	0.004
1971	0.009	0.362	0.138	0.041	0.014	0.006	2003	0.000	0.037	0.058	0.033	0.014	0.006
1972	0.011	0.452	0.173	0.053	0.019	0.008	2004	0.000	0.034	0.046	0.026	0.011	0.005
1973	0.014	0.567	0.219	0.068	0.025	0.011	2005	0.000	0.038	0.056	0.033	0.015	0.007
1974	0.016	0.670	0.258	0.078	0.028	0.012	2006	0.000	0.025	0.039	0.025	0.012	0.005
1975	0.028	1.178	0.448	0.129	0.042	0.018	2007	0.000	0.039	0.054	0.032	0.014	0.006
1976	0.038	1.596	0.612	0.178	0.059	0.025	2008	0.000	0.042	0.061	0.038	0.017	0.007
1977	0.043	1.845	0.713	0.212	0.073	0.031	2009	0.000	0.021	0.032	0.021	0.011	0.005
1978	0.046	1.966	0.769	0.239	0.089	0.039	2010	0.000	0.046	0.061	0.037	0.018	0.008
1979	0.041	1.764	0.703	0.230	0.092	0.041	2011	0.000	0.034	0.050	0.031	0.014	0.006
1980	0.014	0.620	0.285	0.139	0.081	0.038	2012	0.000	0.027	0.049	0.032	0.014	0.005
1981	0.013	0.597	0.243	0.087	0.039	0.018							

Table 2.4.31 Age-0 recruitment estimates for the northern stock.

Quantity	Estimate	CV	Quantity	Estimate	CV
Recr_Virgin	338.589	0.055	Recr_1981	228.867	0.138
Recr_Initial	338.589	0.055	Recr_1982	230.744	0.204
Recr_1950	211.527	0.463	Recr_1983	811.703	0.149
Recr_1951	109.046	0.531	Recr_1984	263.292	0.175
Recr_1952	165.798	0.442	Recr_1985	59.1212	0.214
Recr_1953	253.271	0.332	Recr_1986	282.427	0.093
Recr_1954	483.654	0.224	Recr_1987	350.503	0.093
Recr_1955	176.002	0.346	Recr_1988	434.343	0.090
Recr_1956	87.0122	0.445	Recr_1989	87.8889	0.134
Recr_1957	83.0685	0.438	Recr_1990	150.021	0.094
Recr_1958	61.5931	0.466	Recr_1991	409.58	0.061
Recr_1959	59.2843	0.466	Recr_1992	324.969	0.072
Recr_1960	137.26	0.324	Recr_1993	150.655	0.083
Recr_1961	117.511	0.347	Recr_1994	529.855	0.065
Recr_1962	128.459	0.322	Recr_1995	228.069	0.078
Recr_1963	83.5358	0.393	Recr_1996	127.007	0.077
Recr_1964	114.582	0.337	Recr_1997	875.306	0.068
Recr_1965	98.0672	0.360	Recr_1998	552.571	0.056
Recr_1966	108.746	0.330	Recr_1999	320.154	0.058
Recr_1967	79.273	0.384	Recr_2000	166.993	0.069
Recr_1968	139.118	0.284	Recr_2001	186.551	0.069
Recr_1969	65.4587	0.411	Recr_2002	167.477	0.065
Recr_1970	73.172	0.348	Recr_2003	41.3625	0.105
Recr_1971	172.664	0.190	Recr_2004	273.114	0.053
Recr_1972	283.729	0.137	Recr_2005	308.053	0.056
Recr_1973	315.666	0.122	Recr_2006	378.103	0.051
Recr_1974	837.164	0.081	Recr_2007	267.564	0.061
Recr_1975	360.714	0.115	Recr_2008	363.855	0.054
Recr_1976	128.731	0.214	Recr_2009	145.858	0.076
Recr_1977	77.6743	0.321	Recr_2010	217.834	0.066
Recr_1978	48.9164	0.319	Recr_2011	85.4848	0.111
Recr_1979	547.373	0.088	Recr_2012	1049.26	0.054
Recr_1980	73.9028	0.223	Recr_2013	259.382	0.108

Table 2.4.32 Age-0 recruitment estimates for the southern stock.

Quantity	Estimate	CV	Quantity	Estimate	CV
Recr_Virgin	6655.63	0.032	Recr_1981	1740.73	0.157
Recr_Initial	5025.22	0.068	Recr_1982	2357.35	0.166
Recr_1950	5148.88	0.530	Recr_1983	4150.84	0.146
Recr_1951	5356.01	0.522	Recr_1984	6399.85	0.131
Recr_1952	5819.61	0.518	Recr_1985	7775.85	0.127
Recr_1953	6737.59	0.522	Recr_1986	8671.76	0.110
Recr_1954	6988.67	0.500	Recr_1987	7268.59	0.097
Recr_1955	6487.68	0.481	Recr_1988	5019.15	0.094
Recr_1956	5516.79	0.480	Recr_1989	4905.56	0.093
Recr_1957	4441.37	0.485	Recr_1990	5112.96	0.081
Recr_1958	3298.57	0.467	Recr_1991	4674.07	0.074
Recr_1959	2626.38	0.461	Recr_1992	4451	0.076
Recr_1960	2232.4	0.458	Recr_1993	5360.3	0.068
Recr_1961	2016.86	0.453	Recr_1994	7997.85	0.053
Recr_1962	1881.22	0.438	Recr_1995	4210.47	0.062
Recr_1963	1909.81	0.433	Recr_1996	4798.34	0.057
Recr_1964	1871.72	0.411	Recr_1997	4738.96	0.058
Recr_1965	1804.11	0.393	Recr_1998	5261.85	0.055
Recr_1966	1760.45	0.381	Recr_1999	4188.43	0.056
Recr_1967	1871.33	0.385	Recr_2000	4857.79	0.054
Recr_1968	1964.22	0.371	Recr_2001	6150.53	0.051
Recr_1969	1965.08	0.342	Recr_2002	7057.07	0.048
Recr_1970	1763.15	0.325	Recr_2003	7093.06	0.048
Recr_1971	1530.98	0.328	Recr_2004	5737.59	0.051
Recr_1972	1378.87	0.305	Recr_2005	4900.28	0.052
Recr_1973	1347.67	0.255	Recr_2006	4604.34	0.056
Recr_1974	886.637	0.241	Recr_2007	6708.57	0.051
Recr_1975	820.995	0.203	Recr_2008	7514.6	0.051
Recr_1976	757.068	0.176	Recr_2009	8390.21	0.049
Recr_1977	729.074	0.161	Recr_2010	7154.34	0.051
Recr_1978	854.921	0.142	Recr_2011	4850.81	0.062
Recr_1979	1666.36	0.106	Recr_2012	3348.6	0.072
Recr_1980	1507.1	0.142	Recr_2013	3977.19	0.109

Table 2.4.33 Spawning stock biomass estimates for the northern stock.

Quantity	Estimate	CV	Quantity	Estimate	CV
SPB_Virgin	21,361	0.056	SPB_1981	4,055	0.088
SPB_Initial	3,542	0.216	SPB_1982	4,260	0.087
SPB_1950	3,542	0.216	SPB_1983	4,284	0.086
SPB_1951	3,627	0.211	SPB_1984	4,203	0.086
SPB_1952	3,763	0.202	SPB_1985	4,049	0.086
SPB_1953	3,834	0.189	SPB_1986	3,925	0.087
SPB_1954	3,810	0.183	SPB_1987	3,767	0.087
SPB_1955	3,834	0.175	SPB_1988	3,603	0.087
SPB_1956	3,993	0.163	SPB_1989	3,456	0.087
SPB_1957	4,422	0.144	SPB_1990	3,303	0.087
SPB_1958	4,543	0.137	SPB_1991	3,161	0.088
SPB_1959	4,461	0.134	SPB_1992	3,022	0.088
SPB_1960	4,354	0.133	SPB_1993	2,892	0.087
SPB_1961	4,228	0.131	SPB_1994	2,740	0.087
SPB_1962	4,086	0.130	SPB_1995	2,623	0.088
SPB_1963	4,006	0.128	SPB_1996	2,437	0.088
SPB_1964	3,910	0.125	SPB_1997	2,305	0.089
SPB_1965	3,790	0.123	SPB_1998	2,253	0.088
SPB_1966	3,602	0.123	SPB_1999	2,126	0.089
SPB_1967	3,440	0.122	SPB_2000	2,149	0.088
SPB_1968	3,246	0.121	SPB_2001	2,215	0.087
SPB_1969	3,077	0.120	SPB_2002	2,244	0.087
SPB_1970	2,862	0.120	SPB_2003	2,184	0.088
SPB_1971	2,604	0.119	SPB_2004	2,164	0.088
SPB_1972	2,424	0.119	SPB_2005	2,093	0.090
SPB_1973	2,302	0.119	SPB_2006	2,011	0.091
SPB_1974	2,283	0.116	SPB_2007	1,982	0.092
SPB_1975	2,439	0.109	SPB_2008	2,003	0.093
SPB_1976	2,734	0.102	SPB_2009	2,068	0.093
SPB_1977	3,605	0.091	SPB_2010	2,133	0.092
SPB_1978	4,078	0.088	SPB_2011	2,204	0.093
SPB_1979	4,099	0.089	SPB_2012	2,242	0.093
SPB_1980	4,092	0.088	SPB_2013	2,151	0.096

Table 2.4.34 Spawning stock biomass estimates for the southern stock.

Quantity	Estimate	CV	Quantity	Estimate	CV
SPB_Virgin	140,436	0.032	SPB_1981	29,832	0.252
SPB_Initial	96,276	0.075	SPB_1982	27,228	0.252
SPB_1950	87,195	0.292	SPB_1983	25,070	0.250
SPB_1951	86,259	0.290	SPB_1984	23,497	0.243
SPB_1952	85,289	0.287	SPB_1985	22,461	0.231
SPB_1953	84,392	0.285	SPB_1986	22,123	0.215
SPB_1954	83,900	0.282	SPB_1987	22,875	0.193
SPB_1955	84,255	0.278	SPB_1988	25,462	0.165
SPB_1956	85,420	0.276	SPB_1989	30,551	0.138
SPB_1957	87,425	0.275	SPB_1990	37,941	0.117
SPB_1958	90,273	0.275	SPB_1991	46,267	0.102
SPB_1959	93,460	0.275	SPB_1992	53,662	0.093
SPB_1960	96,087	0.275	SPB_1993	59,408	0.085
SPB_1961	97,503	0.273	SPB_1994	63,630	0.078
SPB_1962	97,321	0.272	SPB_1995	66,639	0.072
SPB_1963	95,460	0.270	SPB_1996	68,681	0.066
SPB_1964	92,240	0.269	SPB_1997	70,509	0.060
SPB_1965	88,136	0.267	SPB_1998	73,083	0.055
SPB_1966	83,567	0.266	SPB_1999	76,229	0.051
SPB_1967	78,877	0.265	SPB_2000	78,420	0.047
SPB_1968	74,299	0.264	SPB_2001	79,959	0.045
SPB_1969	69,944	0.263	SPB_2002	81,237	0.043
SPB_1970	65,840	0.261	SPB_2003	82,268	0.041
SPB_1971	62,035	0.259	SPB_2004	82,695	0.040
SPB_1972	58,556	0.257	SPB_2005	83,586	0.039
SPB_1973	55,362	0.255	SPB_2006	85,316	0.037
SPB_1974	52,327	0.252	SPB_2007	87,869	0.037
SPB_1975	49,309	0.249	SPB_2008	90,364	0.036
SPB_1976	46,120	0.248	SPB_2009	92,066	0.035
SPB_1977	42,784	0.247	SPB_2010	93,047	0.035
SPB_1978	39,369	0.248	SPB_2011	93,753	0.035
SPB_1979	35,941	0.250	SPB_2012	95,363	0.035
SPB_1980	32,685	0.252	SPB_2013	97,906	0.034

Table 2.4.35 Estimated numbers-at-age (ages 0-5) for the northern stock.

	Age					
Year	0	1	2	3	4	5
VIRG	299.514	256.508	227.048	204.621	186.449	171.085
INIT	299.514	187.402	114.771	84.3137	69.6304	60.6208
1950	280.989	187.402	114.771	84.3137	69.6304	60.6208
1951	159.791	200.049	133.178	91.4195	72.3376	61.8308
1952	220.462	112.663	140.746	105.566	78.2764	64.1823
1953	312.252	145.876	73.5457	107.044	88.6523	68.7669
1954	623.68	219.906	102.376	58.2237	91.6766	78.7306
1955	267.062	474.418	169.019	85.2181	51.0437	82.3804
1956	179.317	211.334	382.492	144.568	75.7072	46.2
1957	250.924	141.416	169.876	326.772	128.384	68.5183
1958	225.878	187.641	106.705	140.095	285.361	115.18
1959	216.775	171.432	144.217	88.9244	122.931	256.612
1960	206.854	3.80029	1.59383	10.4179	24.0804	59.01
1961	187.322	133.314	2.40845	1.1931	8.68382	21.0735
1962	233.025	109.952	75.7406	1.69726	0.966148	7.48364
1963	170.767	158.333	74.1838	58.7149	1.43869	0.853078
1964	222.521	74.2298	63.3034	43.0409	43.3033	1.17947
1965	198.276	119.184	37.9057	42.029	33.8293	36.6892
1966	248.027	78.0072	42.3727	20.579	29.9702	27.1971
1967	185.116	160.324	49.688	31.8174	17.1708	26.2292
1968	263.949	40.3445	28.5938	18.4403	18.9247	12.5462
1969	188.571	162.757	24.3288	20.8356	15.1694	16.4407
1970	232.514	107.49	89.5319	16.8504	16.7283	13.0095
1971	207.787	21.792	7.13504	19.2207	7.70374	10.6211
1972	258.603	86.7347	8.32275	4.03701	14.0015	6.27222
1973	265.536	154.784	50.4631	5.94202	3.28741	12.0947
1974	684.458	173.578	99.8095	38.1319	4.97194	2.88094
1975	332.171	509.324	130.132	81.9273	33.1797	4.44669
1976	197.137	249.738	386.521	107.527	71.4998	29.7159
1977	299.97	142.934	173.465	313.871	94.9337	64.8977
1978	127.44	222.024	99.5647	140.851	277.608	86.3644
1979	671.829	14.5407	6.64414	20.4324	84.4051	226.458
1980	177.054	440.856	8.68339	5.04839	17.6924	76.1986

Continued

Year	Age					
	0	1	2	3	4	5
1981	361.905	119.435	276.254	6.744	4.397	15.985
1982	184.248	103.330	17.130	112.540	4.901	3.782
1983	1167.300	122.556	61.296	12.968	97.487	4.430
1984	601.664	599.269	49.205	39.152	10.683	86.758
1985	86.274	103.655	40.533	14.496	25.878	8.932
1986	281.086	21.403	13.018	15.581	10.317	22.086
1987	310.708	96.257	5.068	6.618	11.947	8.957
1988	358.232	118.948	26.455	2.748	5.178	10.447
1989	98.702	119.711	25.652	12.888	2.088	4.496
1990	199.998	34.184	29.314	13.247	9.924	1.815
1991	441.220	47.596	4.479	11.510	9.446	8.459
1992	334.057	226.341	19.743	2.901	9.509	8.414
1993	156.004	250.504	77.434	7.695	1.937	8.085
1994	520.429	107.088	41.939	15.878	4.072	1.562
1995	247.030	374.932	25.879	11.799	9.379	3.356
1996	171.195	167.046	53.279	4.460	5.828	7.412
1997	858.529	121.014	34.306	12.938	2.520	4.782
1998	484.454	629.267	29.271	9.445	7.683	2.098
1999	285.798	329.832	96.073	5.434	4.832	6.155
2000	153.785	218.914	113.301	39.266	3.692	4.115
2001	159.668	120.200	88.800	53.176	28.089	3.186
2002	172.171	123.453	44.585	38.625	36.886	24.014
2003	51.422	136.795	54.798	22.421	28.362	32.102
2004	281.951	41.035	69.141	30.927	17.069	24.736
2005	334.097	202.328	5.655	12.097	14.494	12.912
2006	346.400	260.742	97.866	3.091	8.940	12.351
2007	233.824	253.598	56.727	25.760	1.668	6.901
2008	321.344	178.896	108.632	27.835	17.994	1.385
2009	137.046	240.075	72.887	50.880	18.494	14.385
2010	191.370	106.681	117.569	39.956	37.038	15.525
2011	74.394	142.764	40.698	51.804	25.971	29.507
2012	973.936	59.8056	82.8046	25.5358	40.0092	22.3302
2013	252.143	751.837	30.568	44.6011	16.8847	30.8738

Table 2.4.36 Estimated numbers-at-age (ages 0-5) for the southern stock.

	Age					
Year	0	1	2	3	4	5
VIRG	6,656	5,112	4,253	3,653	3,184	2,800
INIT	5,025	3,854	3,033	2,548	2,203	1,930
1950	5,149	2,958	2,335	1,982	1,738	1,548
1951	5,356	3,949	2,309	1,953	1,709	1,520
1952	5,820	4,109	3,110	1,937	1,684	1,494
1953	6,738	4,465	3,249	2,615	1,673	1,475
1954	6,989	5,169	3,542	2,737	2,262	1,466
1955	6,488	5,362	4,122	2,991	2,370	1,983
1956	5,517	4,978	4,283	3,483	2,591	2,078
1957	4,441	4,233	3,966	3,617	3,017	2,272
1958	3,299	3,407	3,352	3,344	3,133	2,647
1959	2,626	2,530	2,667	2,814	2,894	2,748
1960	2,232	2,013	1,928	2,218	2,429	2,536
1961	2,017	1,710	1,494	1,588	1,908	2,126
1962	1,881	1,543	1,225	1,213	1,361	1,668
1963	1,910	1,439	1,080	985	1,036	1,187
1964	1,872	1,460	976	859	839	903
1965	1,804	1,430	976	772	730	730
1966	1,760	1,377	931	764	654	635
1967	1,871	1,343	882	725	646	568
1968	1,964	1,427	826	676	610	560
1969	1,965	1,498	885	634	568	528
1970	1,763	1,499	926	679	534	492
1971	1,531	1,345	939	713	571	462
1972	1,379	1,165	779	703	596	495
1973	1,348	1,047	617	563	581	515
1974	887	1,021	494	426	458	498
1975	821	670	435	328	343	392
1976	757	613	172	239	251	289
1977	729	560	103	80	174	208
1978	855	536	74	44	56	142
1979	1,666	627	62	29	30	45
1980	1,507	1,229	89	27	20	24

Continued

	Age					
Year	0	1	2	3	4	5
1981	1740.730	1141.390	549.871	57.770	20.141	16.469
1982	2357.350	1320.210	522.460	370.639	46.175	17.029
1983	4150.840	1796.960	764.069	387.540	308.226	39.878
1984	6399.850	3164.990	1108.820	581.302	325.399	267.565
1985	7775.850	4874.990	1923.790	848.077	489.817	282.849
1986	8671.760	5947.710	3430.130	1560.430	727.654	428.426
1987	7268.590	6628.620	4752.370	2830.600	1328.470	634.117
1988	5019.150	5521.340	5155.320	3913.490	2421.720	1159.370
1989	4905.560	3827.340	4360.090	4313.900	3379.310	2120.950
1990	5112.960	3748.190	3082.840	3670.230	3726.750	2961.300
1991	4674.070	3906.080	2999.850	2585.280	3165.460	3264.130
1992	4451.000	3549.340	3008.760	2440.120	2194.180	2753.310
1993	5360.300	3390.420	2803.530	2474.790	2080.810	1913.340
1994	7997.850	4116.360	2696.590	2292.660	2101.190	1809.700
1995	4210.470	6141.940	3285.400	2199.010	1936.990	1822.510
1996	4798.340	3233.440	4920.400	2695.480	1864.480	1681.720
1997	4738.960	3685.000	2602.640	4064.790	2297.600	1623.900
1998	5261.850	3639.460	2974.750	2159.270	3473.190	2002.780
1999	4188.430	4041.330	2974.610	2487.710	1849.420	3032.080
2000	4857.790	3216.930	3288.160	2469.770	2120.760	1611.670
2001	6150.530	3731.040	2597.340	2693.890	2085.920	1840.830
2002	7057.070	4723.790	2996.240	2115.010	2265.980	1806.150
2003	7093.060	5420.380	3835.160	2476.840	1800.170	1972.580
2004	5737.590	5448.010	4346.750	3108.470	2089.280	1560.930
2005	4900.280	4406.920	4382.050	3565.750	2640.210	1816.410
2006	4604.340	3763.790	3527.950	3560.730	3007.340	2286.880
2007	6708.570	3536.500	3055.310	2914.910	3025.630	2613.590
2008	7514.600	5152.690	2829.430	2486.930	2460.910	2624.000
2009	8390.210	5771.780	4110.170	2287.050	2087.650	2127.280
2010	7154.340	6444.360	4702.030	3419.990	1951.420	1815.900
2011	4850.810	5495.060	5121.870	3801.260	2872.400	1685.350
2012	3348.6	3725.8	4418.59	4184.29	3212.38	2490.46
2013	3977.19	2571.99	3017.32	3612.78	3531.36	2786.4

Table 2.4.37 Spawning potential ratio estimates for the northern stock.

Quantity	Estimate	CV	Quantity	Estimate	CV
SPRratio_1950	0.357	0.097	SPRratio_1982	0.380	0.115
SPRratio_1951	0.369	0.131	SPRratio_1983	0.025	0.014
SPRratio_1952	0.323	0.120	SPRratio_1984	0.012	0.006
SPRratio_1953	0.334	0.108	SPRratio_1985	0.055	0.023
SPRratio_1954	0.449	0.105	SPRratio_1986	0.063	0.015
SPRratio_1955	0.554	0.149	SPRratio_1987	0.087	0.019
SPRratio_1956	0.532	0.195	SPRratio_1988	0.040	0.011
SPRratio_1957	0.327	0.132	SPRratio_1989	0.028	0.008
SPRratio_1958	0.273	0.147	SPRratio_1990	0.045	0.015
SPRratio_1959	0.318	0.166	SPRratio_1991	0.187	0.037
SPRratio_1960	0.343	0.145	SPRratio_1992	0.181	0.042
SPRratio_1961	0.313	0.137	SPRratio_1993	0.018	0.005
SPRratio_1962	0.345	0.148	SPRratio_1994	0.096	0.026
SPRratio_1963	0.294	0.138	SPRratio_1995	0.011	0.003
SPRratio_1964	0.237	0.119	SPRratio_1996	0.027	0.010
SPRratio_1965	0.164	0.089	SPRratio_1997	0.544	0.088
SPRratio_1966	0.187	0.110	SPRratio_1998	0.016	0.005
SPRratio_1967	0.127	0.089	SPRratio_1999	0.138	0.025
SPRratio_1968	0.159	0.100	SPRratio_2000	0.156	0.026
SPRratio_1969	0.084	0.065	SPRratio_2001	0.168	0.033
SPRratio_1970	0.028	0.029	SPRratio_2002	0.100	0.023
SPRratio_1971	0.125	0.075	SPRratio_2003	0.217	0.051
SPRratio_1972	0.297	0.118	SPRratio_2004	0.060	0.026
SPRratio_1973	0.368	0.125	SPRratio_2005	0.161	0.033
SPRratio_1974	0.509	0.121	SPRratio_2006	0.084	0.022
SPRratio_1975	0.510	0.117	SPRratio_2007	0.169	0.033
SPRratio_1976	0.467	0.114	SPRratio_2008	0.156	0.030
SPRratio_1977	0.316	0.138	SPRratio_2009	0.219	0.038
SPRratio_1978	0.040	0.030	SPRratio_2010	0.141	0.029
SPRratio_1979	0.361	0.099	SPRratio_2011	0.351	0.058
SPRratio_1980	0.302	0.076	SPRratio_2012	0.059	0.017
SPRratio_1981	0.215	0.084	SPRratio_2013	0.039	0.012

Table 2.4.38 Spawning potential ratio estimates for the southern stock.

Quantity	Estimate	CV	Quantity	Estimate	CV
SPRratio_1950	0.891	0.463	SPRratio_1982	0.542	0.216
SPRratio_1951	0.902	0.459	SPRratio_1983	0.606	0.195
SPRratio_1952	0.912	0.463	SPRratio_1984	0.602	0.161
SPRratio_1953	0.919	0.463	SPRratio_1985	0.767	0.153
SPRratio_1954	0.928	0.470	SPRratio_1986	0.877	0.141
SPRratio_1955	0.931	0.455	SPRratio_1987	0.847	0.122
SPRratio_1956	0.928	0.435	SPRratio_1988	0.890	0.126
SPRratio_1957	0.921	0.430	SPRratio_1989	0.924	0.103
SPRratio_1958	0.905	0.430	SPRratio_1990	0.910	0.092
SPRratio_1959	0.867	0.413	SPRratio_1991	0.812	0.071
SPRratio_1960	0.829	0.399	SPRratio_1992	0.864	0.054
SPRratio_1961	0.783	0.389	SPRratio_1993	0.863	0.051
SPRratio_1962	0.752	0.380	SPRratio_1994	0.854	0.049
SPRratio_1963	0.716	0.367	SPRratio_1995	0.867	0.049
SPRratio_1964	0.697	0.361	SPRratio_1996	0.889	0.051
SPRratio_1965	0.667	0.340	SPRratio_1997	0.898	0.048
SPRratio_1966	0.648	0.319	SPRratio_1998	0.924	0.052
SPRratio_1967	0.606	0.305	SPRratio_1999	0.904	0.052
SPRratio_1968	0.611	0.307	SPRratio_2000	0.869	0.049
SPRratio_1969	0.612	0.308	SPRratio_2001	0.850	0.051
SPRratio_1970	0.622	0.281	SPRratio_2002	0.893	0.050
SPRratio_1971	0.554	0.250	SPRratio_2003	0.852	0.042
SPRratio_1972	0.475	0.232	SPRratio_2004	0.874	0.043
SPRratio_1973	0.391	0.209	SPRratio_2005	0.846	0.043
SPRratio_1974	0.332	0.166	SPRratio_2006	0.889	0.046
SPRratio_1975	0.148	0.105	SPRratio_2007	0.854	0.045
SPRratio_1976	0.074	0.054	SPRratio_2008	0.834	0.044
SPRratio_1977	0.049	0.030	SPRratio_2009	0.905	0.044
SPRratio_1978	0.038	0.020	SPRratio_2010	0.827	0.041
SPRratio_1979	0.051	0.024	SPRratio_2011	0.861	0.042
SPRratio_1980	0.295	0.082	SPRratio_2012	0.870	0.046
SPRratio_1981	0.355	0.145	SPRratio_2013	0.798	0.043

Table 2.4.39 Fishing mortality necessary to achieve the 0.4 SPR target and the spawning stock biomass and yield associated with sustaining fishing at the Fstd_SPRtgt level for the northern stock.

Quantity	Estimate	CV
SSB_SPRtgt	8,512.03	0.056
Fstd_SPRtgt	0.11	0.015
TotYield_SPRtgt	441.97	0.059

Table 2.4.40 Fishing mortality necessary to achieve the 0.4 SPR target and the spawning stock biomass and yield associated with sustaining fishing at the Fstd_SPRtgt level for the southern stock.

Quantity	Estimate	CV
SSB_SPRtgt	55,961.20	0.032
Fstd_SPRtgt	0.11	0.012
TotYield_SPRtgt	4,841.14	0.039

Table 2.4.41 Terminal year and reference point estimates from sensitivity analysis.

Configuration	Virgin SSB	2013 SSB	Virgin R	2013 R	2013 SPR	2013 F	SSB Tgt	F Tgt	Yield Tgt
Base	21,361.20	2,150.95	338.59	259.38	0.039	0.674	8,512.03	0.112	441.97
1981 Start Year	20,300.80	2,173.93	319.22	267.47	0.037	0.683	8,089.47	0.113	415.97
1989 Start Year	18,575.00	2,229.94	295.07	259.41	0.038	0.683	7,401.78	0.113	381.77
Big Equilibrium Catch	24,738.40	2,374.17	388.00	268.88	0.041	0.668	9,857.77	0.114	502.49
Estimated Initial Selectivity	20,997.10	2,258.30	329.89	268.94	0.040	0.667	8,366.95	0.113	427.85
High M	18,822.60	2,302.72	347.50	268.97	0.044	0.662	7,500.46	0.117	425.70
Little Equilibrium Catch	20,680.90	2,307.84	324.35	253.37	0.039	0.678	8,240.94	0.114	420.73
Low M	24,980.90	2,341.12	328.95	248.46	0.035	0.689	9,954.40	0.110	453.84
No Tag Data	18,902.00	1,464.12	296.78	228.27	0.021	0.796	7,532.10	0.109	408.06
No Tag Dispersion	18,431.00	1,342.94	290.02	223.91	0.019	0.809	7,344.42	0.108	404.14
Steepness = 0.92	24,526.50	2,426.16	384.57	257.19	0.042	0.665	9,506.15	0.114	483.41
Unfished Initial Population	20,254.90	3,479.01	316.55	257.74	0.065	0.585	8,071.20	0.116	399.42

Table 2.4.42 Estimates from retrospective analysis.

	Terminal Year				
Quantity	2009	2010	2011	2012	2013
SSB Tgt	7,936.40	8,168.91	7,615.97	8,686.26	8,512.03
Virgin SSB	19,916.60	20,500.10	19,112.50	21,798.40	21,361.20
Initial SSB	4,106.12	4,119.97	3,731.96	3,483.50	3,541.52
2005 SSB	1,901.60	2,070.42	1,869.39	1,997.10	2,093.07
2006 SSB	1,837.88	2,000.79	1,797.43	1,919.94	2,010.53
2007 SSB	1,847.66	2,004.74	1,782.30	1,899.21	1,981.65
2008 SSB	1,908.13	2,067.79	1,817.13	1,927.76	2,003.36
2009 SSB	1,996.07	2,177.07	1,893.88	1,998.95	2,068.49
2010 SSB	-	2,271.47	1,965.22	2,074.71	2,132.55
2011 SSB	-	-	2,017.75	2,159.80	2,203.86
2012 SSB	-	-	-	2,209.83	2,242.18
2013 SSB	-	-	-	-	2,150.95
Virgin R	311.64	320.31	300.85	344.96	338.59
Initial R	311.64	320.31	300.85	344.96	338.59
2005 R	298.14	307.07	301.16	312.04	308.05
2006 R	364.82	383.57	369.80	378.56	378.10
2007 R	253.65	268.25	262.91	275.77	267.56
2008 R	311.71	368.31	353.24	370.51	363.86
2009 R	92.54	135.89	133.56	149.44	145.86
2010 R	-	146.09	167.61	226.30	217.83
2011 R	-	-	72.18	94.02	85.48
2012 R	-	-	-	1,152.85	1,049.26
2013 R	-	-	-	-	259.38
F Tgt	0.112	0.112	0.111	0.111	0.112
2005 F	0.226	0.219	0.240	0.234	0.235
2006 F	0.286	0.282	0.325	0.329	0.331
2007 F	0.279	0.264	0.297	0.299	0.296
2008 F	0.266	0.239	0.265	0.263	0.264
2009 F	0.338	0.258	0.291	0.279	0.281
2010 F	-	0.272	0.305	0.261	0.265
2011 F	-	-	0.222	0.154	0.159
2012 F	-	-	-	0.182	0.204
2013 F	-	-	-	-	0.674
Yield Tgt	410.57	422.28	395.78	462.65	441.97
2005 SPR	0.177	0.184	0.156	0.160	0.161
2006 SPR	0.124	0.125	0.090	0.086	0.084
2007 SPR	0.192	0.209	0.172	0.164	0.169
2008 SPR	0.159	0.186	0.157	0.157	0.156
2009 SPR	0.151	0.243	0.213	0.223	0.219
2010 SPR	-	0.133	0.107	0.145	0.141
2011 SPR	-	-	0.197	0.364	0.351
2012 SPR	-	-	-	0.080	0.059
2013 SPR	-	-	-	-	0.039

Table 3.2.1 Likelihood components of the northern and southern red drum stock assessment. Models showing the fisheries included in the total catch and proportion-at-age components, in indexes of abundance, the tag-based fishing mortality estimates, and the minimized deviations for estimating the initial age structure, annual recruitment, and selectivity. Shown are the data sample size (N), the standardized total sum of squares (TSS, observation differenced with a logical mean, e.g. across years quantity divide by the observed standard deviation), the standardized residual sum of squares (RSS), and the standard deviation of the standardized residuals (SDSR). The standard deviation used to „standardize" the proportion-at-age residuals was calculated as defined for a multinomial, sqrt(Npq).

Northern Stock

Components	N	TSS	RSS	NegLL	SDSR
Total Kill					
Comm GN & BS	25	84,705.83	0.10	-115.08	0.06
Comm other	25	165,558.94	0.00	-115.13	0.01
Rec kept	25	140.26	119.89	26.52	2.05
Rec live release deaths	25	350.71	48.84	-5.06	1.39
Totals	100	250,755.74	168.83	-208.74	
Proportion at age					
Comm GN & BS	175			384.21	
Comm other	175			136.38	
Rec kept	175			229.42	
Rec live release deaths	175			257.34	
Totals	700			1,007.35	
Indices of Abundance					
NC IGNS age 1	13	207.19	61.04	9.28	2.16
NC IGNS age 2	13	309.64	77.35	20.93	2.42
NC JAI age 1	22	333.08	256.36	95.35	3.41
MRFSS ages 1-3	23	855.94	256.64	74.37	3.31
NC Longline	7	4.49	7.26	-8.56	1.02
Totals	78	1,710.34	658.64	191.38	
Auxiliary Observations					
F kept-at-age	88	3,248.35	758.38	260.52	3.44
Full F release	19	354.87	12.98	-23.93	0.71
Totals	107	3,603.22	771.36	236.59	

Other Deviations		
Selectivities		57.76
Totals		57.76
Grand Totals	985	1,284.34

Table. 3.2.1. (con't.).
Southern Stock

Components	N	TSS	RSS	NegLL	SDSR
Total Kill					
Rec kept FL	25	177.51	1.13	-43.57	0.21
Rec kept GA	25	116.15	1.32	-37.70	0.23
Rec kept SC	25	86.67	2.47	-32.10	0.31
Rec live release deaths FL	25	198.77	0.08	-43.17	0.06
Rec live release d. GA/SC	25	310.38	0.07	-36.81	0.05
Totals	125	889.47	5.07	-193.35	
Proportion at age					
Rec kept FL	175			546.01	
Rec kept GA	175			591.26	
Rec kept SC	175			912.12	
Rec live release deaths FL	175			90.71	
Rec live release d. GA/SC	175			86.77	
Totals	875			2,226.87	
Indices of Abundance					
FL seine, age 1	12	26.43	17.65	-0.35	1.20
GA gillnet, age 1	11	71.48	33.71	-1.07	1.75
SC stopnet, age 1	6	9.99	11.84	-2.77	1.37
SC trammel, age 1	20	276.83	98.88	11.67	2.22
SC trammel, age 2	20	253.44	104.77	14.89	2.29
Fl haulseine, age 2	17	28.34	49.57	-4.46	1.71
FL haulseine, age 3	17	20.44	53.86	2.78	1.78
MRFSS/MRIP tot catch	23	411.08	70.22	-35.96	1.75
SC 1-mile longl	11	44.97	51.55	8.36	2.15
SC 1/3-mile longl	7	34.19	32.99	2.35	2.15
GA longl	7	32.48	30.88	5.76	2.10
Totals	151	1,209.65	555.92	1.19	
Other Deviations					
Selectivities				37.54	
Totals				37.54	

Grand Totals	1,151	2,072.26

Table 3.2.2 Parameter estimates and standard deviations for the northern stock model.

No.	Description	Variable Name	Value	Std Deviation
1	age-4 sel rel. to age-3,retained fleet	sel04	-2.789	0.051
2	age-5 sel rel. to age-3,retained fleet	sel05	-4.546	0.528
3	age-4 sel rel. to age-3,discard fleet	sel04b2	0.089	0.695
4	age-5 sel rel. to age-3,discard fleet	sel05b2	-1.818	0.379
5	unscaled log sel: flt 1, selblk 1, age	fill_log_sel	-0.144	0.268
6	unscaled log sel: flt 1, selblk 1, age	fill_log_sel	0.332	0.278
7	unscaled log sel: flt 1, selblk 1, age	fill_log_sel	-0.188	0.258
8	unscaled log sel: flt 1, selblk 2, age	fill_log_sel	-0.557	0.217
9	unscaled log sel: flt 1, selblk 2, age	fill_log_sel	0.714	0.213
10	unscaled log sel: flt 1, selblk 2, age	fill_log_sel	-0.157	0.224
11	unscaled log sel: flt 1, selblk 3, age	fill_log_sel	-0.831	0.190
12	unscaled log sel: flt 1, selblk 3, age	fill_log_sel	1.337	0.185
13	unscaled log sel: flt 1, selblk 3, age	fill_log_sel	-0.506	0.189
14	unscaled log sel: flt 2, selblk 1, age	fill_log_sel	-0.257	0.274
15	unscaled log sel: flt 2, selblk 1, age	fill_log_sel	0.280	0.284
16	unscaled log sel: flt 2, selblk 1, age	fill_log_sel	-0.022	0.285
17	unscaled log sel: flt 2, selblk 2, age	fill_log_sel	-0.695	0.253
18	unscaled log sel: flt 2, selblk 2, age	fill_log_sel	0.559	0.243
19	unscaled log sel: flt 2, selblk 2, age	fill_log_sel	0.136	0.258
20	unscaled log sel: flt 2, selblk 3, age	fill_log_sel	-0.796	0.237
21	unscaled log sel: flt 2, selblk 3, age	fill_log_sel	0.675	0.224
22	unscaled log sel: flt 2, selblk 3, age	fill_log_sel	0.122	0.230
23	unscaled log sel: flt 3, selblk 1, age	fill_log_sel	-0.200	0.229
24	unscaled log sel: flt 3, selblk 1, age	fill_log_sel	0.463	0.231
25	unscaled log sel: flt 3, selblk 1, age	fill_log_sel	-0.264	0.229
26	unscaled log sel: flt 3, selblk 2, age	fill_log_sel	-0.667	0.185
27	unscaled log sel: flt 3, selblk 2, age	fill_log_sel	0.641	0.184
28	unscaled log sel: flt 3, selblk 2, age	fill_log_sel	0.026	0.184
29	unscaled log sel: flt 3, selblk 3, age	fill_log_sel	-1.089	0.197
30	unscaled log sel: flt 3, selblk 3, age	fill_log_sel	1.508	0.190
31	unscaled log sel: flt 3, selblk 3, age	fill_log_sel	-0.419	0.191
32	unscaled log sel: flt 4, selblk 1, age	fill_log_sel	0.286	0.286
33	unscaled log sel: flt 4, selblk 1, age	fill_log_sel	0.006	0.302
34	unscaled log sel: flt 4, selblk 1, age	fill_log_sel	-0.292	0.292
35	unscaled log sel: flt 4, selblk 2, age	fill_log_sel	0.379	0.226
36	unscaled log sel: flt 4, selblk 2, age	fill_log_sel	0.100	0.244
37	unscaled log sel: flt 4, selblk 2, age	fill_log_sel	-0.479	0.257
38	unscaled log sel: flt 4, selblk 3, age	fill_log_sel	-0.501	0.222
39	unscaled log sel: flt 4, selblk 3, age	fill_log_sel	0.251	0.188
40	unscaled log sel: flt 4, selblk 3, age	fill_log_sel	0.251	0.188
41	log Fmultiplier, flt 1, 1989	log_Fmult	0.066	0.314
42	log Fmultiplier, flt 1, 1990	log_Fmult	0.080	0.369
43	log Fmultiplier, flt 1, 1991	log_Fmult	-1.838	0.355
44	log Fmultiplier, flt 1, 1992	log_Fmult	-2.401	0.117
45	log Fmultiplier, flt 1, 1993	log_Fmult	-1.867	0.098
46	log Fmultiplier, flt 1, 1994	log_Fmult	-2.116	0.139
47	log Fmultiplier, flt 1, 1995	log_Fmult	-1.933	0.090
48	log Fmultiplier, flt 1, 1996	log_Fmult	-2.419	0.116
49	log Fmultiplier, flt 1, 1997	log_Fmult	-3.317	0.140

50	log Fmultiplier, flt 1, 1998	log_Fmult	-1.570	0.113
51	log Fmultiplier, flt 1, 1999	log_Fmult	-1.534	0.069
52	log Fmultiplier, flt 1, 2000	log_Fmult	-1.717	0.076
53	log Fmultiplier, flt 1, 2001	log_Fmult	-1.382	0.102
54	log Fmultiplier, flt 1, 2002	log_Fmult	-2.328	0.096
55	log Fmultiplier, flt 1, 2003	log_Fmult	-2.778	0.078
56	log Fmultiplier, flt 1, 2004	log_Fmult	-2.055	0.102
57	log Fmultiplier, flt 1, 2005	log_Fmult	-1.917	0.088
58	log Fmultiplier, flt 1, 2006	log_Fmult	-2.171	0.084
59	log Fmultiplier, flt 1, 2007	log_Fmult	-1.871	0.083
60	log Fmultiplier, flt 1, 2008	log_Fmult	-1.491	0.093
61	log Fmultiplier, flt 1, 2009	log_Fmult	-2.267	0.078
62	log Fmultiplier, flt 1, 2010	log_Fmult	-1.626	0.091
63	log Fmultiplier, flt 1, 2011	log_Fmult	-2.412	0.104
64	log Fmultiplier, flt 1, 2012	log_Fmult	-2.379	0.107
65	log Fmultiplier, flt 1, 2013	log_Fmult	-2.110	0.073
66	log Fmultiplier, flt 2, 1989	log_Fmult	-1.539	0.335
67	log Fmultiplier, flt 2, 1990	log_Fmult	-1.821	0.365
68	log Fmultiplier, flt 2, 1991	log_Fmult	-2.754	0.352
69	log Fmultiplier, flt 2, 1992	log_Fmult	-4.403	0.145
70	log Fmultiplier, flt 2, 1993	log_Fmult	-4.068	0.120
71	log Fmultiplier, flt 2, 1994	log_Fmult	-4.038	0.180
72	log Fmultiplier, flt 2, 1995	log_Fmult	-3.403	0.109
73	log Fmultiplier, flt 2, 1996	log_Fmult	-4.509	0.149
74	log Fmultiplier, flt 2, 1997	log_Fmult	-4.621	0.186
75	log Fmultiplier, flt 2, 1998	log_Fmult	-3.610	0.143
76	log Fmultiplier, flt 2, 1999	log_Fmult	-5.174	0.090
77	log Fmultiplier, flt 2, 2000	log_Fmult	-5.202	0.109
78	log Fmultiplier, flt 2, 2001	log_Fmult	-5.232	0.167
79	log Fmultiplier, flt 2, 2002	log_Fmult	-5.111	0.129
80	log Fmultiplier, flt 2, 2003	log_Fmult	-5.470	0.081
81	log Fmultiplier, flt 2, 2004	log_Fmult	-6.136	0.188
82	log Fmultiplier, flt 2, 2005	log_Fmult	-5.425	0.107
83	log Fmultiplier, flt 2, 2006	log_Fmult	-5.213	0.117
84	log Fmultiplier, flt 2, 2007	log_Fmult	-4.851	0.103
85	log Fmultiplier, flt 2, 2008	log_Fmult	-5.225	0.155
86	log Fmultiplier, flt 2, 2009	log_Fmult	-5.382	0.083
87	log Fmultiplier, flt 2, 2010	log_Fmult	-5.449	0.159
88	log Fmultiplier, flt 2, 2011	log_Fmult	-5.413	0.116
89	log Fmultiplier, flt 2, 2012	log_Fmult	-5.146	0.202
90	log Fmultiplier, flt 2, 2013	log_Fmult	-4.685	0.074
91	log Fmultiplier, flt 3, 1989	log_Fmult	0.779	0.248
92	log Fmultiplier, flt 3, 1990	log_Fmult	0.117	0.345
93	log Fmultiplier, flt 3, 1991	log_Fmult	-0.878	0.249
94	log Fmultiplier, flt 3, 1992	log_Fmult	-0.676	0.091
95	log Fmultiplier, flt 3, 1993	log_Fmult	-0.327	0.084
96	log Fmultiplier, flt 3, 1994	log_Fmult	-1.247	0.103
97	log Fmultiplier, flt 3, 1995	log_Fmult	-1.792	0.106
98	log Fmultiplier, flt 3, 1996	log_Fmult	-1.807	0.128
99	log Fmultiplier, flt 3, 1997	log_Fmult	-0.977	0.100
100	log Fmultiplier, flt 3, 1998	log_Fmult	-1.043	0.093
101	log Fmultiplier, flt 3, 1999	log_Fmult	-2.202	0.144

102	log Fmultiplier, flt 3, 2000	log_Fmult	-1.637	0.120
103	log Fmultiplier, flt 3, 2001	log_Fmult	-0.781	0.120
104	log Fmultiplier, flt 3, 2002	log_Fmult	-0.485	0.124
105	log Fmultiplier, flt 3, 2003	log_Fmult	-1.559	0.178
106	log Fmultiplier, flt 3, 2004	log_Fmult	-1.738	0.251
107	log Fmultiplier, flt 3, 2005	log_Fmult	-1.888	0.262
108	log Fmultiplier, flt 3, 2006	log_Fmult	-1.648	0.324
109	log Fmultiplier, flt 3, 2007	log_Fmult	-1.620	0.264
110	log Fmultiplier, flt 3, 2008	log_Fmult	-1.538	0.215
111	log Fmultiplier, flt 3, 2009	log_Fmult	-2.044	0.199
112	log Fmultiplier, flt 3, 2010	log_Fmult	-1.281	0.160
113	log Fmultiplier, flt 3, 2011	log_Fmult	-1.605	0.208
114	log Fmultiplier, flt 3, 2012	log_Fmult	-1.053	0.395
115	log Fmultiplier, flt 3, 2013	log_Fmult	-1.308	0.213
116	log Fmultiplier, flt 4, 1989	log_Fmult	-3.784	0.246
117	log Fmultiplier, flt 4, 1990	log_Fmult	-3.287	0.312
118	log Fmultiplier, flt 4, 1991	log_Fmult	-3.377	0.105
119	log Fmultiplier, flt 4, 1992	log_Fmult	-4.110	0.136
120	log Fmultiplier, flt 4, 1993	log_Fmult	-3.134	0.100
121	log Fmultiplier, flt 4, 1994	log_Fmult	-2.162	0.081
122	log Fmultiplier, flt 4, 1995	log_Fmult	-2.729	0.142
123	log Fmultiplier, flt 4, 1996	log_Fmult	-3.944	0.193
124	log Fmultiplier, flt 4, 1997	log_Fmult	-3.239	0.101
125	log Fmultiplier, flt 4, 1998	log_Fmult	-3.358	0.099
126	log Fmultiplier, flt 4, 1999	log_Fmult	-3.650	0.110
127	log Fmultiplier, flt 4, 2000	log_Fmult	-3.370	0.104
128	log Fmultiplier, flt 4, 2001	log_Fmult	-3.260	0.117
129	log Fmultiplier, flt 4, 2002	log_Fmult	-3.174	0.149
130	log Fmultiplier, flt 4, 2003	log_Fmult	-3.984	0.178
131	log Fmultiplier, flt 4, 2004	log_Fmult	-4.044	0.156
132	log Fmultiplier, flt 4, 2005	log_Fmult	-3.301	0.266
133	log Fmultiplier, flt 4, 2006	log_Fmult	-2.908	0.241
134	log Fmultiplier, flt 4, 2007	log_Fmult	-3.247	0.201
135	log Fmultiplier, flt 4, 2008	log_Fmult	-2.791	0.170
136	log Fmultiplier, flt 4, 2009	log_Fmult	-3.242	0.243
137	log Fmultiplier, flt 4, 2010	log_Fmult	-2.935	0.143
138	log Fmultiplier, flt 4, 2011	log_Fmult	-3.580	0.263
139	log Fmultiplier, flt 4, 2012	log_Fmult	-1.415	0.258
140	log Fmultiplier, flt 4, 2013	log_Fmult	-3.079	0.188
141	log abundance, 1989, age 2	log_initN	11.734	0.380
142	log abundance, 1989, age 3	log_initN	9.788	0.903
143	log abundance, 1989, age 4	log_initN	9.142	2.904
144	log abundance, 1989, age 5	log_initN	9.449	5.705
145	log abundance, 1989, age 6	log_initN	9.318	8.036
146	log abundance, 1989, age 7+	log_initN	13.807	0.624
147	log abundance, age 1, 1989	log_recruits	11.934	0.311
148	log abundance, age 1, 1990	log_recruits	12.035	0.192
149	log abundance, age 1, 1991	log_recruits	13.296	0.109
150	log abundance, age 1, 1992	log_recruits	13.337	0.103
151	log abundance, age 1, 1993	log_recruits	12.495	0.167
152	log abundance, age 1, 1994	log_recruits	13.201	0.089
153	log abundance, age 1, 1995	log_recruits	12.756	0.124

154	log abundance, age 1, 1996	log_recruits	12.313	0.123
155	log abundance, age 1, 1997	log_recruits	13.363	0.110
156	log abundance, age 1, 1998	log_recruits	13.741	0.067
157	log abundance, age 1, 1999	log_recruits	13.310	0.078
158	log abundance, age 1, 2000	log_recruits	12.109	0.134
159	log abundance, age 1, 2001	log_recruits	12.971	0.114
160	log abundance, age 1, 2002	log_recruits	13.450	0.081
161	log abundance, age 1, 2003	log_recruits	11.406	0.135
162	log abundance, age 1, 2004	log_recruits	13.090	0.084
163	log abundance, age 1, 2005	log_recruits	13.223	0.081
164	log abundance, age 1, 2006	log_recruits	13.448	0.077
165	log abundance, age 1, 2007	log_recruits	12.671	0.099
166	log abundance, age 1, 2008	log_recruits	13.725	0.072
167	log abundance, age 1, 2009	log_recruits	12.564	0.097
168	log abundance, age 1, 2010	log_recruits	12.733	0.102
169	log abundance, age 1, 2011	log_recruits	12.137	0.131
170	log abundance, age 1, 2012	log_recruits	14.482	0.062
171	log abundance, age 1, 2013	log_recruits	12.737	0.154
172	log (index 1 to true abundance)	log_q_MLE	-13.021	0.069
173	log (index 2 to true abundance)	log_q_MLE	-12.928	0.084
174	log (index 3 to true abundance)	log_q_MLE	-13.070	0.060
175	log (index 4 to true abundance)	log_q_MLE	-13.567	0.050
176	log (index 4 to true abundance)	log_q_MLE	-13.970	0.150

Table 3.2.3 Parameter estimates and standard deviations for the southern stock model.

No.	Description	Var. Name	Value	Std Deviation
1	age-4 sel rel. to age-3,retained fleet	sel04	-0.065	0.279
2	age-5 sel rel. to age-3,retained fleet	sel05	-3.552	0.263
3	age-4 sel rel. to age-3,discard fleet	sel04b2	10.000	1.312
4	age-5 sel rel. to age-3,discard fleet	sel05b2	-1.811	0.438
5	unscaled log sel: flt 1, selblk 1, age 1	fill_log_sel	-1.247	0.210
6	unscaled log sel: flt 1, selblk 1, age 2	fill_log_sel	0.498	0.190
7	unscaled log sel: flt 1, selblk 1, age 3	fill_log_sel	0.748	0.203
8	unscaled log sel: flt 2, selblk 1, age 1	fill_log_sel	0.112	0.271
9	unscaled log sel: flt 2, selblk 1, age 2	fill_log_sel	0.079	0.275
10	unscaled log sel: flt 2, selblk 1, age 3	fill_log_sel	-0.191	0.281
11	unscaled log sel: flt 2, selblk 2, age 1	fill_log_sel	0.446	0.208
12	unscaled log sel: flt 2, selblk 2, age 2	fill_log_sel	0.143	0.208
13	unscaled log sel: flt 2, selblk 2, age 3	fill_log_sel	-0.588	0.227
14	unscaled log sel: flt 2, selblk 3, age 1	fill_log_sel	0.498	0.197
15	unscaled log sel: flt 2, selblk 3, age 2	fill_log_sel	0.450	0.189
16	unscaled log sel: flt 2, selblk 3, age 3	fill_log_sel	-0.948	0.213
17	unscaled log sel: flt 3, selblk 1, age 1	fill_log_sel	-0.250	0.229
18	unscaled log sel: flt 3, selblk 1, age 2	fill_log_sel	0.493	0.217
19	unscaled log sel: flt 3, selblk 1, age 3	fill_log_sel	-0.243	0.240
20	unscaled log sel: flt 3, selblk 2, age 1	fill_log_sel	-0.269	0.210
21	unscaled log sel: flt 3, selblk 2, age 2	fill_log_sel	0.590	0.194
22	unscaled log sel: flt 3, selblk 2, age 3	fill_log_sel	-0.321	0.217
23	unscaled log sel: flt 3, selblk 3, age 1	fill_log_sel	-0.893	0.201
24	unscaled log sel: flt 3, selblk 3, age 2	fill_log_sel	0.865	0.185
25	unscaled log sel: flt 3, selblk 3, age 3	fill_log_sel	0.028	0.202
26	unscaled log sel: flt 4, selblk 1, age 1	fill_log_sel	-0.316	0.246
27	unscaled log sel: flt 4, selblk 1, age 2	fill_log_sel	-0.056	0.245
28	unscaled log sel: flt 4, selblk 1, age 3	fill_log_sel	0.372	0.243
29	unscaled log sel: flt 5, selblk 1, age 1	fill_log_sel	0.150	0.292
30	unscaled log sel: flt 5, selblk 1, age 2	fill_log_sel	0.007	0.297
31	unscaled log sel: flt 5, selblk 1, age 3	fill_log_sel	-0.157	0.294
32	unscaled log sel: flt 5, selblk 2, age 1	fill_log_sel	-0.452	0.254
33	unscaled log sel: flt 5, selblk 2, age 2	fill_log_sel	-0.045	0.251
34	unscaled log sel: flt 5, selblk 2, age 3	fill_log_sel	0.497	0.245
35	log Fmultiplier, flt 1, 1989	log_Fmult	-3.086	0.678
36	log Fmultiplier, flt 1, 1990	log_Fmult	-2.939	0.673
37	log Fmultiplier, flt 1, 1991	log_Fmult	-2.293	0.603
38	log Fmultiplier, flt 1, 1992	log_Fmult	-2.505	0.575
39	log Fmultiplier, flt 1, 1993	log_Fmult	-3.070	0.548
40	log Fmultiplier, flt 1, 1994	log_Fmult	-2.525	0.545
41	log Fmultiplier, flt 1, 1995	log_Fmult	-2.798	0.570
42	log Fmultiplier, flt 1, 1996	log_Fmult	-2.245	0.750
43	log Fmultiplier, flt 1, 1997	log_Fmult	-3.157	0.569
44	log Fmultiplier, flt 1, 1998	log_Fmult	-2.628	0.526
45	log Fmultiplier, flt 1, 1999	log_Fmult	-2.417	0.483
46	log Fmultiplier, flt 1, 2000	log_Fmult	-1.969	0.491
47	log Fmultiplier, flt 1, 2001	log_Fmult	-1.921	0.513
48	log Fmultiplier, flt 1, 2002	log_Fmult	-2.460	0.542
49	log Fmultiplier, flt 1, 2003	log_Fmult	-2.466	0.509

50	log Fmultiplier, flt 1, 2004	log_Fmult	-2.641	0.511
51	log Fmultiplier, flt 1, 2005	log_Fmult	-2.252	0.513
52	log Fmultiplier, flt 1, 2006	log_Fmult	-2.415	0.514
53	log Fmultiplier, flt 1, 2007	log_Fmult	-2.219	0.490
54	log Fmultiplier, flt 1, 2008	log_Fmult	-2.209	0.508
55	log Fmultiplier, flt 1, 2009	log_Fmult	-3.022	0.521
56	log Fmultiplier, flt 1, 2010	log_Fmult	-2.383	0.518
57	log Fmultiplier, flt 1, 2011	log_Fmult	-2.413	0.536
58	log Fmultiplier, flt 1, 2012	log_Fmult	-2.071	0.528
59	log Fmultiplier, flt 1, 2013	log_Fmult	-1.587	0.536
60	log Fmultiplier, flt 2, 1989	log_Fmult	-3.347	0.504
61	log Fmultiplier, flt 2, 1990	log_Fmult	-3.080	0.497
62	log Fmultiplier, flt 2, 1991	log_Fmult	-2.497	0.512
63	log Fmultiplier, flt 2, 1992	log_Fmult	-3.165	0.428
64	log Fmultiplier, flt 2, 1993	log_Fmult	-2.977	0.421
65	log Fmultiplier, flt 2, 1994	log_Fmult	-2.808	0.448
66	log Fmultiplier, flt 2, 1995	log_Fmult	-2.973	0.431
67	log Fmultiplier, flt 2, 1996	log_Fmult	-3.504	0.459
68	log Fmultiplier, flt 2, 1997	log_Fmult	-3.940	0.425
69	log Fmultiplier, flt 2, 1998	log_Fmult	-4.264	0.434
70	log Fmultiplier, flt 2, 1999	log_Fmult	-3.407	0.412
71	log Fmultiplier, flt 2, 2000	log_Fmult	-2.851	0.403
72	log Fmultiplier, flt 2, 2001	log_Fmult	-3.029	0.555
73	log Fmultiplier, flt 2, 2002	log_Fmult	-3.322	0.420
74	log Fmultiplier, flt 2, 2003	log_Fmult	-3.164	0.385
75	log Fmultiplier, flt 2, 2004	log_Fmult	-2.904	0.410
76	log Fmultiplier, flt 2, 2005	log_Fmult	-3.040	0.391
77	log Fmultiplier, flt 2, 2006	log_Fmult	-3.289	0.406
78	log Fmultiplier, flt 2, 2007	log_Fmult	-2.860	0.382
79	log Fmultiplier, flt 2, 2008	log_Fmult	-2.776	0.403
80	log Fmultiplier, flt 2, 2009	log_Fmult	-3.592	0.411
81	log Fmultiplier, flt 2, 2010	log_Fmult	-2.585	0.447
82	log Fmultiplier, flt 2, 2011	log_Fmult	-3.156	0.418
83	log Fmultiplier, flt 2, 2012	log_Fmult	-3.667	0.434
84	log Fmultiplier, flt 2, 2013	log_Fmult	-3.359	0.420
85	log Fmultiplier, flt 3, 1989	log_Fmult	-1.973	0.562
86	log Fmultiplier, flt 3, 1990	log_Fmult	-2.108	0.640
87	log Fmultiplier, flt 3, 1991	log_Fmult	-2.308	0.584
88	log Fmultiplier, flt 3, 1992	log_Fmult	-2.651	0.505
89	log Fmultiplier, flt 3, 1993	log_Fmult	-2.681	0.548
90	log Fmultiplier, flt 3, 1994	log_Fmult	-2.426	0.761
91	log Fmultiplier, flt 3, 1995	log_Fmult	-1.602	0.814
92	log Fmultiplier, flt 3, 1996	log_Fmult	-2.404	0.657
93	log Fmultiplier, flt 3, 1997	log_Fmult	-2.453	0.484
94	log Fmultiplier, flt 3, 1998	log_Fmult	-3.416	0.463
95	log Fmultiplier, flt 3, 1999	log_Fmult	-3.522	0.480
96	log Fmultiplier, flt 3, 2000	log_Fmult	-3.606	0.483
97	log Fmultiplier, flt 3, 2001	log_Fmult	-2.855	0.506
98	log Fmultiplier, flt 3, 2002	log_Fmult	-3.568	0.516
99	log Fmultiplier, flt 3, 2003	log_Fmult	-2.394	0.459
100	log Fmultiplier, flt 3, 2004	log_Fmult	-2.732	0.454
101	log Fmultiplier, flt 3, 2005	log_Fmult	-2.452	0.444

102	log Fmultiplier, flt 3, 2006	log_Fmult	-3.296	0.494
103	log Fmultiplier, flt 3, 2007	log_Fmult	-2.796	0.439
104	log Fmultiplier, flt 3, 2008	log_Fmult	-2.371	0.451
105	log Fmultiplier, flt 3, 2009	log_Fmult	-3.047	0.456
106	log Fmultiplier, flt 3, 2010	log_Fmult	-2.272	0.444
107	log Fmultiplier, flt 3, 2011	log_Fmult	-2.383	0.466
108	log Fmultiplier, flt 3, 2012	log_Fmult	-2.500	0.471
109	log Fmultiplier, flt 3, 2013	log_Fmult	-2.445	0.465
110	log Fmultiplier, flt 4, 1989	log_Fmult	-4.498	0.678
111	log Fmultiplier, flt 4, 1990	log_Fmult	-5.519	0.635
112	log Fmultiplier, flt 4, 1991	log_Fmult	-3.402	0.705
113	log Fmultiplier, flt 4, 1992	log_Fmult	-4.376	0.586
114	log Fmultiplier, flt 4, 1993	log_Fmult	-3.985	0.576
115	log Fmultiplier, flt 4, 1994	log_Fmult	-3.686	0.566
116	log Fmultiplier, flt 4, 1995	log_Fmult	-3.782	0.565
117	log Fmultiplier, flt 4, 1996	log_Fmult	-4.002	0.592
118	log Fmultiplier, flt 4, 1997	log_Fmult	-3.928	0.574
119	log Fmultiplier, flt 4, 1998	log_Fmult	-4.028	0.544
120	log Fmultiplier, flt 4, 1999	log_Fmult	-3.813	0.511
121	log Fmultiplier, flt 4, 2000	log_Fmult	-3.520	0.514
122	log Fmultiplier, flt 4, 2001	log_Fmult	-3.402	0.535
123	log Fmultiplier, flt 4, 2002	log_Fmult	-3.712	0.554
124	log Fmultiplier, flt 4, 2003	log_Fmult	-3.765	0.528
125	log Fmultiplier, flt 4, 2004	log_Fmult	-3.555	0.528
126	log Fmultiplier, flt 4, 2005	log_Fmult	-3.168	0.535
127	log Fmultiplier, flt 4, 2006	log_Fmult	-3.570	0.527
128	log Fmultiplier, flt 4, 2007	log_Fmult	-3.649	0.518
129	log Fmultiplier, flt 4, 2008	log_Fmult	-3.485	0.534
130	log Fmultiplier, flt 4, 2009	log_Fmult	-4.091	0.525
131	log Fmultiplier, flt 4, 2010	log_Fmult	-3.252	0.530
132	log Fmultiplier, flt 4, 2011	log_Fmult	-3.524	0.542
133	log Fmultiplier, flt 4, 2012	log_Fmult	-3.696	0.535
134	log Fmultiplier, flt 4, 2013	log_Fmult	-3.023	0.564
135	log Fmultiplier, flt 5, 1989	log_Fmult	-5.163	0.603
136	log Fmultiplier, flt 5, 1990	log_Fmult	-4.438	0.639
137	log Fmultiplier, flt 5, 1991	log_Fmult	-4.916	0.636
138	log Fmultiplier, flt 5, 1992	log_Fmult	-4.846	0.595
139	log Fmultiplier, flt 5, 1993	log_Fmult	-4.438	0.719
140	log Fmultiplier, flt 5, 1994	log_Fmult	-4.031	0.570
141	log Fmultiplier, flt 5, 1995	log_Fmult	-3.677	0.603
142	log Fmultiplier, flt 5, 1996	log_Fmult	-4.593	0.638
143	log Fmultiplier, flt 5, 1997	log_Fmult	-4.867	0.616
144	log Fmultiplier, flt 5, 1998	log_Fmult	-5.425	0.549
145	log Fmultiplier, flt 5, 1999	log_Fmult	-5.425	0.549
146	log Fmultiplier, flt 5, 2000	log_Fmult	-4.663	0.540
147	log Fmultiplier, flt 5, 2001	log_Fmult	-3.968	0.566
148	log Fmultiplier, flt 5, 2002	log_Fmult	-4.416	0.558
149	log Fmultiplier, flt 5, 2003	log_Fmult	-3.776	0.530
150	log Fmultiplier, flt 5, 2004	log_Fmult	-4.025	0.537
151	log Fmultiplier, flt 5, 2005	log_Fmult	-3.618	0.530
152	log Fmultiplier, flt 5, 2006	log_Fmult	-3.732	0.536
153	log Fmultiplier, flt 5, 2007	log_Fmult	-3.711	0.521

154	log Fmultiplier, flt 5, 2008	log_Fmult	-3.430	0.536
155	log Fmultiplier, flt 5, 2009	log_Fmult	-3.442	0.529
156	log Fmultiplier, flt 5, 2010	log_Fmult	-3.262	0.528
157	log Fmultiplier, flt 5, 2011	log_Fmult	-3.623	0.539
158	log Fmultiplier, flt 5, 2012	log_Fmult	-3.871	0.534
159	log Fmultiplier, flt 5, 2013	log_Fmult	-3.509	0.556
160	log abundance, 1989, age 2	log_initN	13.076	0.491
161	log abundance, 1989, age 3	log_initN	12.216	0.702
162	log abundance, 1989, age 4	log_initN	12.133	0.985
163	log abundance, 1989, age 5	log_initN	13.863	2.389
164	log abundance, 1989, age 6	log_initN	12.912	12.464
165	log abundance, 1989, age 7+	log_initN	13.949	4.700
166	log abundance, age 1, 1989	log_recruits	13.658	0.388
167	log abundance, age 1, 1990	log_recruits	13.742	0.361
168	log abundance, age 1, 1991	log_recruits	14.092	0.343
169	log abundance, age 1, 1992	log_recruits	14.085	0.350
170	log abundance, age 1, 1993	log_recruits	14.012	0.356
171	log abundance, age 1, 1994	log_recruits	14.240	0.341
172	log abundance, age 1, 1995	log_recruits	14.510	0.316
173	log abundance, age 1, 1996	log_recruits	13.829	0.326
174	log abundance, age 1, 1997	log_recruits	13.977	0.345
175	log abundance, age 1, 1998	log_recruits	13.801	0.364
176	log abundance, age 1, 1999	log_recruits	13.964	0.357
177	log abundance, age 1, 2000	log_recruits	13.525	0.336
178	log abundance, age 1, 2001	log_recruits	14.379	0.345
179	log abundance, age 1, 2002	log_recruits	14.199	0.348
180	log abundance, age 1, 2003	log_recruits	14.375	0.345
181	log abundance, age 1, 2004	log_recruits	14.217	0.334
182	log abundance, age 1, 2005	log_recruits	14.123	0.332
183	log abundance, age 1, 2006	log_recruits	13.772	0.336
184	log abundance, age 1, 2007	log_recruits	14.104	0.338
185	log abundance, age 1, 2008	log_recruits	14.230	0.350
186	log abundance, age 1, 2009	log_recruits	14.337	0.347
187	log abundance, age 1, 2010	log_recruits	14.608	0.330
188	log abundance, age 1, 2011	log_recruits	14.147	0.321
189	log abundance, age 1, 2012	log_recruits	13.670	0.331
190	log abundance, age 1, 2013	log_recruits	14.374	0.351
191	log (index 1 to true abundance)	log_q_ndx	-14.249	0.360
192	log (index 2 to true abundance)	log_q_ndx	-14.255	0.338
193	log (index 3 to true abundance)	log_q_ndx	-14.221	0.355
194	log (index 4 to true abundance)	log_q_ndx	-14.193	0.339
195	log (index 5 to true abundance)	log_q_ndx	-13.832	0.376
196	log (index 6 to true abundance)	log_q_ndx	-13.711	0.375
197	log (index 7 to true abundance)	log_q_ndx	-13.341	0.463
198	log (index 8 to true abundance)	log_q_ndx	-14.889	0.378
199	log (index 9 to true abundance)	log_q_ndx	-14.428	0.679
200	log (index 10 to true abundance)	log_q_ndx	-14.600	0.675
201	log (index 11 to true abundance)	log_q_ndx	-14.708	0.678

7.0 Figures

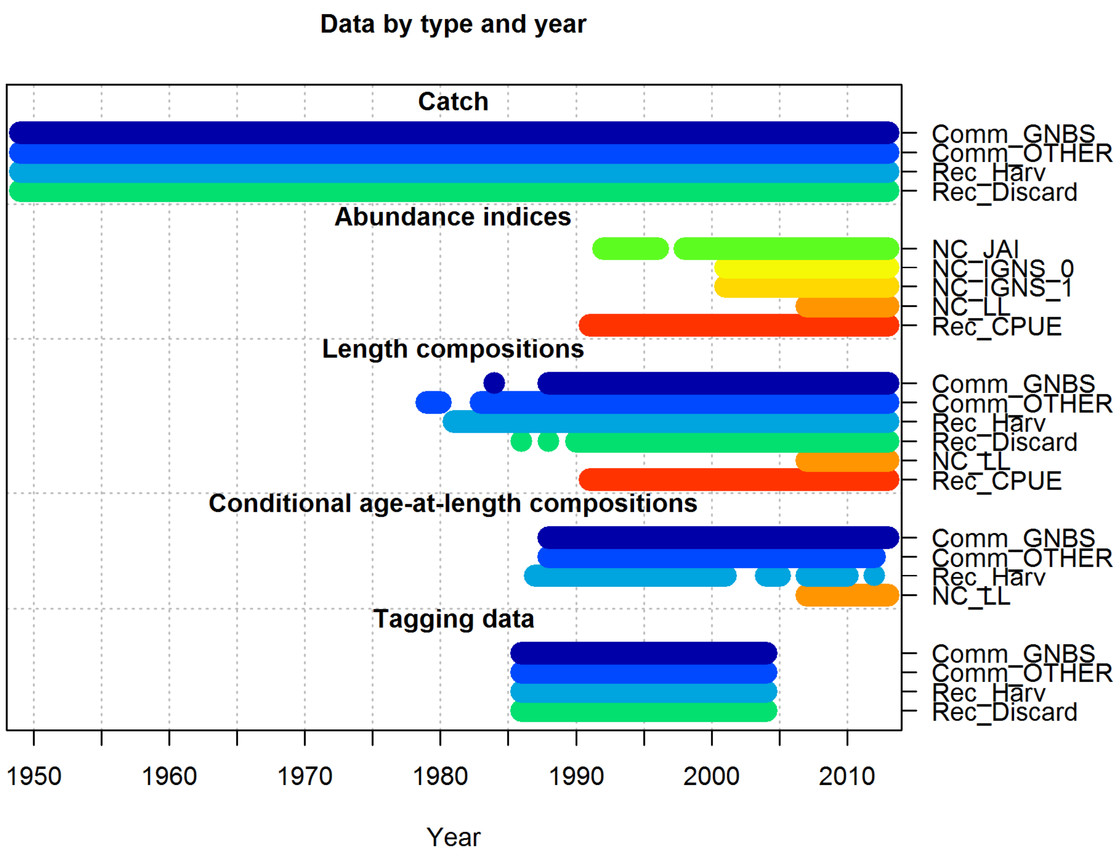


Figure 2.2.1 Input data types by year for the northern base Stock Synthesis model.

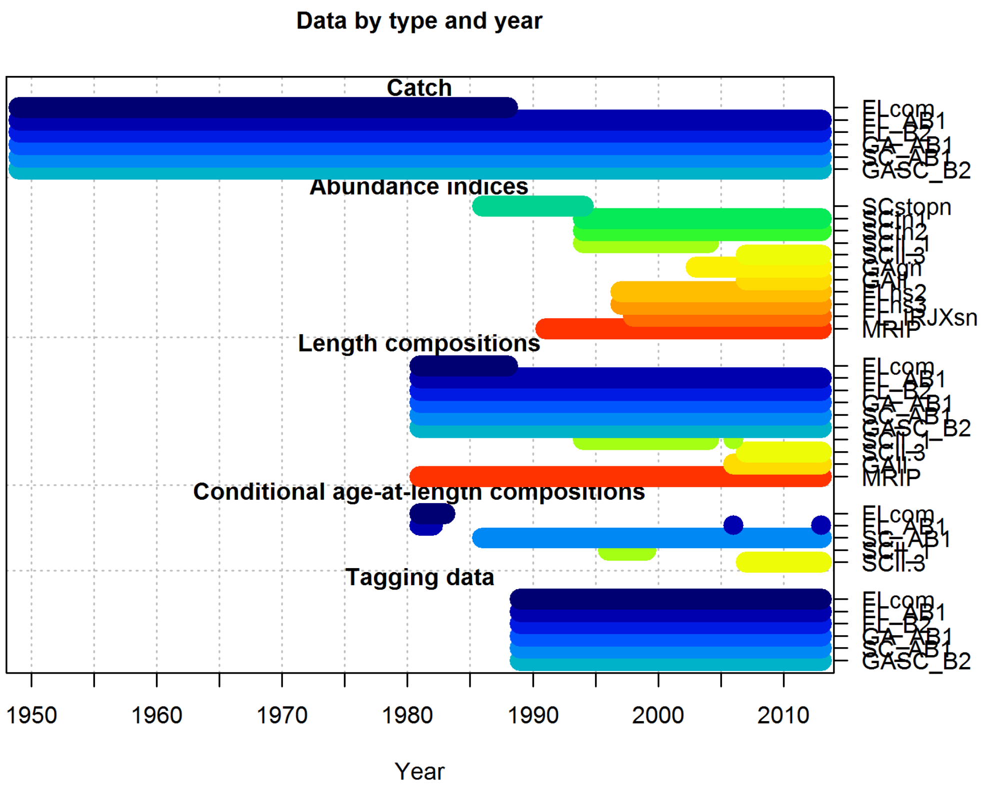


Figure 2.2.2 Input data types by year for the southern base Stock Synthesis model.

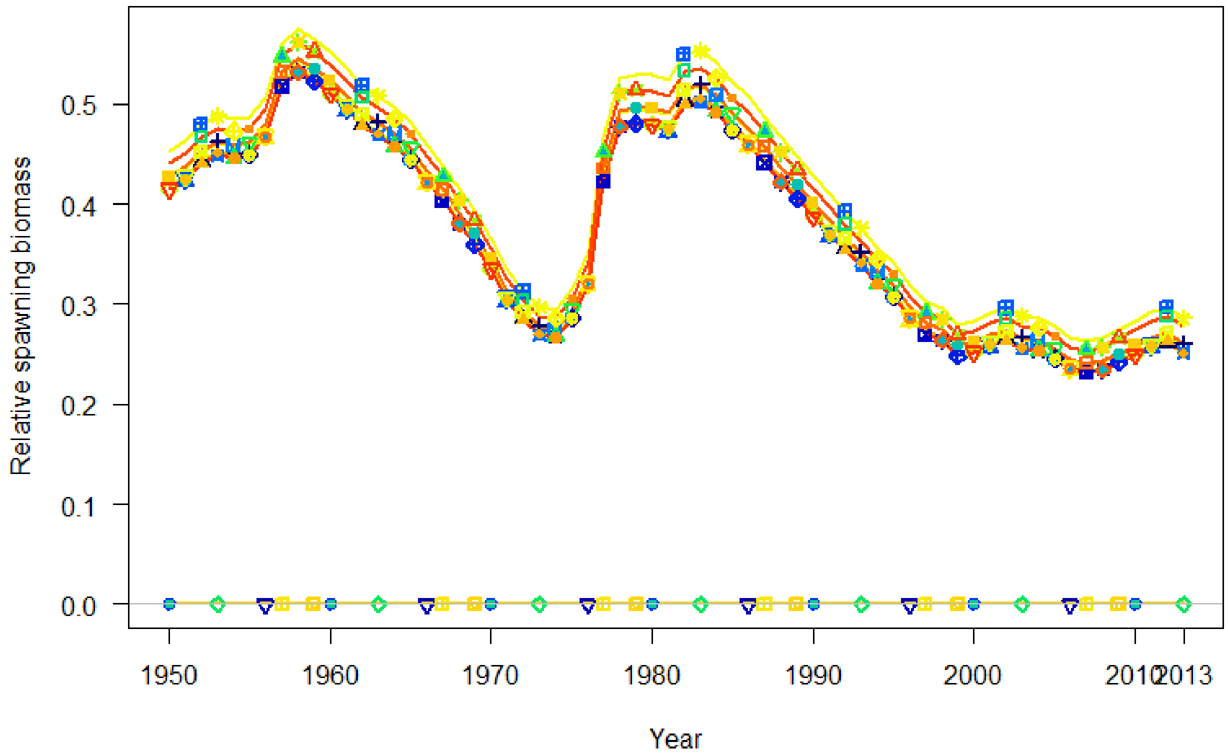

Relative spawning biomass
0.0
0.1
0.2
0.3
0.4
0.5
1950
1960
1970
1980
1990
2000
2010
2013
Year

Figure 2.4.1 Relative spawning biomass trajectory of all fifty northern Stock Synthesis model runs with jittered starting values.

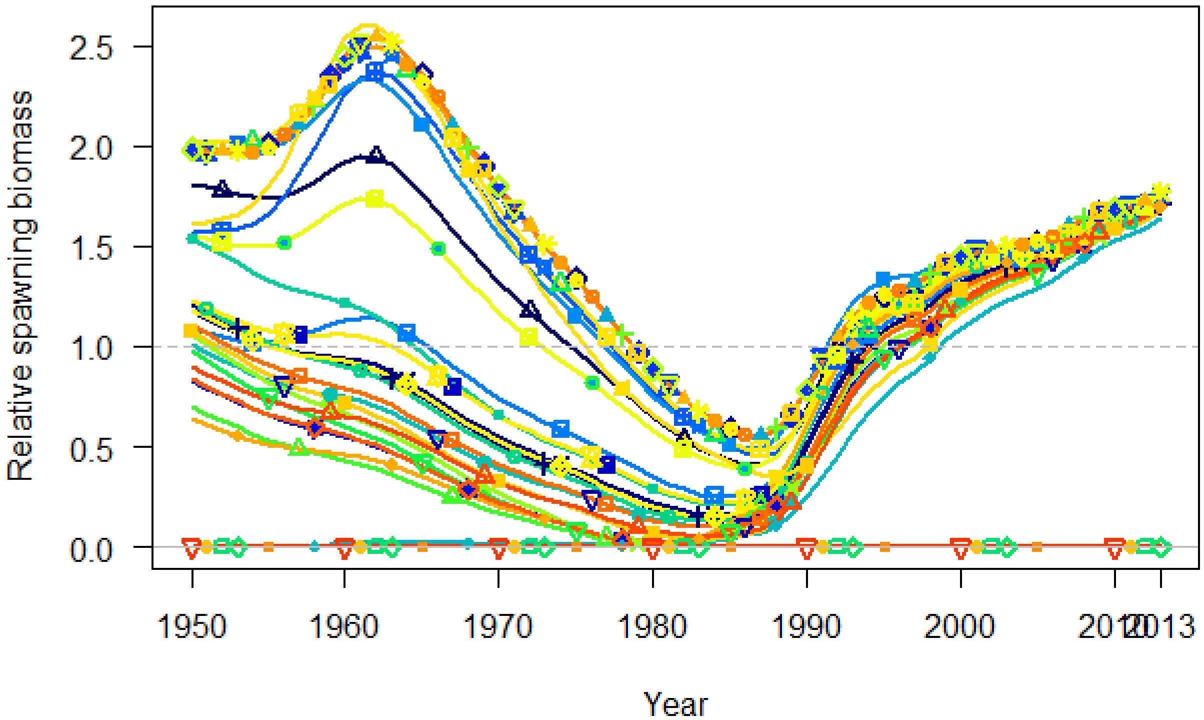


Figure 2.4.2. Relative spawning biomass trajectory of all fifty southern Stock Synthesis model runs with jittered starting values.

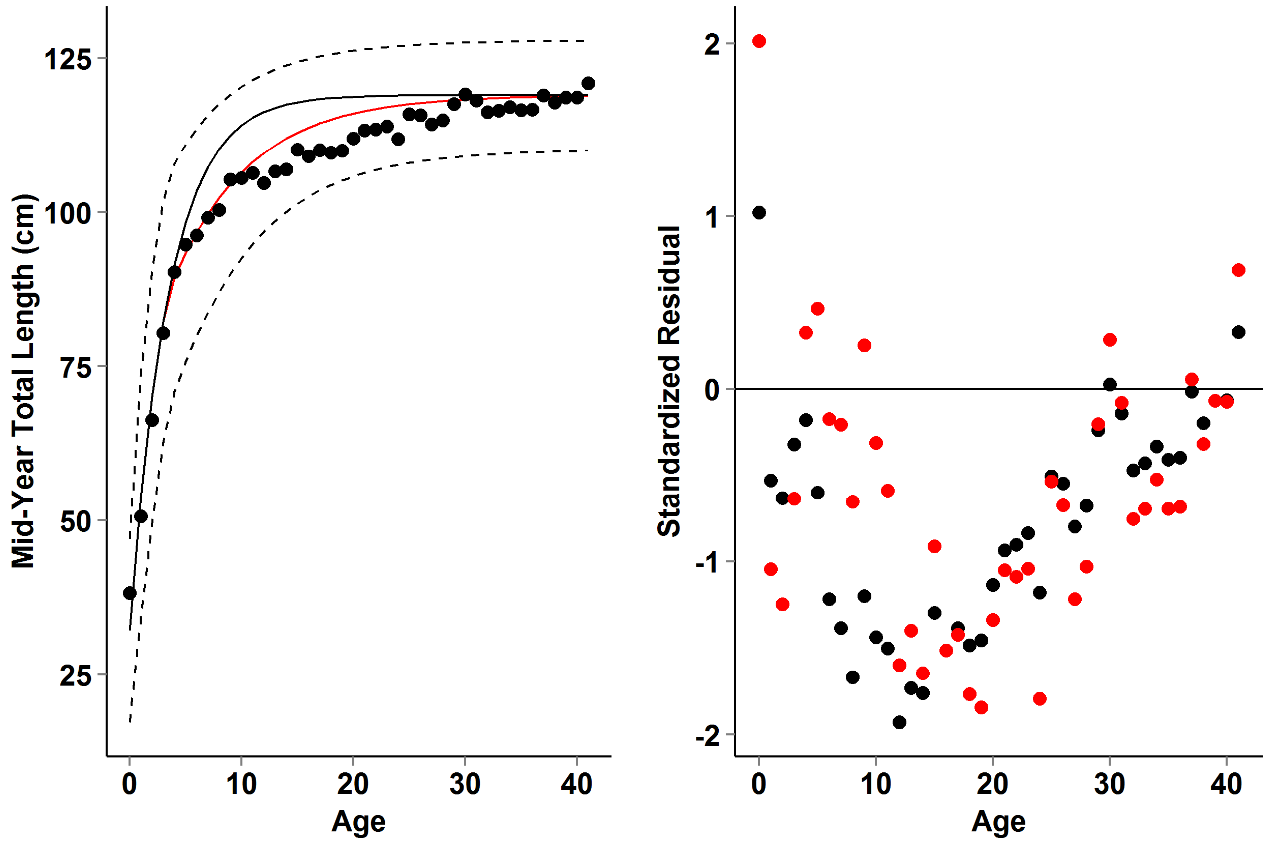


Figure 2.4.3 (a)Northern stock mid-year growth from age-length data (circles), estimated with the original K for all ages (solid black line), and estimated with age-specific K (red line).

The dashed lines show ± 1.96 SEs of the growth estimated with age-specific K. (b) Standardized residuals (residual/mean(residual)) for the original K growth estimates (black) and the growth estimates with age-specific K (red). The model uses the growth estimated with age-specific K for all model estimates.

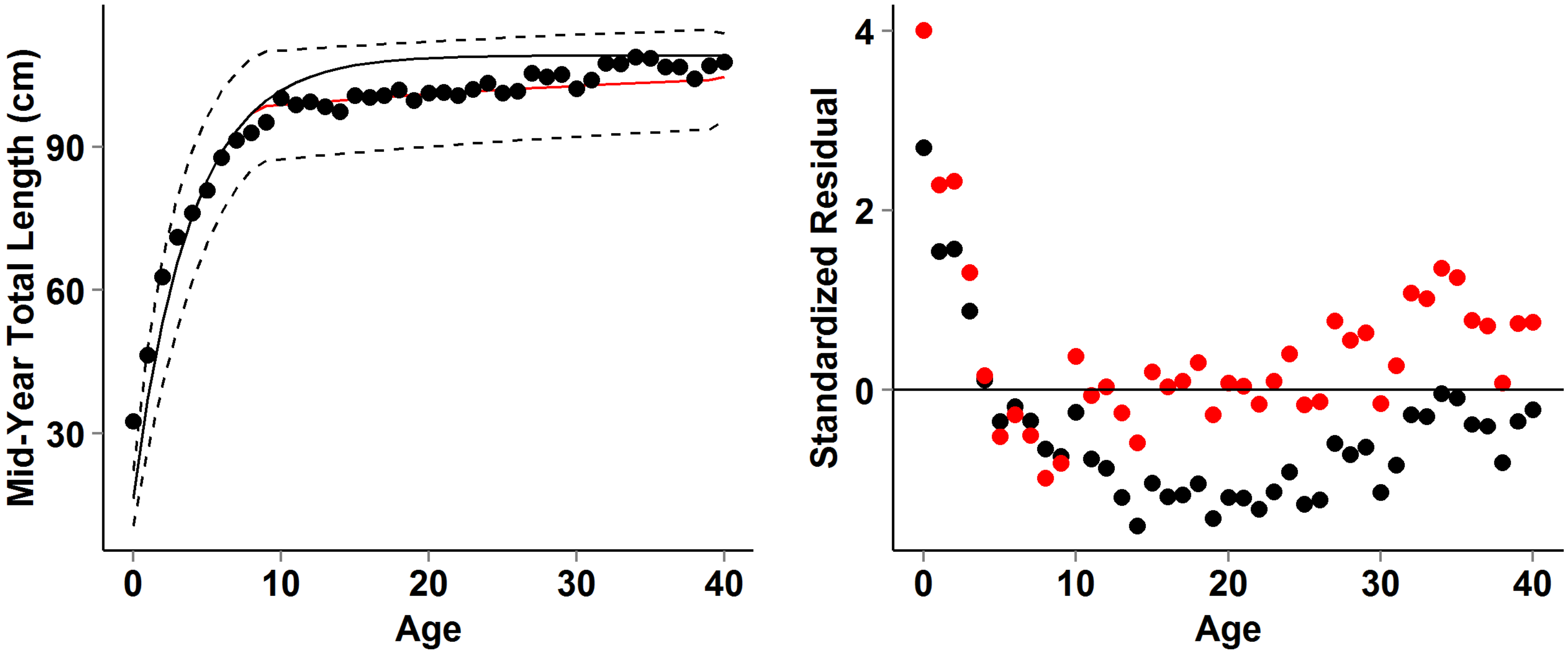


Figure 2.4.4. (a)Southern stock mid-year growth from age-length data (circles), estimated with the original K for all ages (solid black line), and estimated with age-specific K (red line).
The dashed lines show ± 1.96 SEs of the growth estimated with age-specific K. (b) Standardized residuals (residual/mean(residual)) for the original K growth estimates (black) and the growth estimates with age-specific K (red). The model uses the growth estimated with age-specific K for all model estimates.

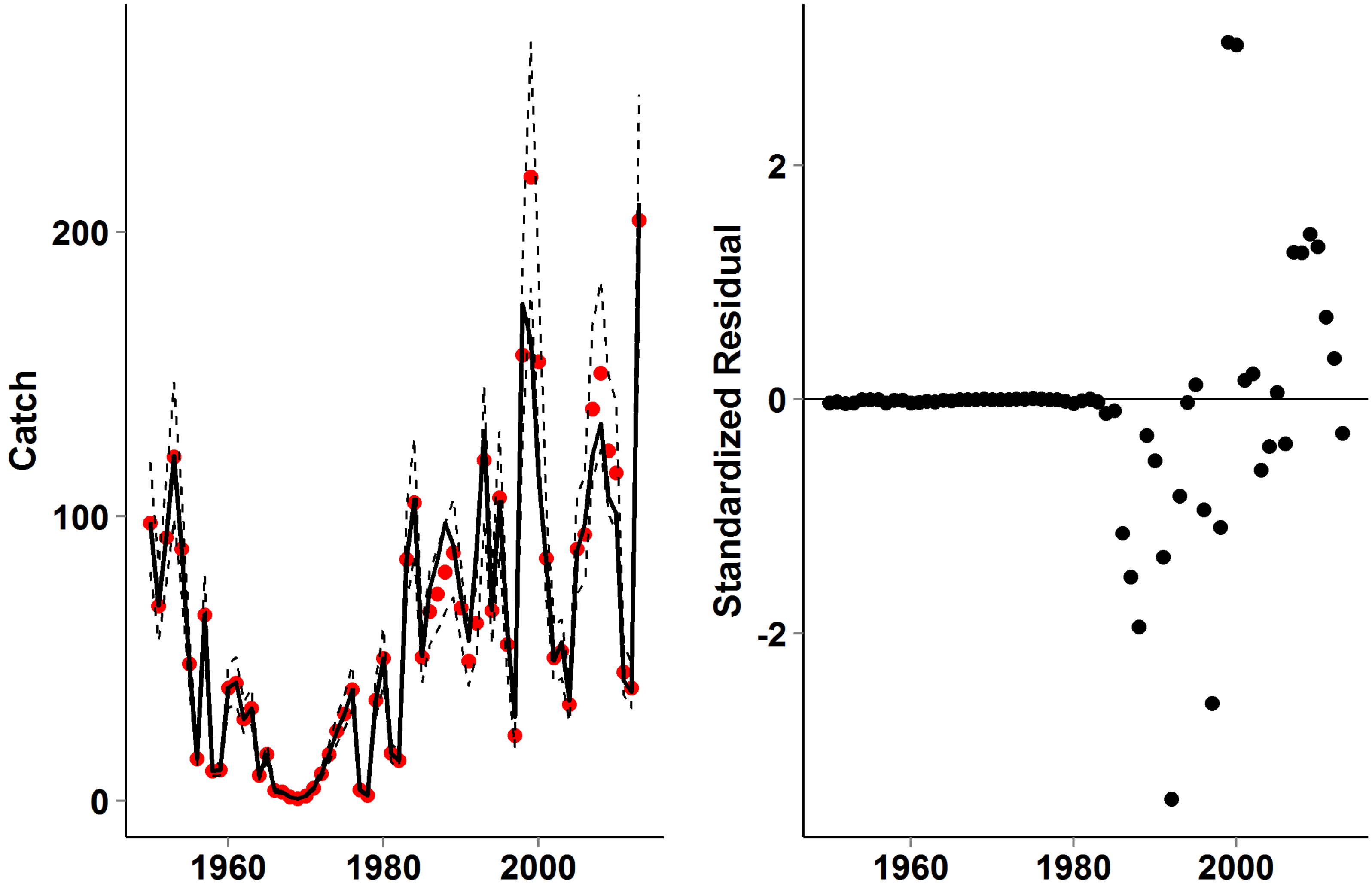


Figure 2.4.5 (a)Northern stock model fit to Comm_GNBS landings (metric tons).
Red circles indicate observed landings, solid black line indicates model predicted landings, and dashed black lines indicate ±1.96 input SEs of the observed landings. (b)Standardized residuals are calculated as (log(obs)-log(pred))/input SE.

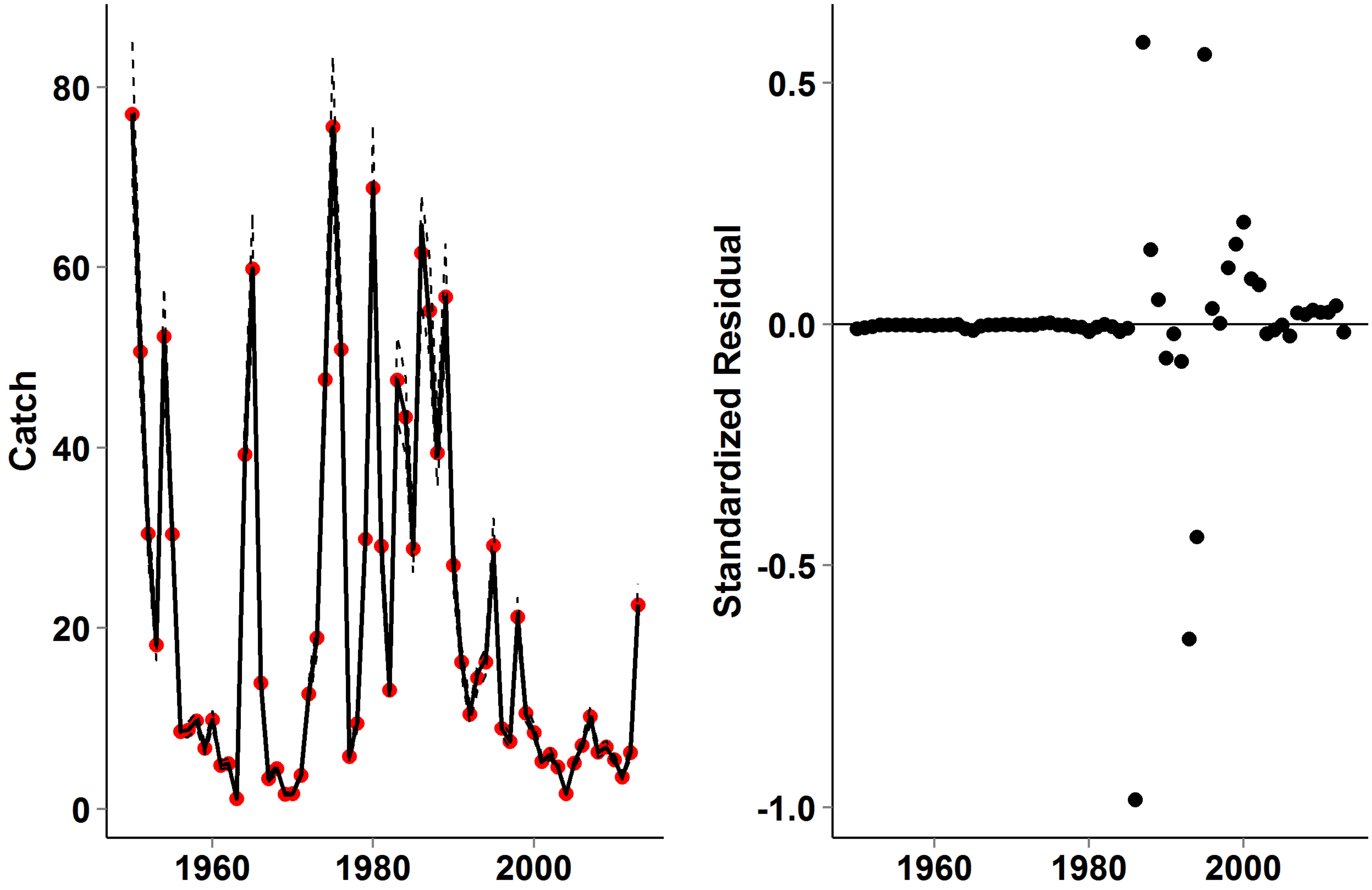


Figure 2.4.6 (a)Northern stock model fit to Comm_OTHER landings (metric tons).
Red circles indicate observed landings, solid black line indicates model predicted landings, and dashed black lines indicate +1.96 input SEs of the observed landings. (b)Standardized residuals are calculated as (log(obs)-log(pred))/input SE.

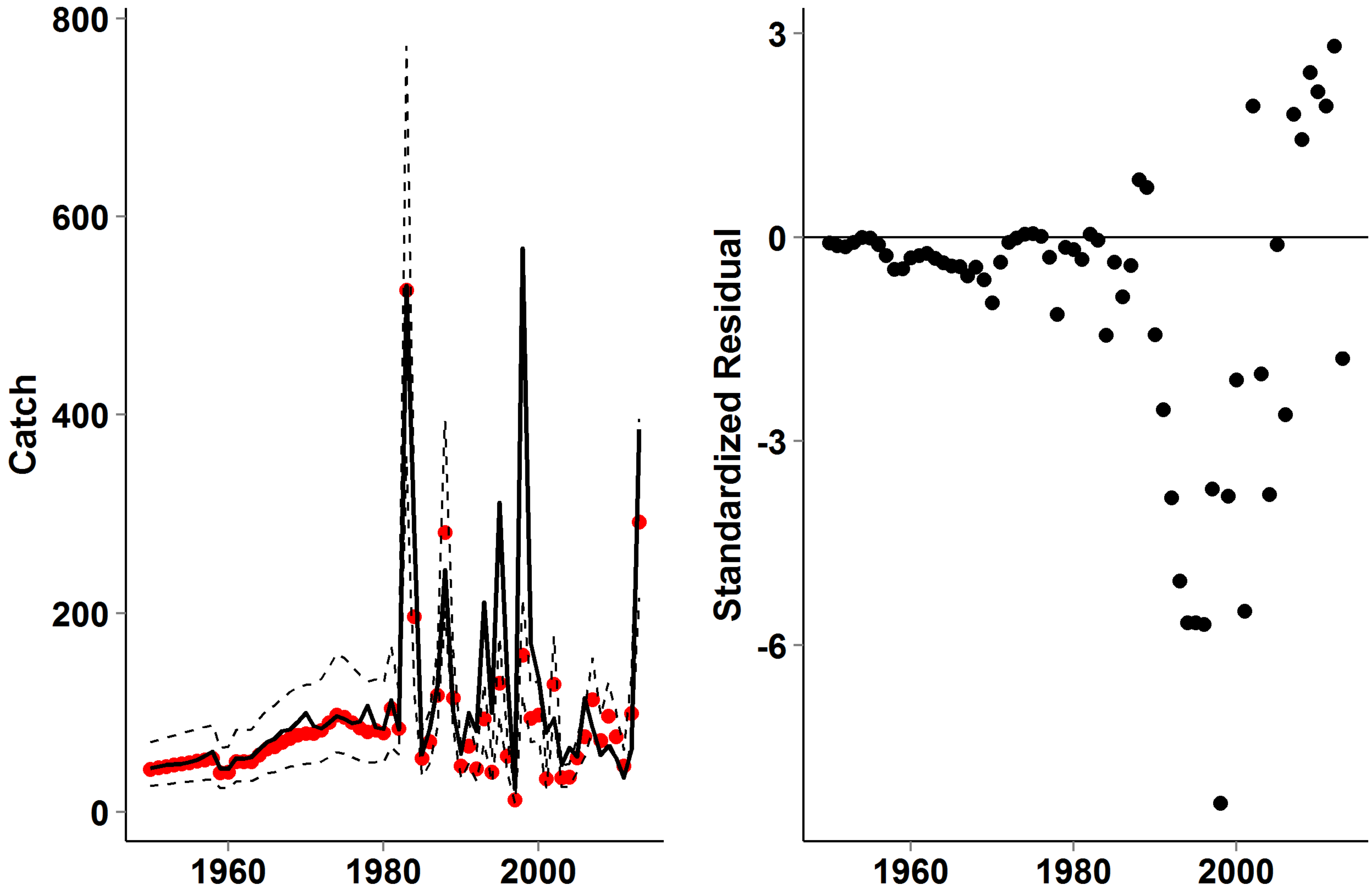


Figure 2.4.7 (a)Northern stock model fit to Rec_Harv harvest (thousands of fish).
Red circles indicate observed harvest, solid black line indicates model predicted harvest, and dashed black lines indicate ±1.96 input SEs of the observed harvest. (b)Standardized residuals are calculated as (log(obs)-log(pred))/input SE.

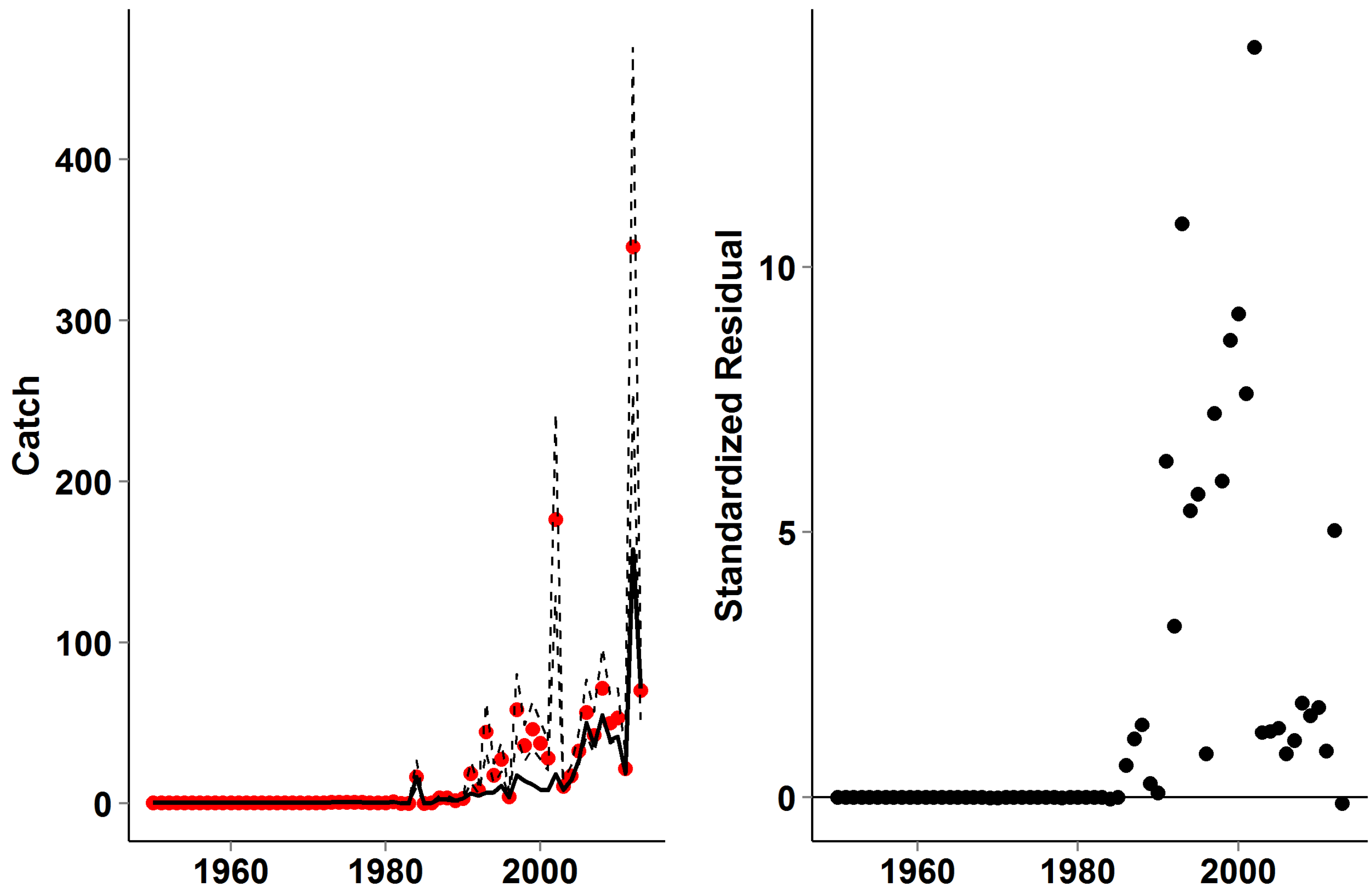


Figure 2.4.8 (a)Northern stock model fit to Rec_Discard dead releases (thousands of fish).
Red circles indicate observed dead discards, solid black line indicates model predicted dead discards, and dashed black lines indicate ±1.96 input SEs of the observed dead discards. (b)Standardized residuals are calculated as (log(obs)-log(pred))/input SE.

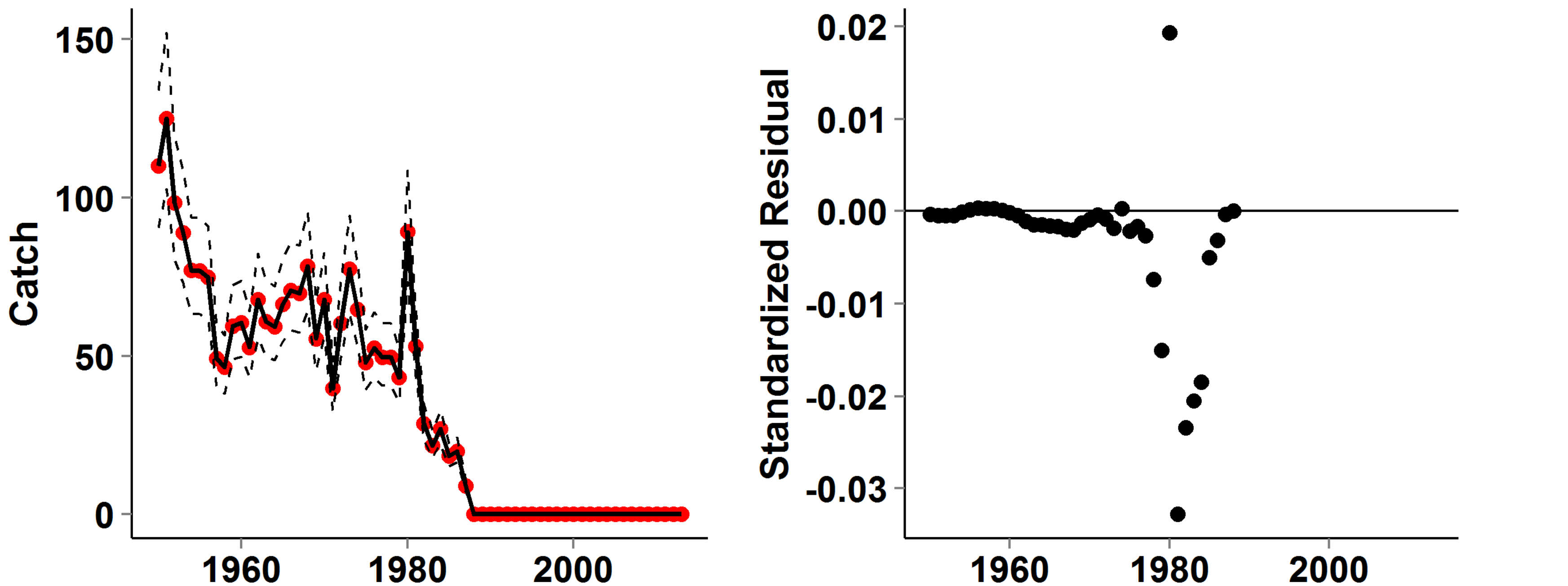


Figure 2.4.9 (a)Southern stock model fit to Flcom landings (metric tons).
Red circles indicate observed landings, solid black line indicates model predicted landings, and dashed black lines indicate ±1.96 input SEs of the observed landings. (b)Standardized residuals are calculated as (log(obs)-log(pred))/input SE.

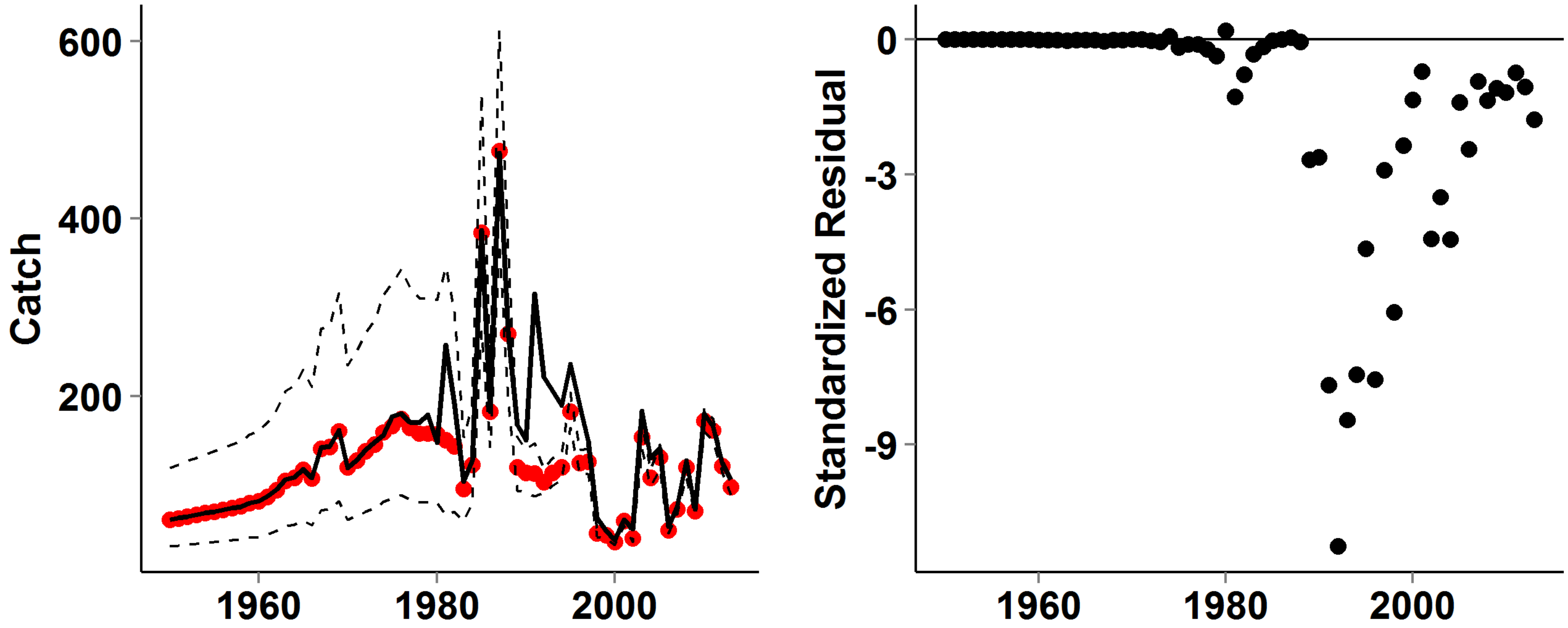


Figure 2.4.10 (a)Southern stock model fit to SC_AB1 harvest (thousands of fish).
Red circles indicate observed harvest, solid black line indicates model predicted harvest, and dashed black lines indicate ±1.96 input SEs of the observed harvest. (b)Standardized residuals are calculated as (log(obs)-log(pred))/input SE.

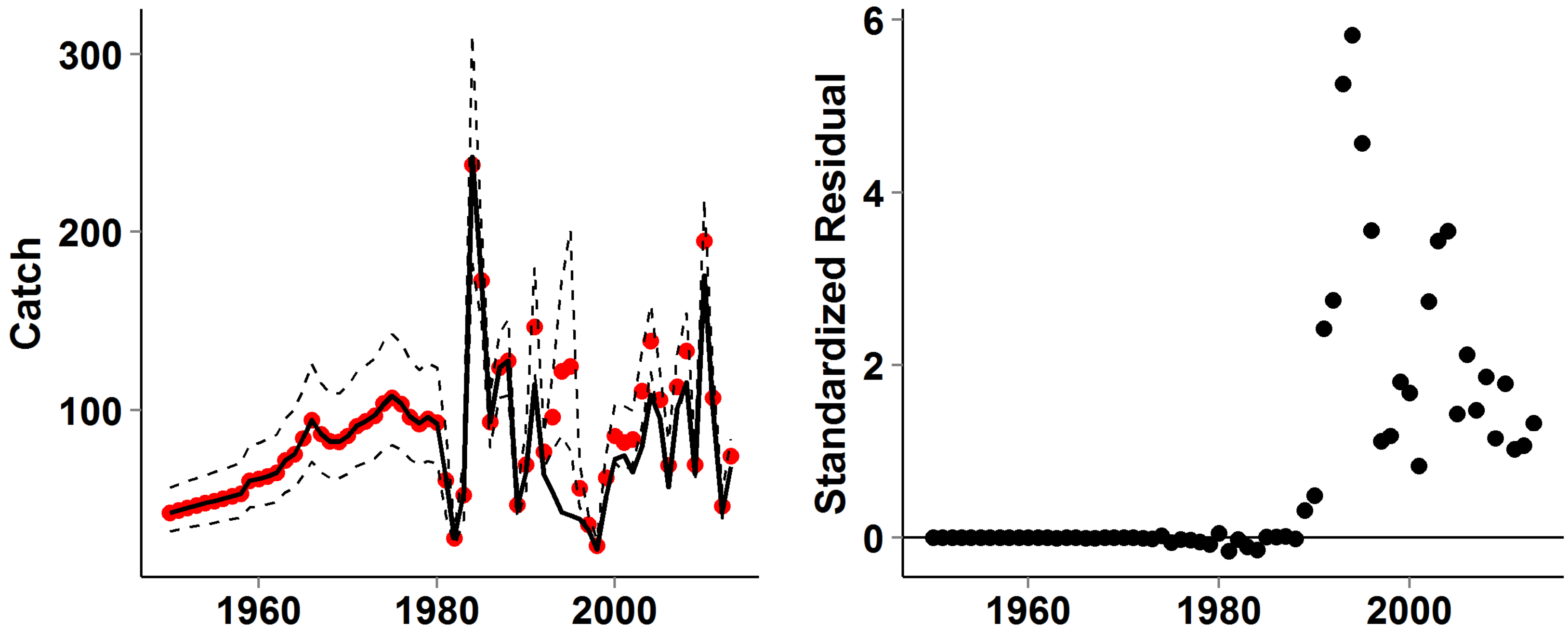


Figure 2.4.11 (a)Southern stock model fit to GA_AB1 harvest (thousands of fish).
Red circles indicate observed harvest, solid black line indicates model predicted harvest, and dashed black lines indicate ±1.96 input SEs of the observed harvest. (b)Standardized residuals are calculated as (log(obs)-log(pred))/input SE.

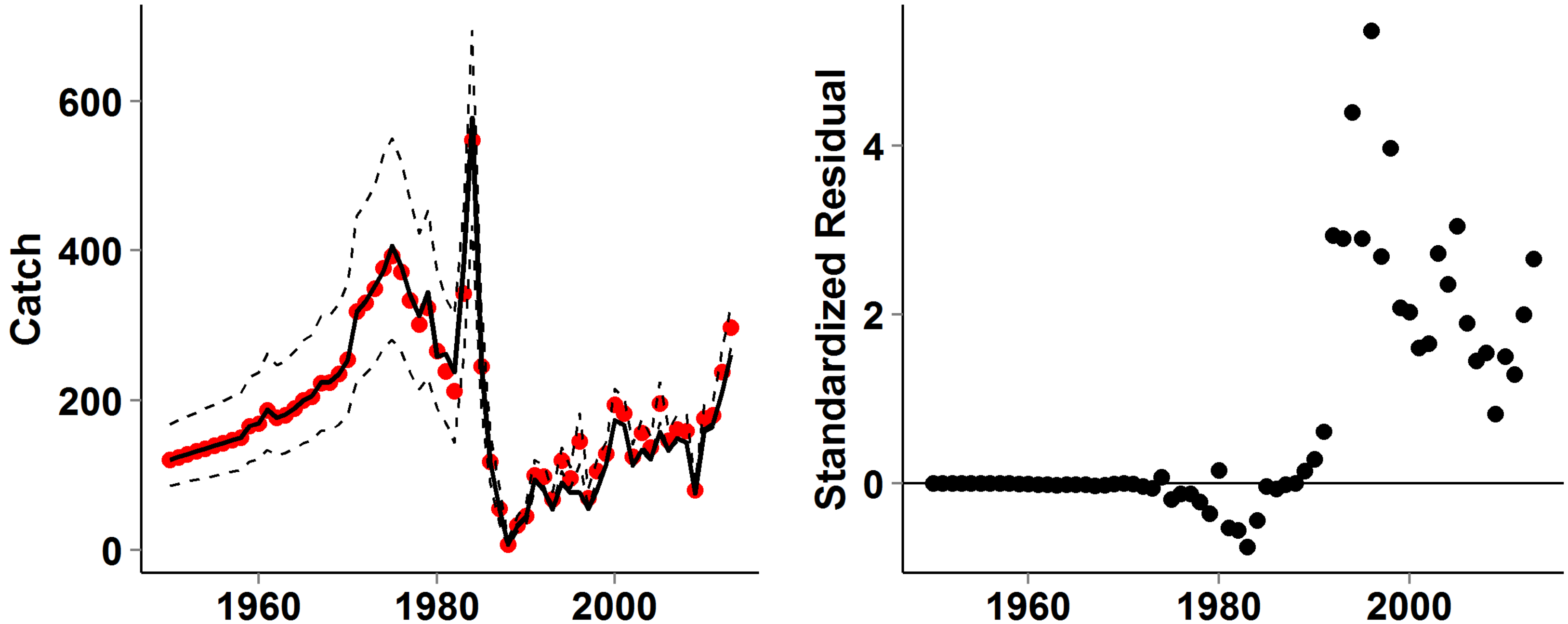


Figure 2.4.12 (a)Southern stock model fit to FL_AB1 harvest (thousands of fish).
Red circles indicate observed harvest, solid black line indicates model predicted harvest, and dashed black lines indicate +1.96 input SEs of the observed harvest. (b)Standardized residuals are calculated as (log(obs)-log(pred))/input SE.

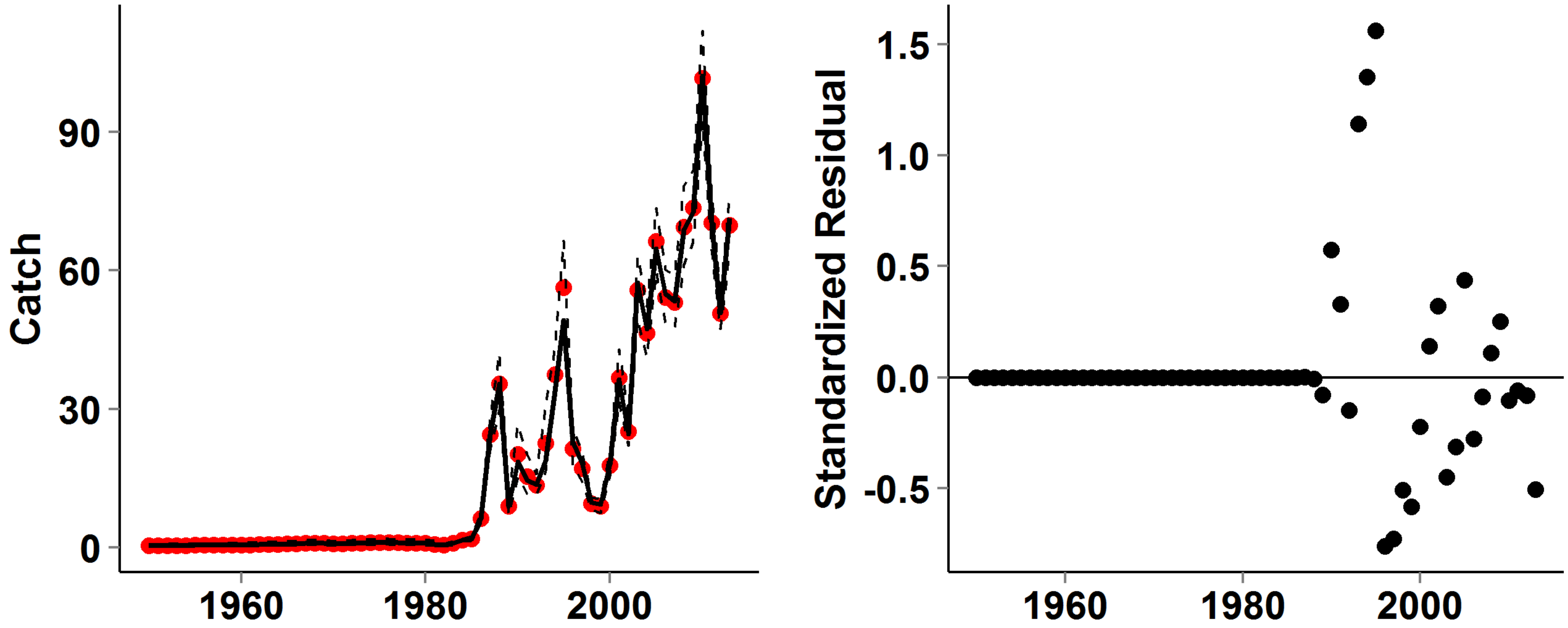


Figure 2.4.13 (a)Southern stock model fit to GASC_B2 dead releases (thousands of fish).
Red circles indicate observed dead discards, solid black line indicates model predicted dead discards, and dashed black lines indicate ±1.96 input SEs of the observed dead discards. (b)Standardized residuals are calculated as (log(obs)-log(pred))/input SE.

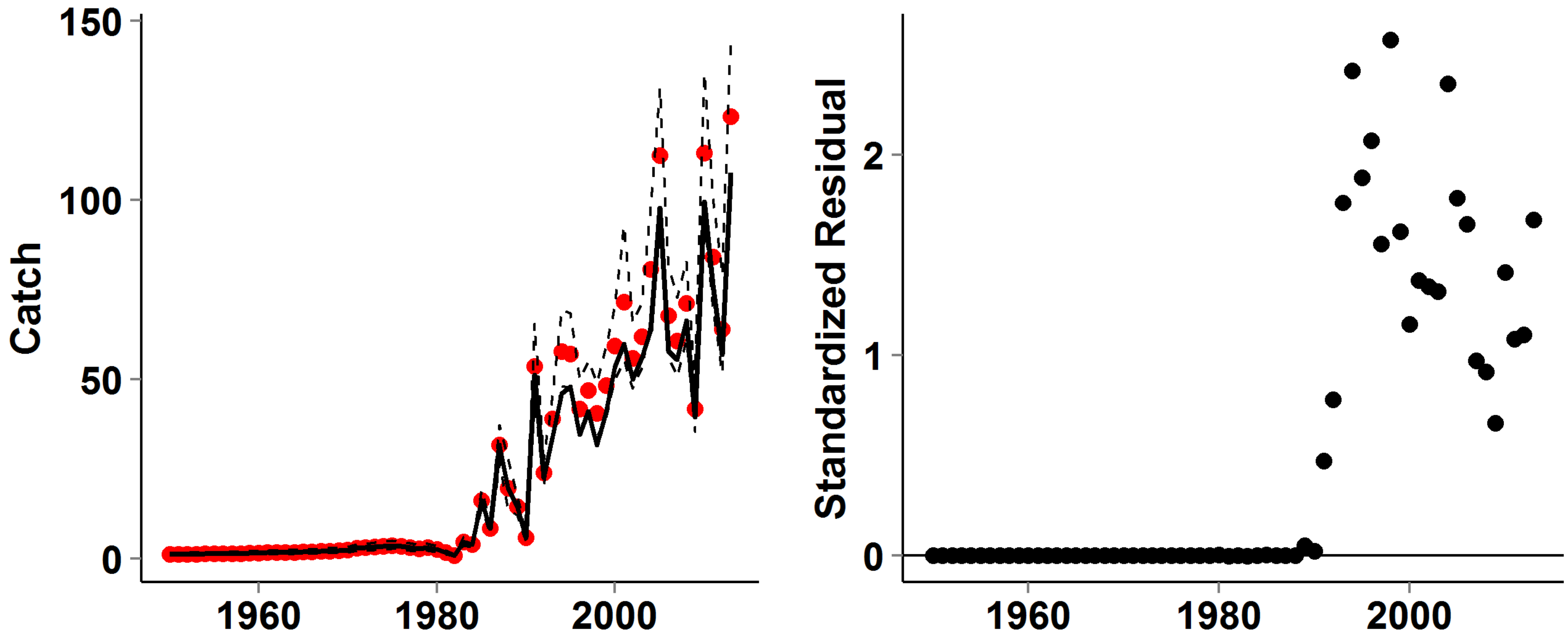


Figure 2.4.14 (a)Southern stock model fit to FL_B2 dead releases (thousands of fish).
Red circles indicate observed dead discards, solid black line indicates model predicted dead discards, and dashed black lines indicate ±1.96 input SEs of the observed dead discards. (b)Standardized residuals are calculated as (log(obs)-log(pred))/input SE.

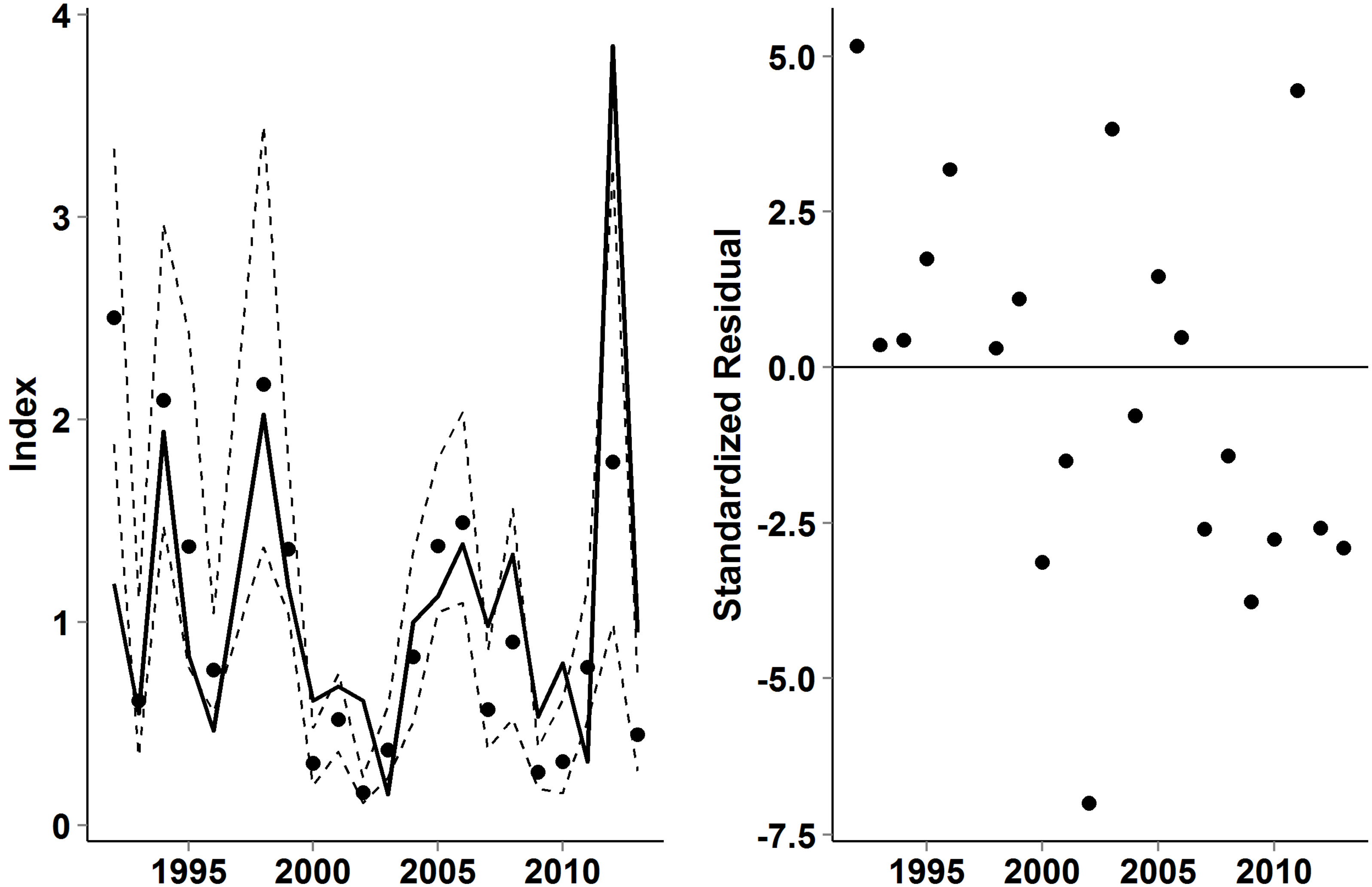


Figure 2.4.15 (a)Northern stock model fit to NC_JAI index with observed index (circles), model predicted index (solid black line), and ±1.96 input SEs of the observed index (dashed lines).
(b)Standardized residuals calculated as (log(obs)-log(pred))/input SE.

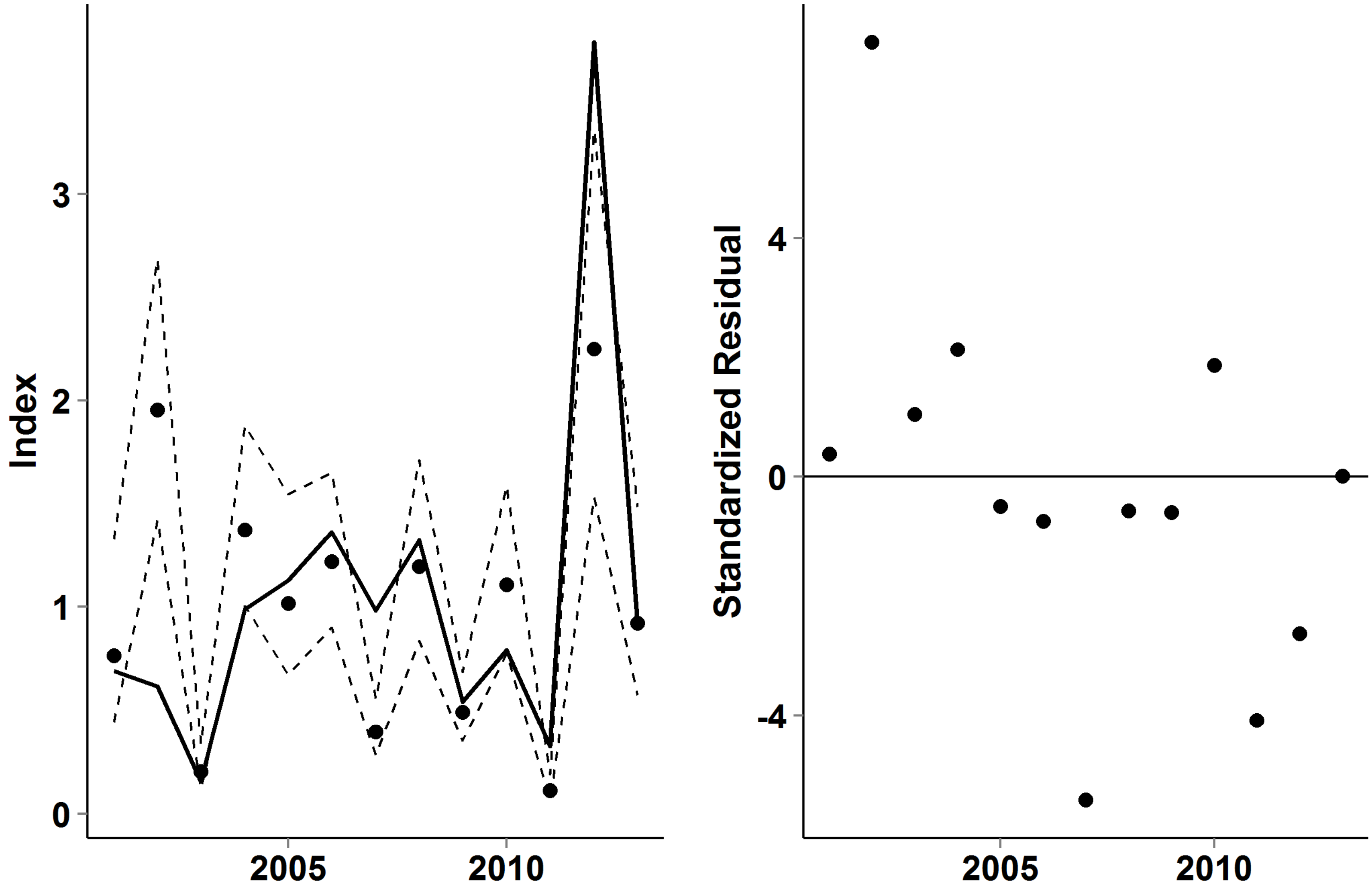


Figure 2.4.16 (a)Northern stock model fit to NC_IGNS_0 index with observed index (circles), model predicted index (solid black line), and +1.96 input SEs of the observed index (dashed lines).
(b)Standardized residuals calculated as (log(obs)-log(pred))/input SE.

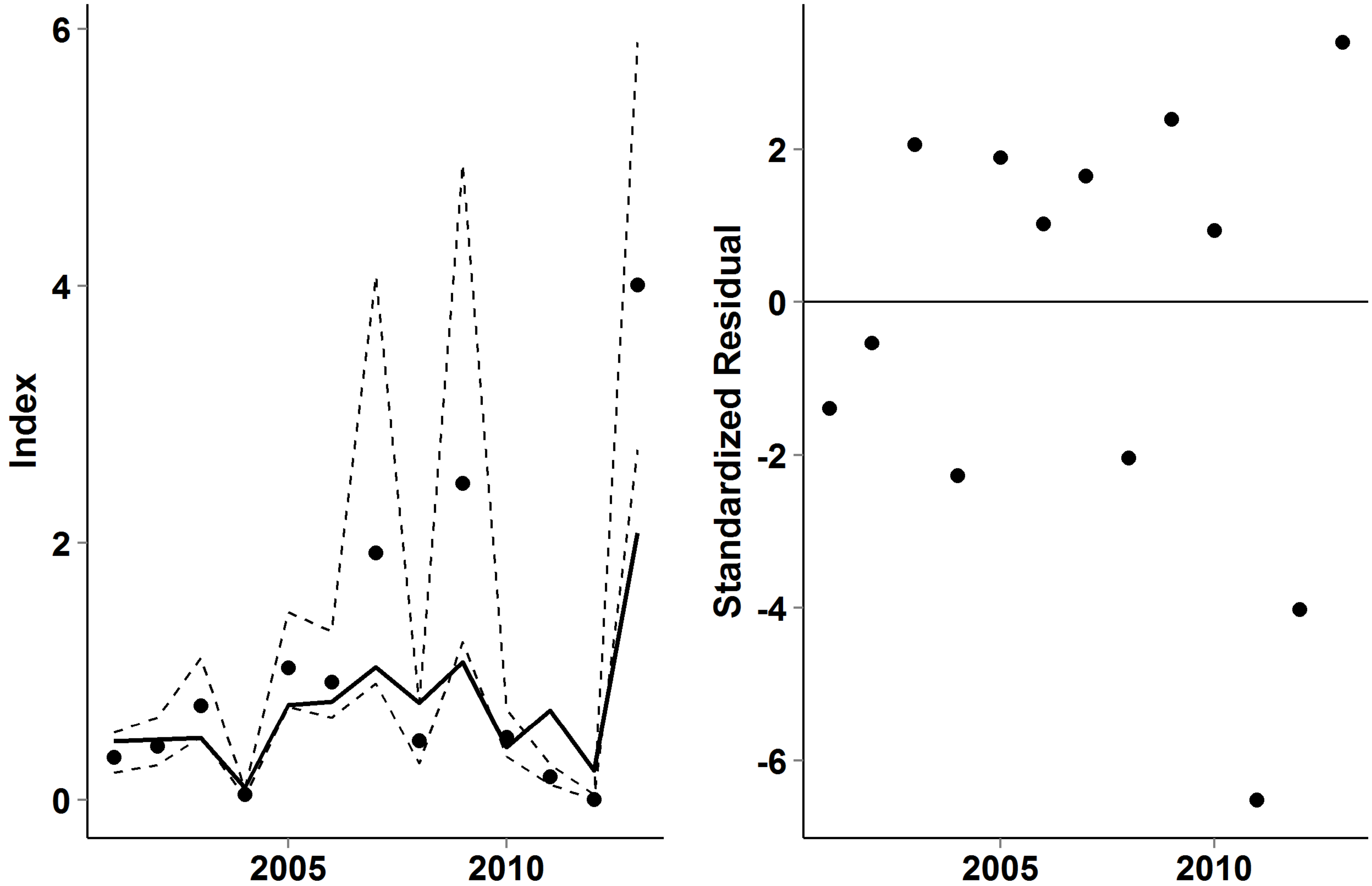


Figure 2.4.17 (a)Northern stock model fit to NC_IGNS_1 index with observed index (circles), model predicted index (solid black line), and ±1.96 input SEs of the observed index (dashed lines).
(b)Standardized residuals calculated as (log(obs)-log(pred))/input SE.

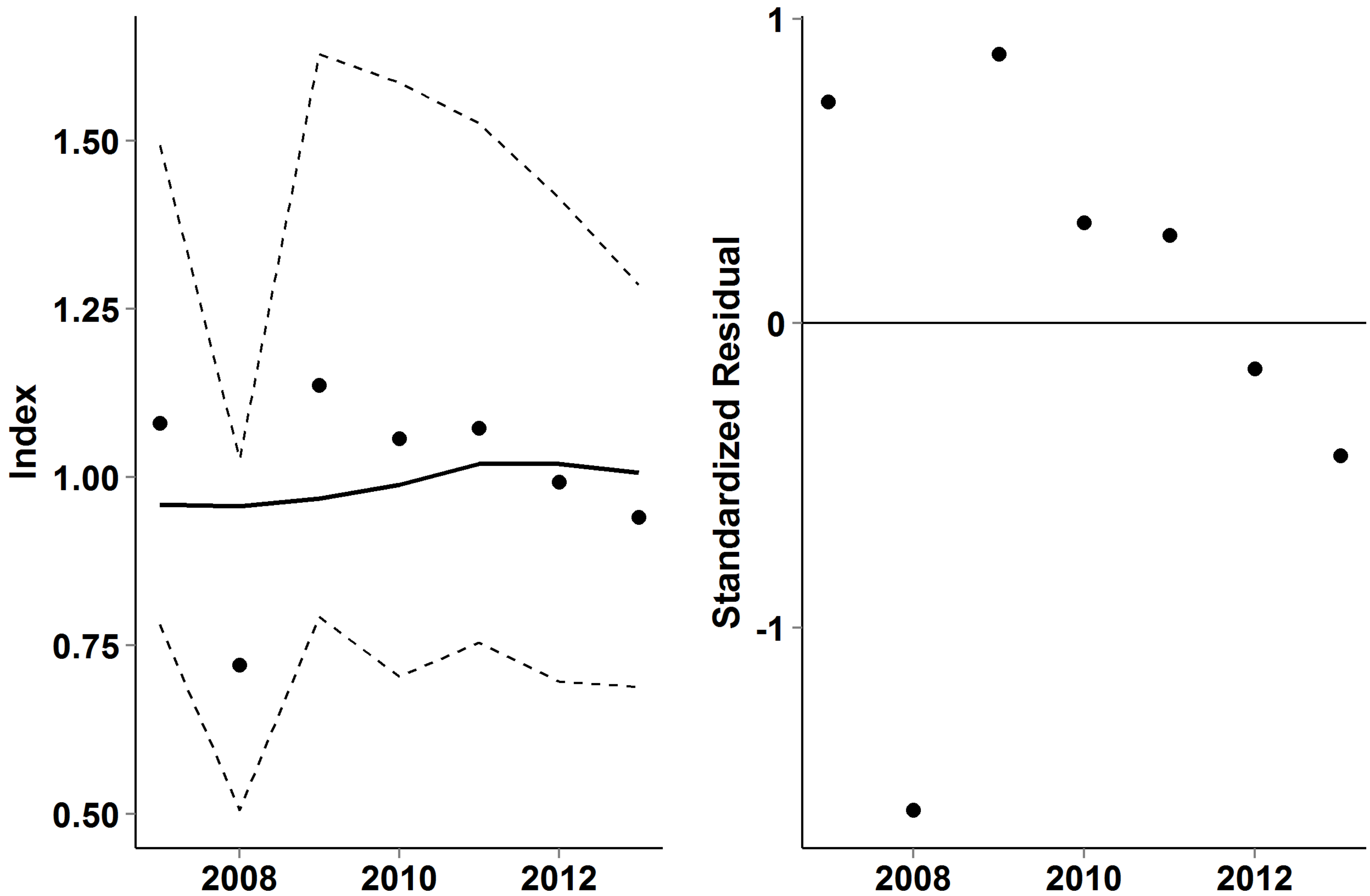


Figure 2.4.18 (a)Northern stock model fit to NC_LL index with observed index (circles), model predicted index (solid black line), and $\pm$1.96 input SEs of the observed index (dashed lines).
(b)Standardized residuals calculated as (log(obs)-log(pred))/input SE.

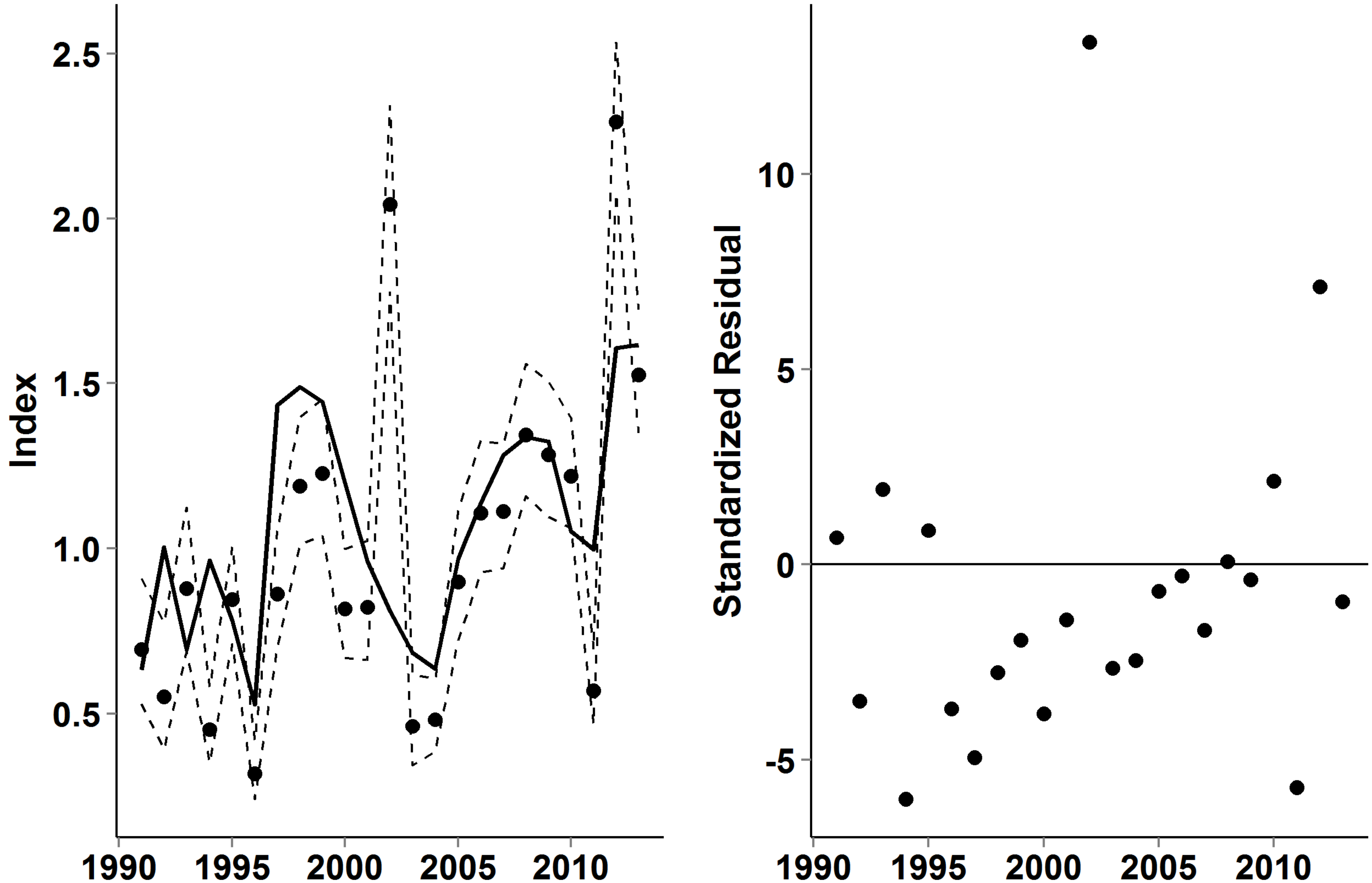


Figure 2.4.19 (a)Northern stock model fit to Rec_CPUE index with observed index (circles), model predicted index (solid black line), and ±1.96 input SEs of the observed index (dashed lines).
(b)Standardized residuals calculated as (log(obs)-log(pred))/input SE.

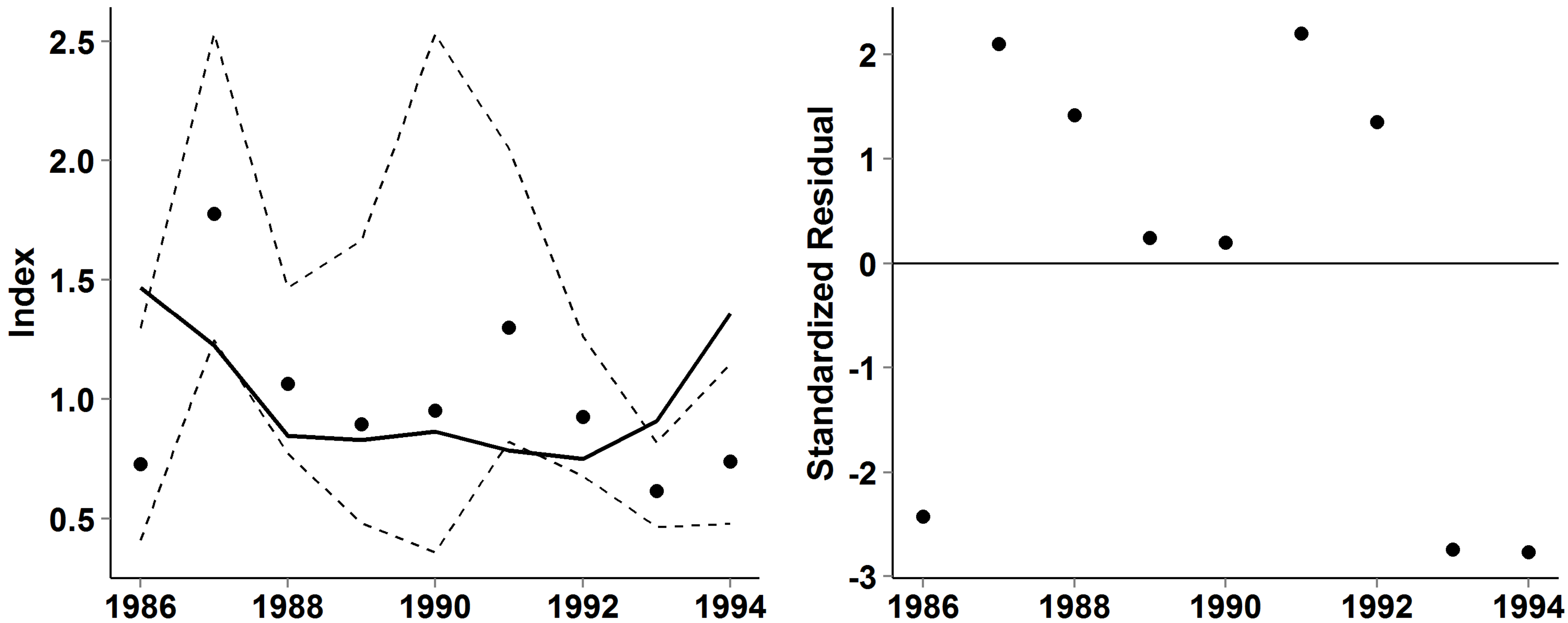


Figure 2.4.20 (a)Southern stock model fit to SCstopn index with observed index (circles), model predicted index (solid black line), and ±1.96 input SEs of the observed index (dashed lines).
(b)Standardized residuals calculated as (log(obs)-log(pred))/input SE.

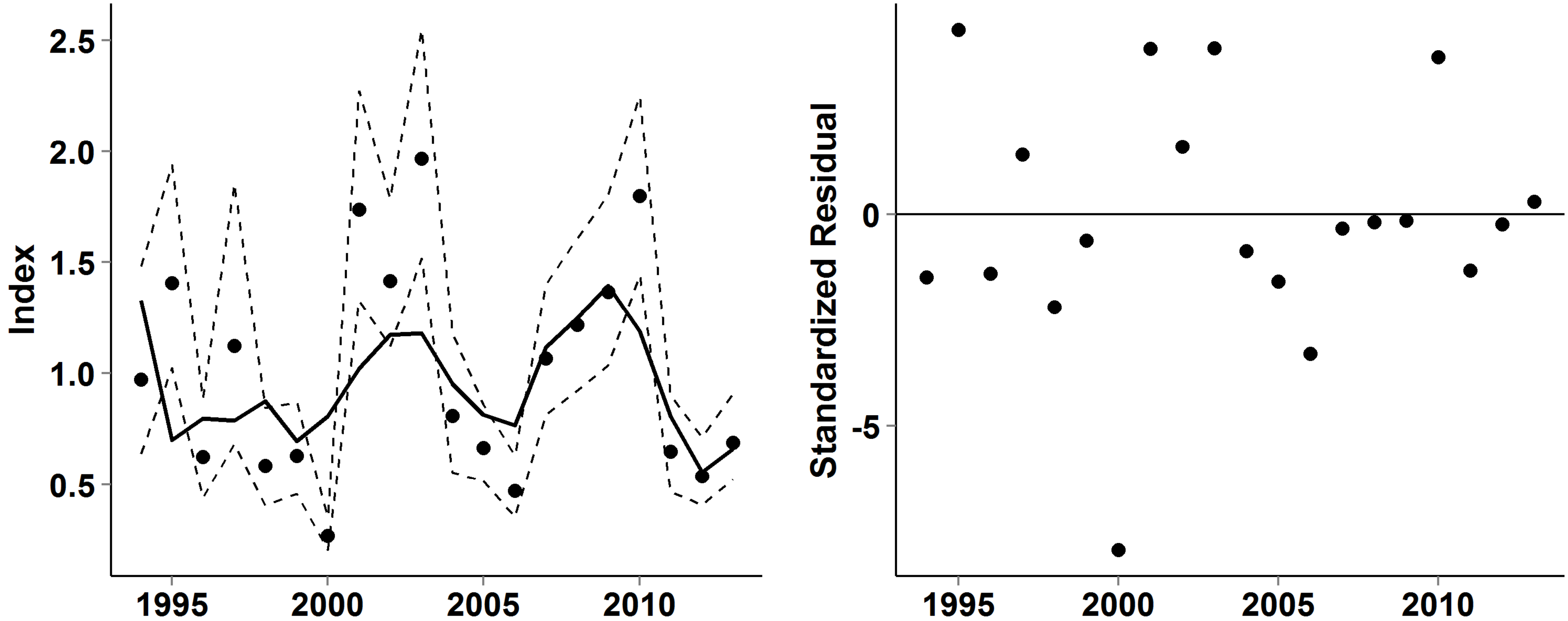


Figure 2.4.21 (a)Southern stock model fit to SCtn1 index with observed index (circles), model predicted index (solid black line), and ±1.96 input SEs of the observed index (dashed lines).
(b)Standardized residuals calculated as (log(obs)-log(pred))/input SE.

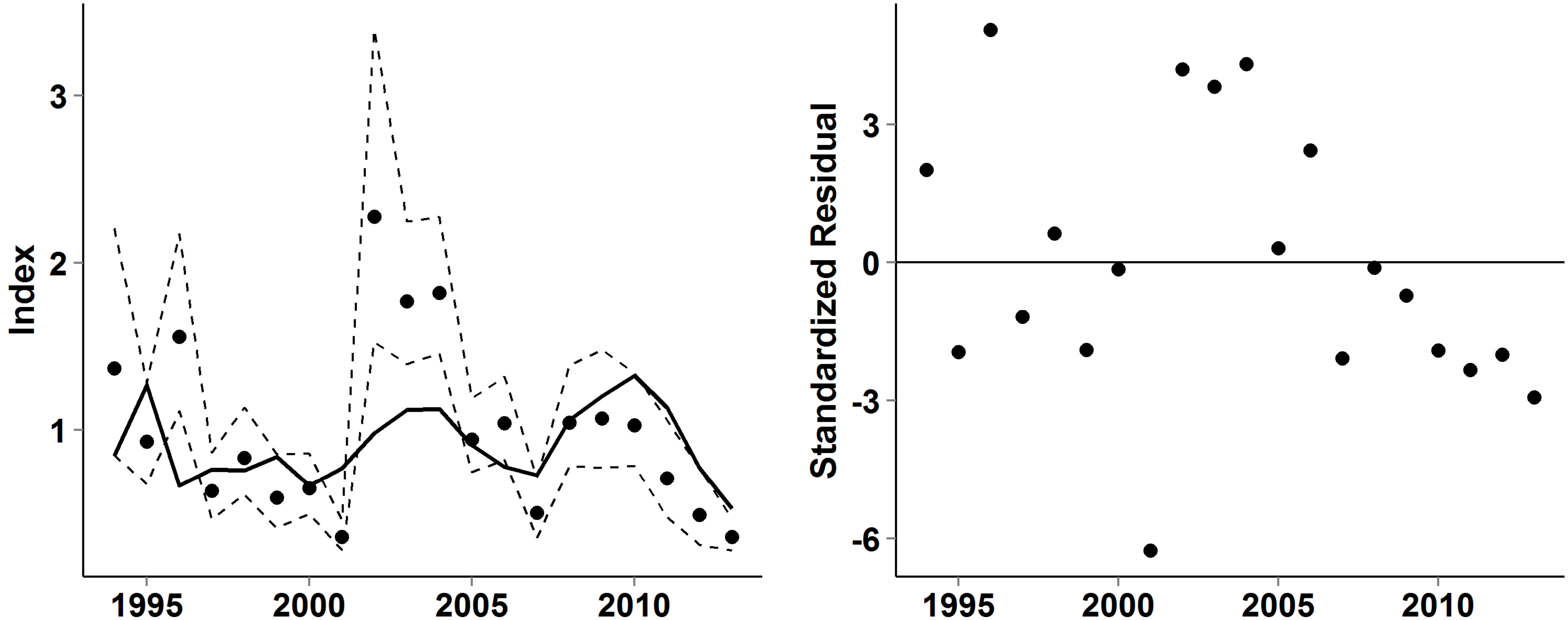


Figure 2.4.22 (a)Southern stock model fit to SCtn2 index with observed index (circles), model predicted index (solid black line), and ±1.96 input SEs of the observed index (dashed lines).
(b)Standardized residuals calculated as (log(obs)-log(pred))/input SE.

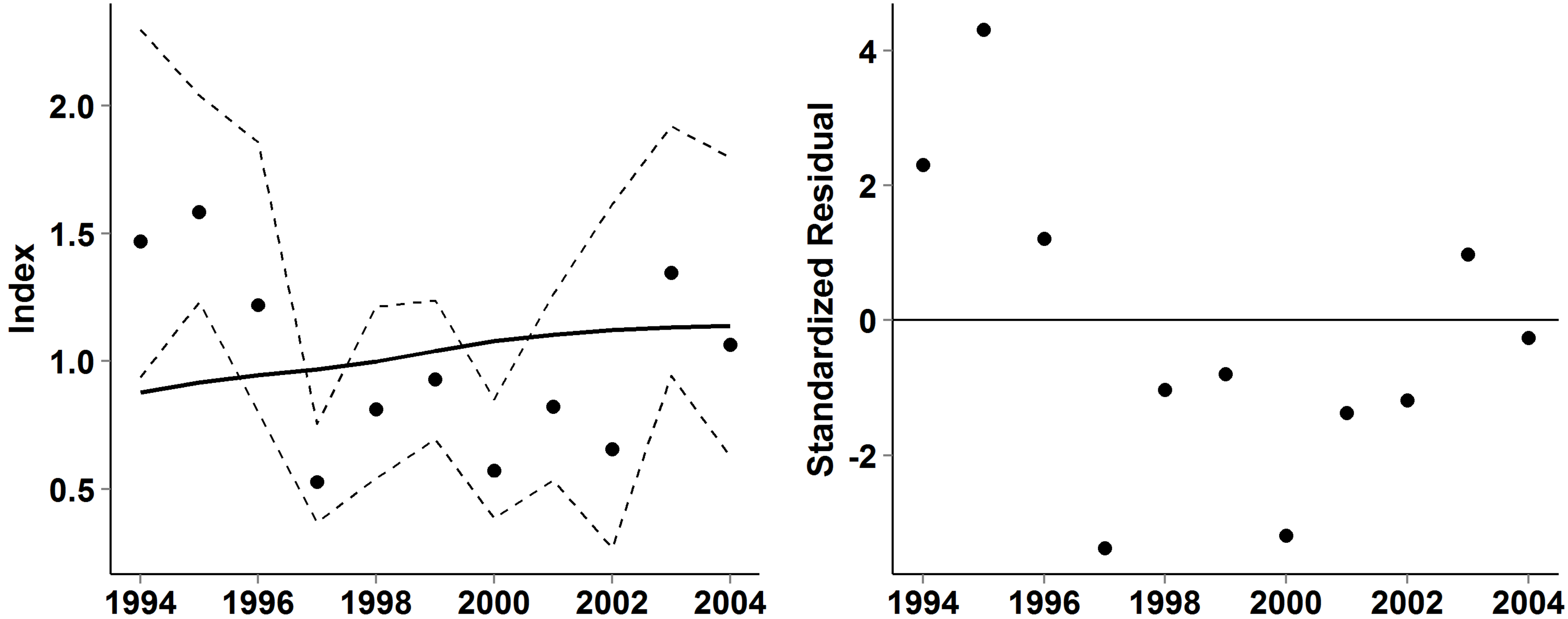


Figure 2.4.23 (a)Southern stock model fit to SCll_1 index with observed index (circles), model predicted index (solid black line), and +1.96 input SEs of the observed index (dashed lines).
(b)Standardized residuals calculated as (log(obs)-log(pred))/input SE.

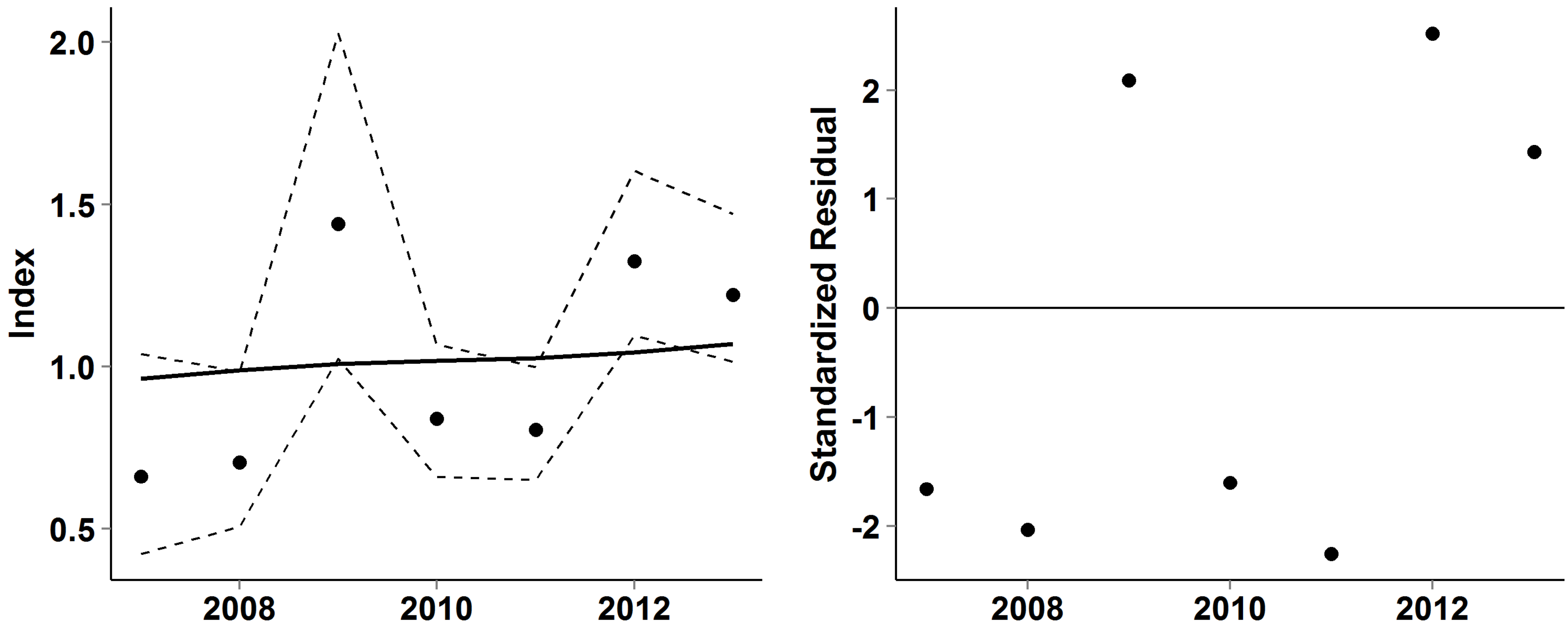


Figure 2.4.24 (a)Southern stock model fit to SCll.3 index with observed index (circles), model predicted index (solid black line), and $\pm$1.96 input SEs of the observed index (dashed lines).
(b)Standardized residuals calculated as (log(obs)-log(pred))/input SE.

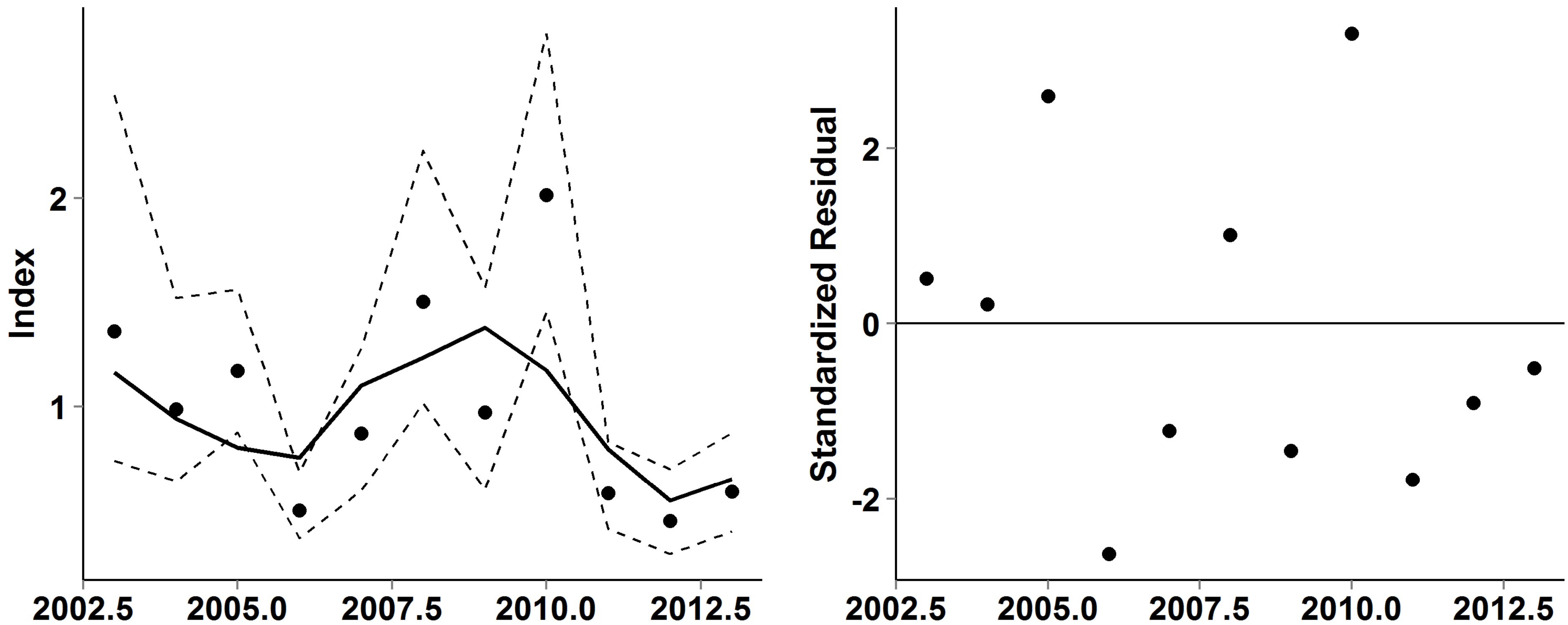


Figure 2.4.25 (a)Southern stock model fit to GAgn index with observed index (circles), model predicted index (solid black line), and ±1.96 input SEs of the observed index (dashed lines).
(b)Standardized residuals calculated as (log(obs)-log(pred))/input SE.

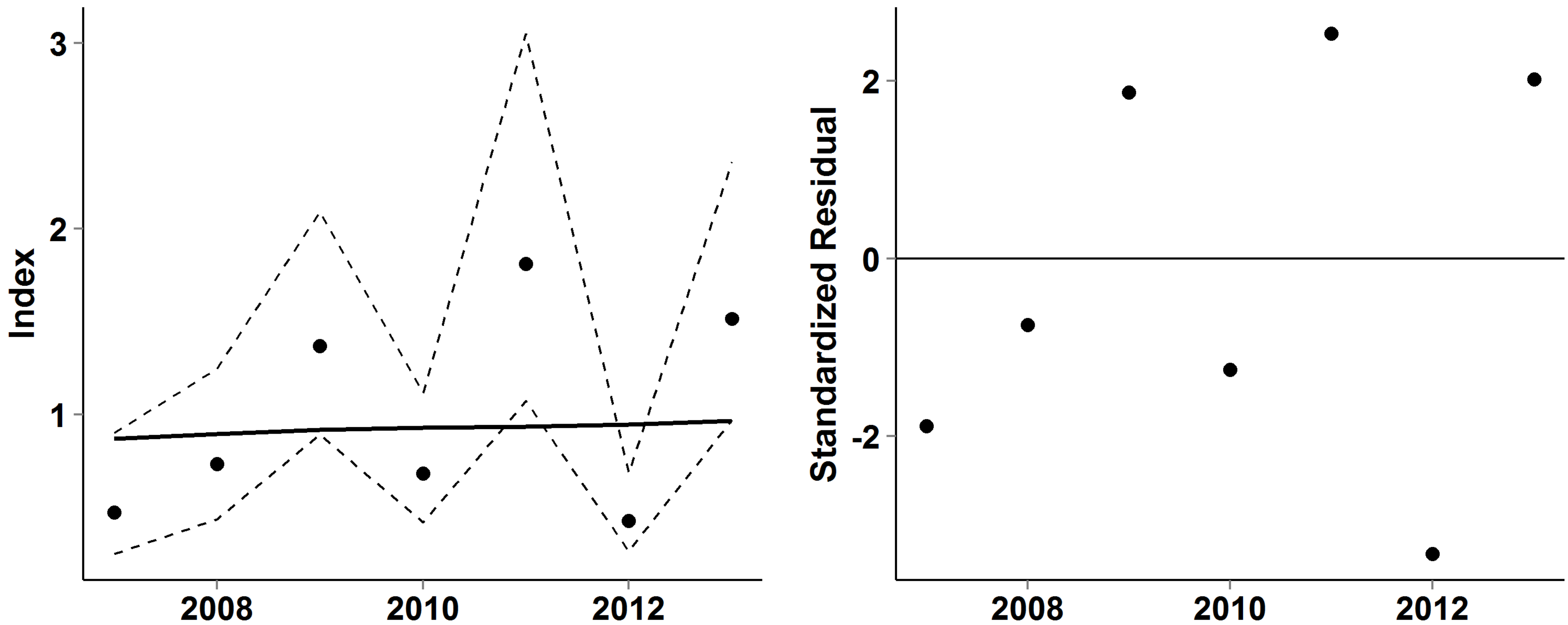


Figure 2.4.26 (a)Southern stock model fit to GAll index with observed index (circles), model predicted index (solid black line), and ±1.96 input SEs of the observed index (dashed lines).
(b)Standardized residuals calculated as (log(obs)-log(pred))/input SE.

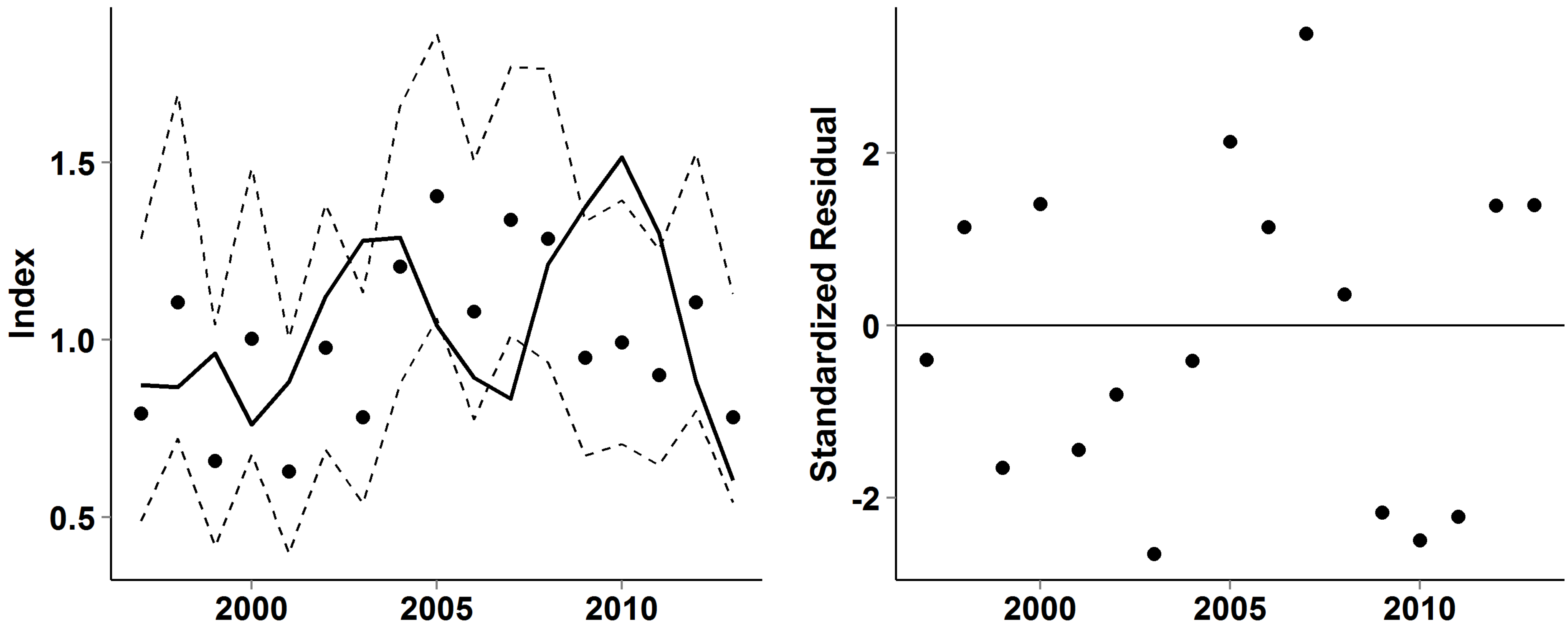


Figure 2.4.27 (a)Southern stock model fit to FLhs2 index with observed index (circles), model predicted index (solid black line), and ±1.96 input SEs of the observed index (dashed lines).
(b)Standardized residuals calculated as (log(obs)-log(pred))/input SE.

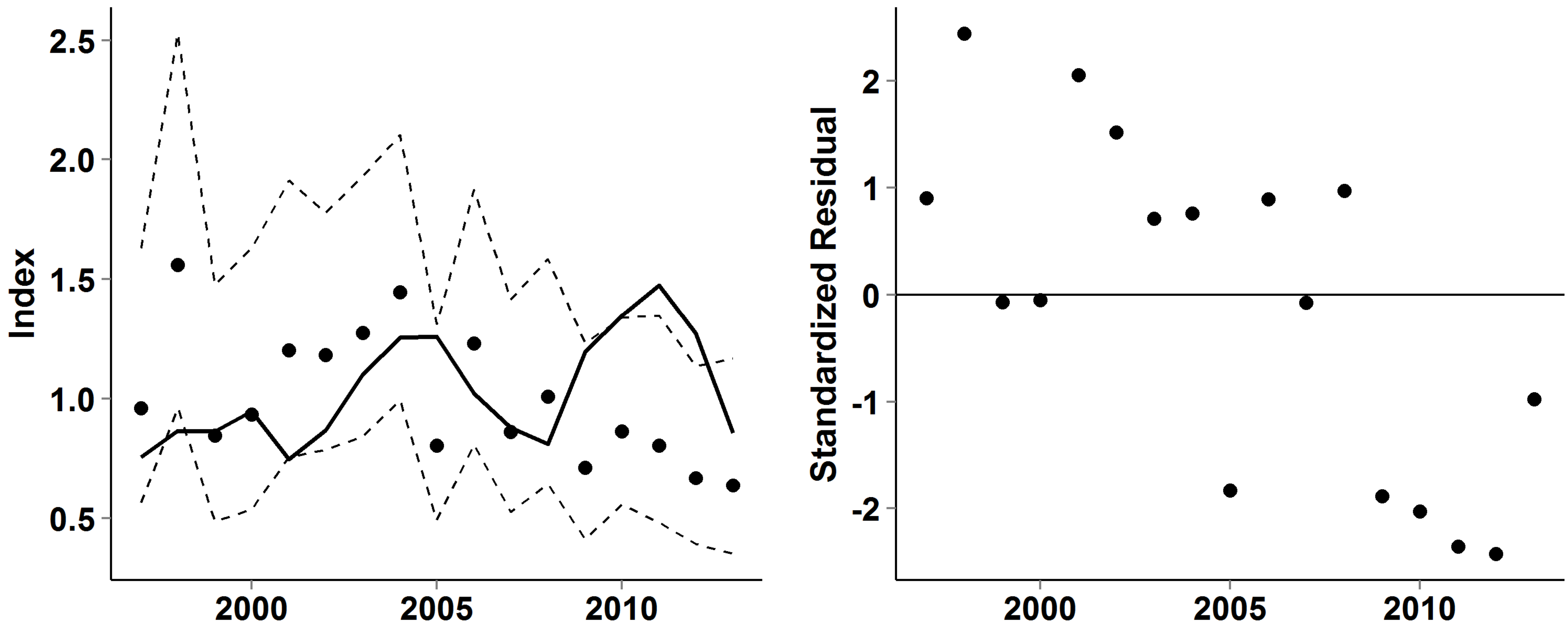


Figure 2.4.28 (a)Southern stock model fit to FLhs3 index with observed index (circles), model predicted index (solid black line), and +1.96 input SEs of the observed index (dashed lines).
(b)Standardized residuals calculated as (log(obs)-log(pred))/input SE.

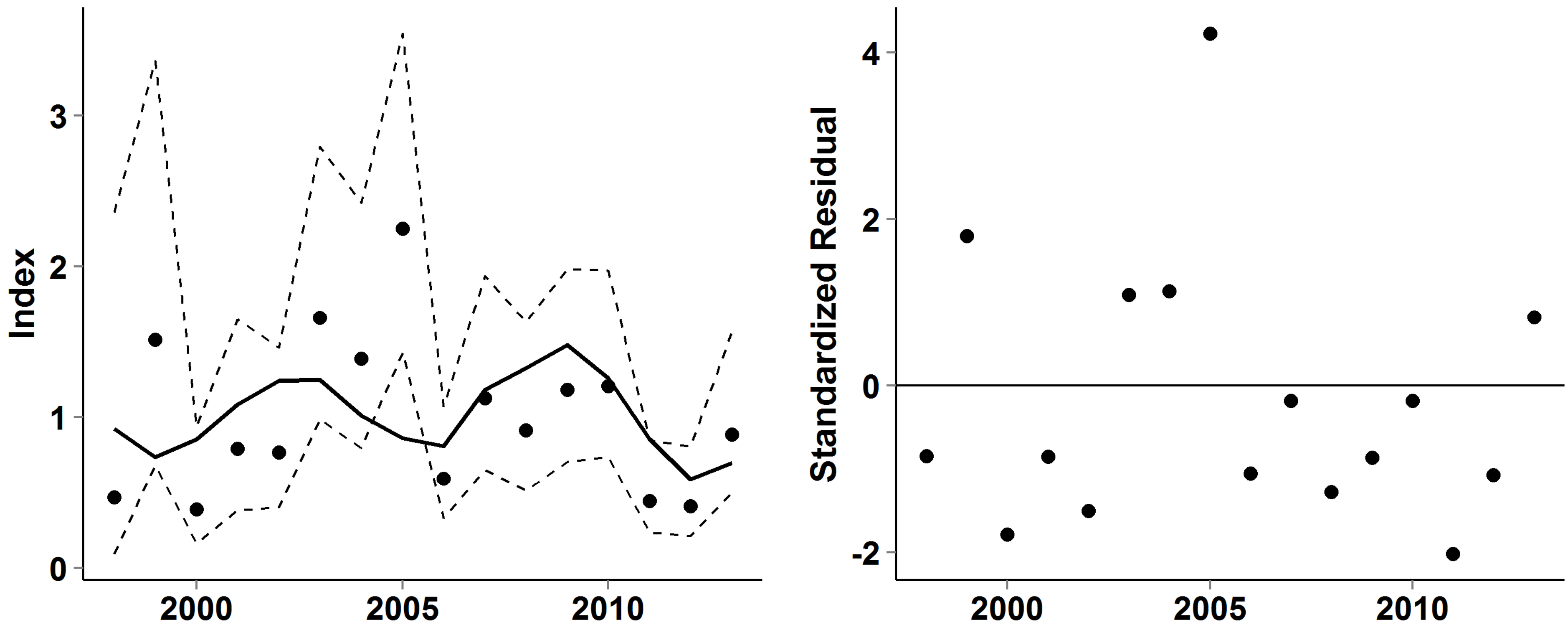


Figure 2.4.29 (a)Southern stock model fit to FL_IRJXsn index with observed index (circles), model predicted index (solid black line), and ±1.96 input SEs of the observed index (dashed lines).
(b)Standardized residuals calculated as (log(obs)-log(pred))/input SE.

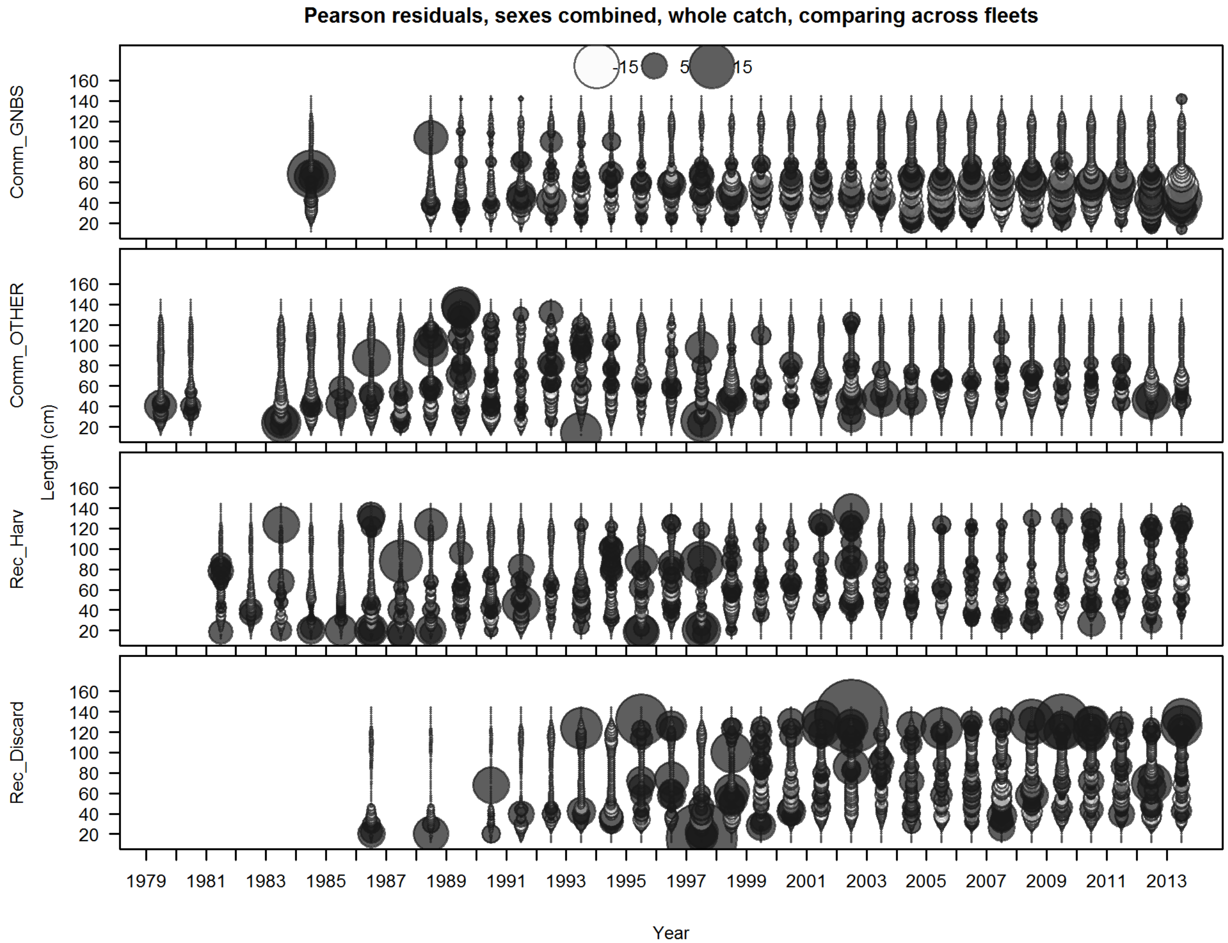
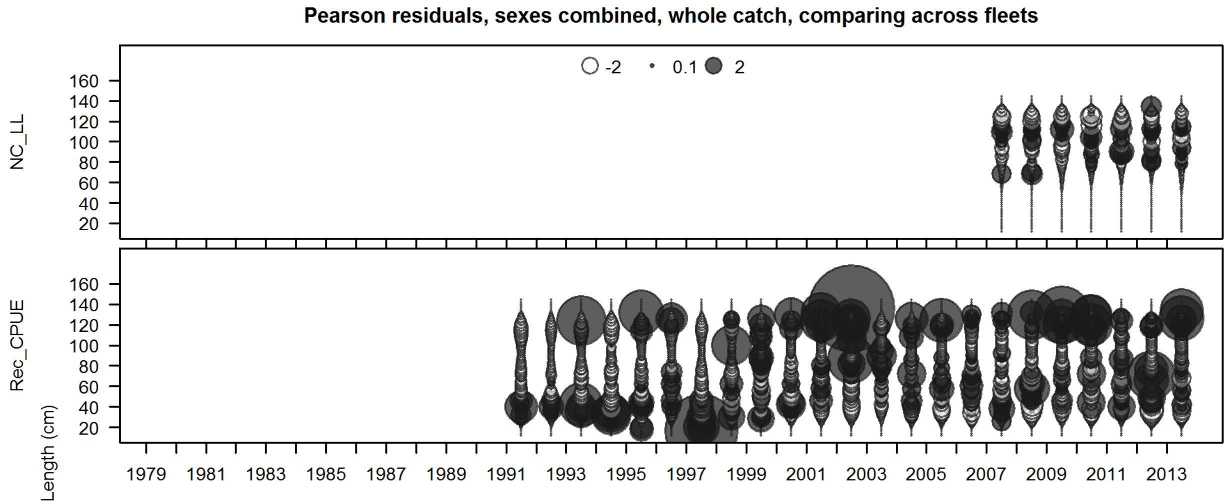


Figure 2.4.30 Pearson residuals of length composition (TL cm) model fits for each northern fishing fleet.



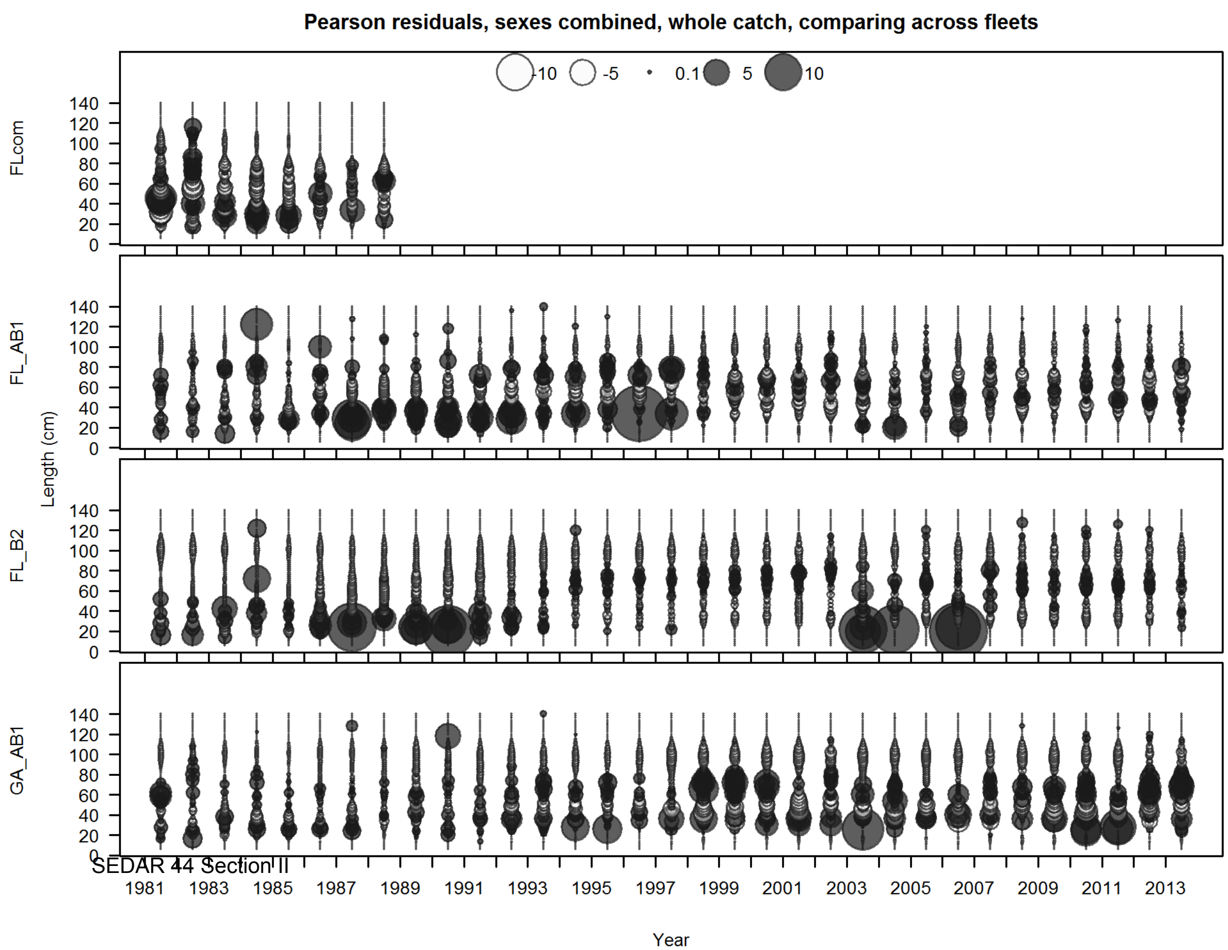


Figure 2.4.31 Pearson residuals of length composition (TL cm) model fits for each northern index with input length data.

Figure 2.4.32 Pearson residuals for length composition (TL cm) model fits for each southern fishing fleet and index with input length data.

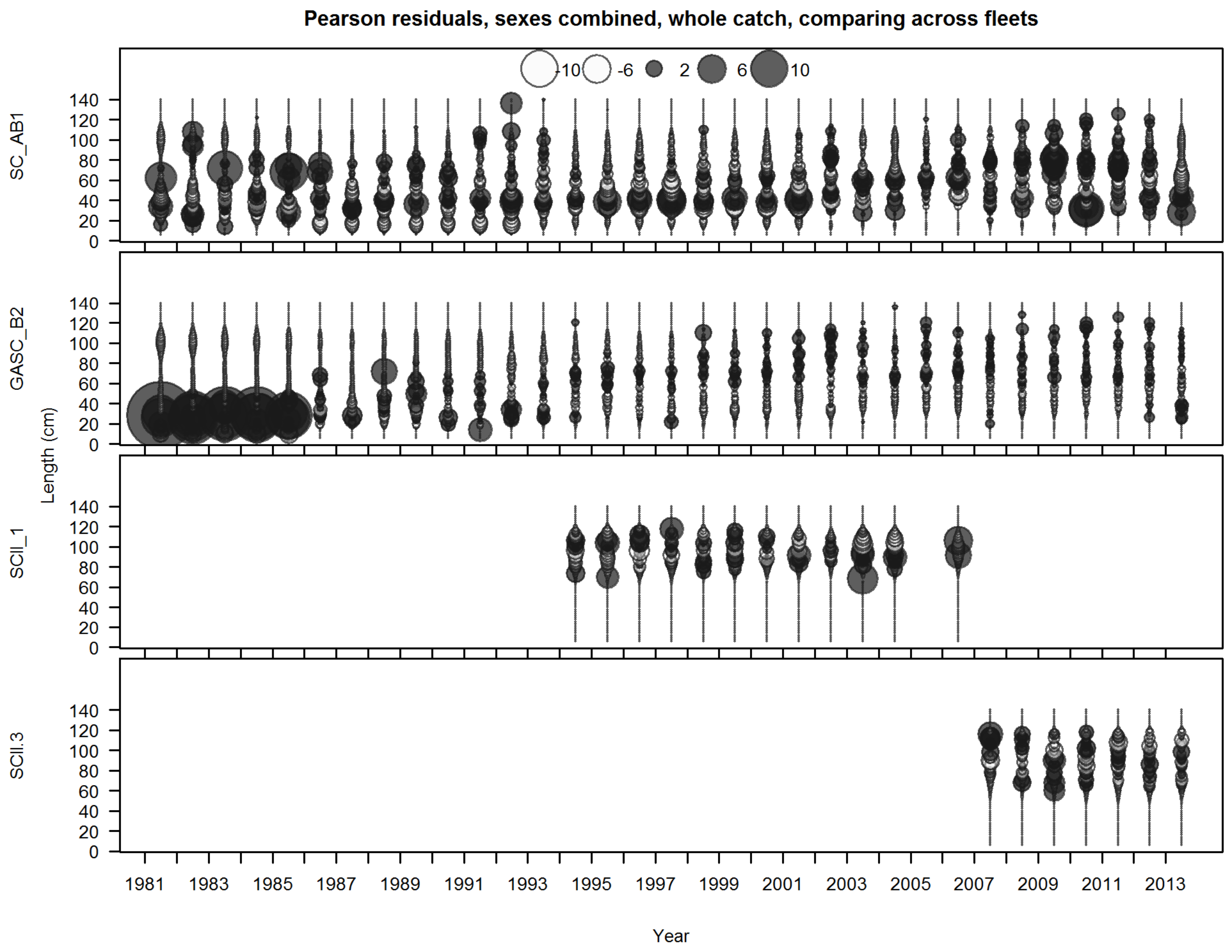


Figure 2.4.32 Continued

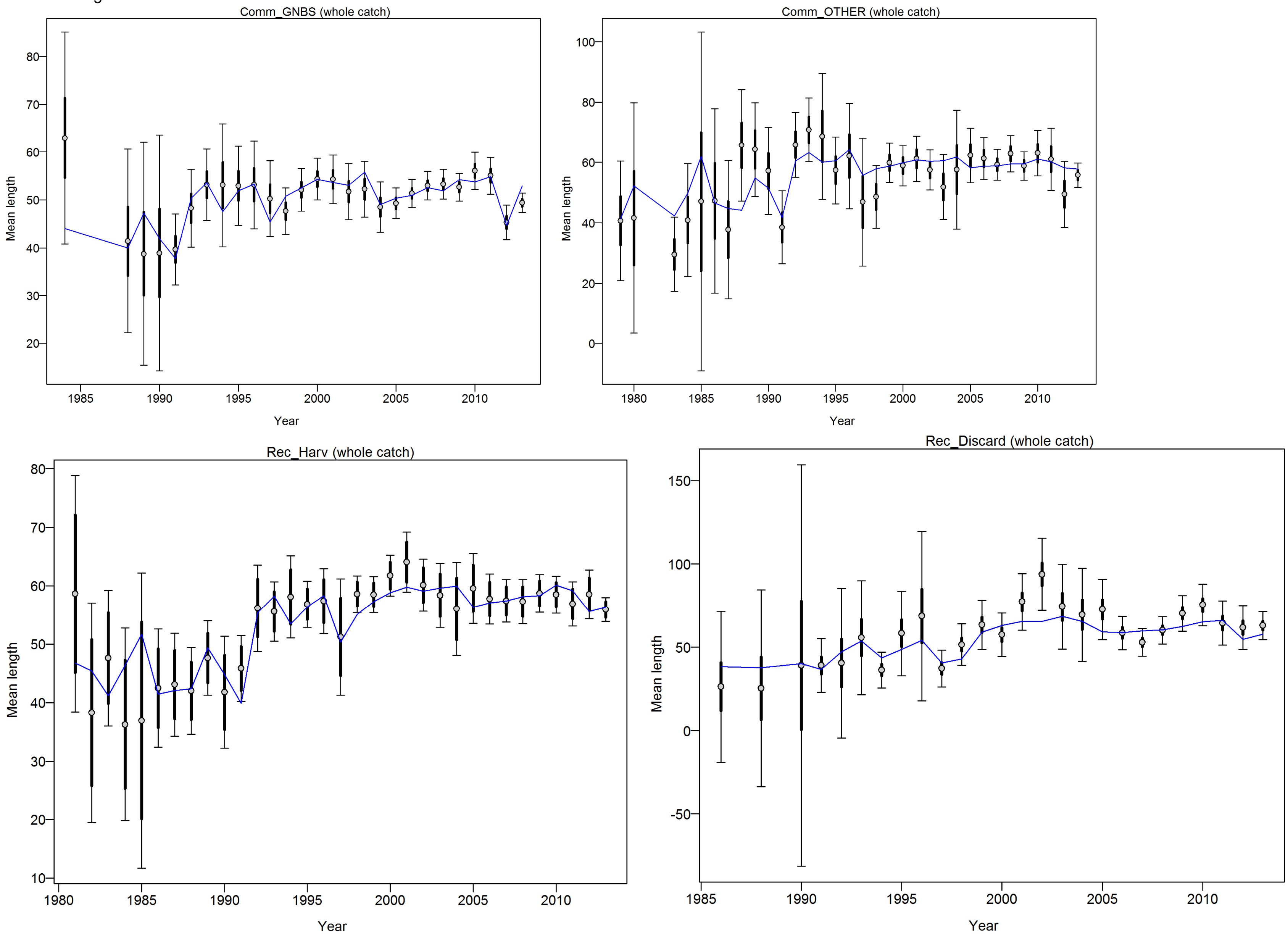
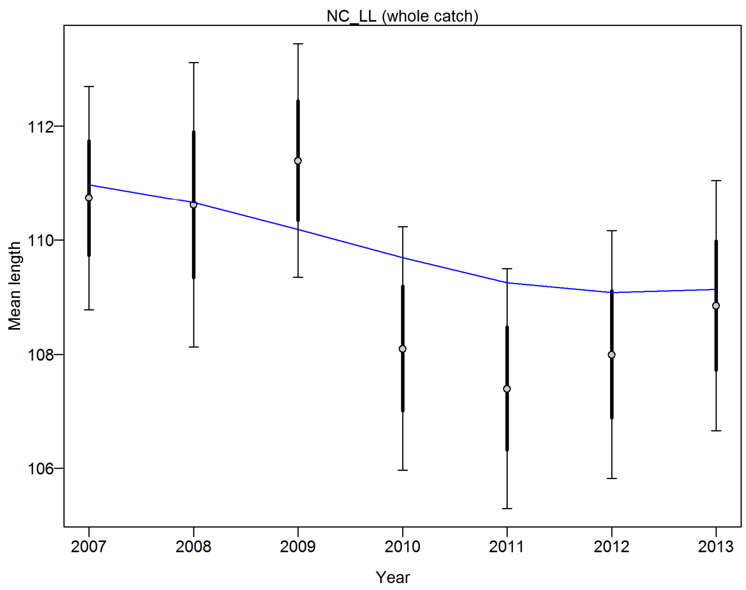


Figure 2.4.33 Model fits to the annual mean total length (cm) of northern stock removals by the fishing fleets with input length data.



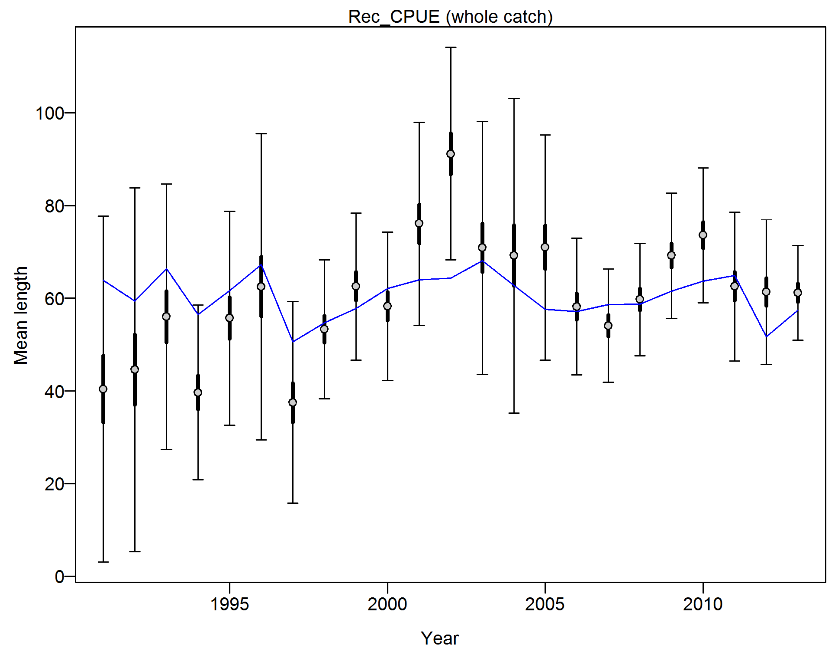
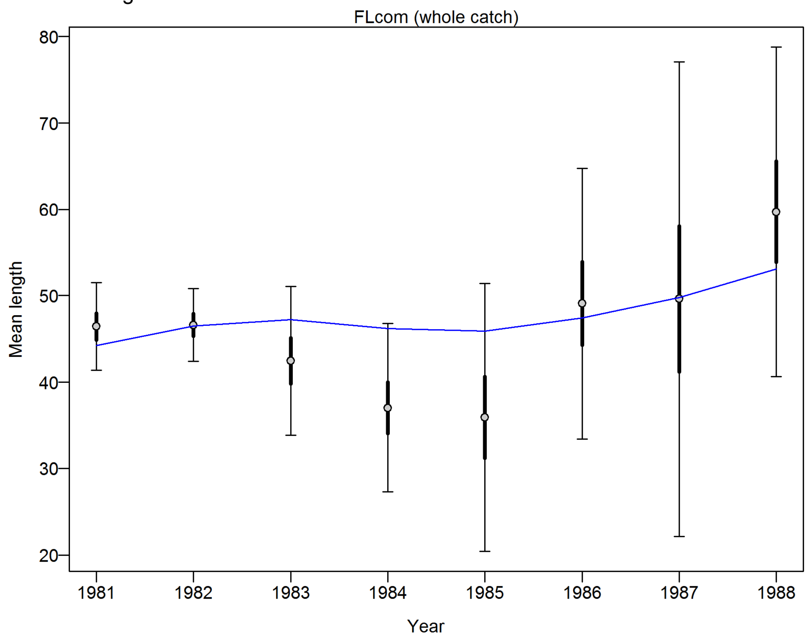
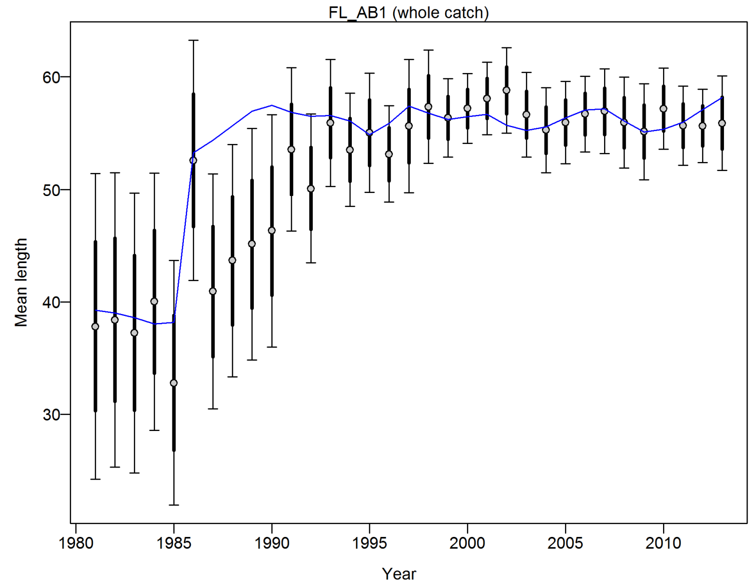
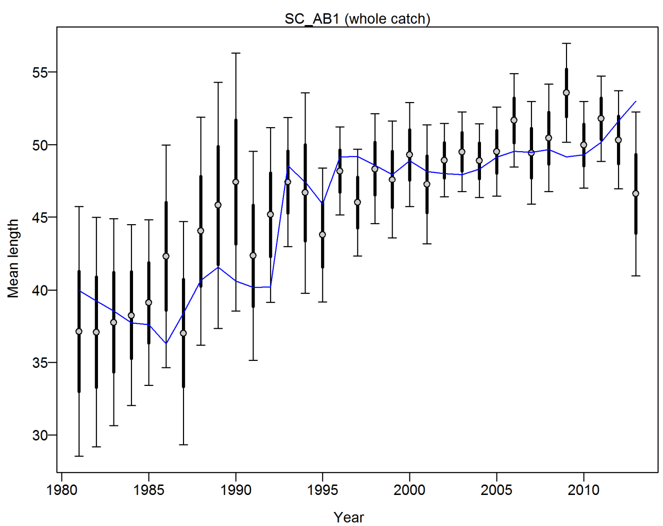
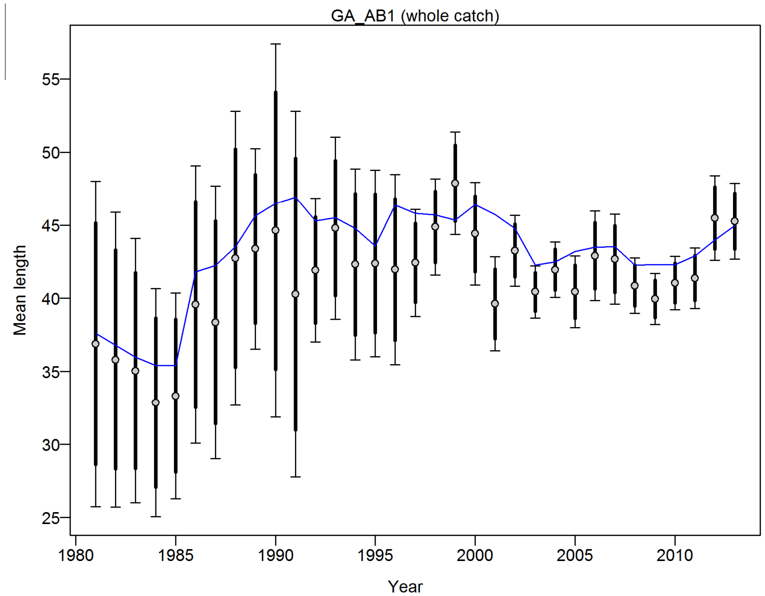


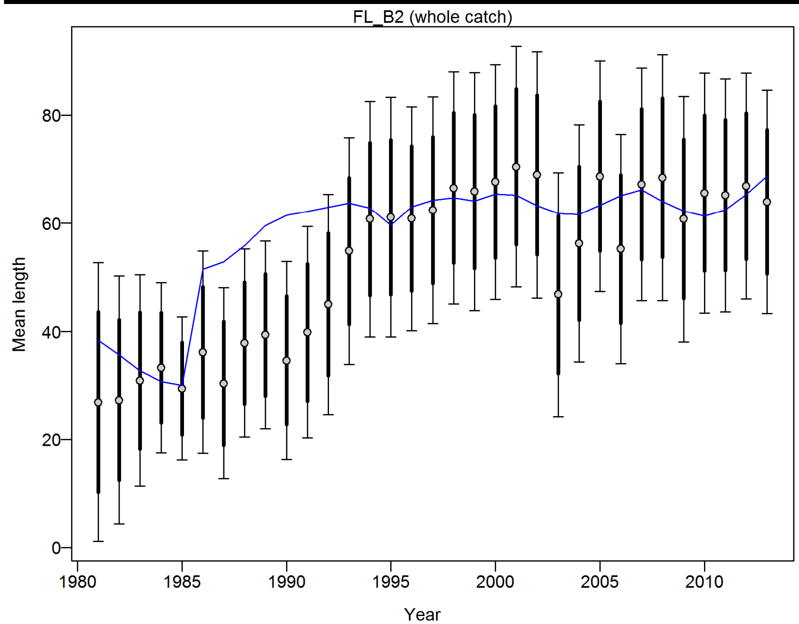
Figure 2.4.34 Model fits to the annual mean total length (cm) of northern stock catch in the indices with input length data.


FLcom (whole catch)
Mean length
Year
20
30
40
50
60
70
80
1981
1982
1983
1984
1985
1986
1987
1988


FL_AB1 (whole catch)
Mean length
Year
30
40
50
60
1980
1985
1990
1995
2000
2005
2010


SC_AB1 (whole catch)
Mean length
Year
30
35
40
45
50
55
1980
1985
1990
1995
2000
2005
2010


GA_AB1 (whole catch)
Mean length
Year
25
30
35
40
45
50
55
1980
1985
1990
1995
2000
2005
2010



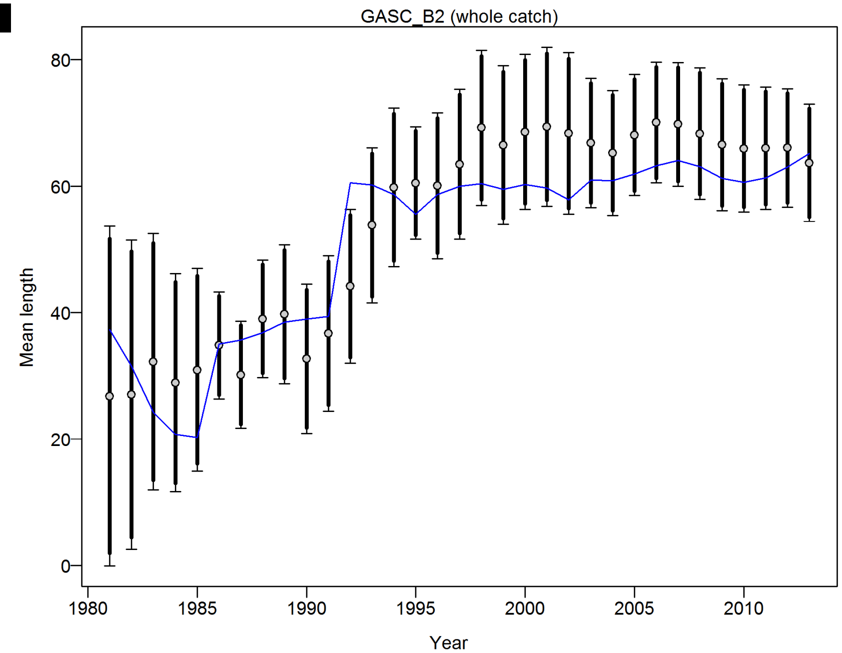
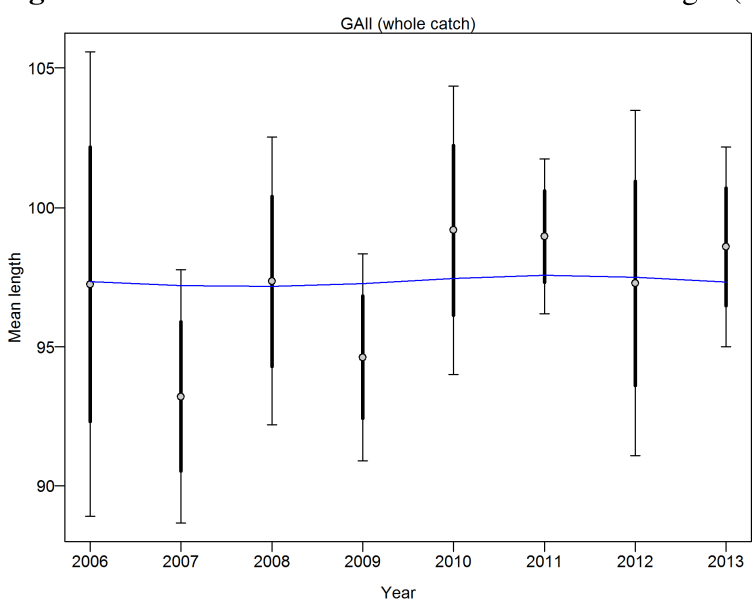
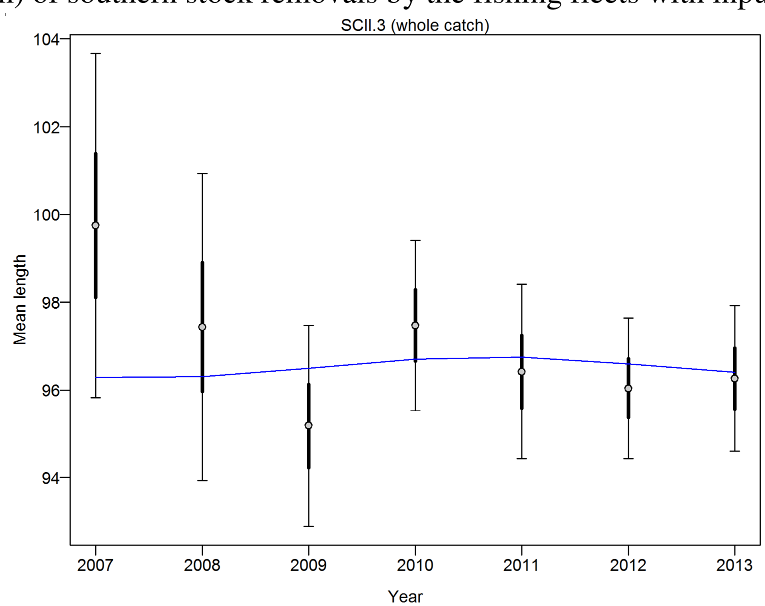


Figure 2.4.35 Model fits to the annual mean total length (cm) of southern stock removals by the fishing fleets with input length data.





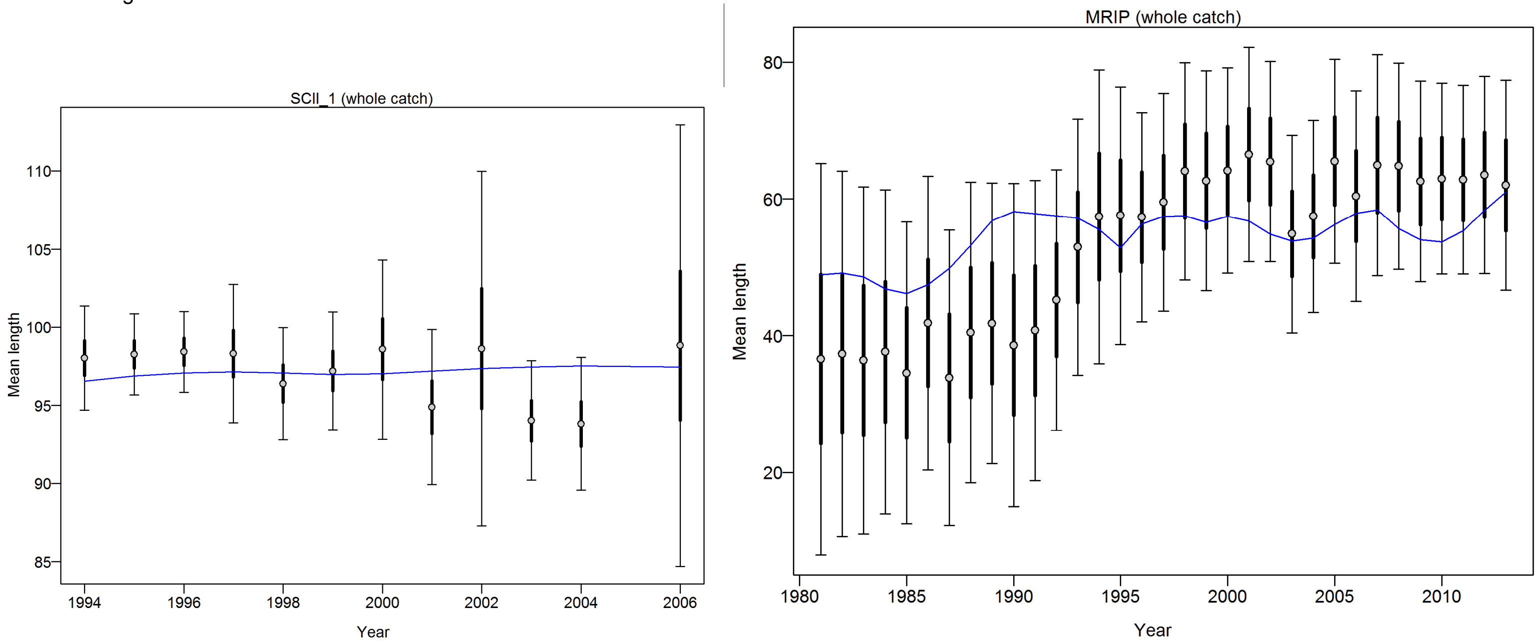


Figure 2.4.36 Model fits to the annual mean total length (cm) of southern stock catch in the indices with input length data.

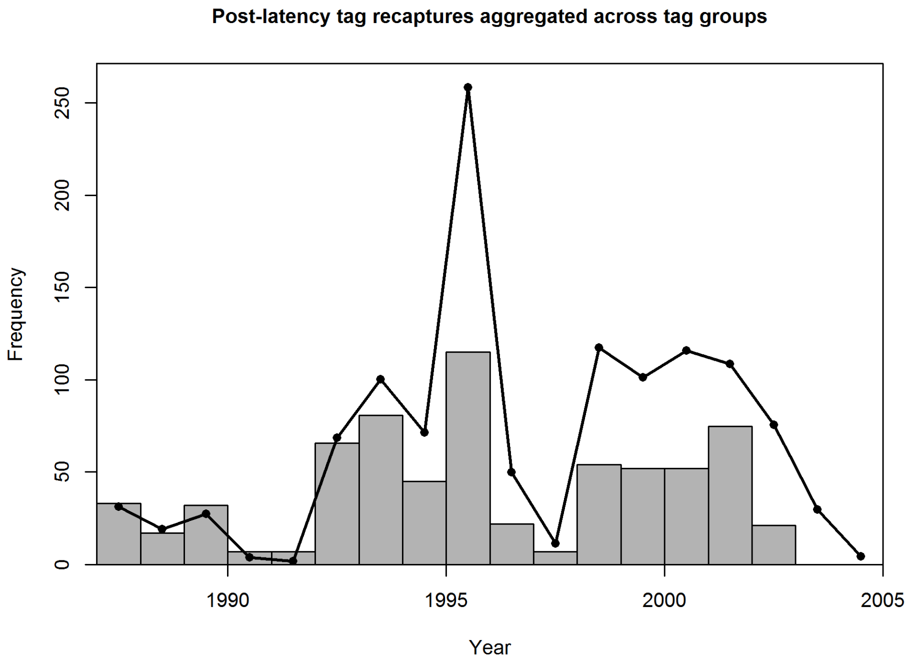


Figure 2.4.37 Northern stock model observed (bars) and predicted (line) recaptures of tagged fish aggregated across tag groups and fleets.

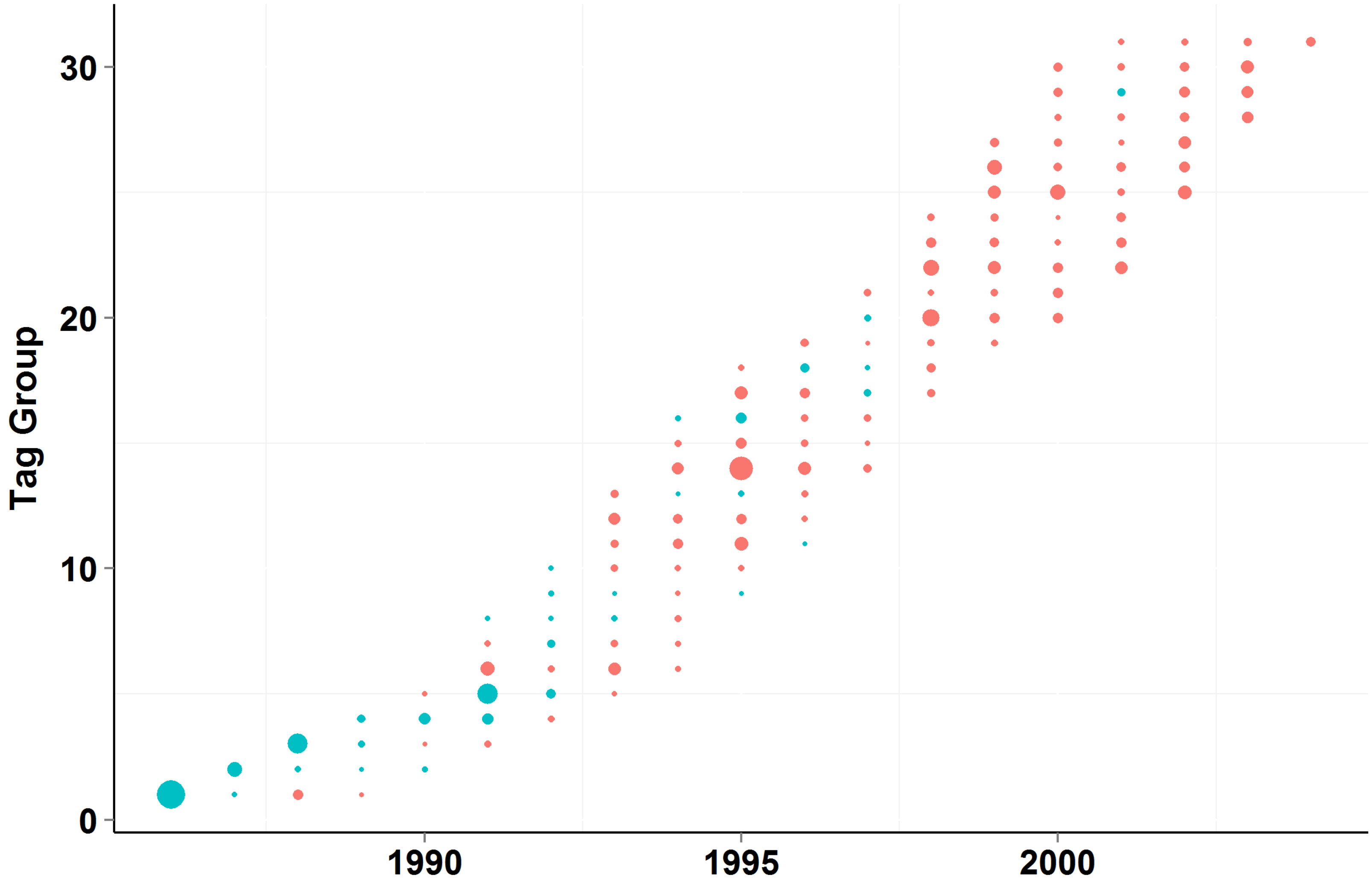


Figure 2.4.38 Residuals for recapture estimates by tag group and year in the northern stock model. Blue indicates positive residuals (underestimate) and red indicates negative residuals (overestimate).

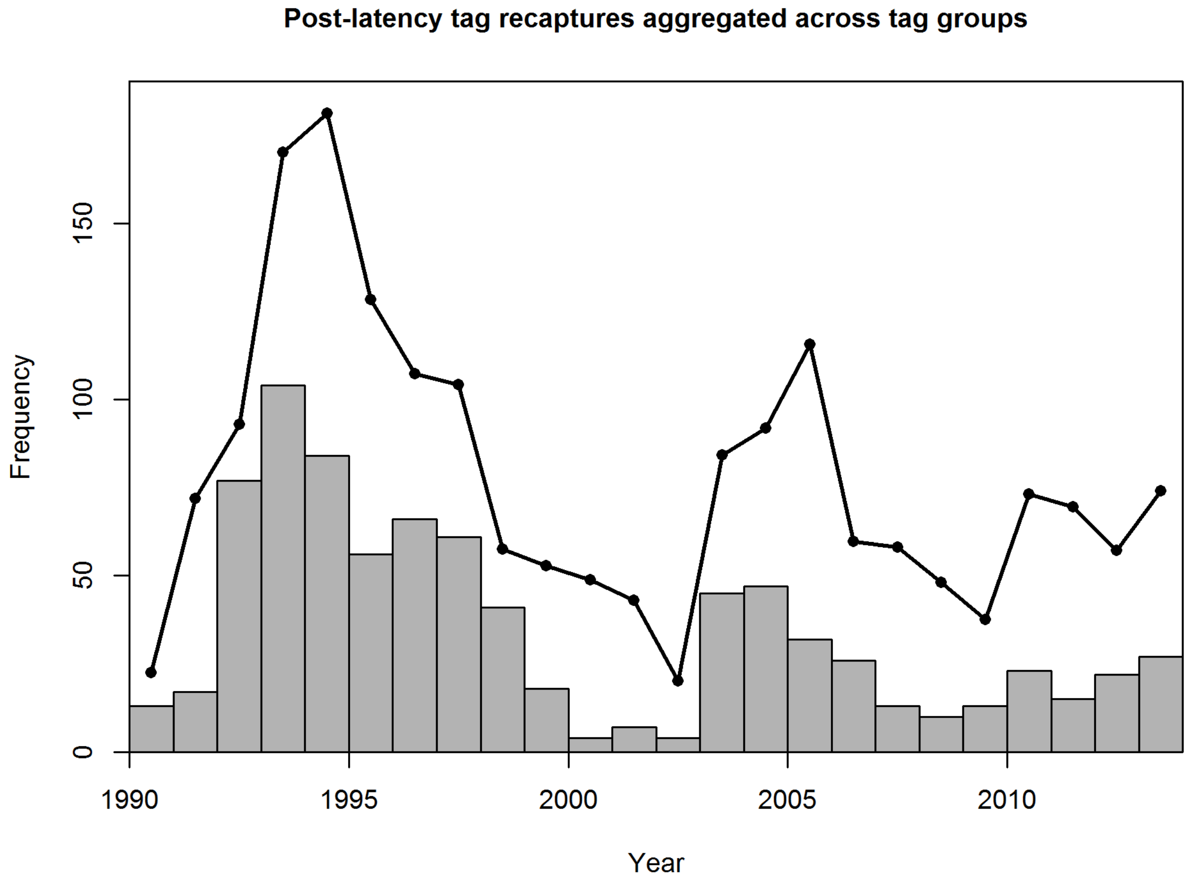


Figure 2.4.39 Southern stock model observed (bars) and predicted (line) recaptures of tagged fish aggregated across tag groups and fleets.

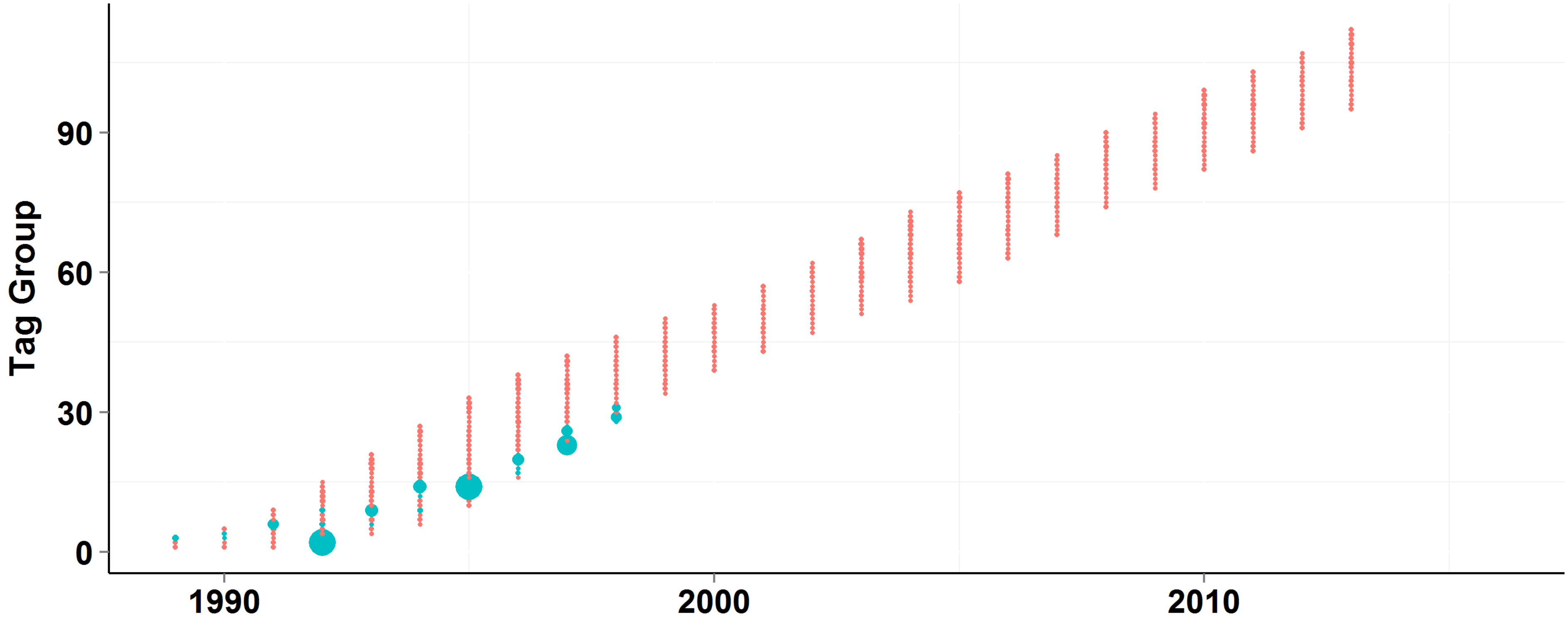


Figure 2.4.40 Residuals for recapture estimates by tag group and year in the southern stock model. Blue indicates positive residuals (underestimate) and red indicates negative residuals (overestimate).

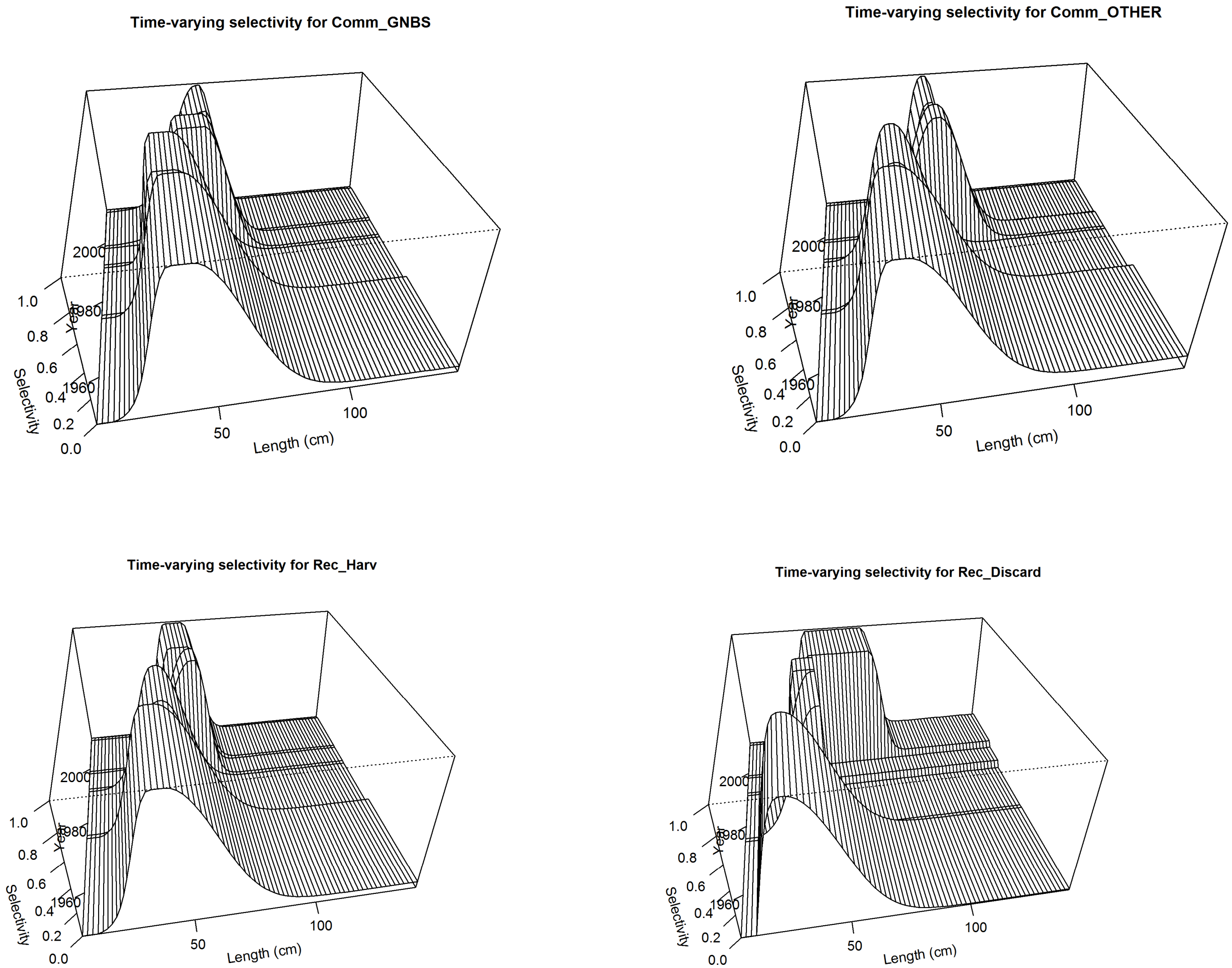


Figure 2.4.41 Selectivities-at-length of the Comm_GNBS fleet (upper left), Comm_OTHER fleet (upper right), Rec_Harv fleet (lower left), and Rec_Discard fleet (lower right) by regulation period.

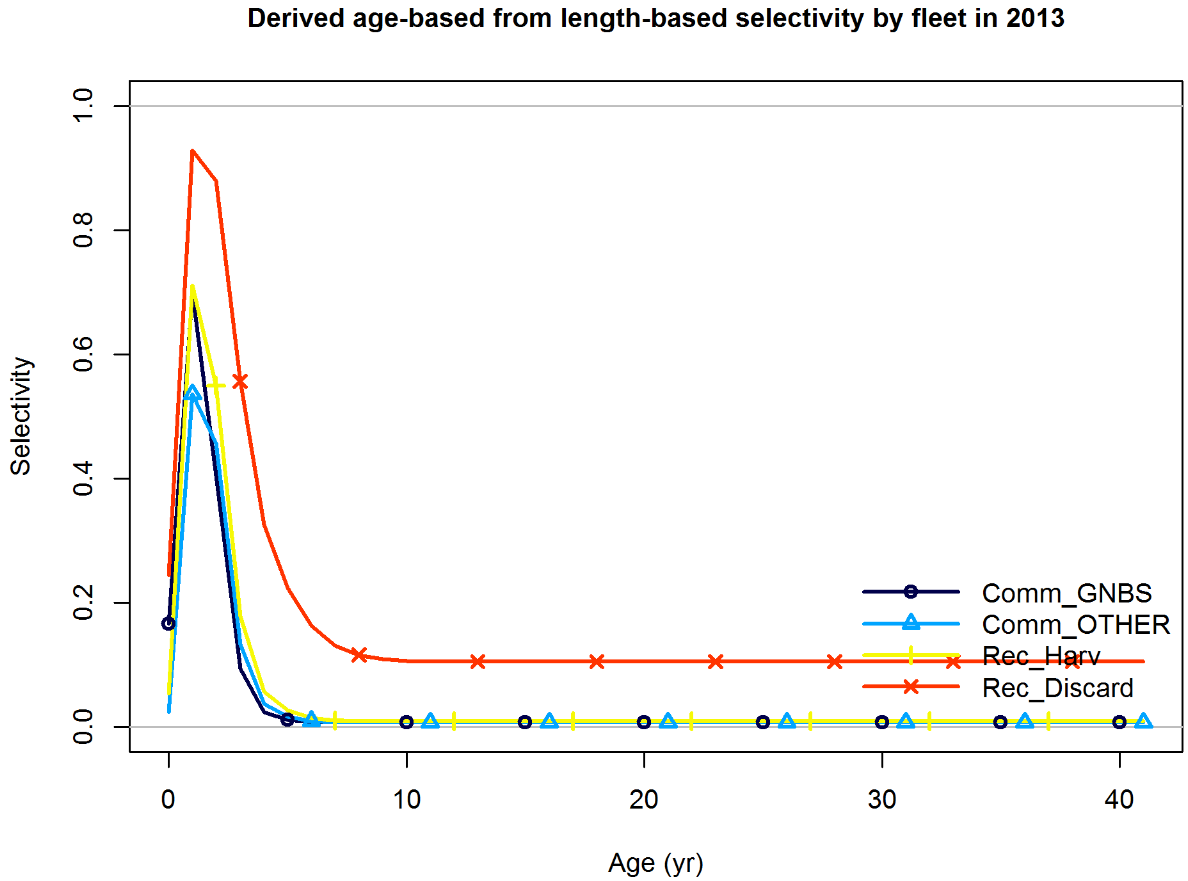
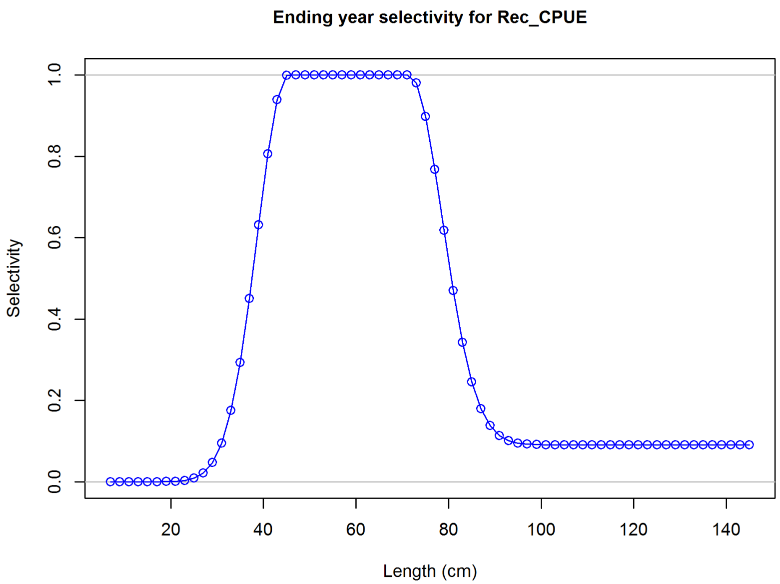


Figure 2.4.42 Selectivities-at-age of northern fishing fleets in 2013 derived from length selectivities.



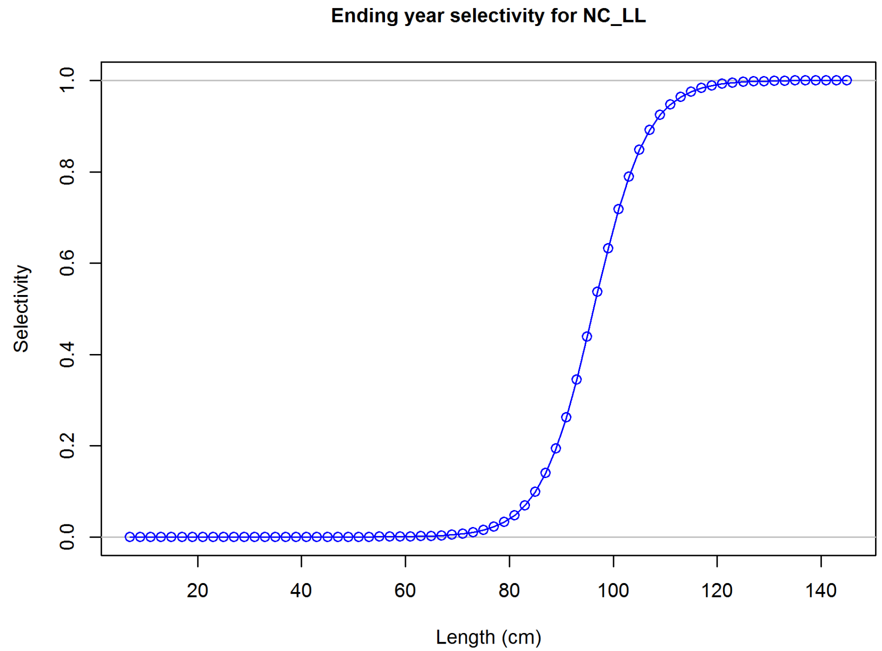


Figure 2.4.43 Selectivities-at-length of the Rec_CPUE (left) and NC_LL (right) indices.

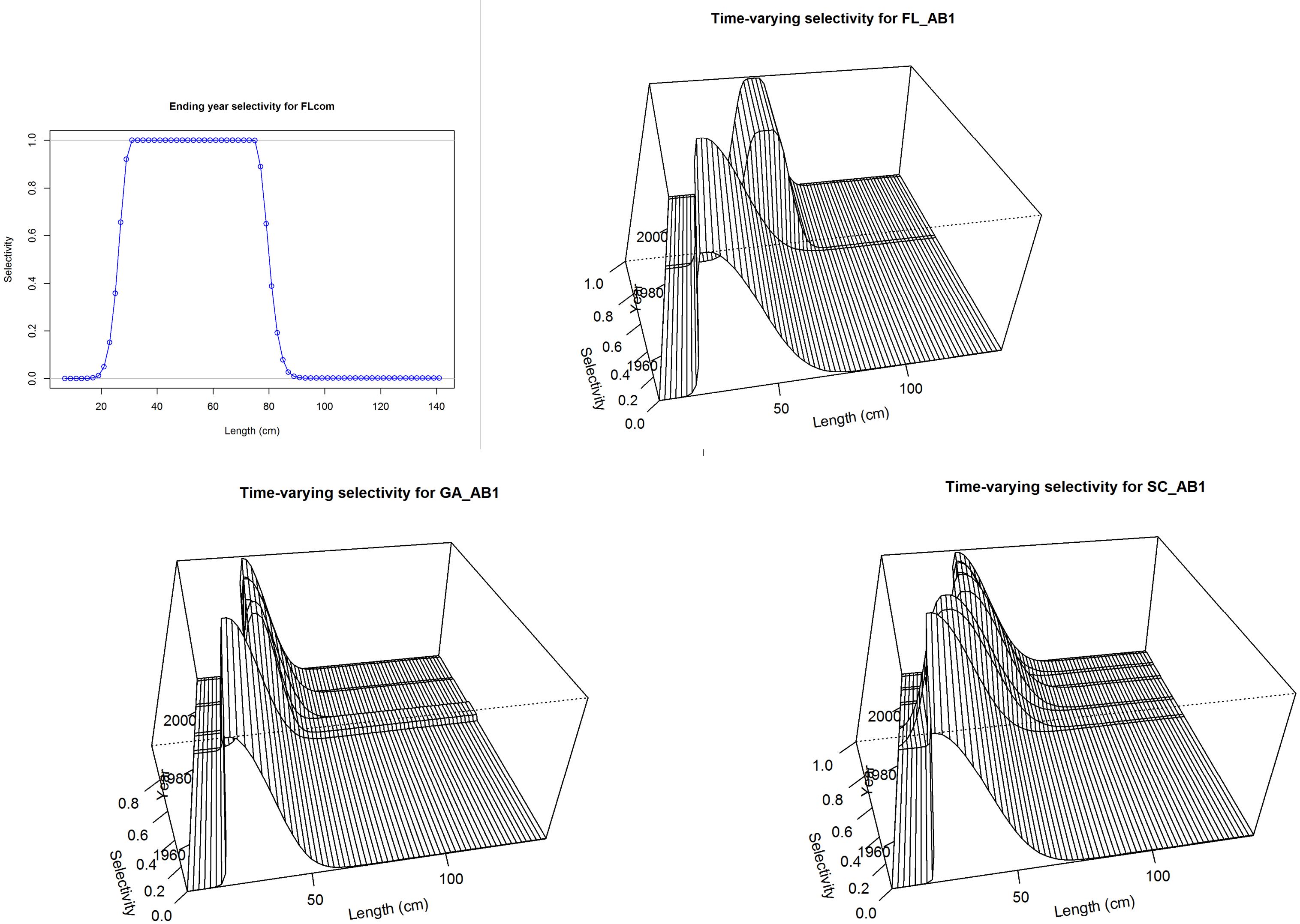


Figure 2.4.44 Selectivities-at-length of the FLcom fleet (upper left), FL_AB1 fleet (upper right), GA_AB1 fleet (lower left), and SC_AB1 fleet (lower right) by regulation period.

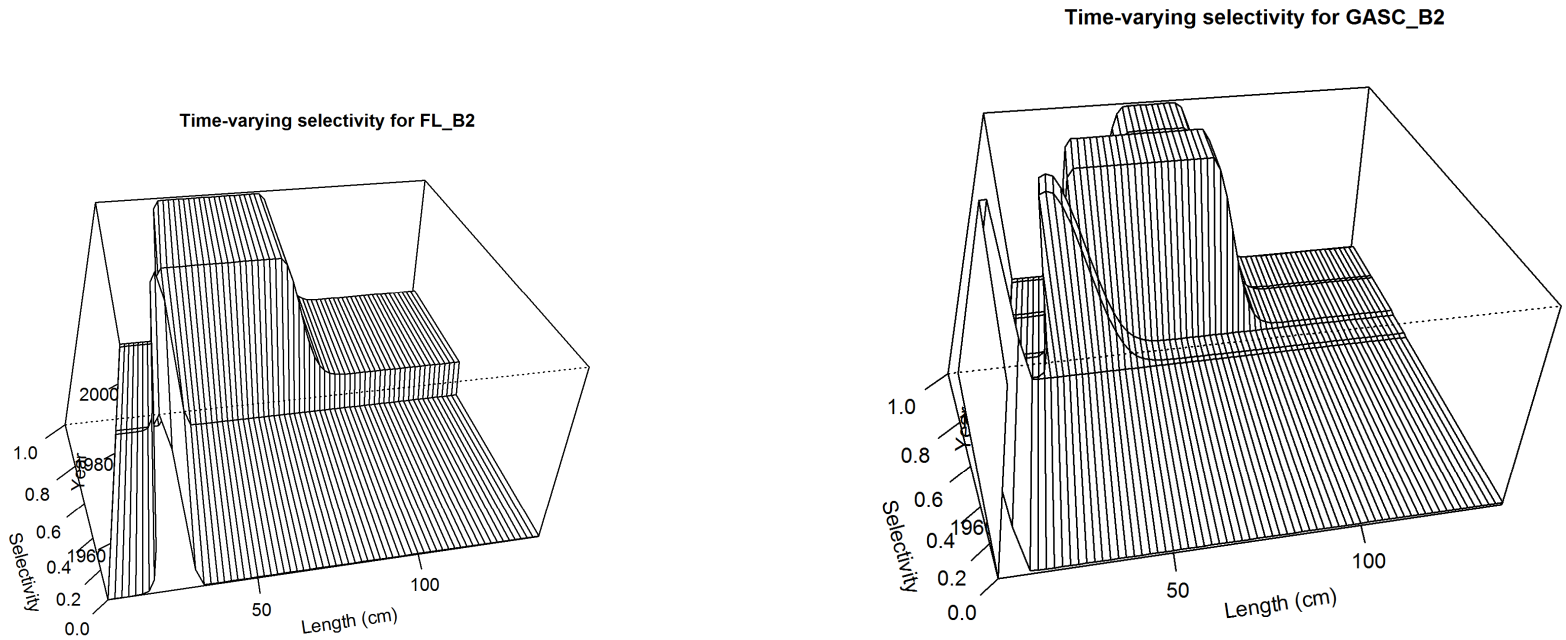


Figure 2.4.45 Selectivities-at-length of the FL_B2 fleet (left) and GASC_B2 fleet (right) by regulation period.

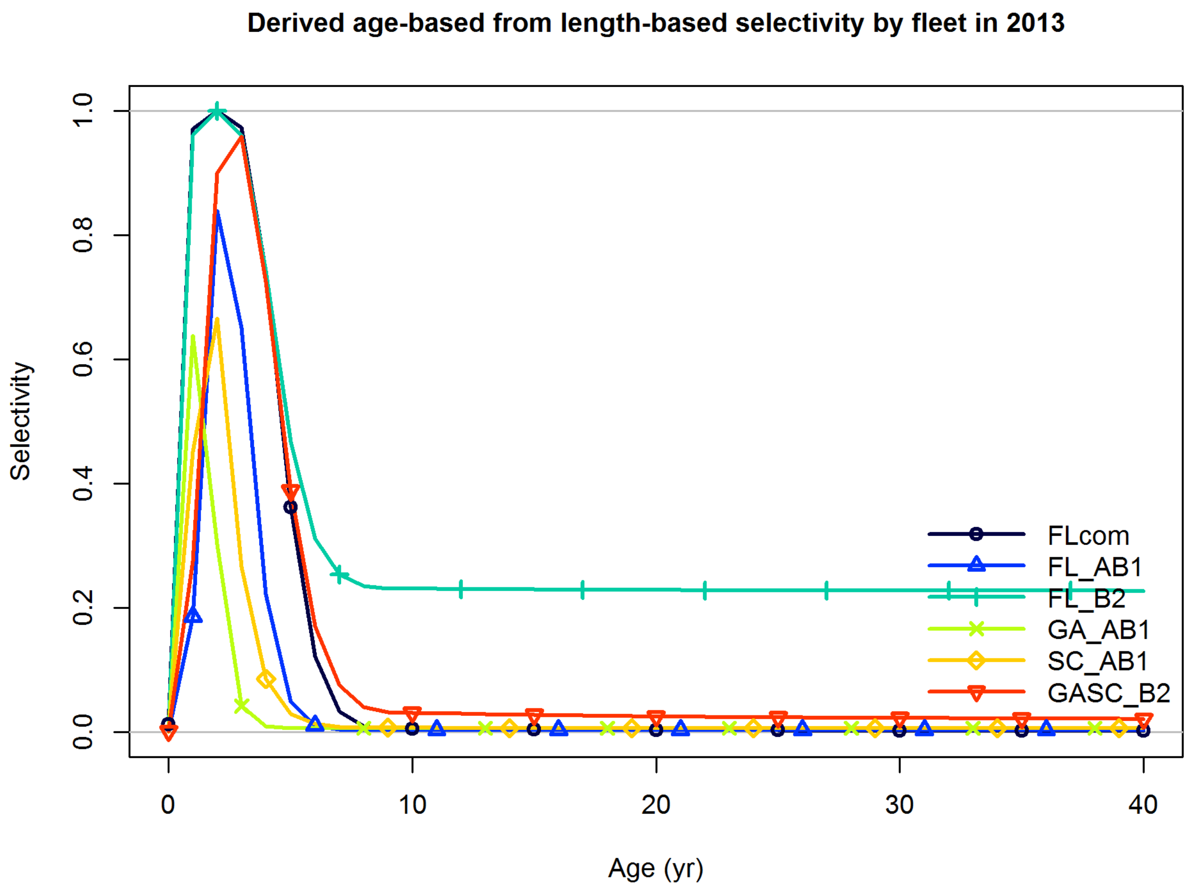


Figure 2.4.46 Selectivities-at-age of southern fishing fleets in 2013 derived from length selectivities.

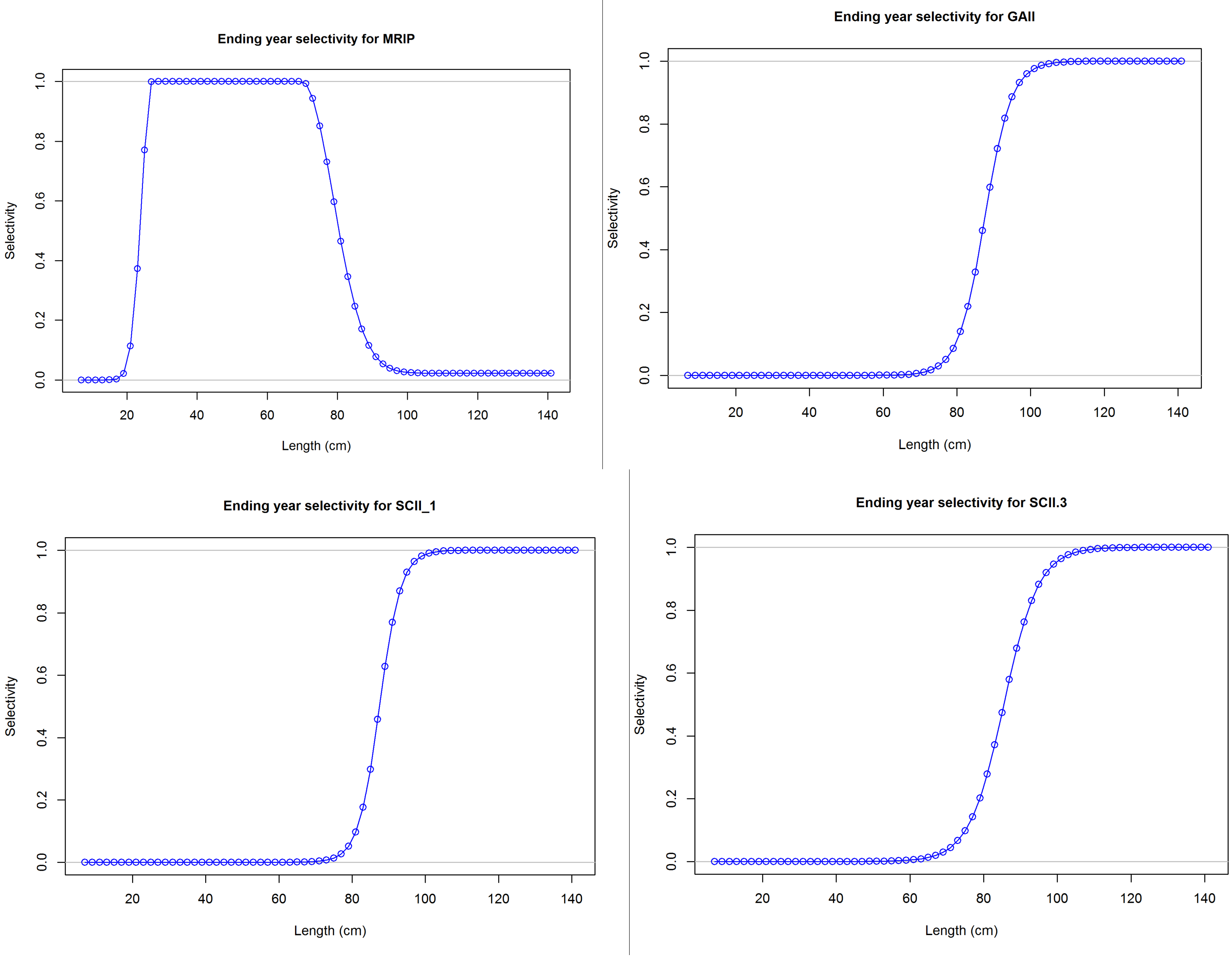


Figure 2.4.47 Selectivities-at-length of the MRIP (upper left), GAll (upper right), SCll_1 (lower left), and SCll.3 (lower right) indices.

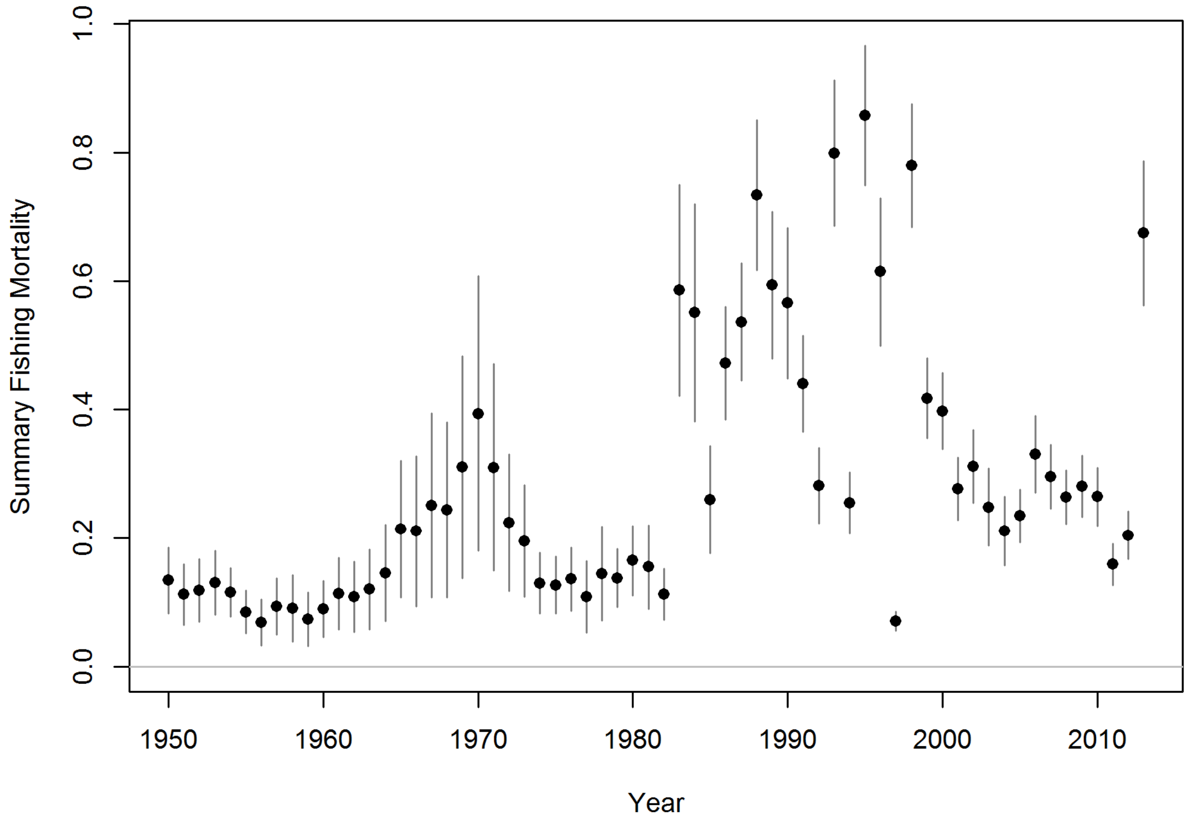


Figure 2.4.48 Northern stock annual fishing mortality estimates for age 0-10 fish with 95% asymptotic standard confidence intervals.

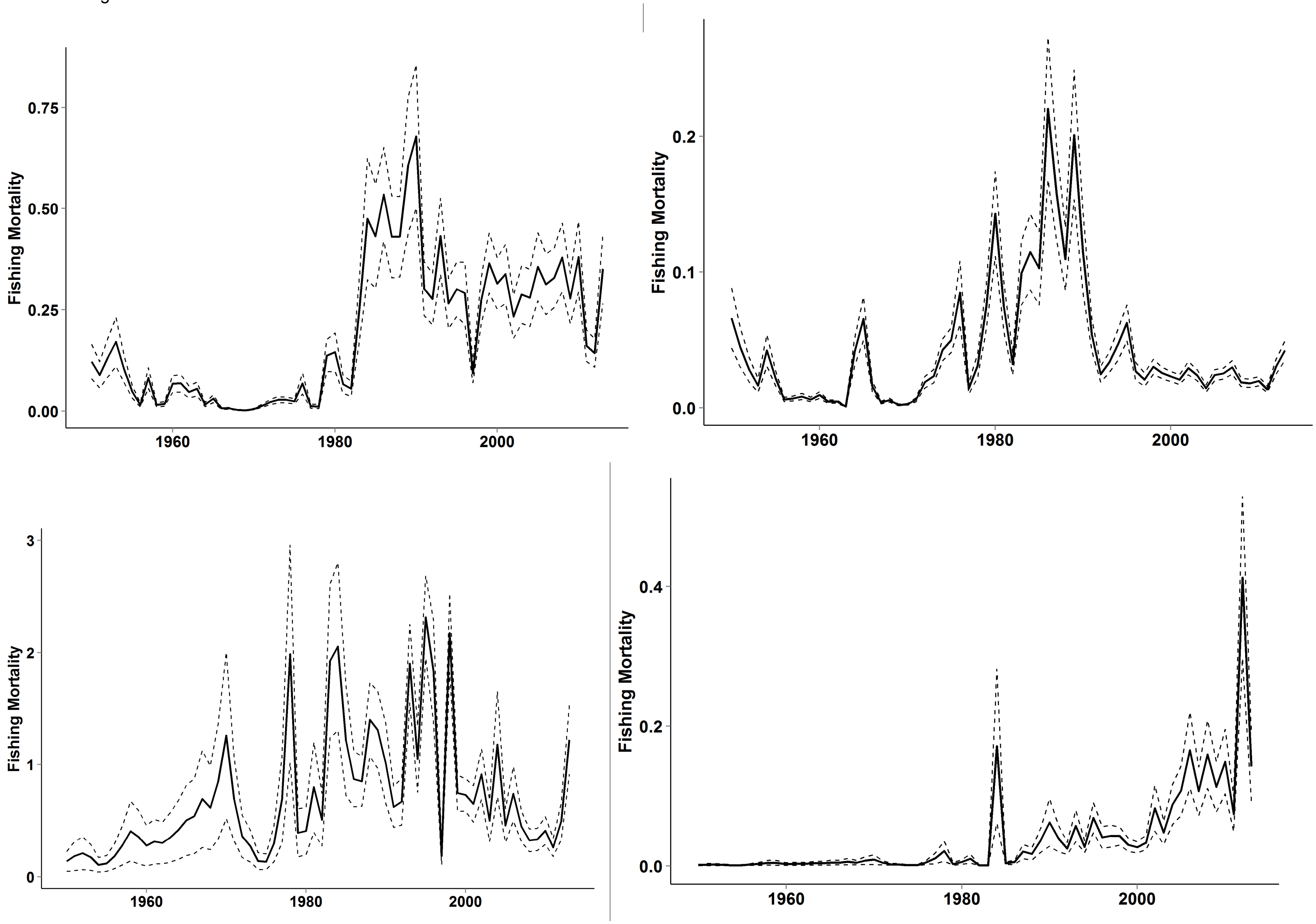


Figure 2.4.49 Annual fishing mortality of the Comm_GNBS fleet (upper left), Comm_OTHER fleet (upper right), Rec_Harv fleet (lower left), and Rec_Discard fleet for ages 0-10 fish with $\underline{+}$1.96 SEs (dashed lines).

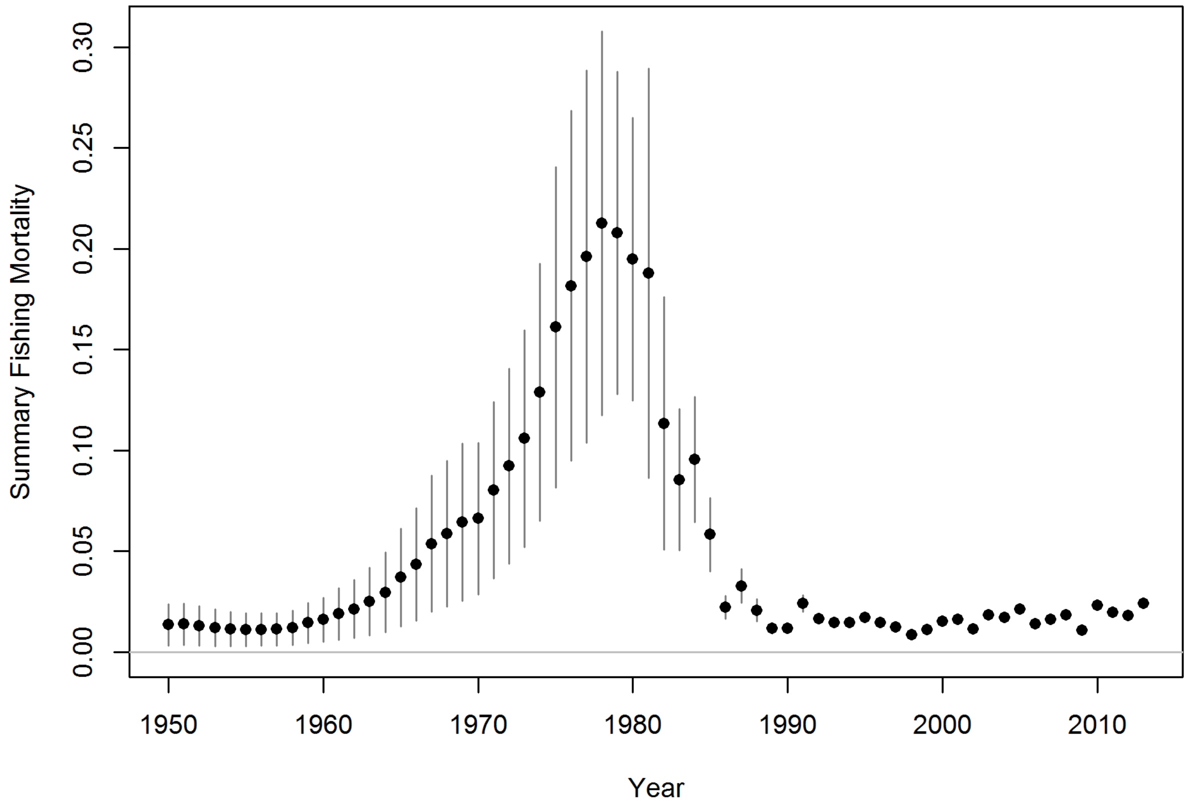


Figure 2.4.50 Southern stock annual fishing mortality estimates for age 0-10 fish with 95% asymptotic standard confidence intervals.

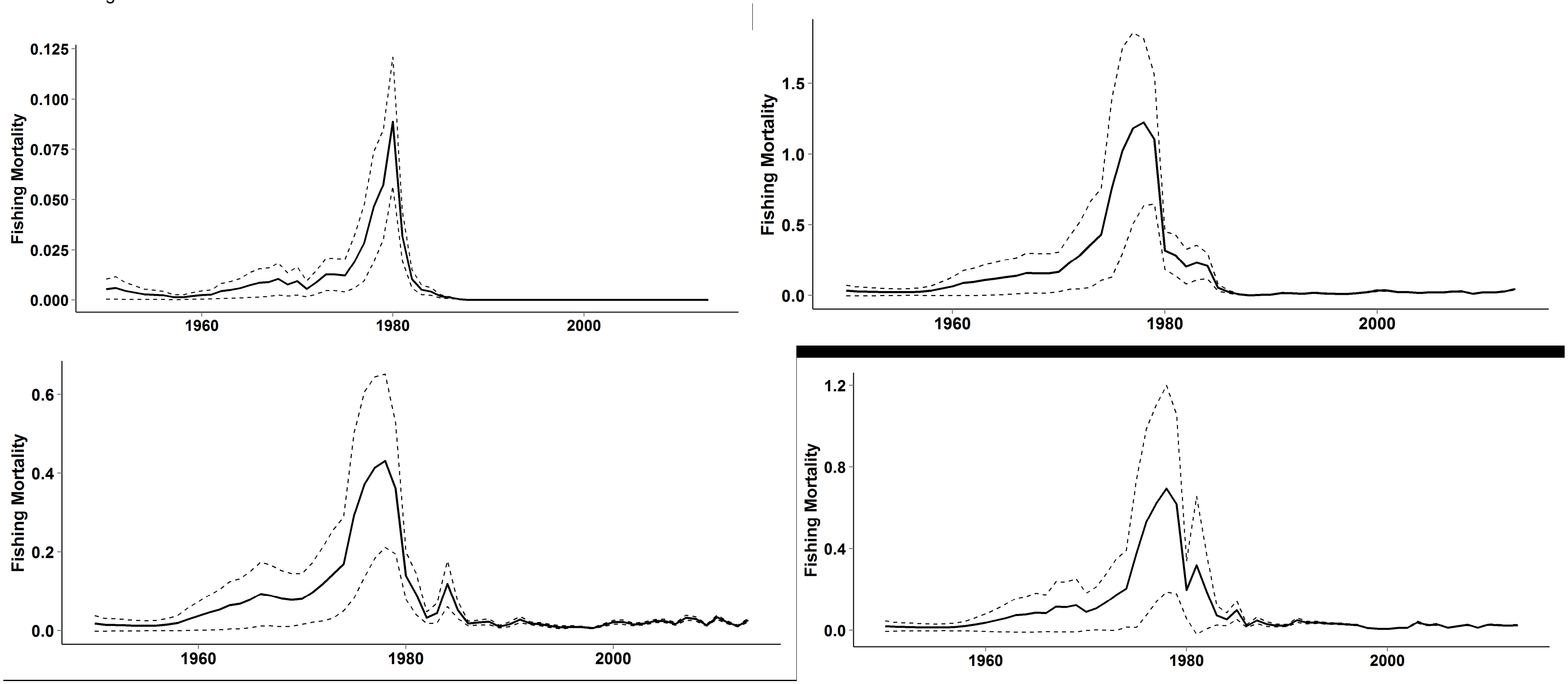


Figure 2.4.51 Annual fishing mortality of the FLcom fleet (upper left), Fl_AB1 fleet (upper right), GA_AB1 fleet (lower left), and SC_AB1 fleet for ages 0-10 fish with +1.96 SEs (dashed lines).

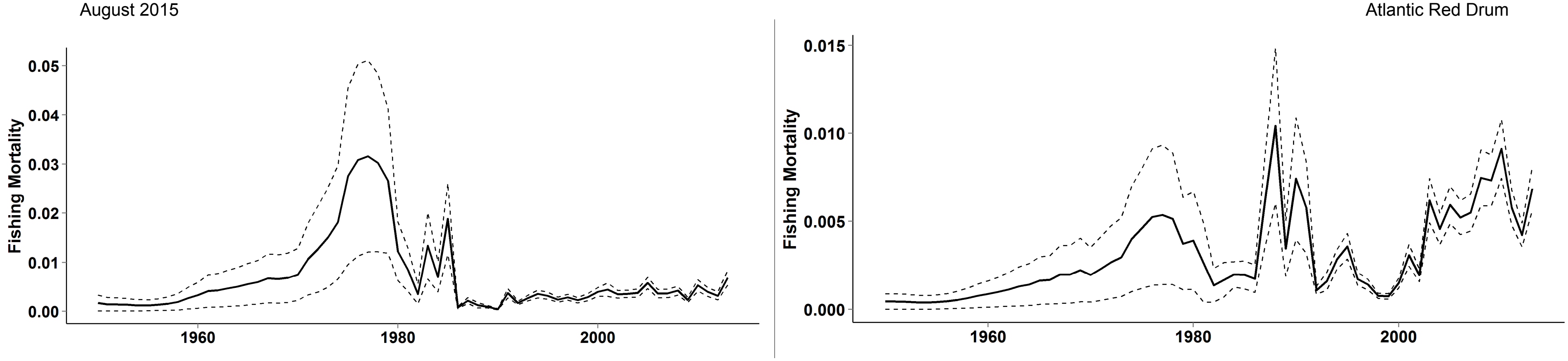


Figure 2.4.52 Annual fishing mortality of the FL_B2 (left) and GASC_B2 fleet (right) for ages 0-10 fish with ±1.96 SEs (dashed lines).

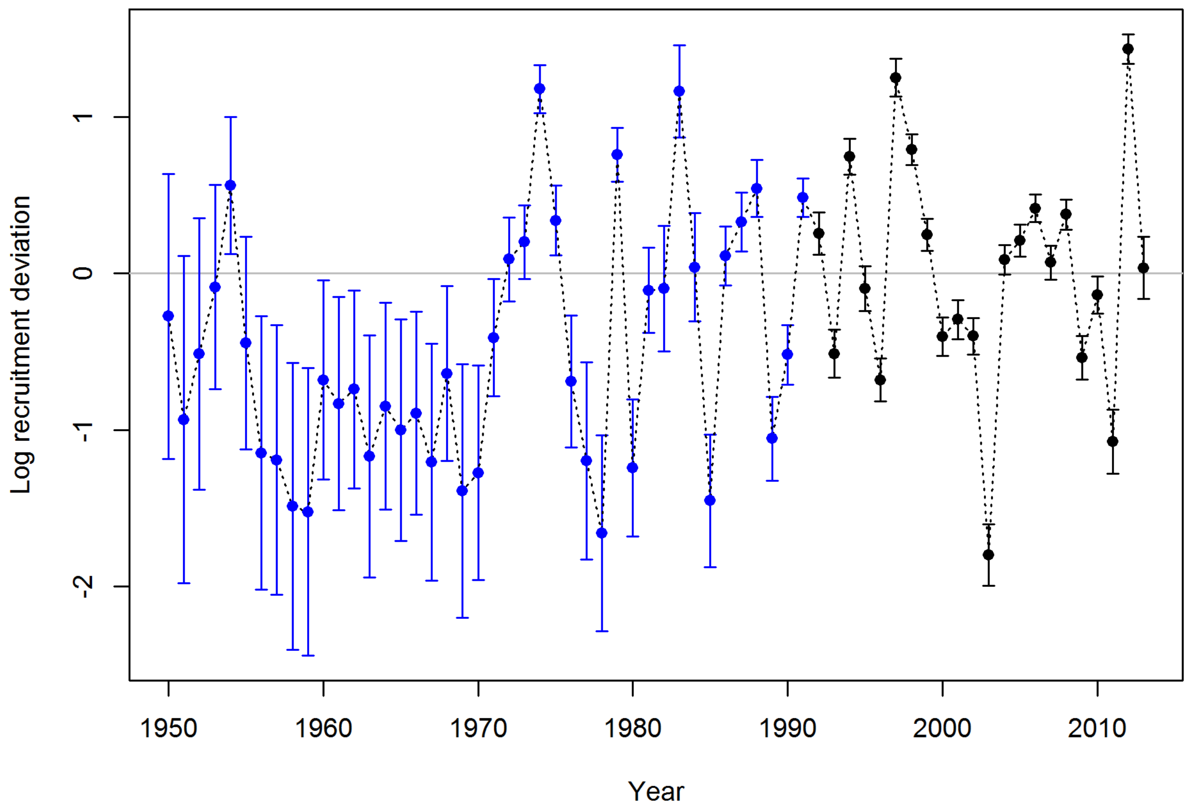


Figure 2.4.53 Northern stock annual recruitment deviations from the S-R relationship expected recruitment with 95% confidence intervals.

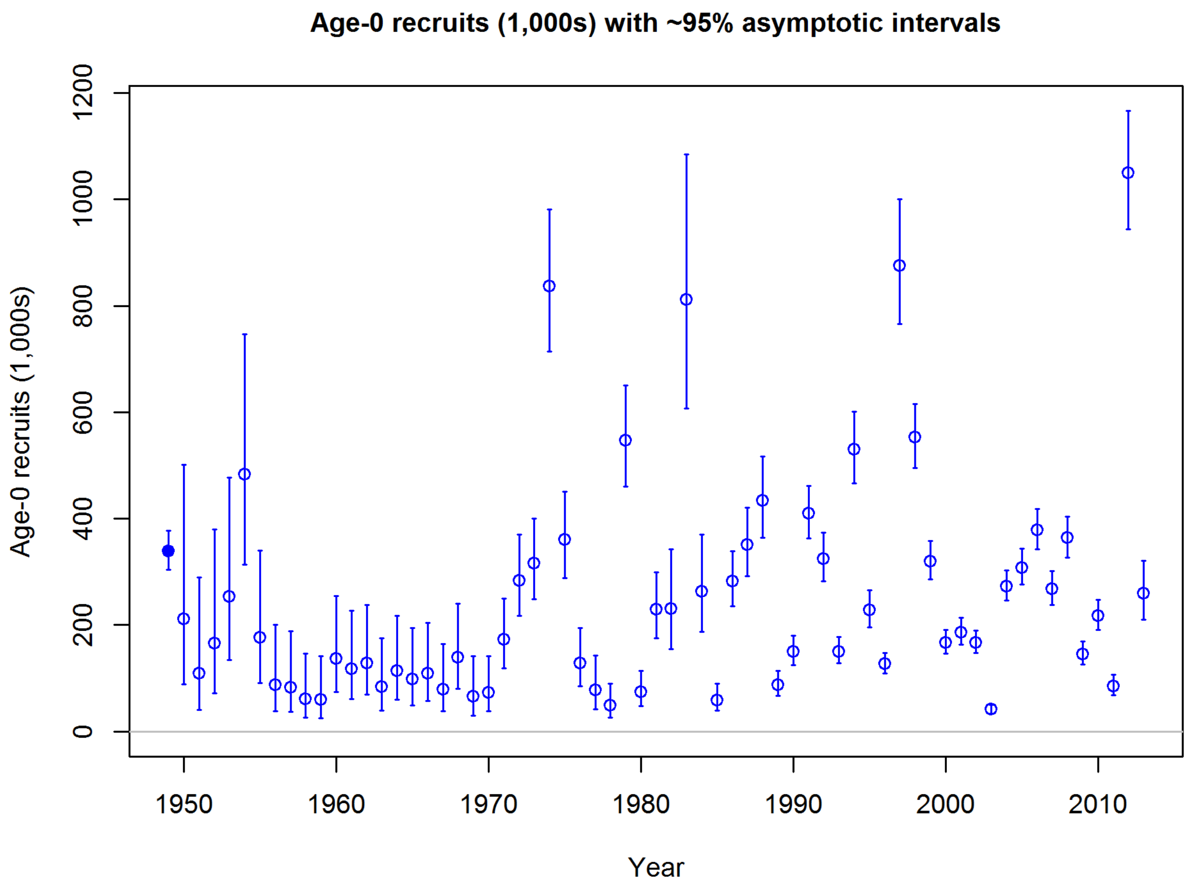


Figure 2.4.54 Northern stock annual recruitment of age-0 fish (1,000s) with 95% confidence intervals.

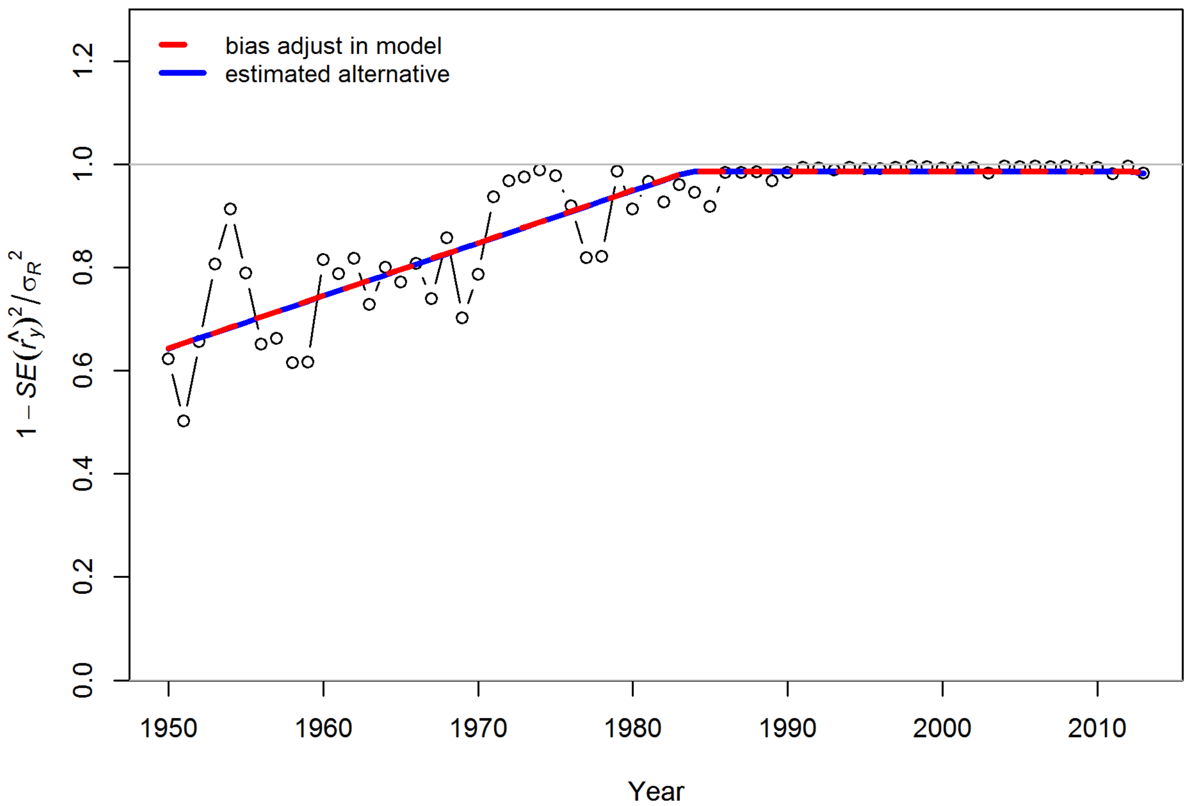


Figure 2.4.55 Recruitment bias adjustment configured in the northern model using methods of Methot and Taylor (2011).

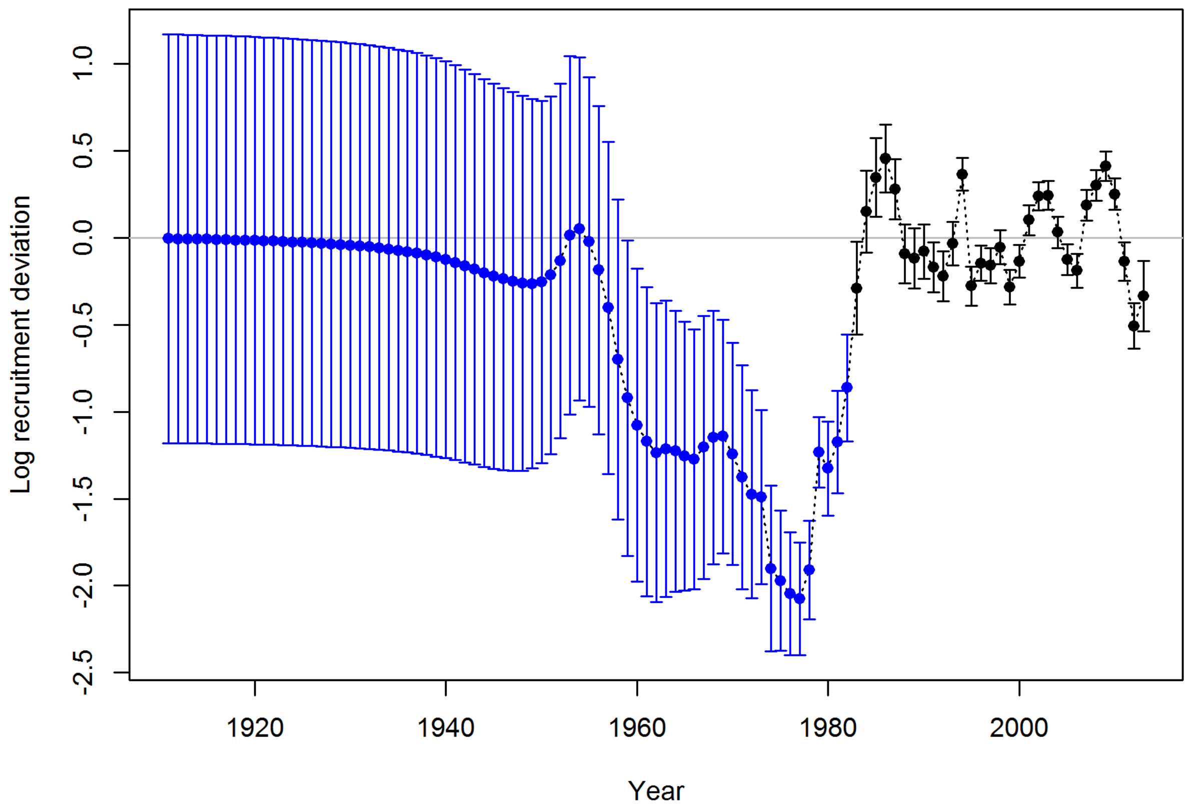


Figure 2.4.56 Southern stock annual recruitment deviations from the S-R relationship expected recruitment with 95% confidence intervals.

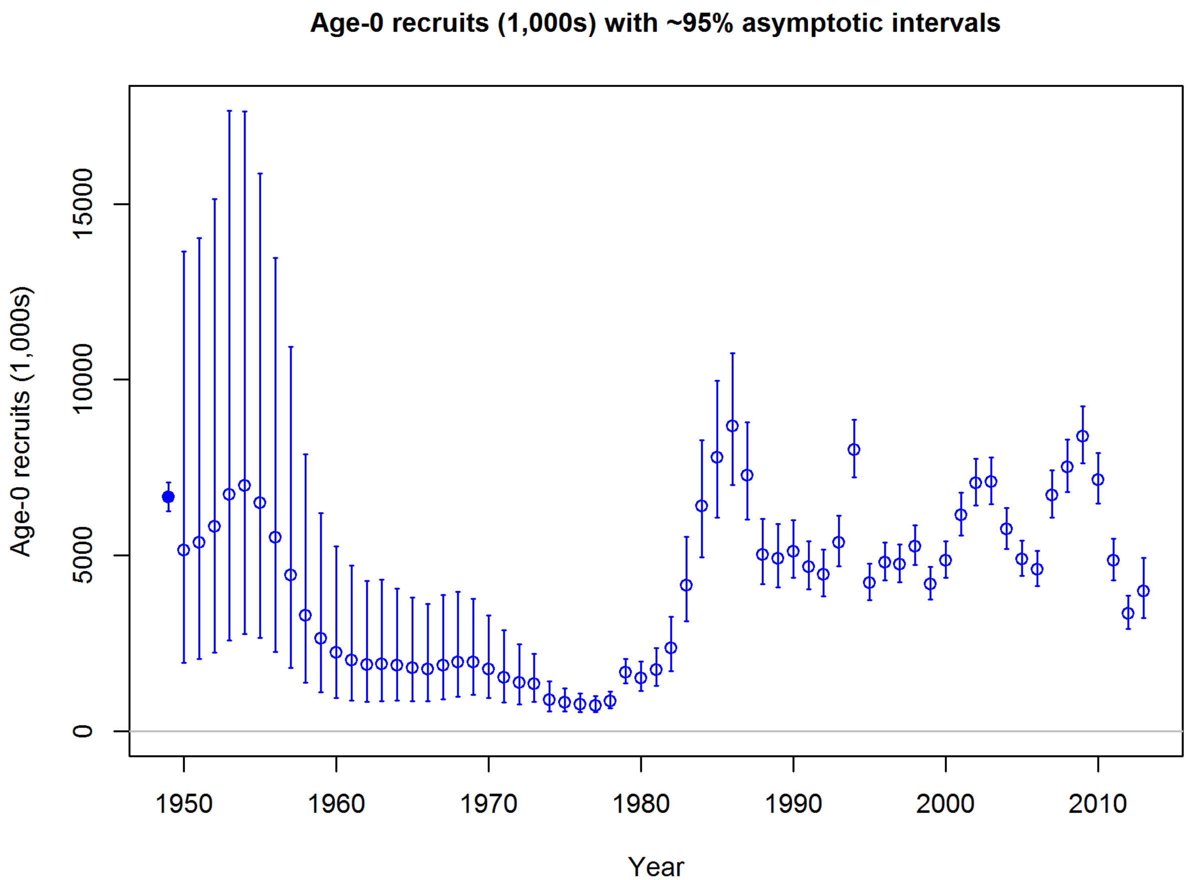


Figure 2.4.57 Southern stock annual recruitment of age-0 fish (1,000s) with 95% confidence intervals.

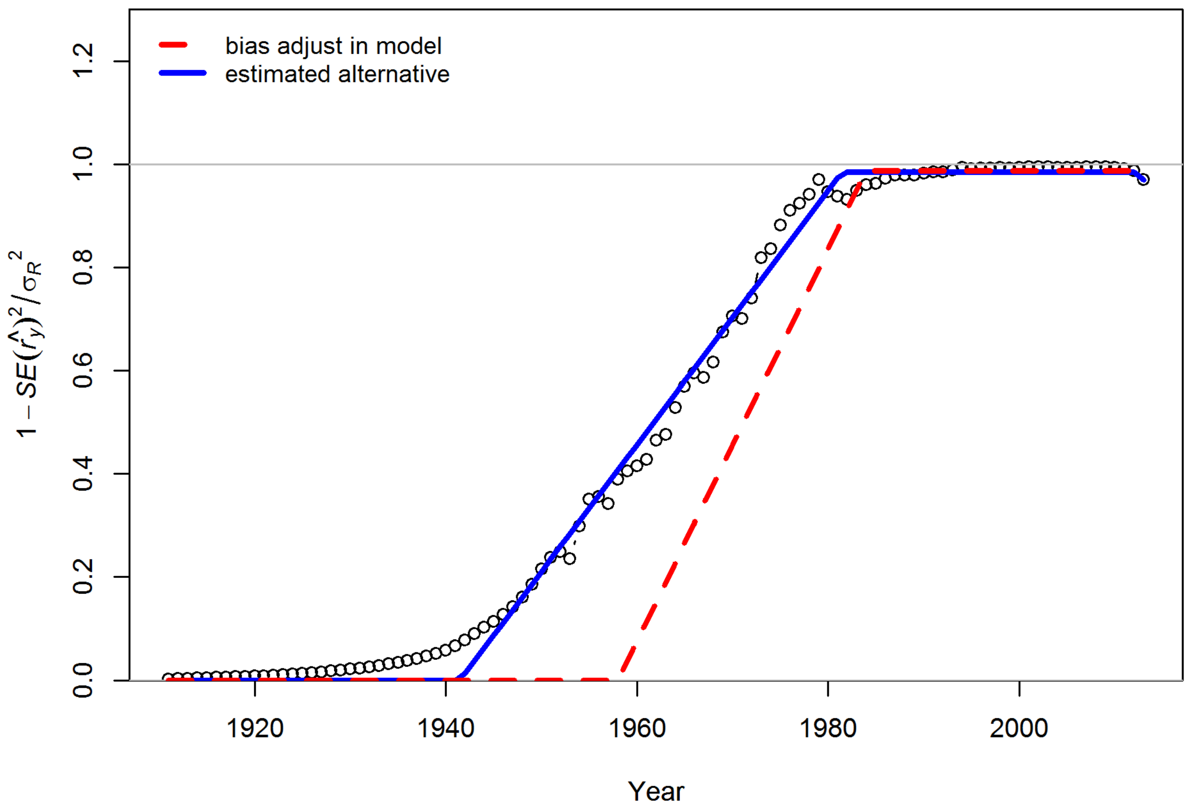


Figure 2.4.58 Recruitment bias adjustment configured in the southern model using methods of Methot and Taylor (2011).

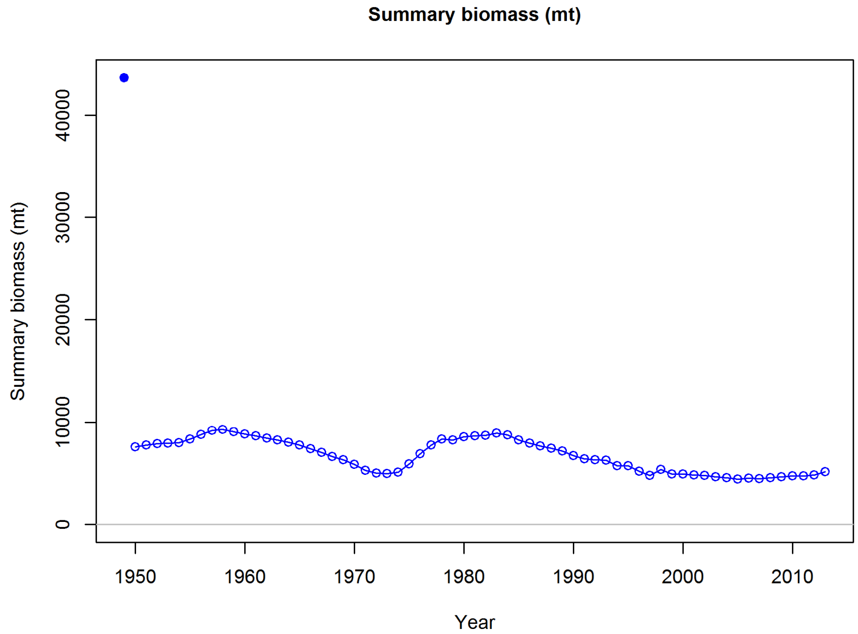


Figure 2.4.59 Northern spawning stock biomass (mt).

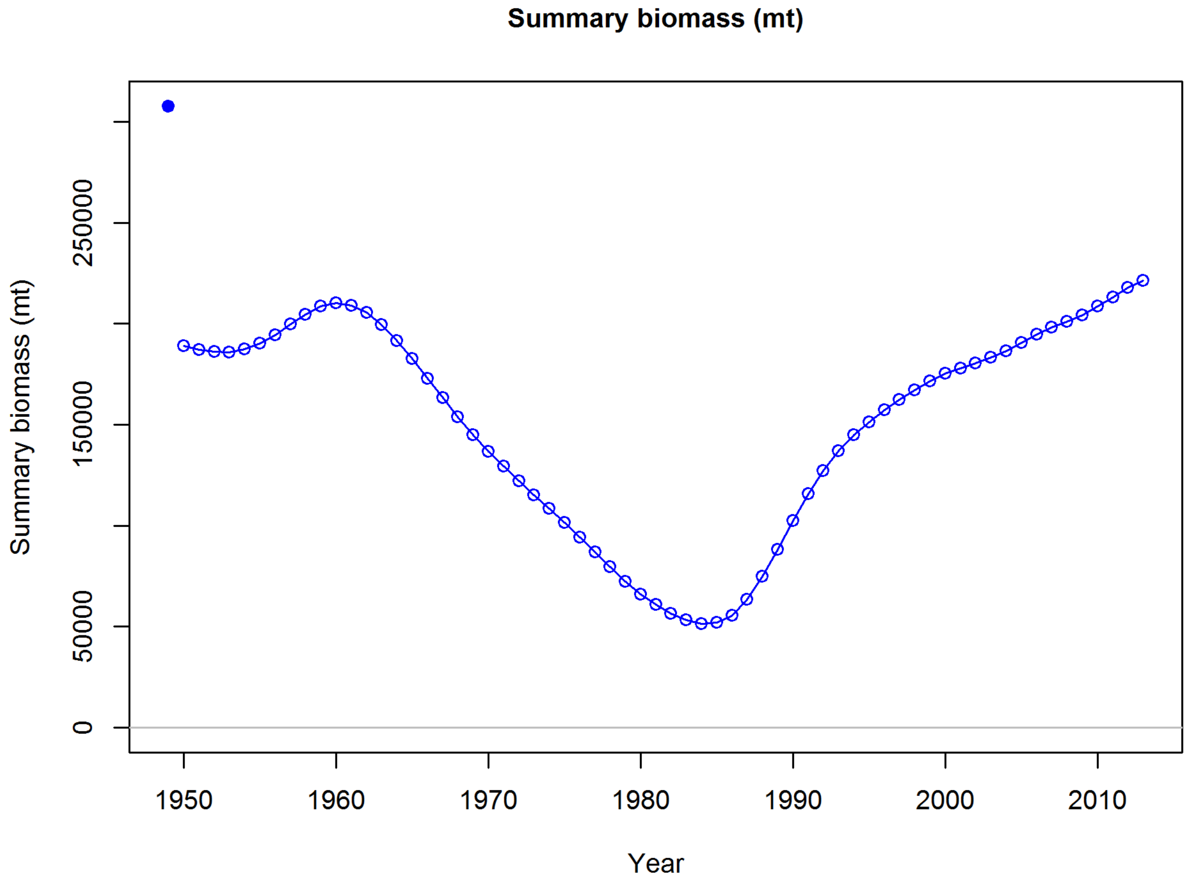


Figure 2.4.60 Southern spawning stock biomass (mt).

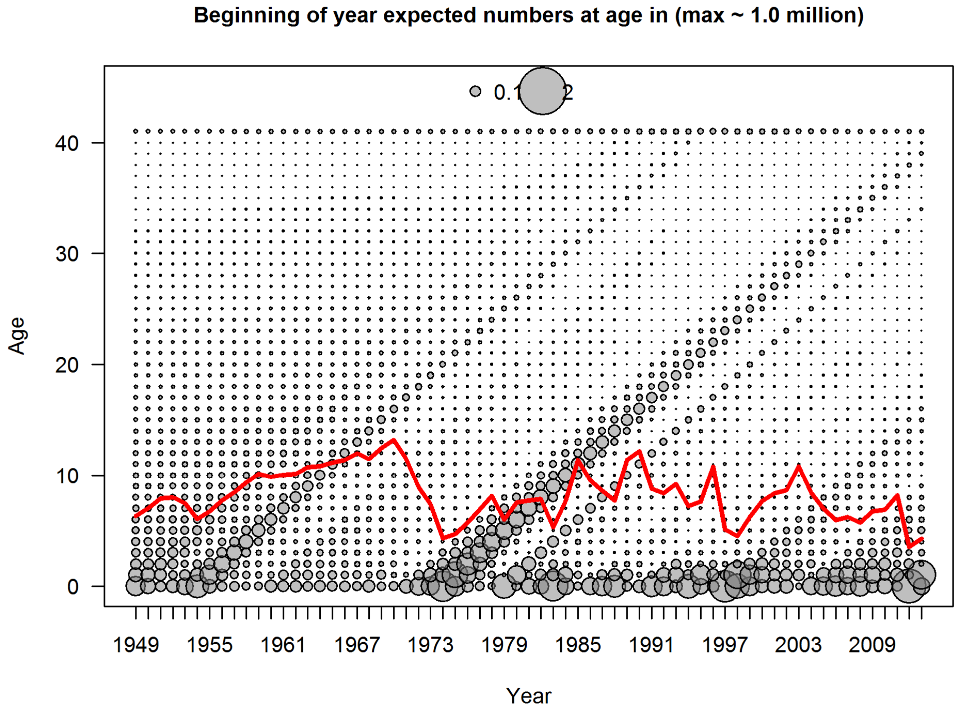


Figure 2.4.61 Northern stock beginning year numbers-at-age. The red line indicates the mean age in the population.

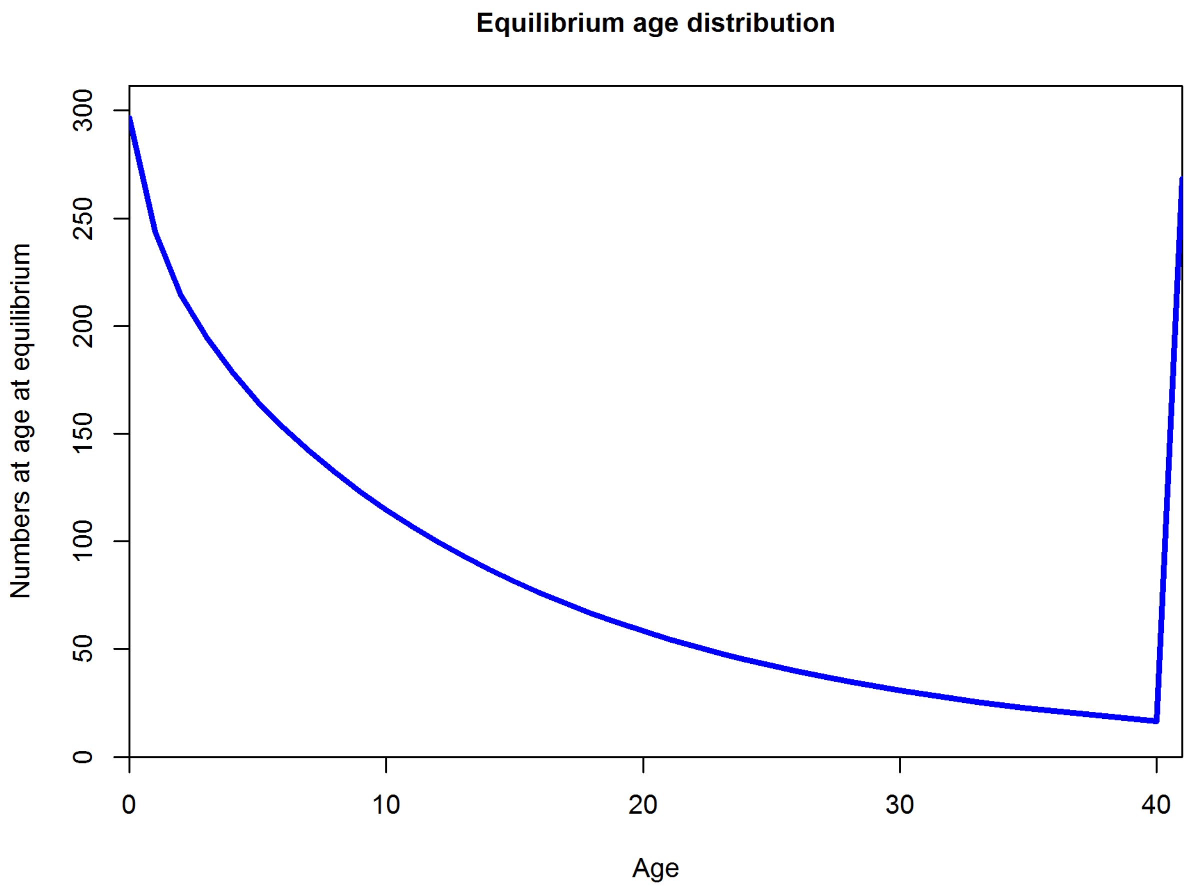


Figure 2.4.62 Northern unfished equilibrium numbers-at-age.

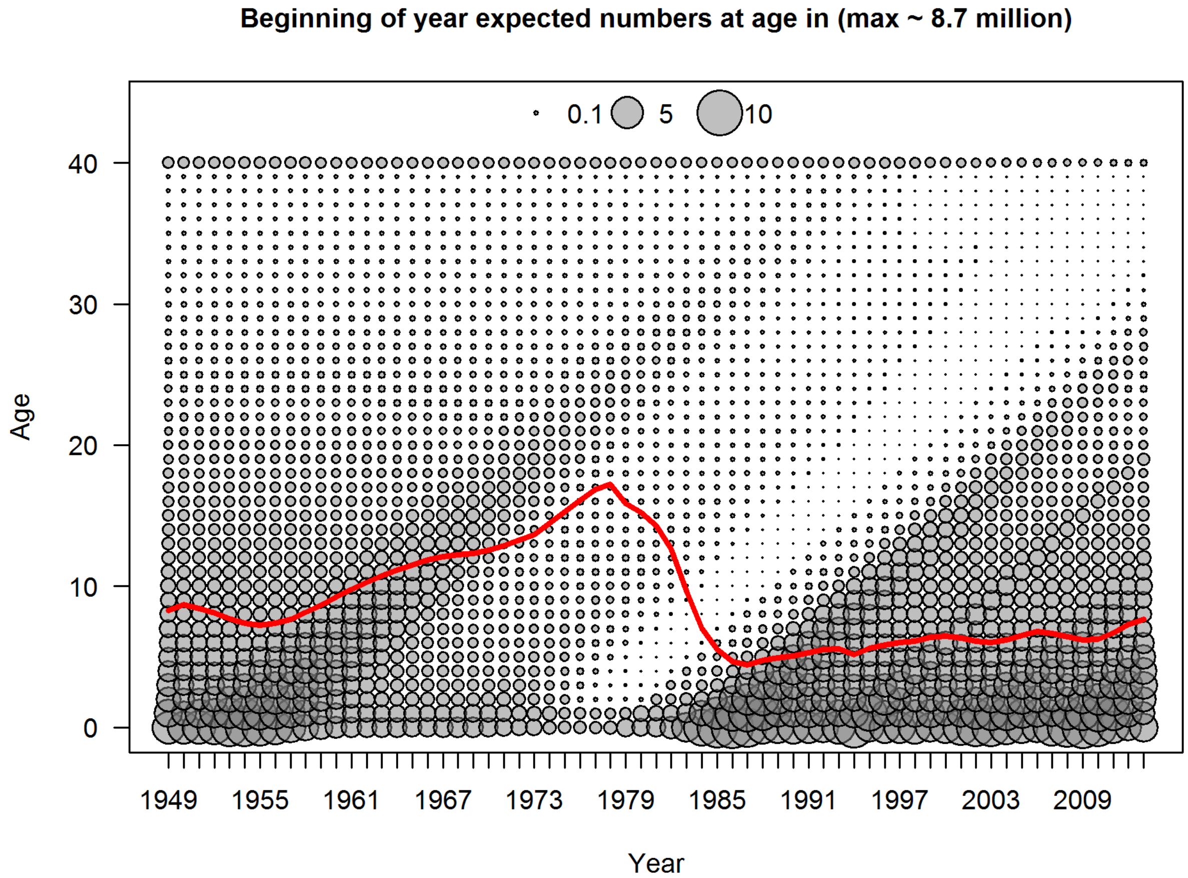


Figure 2.4.63 Southern stock beginning year numbers-at-age. The red line indicates the mean age in the population.

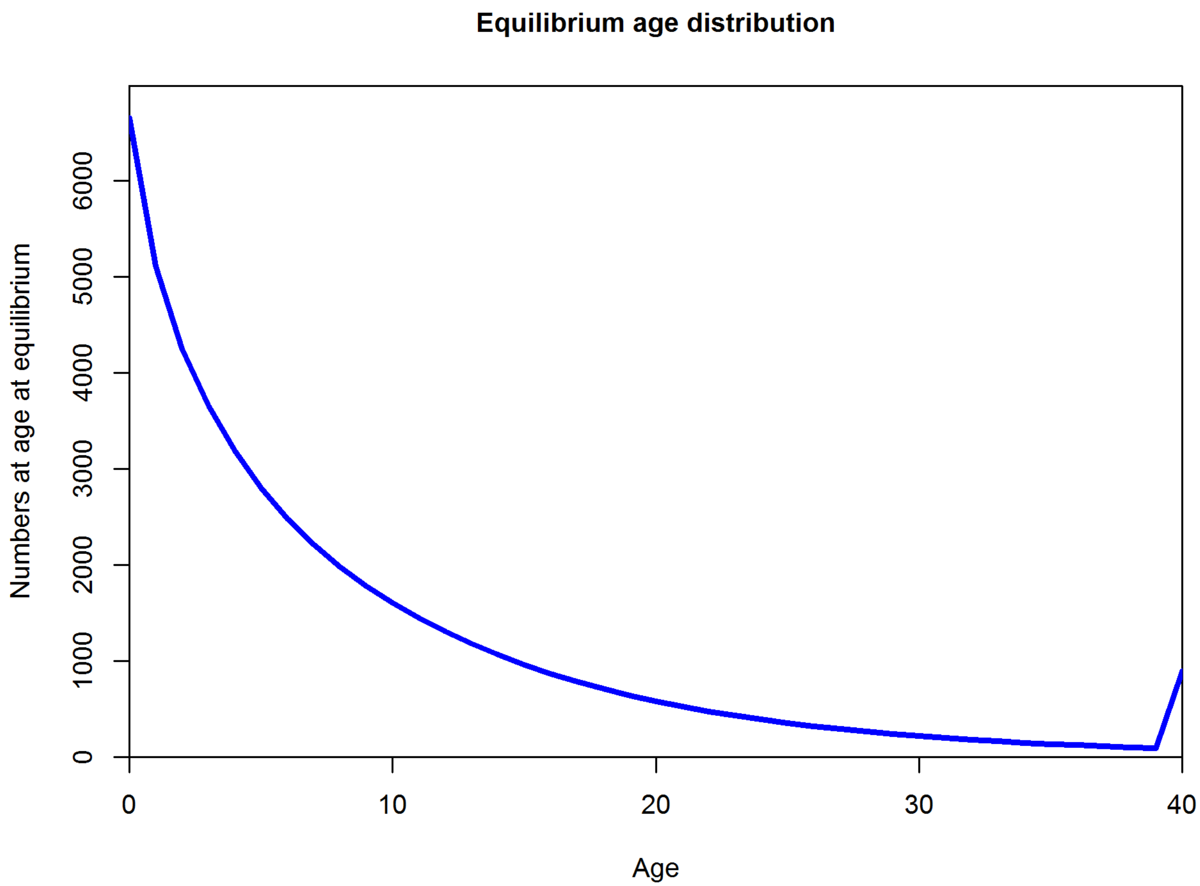


Figure 2.4.64 Southern unfished equilibrium numbers-at-age.

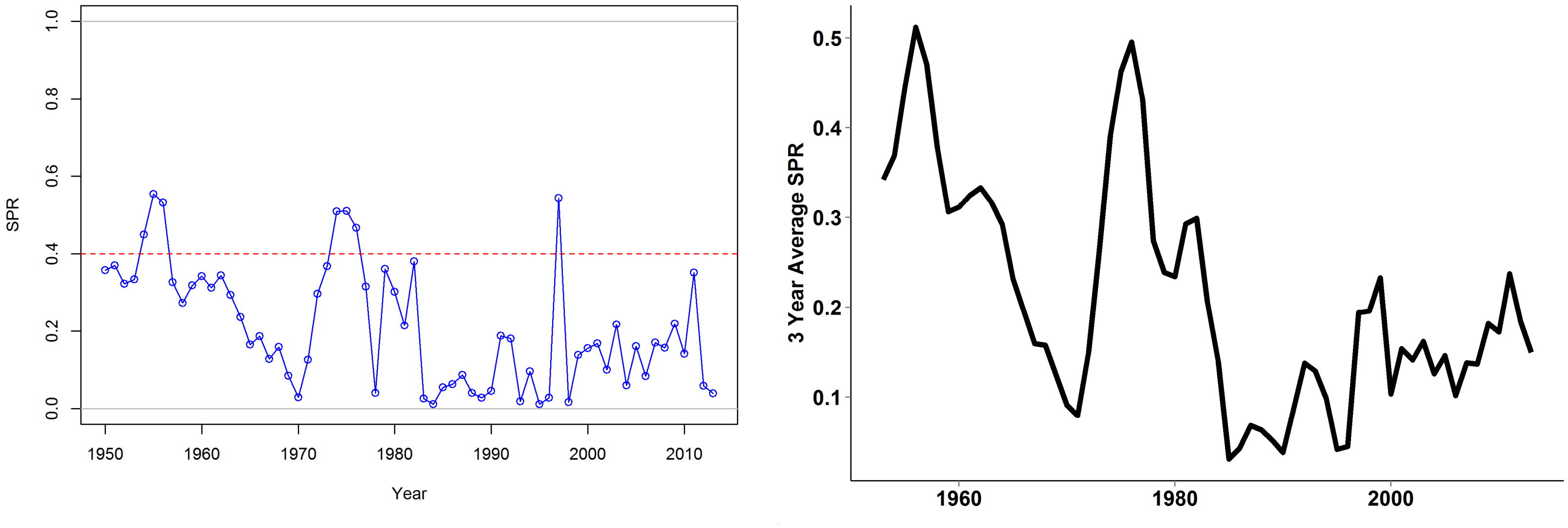


Figure 2.4.65 Northern stock annual SPR (left) and three-year average SPR (right).
The red dashed line indicates the management target SPR of 0.4 defined in the ASMFC Amendment 2 to the ISFMP for red drum.

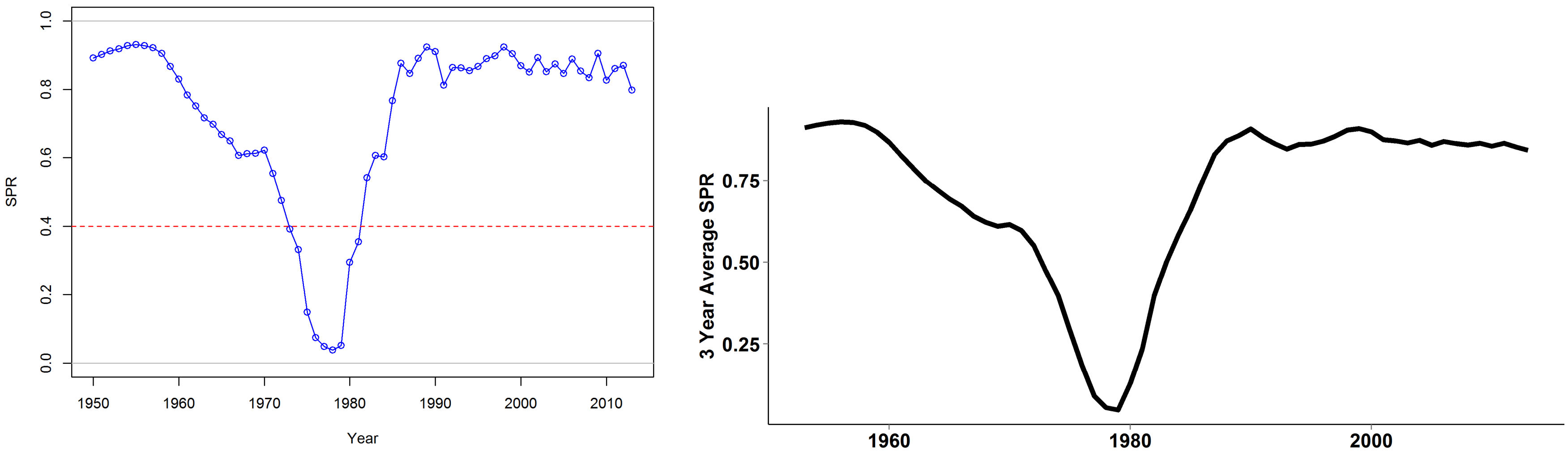


Figure 2.4.66 Southern stock annual SPR (left) and three-year average SPR (right).
The red dashed line indicates the management target SPR of 0.4 defined in the ASMFC Amendment 2 to the ISFMP for red drum.

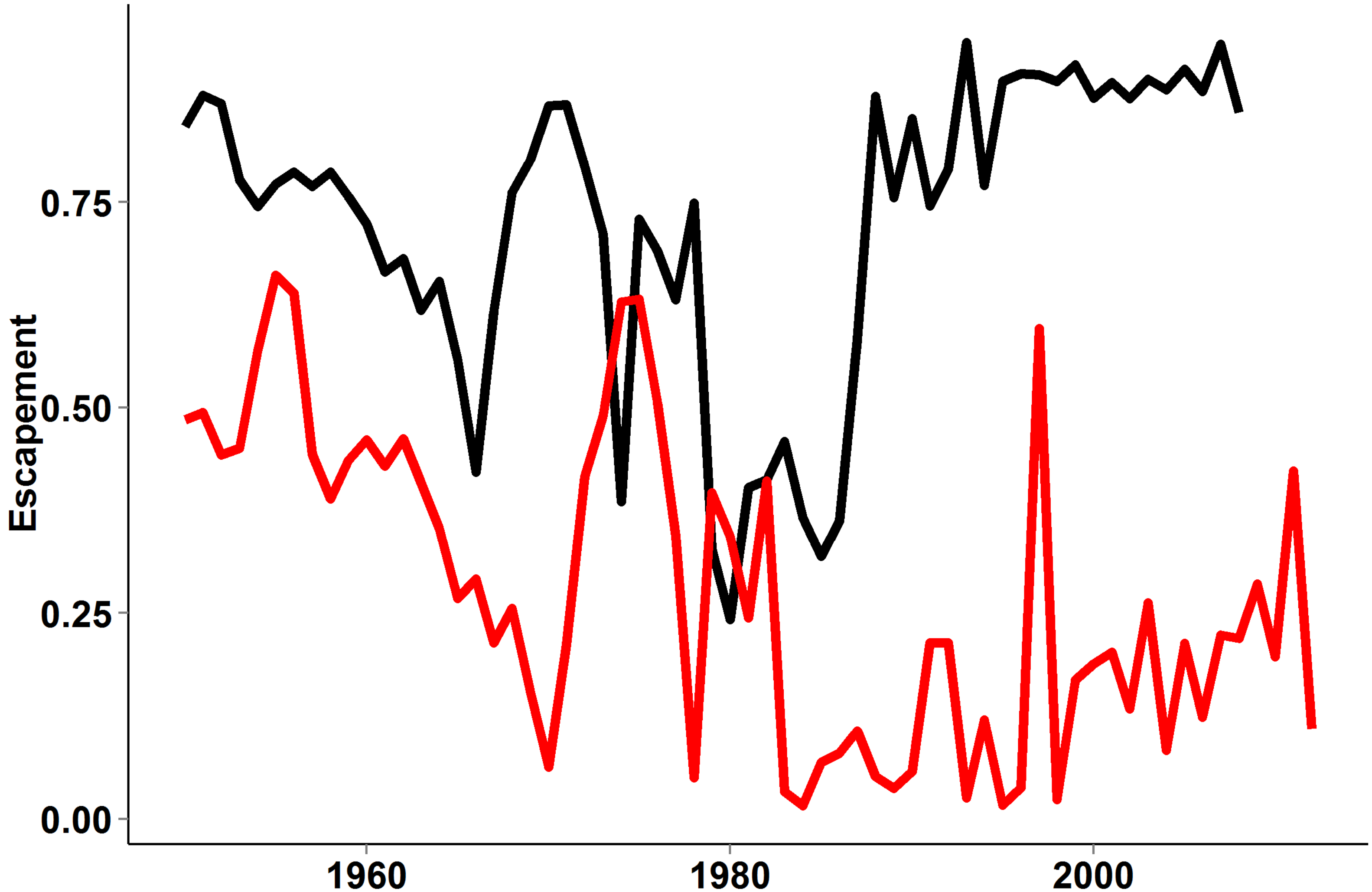


Figure 2.4.67 Static escapement (red line) and cohort-specific escapement (black line) of northern stock red drum through age 4.

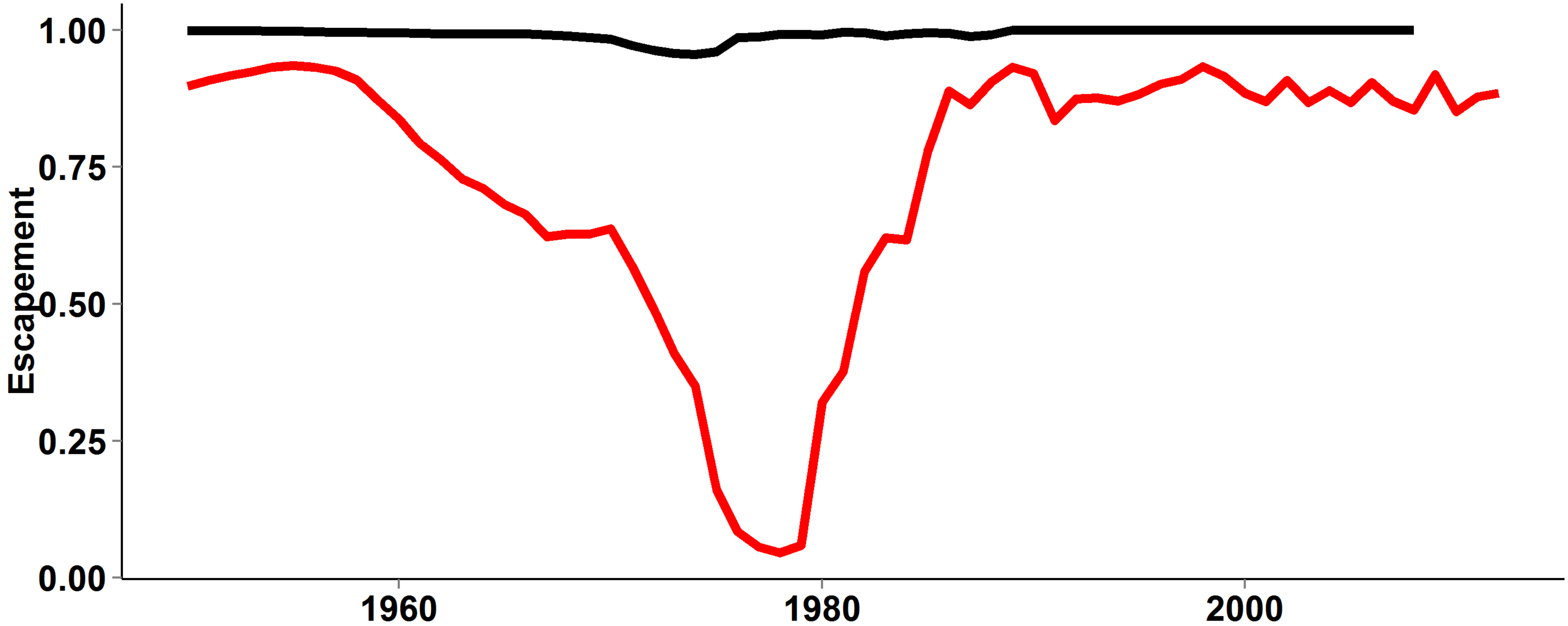


Figure 2.4.68 Static escapement (red line) and cohort-specific escapement (black line) of southern stock red drum through age 4.

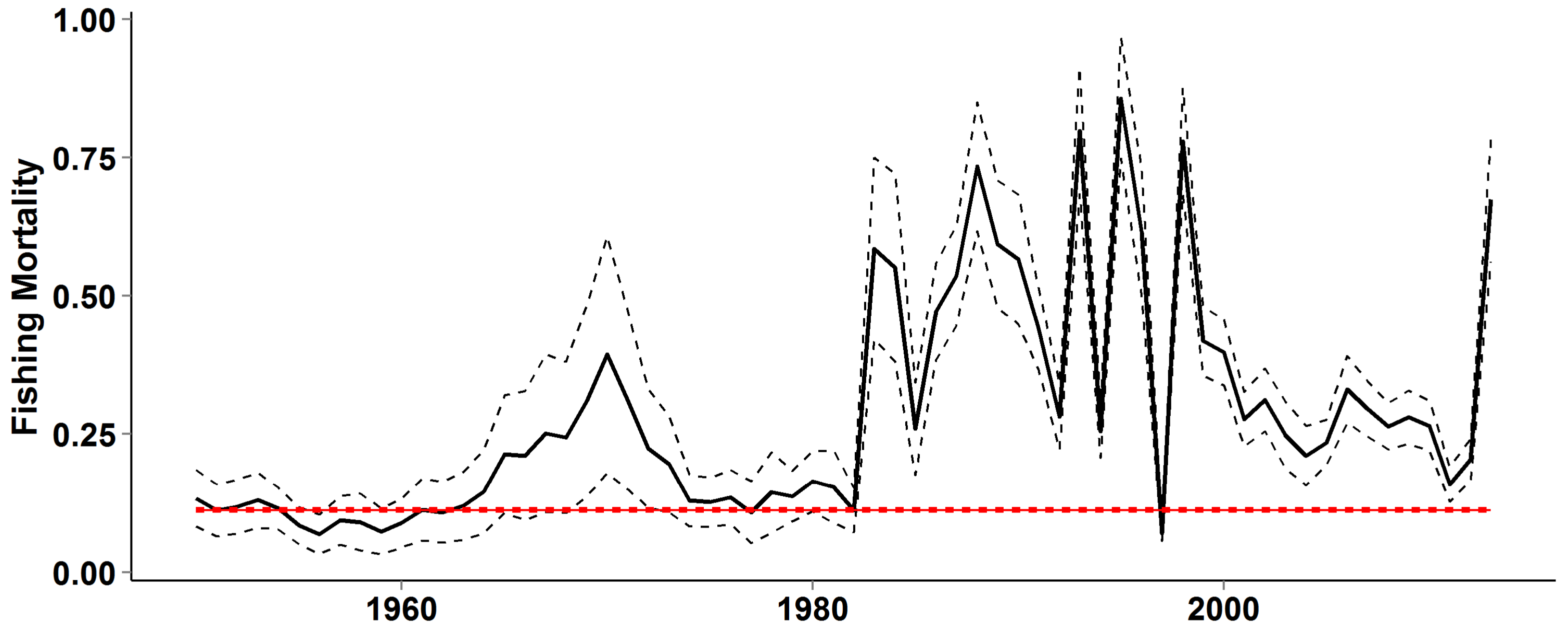


Figure 2.4.69 Northern stock estimated fishing mortality with 95% confidence interval (black lines) and the estimated fishing mortality target to achieve the 0.4 SPR target with 95% confidence interval (red lines).

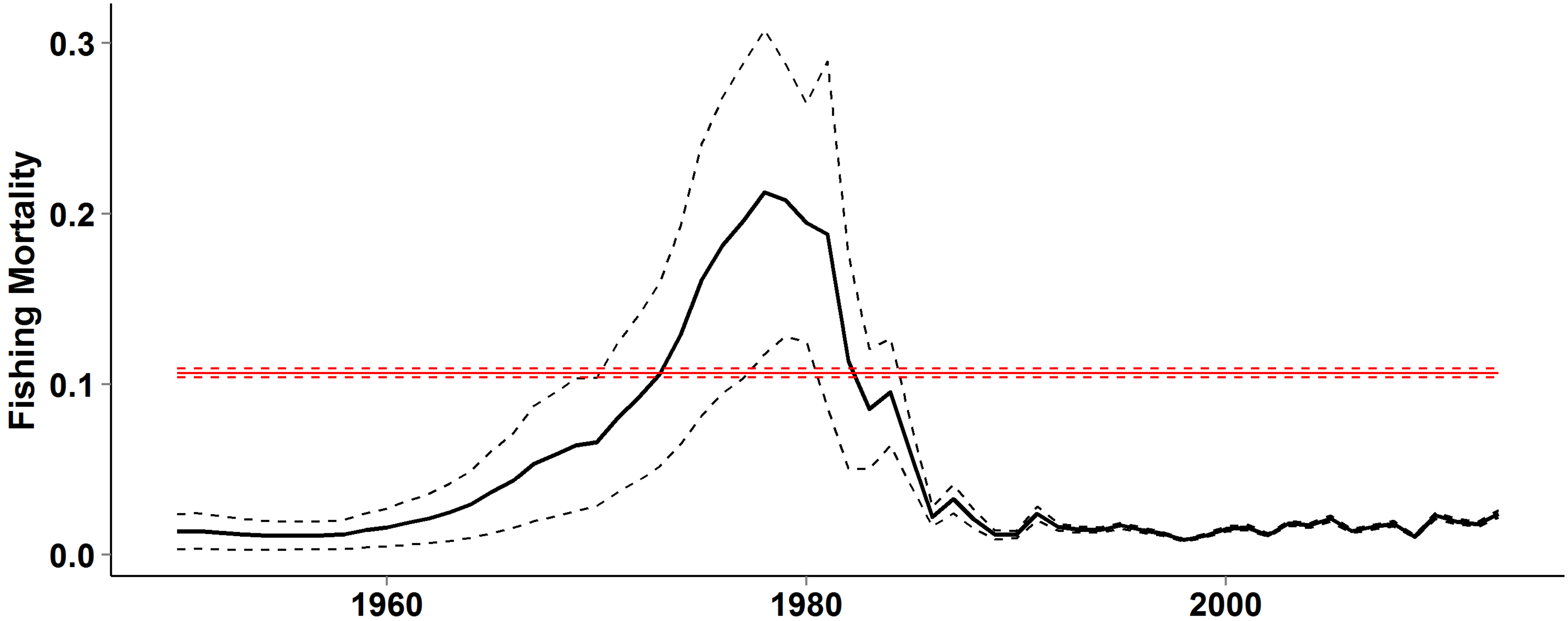


Figure 2.4.70 Southern stock estimated fishing mortality with 95% confidence interval (black lines) and the estimated fishing mortality target to achieve the 0.4 SPR target with 95% confidence interval (red lines).

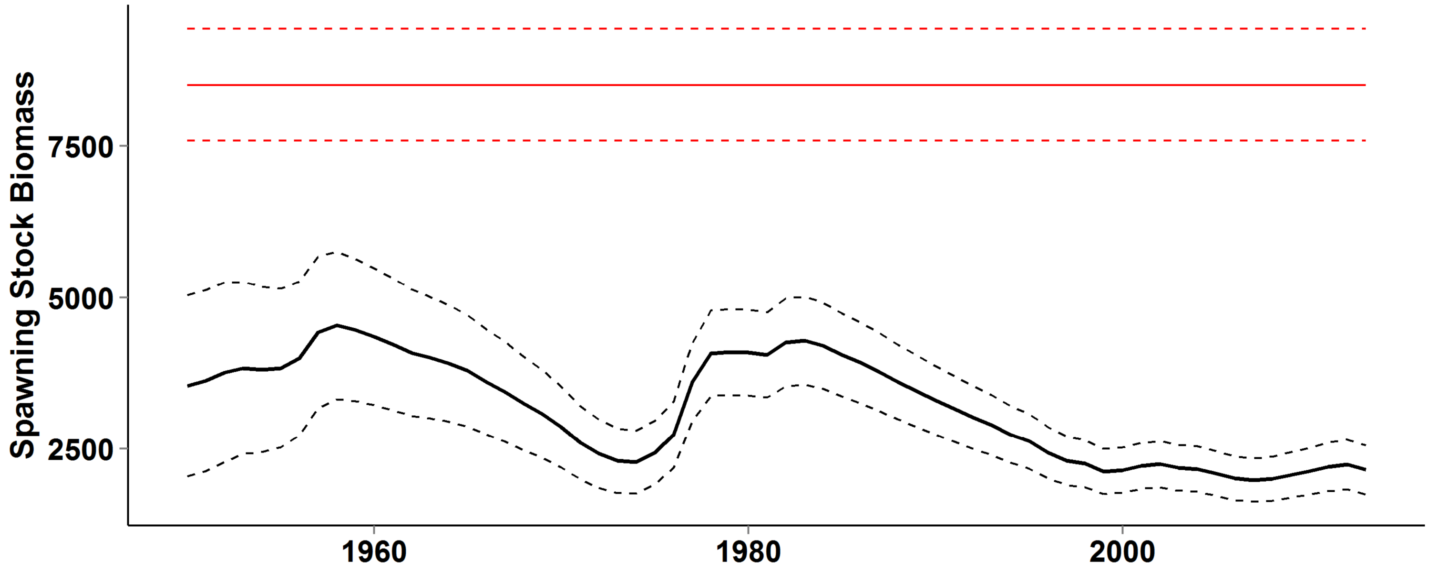
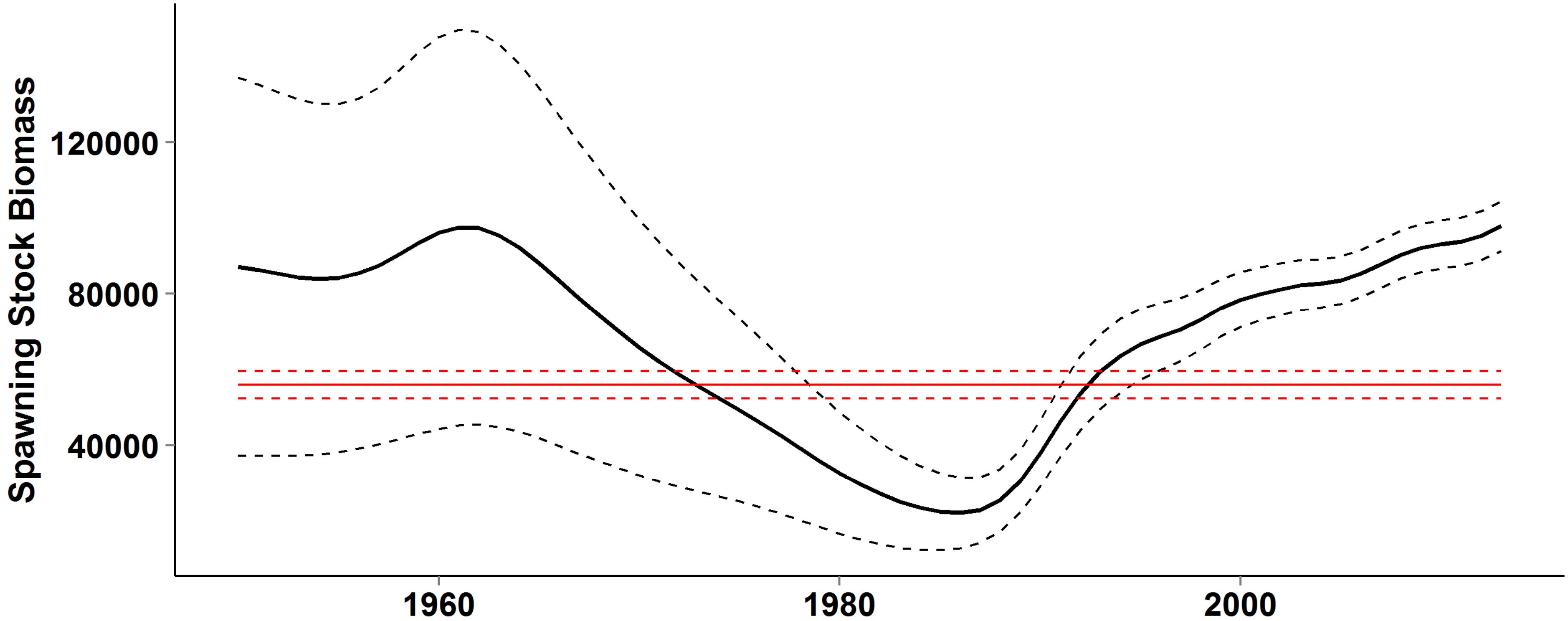


Figure 2.4.71 Northern stock estimated biomass with 95% confidence interval (black lines) and the stock biomass when the fishing mortality target is sustained with confidence interval (red lines).



Spawning Stock Biomass
120000
80000
40000
1960
1980
2000

Figure 2.4.72 Southern stock estimated biomass with 95% confidence interval (black lines) and the stock biomass when the fishing mortality target is sustained with confidence interval (red lines).

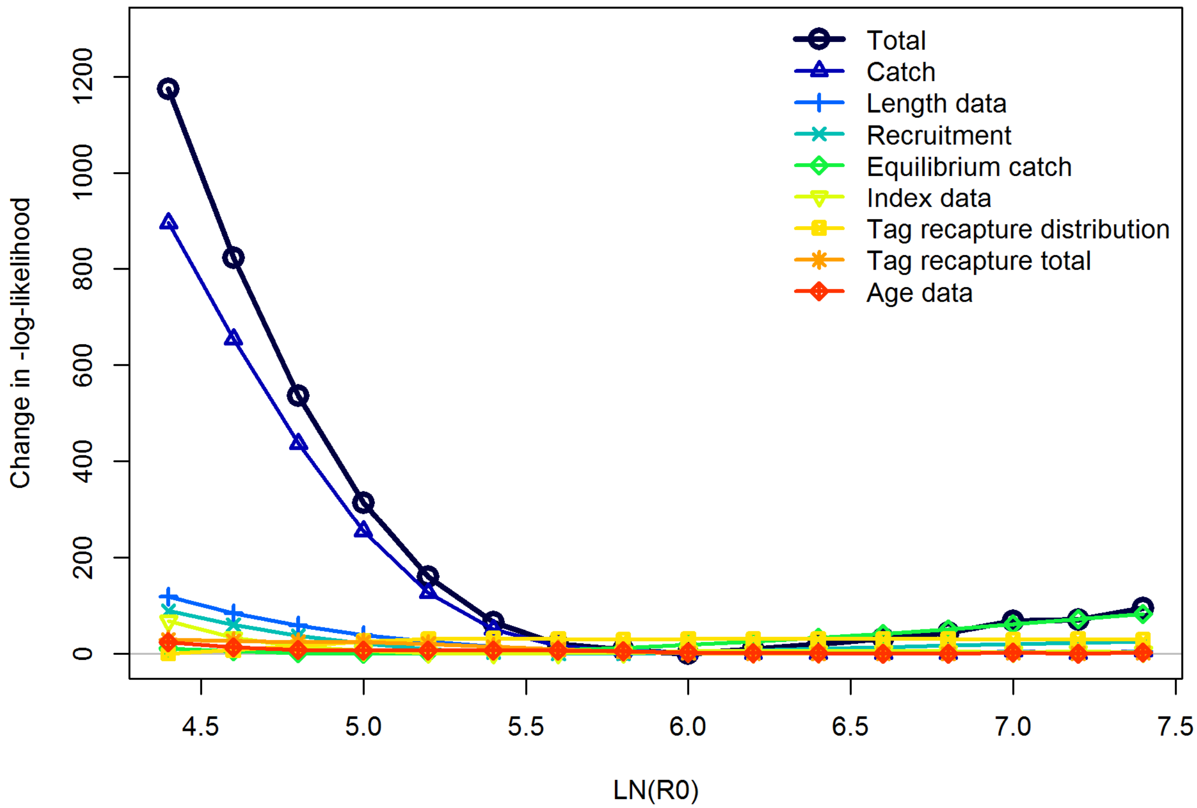


Figure 2.4.72 Likelihood profile of unfished equilibrium LN(R0).

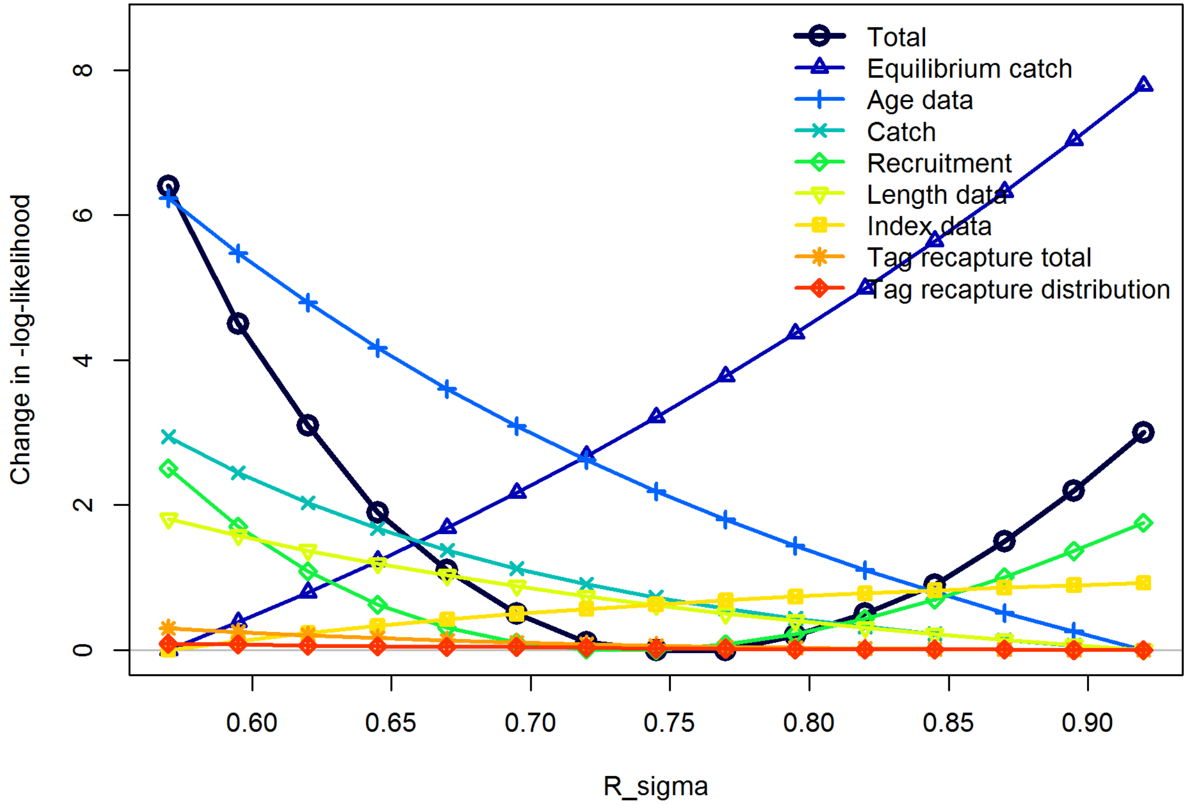


Figure 2.4.73 Likelihood profile of unfished equilibrium R sigma.

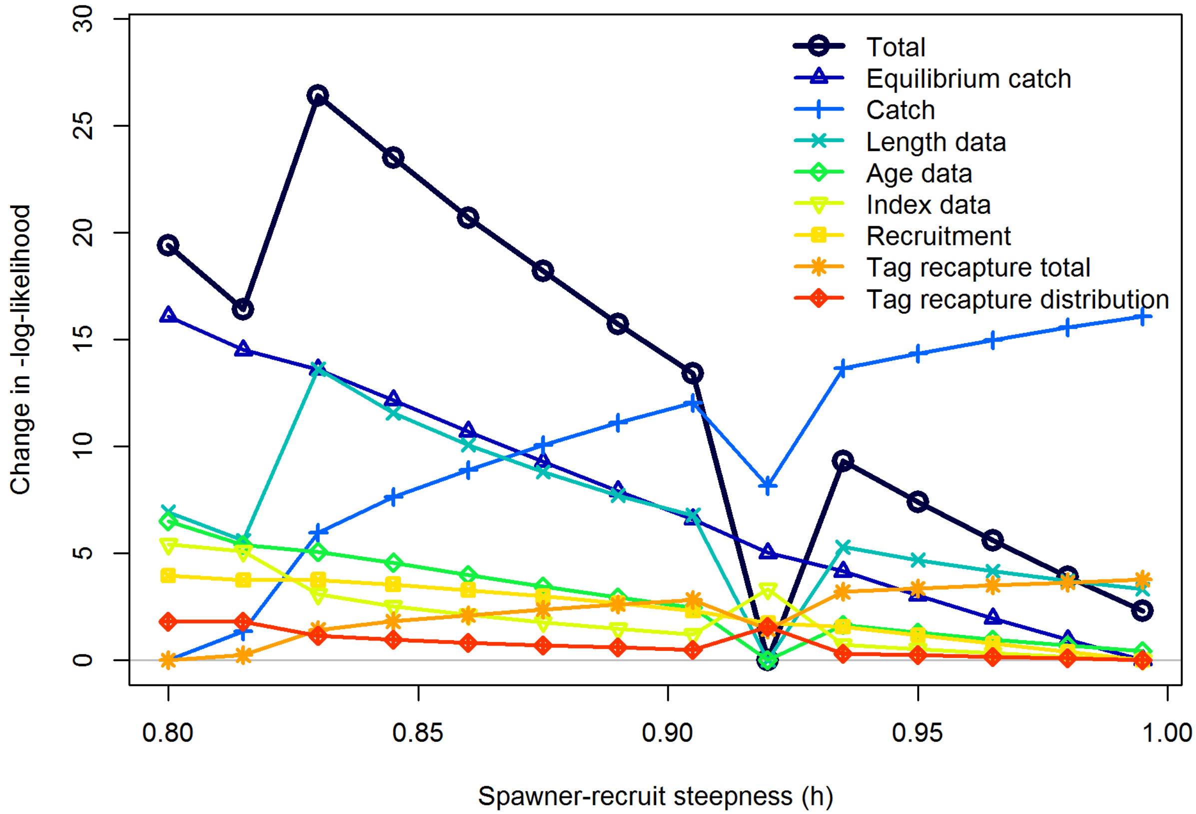


Figure 2.4.74 Likelihood profile of unfished equilibrium spawner-recruit steepness (h).

Figure 2.4.75 Fishing mortality (upper left), SPR (upper right), SSB (lower left), and recruitment (lower right) estimates from retrospective analysis.

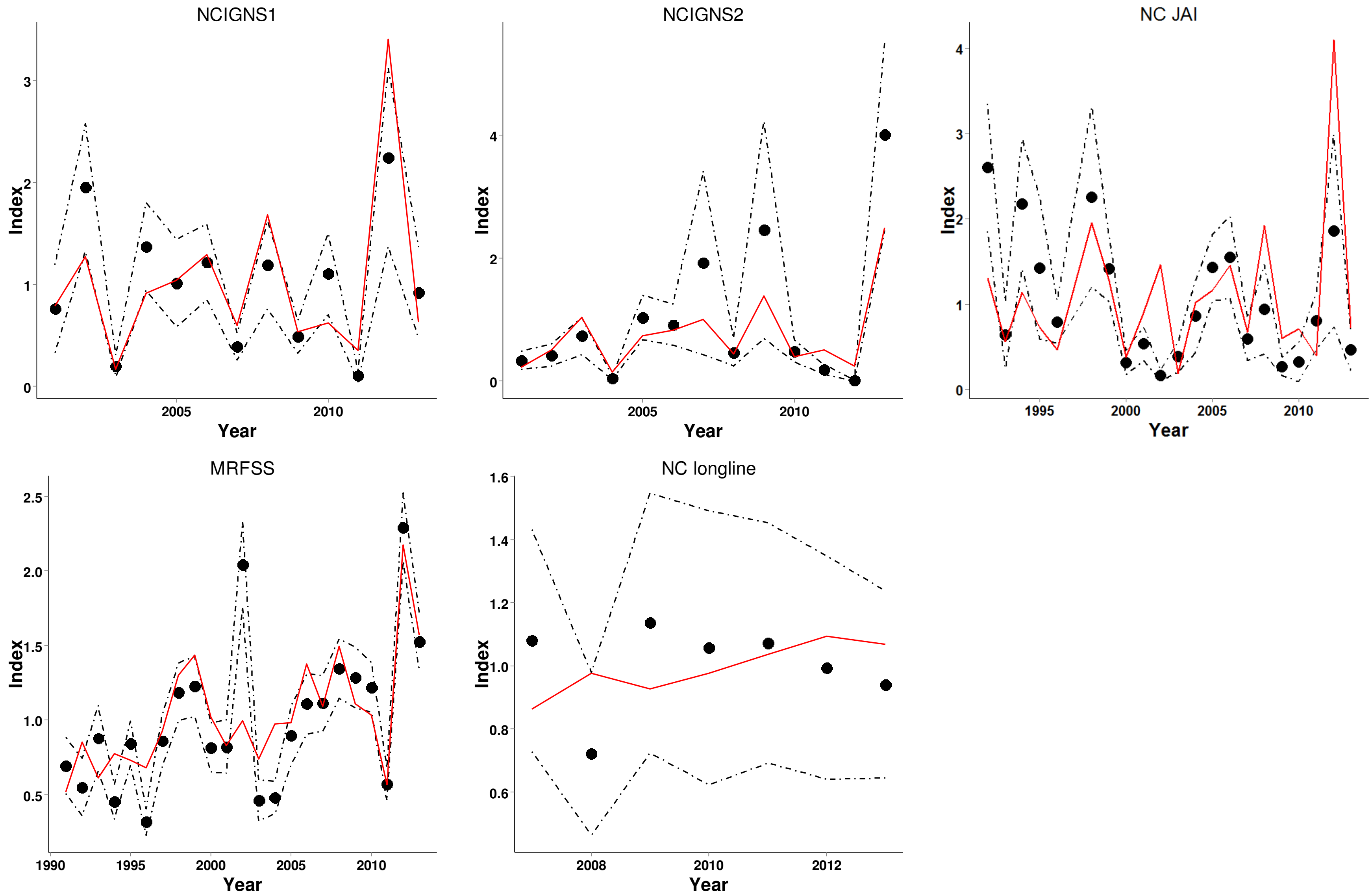


Figure 3.2.1 Observed (points) and predicted (solid lines) indices of abundance for red drum in the northern region. Dotted lines show the 95% confidence bands around the observed values based on input CV's.

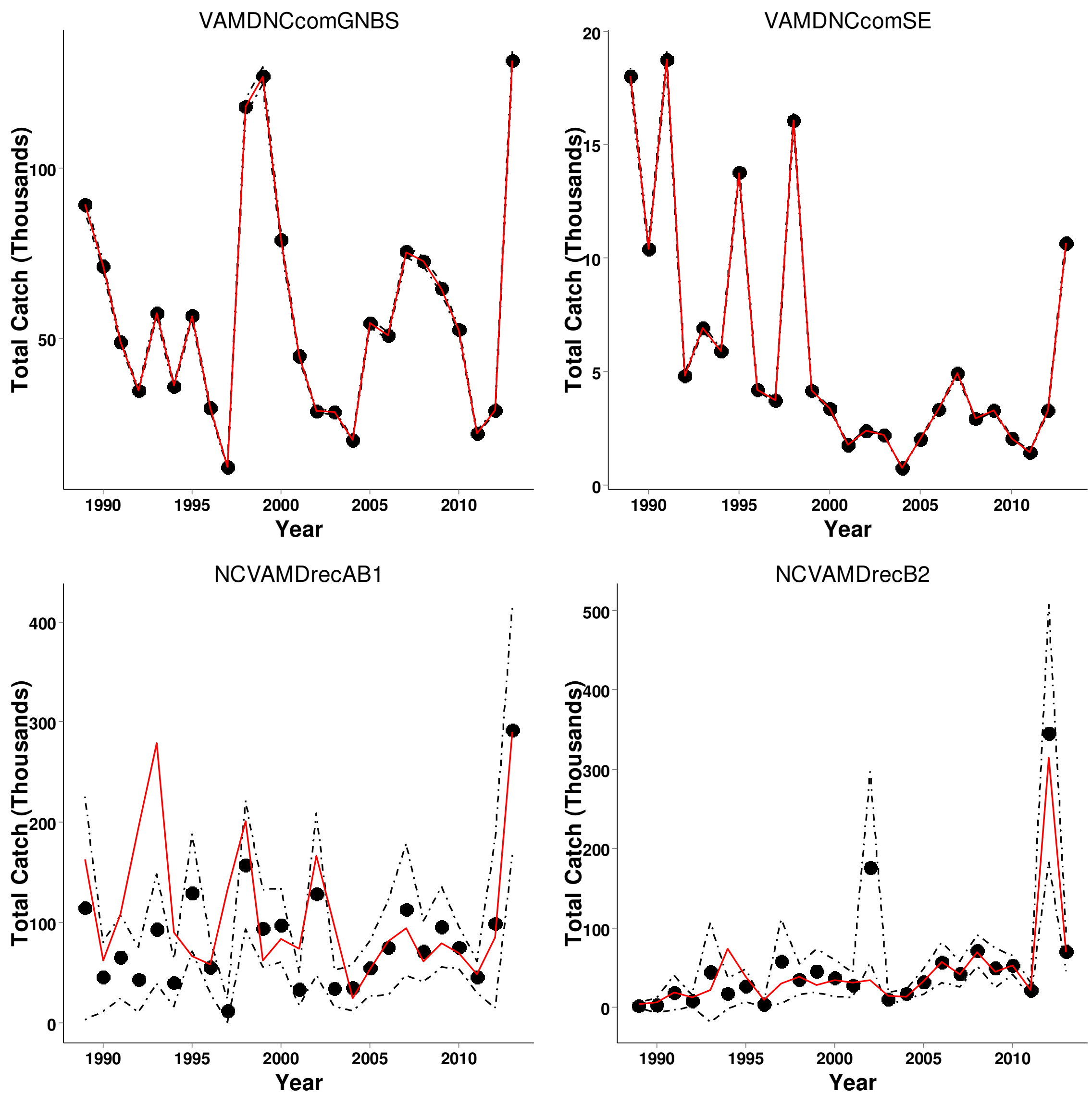


Figure 3.2.2 Observed (points) and predicted (solid lines) total kill for each fishery on red drum in the northern region. Dotted lines show the 95% confidence bands around the observed values based on input CV's.

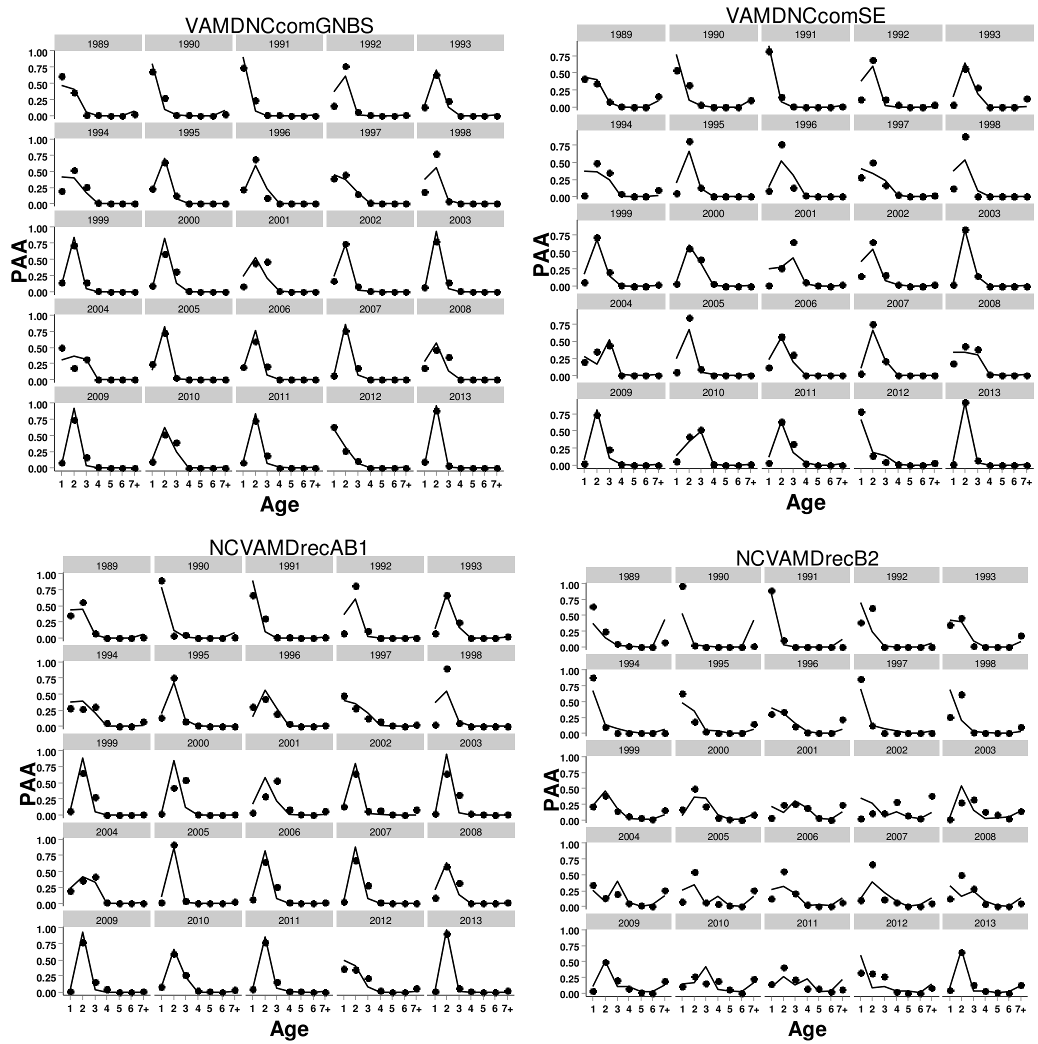


Figure 3.2.3 Observed (points) and predicted (lines) for proportion-at-age of red drum in the retained [two commercial (com) and recreational landings (recAB1)] and dead-subsequent-to-live-release [recB2] northern fisheries.

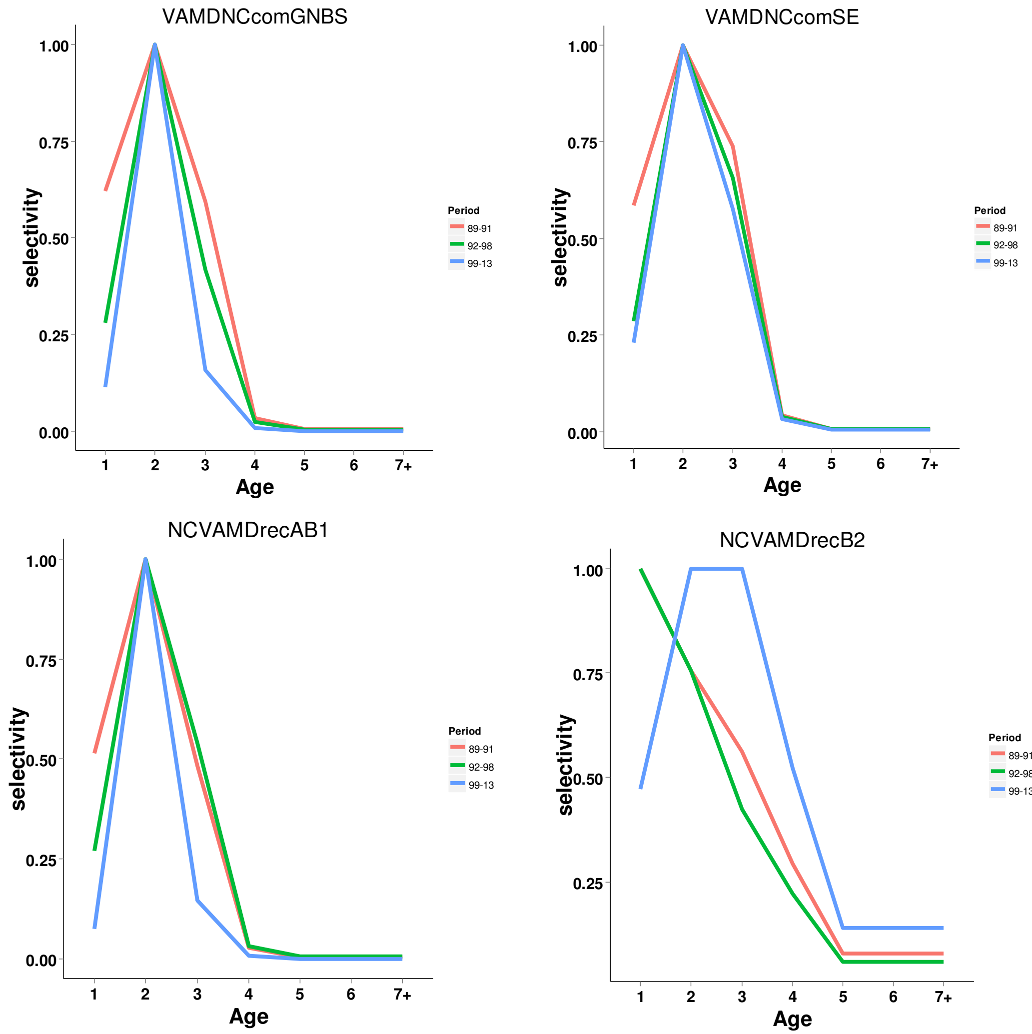


Figure 3.2.4. Selectivity by block of years under similar regulation for each of the northern red drum fleets.

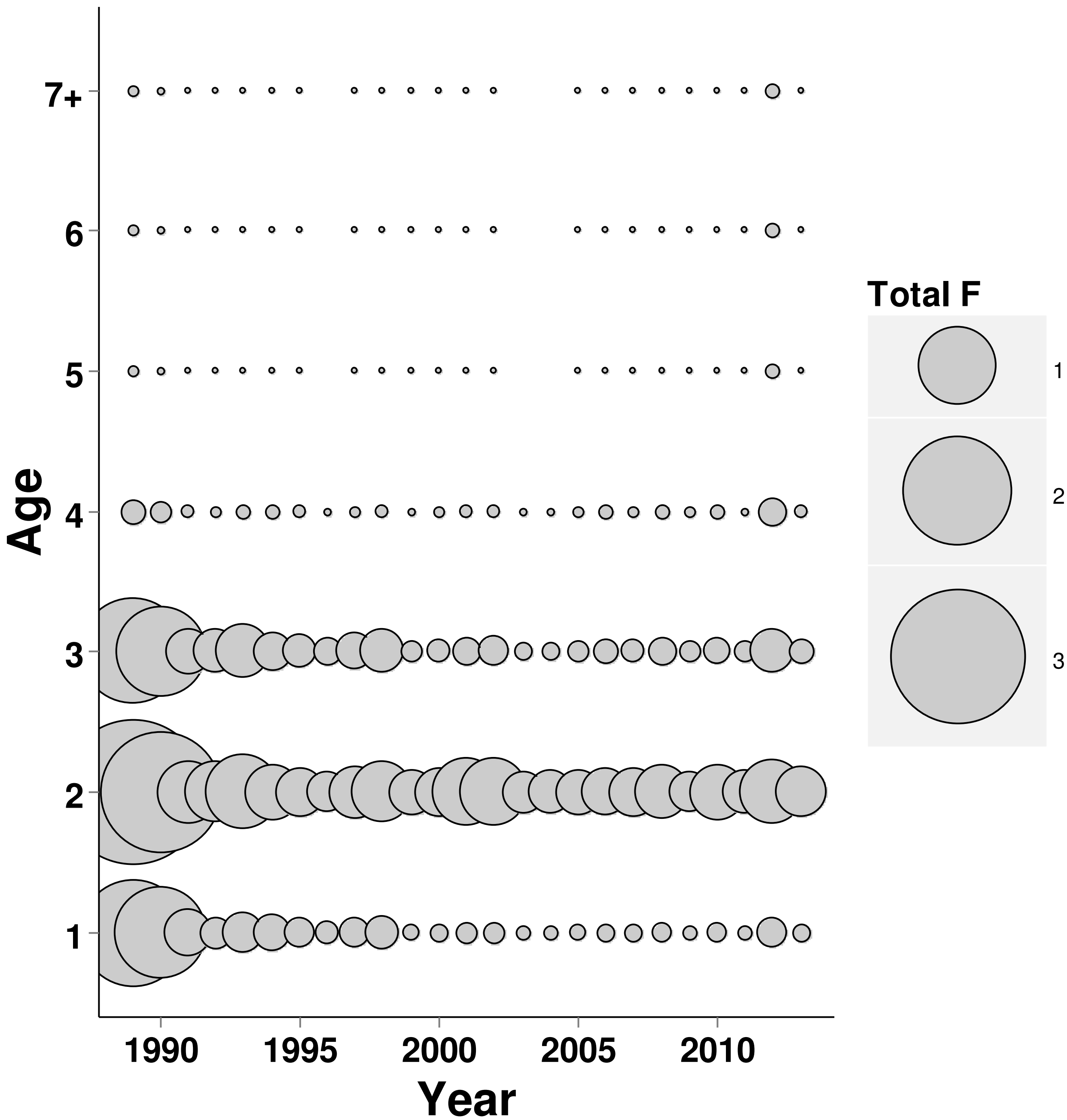


Figure 3.2.5. Instantaneous fishing mortality rate (/yr) estimates for northern red drum stock.

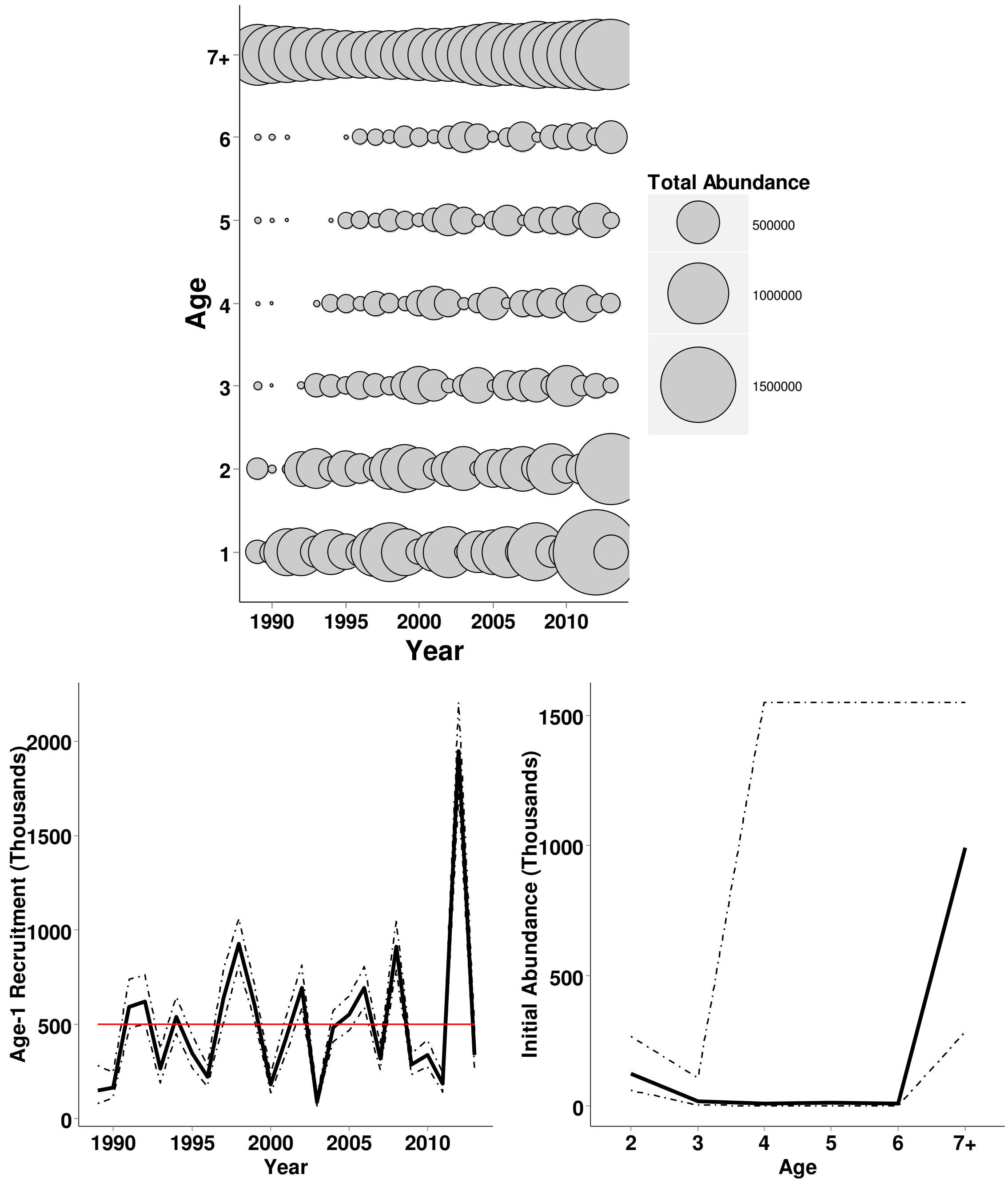
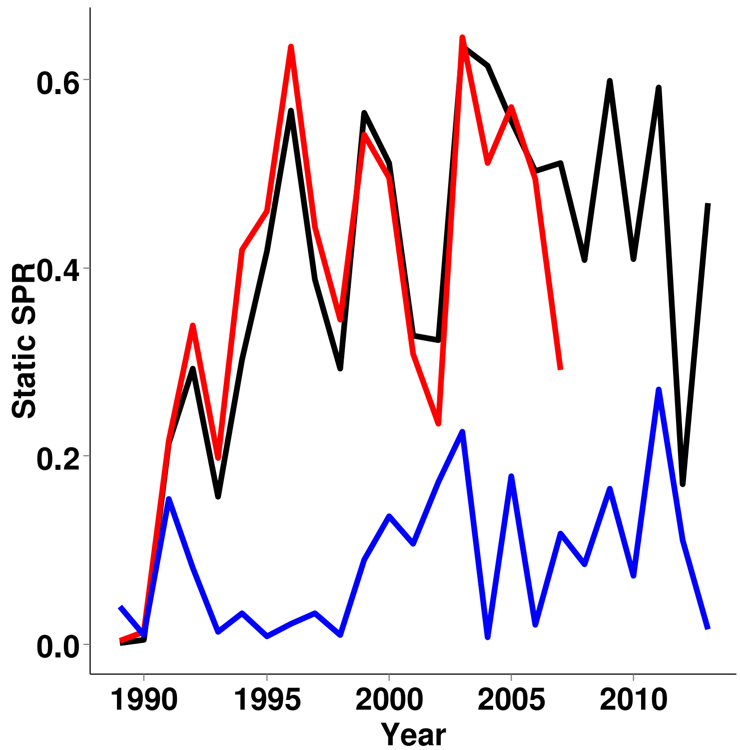


Figure 3.2.6. Bubble plot of abundance at age, recruitment abundance (showing geometric mean red line and confidence intervals, dotted lines), and estimated initial abundance at age in 1989 [note that the upper confidence bounds for age 4-7+ have been severely truncated].



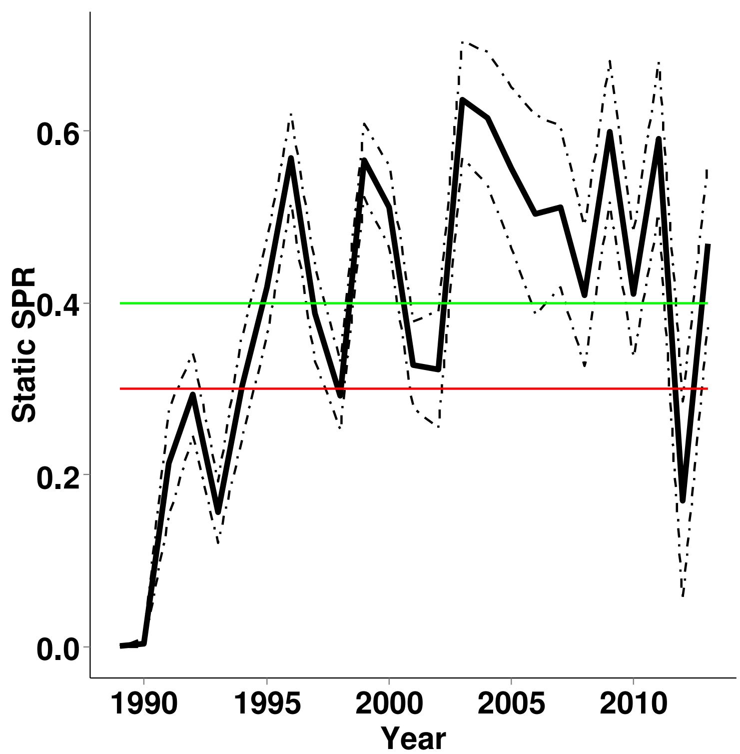


Figure 3.2.7 Calculated static spawning potential ratios from SEDAR 18 final base run (top, red line), current continuity model for the north stock region (top, black line), and the sSPR from the SS3 model run(top, blue line).

The current continuity run sSPR results relative to threshold (red) and target (black) sSPR's showing 95% confidence intervals.

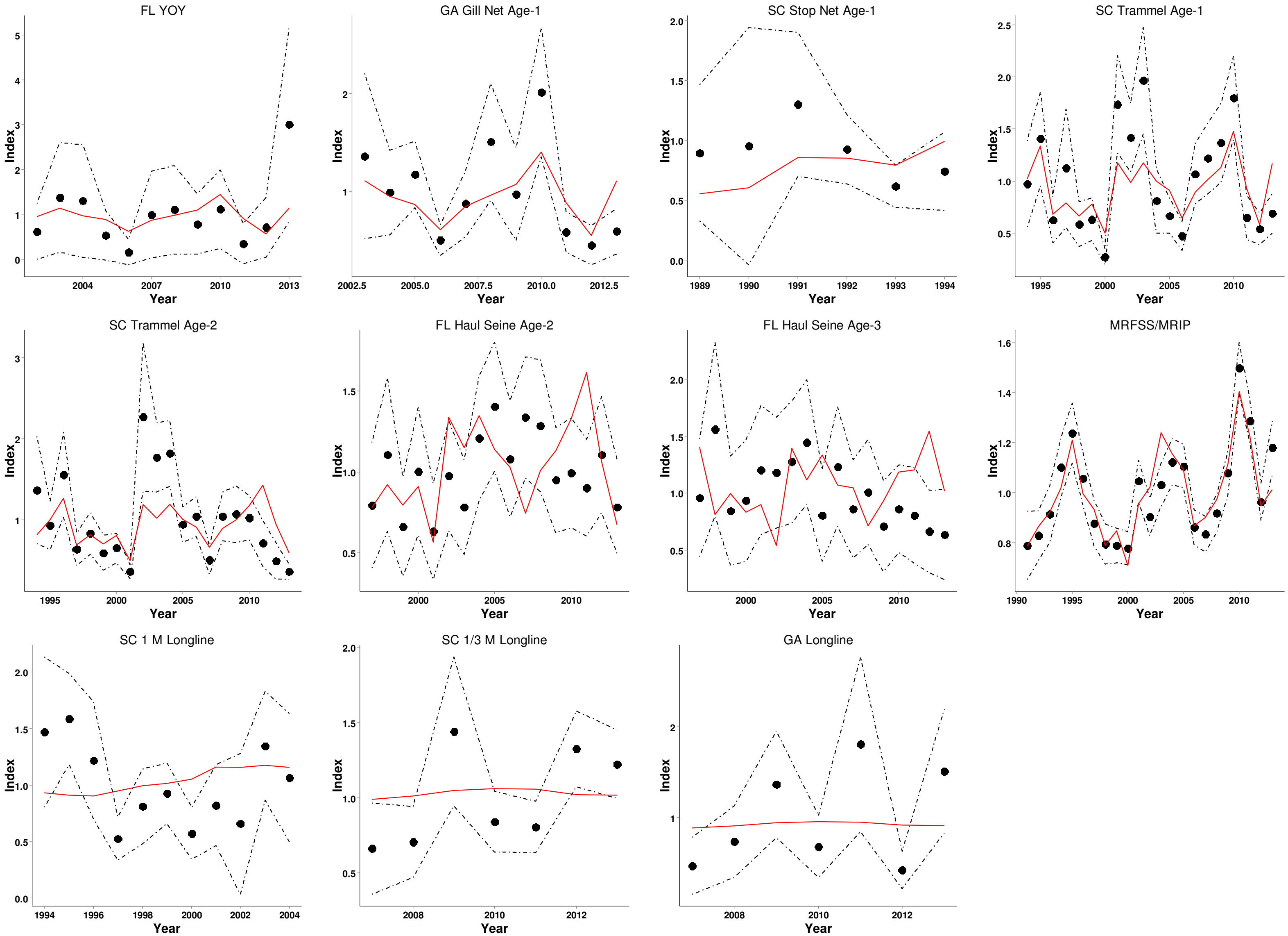


Figure 3.2.8. Observed (points) and predicted (solid lines) indices of abundance for red drum in the southern region. Dotted lines show the 95% confidence bands around the observed values based on input CV's.

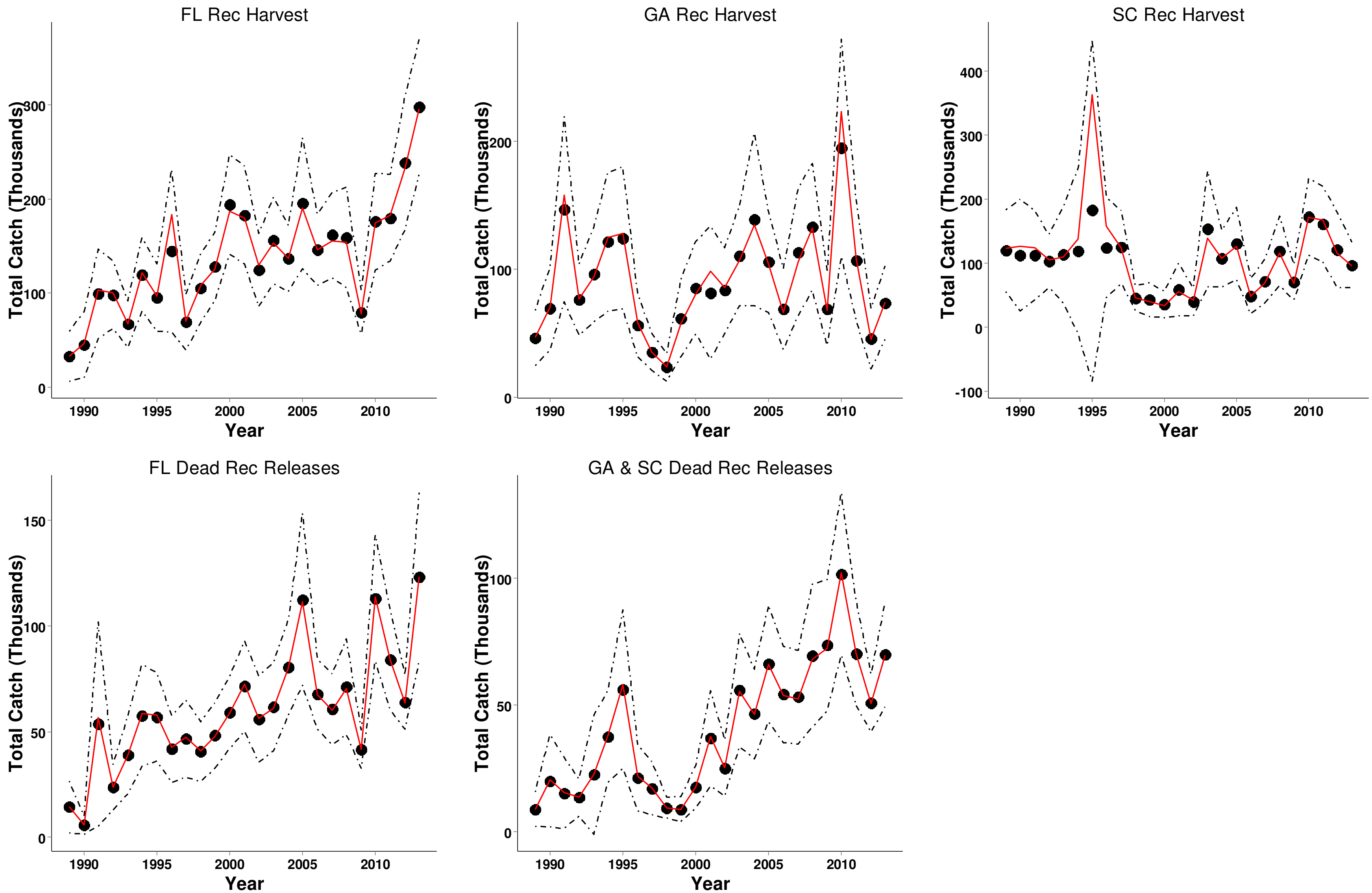


Figure 3.2.9. Observed (points) and predicted (solid lines) total kill for each fishery on red drum in the southern region. Dotted lines show the 95% confidence bands around the observed values based on input CV's.

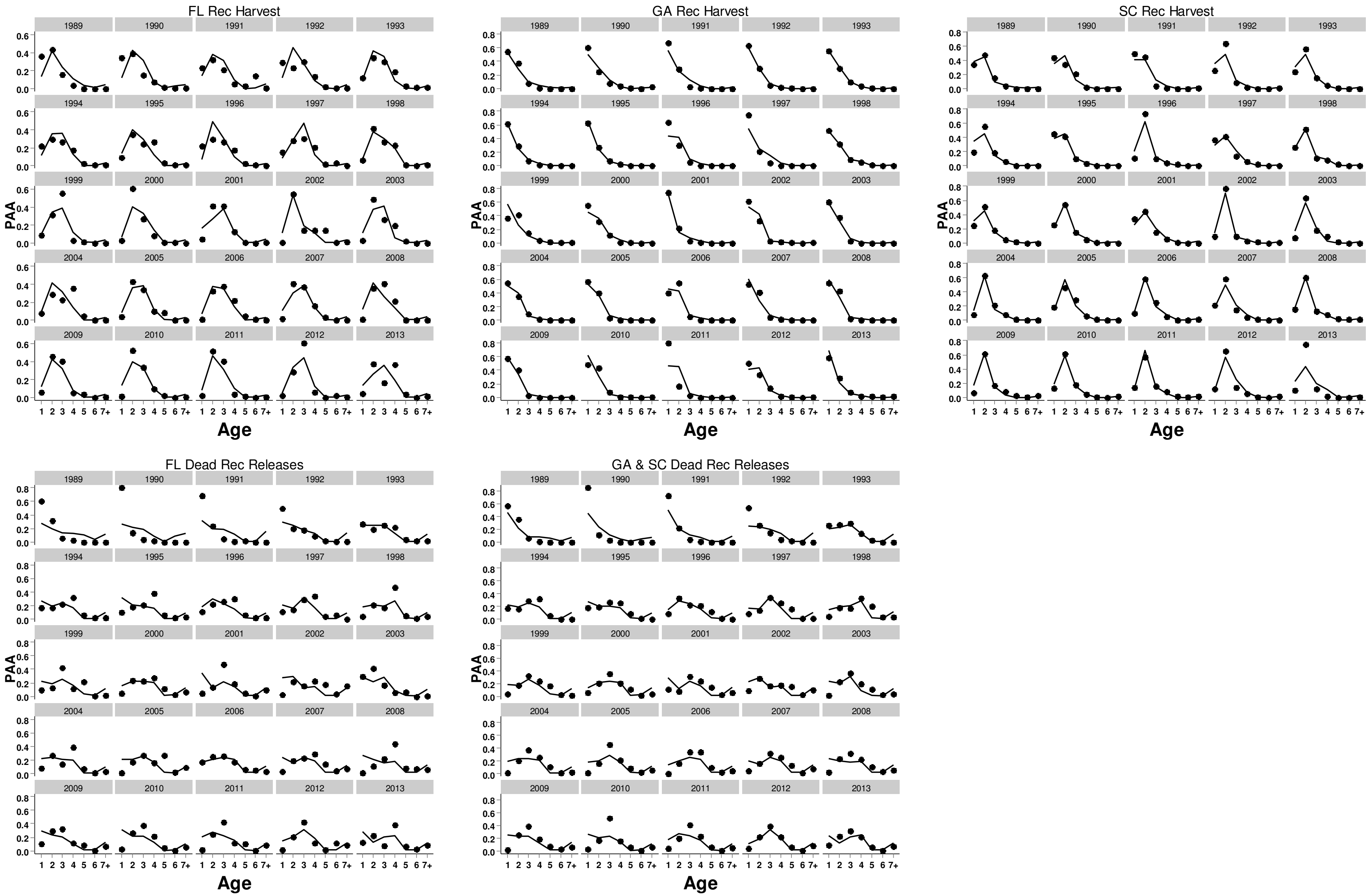


Figure 3.2.10. Observed (points) and predicted (lines) for proportion-at-age of red drum in the retained and dead-subsequent-to-live-release [recB2] south-stock fisheries.

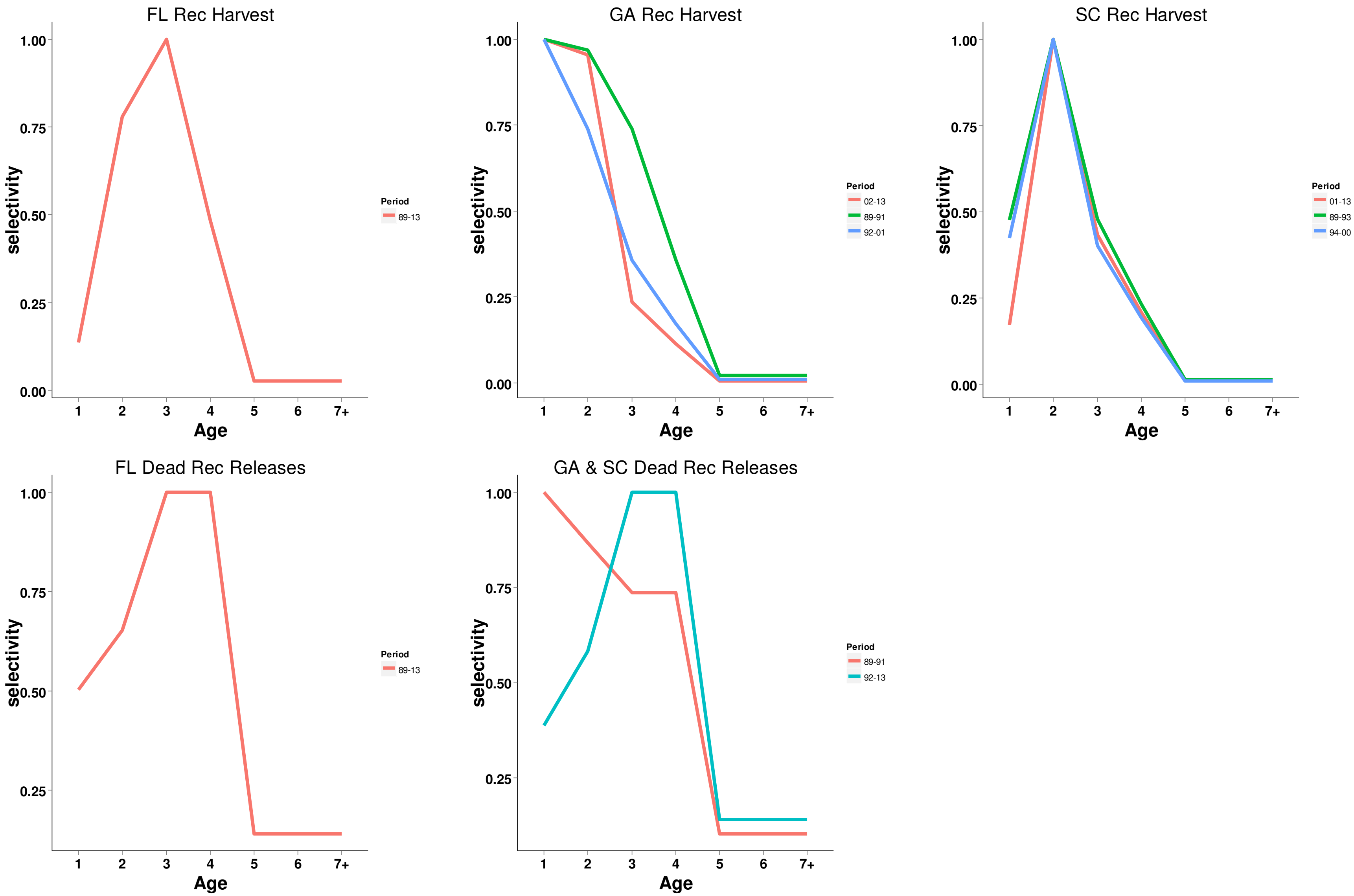


Figure 3.2.11. Selectivity by block of years under similar regulation for each of the southern red drum fleets.

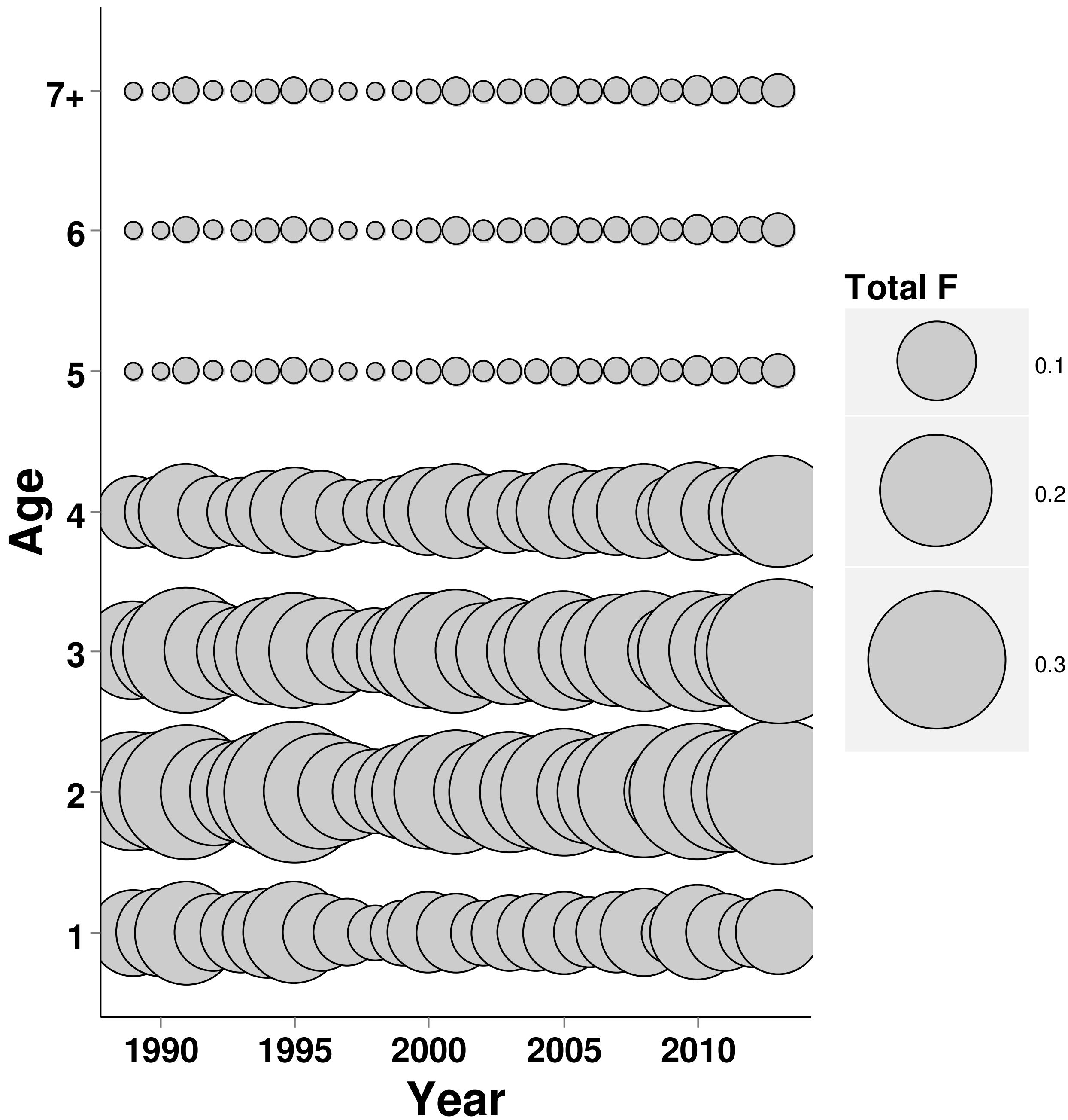


Figure 3.2.12. Instantaneous fishing mortality rate (/yr) estimates for the south stock red drum .

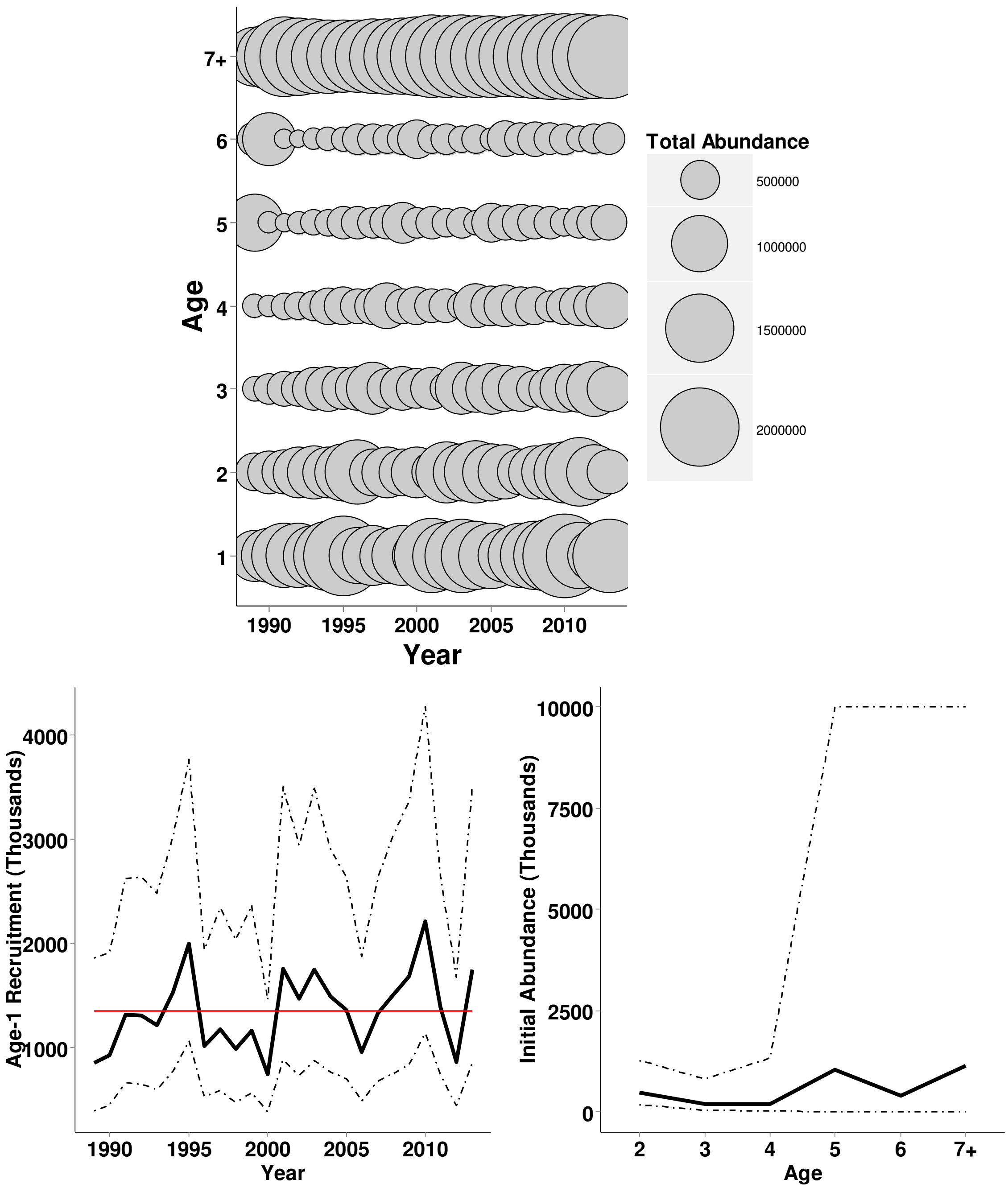


Figure 3.2.13. Bubble plot of abundance at age in the southern stock of red drum, recruitment abundance (showing geometric mean red line and confidence intervals, dotted lines), and estimated initial abundance at age in 1989 [note that the upper confidence bounds for age 5-7$^+$ have been severely truncated].

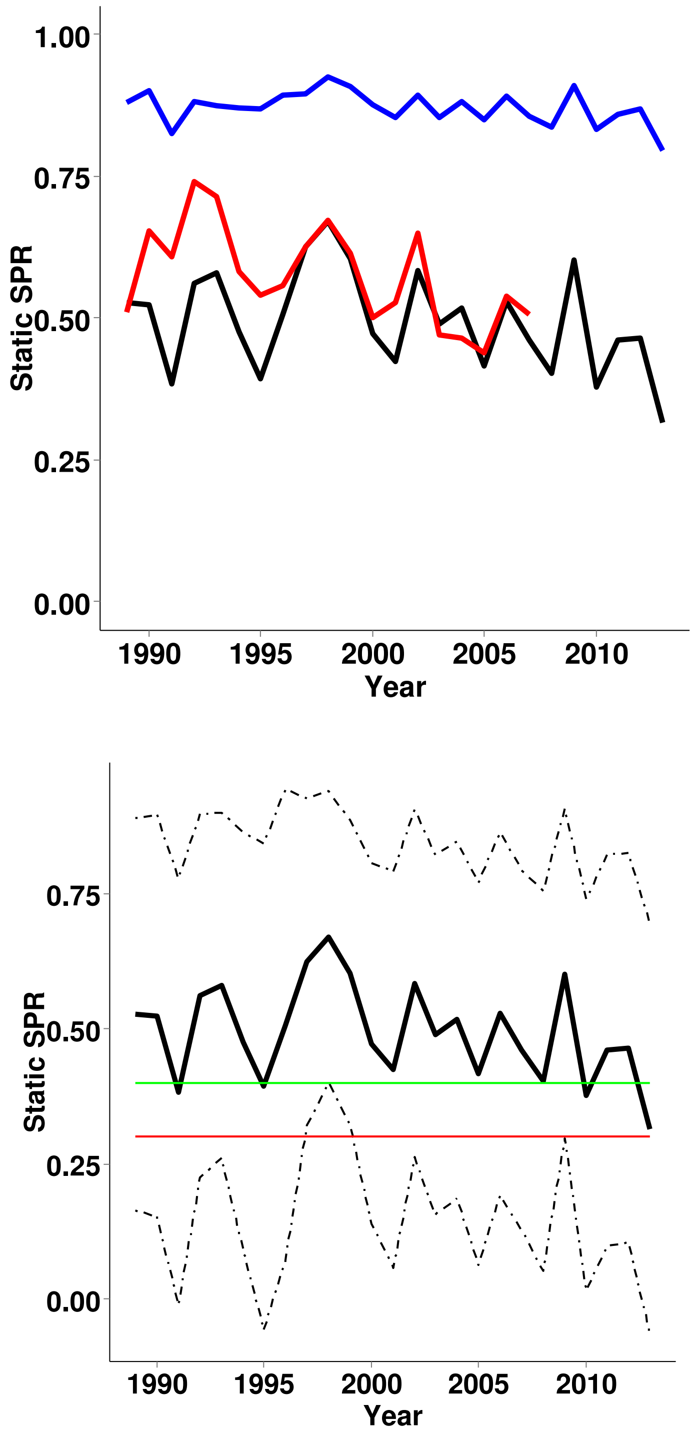


Figure 3.2.14. Calculated static spawning potential ratios from SEDAR 18 final base run (top, red line), current continuity model for the south stock region (top, black line), and the sSPR from the SS3 model run(top, blue line).
The current continuity run sSPR results relative to threshold (red) and target (black) sSPR's showing 95% c confidence intervals.

Appendicies

Appendix x. Stock Synthesis starter file for the northern stock base model.

#V3.24S
#C -- Executed: 2015-07-09 15:12:52 base
rd_north.dat
rd_north.ctl
0 #_Intial_Values_Values__0=use_init_values_in_control_file;1=use_ss3.par
0 #_Run_Display_Detail__(0=ADMB_only,1=one_line_per_iteration,2=fuller_display)
1 #_Detailed_Age-structured_Reports_in_REPORT.SSO__(0=omit_CAA_for_each_fleet&cohort,1=include_all)
0 #_Write_detailed_checkup.sso_file_(0,1),used_be_developer
4 #_Parameter_Trace_writes_parm_values_to_ParmTrace.sso__(0=no,1=good,active;2=good,all;3=every_iter,all_parms;4=every,active)
2 #_Cumulative_Report_writes_to cumreport.sso_(0=no,1=like&timeseries;2=add survey fits)
0 #_Full_Priors__include_prior_like_for_non-estimated_parameters_(0_only_include_priors_for_active_parameters,1_all_priors_included_in_logL)
1 #_Soft_Boundaries_to_aid_convergence_(0_no,1_yes)_(recommended_uses_weak_symmetric_beta_penalty_near_bound)
1 #_Number_of_datafiles_to_produce:_1st_is_input,2nd_is_estimates,3rd_and_higher_are_bootstrap
7 #_Turn_off_estimation_for_parameters_entering_after_this_phase__-1=input_read_only_0=exit_after_one_call_to_calcs_N>0=last_phase
10 #_MCeval_burn_interval
2 #_MCeval_thin_interval
0 #_Jitter_Initial_parm_value_by_this_fraction
-1 #_min_yr_for_sdreport_outputs_(-1_for_st_yr)
-1 #_max_yr_for_sdreport_outputs_(-1_for_end_yr;-2_for_end_yr+Nforecastyrs
0 #_additional_N_individual_STD_years
#_vector_of_year_values_for_STD
#_**no_std_report_years**
1e-04 #_final_convergence_criteria_(e.g._1.0e-04)
0 #_retrospective_year_relative_to_end_year_(e.g. -4)
0 #_min_age_for_calc_of_summary_biomass used for reporting exploitation
1 #_Depletion_basis_for_degree_of_depletion_in_SSB:__denom_is:0=skip;1=rel X*B0;2=rel_X*Bmsy;3=rel_X*B_styr
0.4 #_Fraction_(X)_for_Depletion_denominator(e.g.if_basis_is_2_X*Bmsy_then_0.4Bmsy_is_denom)

4 #_SPR_report_basis: 0=skip; 1=(1-SPR)/(1-SPR_tgt);2=(1-SPR)/(1-SPR_MSY);3=(1-SPR)/(1-SPR_Btarget);4=rawSPR
4
#_F_report_units:0=skip;1=exploitation(Bio);2=exploitation(Num);3=sum(Frates);4=true_F_for_range_of_ages
0 10 #_min and max age over which average F will be calculated
0 #_F_report_basis:0=raw;1=F/Fspr;2=F/Fmsy;3=F/Fbtgt
999 #_check_value_for_end_of_file

Appendix x. Stock Synthesis data file for the northern stock base model.
#C -- Executed: 2015-06-22 22:37:13 --
1950 #start_yr
2013 #end_yr
1 #_nseas
12 #_months/season
1 #_spawn_seas
4 #_Nfleet
5 #_Nsurveys
1 #_N_areas
Comm_GNBS%Comm_OTHER%Rec_Harv%Rec_Discard%NC_JAI%NC_IGNS_0%NC_IGNS_1%NC_LL%Rec_CPUE
-1 -1 -1 -1 0 0.67 0.5 0.67 0.75 #_fishery&surveys_timing_in_season -- neg. for fleet uses actual CAA
1 1 1 1 1 1 1 1 1 #_fishery&surveys_area_assignments
1 1 2 2 #___units_of_catch_for_FLEETS_ONLY:_1=bio,2=num
0.1 0.05 0.25 0.25
#_se_of_log(catch)_for_each_fleet:_only_used_for_init_eq_catch_and_for_Fmethod_2_and_3; use -1 for discard only fleets
1 #_Ngenders(1/2)_(females_are_gender_1)
41 #_Nages--large_enough_to_accumulate_note_SS3_alwas_starts_at_age_0
61.68 29.27 47.35 0.33 #_init_equil_catch_for_each_fishery
64 #_N_lines_of_catch_to_read
#catch_biomass(mt):_columns_are_fisheries_catch_(in order),year,season

97.66	77.02	42.90	0.30	1950	1
68.40	50.67	44.24	0.31	1951	1
92.49	30.48	45.58	0.32	1952	1
120.79	18.14	46.91	0.33	1953	1
88.36	52.35	48.25	0.34	1954	1
48.08	30.44	49.59	0.35	1955	1
14.65	8.53	50.92	0.35	1956	1
65.18	8.71	52.26	0.36	1957	1
10.43	9.71	53.60	0.37	1958	1
10.80	6.67	39.20	0.30	1959	1
39.55	9.84	40.16	0.31	1960	1
41.32	4.81	50.20	0.37	1961	1
28.49	4.99	50.40	0.38	1962	1

32.39	1.13	50.71	0.38	1963	1
8.89	39.24	57.28	0.42	1964	1
16.15	59.83	63.01	0.46	1965	1
3.54	13.93	65.63	0.48	1966	1
2.99	3.31	70.09	0.51	1967	1
1.27	4.45	73.90	0.54	1968	1
0.64	1.63	77.18	0.54	1969	1
1.77	1.68	78.52	0.53	1970	1
4.40	3.72	78.95	0.55	1971	1
9.42	12.72	81.96	0.56	1972	1
16.14	18.95	89.67	0.62	1973	1
24.19	47.55	97.52	0.68	1974	1
30.53	75.63	95.11	0.67	1975	1
38.99	50.88	89.63	0.63	1976	1
3.77	5.77	84.35	0.62	1977	1
1.85	9.42	80.59	0.58	1978	1
35.21	29.86	81.91	0.59	1979	1
49.87	68.81	79.46	0.57	1980	1
16.48	29.12	104.19	1.06	1981	1
14.11	13.12	83.58	0.10	1982	1
84.79	47.45	525.70	0.17	1983	1
104.74	43.41	196.49	16.41	1984	1
50.33	28.80	53.59	0.11	1985	1
66.38	61.60	70.15	0.58	1986	1
72.52	55.21	117.63	3.35	1987	1
80.33	39.47	281.61	3.33	1988	1
86.94	56.74	114.51	1.75	1989	1
67.79	26.98	46.09	3.24	1990	1
49.06	16.22	65.96	18.47	1991	1
62.25	10.46	43.12	8.37	1992	1
119.59	14.47	93.87	44.23	1993	1
66.73	16.23	40.20	17.31	1994	1
106.44	29.18	129.55	27.32	1995	1
54.79	8.86	55.97	4.26	1996	1
22.73	7.41	12.47	58.15	1997	1
156.60	21.21	157.86	35.75	1998	1
219.24	10.58	94.17	46.08	1999	1
154.25	8.42	97.49	37.27	2000	1
85.09	5.24	33.54	27.98	2001	1
50.18	6.01	128.61	176.34	2002	1
52.41	4.64	34.18	10.54	2003	1
33.78	1.68	35.02	17.20	2004	1
88.37	5.04	54.57	32.55	2005	1
93.69	7.01	75.21	56.75	2006	1
137.59	10.20	113.19	42.15	2007	1
150.12	6.26	71.66	71.68	2008	1

```
122.94 6.79   96.21  49.83  2009  1
115.16 5.42   75.10  53.33  2010  1
45.16  3.55   46.10  21.52  2011  1
39.52  6.18   99.27  345.80 2012  1
204.12 22.55  292.19 70.16  2013  1

#
#
77 #_N_cpue_and_surveyabundance_observations
#_Units:0=numbers;1=biomass;2=F
#_Errtype:-1=normal;0=lognormal;>0=T
#_Fleet_Units_Errtype
1  1  0  #_comGNBS
2  1  0  #_comOTHR
3  0  0  #_MRIP
4  0  0  #_MRIP B2
5  0  0  #_NCJAI
6  0  0  #_NCIGNS1
7  0  0  #_NCIGNS2
8  0  0  #_NCLL
9  0  0  #_MRIPtotC
#yr_sn_fl_val_SE
1992  1  5  2.504  0.144
1993  1  5  0.614  0.299
1994  1  5  2.094  0.174
1995  1  5  1.373  0.285
1996  1  5  0.764  0.156
1998  1  5  2.173  0.231
1999  1  5  1.362  0.136
2000  1  5  0.304  0.223
2001  1  5  0.52   0.182
2002  1  5  0.16   0.192
2003  1  5  0.37   0.233
2004  1  5  0.829  0.242
2005  1  5  1.377  0.136
2006  1  5  1.493  0.155
2007  1  5  0.57   0.209
2008  1  5  0.904  0.273
2009  1  5  0.262  0.189
2010  1  5  0.313  0.339
2011  1  5  0.777  0.204
2012  1  5  1.791  0.296
2013  1  5  0.446  0.26
2001  1  6  0.765  0.276
2002  1  6  1.954  0.159
2003  1  6  0.201  0.255
```

2004	1	6	1.374	0.156
2005	1	6	1.018	0.209
2006	1	6	1.218	0.152
2007	1	6	0.394	0.169
2008	1	6	1.196	0.179
2009	1	6	0.49	0.166
2010	1	6	1.107	0.18
2011	1	6	0.111	0.262
2012	1	6	2.251	0.193
2013	1	6	0.921	0.239
2001	1	7	0.333	0.224
2002	1	7	0.416	0.216
2003	1	7	0.734	0.204
2004	1	7	0.045	0.325
2005	1	7	1.029	0.175
2006	1	7	0.915	0.18
2007	1	7	1.921	0.376
2008	1	7	0.461	0.242
2009	1	7	2.465	0.348
2010	1	7	0.484	0.186
2011	1	7	0.182	0.206
2012	1	7	0.008	0.833
2013	1	7	4.008	0.193
2007	1	8	1.08	0.162
2008	1	8	0.721	0.177
2009	1	8	1.136	0.18
2010	1	8	1.057	0.203
2011	1	8	1.073	0.176
2012	1	8	0.993	0.177
2013	1	8	0.941	0.156
1991	1	9	0.694	0.135
1992	1	9	0.551	0.171
1993	1	9	0.879	0.123
1994	1	9	0.452	0.126
1995	1	9	0.845	0.087
1996	1	9	0.318	0.137
1997	1	9	0.862	0.103
1998	1	9	1.189	0.081
1999	1	9	1.228	0.084
2000	1	9	0.818	0.1
2001	1	9	0.823	0.109
2002	1	9	2.042	0.069
2003	1	9	0.461	0.148
2004	1	9	0.482	0.113
2005	1	9	0.898	0.109
2006	1	9	1.109	0.09

2007 1 9 1.113 0.084
2008 1 9 1.345 0.074
2009 1 9 1.285 0.079
2010 1 9 1.219 0.068
2011 1 9 0.57 0.098
2012 1 9 2.293 0.05
2013 1 9 1.525 0.061
0 #_N_fleets_with_discard
#_discard_units (1=same_as_catchunits(bio/num); 2=fraction; 3=numbers)
#_discard_errtype: >0 for DF of T-dist(read CV below); 0 for normal with CV; -1 for normal with se; -2 for lognormal
Fleet Disc_units err_type
0 #_N_discard_obs
#_year seas index obs err
0 #_N_mean_bodywt_obs
30 #_DF_for_meanbodywt_T-distribution_like
#
3 #_length_bin_method:1=use databins;2=generate_from_binwidth,min,max_below;3=read_vector
70 #_Number_Pop_LengthBins -- this may be separate from length composition bins
#_Lower_edge_of_Pop_len_bins --same as databins
6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 62 64 66 68 70 72 74 76 78 80 82 84 86 88 90 92 94 96 98 100 102 104 106 108 110 112 114 116 118 120 122 124 126 128 130 132 134 136 138 140 142 144
-1e-04 #_comp_tail_compression_--_neg_value_causes_no_compression;
1e-04 #_add_to_comp
0 #_combine_males_into_females_at_or_below_this_bin_number
67 #_N_Data_LengthBins
#_data_length_bins_--_lower_edge
12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 62 64 66 68 70 72 74 76 78 80 82 84 86 88 90 92 94 96 98 100 102 104 106 108 110 112 114 116 118 120 122 124 126 128 130 132 134 136 138 140 142 144
149 #_N_Length_obs
#_Length_composition_data
#_Year_Seas_Fleet_Gender_Partition_Nsamp_data_vector

1984	1	1	0	0	14	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	2	0	0	0
	0	0	0	0	0	1	0	2	3	5	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
1988	1	1	0	0	14	0	0	0	0	0	0	0
	0	0	1	1	1	4	4	2	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	1	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
1989	1	1	0	0	15	0	6	0	0	154	181	1669
	3626	0	6840	12264	18169	0	13957	11283	7229	8203	0	47
	1053	0	31	0	1069	1037	0	0	0	0	78	16
	0	0	16	925	0	0	0	0	0	0	0	0
	31	6	0	74	37	37	1069	0	174	47	0	16
	0	16	47	6	0	0	0	0	0	0	21	0
1990	1	1	0	0	15	0	4	0	0	114	134	1234
	2587	0	4897	9679	10984	0	17216	10262	7260	2555	0	1142
	33	16	0	0	0	273	290	0	49	0	33	273
	0	128	0	672	0	0	0	0	0	33	0	0
	161	21	0	58	53	632	156	0	105	61	161	0
	0	0	12	4	0	0	0	0	0	0	16	0
1991	1	1	0	0	80	0	3	0	0	71	104	874
	2148	0	4087	8145	5589	0	3546	1113	4922	9055	0	5831
	981	1212	717	0	0	0	25	0	0	0	25	0
	0	0	0	421	239	0	0	0	0	0	0	0
	0	3	0	14	3	11	7	0	66	7	0	0
	0	8	7	3	0	0	0	0	0	0	10	0
1992	1	1	0	0	72	0	0	0	0	8	9	92
	153	0	277	520	1193	0	1913	3205	9838	4678	0	1519
	1203	991	1286	0	1711	1400	1083	0	965	1420	282	366
	0	183	180	57	1	0	2	0	0	2	0	0
	2	320	0	2	1	107	1	0	7	3	0	0
	0	0	1	0	0	0	1	0	0	0	1	0
1993	1	1	0	0	88	0	0	3	0	13	15	118
	250	0	451	788	1947	0	2969	4273	3042	2468	0	3087
	3014	4089	4409	0	7064	6546	5139	0	3935	2193	544	445
	0	292	283	77	75	0	0	3	0	3	0	3
	77	8	0	1	21	8	1	0	15	9	0	0
	0	0	1	0	0	0	0	0	0	0	1	0
1994	1	1	0	0	32	0	0	0	0	8	10	76
	161	0	290	507	1465	0	1912	4297	1863	1854	0	1236
	2472	2790	2493	0	1881	2503	1888	0	2797	3806	914	240
	0	192	184	50	3	0	0	0	0	0	0	3
	3	315	0	1	7	0	1	0	8	1	0	0
	0	0	1	0	0	0	0	0	0	0	1	0
1995	1	1	0	0	62	0	0	0	0	13	15	118
	249	0	449	784	1800	0	2968	4258	3175	2015	0	2125
	2019	4644	5170	0	9025	8424	4027	0	2391	1224	707	488
	0	290	284	82	0	0	0	0	0	0	0	0
	0	0	0	1	0	0	1	0	12	1	0	0
	0	0	1	0	0	0	0	0	0	0	1	0
1996	1	1	0	0	65	0	0	0	0	7	8	62
	130	0	235	408	931	0	1537	2216	1498	52	0	38

	384	3251	4317	0	7247	5830	116	0	94	601	241	191
	0	158	154	43	4	0	1	1	1	0	0	1
	1	1	0	0	2	1	2	0	9	2	1	0
	0	0	0	0	0	0	0	0	0	0	1	0
1997	1	1	0	0	66	0	0	0	0	3	5	32
	53	0	98	237	417	0	629	974	789	1603	0	1843
	1839	643	48	0	47	159	749	0	923	760	206	79
	0	67	101	19	3	0	1	1	1	3	0	1
	1	1	0	0	2	1	1	0	4	1	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
1998	1	1	0	0	151	0	1	0	0	27	31	246
	521	0	1052	1650	3787	0	6279	9015	7134	17190	0	26105
	20045	9208	4682	0	3872	710	565	0	452	2398	955	755
	0	607	589	161	0	0	0	0	10	0	0	2
	0	1	0	2	1	1	2	0	35	2	0	0
	0	0	2	1	0	0	0	0	0	0	3	0
1999	1	1	0	0	200	0	1	0	0	18	21	167
	354	0	642	1327	2735	0	4511	6544	5840	10839	0	9990
	10379	11414	18372	0	17032	12070	6164	0	4596	1918	649	511
	0	403	496	105	0	0	0	0	0	0	0	18
	0	1	0	1	9	1	2	0	34	2	0	0
	0	0	2	1	0	0	0	0	0	0	2	0
2000	1	1	0	0	211	0	0	0	0	11	12	99
	210	0	381	666	1561	0	2707	3895	3291	7371	0	5822
	3048	2951	4979	0	9013	12416	8991	0	6604	2846	1023	390
	0	363	293	73	21	0	0	21	0	0	0	0
	0	0	0	1	0	0	1	0	10	1	0	0
	0	0	1	0	0	0	0	0	0	0	1	0
2001	1	1	0	0	198	0	0	0	0	6	7	59
	125	0	226	395	919	0	1586	2301	1531	4293	0	2202
	2174	2525	3212	0	5790	5572	5862	0	2989	2125	390	270
	0	148	151	55	18	0	0	5	0	0	0	0
	0	0	0	0	0	0	5	0	6	1	5	0
	0	0	1	0	0	0	0	0	0	0	1	0
2002	1	1	0	0	154	0	0	0	0	4	4	39
	90	0	158	243	551	0	948	1370	1181	3607	0	4183
	2358	2522	2443	0	2015	2669	1959	0	1431	529	149	107
	0	94	89	30	8	0	8	0	0	4	0	4
	4	8	0	0	0	4	4	0	15	4	4	4
	0	4	0	0	0	0	0	0	0	0	0	0
2003	1	1	0	0	131	0	0	0	0	4	5	37
	79	0	143	249	580	0	1016	1464	1428	3568	0	2238
	1854	1944	2936	0	3354	3103	2061	0	1513	332	324	110
	0	88	86	23	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	4	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

2004	1	1	0	0	273	0	0	2	0	157	215	427
	837	0	747	696	1957	0	1572	1285	850	1371	0	967
	399	179	555	0	1267	1314	2116	0	1809	868	498	313
	0	2	0	51	0	0	0	0	0	0	0	0
	0	0	0	2	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
2005	1	1	0	0	466	0	3	0	0	134	192	329
	554	0	2709	2803	3653	0	1417	1340	2445	6242	0	3654
	2591	3322	4405	0	4390	6433	4384	0	2131	919	540	107
	0	0	3	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	3	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
2006	1	1	0	0	544	0	0	3	0	79	158	311
	433	0	1560	2659	3351	0	1451	634	907	3682	0	3399
	2712	3332	4601	0	6568	5805	4477	0	2173	1430	550	465
	0	121	145	3	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
2007	1	1	0	0	449	0	0	0	0	11	12	101
	213	0	387	676	1573	0	2715	3969	3261	6048	0	5519
	5432	5986	8455	0	10242	8087	5340	0	3919	2130	619	335
	0	238	234	63	0	0	0	0	0	0	0	0
	0	0	0	8	0	0	1	0	10	1	0	0
	0	0	1	0	0	0	0	0	0	0	1	0
2008	1	1	0	0	474	0	0	0	0	5	5	513
	1258	0	1332	1640	3352	0	3681	3140	2371	2152	0	1774
	2212	3097	7270	0	11752	10475	7491	0	4748	2247	885	1131
	0	293	0	5	0	0	0	0	0	0	0	0
	0	0	0	0	5	0	0	0	0	0	0	0
	0	0	5	0	0	0	0	0	0	0	0	0
2009	1	1	0	0	436	0	0	0	0	0	239	184
	330	0	406	483	2884	0	2232	2356	1413	4986	0	4913
	4700	4661	6578	0	11036	8509	4513	0	2089	1094	306	201
	0	142	139	286	0	0	3	0	45	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
2010	1	1	0	0	339	0	0	0	0	7	0	0
	14	0	233	281	613	0	554	669	1361	3677	0	2361
	1696	2828	5734	0	10436	9503	7727	0	3559	1001	187	210
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
2011	1	1	0	0	276	0	0	0	0	0	53	3
	8	0	62	76	146	0	196	351	254	1647	0	2341
	1736	1415	2473	0	4208	3442	2089	0	1102	486	214	3
	0	0	55	0	1	0	0	0	0	0	0	0

	0	0	0	3	4	0	3	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
2012	1	1	0	0	392	0	0	38	0	185	347	387
	702	0	1408	1943	3765	0	1786	841	1104	4914	0	2559
	615	407	523	0	1130	2349	1740	0	1009	628	462	105
	0	28	0	1	5	0	0	0	0	0	0	0
	0	0	0	0	15	0	5	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
2013	1	1	0	0	763	0	44	0	0	13	95	267
	384	0	1376	4851	5238	0	4629	3061	4689	17739	0	17578
	14900	13449	13285	0	14273	9428	5252	0	617	363	181	2
	0	0	0	2	0	0	0	0	0	0	0	0
	0	2	0	0	0	0	5	0	41	0	2	0
	0	0	0	2	0	0	0	0	0	0	41	0
1979	1	2	0	0	23	0	0	0	0	0	0	0
	0	0	0	0	0	1	3	12	4	3	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
1980	1	2	0	0	6	0	0	0	0	0	0	0
	0	0	0	0	1	0	1	2	1	0	0	0
	0	0	1	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
1983	1	2	0	0	55	0	0	0	0	0	3	12
	13	8	1	4	4	3	3	1	1	0	1	1
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
1984	1	2	0	0	37	0	0	0	0	0	0	0
	0	0	1	0	3	3	6	8	6	3	5	1
	0	0	1	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
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1985	1	2	0	0	7	0	0	0	0	0	0	0
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1999	1	2	0	0	52	0	0	0	0	0	0	0
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2000	1	2	0	0	52	0	0	0	0	0	0	0
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2001	1	2	0	0	51	0	0	0	0	0	0	0
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2002	1	2	0	0	74	0	0	0	0	0	0	0
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2003	1	2	0	0	27	0	0	0	0	0	0	0
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2005	1	2	0	0	36	0	0	0	0	0	0	0
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2006	1	2	0	0	54	0	0	0	0	0	0	0
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2007	1	2	0	0	89	0	0	0	0	0	0	0
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2008	1	2	0	0	68	0	0	0	0	0	0	0
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2009	1	2	0	0	101	0	0	0	0	0	0	0
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2010	1	2	0	0	47	0	0	0	0	0	0	0
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2011	1	2	0	0	25	0	0	0	0	0	0	0
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2012	1	2	0	0	34	0	0	0	0	0	0	0
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2013	1	2	0	0	116	0	0	0	0	0	0	0
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1981	1	3	0	0	6	0	0	0	1	0	0	0
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1982	1	3	0	0	6	0	0	0	0	0	0	0
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1988	1	3	0	0	33	0	0	0	2	6	1	0
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1990	1	3	0	0	36	0	0	0	0	1	0	0
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1994	1	3	0	0	49	0	0	0	0	0	0	0
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1995	1	3	0	0	97	0	0	0	3	3	1	0
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1996	1	3	0	0	64	0	0	0	0	0	0	0
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1997	1	3	0	0	21	0	0	1	0	9	9	5
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1998	1	3	0	0	123	0	0	0	0	1	1	0
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1999	1	3	0	0	105	0	0	0	0	0	0	0
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2001	1	3	0	0	49	0	0	0	0	0	0	0
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2002	1	3	0	0	71	0	0	0	0	0	0	0
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2003	1	3	0	0	45	0	0	0	0	0	0	0
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	5	9	7	17	4	8	8	6	15	1	6	0
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	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
2004	1	3	0	0	34	0	0	0	0	0	0	0
	0	0	0	0	0	2	0	2	0	0	10	10
	6	6	8	6	4	10	4	6	6	0	4	2
	0	0	0	2	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
2005	1	3	0	0	35	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	1	1	1	2	11
	13	7	10	17	13	30	30	10	6	6	1	0
	0	0	1	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	1	1
	0	2	0	0	0	0	0	0	0	0	0	0
2006	1	3	0	0	62	0	0	0	0	0	0	0
	0	0	1	2	1	7	10	9	7	4	6	17
	17	25	15	23	19	34	17	12	13	21	9	6
	3	7	0	2	0	0	1	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	2	1
	1	1	0	0	0	0	0	0	0	0	0	0

2007	1	3	0	0	77	0	0	0	0	0	0	0
	1	0	0	4	4	3	10	7	6	9	13	25
	19	27	30	30	32	36	31	33	45	17	21	2
	1	2	1	0	0	0	0	0	0	1	0	0
	0	0	0	0	0	0	0	0	0	1	0	0
	0	1	0	0	0	0	0	0	0	0	0	0
2008	1	3	0	0	77	0	0	0	0	0	0	0
	1	0	3	2	0	2	0	6	2	5	24	27
	31	29	18	13	43	32	31	28	16	17	10	8
	4	2	1	1	0	1	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	1	0
	0	0	0	0	1	0	0	0	0	0	0	0
2009	1	3	0	0	95	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	2	1	1	7	12
	20	18	24	36	23	31	21	18	15	12	13	2
	1	0	1	0	0	0	0	0	0	0	0	0
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	0	0	0	0	1	0	0	0	0	0	0	0
2010	1	3	0	0	124	0	0	0	0	0	0	0
	0	2	0	0	0	2	0	1	4	11	24	32
	21	24	23	18	20	33	26	18	13	8	4	6
	0	1	0	1	1	0	0	1	0	0	0	0
	0	0	0	2	0	2	0	2	2	1	0	3
	0	0	0	1	1	0	0	0	0	0	0	0
2011	1	3	0	0	83	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	2	1	2	14	10
	31	16	18	26	28	21	15	15	13	5	1	5
	2	1	1	0	0	0	1	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
2012	1	3	0	0	95	0	0	0	0	0	0	0
	0	2	1	2	4	4	2	9	5	19	30	39
	14	17	10	9	7	7	8	3	18	18	25	10
	2	11	0	1	0	0	0	0	0	0	1	0
	0	0	0	0	0	2	0	0	2	1	4	4
	0	1	1	0	0	0	0	0	0	0	0	0
2013	1	3	0	0	199	0	0	0	0	0	0	0
	0	0	0	0	1	1	4	5	12	14	33	34
	73	62	61	59	57	40	35	15	13	5	1	5
	3	2	2	2	0	0	1	0	0	0	0	1
	0	0	0	0	0	0	1	1	0	0	2	0
	1	2	2	0	0	0	1	0	0	0	0	0
1986	1	4	0	0	5	0	0	0	0	1	1	0
	0	1	2	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
1988	1	4	0	0	2	0	0	0	0	1	0	0
	0	0	1	0	0	0	0	0	0	0	0	0
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	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
1990	1	4	0	0	1	0	0	0	0	1	0	0
	0	0	1	0	0	1	0	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
1991	1	4	0	0	24	0	0	0	0	0	0	0
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	0	0	0	0	0	0	0	0	0	0	0	0
1992	1	4	0	0	12	0	0	0	0	0	0	0
	0	0	0	1	0	3	3	6	0	3	3	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
1993	1	4	0	0	29	0	0	0	0	0	0	0
	0	0	0	0	0	7	0	8	15	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	7	0	0	0	0	0	0	0	0	0	0
1994	1	4	0	0	163	0	0	0	0	0	0	0
	3	1	10	52	66	71	9	20	13	6	5	0
	0	1	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	2	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
1995	1	4	0	0	39	0	0	0	0	0	0	0
	0	0	0	1	0	1	1	4	3	4	2	0
	0	0	0	0	1	0	0	0	1	0	0	1
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	2	0	0	0
	1	0	0	0	0	1	0	0	0	0	0	0
1996	1	4	0	0	14	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	4	2	2	3	0

	0	0	0	2	3	0	2	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	3	3	0	0	0	0	0	0	0	0	0
1997	1	4	0	0	91	0	0	5	1	1	2	1
	1	0	14	15	1	12	14	29	0	11	18	0
	0	0	1	0	0	1	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
1998	1	4	0	0	83	0	0	0	0	0	0	0
	0	0	8	5	5	13	5	12	4	8	10	1
	5	5	7	0	2	2	7	0	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	5	0	0	0	0	1	1	0	2	0	1
	0	2	1	0	0	0	0	0	0	0	0	0
1999	1	4	0	0	69	0	0	0	0	0	0	0
	0	2	2	3	1	1	3	5	3	3	1	0
	7	3	4	0	4	1	0	1	0	2	1	3
	0	1	1	2	2	0	2	1	0	1	0	0
	0	0	0	1	0	2	0	2	0	1	1	3
	0	0	1	0	0	0	0	0	0	0	0	0
2000	1	4	0	0	91	0	0	0	0	0	0	0
	0	0	0	0	1	4	7	6	15	13	3	0
	3	0	3	1	4	3	8	0	4	3	1	1
	2	4	1	1	0	1	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	5	0	0
	0	2	0	0	1	0	0	0	0	0	0	0
2001	1	4	0	0	63	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	2	1	5	0
	1	1	0	4	5	1	1	1	4	0	0	0
	2	4	3	4	1	0	1	0	0	0	0	0
	0	0	0	0	0	0	1	1	0	0	1	4
	0	5	0	0	0	1	0	0	0	0	0	0
2002	1	4	0	0	43	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	2	0	0	0
	2	0	0	0	0	0	0	0	0	2	0	0
	2	3	3	0	4	3	8	0	0	0	0	0
	0	0	0	0	2	0	0	0	3	0	0	5
	0	3	3	0	0	0	0	3	0	0	0	0
2003	1	4	0	0	30	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	2	1	0
	0	1	2	2	0	1	0	0	1	2	2	2
	0	4	2	4	0	0	0	0	3	0	2	0
	0	1	0	0	0	0	0	0	0	0	2	0
	0	0	0	0	0	0	0	0	0	0	0	0

2004	1	4	0	0	34	0	0	0	0	0	0	0
	0	0	2	0	0	1	0	8	0	5	5	0
	0	0	0	0	3	0	0	0	0	0	0	8
	1	2	0	0	0	0	2	0	0	0	0	0
	0	0	0	0	0	3	2	0	2	0	0	2
	0	0	3	0	0	0	0	0	0	0	0	0
2005	1	4	0	0	61	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	7	4	10	4	0
	6	7	0	4	15	3	6	3	0	6	3	0
	0	1	4	2	1	0	0	3	0	0	0	0
	0	0	0	0	0	0	0	2	0	3	6	6
	0	12	0	0	0	0	0	0	0	0	0	0
2006	1	4	0	0	172	0	0	0	0	0	0	0
	0	0	2	5	2	9	5	11	9	18	14	2
	8	15	12	2	8	16	7	0	12	6	11	3
	5	2	0	3	0	0	2	2	1	0	0	0
	0	0	0	1	0	0	0	0	0	0	4	2
	2	2	1	1	1	0	0	0	0	0	0	0
2007	1	4	0	0	220	0	0	0	0	0	0	0
	2	0	1	8	12	9	31	22	20	20	24	8
	15	2	3	1	14	7	10	0	0	3	5	6
	4	8	4	1	1	0	1	1	1	3	0	0
	0	0	0	0	0	1	0	0	1	3	1	1
	1	3	1	0	0	1	0	0	0	0	0	0
2008	1	4	0	0	234	0	0	0	0	0	0	0
	0	0	1	0	1	10	2	11	1	9	16	2
	16	16	14	6	34	18	22	1	11	9	0	3
	12	6	5	2	1	1	0	0	1	0	0	0
	0	0	0	0	1	0	0	0	0	1	3	0
	1	1	0	0	4	1	0	0	0	0	0	0
2009	1	4	0	0	125	0	0	0	0	0	0	0
	0	0	0	0	0	1	0	5	0	3	9	2
	3	2	2	5	5	5	4	2	6	4	0	6
	3	1	4	1	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	1	1	1	1	2	6
	1	0	0	1	3	0	0	0	0	0	0	0
2010	1	4	0	0	106	0	0	0	0	0	0	0
	0	0	0	0	0	1	0	4	2	9	1	0
	0	2	0	0	4	2	5	0	4	5	4	12
	1	3	1	3	2	0	1	2	0	0	0	0
	0	0	0	0	0	0	0	0	5	3	0	7
	0	0	1	2	1	0	0	0	0	0	0	0
2011	1	4	0	0	96	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	9	4	5	5	6
	0	3	0	1	4	2	7	1	4	0	3	3
	1	4	5	2	1	0	4	2	1	0	0	0

	0	0	0	0	0	2	0	0	1	0	0	0
	0	2	0	1	0	0	0	0	0	0	0	0
2012	1	4	0	0	110	0	0	0	0	0	0	0
	0	1	0	1	4	1	2	7	4	17	15	13
	0	2	1	0	1	2	0	0	14	2	26	5
	1	13	0	1	0	0	0	0	0	0	1	0
	0	0	0	0	0	0	0	0	2	1	3	3
	0	1	1	0	0	0	0	0	0	0	0	0
2013	1	4	0	0	165	0	0	0	0	0	0	0
	0	0	0	0	1	1	2	7	11	7	5	3
	5	7	2	9	5	5	3	2	5	0	2	3
	3	3	2	2	0	0	1	0	0	0	0	1
	0	0	0	0	0	0	1	1	0	0	2	1
	2	2	3	0	0	0	1	0	0	0	0	0
2007	1	8	0	0	412	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	1	0	0
	0	0	0	0	0	1	0	1	3	2	3	8
	11	20	19	24	18	29	44	45	45	34	53	24
	17	5	2	3	0	0	0	0	0	0	0	0
2008	1	8	0	0	265	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	1	1	0
	0	0	0	0	1	1	1	1	0	1	1	4
	11	2	20	11	10	22	27	31	25	33	31	11
	15	3	1	0	0	0	0	0	0	0	0	0
2009	1	8	0	0	411	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	1	0	2	1	3	1	2	3	4
	7	18	11	18	27	27	32	56	47	46	51	27
	15	6	4	2	0	0	0	0	0	0	0	0
2010	1	8	0	0	390	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	1	0	2	1	2	2	8	9	7	5	7
	16	14	24	34	28	26	33	38	40	18	28	21
	23	0	0	2	1	0	0	0	0	0	0	0
2011	1	8	0	0	404	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	1	2	3	7	12	18	10	10	7
	11	14	27	18	20	20	34	51	35	44	21	15
	15	6	2	1	0	0	0	0	0	0	0	0
2012	1	8	0	0	369	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	3	4	3	4	6	3	13	9	13
	12	8	15	16	21	31	35	43	40	30	25	17
	10	4	1	2	0	0	1	0	0	0	0	0
2013	1	8	0	0	348	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	1	1	1	0	3	5	6	9	17	11
	13	14	8	14	12	22	28	33	44	36	24	22
	12	9	3	0	0	0	0	0	0	0	0	0
1991	1	9	0	0	75	0	0	0	0	0	0	0
	1	0	0	13	11	10	14	45	9	15	17	3
	3	0	1	0	0	0	0	0	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
1992	1	9	0	0	46	0	0	0	0	0	0	0
	0	0	0	4	1	9	10	18	1	10	11	1
	1	0	1	1	3	2	2	3	1	2	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
1993	1	9	0	0	95	0	0	0	0	0	0	0
	0	0	0	0	0	27	2	29	53	4	3	1
	0	1	1	2	4	4	2	1	1	0	1	0
	0	1	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	1
	0	25	0	0	0	0	0	0	0	0	0	0
1994	1	9	0	0	212	0	0	0	0	0	0	0
	4	1	12	63	80	85	10	24	16	9	7	1
	2	3	3	2	2	2	4	4	3	2	3	1
	1	0	1	1	1	0	0	0	0	0	0	0
	0	1	1	1	0	0	0	0	3	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
1995	1	9	0	0	136	0	0	0	1	1	0	0
	0	0	0	7	1	10	5	37	33	37	27	3
	2	3	6	5	13	8	14	6	9	1	1	5
	0	0	1	0	0	0	0	1	0	0	0	0
	0	0	0	0	0	0	0	0	17	0	0	0
	7	0	0	0	0	5	0	0	0	0	0	0
1996	1	9	0	0	78	0	0	0	0	0	0	0
	0	0	0	0	1	3	2	15	9	7	15	6
	2	2	1	5	11	1	13	2	3	9	3	1
	10	0	0	1	1	0	1	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	8	8	0	0	0	0	0	0	0	0	0

1997	1	9	0	0	112	0	0	6	1	2	2	1
	2	0	18	19	1	14	18	35	0	14	22	1
	1	0	1	0	0	1	0	0	0	0	0	1
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
1998	1	9	0	0	206	0	0	0	0	0	0	0
	0	0	34	22	22	56	22	52	19	33	49	9
	25	31	49	25	32	35	54	12	11	4	1	0
	0	0	1	0	0	0	0	1	0	0	0	0
	0	21	0	2	0	1	6	3	0	9	0	4
	0	7	4	0	0	0	0	0	0	0	0	0
1999	1	9	0	0	174	0	0	0	0	0	0	0
	0	8	8	11	3	4	9	18	10	9	5	3
	25	12	18	2	19	6	4	7	4	11	5	13
	0	3	3	8	6	0	5	5	0	3	0	0
	0	0	0	3	0	6	0	8	0	3	3	9
	0	0	5	0	0	0	0	0	0	0	0	0
2000	1	9	0	0	178	0	0	0	0	0	0	0
	0	0	0	0	3	9	16	13	32	28	6	2
	6	1	8	5	10	13	20	6	15	10	4	4
	5	9	2	2	0	2	0	0	1	0	0	0
	0	0	0	0	0	0	0	0	0	10	0	0
	0	4	0	0	3	0	0	0	0	0	0	0
2001	1	9	0	0	112	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	1	4	3	13	0
	2	3	0	9	12	4	3	3	11	1	1	1
	4	9	7	8	2	0	2	0	0	0	0	0
	0	0	0	0	0	0	3	2	0	0	3	10
	0	11	0	0	0	2	0	0	0	0	0	0
2002	1	9	0	0	114	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	8	0	1	2
	9	0	0	0	0	1	0	0	0	8	0	0
	8	9	10	0	15	9	29	0	0	0	0	0
	0	0	0	0	8	0	0	0	10	0	0	18
	0	9	9	0	0	0	0	9	0	0	0	0
2003	1	9	0	0	75	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	5	4	2
	1	5	6	8	1	5	2	1	6	5	6	5
	0	8	5	8	0	0	0	0	8	0	5	0
	0	3	0	0	0	0	0	0	0	0	5	0
	0	0	0	0	0	0	0	0	0	0	0	0
2004	1	9	0	0	68	0	0	0	0	0	0	0
	0	0	3	0	0	2	0	13	0	7	9	1
	1	1	1	1	5	1	1	1	1	0	1	14
	2	4	0	0	0	0	3	0	0	0	0	0

	0	0	0	0	0	5	3	0	4	0	0	4
	0	0	5	0	0	0	0	0	0	0	0	0
2005	1	9	0	0	96	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	10	5	13	5	1
	9	9	1	7	21	7	12	5	1	9	4	0
	0	1	5	2	1	0	0	3	0	0	0	0
	0	0	0	0	0	0	0	2	0	4	8	8
	0	15	0	0	0	0	0	0	0	0	0	0
2006	1	9	0	0	234	0	0	0	0	0	0	0
	0	0	2	7	2	12	8	15	12	24	19	4
	12	23	17	5	12	24	11	1	17	10	15	5
	7	4	0	4	0	0	2	2	2	0	0	0
	0	0	0	1	0	0	0	0	0	0	5	3
	2	3	1	1	1	0	0	0	0	0	0	0
2007	1	9	0	0	297	0	0	0	0	0	0	0
	3	0	1	11	16	12	42	31	27	28	34	14
	23	8	10	7	24	15	18	6	8	7	10	8
	5	11	5	1	1	0	2	2	1	4	0	0
	1	0	0	0	0	2	0	0	1	5	1	2
	1	4	2	0	0	1	0	0	0	0	0	0
2008	1	9	0	0	311	0	0	0	0	0	0	0
	0	0	2	1	1	14	3	16	2	12	24	4
	25	24	20	10	50	27	33	3	17	14	1	4
	16	8	7	3	1	2	0	0	1	0	0	0
	0	0	0	0	1	0	0	0	0	1	5	0
	1	1	0	0	6	1	0	0	0	0	0	0
2009	1	9	0	0	220	0	0	0	0	0	0	0
	0	0	0	0	1	3	0	13	1	8	23	6
	9	7	9	17	16	16	14	8	18	10	3	14
	7	3	11	2	0	0	1	0	0	0	0	0
	0	1	0	0	0	0	2	3	4	2	5	15
	3	0	0	4	7	0	0	0	0	0	0	0
2010	1	9	0	0	230	0	0	0	0	0	0	0
	0	0	0	0	0	4	0	12	8	31	7	3
	2	8	2	2	16	10	18	2	13	15	13	38
	3	8	2	8	6	1	2	8	0	0	0	0
	0	0	0	0	0	0	1	0	16	10	0	23
	0	0	2	7	4	0	0	0	0	0	0	0
2011	1	9	0	0	179	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	22	10	13	14	15
	5	10	3	5	13	7	20	4	12	1	7	9
	3	9	12	5	1	0	10	5	1	0	0	0
	0	0	0	0	0	4	0	0	3	0	0	0
	0	4	0	1	0	0	0	0	0	0	0	0
2012	1	9	0	0	205	0	0	0	0	0	0	0
	0	3	0	2	8	2	4	14	9	33	30	27

```
      1     5     3     0     2     3     0     0     27    4     52    10
      2     26    1     1     0     0     0     0     0     0     1     0
      0     0     0     0     0     0     0     0     4     3     7     6
      0     1     1     0     0     0     0     0     0     0     0     0
2013  1     9     0     0     364   0     0     0     0     0     0     0
      0     0     0     0     6     3     9     28    45    28    25    21
      35    43    23    48    34    30    18    13    20    1     6     14
      11    11    8     8     0     0     5     0     0     0     0     4
      0     0     0     0     0     0     4     4     0     0     9     2
      6     9     13    0     0     0     4     0     0     0     0     0
41 #_N_observed_age_bins
#_data_age_bins
0     1     2     3     4     5     6     7     8     9     10    11    12
      13    14    15    16    17    18    19    20    21    22    23    24
      25    26    27    28    29    30    31    32    33    34    35    36
      37    38    39    40
#_N_ageerror_definitions
1
#_ageing_error_matrix(all_ages_not_just_bins,must_start_from_zero)
-1    -1    -1    -1    -1    -1    -1    -1    -1    -1    -1    -1    -1
      -1    -1    -1    -1    -1    -1    -1    -1    -1    -1    -1    -1
      -1    -1    -1    -1    -1    -1    -1    -1    -1    -1    -1    -1
      -1    -1    -1    -1    -1
0.001 0.001 0.001 0.001 0.001 0.001 0.001 0.001 0.001 0.001 0.001 0.001 0.001
      0.001 0.001 0.001 0.001 0.001 0.001 0.001 0.001 0.001 0.001 0.001 0.001
      0.001 0.001 0.001 0.001 0.001 0.001 0.001 0.001 0.001 0.001 0.001 0.001
      0.001 0.001 0.001 0.001 0.001
1672 #_N_Agecomp_obs
3 #_Lbin_method:1=poplenbins_ndx;2=datalenbins_ndx;3=actual_lengths
0 #_combine_males_into_females_at_or_below_this_bin_NUMBER
#_Age_composition_observations
#_Yr_Szn_Flt__Gdr_Part_ageerr__Lbin-lo_Lbin-hi___Nsamp
1988  1     1     0     0     1     28    28    1     1     0     0     0
      0     0     0     0     0     0     0     0     0     0     0     0
      0     0     0     0     0     0     0     0     0     0     0     0
      0     0     0     0     0     0     0     0     0     0     0     0
      0
1988  1     1     0     0     1     30    30    3     3     0     0     0
      0     0     0     0     0     0     0     0     0     0     0     0
      0     0     0     0     0     0     0     0     0     0     0     0
      0     0     0     0     0     0     0     0     0     0     0     0
      0
1988  1     1     0     0     1     32    32    8     8     0     0     0
      0     0     0     0     0     0     0     0     0     0     0     0
      0     0     0     0     0     0     0     0     0     0     0     0
```

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1988	1	1	0	0	1	34	34	6	6	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1988	1	1	0	0	1	36	36	4	4	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1988	1	1	0	0	1	38	38	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1988	1	1	0	0	1	40	40	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1988	1	1	0	0	1	44	44	2	2	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1988	1	1	0	0	1	46	46	3	3	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1988	1	1	0	0	1	52	52	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1988	1	1	0	0	1	54	54	4	0	4	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1988	1	1	0	0	1	58	58	2	0	2	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1988	1	1	0	0	1	62	62	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1988	1	1	0	0	1	68	68	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1988	1	1	0	0	1	102	102	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1988	1	1	0	0	1	130	130	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	1											
1989	1	1	0	0	1	30	30	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1989	1	1	0	0	1	32	32	2	2	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1989	1	1	0	0	1	34	34	3	3	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1989	1	1	0	0	1	38	38	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1989	1	1	0	0	1	40	40	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1989	1	1	0	0	1	46	46	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1989	1	1	0	0	1	48	48	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1989	1	1	0	0	1	54	54	2	0	2	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1989	1	1	0	0	1	56	56	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1989	1	1	0	0	1	110	110	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	1	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1990	1	1	0	0	1	32	32	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1990	1	1	0	0	1	34	34	3	3	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1990	1	1	0	0	1	36	36	5	5	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1990	1	1	0	0	1	38	38	6	6	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1990	1	1	0	0	1	40	40	6	6	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1990	1	1	0	0	1	42	42	6	6	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1990	1	1	0	0	1	44	44	5	5	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1990	1	1	0	0	1	46	46	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1990	1	1	0	0	1	48	48	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1990	1	1	0	0	1	50	50	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1990	1	1	0	0	1	54	54	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1990	1	1	0	0	1	56	56	2	0	2	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1990	1	1	0	0	1	58	58	2	0	1	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1990	1	1	0	0	1	60	60	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1990	1	1	0	0	1	64	64	1	0	0	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1990	1	1	0	0	1	66	66	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1990	1	1	0	0	1	68	68	4	0	1	3	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1990	1	1	0	0	1	72	72	3	0	0	3	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1990	1	1	0	0	1	74	74	2	0	0	2	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1990	1	1	0	0	1	76	76	3	0	0	3	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1990	1	1	0	0	1	78	78	1	0	0	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1990	1	1	0	0	1	80	80	3	0	0	3	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1990	1	1	0	0	1	82	82	1	0	0	0	1
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1990	1	1	0	0	1	114	114	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	1	0	0	0	0
	0											
1990	1	1	0	0	1	126	126	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	1											
1991	1	1	0	0	1	26	26	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1991	1	1	0	0	1	28	28	6	6	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1991	1	1	0	0	1	30	30	5	5	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1991	1	1	0	0	1	32	32	5	5	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1991	1	1	0	0	1	34	34	6	6	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1991	1	1	0	0	1	36	36	10	10	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1991	1	1	0	0	1	38	38	7	7	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1991	1	1	0	0	1	40	40	10	10	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1991	1	1	0	0	1	42	42	4	3	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1991	1	1	0	0	1	44	44	4	4	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1991	1	1	0	0	1	46	46	2	1	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1991	1	1	0	0	1	48	48	2	2	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1991	1	1	0	0	1	50	50	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1991	1	1	0	0	1	54	54	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1991	1	1	0	0	1	56	56	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1991	1	1	0	0	1	58	58	2	0	2	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1991	1	1	0	0	1	60	60	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1991	1	1	0	0	1	62	62	6	0	6	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1991	1	1	0	0	1	64	64	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1991	1	1	0	0	1	66	66	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1991	1	1	0	0	1	68	68	1	0	0	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1991	1	1	0	0	1	72	72	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1992	1	1	0	0	1	26	26	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1992	1	1	0	0	1	28	28	5	5	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1992	1	1	0	0	1	30	30	9	9	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1992	1	1	0	0	1	32	32	13	12	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1992	1	1	0	0	1	34	34	9	8	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1992	1	1	0	0	1	36	36	3	3	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1992	1	1	0	0	1	38	38	4	3	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1992	1	1	0	0	1	40	40	2	0	2	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1992	1	1	0	0	1	42	42	2	0	2	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1992	1	1	0	0	1	44	44	12	0	12	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1992	1	1	0	0	1	46	46	10	0	10	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1992	1	1	0	0	1	48	48	2	0	2	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1992	1	1	0	0	1	50	50	3	0	3	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1992	1	1	0	0	1	52	52	7	0	7	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1992	1	1	0	0	1	54	54	6	0	6	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1992	1	1	0	0	1	56	56	3	0	3	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1992	1	1	0	0	1	58	58	7	0	7	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1992	1	1	0	0	1	60	60	5	0	5	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1992	1	1	0	0	1	62	62	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1992	1	1	0	0	1	64	64	5	0	4	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1992	1	1	0	0	1	66	66	2	0	2	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1992	1	1	0	0	1	78	78	1	0	0	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1992	1	1	0	0	1	80	80	1	0	0	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1992	1	1	0	0	1	104	104	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	1	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1992	1	1	0	0	1	106	106	2	0	0	0	0
	0	0	0	0	0	1	0	0	0	0	0	0
	0	0	0	1	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1992	1	1	0	0	1	108	108	2	0	0	0	0
	0	0	0	0	0	0	0	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1992	1	1	0	0	1	110	110	1	0	0	0	0
	0	0	0	0	0	0	0	0	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1992	1	1	0	0	1	118	118	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	1											
1993	1	1	0	0	1	24	24	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1993	1	1	0	0	1	26	26	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1993	1	1	0	0	1	28	28	4	3	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1993	1	1	0	0	1	30	30	4	3	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1993	1	1	0	0	1	32	32	2	2	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1993	1	1	0	0	1	34	34	5	4	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1993	1	1	0	0	1	36	36	8	6	2	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1993	1	1	0	0	1	38	38	9	7	2	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1993	1	1	0	0	1	40	40	10	9	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1993	1	1	0	0	1	42	42	10	1	9	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1993	1	1	0	0	1	44	44	9	1	8	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1993	1	1	0	0	1	46	46	12	0	12	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1993	1	1	0	0	1	48	48	7	0	7	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1993	1	1	0	0	1	50	50	4	0	4	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1993	1	1	0	0	1	52	52	3	0	3	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1993	1	1	0	0	1	54	54	3	0	3	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1993	1	1	0	0	1	56	56	7	0	7	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1993	1	1	0	0	1	58	58	11	0	8	3	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1993	1	1	0	0	1	60	60	12	0	9	3	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1993	1	1	0	0	1	62	62	14	0	1	13	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1993	1	1	0	0	1	64	64	9	0	5	4	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1993	1	1	0	0	1	66	66	9	0	1	8	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1993	1	1	0	0	1	68	68	13	0	1	12	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1993	1	1	0	0	1	70	70	12	0	0	12	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1993	1	1	0	0	1	72	72	12	0	0	12	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1993	1	1	0	0	1	74	74	4	0	0	4	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1993	1	1	0	0	1	76	76	6	0	0	6	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1993	1	1	0	0	1	78	78	2	0	0	2	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1993	1	1	0	0	1	88	88	1	0	0	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1993	1	1	0	0	1	108	108	3	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	1	1	1	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1994	1	1	0	0	1	26	26	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1994	1	1	0	0	1	28	28	3	3	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1994	1	1	0	0	1	30	30	4	4	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1994	1	1	0	0	1	32	32	14	14	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1994	1	1	0	0	1	34	34	11	11	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1994	1	1	0	0	1	36	36	3	3	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1994	1	1	0	0	1	48	48	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1994	1	1	0	0	1	52	52	1	0	0	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1994	1	1	0	0	1	56	56	1	0	0	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1994	1	1	0	0	1	58	58	3	0	0	3	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1994	1	1	0	0	1	60	60	4	0	0	4	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1994	1	1	0	0	1	62	62	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1994	1	1	0	0	1	64	64	5	0	3	2	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1994	1	1	0	0	1	66	66	4	0	2	0	2
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1994	1	1	0	0	1	68	68	2	0	0	2	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1994	1	1	0	0	1	70	70	8	0	0	7	1
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1994	1	1	0	0	1	72	72	3	0	0	2	1
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1994	1	1	0	0	1	74	74	4	0	0	4	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1994	1	1	0	0	1	78	78	1	0	0	0	1
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1994	1	1	0	0	1	80	80	2	0	0	0	2
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1994	1	1	0	0	1	82	82	1	0	0	0	1
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1994	1	1	0	0	1	86	86	3	0	0	0	2
	1	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1994	1	1	0	0	1	116	116	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1994	1	1	0	0	1	126	126	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	1											
1995	1	1	0	0	1	30	30	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1995	1	1	0	0	1	32	32	2	2	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1995	1	1	0	0	1	34	34	8	8	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1995	1	1	0	0	1	36	36	10	10	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1995	1	1	0	0	1	38	38	14	13	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1995	1	1	0	0	1	40	40	23	20	3	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1995	1	1	0	0	1	42	42	28	25	3	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1995	1	1	0	0	1	44	44	15	15	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1995	1	1	0	0	1	46	46	10	8	2	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1995	1	1	0	0	1	48	48	6	2	4	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1995	1	1	0	0	1	50	50	5	0	5	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1995	1	1	0	0	1	52	52	2	0	2	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1995	1	1	0	0	1	54	54	3	0	3	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1995	1	1	0	0	1	58	58	4	0	2	2	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1995	1	1	0	0	1	60	60	6	0	5	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1995	1	1	0	0	1	64	64	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1995	1	1	0	0	1	66	66	2	0	1	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1995	1	1	0	0	1	68	68	1	0	0	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1995	1	1	0	0	1	74	74	1	0	0	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1995	1	1	0	0	1	76	76	1	0	0	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1995	1	1	0	0	1	110	110	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	1	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1995	1	1	0	0	1	120	120	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	1											
1996	1	1	0	0	1	22	22	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1996	1	1	0	0	1	30	30	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1996	1	1	0	0	1	32	32	8	8	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1996	1	1	0	0	1	34	34	11	11	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1996	1	1	0	0	1	36	36	11	10	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1996	1	1	0	0	1	38	38	18	18	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1996	1	1	0	0	1	40	40	27	25	2	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1996	1	1	0	0	1	42	42	29	24	5	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1996	1	1	0	0	1	44	44	24	18	6	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1996	1	1	0	0	1	46	46	12	8	4	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1996	1	1	0	0	1	48	48	5	2	3	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1996	1	1	0	0	1	50	50	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1996	1	1	0	0	1	52	52	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1996	1	1	0	0	1	54	54	2	0	2	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1996	1	1	0	0	1	56	56	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1996	1	1	0	0	1	58	58	4	0	4	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1996	1	1	0	0	1	60	60	6	0	3	3	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1996	1	1	0	0	1	62	62	4	0	2	2	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1996	1	1	0	0	1	64	64	5	0	2	3	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1996	1	1	0	0	1	66	66	5	0	3	2	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1996	1	1	0	0	1	68	68	8	0	2	6	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1996	1	1	0	0	1	70	70	2	0	0	1	1
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1996	1	1	0	0	1	72	72	2	0	0	2	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1996	1	1	0	0	1	74	74	2	0	0	2	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1996	1	1	0	0	1	104	104	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	1	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1996	1	1	0	0	1	106	106	1	0	0	0	0
	0	1	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1996	1	1	0	0	1	108	108	2	0	0	0	0
	0	0	0	0	0	1	0	0	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1997	1	1	0	0	1	26	26	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1997	1	1	0	0	1	28	28	4	4	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1997	1	1	0	0	1	30	30	14	14	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1997	1	1	0	0	1	32	32	17	17	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1997	1	1	0	0	1	34	34	17	17	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1997	1	1	0	0	1	36	36	12	12	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1997	1	1	0	0	1	38	38	12	12	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1997	1	1	0	0	1	40	40	19	19	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1997	1	1	0	0	1	42	42	22	20	2	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1997	1	1	0	0	1	44	44	11	9	2	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1997	1	1	0	0	1	46	46	16	12	4	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1997	1	1	0	0	1	48	48	7	5	2	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1997	1	1	0	0	1	50	50	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1997	1	1	0	0	1	52	52	3	0	3	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1997	1	1	0	0	1	54	54	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1997	1	1	0	0	1	58	58	3	0	2	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1997	1	1	0	0	1	62	62	3	0	2	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1997	1	1	0	0	1	64	64	4	0	1	3	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1997	1	1	0	0	1	66	66	3	0	1	2	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1997	1	1	0	0	1	68	68	1	0	0	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1997	1	1	0	0	1	104	104	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	1	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1997	1	1	0	0	1	106	106	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1997	1	1	0	0	1	112	112	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	1	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1997	1	1	0	0	1	114	114	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	1	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1997	1	1	0	0	1	128	128	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	1	0	0
	0											
1998	1	1	0	0	1	30	30	2	2	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1998	1	1	0	0	1	32	32	8	5	3	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1998	1	1	0	0	1	34	34	11	7	4	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1998	1	1	0	0	1	36	36	12	6	6	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1998	1	1	0	0	1	38	38	26	12	14	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1998	1	1	0	0	1	40	40	35	12	23	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1998	1	1	0	0	1	42	42	42	14	28	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1998	1	1	0	0	1	44	44	30	4	26	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1998	1	1	0	0	1	46	46	33	0	33	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1998	1	1	0	0	1	48	48	27	1	26	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1998	1	1	0	0	1	50	50	9	0	9	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1998	1	1	0	0	1	52	52	4	0	4	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1998	1	1	0	0	1	54	54	11	0	11	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1998	1	1	0	0	1	56	56	10	0	10	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1998	1	1	0	0	1	58	58	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1998	1	1	0	0	1	60	60	3	0	3	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1998	1	1	0	0	1	62	62	2	0	2	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1998	1	1	0	0	1	66	66	4	0	0	4	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1998	1	1	0	0	1	68	68	1	0	0	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1998	1	1	0	0	1	70	70	1	0	0	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1998	1	1	0	0	1	72	72	1	0	0	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1998	1	1	0	0	1	100	100	1	0	0	0	0
	0	1	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1998	1	1	0	0	1	104	104	1	0	0	0	0
	0	0	0	1	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1998	1	1	0	0	1	108	108	2	0	0	0	0
	0	0	0	1	0	0	0	0	0	0	0	0
	0	0	0	0	1	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1998	1	1	0	0	1	110	110	2	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	1	0	0	0	0	0	0	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1999	1	1	0	0	1	26	26	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1999	1	1	0	0	1	28	28	2	2	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1999	1	1	0	0	1	30	30	2	0	2	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1999	1	1	0	0	1	32	32	9	4	5	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1999	1	1	0	0	1	34	34	22	7	15	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1999	1	1	0	0	1	36	36	30	14	16	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1999	1	1	0	0	1	38	38	39	18	21	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1999	1	1	0	0	1	40	40	39	9	30	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1999	1	1	0	0	1	42	42	33	8	25	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1999	1	1	0	0	1	44	44	27	2	25	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1999	1	1	0	0	1	46	46	37	2	35	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1999	1	1	0	0	1	48	48	21	0	21	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1999	1	1	0	0	1	50	50	7	0	7	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1999	1	1	0	0	1	52	52	7	0	7	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1999	1	1	0	0	1	54	54	17	0	12	5	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1999	1	1	0	0	1	56	56	19	0	17	2	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1999	1	1	0	0	1	58	58	13	0	4	9	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1999	1	1	0	0	1	60	60	16	0	7	9	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1999	1	1	0	0	1	62	62	10	0	6	4	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1999	1	1	0	0	1	64	64	4	0	1	3	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1999	1	1	0	0	1	66	66	4	0	2	2	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1999	1	1	0	0	1	68	68	3	0	2	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1999	1	1	0	0	1	80	80	1	0	0	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1999	1	1	0	0	1	90	90	1	0	0	0	0
	0	0	1	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1999	1	1	0	0	1	102	102	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1999	1	1	0	0	1	118	118	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2000	1	1	0	0	1	24	24	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2000	1	1	0	0	1	30	30	3	3	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2000	1	1	0	0	1	32	32	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2000	1	1	0	0	1	34	34	6	3	3	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2000	1	1	0	0	1	36	36	17	7	10	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2000	1	1	0	0	1	38	38	26	12	14	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2000	1	1	0	0	1	40	40	29	20	9	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2000	1	1	0	0	1	42	42	18	11	7	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2000	1	1	0	0	1	44	44	16	7	9	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2000	1	1	0	0	1	46	46	31	6	25	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2000	1	1	0	0	1	48	48	13	0	13	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2000	1	1	0	0	1	50	50	12	0	12	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2000	1	1	0	0	1	54	54	6	0	4	2	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2000	1	1	0	0	1	56	56	17	0	8	9	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2000	1	1	0	0	1	58	58	12	0	10	2	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2000	1	1	0	0	1	60	60	17	0	9	8	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2000	1	1	0	0	1	62	62	19	0	9	10	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2000	1	1	0	0	1	64	64	8	0	3	5	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2000	1	1	0	0	1	66	66	7	0	0	7	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2000	1	1	0	0	1	68	68	6	0	1	5	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2000	1	1	0	0	1	74	74	3	0	0	2	1
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2000	1	1	0	0	1	76	76	1	0	0	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2000	1	1	0	0	1	78	78	5	0	0	4	1
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2000	1	1	0	0	1	80	80	4	0	0	4	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2000	1	1	0	0	1	82	82	1	0	0	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2000	1	1	0	0	1	88	88	1	0	0	0	1
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2000	1	1	0	0	1	92	92	1	0	0	0	1
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2000	1	1	0	0	1	94	94	1	0	0	0	1
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2001	1	1	0	0	1	28	28	4	4	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2001	1	1	0	0	1	30	30	7	5	2	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2001	1	1	0	0	1	32	32	8	6	2	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2001	1	1	0	0	1	34	34	17	9	8	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2001	1	1	0	0	1	36	36	20	8	12	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2001	1	1	0	0	1	38	38	24	10	14	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2001	1	1	0	0	1	40	40	17	10	7	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2001	1	1	0	0	1	42	42	10	3	7	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2001	1	1	0	0	1	44	44	15	3	12	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2001	1	1	0	0	1	46	46	20	7	13	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2001	1	1	0	0	1	48	48	19	2	17	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2001	1	1	0	0	1	50	50	16	0	16	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2001	1	1	0	0	1	52	52	10	0	9	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2001	1	1	0	0	1	54	54	22	0	16	6	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2001	1	1	0	0	1	56	56	12	0	6	6	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2001	1	1	0	0	1	58	58	20	0	11	9	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2001	1	1	0	0	1	60	60	26	0	8	18	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2001	1	1	0	0	1	62	62	18	0	3	15	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2001	1	1	0	0	1	64	64	20	0	2	18	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2001	1	1	0	0	1	66	66	10	0	2	8	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2001	1	1	0	0	1	68	68	7	0	0	7	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2001	1	1	0	0	1	70	70	6	0	0	4	2
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2001	1	1	0	0	1	72	72	6	0	0	4	2
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2001	1	1	0	0	1	74	74	1	0	0	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2001	1	1	0	0	1	104	104	1	0	0	0	0
	0	0	0	0	0	0	1	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2002	1	1	0	0	1	28	28	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2002	1	1	0	0	1	30	30	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2002	1	1	0	0	1	32	32	7	1	6	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2002	1	1	0	0	1	34	34	14	3	11	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2002	1	1	0	0	1	36	36	19	4	15	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2002	1	1	0	0	1	38	38	11	5	6	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2002	1	1	0	0	1	40	40	16	7	9	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2002	1	1	0	0	1	42	42	5	1	4	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2002	1	1	0	0	1	44	44	4	1	3	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2002	1	1	0	0	1	46	46	24	6	18	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2002	1	1	0	0	1	48	48	27	6	21	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2002	1	1	0	0	1	50	50	17	5	12	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2002	1	1	0	0	1	52	52	10	1	9	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2002	1	1	0	0	1	54	54	10	1	9	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2002	1	1	0	0	1	56	56	10	0	9	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2002	1	1	0	0	1	58	58	3	0	2	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2002	1	1	0	0	1	60	60	7	0	7	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2002	1	1	0	0	1	62	62	5	0	5	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2002	1	1	0	0	1	64	64	4	0	3	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2002	1	1	0	0	1	66	66	7	0	6	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2002	1	1	0	0	1	68	68	2	0	2	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2002	1	1	0	0	1	90	90	1	0	0	0	0
	1	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2002	1	1	0	0	1	98	98	1	0	0	0	0
	1	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2002	1	1	0	0	1	104	104	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2002	1	1	0	0	1	108	108	3	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	1	0	0	1
	1	0	0	0	0	0	0	0	0	0	0	0
	0											
2003	1	1	0	0	1	36	36	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2003	1	1	0	0	1	38	38	5	2	3	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2003	1	1	0	0	1	40	40	11	2	9	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2003	1	1	0	0	1	42	42	11	1	10	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2003	1	1	0	0	1	44	44	6	4	2	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2003	1	1	0	0	1	46	46	8	1	7	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2003	1	1	0	0	1	48	48	8	2	6	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2003	1	1	0	0	1	50	50	7	0	7	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2003	1	1	0	0	1	52	52	6	0	6	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2003	1	1	0	0	1	54	54	4	0	4	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2003	1	1	0	0	1	56	56	11	0	10	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2003	1	1	0	0	1	58	58	14	0	11	3	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2003	1	1	0	0	1	60	60	12	0	10	2	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2003	1	1	0	0	1	62	62	13	0	11	2	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2003	1	1	0	0	1	64	64	4	0	1	3	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2003	1	1	0	0	1	66	66	4	0	0	4	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2003	1	1	0	0	1	68	68	1	0	0	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2003	1	1	0	0	1	70	70	1	0	0	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2003	1	1	0	0	1	72	72	1	0	0	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2003	1	1	0	0	1	74	74	1	0	0	0	1
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2004	1	1	0	0	1	22	22	2	2	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2004	1	1	0	0	1	24	24	3	3	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2004	1	1	0	0	1	26	26	5	5	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2004	1	1	0	0	1	28	28	9	9	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2004	1	1	0	0	1	30	30	12	12	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2004	1	1	0	0	1	32	32	10	10	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2004	1	1	0	0	1	34	34	7	7	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2004	1	1	0	0	1	36	36	8	8	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2004	1	1	0	0	1	38	38	18	18	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2004	1	1	0	0	1	40	40	12	12	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2004	1	1	0	0	1	42	42	12	12	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2004	1	1	0	0	1	44	44	6	6	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2004	1	1	0	0	1	46	46	8	5	3	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2004	1	1	0	0	1	48	48	5	4	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2004	1	1	0	0	1	50	50	4	2	2	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2004	1	1	0	0	1	52	52	2	0	2	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2004	1	1	0	0	1	54	54	2	0	1	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2004	1	1	0	0	1	56	56	1	0	0	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2004	1	1	0	0	1	58	58	2	0	1	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2004	1	1	0	0	1	60	60	6	0	1	5	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2004	1	1	0	0	1	62	62	4	0	0	4	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2004	1	1	0	0	1	64	64	11	0	0	11	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2004	1	1	0	0	1	66	66	11	0	0	11	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2004	1	1	0	0	1	68	68	6	0	1	5	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2004	1	1	0	0	1	70	70	2	0	0	2	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2004	1	1	0	0	1	72	72	2	0	0	1	1
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2004	1	1	0	0	1	74	74	1	0	0	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2004	1	1	0	0	1	78	78	1	0	0	0	1
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2004	1	1	0	0	1	122	122	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	1	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2005	1	1	0	0	1	28	28	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2005	1	1	0	0	1	30	30	5	4	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2005	1	1	0	0	1	32	32	6	6	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2005	1	1	0	0	1	34	34	3	3	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2005	1	1	0	0	1	36	36	7	6	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2005	1	1	0	0	1	38	38	6	4	2	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2005	1	1	0	0	1	40	40	20	13	7	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2005	1	1	0	0	1	42	42	21	13	8	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2005	1	1	0	0	1	44	44	26	14	12	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2005	1	1	0	0	1	46	46	33	14	19	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2005	1	1	0	0	1	48	48	13	2	11	0	0
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	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2005	1	1	0	0	1	50	50	12	0	12	0	0
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	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2005	1	1	0	0	1	52	52	10	0	10	0	0
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	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2005	1	1	0	0	1	54	54	14	0	14	0	0
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	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2005	1	1	0	0	1	56	56	10	0	10	0	0
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	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2005	1	1	0	0	1	58	58	9	0	9	0	0
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	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2005	1	1	0	0	1	60	60	13	0	12	1	0
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	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2005	1	1	0	0	1	62	62	9	0	9	0	0
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	0											
2005	1	1	0	0	1	64	64	13	0	12	1	0
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	0											
2005	1	1	0	0	1	66	66	5	0	4	1	0
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	0											
2005	1	1	0	0	1	68	68	2	0	1	1	0
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	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2005	1	1	0	0	1	70	70	2	0	2	0	0
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	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2005	1	1	0	0	1	72	72	1	0	0	1	0
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	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2005	1	1	0	0	1	100	100	1	0	0	0	0
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	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2005	1	1	0	0	1	110	110	1	0	0	0	0
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	0	0	1	0	0	0	0	0	0	0	0	0
	0											
2005	1	1	0	0	1	114	114	1	0	0	0	0
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	0											
2005	1	1	0	0	1	116	116	1	0	0	0	0
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	0											
2005	1	1	0	0	1	118	118	1	0	0	0	0
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	0											
2006	1	1	0	0	1	20	20	2	2	0	0	0
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	0											
2006	1	1	0	0	1	22	22	1	1	0	0	0
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	0											
2006	1	1	0	0	1	26	26	1	1	0	0	0
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	0											
2006	1	1	0	0	1	28	28	1	1	0	0	0
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	0											
2006	1	1	0	0	1	30	30	1	1	0	0	0
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	0											
2006	1	1	0	0	1	32	32	4	4	0	0	0
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	0											
2006	1	1	0	0	1	34	34	10	10	0	0	0
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	0											
2006	1	1	0	0	1	36	36	26	20	6	0	0
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	0											
2006	1	1	0	0	1	38	38	33	17	16	0	0
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	0											
2006	1	1	0	0	1	40	40	37	16	21	0	0
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	0											
2006	1	1	0	0	1	42	42	23	10	13	0	0
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	0											
2006	1	1	0	0	1	44	44	16	4	12	0	0
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	0											
2006	1	1	0	0	1	46	46	37	3	34	0	0
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	0											
2006	1	1	0	0	1	48	48	18	4	14	0	0
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	0											
2006	1	1	0	0	1	50	50	7	0	7	0	0
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	0											
2006	1	1	0	0	1	52	52	4	0	4	0	0
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	0											
2006	1	1	0	0	1	54	54	11	0	9	2	0
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	0											
2006	1	1	0	0	1	56	56	12	0	12	0	0
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	0											
2006	1	1	0	0	1	58	58	22	0	15	7	0
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	0											
2006	1	1	0	0	1	60	60	20	0	19	1	0
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	0											
2006	1	1	0	0	1	62	62	18	0	7	11	0
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	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2006	1	1	0	0	1	64	64	18	0	7	11	0
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	0											
2006	1	1	0	0	1	66	66	15	0	2	13	0
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	0											
2006	1	1	0	0	1	68	68	5	0	2	3	0
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	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2006	1	1	0	0	1	70	70	2	0	1	1	0
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	0											
2006	1	1	0	0	1	72	72	1	0	0	1	0
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	0											
2006	1	1	0	0	1	110	110	1	0	0	0	0
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2006 1 1 0 0 1 118 118 1 0 0 0 0
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2007 1 1 0 0 1 46 46 3 1 2 0 0
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2007	1	1	0	0	1	48	48	2	0	2	0	0
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	0											
2007	1	1	0	0	1	50	50	3	0	3	0	0
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	0											
2007	1	1	0	0	1	54	54	1	0	1	0	0
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	0											
2007	1	1	0	0	1	56	56	1	0	1	0	0
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	0											
2007	1	1	0	0	1	58	58	6	1	2	3	0
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	0											
2007	1	1	0	0	1	60	60	1	0	1	0	0
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	0											
2007	1	1	0	0	1	62	62	7	0	2	5	0
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	0											
2007	1	1	0	0	1	64	64	9	0	2	7	0
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	0											
2007	1	1	0	0	1	66	66	7	0	0	7	0
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	0											
2007	1	1	0	0	1	68	68	1	0	0	1	0
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	0											
2008	1	1	0	0	1	46	46	2	0	2	0	0
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	0											
2008	1	1	0	0	1	48	48	5	1	4	0	0
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	0											
2008	1	1	0	0	1	50	50	3	0	3	0	0
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	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2008	1	1	0	0	1	52	52	1	0	1	0	0
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	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2008	1	1	0	0	1	54	54	4	0	3	1	0
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	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2008	1	1	0	0	1	56	56	4	0	1	3	0
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	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2008	1	1	0	0	1	58	58	1	0	0	1	0
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	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2008	1	1	0	0	1	60	60	4	0	0	4	0
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	0											
2008	1	1	0	0	1	62	62	7	0	0	7	0
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	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2008	1	1	0	0	1	64	64	6	0	0	6	0
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	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2008	1	1	0	0	1	66	66	1	0	0	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2008	1	1	0	0	1	68	68	1	0	0	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2008	1	1	0	0	1	70	70	1	0	0	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2008	1	1	0	0	1	74	74	1	0	0	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2008	1	1	0	0	1	82	82	2	0	0	0	2
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2009	1	1	0	0	1	42	42	2	0	2	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2009	1	1	0	0	1	44	44	2	0	2	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2009	1	1	0	0	1	48	48	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2009	1	1	0	0	1	50	50	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2009	1	1	0	0	1	54	54	3	0	3	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2009	1	1	0	0	1	56	56	4	0	4	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2009	1	1	0	0	1	58	58	2	0	2	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2009	1	1	0	0	1	60	60	3	0	2	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2009	1	1	0	0	1	72	72	1	0	0	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2010	1	1	0	0	1	44	44	2	2	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2010	1	1	0	0	1	56	56	2	0	2	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2010	1	1	0	0	1	58	58	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2010	1	1	0	0	1	66	66	1	0	0	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2011	1	1	0	0	1	54	54	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2011	1	1	0	0	1	56	56	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2011	1	1	0	0	1	58	58	2	0	2	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2011	1	1	0	0	1	60	60	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2012	1	1	0	0	1	26	26	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2012	1	1	0	0	1	28	28	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2012	1	1	0	0	1	30	30	3	3	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2012	1	1	0	0	1	32	32	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2012	1	1	0	0	1	34	34	2	2	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2012	1	1	0	0	1	36	36	2	2	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2012	1	1	0	0	1	38	38	3	2	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2012	1	1	0	0	1	40	40	2	2	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2012	1	1	0	0	1	42	42	3	2	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2012	1	1	0	0	1	44	44	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2012	1	1	0	0	1	46	46	11	11	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2012	1	1	0	0	1	48	48	9	9	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2012	1	1	0	0	1	50	50	3	3	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2012	1	1	0	0	1	52	52	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2012	1	1	0	0	1	58	58	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2012	1	1	0	0	1	64	64	2	0	2	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2012	1	1	0	0	1	66	66	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2013	1	1	0	0	1	34	34	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2013	1	1	0	0	1	36	36	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2013	1	1	0	0	1	38	38	3	0	3	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2013	1	1	0	0	1	40	40	4	0	4	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2013	1	1	0	0	1	42	42	6	0	6	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2013	1	1	0	0	1	44	44	5	0	5	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2013	1	1	0	0	1	46	46	5	0	5	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2013	1	1	0	0	1	50	50	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2013	1	1	0	0	1	52	52	2	0	2	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2013	1	1	0	0	1	56	56	5	0	5	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2013	1	1	0	0	1	58	58	2	0	2	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2013	1	1	0	0	1	60	60	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2013	1	1	0	0	1	126	126	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	1
	0											
1988	1	2	0	0	1	28	28	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1988	1	2	0	0	1	40	40	2	2	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1988	1	2	0	0	1	42	42	4	4	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1988	1	2	0	0	1	44	44	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1988	1	2	0	0	1	46	46	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1988	1	2	0	0	1	54	54	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1988	1	2	0	0	1	56	56	2	0	2	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1988	1	2	0	0	1	64	64	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1988	1	2	0	0	1	100	100	2	0	0	0	0
	1	0	0	1	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1989	1	2	0	0	1	28	28	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1989	1	2	0	0	1	36	36	2	2	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1989	1	2	0	0	1	38	38	6	6	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1989	1	2	0	0	1	40	40	2	1	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1989	1	2	0	0	1	42	42	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1989	1	2	0	0	1	44	44	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1989	1	2	0	0	1	46	46	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1989	1	2	0	0	1	54	54	3	0	3	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1989	1	2	0	0	1	56	56	2	0	2	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1989	1	2	0	0	1	58	58	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1989	1	2	0	0	1	60	60	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1989	1	2	0	0	1	66	66	2	0	1	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1989	1	2	0	0	1	68	68	1	0	0	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1989	1	2	0	0	1	70	70	3	0	0	3	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1989	1	2	0	0	1	72	72	6	0	0	6	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1989	1	2	0	0	1	74	74	1	0	0	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1989	1	2	0	0	1	76	76	1	0	0	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1989	1	2	0	0	1	78	78	1	0	0	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1989	1	2	0	0	1	80	80	1	0	0	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1989	1	2	0	0	1	82	82	1	0	0	0	1
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1989	1	2	0	0	1	86	86	1	0	0	0	1
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1989	1	2	0	0	1	88	88	1	0	0	0	1
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1989	1	2	0	0	1	90	90	1	0	0	0	0
	1	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1989	1	2	0	0	1	92	92	1	0	0	0	0
	0	0	1	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1989	1	2	0	0	1	98	98	1	0	0	0	0
	0	0	1	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1989	1	2	0	0	1	100	100	2	0	0	0	0
	0	0	0	0	0	1	1	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1989	1	2	0	0	1	102	102	4	0	0	0	0
	0	0	0	0	0	1	0	0	0	0	2	1
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1989	1	2	0	0	1	104	104	2	0	0	0	0
	0	0	0	0	0	0	1	0	0	0	0	1
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1989	1	2	0	0	1	106	106	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	1
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1989	1	2	0	0	1	108	108	6	0	0	0	0
	0	0	0	0	0	0	0	0	0	1	1	3
	0	1	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1989	1	2	0	0	1	110	110	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	1	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1989	1	2	0	0	1	112	112	2	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	1	0	1	0	0
	0											
1989	1	2	0	0	1	114	114	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1989	1	2	0	0	1	116	116	3	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	1
	1	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	1											
1989	1	2	0	0	1	118	118	3	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	1
	0	0	0	0	0	0	0	0	0	0	0	0
	2											
1989	1	2	0	0	1	122	122	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	1											
1990	1	2	0	0	1	24	24	3	3	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1990	1	2	0	0	1	26	26	5	5	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1990	1	2	0	0	1	28	28	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1990	1	2	0	0	1	30	30	2	2	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1990	1	2	0	0	1	32	32	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1990	1	2	0	0	1	34	34	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1990	1	2	0	0	1	38	38	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1990	1	2	0	0	1	40	40	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1990	1	2	0	0	1	52	52	2	0	2	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1990	1	2	0	0	1	70	70	2	0	0	2	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1990	1	2	0	0	1	74	74	2	0	0	2	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1990	1	2	0	0	1	94	94	1	0	0	0	0
	1	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1990	1	2	0	0	1	96	96	2	0	0	0	0
	1	0	1	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1990	1	2	0	0	1	98	98	1	0	0	0	0
	0	0	0	0	0	0	0	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1990	1	2	0	0	1	100	100	3	0	0	0	0
	0	0	0	0	1	0	0	0	0	0	0	0
	1	1	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1990	1	2	0	0	1	104	104	11	0	0	0	0
	0	0	0	0	0	1	0	3	0	1	0	1
	5	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1990	1	2	0	0	1	106	106	3	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	1
	1	1	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1990	1	2	0	0	1	108	108	4	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	1
	2	0	1	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1990	1	2	0	0	1	110	110	4	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	1	0
	2	0	1	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1990	1	2	0	0	1	112	112	4	0	0	0	0
	0	0	0	0	0	0	0	1	0	0	0	0
	1	2	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1990	1	2	0	0	1	114	114	5	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	1	0
	2	0	0	0	1	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	1											
1990	1	2	0	0	1	116	116	5	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	1	0	0	1	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	3											
1990	1	2	0	0	1	120	120	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	1	0	0	0	0	0	0	0	0	0	0	0
	0											
1990	1	2	0	0	1	122	122	2	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	1	0	0
	1											
1990	1	2	0	0	1	124	124	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	1	0	0	0	0	0	0	0	0	0
	0											
1991	1	2	0	0	1	16	16	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1991	1	2	0	0	1	24	24	2	2	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1991	1	2	0	0	1	28	28	2	2	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1991	1	2	0	0	1	30	30	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1991	1	2	0	0	1	32	32	6	6	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1991	1	2	0	0	1	34	34	5	5	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1991	1	2	0	0	1	36	36	5	5	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1991	1	2	0	0	1	38	38	3	3	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1991	1	2	0	0	1	40	40	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1991	1	2	0	0	1	44	44	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1991	1	2	0	0	1	46	46	4	4	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1991	1	2	0	0	1	96	96	1	0	0	0	0
	0	1	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1991	1	2	0	0	1	100	100	1	0	0	0	0
	0	1	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1991	1	2	0	0	1	108	108	2	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	1	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	1	0
	0											
1991	1	2	0	0	1	110	110	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	1	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1991	1	2	0	0	1	112	112	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	1	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1991	1	2	0	0	1	118	118	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	1	0	0	0	0	0	0	0	0
	0											
1991	1	2	0	0	1	120	120	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1992	1	2	0	0	1	20	20	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1992	1	2	0	0	1	22	22	3	3	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1992	1	2	0	0	1	24	24	6	6	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1992	1	2	0	0	1	26	26	3	3	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1992	1	2	0	0	1	28	28	2	2	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1992	1	2	0	0	1	30	30	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1992	1	2	0	0	1	34	34	6	6	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1992	1	2	0	0	1	36	36	4	4	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1992	1	2	0	0	1	38	38	2	2	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1992	1	2	0	0	1	44	44	2	0	2	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1992	1	2	0	0	1	46	46	6	0	6	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1992	1	2	0	0	1	48	48	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1992	1	2	0	0	1	50	50	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1992	1	2	0	0	1	52	52	4	0	4	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1992	1	2	0	0	1	54	54	4	0	4	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1992	1	2	0	0	1	56	56	2	0	2	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1992	1	2	0	0	1	58	58	2	0	2	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1992	1	2	0	0	1	60	60	6	0	6	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1992	1	2	0	0	1	62	62	4	0	4	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1992	1	2	0	0	1	64	64	3	0	3	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1992	1	2	0	0	1	66	66	5	0	5	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1992	1	2	0	0	1	68	68	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1992	1	2	0	0	1	70	70	3	0	2	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1992	1	2	0	0	1	72	72	1	0	0	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1992	1	2	0	0	1	76	76	1	0	0	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1992	1	2	0	0	1	84	84	3	0	0	2	1
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1992	1	2	0	0	1	86	86	1	0	0	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1992	1	2	0	0	1	88	88	2	0	0	0	1
	1	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1992	1	2	0	0	1	98	98	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	1	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1992	1	2	0	0	1	100	100	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	1	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1992	1	2	0	0	1	102	102	1	0	0	0	0
	0	0	0	0	0	1	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1992	1	2	0	0	1	104	104	2	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	1	1	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1992	1	2	0	0	1	106	106	1	0	0	0	0
	0	0	0	0	1	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1992	1	2	0	0	1	108	108	2	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	2	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1992	1	2	0	0	1	110	110	2	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	1	1	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1992	1	2	0	0	1	112	112	3	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	1	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	1
	1											
1992	1	2	0	0	1	114	114	3	0	0	0	0
	0	0	0	0	0	0	0	0	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	1	0
	1											
1992	1	2	0	0	1	118	118	2	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	1	0
	1											
1992	1	2	0	0	1	120	120	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1992	1	2	0	0	1	124	124	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	1	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1992	1	2	0	0	1	132	132	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	1
	0											
1993	1	2	0	0	1	46	46	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1993	1	2	0	0	1	62	62	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1993	1	2	0	0	1	70	70	3	0	0	3	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1993	1	2	0	0	1	72	72	1	0	0	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1993	1	2	0	0	1	84	84	1	0	0	0	1
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1993	1	2	0	0	1	94	94	1	0	0	0	0
	0	1	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1993	1	2	0	0	1	98	98	1	0	0	0	0
	0	0	0	0	0	0	0	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1993	1	2	0	0	1	102	102	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1993	1	2	0	0	1	104	104	1	0	0	0	0
	0	0	0	0	0	0	0	0	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1993	1	2	0	0	1	106	106	3	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	1	0
	0	0	0	2	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1993	1	2	0	0	1	110	110	3	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	3	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1993	1	2	0	0	1	112	112	4	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	3	0
	0	0	1	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1993	1	2	0	0	1	114	114	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	1	0	0	0	0	0	0	0	0	0	0	0
	0											
1993	1	2	0	0	1	116	116	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	1	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1993	1	2	0	0	1	118	118	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	1	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1993	1	2	0	0	1	120	120	3	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	2	1	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1994	1	2	0	0	1	26	26	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1994	1	2	0	0	1	28	28	4	4	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1994	1	2	0	0	1	30	30	5	5	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1994	1	2	0	0	1	32	32	2	2	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1994	1	2	0	0	1	76	76	2	0	0	2	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1994	1	2	0	0	1	94	94	1	0	0	0	0
	0	0	1	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1994	1	2	0	0	1	104	104	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1994	1	2	0	0	1	110	110	2	0	0	0	0
	0	0	0	0	0	1	0	0	0	0	0	0
	0	0	0	1	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1994	1	2	0	0	1	118	118	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	1											
1995	1	2	0	0	1	24	24	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1995	1	2	0	0	1	34	34	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1995	1	2	0	0	1	36	36	2	2	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1995	1	2	0	0	1	38	38	2	2	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1995	1	2	0	0	1	40	40	5	5	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1995	1	2	0	0	1	42	42	3	2	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1995	1	2	0	0	1	44	44	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1995	1	2	0	0	1	48	48	2	0	2	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1995	1	2	0	0	1	50	50	4	0	4	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1995	1	2	0	0	1	52	52	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1995	1	2	0	0	1	54	54	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1995	1	2	0	0	1	56	56	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1995	1	2	0	0	1	60	60	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1995	1	2	0	0	1	62	62	2	0	0	2	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1995	1	2	0	0	1	64	64	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1995	1	2	0	0	1	70	70	1	0	0	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1995	1	2	0	0	1	76	76	2	0	1	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1995	1	2	0	0	1	82	82	1	0	0	0	1
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1995	1	2	0	0	1	98	98	1	0	0	0	0
	0	0	0	0	0	1	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1995	1	2	0	0	1	102	102	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1995	1	2	0	0	1	104	104	2	0	0	0	0
	0	0	0	0	0	0	0	0	0	1	0	0
	1	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1995	1	2	0	0	1	106	106	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	1	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1995	1	2	0	0	1	110	110	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1995	1	2	0	0	1	112	112	2	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1	1	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1995	1	2	0	0	1	114	114	2	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	1	0	0	0	0	1	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1995	1	2	0	0	1	118	118	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1996	1	2	0	0	1	28	28	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1996	1	2	0	0	1	30	30	4	4	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1996	1	2	0	0	1	32	32	3	3	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1996	1	2	0	0	1	34	34	2	2	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1996	1	2	0	0	1	42	42	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1996	1	2	0	0	1	46	46	7	7	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1996	1	2	0	0	1	48	48	3	3	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1996	1	2	0	0	1	56	56	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1996	1	2	0	0	1	58	58	3	0	3	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1996	1	2	0	0	1	60	60	4	0	4	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1996	1	2	0	0	1	62	62	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1996	1	2	0	0	1	72	72	1	0	0	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1996	1	2	0	0	1	74	74	1	0	0	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1996	1	2	0	0	1	112	112	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1996	1	2	0	0	1	114	114	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	1	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1997	1	2	0	0	1	24	24	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1997	1	2	0	0	1	26	26	5	5	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1997	1	2	0	0	1	28	28	2	2	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1997	1	2	0	0	1	30	30	5	5	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1997	1	2	0	0	1	32	32	21	21	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1997	1	2	0	0	1	34	34	34	34	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1997	1	2	0	0	1	36	36	33	33	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1997	1	2	0	0	1	38	38	18	18	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1997	1	2	0	0	1	40	40	9	9	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1997	1	2	0	0	1	42	42	2	2	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1997	1	2	0	0	1	46	46	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1997	1	2	0	0	1	62	62	3	0	3	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1997	1	2	0	0	1	64	64	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1997	1	2	0	0	1	66	66	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1997	1	2	0	0	1	86	86	1	0	0	0	1
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1997	1	2	0	0	1	102	102	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1997	1	2	0	0	1	108	108	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1997	1	2	0	0	1	112	112	2	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1	0	0	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1998	1	2	0	0	1	20	20	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1998	1	2	0	0	1	22	22	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1998	1	2	0	0	1	26	26	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1998	1	2	0	0	1	28	28	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1998	1	2	0	0	1	38	38	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1998	1	2	0	0	1	42	42	2	2	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1998	1	2	0	0	1	44	44	3	3	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1998	1	2	0	0	1	62	62	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1998	1	2	0	0	1	96	96	1	0	0	0	0
	0	0	1	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1998	1	2	0	0	1	98	98	1	0	0	0	0
	0	0	0	1	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1998	1	2	0	0	1	100	100	1	0	0	0	0
	0	0	0	1	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1998	1	2	0	0	1	106	106	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	1	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1998	1	2	0	0	1	108	108	2	0	0	0	0
	0	0	0	0	0	0	0	0	1	0	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1998	1	2	0	0	1	112	112	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1998	1	2	0	0	1	114	114	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1999	1	2	0	0	1	26	26	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1999	1	2	0	0	1	34	34	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1999	1	2	0	0	1	36	36	2	2	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1999	1	2	0	0	1	38	38	4	4	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1999	1	2	0	0	1	40	40	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1999	1	2	0	0	1	42	42	4	4	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1999	1	2	0	0	1	44	44	2	2	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1999	1	2	0	0	1	46	46	7	7	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1999	1	2	0	0	1	48	48	7	7	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1999	1	2	0	0	1	50	50	2	2	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1999	1	2	0	0	1	54	54	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1999	1	2	0	0	1	56	56	5	1	4	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1999	1	2	0	0	1	58	58	14	1	13	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1999	1	2	0	0	1	60	60	8	0	8	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1999	1	2	0	0	1	62	62	9	0	9	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1999	1	2	0	0	1	64	64	2	0	2	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1999	1	2	0	0	1	70	70	2	0	1	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1999	1	2	0	0	1	72	72	4	0	2	2	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1999	1	2	0	0	1	74	74	2	0	0	2	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1999	1	2	0	0	1	76	76	2	0	1	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1999	1	2	0	0	1	100	100	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1999	1	2	0	0	1	102	102	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1999	1	2	0	0	1	118	118	2	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	1											
2000	1	2	0	0	1	38	38	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2000	1	2	0	0	1	40	40	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2000	1	2	0	0	1	42	42	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2000	1	2	0	0	1	44	44	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2000	1	2	0	0	1	46	46	2	1	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2000	1	2	0	0	1	50	50	2	0	2	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2000	1	2	0	0	1	52	52	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2000	1	2	0	0	1	54	54	3	0	3	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2000	1	2	0	0	1	56	56	3	0	3	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2000	1	2	0	0	1	58	58	7	0	7	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2000	1	2	0	0	1	60	60	5	0	3	2	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2000	1	2	0	0	1	62	62	3	0	3	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2000	1	2	0	0	1	64	64	2	0	2	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2000	1	2	0	0	1	66	66	5	0	2	2	1
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2000	1	2	0	0	1	68	68	2	0	0	2	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2000	1	2	0	0	1	70	70	4	0	0	4	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2000	1	2	0	0	1	72	72	2	0	0	2	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2000	1	2	0	0	1	74	74	2	0	0	2	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2000	1	2	0	0	1	76	76	2	0	0	2	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2000	1	2	0	0	1	78	78	1	0	0	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2000	1	2	0	0	1	88	88	1	0	0	0	1
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2000	1	2	0	0	1	118	118	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2001	1	2	0	0	1	42	42	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2001	1	2	0	0	1	46	46	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2001	1	2	0	0	1	60	60	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2001	1	2	0	0	1	62	62	1	0	0	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2001	1	2	0	0	1	64	64	2	0	1	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2001	1	2	0	0	1	66	66	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2001	1	2	0	0	1	68	68	3	0	0	3	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2001	1	2	0	0	1	74	74	1	0	0	0	1
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2001	1	2	0	0	1	76	76	3	0	0	0	3
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2001	1	2	0	0	1	78	78	3	0	0	0	3
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2001	1	2	0	0	1	80	80	1	0	0	0	1
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2001	1	2	0	0	1	82	82	4	0	0	1	3
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2001	1	2	0	0	1	86	86	3	0	0	0	2
	1	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2001	1	2	0	0	1	88	88	1	0	0	0	0
	1	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2001	1	2	0	0	1	92	92	1	0	0	0	0
	1	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2001	1	2	0	0	1	118	118	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	1											
2001	1	2	0	0	1	126	126	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	1	0	0	0	0	0	0	0	0	0
	0											
2001	1	2	0	0	1	128	128	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	1											
2002	1	2	0	0	1	26	26	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2002	1	2	0	0	1	28	28	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2002	1	2	0	0	1	30	30	2	2	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2002	1	2	0	0	1	32	32	6	6	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2002	1	2	0	0	1	34	34	2	2	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2002	1	2	0	0	1	36	36	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2002	1	2	0	0	1	38	38	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2002	1	2	0	0	1	40	40	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2002	1	2	0	0	1	44	44	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2002	1	2	0	0	1	46	46	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2002	1	2	0	0	1	48	48	4	3	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2002	1	2	0	0	1	50	50	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2002	1	2	0	0	1	52	52	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2002	1	2	0	0	1	54	54	3	0	3	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2002	1	2	0	0	1	56	56	2	0	2	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2002	1	2	0	0	1	58	58	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2002	1	2	0	0	1	60	60	2	0	2	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2002	1	2	0	0	1	62	62	2	0	2	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2002	1	2	0	0	1	64	64	4	0	4	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2002	1	2	0	0	1	66	66	3	0	3	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2002	1	2	0	0	1	70	70	1	0	0	0	1
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2002	1	2	0	0	1	72	72	4	0	0	1	3
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2002	1	2	0	0	1	76	76	2	0	0	0	2
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2002	1	2	0	0	1	78	78	2	0	0	0	2
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2002	1	2	0	0	1	80	80	2	0	0	0	2
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2002	1	2	0	0	1	82	82	1	0	0	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2002	1	2	0	0	1	88	88	1	0	0	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2002	1	2	0	0	1	90	90	1	0	0	0	0
	1	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2002	1	2	0	0	1	102	102	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	1	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2002	1	2	0	0	1	116	116	1	0	0	0	0
	0	0	0	0	0	0	0	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2002	1	2	0	0	1	118	118	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	1	0	0	0	0	0	0	0	0	0
	0											
2002	1	2	0	0	1	120	120	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	1	0	0	0	0	0	0	0	0	0
	0											
2002	1	2	0	0	1	122	122	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	1
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2003	1	2	0	0	1	34	34	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2003	1	2	0	0	1	38	38	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2003	1	2	0	0	1	40	40	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2003	1	2	0	0	1	44	44	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2003	1	2	0	0	1	52	52	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2003	1	2	0	0	1	56	56	3	0	3	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2003	1	2	0	0	1	58	58	3	0	3	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2003	1	2	0	0	1	60	60	8	0	8	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2003	1	2	0	0	1	62	62	2	0	2	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2003	1	2	0	0	1	64	64	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2003	1	2	0	0	1	72	72	1	0	0	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2003	1	2	0	0	1	106	106	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	1	0	0	0	0	0	0	0	0	0	0	0
	0											
2004	1	2	0	0	1	46	46	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2004	1	2	0	0	1	62	62	2	0	0	2	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2004	1	2	0	0	1	64	64	2	0	0	2	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2004	1	2	0	0	1	66	66	2	0	1	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2004	1	2	0	0	1	70	70	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2004	1	2	0	0	1	72	72	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2004	1	2	0	0	1	76	76	1	0	0	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2004	1	2	0	0	1	106	106	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2005	1	2	0	0	1	46	46	2	2	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2005	1	2	0	0	1	48	48	2	2	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2005	1	2	0	0	1	64	64	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2005	1	2	0	0	1	116	116	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	1	0	0	0	0	0	0
	0											
2006	1	2	0	0	1	28	28	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2006	1	2	0	0	1	30	30	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2006	1	2	0	0	1	32	32	2	2	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2006	1	2	0	0	1	34	34	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2006	1	2	0	0	1	46	46	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2006	1	2	0	0	1	50	50	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2006	1	2	0	0	1	60	60	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2006	1	2	0	0	1	62	62	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2006	1	2	0	0	1	66	66	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2006	1	2	0	0	1	70	70	2	0	0	2	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2006	1	2	0	0	1	72	72	1	0	0	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2007	1	2	0	0	1	44	44	2	0	2	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2007	1	2	0	0	1	46	46	5	1	4	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2007	1	2	0	0	1	48	48	6	3	3	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2007	1	2	0	0	1	50	50	7	1	5	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2007	1	2	0	0	1	52	52	4	0	4	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2007	1	2	0	0	1	54	54	9	0	9	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2007	1	2	0	0	1	56	56	5	0	5	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2007	1	2	0	0	1	58	58	6	0	6	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2007	1	2	0	0	1	60	60	2	0	2	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2007	1	2	0	0	1	62	62	8	0	7	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2007	1	2	0	0	1	64	64	6	0	4	2	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2007	1	2	0	0	1	66	66	4	0	3	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2008	1	2	0	0	1	34	34	2	2	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2008	1	2	0	0	1	36	36	5	5	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2008	1	2	0	0	1	38	38	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2008	1	2	0	0	1	40	40	2	2	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2008	1	2	0	0	1	46	46	3	1	2	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2008	1	2	0	0	1	48	48	2	1	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2008	1	2	0	0	1	50	50	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2008	1	2	0	0	1	52	52	1	0	0	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2008	1	2	0	0	1	58	58	2	0	0	2	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2008	1	2	0	0	1	60	60	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2008	1	2	0	0	1	62	62	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2008	1	2	0	0	1	64	64	1	0	0	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2008	1	2	0	0	1	66	66	4	0	0	4	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2008	1	2	0	0	1	68	68	4	0	0	4	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2008	1	2	0	0	1	70	70	1	0	0	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2008	1	2	0	0	1	72	72	2	0	1	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2008	1	2	0	0	1	100	100	1	0	0	0	0
	0	0	0	0	1	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2008	1	2	0	0	1	102	102	2	0	0	0	0
	0	0	0	0	0	1	0	0	0	0	0	0
	1	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2008	1	2	0	0	1	104	104	6	0	0	0	0
	0	0	0	0	0	2	1	2	0	0	0	0
	0	0	0	0	0	0	0	0	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2008	1	2	0	0	1	106	106	8	0	0	0	0
	0	0	0	1	0	0	2	2	0	0	0	0
	2	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	1	0	0	0	0	0	0
	0											
2008	1	2	0	0	1	108	108	4	0	0	0	0
	0	0	0	0	0	0	0	1	0	0	0	0
	1	1	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	1	0	0	0	0	0
	0											
2008	1	2	0	0	1	110	110	4	0	0	0	0
	0	0	0	0	0	0	2	0	0	0	2	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2008	1	2	0	0	1	112	112	1	0	0	0	0
	0	0	0	0	0	1	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2008	1	2	0	0	1	114	114	2	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1	0	1	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2008	1	2	0	0	1	116	116	4	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1	0	1	0	0	0	0	0

	0	1	0	0	0	0	0	1	0	0	0	0
	0											
2008	1	2	0	0	1	120	120	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	1	0	0	0	0	0
	0											
2008	1	2	0	0	1	122	122	3	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	1	0	0	0	0	0	0
	0	1	0	0	0	0	1	0	0	0	0	0
	0											
2008	1	2	0	0	1	124	124	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	1	0	0	0	0	0	0	0	0	0	0
	0											
2008	1	2	0	0	1	132	132	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2009	1	2	0	0	1	42	42	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2009	1	2	0	0	1	44	44	3	0	3	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2009	1	2	0	0	1	46	46	4	0	4	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2009	1	2	0	0	1	48	48	9	0	9	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2009	1	2	0	0	1	50	50	2	0	2	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2009	1	2	0	0	1	52	52	3	0	3	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2009	1	2	0	0	1	54	54	2	0	2	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2009	1	2	0	0	1	56	56	1	0	0	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2009	1	2	0	0	1	70	70	2	0	1	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2009	1	2	0	0	1	102	102	2	0	0	0	0
	0	0	0	0	0	0	1	0	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2009	1	2	0	0	1	104	104	3	0	0	0	0
	0	0	0	0	0	1	0	0	0	1	0	0
	0	1	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2009	1	2	0	0	1	106	106	2	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	1	1
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2009	1	2	0	0	1	108	108	5	0	0	0	0
	0	0	0	0	0	0	1	0	0	0	1	0
	0	0	0	0	1	2	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2009	1	2	0	0	1	110	110	3	0	0	0	0
	0	0	0	0	0	0	1	0	0	0	0	0
	0	0	0	0	1	1	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2009	1	2	0	0	1	112	112	3	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	1	0	1	1	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2009	1	2	0	0	1	114	114	4	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	1	0	0	0	0	0	0	0	1	0
	0	0	1	0	0	1	0	0	0	0	0	0
	0											
2009	1	2	0	0	1	116	116	3	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	1	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2009	1	2	0	0	1	118	118	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	1	0	0	0	0	0	0	0	0	0
	0											
2009	1	2	0	0	1	120	120	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	1	0	0	0	0	0	0	0	0	0	0
	0											
2009	1	2	0	0	1	126	126	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	1	0	0	0	0	0	0
	0											
2010	1	2	0	0	1	38	38	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2010	1	2	0	0	1	40	40	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2010	1	2	0	0	1	42	42	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2010	1	2	0	0	1	44	44	3	3	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2010	1	2	0	0	1	46	46	4	4	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2010	1	2	0	0	1	48	48	3	3	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2010	1	2	0	0	1	52	52	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2010	1	2	0	0	1	54	54	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2010	1	2	0	0	1	56	56	2	0	2	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2010	1	2	0	0	1	58	58	2	0	2	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2010	1	2	0	0	1	64	64	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2010	1	2	0	0	1	66	66	2	0	2	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2010	1	2	0	0	1	72	72	1	0	0	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2011	1	2	0	0	1	42	42	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2011	1	2	0	0	1	48	48	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2011	1	2	0	0	1	56	56	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2011	1	2	0	0	1	90	90	1	0	0	0	0
	1	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2012	1	2	0	0	1	24	24	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2012	1	2	0	0	1	26	26	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2012	1	2	0	0	1	42	42	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2012	1	2	0	0	1	44	44	2	2	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2012	1	2	0	0	1	46	46	2	2	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2012	1	2	0	0	1	48	48	6	6	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2012	1	2	0	0	1	50	50	3	3	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2012	1	2	0	0	1	62	62	1	0	0	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1987	1	3	0	0	1	44	44	2	2	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1987	1	3	0	0	1	48	48	2	2	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1987	1	3	0	0	1	50	50	3	3	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1987	1	3	0	0	1	64	64	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1987	1	3	0	0	1	72	72	2	0	2	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1987	1	3	0	0	1	102	102	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1988	1	3	0	0	1	44	44	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1988	1	3	0	0	1	58	58	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1988	1	3	0	0	1	60	60	2	0	2	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1988	1	3	0	0	1	64	64	3	0	3	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1988	1	3	0	0	1	66	66	4	0	3	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1988	1	3	0	0	1	68	68	3	0	2	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1988	1	3	0	0	1	70	70	1	0	0	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1988	1	3	0	0	1	72	72	2	0	2	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1988	1	3	0	0	1	76	76	5	0	0	5	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1988	1	3	0	0	1	78	78	6	0	0	6	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1988	1	3	0	0	1	80	80	6	0	0	6	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1988	1	3	0	0	1	82	82	4	0	0	4	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1988	1	3	0	0	1	84	84	2	0	0	2	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1988	1	3	0	0	1	86	86	4	0	0	2	2
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1988	1	3	0	0	1	88	88	1	0	0	0	1
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1988	1	3	0	0	1	92	92	2	0	0	0	0
	0	2	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1988	1	3	0	0	1	94	94	1	0	0	0	0
	1	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1988	1	3	0	0	1	96	96	1	0	0	0	0
	0	0	0	0	0	1	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1988	1	3	0	0	1	98	98	1	0	0	0	0
	0	0	1	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1988	1	3	0	0	1	100	100	6	0	0	0	0
	0	1	0	0	0	5	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1988	1	3	0	0	1	102	102	7	0	0	0	0
	0	0	0	1	0	2	0	0	0	1	1	2
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1988	1	3	0	0	1	104	104	11	0	0	0	0
	0	0	0	1	0	3	0	0	0	1	6	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1988	1	3	0	0	1	106	106	3	0	0	0	0
	0	0	0	0	0	0	0	0	0	1	2	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1988	1	3	0	0	1	108	108	6	0	0	0	0
	0	0	0	0	0	1	0	0	0	1	1	1
	2	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1988	1	3	0	0	1	110	110	6	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	2	1
	3	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1988	1	3	0	0	1	114	114	3	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	1	0
	0	0	0	0	0	0	0	0	0	0	0	1

	0	0	0	0	0	0	1	0	0	0	0	0
	0											
1988	1	3	0	0	1	116	116	3	0	0	0	0
	0	0	0	1	0	0	0	0	0	0	1	1
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1988	1	3	0	0	1	118	118	3	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	1	1
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	1	0	0	0	0	0	0
	0											
1988	1	3	0	0	1	120	120	3	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	1	0	0	0	0	0
	2											
1988	1	3	0	0	1	122	122	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	1	0	0	0	0	0
	0											
1988	1	3	0	0	1	124	124	2	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	1											
1988	1	3	0	0	1	126	126	3	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	1	0	0	1	0
	1											
1988	1	3	0	0	1	128	128	2	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	1	0	0	0	0	0
	1											
1989	1	3	0	0	1	24	24	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1989	1	3	0	0	1	26	26	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1989	1	3	0	0	1	28	28	2	2	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1989	1	3	0	0	1	30	30	3	3	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1989	1	3	0	0	1	32	32	4	4	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1989	1	3	0	0	1	34	34	2	2	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1989	1	3	0	0	1	54	54	3	0	3	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1989	1	3	0	0	1	56	56	3	0	3	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1989	1	3	0	0	1	58	58	11	0	11	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1989	1	3	0	0	1	60	60	12	0	12	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1989	1	3	0	0	1	62	62	6	0	6	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1989	1	3	0	0	1	64	64	8	0	7	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1989	1	3	0	0	1	66	66	20	0	9	11	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1989	1	3	0	0	1	68	68	12	0	2	10	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1989	1	3	0	0	1	70	70	10	0	0	10	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1989	1	3	0	0	1	72	72	9	0	0	9	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1989	1	3	0	0	1	74	74	7	0	0	7	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1989	1	3	0	0	1	76	76	6	0	0	4	2
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1989	1	3	0	0	1	78	78	1	0	0	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1989	1	3	0	0	1	80	80	3	0	0	2	1
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1989	1	3	0	0	1	82	82	3	0	0	0	3
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1989	1	3	0	0	1	84	84	4	0	0	0	4
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1989	1	3	0	0	1	86	86	8	0	0	0	8
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1989	1	3	0	0	1	88	88	4	0	0	0	4
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1989	1	3	0	0	1	90	90	1	0	0	0	1
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1989	1	3	0	0	1	92	92	1	0	0	0	1
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1989	1	3	0	0	1	94	94	3	0	0	0	0
	0	0	2	1	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1989	1	3	0	0	1	96	96	4	0	0	0	0
	0	0	2	1	1	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1989	1	3	0	0	1	98	98	5	0	0	0	0
	0	0	2	0	1	0	1	0	0	0	0	1
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1989	1	3	0	0	1	100	100	4	0	0	0	0
	0	1	0	0	2	0	1	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1989	1	3	0	0	1	102	102	5	0	0	0	0
	0	0	0	1	0	0	1	0	0	0	0	3
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1989	1	3	0	0	1	104	104	4	0	0	0	0
	0	0	0	0	0	0	1	0	0	0	3	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1989	1	3	0	0	1	106	106	10	0	0	0	0
	0	0	0	0	1	0	2	0	0	1	3	1
	2	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1989	1	3	0	0	1	108	108	10	0	0	0	0
	0	0	0	0	0	0	3	0	0	0	1	3
	3	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1989	1	3	0	0	1	110	110	7	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	5
	1	1	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1989	1	3	0	0	1	112	112	10	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	5
	1	4	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1989	1	3	0	0	1	116	116	7	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	1	4
	1	1	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1989	1	3	0	0	1	118	118	3	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	1	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	1	0	0	0	1
	0											
1989	1	3	0	0	1	120	120	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	1	0	0	0	0	0	0	0	0	0	0
	0											
1989	1	3	0	0	1	122	122	5	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	1	0	0	0
	0	0	0	0	0	0	1	0	0	0	0	0
	3											
1989	1	3	0	0	1	124	124	2	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	1
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	1	0	0	0
	0											
1989	1	3	0	0	1	126	126	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	1	0	0	0	0
	0											
1989	1	3	0	0	1	128	128	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1989	1	3	0	0	1	134	134	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	1											
1989	1	3	0	0	1	144	144	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	1											
1990	1	3	0	0	1	60	60	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1990	1	3	0	0	1	64	64	2	0	0	2	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1990	1	3	0	0	1	66	66	3	0	0	3	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1990	1	3	0	0	1	68	68	8	0	0	8	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1990	1	3	0	0	1	70	70	5	0	0	5	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1990	1	3	0	0	1	72	72	14	0	0	14	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1990	1	3	0	0	1	74	74	8	0	0	8	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1990	1	3	0	0	1	76	76	6	0	0	6	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1990	1	3	0	0	1	78	78	4	0	0	3	1
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1990	1	3	0	0	1	80	80	2	0	0	1	1
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1990	1	3	0	0	1	82	82	1	0	0	0	1
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1990	1	3	0	0	1	84	84	4	0	0	1	2
	0	1	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1990	1	3	0	0	1	86	86	5	0	0	0	5
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1990	1	3	0	0	1	88	88	1	0	0	0	1
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1990	1	3	0	0	1	90	90	4	0	0	0	2
	2	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1990	1	3	0	0	1	92	92	6	0	0	0	1
	5	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1990	1	3	0	0	1	94	94	5	0	0	0	0
	2	0	1	1	0	1	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1990	1	3	0	0	1	96	96	10	0	0	0	0
	1	2	1	0	3	2	0	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1990	1	3	0	0	1	98	98	9	0	0	0	0
	2	0	1	2	0	0	0	2	0	0	0	0
	2	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1990	1	3	0	0	1	100	100	11	0	0	0	0
	0	0	0	0	0	1	0	6	0	0	0	2
	2	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1990	1	3	0	0	1	102	102	21	0	0	0	0
	0	0	0	0	0	6	0	8	0	0	0	2
	4	0	1	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1990	1	3	0	0	1	104	104	16	0	0	0	0
	0	0	0	1	0	1	2	6	0	0	2	0
	0	3	1	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1990	1	3	0	0	1	106	106	14	0	0	0	0
	0	0	0	1	0	2	0	3	0	0	0	1
	3	3	1	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1990	1	3	0	0	1	108	108	20	0	0	0	0
	0	0	0	0	0	0	0	5	0	0	1	3
	6	3	1	1	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1990	1	3	0	0	1	110	110	10	0	0	0	0
	0	0	0	1	0	0	0	1	0	1	0	0
	0	2	4	0	0	0	0	0	0	0	0	0
	0	1	0	0	0	0	0	0	0	0	0	0
	0											
1990	1	3	0	0	1	112	112	13	0	0	0	0
	0	0	0	0	0	1	0	1	0	0	1	1
	7	1	0	0	0	0	0	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1990	1	3	0	0	1	114	114	2	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	1	0	0	1	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1990	1	3	0	0	1	116	116	3	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	1	1	0	1	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1990	1	3	0	0	1	118	118	4	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	1	1	0	0	0	0	1	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	1	0
	0											
1990	1	3	0	0	1	120	120	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1990	1	3	0	0	1	122	122	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	1	0	0	0	0	0	0	0	0	0	0	0
	0											
1991	1	3	0	0	1	32	32	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1991	1	3	0	0	1	44	44	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1991	1	3	0	0	1	48	48	4	4	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1991	1	3	0	0	1	50	50	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1991	1	3	0	0	1	58	58	2	0	2	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1991	1	3	0	0	1	60	60	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1991	1	3	0	0	1	62	62	12	0	12	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1991	1	3	0	0	1	64	64	9	0	9	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1991	1	3	0	0	1	66	66	8	0	6	2	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1991	1	3	0	0	1	68	68	8	0	8	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1991	1	3	0	0	1	70	70	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1991	1	3	0	0	1	72	72	4	0	1	2	1
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1991	1	3	0	0	1	76	76	1	0	0	0	1
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1991	1	3	0	0	1	80	80	3	0	0	0	3
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1991	1	3	0	0	1	82	82	3	0	0	0	3
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1991	1	3	0	0	1	84	84	5	0	0	0	5
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1991	1	3	0	0	1	86	86	3	0	0	0	1
	2	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1991	1	3	0	0	1	88	88	2	0	0	0	0
	2	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1991	1	3	0	0	1	90	90	5	0	0	0	3
	2	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1991	1	3	0	0	1	92	92	2	0	0	0	0
	1	0	0	0	0	0	0	0	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1991	1	3	0	0	1	94	94	2	0	0	0	0
	1	1	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1991	1	3	0	0	1	96	96	3	0	0	0	0
	2	1	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1991	1	3	0	0	1	98	98	2	0	0	0	0
	0	1	0	0	0	0	0	0	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1991	1	3	0	0	1	100	100	4	0	0	0	0
	0	0	0	0	0	0	0	0	3	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1991	1	3	0	0	1	102	102	5	0	0	0	0
	0	1	0	0	0	1	0	0	0	0	0	0
	1	2	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1991	1	3	0	0	1	104	104	5	0	0	0	0
	0	0	0	0	0	0	0	0	1	0	0	1
	1	2	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1991	1	3	0	0	1	106	106	4	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	1	3	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1991	1	3	0	0	1	108	108	10	0	0	0	0
	0	0	0	0	0	0	1	0	0	0	0	1
	1	3	1	1	2	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1991	1	3	0	0	1	110	110	6	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	1
	0	1	1	2	1	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1991	1	3	0	0	1	112	112	6	0	0	0	0
	0	0	0	0	0	1	0	0	0	0	0	1
	1	2	0	0	1	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1991	1	3	0	0	1	114	114	2	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	1	0	0	1	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1991	1	3	0	0	1	116	116	7	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	1	1	0	1	0	0	0	0	0	0	1	0
	1	0	0	0	0	0	0	1	0	1	0	0
	0											
1991	1	3	0	0	1	118	118	2	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	1	0	0	0	0	0	0	0	0	1
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1991	1	3	0	0	1	120	120	2	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	2											
1991	1	3	0	0	1	126	126	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1991	1	3	0	0	1	128	128	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	1	0	0	0	0	0	0	0	0
	0											
1991	1	3	0	0	1	132	132	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	1	0	0
	0											
1991	1	3	0	0	1	140	140	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	1											
1992	1	3	0	0	1	24	24	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1992	1	3	0	0	1	26	26	4	4	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1992	1	3	0	0	1	28	28	5	5	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1992	1	3	0	0	1	30	30	3	3	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1992	1	3	0	0	1	32	32	4	4	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1992	1	3	0	0	1	34	34	3	3	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1992	1	3	0	0	1	36	36	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1992	1	3	0	0	1	38	38	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1992	1	3	0	0	1	40	40	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1992	1	3	0	0	1	52	52	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1992	1	3	0	0	1	54	54	2	0	2	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1992	1	3	0	0	1	56	56	3	0	3	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1992	1	3	0	0	1	58	58	3	0	3	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1992	1	3	0	0	1	60	60	16	0	16	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1992	1	3	0	0	1	62	62	28	0	28	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1992	1	3	0	0	1	64	64	28	0	28	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1992	1	3	0	0	1	66	66	15	0	11	4	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1992	1	3	0	0	1	68	68	5	0	4	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1992	1	3	0	0	1	70	70	4	0	0	4	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1992	1	3	0	0	1	72	72	10	0	0	10	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1992	1	3	0	0	1	74	74	9	0	0	9	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1992	1	3	0	0	1	76	76	3	0	0	3	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1992	1	3	0	0	1	78	78	3	0	0	3	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1992	1	3	0	0	1	80	80	2	0	0	1	1
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1992	1	3	0	0	1	86	86	1	0	0	0	0
	1	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1992	1	3	0	0	1	88	88	1	0	0	0	0
	1	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1992	1	3	0	0	1	94	94	1	0	0	0	0
	0	0	1	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1992	1	3	0	0	1	98	98	1	0	0	0	0
	0	0	0	0	0	1	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1992	1	3	0	0	1	100	100	1	0	0	0	0
	0	0	0	0	1	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1992	1	3	0	0	1	102	102	6	0	0	0	0
	0	0	0	0	0	0	0	0	0	2	0	0
	0	0	3	1	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1992	1	3	0	0	1	104	104	4	0	0	0	0
	0	0	0	0	0	0	0	1	1	1	0	0
	0	1	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1992	1	3	0	0	1	106	106	9	0	0	0	0
	0	0	1	0	0	0	0	0	0	2	0	0
	0	0	5	0	1	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1992	1	3	0	0	1	108	108	5	0	0	0	0
	0	0	0	0	0	1	0	0	0	0	0	0
	0	0	3	0	1	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1992	1	3	0	0	1	110	110	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1992	1	3	0	0	1	112	112	3	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	2	0	0	0	0	0	0	0	0
	0	0	0	1	0	0	0	0	0	0	0	0
	0											
1992	1	3	0	0	1	114	114	14	0	0	0	0
	0	0	0	0	0	0	0	0	0	1	0	0
	0	0	5	1	2	2	0	0	0	0	0	0
	1	0	0	0	0	0	0	1	0	0	1	0
	0											
1992	1	3	0	0	1	116	116	4	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	1	0	0	1	0	0	0	1	0	0	0
	0	0	0	0	0	0	0	0	0	1	0	0
	0											
1992	1	3	0	0	1	118	118	4	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	1	0	1	1	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	1											
1992	1	3	0	0	1	120	120	3	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	1	0
	2											
1992	1	3	0	0	1	122	122	2	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	1	0	0	0	0	0	0	0	0
	1											
1992	1	3	0	0	1	124	124	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	1											
1992	1	3	0	0	1	128	128	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1993	1	3	0	0	1	28	28	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1993	1	3	0	0	1	30	30	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1993	1	3	0	0	1	36	36	2	2	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1993	1	3	0	0	1	38	38	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1993	1	3	0	0	1	46	46	3	2	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1993	1	3	0	0	1	48	48	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1993	1	3	0	0	1	50	50	4	0	4	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1993	1	3	0	0	1	52	52	3	0	3	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1993	1	3	0	0	1	54	54	7	0	7	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1993	1	3	0	0	1	56	56	10	0	10	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1993	1	3	0	0	1	58	58	7	0	6	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1993	1	3	0	0	1	60	60	16	0	15	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1993	1	3	0	0	1	62	62	15	0	12	3	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1993	1	3	0	0	1	64	64	15	0	12	3	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1993	1	3	0	0	1	66	66	11	0	5	6	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1993	1	3	0	0	1	68	68	4	0	2	2	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1993	1	3	0	0	1	70	70	5	0	0	5	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1993	1	3	0	0	1	72	72	8	0	1	7	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1993	1	3	0	0	1	74	74	7	0	0	7	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1993	1	3	0	0	1	76	76	5	0	0	5	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1993	1	3	0	0	1	78	78	1	0	0	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1993	1	3	0	0	1	80	80	3	0	0	3	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1993	1	3	0	0	1	84	84	2	0	0	1	1
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1993	1	3	0	0	1	88	88	1	0	0	0	0
	0	1	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1993	1	3	0	0	1	94	94	1	0	0	0	0
	0	1	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1993	1	3	0	0	1	98	98	4	0	0	0	0
	0	0	1	0	0	0	1	0	0	0	2	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1993	1	3	0	0	1	100	100	3	0	0	0	0
	0	0	0	0	1	0	0	0	1	0	0	0
	0	0	0	1	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1993	1	3	0	0	1	104	104	10	0	0	0	0
	0	0	0	0	0	0	1	0	0	0	5	0
	0	0	1	2	1	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1993	1	3	0	0	1	106	106	14	0	0	0	0
	0	0	1	0	0	0	1	0	1	0	5	0
	0	1	1	2	1	1	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1993	1	3	0	0	1	108	108	6	0	0	0	0
	0	0	0	0	0	0	1	0	0	0	0	0
	0	0	3	2	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1993	1	3	0	0	1	110	110	6	0	0	0	0
	0	0	0	0	0	0	1	0	0	0	2	0
	0	0	1	1	1	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1993	1	3	0	0	1	112	112	8	0	0	0	0
	0	0	0	0	0	0	0	1	0	0	0	0
	0	0	2	3	0	1	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	1
	0											
1993	1	3	0	0	1	114	114	2	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	1	0
	0	0	0	0	0	1	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1993	1	3	0	0	1	116	116	2	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	1	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	1
	0											
1993	1	3	0	0	1	118	118	2	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1	1	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1993	1	3	0	0	1	122	122	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	1											
1993	1	3	0	0	1	124	124	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	1
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1994	1	3	0	0	1	26	26	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1994	1	3	0	0	1	28	28	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1994	1	3	0	0	1	50	50	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1994	1	3	0	0	1	54	54	2	0	1	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1994	1	3	0	0	1	56	56	2	0	2	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1994	1	3	0	0	1	58	58	9	0	8	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1994	1	3	0	0	1	60	60	12	0	10	2	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1994	1	3	0	0	1	62	62	21	0	14	7	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1994	1	3	0	0	1	64	64	20	0	7	13	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1994	1	3	0	0	1	66	66	21	0	7	14	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1994	1	3	0	0	1	68	68	13	0	3	9	1
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1994	1	3	0	0	1	70	70	11	0	4	7	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1994	1	3	0	0	1	72	72	12	0	2	9	1
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1994	1	3	0	0	1	74	74	2	0	0	1	1
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1994	1	3	0	0	1	76	76	3	0	0	1	2
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1994	1	3	0	0	1	78	78	3	0	0	2	1
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1994	1	3	0	0	1	80	80	2	0	0	2	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1994	1	3	0	0	1	82	82	7	0	0	3	4
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1994	1	3	0	0	1	84	84	3	0	0	3	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1994	1	3	0	0	1	86	86	2	0	0	1	1
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1994	1	3	0	0	1	88	88	4	0	0	0	2
	2	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1994	1	3	0	0	1	90	90	1	0	0	0	0
	1	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1994	1	3	0	0	1	92	92	4	0	0	0	1
	1	0	2	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1994	1	3	0	0	1	94	94	3	0	0	0	0
	0	1	1	1	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1994	1	3	0	0	1	96	96	2	0	0	0	0
	0	0	2	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1994	1	3	0	0	1	98	98	1	0	0	0	0
	0	0	0	0	1	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1994	1	3	0	0	1	100	100	4	0	0	0	0
	0	0	1	0	2	0	0	0	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1994	1	3	0	0	1	102	102	5	0	0	0	0
	0	0	0	1	0	1	0	0	1	0	1	0
	0	0	0	1	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1994	1	3	0	0	1	104	104	4	0	0	0	0
	0	0	0	0	1	0	0	0	0	1	1	0
	0	0	0	0	0	1	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1994	1	3	0	0	1	106	106	2	0	0	0	0
	0	0	0	0	0	0	0	0	0	1	0	0
	0	0	0	1	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1994	1	3	0	0	1	110	110	4	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	2
	0	0	0	1	0	0	0	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1994	1	3	0	0	1	112	112	4	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	1
	0	0	0	2	0	1	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1994	1	3	0	0	1	114	114	3	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	1	0	0	1	1	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1994	1	3	0	0	1	116	116	2	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	1	0	0	0	0	0	0	0	0

	0	0	0	1	0	0	0	0	0	0	0	0
	0											
1994	1	3	0	0	1	118	118	3	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	2	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	1											
1994	1	3	0	0	1	120	120	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	1	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1994	1	3	0	0	1	124	124	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	1
	0											
1995	1	3	0	0	1	24	24	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1995	1	3	0	0	1	26	26	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1995	1	3	0	0	1	28	28	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1995	1	3	0	0	1	38	38	2	2	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1995	1	3	0	0	1	40	40	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1995	1	3	0	0	1	42	42	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1995	1	3	0	0	1	44	44	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1995	1	3	0	0	1	46	46	2	1	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1995	1	3	0	0	1	48	48	3	2	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1995	1	3	0	0	1	50	50	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1995	1	3	0	0	1	52	52	2	0	2	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1995	1	3	0	0	1	54	54	8	0	8	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1995	1	3	0	0	1	56	56	27	0	27	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1995	1	3	0	0	1	58	58	31	0	31	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1995	1	3	0	0	1	60	60	41	0	40	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1995	1	3	0	0	1	62	62	42	0	42	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1995	1	3	0	0	1	64	64	13	0	10	3	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1995	1	3	0	0	1	66	66	13	0	8	5	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1995	1	3	0	0	1	68	68	9	0	5	4	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1995	1	3	0	0	1	70	70	5	0	2	3	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1995	1	3	0	0	1	72	72	6	0	2	4	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1995	1	3	0	0	1	74	74	4	0	1	1	2
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1995	1	3	0	0	1	76	76	6	0	1	5	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1995	1	3	0	0	1	78	78	6	0	0	5	1
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1995	1	3	0	0	1	80	80	4	0	0	2	2
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1995	1	3	0	0	1	82	82	6	0	0	3	2
	1	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1995	1	3	0	0	1	84	84	3	0	0	2	1
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1995	1	3	0	0	1	86	86	2	0	0	0	0
	2	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1995	1	3	0	0	1	88	88	2	0	0	0	1
	1	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1995	1	3	0	0	1	90	90	2	0	0	0	0
	0	1	0	1	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1995	1	3	0	0	1	96	96	1	0	0	0	0
	0	0	0	0	0	0	1	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1995	1	3	0	0	1	98	98	3	0	0	0	0
	0	0	0	2	0	0	0	0	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1995	1	3	0	0	1	100	100	2	0	0	0	0
	0	0	0	0	0	0	0	0	0	1	0	0
	1	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1995	1	3	0	0	1	102	102	3	0	0	0	0
	0	0	0	0	0	1	0	0	0	0	0	0
	1	0	0	0	0	1	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1995	1	3	0	0	1	104	104	8	0	0	0	0
	0	0	0	1	0	0	0	2	0	1	1	1
	0	1	0	0	1	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1995	1	3	0	0	1	106	106	2	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	1	0	0	0	0	0	0	0	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1995	1	3	0	0	1	108	108	3	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	2	0	0	0	0	1	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1995	1	3	0	0	1	110	110	11	0	0	0	0
	0	0	0	0	0	0	0	0	0	1	2	1
	1	0	0	1	1	2	1	0	0	0	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1995	1	3	0	0	1	112	112	5	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	1	0	0	0	1	1	0	0	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	1											
1995	1	3	0	0	1	114	114	2	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	1	0	0	0	0	0	1
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1995	1	3	0	0	1	116	116	4	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	2	0	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	1											
1995	1	3	0	0	1	118	118	3	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	2	0	0	0	0	0	0

	0	0	0	1	0	0	0	0	0	0	0	0
	0											
1995	1	3	0	0	1	126	126	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	1											
1996	1	3	0	0	1	40	40	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1996	1	3	0	0	1	44	44	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1996	1	3	0	0	1	48	48	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1996	1	3	0	0	1	52	52	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1996	1	3	0	0	1	54	54	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1996	1	3	0	0	1	56	56	9	0	7	2	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1996	1	3	0	0	1	58	58	15	0	15	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1996	1	3	0	0	1	60	60	21	1	20	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1996	1	3	0	0	1	62	62	23	0	23	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1996	1	3	0	0	1	64	64	17	0	13	4	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1996	1	3	0	0	1	66	66	7	0	6	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1996	1	3	0	0	1	68	68	4	0	3	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1996	1	3	0	0	1	70	70	1	0	0	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1996	1	3	0	0	1	72	72	4	0	0	4	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1996	1	3	0	0	1	74	74	4	0	0	3	1
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1996	1	3	0	0	1	76	76	3	0	0	2	1
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1996	1	3	0	0	1	86	86	1	0	0	0	1
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1996	1	3	0	0	1	88	88	1	0	0	0	1
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1996	1	3	0	0	1	90	90	2	0	0	0	0
	1	0	0	0	1	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1996	1	3	0	0	1	94	94	2	0	0	0	0
	2	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1996	1	3	0	0	1	98	98	2	0	0	0	0
	0	2	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1996	1	3	0	0	1	100	100	3	0	0	0	0
	0	2	0	0	0	0	0	0	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1996	1	3	0	0	1	102	102	1	0	0	0	0
	0	0	0	0	0	0	0	0	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1996	1	3	0	0	1	104	104	4	0	0	0	0
	0	0	0	0	1	1	0	0	0	1	0	0
	0	0	0	0	0	0	1	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1996	1	3	0	0	1	106	106	6	0	0	0	0
	0	0	0	0	0	1	0	0	0	1	0	0
	0	1	0	0	1	1	0	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1996	1	3	0	0	1	108	108	3	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	2	1	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1996	1	3	0	0	1	110	110	4	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	1
	1	0	0	0	0	0	2	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1996	1	3	0	0	1	112	112	5	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	1	0	0	0	0	2	2	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1996	1	3	0	0	1	114	114	3	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	3	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1996	1	3	0	0	1	124	124	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1996	1	3	0	0	1	128	128	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	1											
1996	1	3	0	0	1	130	130	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	1											
1997	1	3	0	0	1	32	32	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1997	1	3	0	0	1	36	36	2	2	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1997	1	3	0	0	1	40	40	5	5	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1997	1	3	0	0	1	44	44	4	4	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1997	1	3	0	0	1	46	46	7	7	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1997	1	3	0	0	1	48	48	4	3	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1997	1	3	0	0	1	50	50	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1997	1	3	0	0	1	56	56	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1997	1	3	0	0	1	58	58	2	0	2	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1997	1	3	0	0	1	60	60	3	0	3	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1997	1	3	0	0	1	62	62	4	0	4	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1997	1	3	0	0	1	64	64	8	0	7	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1997	1	3	0	0	1	66	66	5	0	3	2	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1997	1	3	0	0	1	68	68	4	0	1	3	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1997	1	3	0	0	1	70	70	5	0	3	2	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1997	1	3	0	0	1	72	72	1	0	0	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1997	1	3	0	0	1	74	74	2	0	0	1	1
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1997	1	3	0	0	1	76	76	5	0	1	4	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1997	1	3	0	0	1	78	78	3	0	0	1	2
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1997	1	3	0	0	1	80	80	1	0	0	0	1
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1997	1	3	0	0	1	86	86	1	0	0	0	0
	1	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1997	1	3	0	0	1	88	88	1	0	0	0	1
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1997	1	3	0	0	1	90	90	1	0	0	0	0
	0	1	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1997	1	3	0	0	1	92	92	1	0	0	0	1
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1997	1	3	0	0	1	96	96	1	0	0	0	0
	0	0	0	0	0	0	0	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1997	1	3	0	0	1	98	98	2	0	0	0	0
	0	0	1	0	0	1	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1997	1	3	0	0	1	100	100	2	0	0	0	0
	0	0	0	0	0	1	0	0	0	0	0	0
	0	0	0	1	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1997	1	3	0	0	1	104	104	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1997	1	3	0	0	1	106	106	2	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	1	0	0	0	1	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1997	1	3	0	0	1	108	108	3	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	1	1	0	0	0	0

	0	0	0	0	0	0	0	1	0	0	0	0
	0											
1997	1	3	0	0	1	110	110	4	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	1
	0	0	2	0	0	0	0	0	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1997	1	3	0	0	1	112	112	3	0	0	0	0
	0	0	0	0	0	1	0	0	0	0	0	0
	0	0	0	0	0	0	1	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1997	1	3	0	0	1	114	114	4	0	0	0	0
	0	0	0	0	0	1	0	0	0	0	0	0
	0	0	0	0	0	0	1	1	0	0	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1997	1	3	0	0	1	116	116	4	0	0	0	0
	0	0	0	0	0	0	1	1	0	0	0	0
	0	0	0	0	0	0	0	1	0	0	0	0
	0	0	0	0	0	0	0	1	0	0	0	0
	0											
1997	1	3	0	0	1	118	118	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	1	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1997	1	3	0	0	1	130	130	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	1											
1998	1	3	0	0	1	38	38	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1998	1	3	0	0	1	44	44	3	1	2	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1998	1	3	0	0	1	48	48	7	4	3	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1998	1	3	0	0	1	50	50	5	1	4	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1998	1	3	0	0	1	52	52	11	1	10	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1998	1	3	0	0	1	54	54	13	1	12	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1998	1	3	0	0	1	56	56	9	0	9	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1998	1	3	0	0	1	58	58	20	0	20	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1998	1	3	0	0	1	60	60	25	0	25	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1998	1	3	0	0	1	62	62	19	0	19	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1998	1	3	0	0	1	64	64	7	0	7	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1998	1	3	0	0	1	66	66	7	0	6	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1998	1	3	0	0	1	68	68	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1998	1	3	0	0	1	70	70	2	0	2	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1998	1	3	0	0	1	74	74	1	0	0	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1998	1	3	0	0	1	76	76	1	0	0	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1998	1	3	0	0	1	80	80	3	0	0	2	1
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1998	1	3	0	0	1	82	82	1	0	0	0	1
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1998	1	3	0	0	1	84	84	3	0	0	0	3
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1998	1	3	0	0	1	86	86	5	0	0	0	4
	1	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1998	1	3	0	0	1	88	88	4	0	0	0	0
	4	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1998	1	3	0	0	1	90	90	4	0	0	0	1
	3	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1998	1	3	0	0	1	92	92	7	0	0	0	0
	5	2	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1998	1	3	0	0	1	94	94	10	0	0	0	1
	4	2	3	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1998	1	3	0	0	1	96	96	3	0	0	0	0
	1	0	2	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1998	1	3	0	0	1	98	98	4	0	0	0	0
	1	2	0	0	0	0	1	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1998	1	3	0	0	1	100	100	2	0	0	0	0
	0	1	0	0	0	0	1	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1998	1	3	0	0	1	102	102	5	0	0	0	0
	0	1	0	0	0	1	0	0	0	0	2	0
	0	0	0	1	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1998	1	3	0	0	1	104	104	4	0	0	0	0
	0	0	0	2	0	0	0	0	0	0	1	0
	0	0	0	0	0	0	0	0	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1998	1	3	0	0	1	106	106	7	0	0	0	0
	0	0	0	0	0	0	0	1	2	0	0	0
	0	0	0	3	0	0	0	1	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1998	1	3	0	0	1	108	108	3	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	2	0	0	0	0	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1998	1	3	0	0	1	110	110	5	0	0	0	0
	0	0	0	0	0	0	0	1	0	0	0	0
	0	1	0	0	0	0	0	1	1	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1998	1	3	0	0	1	112	112	3	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	1	0	0	2	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1998	1	3	0	0	1	114	114	6	0	0	0	0
	0	0	0	0	0	0	1	0	0	0	0	0
	0	1	0	1	0	1	0	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1998	1	3	0	0	1	116	116	4	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	1	0	0	0	0	0	2	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1998	1	3	0	0	1	118	118	4	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	1	0	0	0	0	0	0	1	0	1	0
	0	0	0	1	0	0	0	0	0	0	0	0
	0											
1998	1	3	0	0	1	120	120	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1998	1	3	0	0	1	124	124	2	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1998	1	3	0	0	1	128	128	2	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	1	0	0	0	0	1	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1998	1	3	0	0	1	130	130	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	1	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1999	1	3	0	0	1	42	42	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1999	1	3	0	0	1	46	46	3	3	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1999	1	3	0	0	1	48	48	2	2	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1999	1	3	0	0	1	50	50	5	2	3	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1999	1	3	0	0	1	52	52	3	1	2	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1999	1	3	0	0	1	54	54	5	2	3	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1999	1	3	0	0	1	56	56	2	1	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1999	1	3	0	0	1	58	58	6	0	6	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1999	1	3	0	0	1	60	60	6	0	6	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1999	1	3	0	0	1	62	62	13	0	11	2	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1999	1	3	0	0	1	64	64	14	0	13	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1999	1	3	0	0	1	66	66	8	0	7	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1999	1	3	0	0	1	68	68	2	0	2	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1999	1	3	0	0	1	70	70	4	0	0	4	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1999	1	3	0	0	1	72	72	1	0	0	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1999	1	3	0	0	1	104	104	2	0	0	0	0
	0	1	1	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1999	1	3	0	0	1	106	106	1	0	0	0	0
	0	0	0	1	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1999	1	3	0	0	1	110	110	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	1	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1999	1	3	0	0	1	114	114	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	1	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1999	1	3	0	0	1	116	116	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
1999	1	3	0	0	1	120	120	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2000	1	3	0	0	1	40	40	5	5	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2000	1	3	0	0	1	42	42	3	3	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2000	1	3	0	0	1	44	44	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2000	1	3	0	0	1	46	46	4	3	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2000	1	3	0	0	1	50	50	2	0	2	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2000	1	3	0	0	1	52	52	5	0	5	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2000	1	3	0	0	1	54	54	3	0	3	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2000	1	3	0	0	1	56	56	5	0	5	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2000	1	3	0	0	1	58	58	6	0	5	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2000	1	3	0	0	1	60	60	3	0	2	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2000	1	3	0	0	1	62	62	2	0	2	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2000	1	3	0	0	1	64	64	2	0	0	2	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2000	1	3	0	0	1	66	66	1	0	0	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2000	1	3	0	0	1	68	68	1	0	0	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2000	1	3	0	0	1	70	70	1	0	0	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2000	1	3	0	0	1	84	84	1	0	0	0	1
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2000	1	3	0	0	1	104	104	3	0	0	0	0
	0	0	0	1	0	1	0	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2000	1	3	0	0	1	114	114	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	1	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2000	1	3	0	0	1	118	118	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2000	1	3	0	0	1	122	122	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2001	1	3	0	0	1	42	42	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2001	1	3	0	0	1	48	48	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2001	1	3	0	0	1	50	50	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2001	1	3	0	0	1	52	52	2	0	2	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2001	1	3	0	0	1	54	54	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2001	1	3	0	0	1	56	56	1	0	0	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2001	1	3	0	0	1	58	58	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2001	1	3	0	0	1	60	60	3	0	3	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2001	1	3	0	0	1	66	66	1	0	0	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2001	1	3	0	0	1	118	118	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	1
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2004	1	3	0	0	1	46	46	2	2	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2004	1	3	0	0	1	48	48	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2004	1	3	0	0	1	60	60	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2004	1	3	0	0	1	64	64	1	0	0	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2004	1	3	0	0	1	66	66	5	0	2	3	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2004	1	3	0	0	1	68	68	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2004	1	3	0	0	1	104	104	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2005	1	3	0	0	1	48	48	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2005	1	3	0	0	1	52	52	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2005	1	3	0	0	1	58	58	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2005	1	3	0	0	1	60	60	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2005	1	3	0	0	1	62	62	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2005	1	3	0	0	1	68	68	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2005	1	3	0	0	1	92	92	1	0	0	0	0
	1	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2007	1	3	0	0	1	40	40	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2007	1	3	0	0	1	46	46	2	0	2	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2007	1	3	0	0	1	48	48	11	0	11	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2007	1	3	0	0	1	50	50	8	0	8	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2007	1	3	0	0	1	52	52	4	0	4	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2007	1	3	0	0	1	54	54	2	0	2	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2007	1	3	0	0	1	56	56	2	1	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2007	1	3	0	0	1	60	60	2	0	2	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2007	1	3	0	0	1	62	62	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2007	1	3	0	0	1	64	64	2	0	2	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2007	1	3	0	0	1	74	74	1	0	0	0	1
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2007	1	3	0	0	1	84	84	1	0	0	0	1
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2007	1	3	0	0	1	86	86	1	0	0	0	1
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2007	1	3	0	0	1	94	94	1	0	0	0	1
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2007	1	3	0	0	1	102	102	1	0	0	0	0
	0	0	0	0	0	0	1	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2007	1	3	0	0	1	110	110	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	1	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2007	1	3	0	0	1	114	114	2	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	2	0	0	0	0	0	0
	0											
2007	1	3	0	0	1	118	118	2	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	1	0	0	0	0	0	1
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2007	1	3	0	0	1	122	122	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2008	1	3	0	0	1	46	46	2	2	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2008	1	3	0	0	1	48	48	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2008	1	3	0	0	1	56	56	4	0	3	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2008	1	3	0	0	1	58	58	1	0	0	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2008	1	3	0	0	1	60	60	4	0	4	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2008	1	3	0	0	1	62	62	6	0	4	2	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2008	1	3	0	0	1	64	64	5	0	2	3	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2008	1	3	0	0	1	66	66	1	0	0	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2008	1	3	0	0	1	78	78	1	0	0	0	1
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2008	1	3	0	0	1	100	100	1	0	0	0	0
	0	0	1	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2008	1	3	0	0	1	112	112	1	0	0	0	0
	0	0	0	0	0	1	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2008	1	3	0	0	1	118	118	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	1
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2009	1	3	0	0	1	42	42	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2009	1	3	0	0	1	46	46	5	0	5	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2009	1	3	0	0	1	48	48	8	0	8	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2009	1	3	0	0	1	50	50	7	0	7	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2009	1	3	0	0	1	52	52	18	0	18	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2009	1	3	0	0	1	54	54	14	0	14	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2009	1	3	0	0	1	56	56	9	0	9	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2009	1	3	0	0	1	58	58	5	0	5	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2009	1	3	0	0	1	60	60	2	0	2	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2009	1	3	0	0	1	66	66	2	0	2	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2009	1	3	0	0	1	78	78	1	0	0	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2009	1	3	0	0	1	82	82	1	0	0	0	1
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2010	1	3	0	0	1	44	44	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2010	1	3	0	0	1	46	46	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2010	1	3	0	0	1	56	56	6	0	0	6	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2010	1	3	0	0	1	58	58	6	0	0	6	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2010	1	3	0	0	1	60	60	4	0	0	4	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2010	1	3	0	0	1	62	62	5	0	1	4	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2010	1	3	0	0	1	64	64	6	0	0	6	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2010	1	3	0	0	1	66	66	2	0	0	2	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2010	1	3	0	0	1	96	96	1	0	0	0	0
	0	0	0	0	1	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2010	1	3	0	0	1	104	104	1	0	0	0	0
	0	0	0	0	0	0	0	0	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2010	1	3	0	0	1	108	108	1	0	0	0	0
	0	0	0	0	1	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2010	1	3	0	0	1	114	114	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2012	1	3	0	0	1	44	44	1	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2012	1	3	0	0	1	46	46	2	2	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2012	1	3	0	0	1	48	48	2	2	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2012	1	3	0	0	1	50	50	3	2	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2012	1	3	0	0	1	54	54	1	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2012	1	3	0	0	1	58	58	1	0	0	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2012	1	3	0	0	1	60	60	1	0	0	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2012	1	3	0	0	1	62	62	3	0	3	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2012	1	3	0	0	1	64	64	6	0	2	4	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2012	1	3	0	0	1	66	66	3	0	1	2	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2012	1	3	0	0	1	68	68	3	0	3	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2007	1	8	0	0	1	68	68	1	0	0	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2007	1	8	0	0	1	70	70	2	0	0	2	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2007	1	8	0	0	1	74	74	1	0	0	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2007	1	8	0	0	1	76	76	1	0	0	0	1
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2007	1	8	0	0	1	84	84	1	0	0	0	1
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2007	1	8	0	0	1	88	88	1	0	0	0	1
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2007	1	8	0	0	1	90	90	1	0	0	0	1
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2007	1	8	0	0	1	96	96	1	0	0	0	0
	0	0	0	1	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2007	1	8	0	0	1	100	100	2	0	0	0	0
	0	0	0	0	1	1	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2007	1	8	0	0	1	102	102	1	0	0	0	0
	0	0	0	1	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2007	1	8	0	0	1	104	104	4	0	0	0	0
	0	0	0	0	0	1	0	0	0	0	1	0
	0	0	0	0	0	0	0	0	0	0	1	0
	1	0	0	0	0	0	0	0	0	0	0	0
	0											
2007	1	8	0	0	1	106	106	1	0	0	0	0
	0	0	0	0	0	0	1	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2007	1	8	0	0	1	108	108	4	0	0	0	0
	0	0	0	1	0	0	0	0	0	2	0	0
	0	0	0	0	0	1	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2007	1	8	0	0	1	110	110	11	0	0	0	0
	0	0	0	0	0	1	0	0	0	2	0	0
	0	0	0	0	0	2	0	0	0	1	1	0
	3	0	0	0	0	1	0	0	0	0	0	0
	0											
2007	1	8	0	0	1	112	112	8	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	1	2	1	0	1	0	0	1	0
	1	0	0	0	0	1	0	0	0	0	0	0
	0											
2007	1	8	0	0	1	114	114	12	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	1
	1	0	0	0	1	1	0	0	1	0	2	0
	3	0	0	0	0	1	1	0	0	0	0	0
	0											
2007	1	8	0	0	1	116	116	10	0	0	0	0
	0	0	0	0	0	0	0	0	0	1	0	0
	0	0	0	0	0	1	0	0	1	0	0	0
	4	0	1	0	0	1	1	0	0	0	0	0
	0											
2007	1	8	0	0	1	118	118	13	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	1	0	2	0	1	2	0
	3	0	0	0	0	2	1	0	1	0	0	0
	0											
2007	1	8	0	0	1	120	120	7	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1	1	0	1	0	0	1	1
	0	0	0	0	0	1	0	0	0	0	0	0
	1											
2007	1	8	0	0	1	122	122	2	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	1	0
	0	0	0	0	0	1	0	0	0	0	0	0
	0											
2007	1	8	0	0	1	124	124	2	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	1	0	0	0	0	1	0	0	0	0	0	0
	0											
2007	1	8	0	0	1	126	126	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	1	0	0	0	0	0	0	0	0
	0											
2008	1	8	0	0	1	68	68	1	0	0	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2008	1	8	0	0	1	82	82	1	0	0	0	1
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2008	1	8	0	0	1	84	84	1	0	0	0	1
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2008	1	8	0	0	1	86	86	1	0	0	0	0
	1	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2008	1	8	0	0	1	88	88	1	0	0	0	0
	1	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2008	1	8	0	0	1	98	98	1	0	0	0	0
	0	0	0	1	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2008	1	8	0	0	1	100	100	1	0	0	0	0
	0	0	0	1	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2008	1	8	0	0	1	102	102	3	0	0	0	0
	0	0	0	0	0	1	1	0	0	0	0	0
	0	0	0	1	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2008	1	8	0	0	1	104	104	2	0	0	0	0
	0	0	0	0	0	1	0	0	0	0	0	0
	1	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2008	1	8	0	0	1	108	108	2	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	1	0	0	0	0	0	0	0	0	0	1
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2008	1	8	0	0	1	110	110	6	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	2	0
	0	1	0	0	0	1	0	0	0	0	0	0
	1	0	0	0	0	0	1	0	0	0	0	0
	0											
2008	1	8	0	0	1	112	112	2	0	0	0	0
	0	0	0	0	0	0	1	0	0	0	0	0
	0	0	0	0	0	1	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2008	1	8	0	0	1	118	118	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	1	0	0	0	0	0
	0											
2008	1	8	0	0	1	120	120	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	1	0	0	0	0	0	0	0	0	0	0	0
	0											
2008	1	8	0	0	1	126	126	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	1	0	0	0
	0											
2008	1	8	0	0	1	130	130	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	1	0	0	0	0	0
	0											
2009	1	8	0	0	1	88	88	2	0	0	0	0
	1	1	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2009	1	8	0	0	1	94	94	1	0	0	0	0
	0	0	0	0	1	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2009	1	8	0	0	1	100	100	4	0	0	0	0
	0	0	0	0	1	0	2	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2009	1	8	0	0	1	106	106	3	0	0	0	0
	0	0	0	0	0	0	0	0	1	0	0	1
	0	0	0	0	0	0	0	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2009	1	8	0	0	1	108	108	3	0	0	0	0
	0	0	0	0	0	0	0	1	0	0	0	0
	0	0	0	0	0	0	2	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2009	1	8	0	0	1	112	112	4	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	1	0	0	1	0	0	0	1	0	0
	1	0	0	0	0	0	0	0	0	0	0	0
	0											
2009	1	8	0	0	1	114	114	3	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	1	0	0	0	0	0
	0	0	1	0	0	0	1	0	0	0	0	0
	0											
2009	1	8	0	0	1	118	118	7	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	1	0	0	1	0	0	0	0	0	0
	1	0	0	0	0	0	0	2	1	0	0	1
	0											
2009	1	8	0	0	1	120	120	2	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	1	1	0	0	0
	0											
2009	1	8	0	0	1	124	124	2	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	1	0	0	0	0	0

	1	0	0	0	0	0	0	0	0	0	0	0
	0											
2009	1	8	0	0	1	126	126	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	1	0	0	0	0	0	0	0	0	0
	0											
2009	1	8	0	0	1	132	132	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	1	0	0	0	0	0	0	0	0	0
	0											
2010	1	8	0	0	1	76	76	1	0	0	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2010	1	8	0	0	1	80	80	1	0	0	0	0
	1	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2010	1	8	0	0	1	82	82	1	0	0	0	0
	1	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2010	1	8	0	0	1	84	84	2	0	0	0	0
	2	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2010	1	8	0	0	1	86	86	2	0	0	0	2
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2010	1	8	0	0	1	88	88	4	0	0	0	4
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2010	1	8	0	0	1	90	90	4	0	0	0	0
	4	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2010	1	8	0	0	1	92	92	1	0	0	0	0
	1	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2010	1	8	0	0	1	96	96	1	0	0	0	0
	0	1	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2010	1	8	0	0	1	98	98	1	0	0	0	0
	1	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2010	1	8	0	0	1	100	100	1	0	0	0	0
	0	0	0	0	0	0	0	0	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2010	1	8	0	0	1	102	102	2	0	0	0	0
	0	0	2	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2010	1	8	0	0	1	106	106	2	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	2	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2010	1	8	0	0	1	108	108	2	0	0	0	0
	0	0	0	0	0	0	0	1	0	0	0	0
	0	0	0	0	0	0	1	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2010	1	8	0	0	1	110	110	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	1	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2010	1	8	0	0	1	112	112	3	0	0	0	0
	0	0	0	0	0	0	0	0	1	0	0	0
	0	0	0	1	0	0	0	0	0	0	1	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2010	1	8	0	0	1	114	114	2	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	1	0	0	0	0	0	0	0	0
	0	0	0	1	0	0	0	0	0	0	0	0
	0											
2010	1	8	0	0	1	116	116	2	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	1	0	0	0	0
	0	0	0	0	0	0	0	0	1	0	0	0
	0											
2010	1	8	0	0	1	118	118	3	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	1	0	0	0	1	0	0	0	1	0	0
	0											
2010	1	8	0	0	1	120	120	3	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	1	0	0	1	0	0	0	1	0	0	0	0
	0											
2010	1	8	0	0	1	122	122	2	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	1	0	0	0	0	0	1	0	0
	0											
2011	1	8	0	0	1	82	82	1	0	0	0	0
	1	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2011	1	8	0	0	1	84	84	1	0	0	0	0
	0	1	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2011	1	8	0	0	1	86	86	2	0	0	0	0
	2	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2011	1	8	0	0	1	88	88	2	0	0	0	0
	0	2	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2011	1	8	0	0	1	90	90	2	0	0	0	0
	0	2	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2011	1	8	0	0	1	92	92	4	0	0	0	0
	1	2	1	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2011	1	8	0	0	1	94	94	2	0	0	0	0
	1	0	0	1	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2011	1	8	0	0	1	96	96	1	0	0	0	0
	0	0	0	1	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2011	1	8	0	0	1	98	98	1	0	0	0	0
	0	0	1	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2011	1	8	0	0	1	100	100	2	0	0	0	0
	0	0	0	0	1	0	1	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2011	1	8	0	0	1	102	102	2	0	0	0	0
	0	0	0	0	0	0	1	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2011	1	8	0	0	1	104	104	3	0	0	0	0
	0	0	0	0	0	0	2	0	0	0	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2011	1	8	0	0	1	106	106	5	0	0	0	0
	0	0	0	0	0	0	0	0	3	0	0	0
	0	1	0	0	0	0	0	0	0	0	0	1

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2011	1	8	0	0	1	108	108	3	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	1	0
	0	0	0	1	1	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2011	1	8	0	0	1	110	110	8	0	0	0	0
	0	0	0	0	0	0	0	0	1	0	0	1
	0	1	0	0	0	0	0	0	0	0	0	1
	1	0	0	0	1	0	0	0	2	0	0	0
	0											
2011	1	8	0	0	1	112	112	7	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	1	0	0	1	0	0	0	0	1	0	0
	0	1	0	0	2	0	0	0	0	1	0	0
	0											
2011	1	8	0	0	1	114	114	8	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	1	1	0	0	1	0	0	0	0	3	1	0
	0	0	0	1	0	0	0	0	0	0	0	0
	0											
2011	1	8	0	0	1	116	116	11	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	1	0
	0	0	0	0	0	0	0	1	0	2	0	0
	1	1	0	1	2	0	0	0	1	1	0	0
	0											
2011	1	8	0	0	1	118	118	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1	0	0	0	0	0	0	0
	0											
2011	1	8	0	0	1	120	120	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2011	1	8	0	0	1	122	122	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	1	0	0	0	0	0	0	0	0	0
	0											
2011	1	8	0	0	1	124	124	3	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	2	0	0

	0	0	0	0	0	0	0	0	0	1	0	0
	0											
2012	1	8	0	0	1	80	80	1	0	0	0	1
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2012	1	8	0	0	1	82	82	1	0	0	0	1
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2012	1	8	0	0	1	86	86	1	0	0	0	0
	0	1	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2012	1	8	0	0	1	88	88	2	0	0	0	0
	1	0	1	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2012	1	8	0	0	1	92	92	1	0	0	0	1
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2012	1	8	0	0	1	94	94	1	0	0	0	0
	0	1	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2012	1	8	0	0	1	96	96	3	0	0	0	0
	0	0	1	1	1	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2012	1	8	0	0	1	98	98	2	0	0	0	0
	0	0	0	0	0	0	0	2	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2012	1	8	0	0	1	100	100	2	0	0	0	0
	0	0	1	0	1	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2012	1	8	0	0	1	102	102	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2012	1	8	0	0	1	104	104	2	0	0	0	0
	0	0	0	1	0	0	0	0	0	0	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2012	1	8	0	0	1	106	106	6	0	0	0	0
	0	0	0	0	0	0	0	1	1	3	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2012	1	8	0	0	1	108	108	5	0	0	0	0
	0	0	0	0	0	0	0	0	2	0	1	0
	0	0	0	0	0	1	0	0	0	0	0	0
	0	0	0	0	0	1	0	0	0	0	0	0
	0											
2012	1	8	0	0	1	110	110	7	0	0	0	0
	0	0	0	0	0	0	0	1	0	1	1	0
	0	1	0	0	2	0	0	0	1	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2012	1	8	0	0	1	112	112	3	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	1	0
	0	1	0	1	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2012	1	8	0	0	1	114	114	5	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	1	0
	0	1	1	0	1	0	0	0	0	0	0	0
	0	0	0	0	0	1	0	0	0	0	0	0
	0											
2012	1	8	0	0	1	116	116	10	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	1	0	0	2	0	1	0	0	2	0
	0	0	0	1	0	2	0	0	0	0	1	0
	0											
2012	1	8	0	0	1	118	118	4	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	1	1	2	0	0	0	0	0	0	0	0	0
	0											
2012	1	8	0	0	1	120	120	3	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	1	0	0	0
	0	0	0	0	0	0	0	0	1	0	1	0
	0											
2012	1	8	0	0	1	122	122	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2012	1	8	0	0	1	124	124	2	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	2	0
	0											
2012	1	8	0	0	1	126	126	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	1	0	0	0	0	0	0	0	0
	0											
2013	1	8	0	0	1	86	86	1	0	0	0	0
	0	0	0	1	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2013	1	8	0	0	1	88	88	1	0	0	0	0
	0	0	0	1	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2013	1	8	0	0	1	90	90	2	0	0	0	0
	0	0	1	1	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2013	1	8	0	0	1	94	94	4	0	0	0	0
	2	0	1	1	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2013	1	8	0	0	1	96	96	1	0	0	0	0
	0	1	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2013	1	8	0	0	1	98	98	3	0	0	0	0
	0	1	0	2	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2013	1	8	0	0	1	100	100	4	0	0	0	0
	0	0	0	3	1	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2013	1	8	0	0	1	102	102	1	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	1
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2013	1	8	0	0	1	106	106	2	0	0	0	0
	0	0	0	0	0	0	0	0	2	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0											
2013	1	8	0	0	1	108	108	2	0	0	0	0
	0	0	0	0	0	0	0	0	0	1	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	1	0	0	0	0	0	0	0	0
	0											
2013	1	8	0	0	1	110	110	4	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	1	0	0	0	0	1	0	0	0	0	1
	0	1	0	0	0	0	0	0	0	0	0	0
	0											
2013	1	8	0	0	1	112	112	7	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	2	0	1	1	0	0	0	0	0	0	1	0
	0	1	0	0	0	0	1	0	0	0	0	0
	0											
2013	1	8	0	0	1	114	114	7	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	2	0	1	0	0	0	0	0	0
	0	0	1	0	0	0	2	0	0	0	0	0
	1											
2013	1	8	0	0	1	116	116	10	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	3	0	0	0	1	0	0	1	0

0 2 0 0 0 0 1 0 0 0 0 2
0
2013 1 8 0 0 1 118 118 5 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 1 0 1 0 0
0 0 1 0 1 0 1 0 0 0 0 0
0
2013 1 8 0 0 1 120 120 4 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 1 1 0
0 0 0 0 0 0 0 0 0 0 0 2
0
2013 1 8 0 0 1 122 122 6 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 1 0 0 1 0 0 0 0 0
0 1 0 0 0 0 1 0 0 0 0 1
1
2013 1 8 0 0 1 124 124 1 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0 1 0 0 0 0 0 0 0
0
0 #_N_MeanSize-at-Age_obs
0 #_N_environ_variables
0 #_N_environ_obs
year__environemntal-effect
none
0 #_N_sizefreq_methods_to_read
1 #_Do tag/rec_data (0/1)
31 #_N tag groups
197 #_N recap events
0.75 #_Mixing latency period: N periods to delay before comparing observed to expected recoveries (0 = release period)
3 #_Max periods (seasons) to track recoveries, after which tags enter accumulator
#Release Data

#TG	area	yr	season	<tfill>	gender	Age	Nrelease
1	1	1986	1	999	0	0	1035
2	1	1987	1	999	0	0	424
3	1	1988	1	999	0	0	732
4	1	1989	1	999	0	14	483
5	1	1990	1	999	0	16	431
6	1	1991	1	999	0	0	1873
7	1	1991	1	999	0	0	304
8	1	1991	1	999	0	13	485
9	1	1992	1	999	0	0	933
10	1	1992	1	999	0	16	362

11	1	1993	1	999	0	0	844
12	1	1993	1	999	0	0	482
13	1	1993	1	999	0	16	421
14	1	1994	1	999	0	0	3220
15	1	1994	1	999	0	0	324
16	1	1994	1	999	0	14	788
17	1	1995	1	999	0	0	370
18	1	1995	1	999	0	14	561
19	1	1996	1	999	0	14	549
20	1	1997	1	999	0	0	1618
21	1	1997	1	999	0	16	588
22	1	1998	1	999	0	0	1287
23	1	1998	1	999	0	1	1448
24	1	1998	1	999	0	16	649
25	1	1999	1	999	0	0	1114
26	1	1999	1	999	0	1	814
27	1	1999	1	999	0	14	855
28	1	2000	1	999	0	0	633
29	1	2000	1	999	0	1	794
30	1	2000	1	999	0	17	989
31	1	2001	1	999	0	1	358

#Recapture Data

#TG	year	season	fleet	Number
1	1986	1	3	49
1	1987	1	3	6
1	1986	1	1	90
1	1987	1	1	23
1	1986	1	2	66
1	1987	1	2	4
1	1991	1	2	2
2	1987	1	3	28
2	1988	1	3	6
2	1987	1	1	28
2	1988	1	1	9
2	1989	1	1	1
2	1990	1	1	1
2	1987	1	2	8
2	1988	1	2	2
2	1989	1	2	1
3	1988	1	3	50
3	1989	1	3	12
3	1990	1	3	1
3	1988	1	1	56
3	1989	1	1	14
3	1990	1	1	1
3	1988	1	2	14

3	1989	1	2	2
4	1989	1	3	1
4	1990	1	3	1
4	1991	1	3	1
4	1993	1	3	1
4	1990	1	1	1
4	1991	1	1	1
4	1989	1	2	3
4	1990	1	2	2
5	1990	1	3	1
5	1991	1	3	1
5	1992	1	3	1
5	1993	1	3	1
5	1997	1	3	1
5	1991	1	2	4
5	1992	1	2	1
6	1991	1	4	1
6	1991	1	3	31
6	1992	1	3	13
6	1993	1	3	6
6	1994	1	3	2
6	1991	1	1	48
6	1992	1	1	36
6	1993	1	1	6
6	1994	1	1	1
6	1995	1	1	1
6	1991	1	2	9
6	1992	1	2	2
7	1991	1	3	5
7	1992	1	3	6
7	1991	1	1	9
7	1992	1	1	4
7	1993	1	1	1
7	1991	1	2	3
7	1992	1	2	1
8	1992	1	3	1
8	1993	1	3	1
8	1995	1	3	1
8	1991	1	1	1
8	1993	1	2	1
9	1992	1	3	7
9	1993	1	3	28
9	1994	1	3	5
9	1992	1	1	18
9	1993	1	1	28
9	1994	1	1	1

9	1995	1	1	1
9	1996	1	1	2
9	1992	1	2	1
9	1993	1	2	8
10	1992	1	3	1
10	1995	1	3	1
11	1993	1	4	1
11	1993	1	3	18
11	1994	1	3	14
11	1993	1	1	9
11	1994	1	1	8
11	1996	1	1	2
11	1993	1	2	5
11	1994	1	2	2
12	1993	1	3	7
12	1994	1	3	5
12	1994	1	1	4
12	1993	1	2	1
13	1995	1	3	2
13	1997	1	3	1
13	1994	1	2	1
14	1994	1	4	13
14	1995	1	4	3
14	1994	1	3	20
14	1995	1	3	65
14	1996	1	3	5
14	1997	1	3	1
14	1994	1	1	18
14	1995	1	1	26
14	1996	1	1	1
14	1994	1	2	12
15	1994	1	3	3
15	1995	1	3	6
15	1994	1	1	3
15	1995	1	2	1
16	1994	1	3	2
16	1995	1	3	6
16	1997	1	3	1
16	1998	1	3	1
16	1994	1	1	1
16	1995	1	2	2
17	1995	1	3	2
17	1996	1	3	5
17	1997	1	3	2
17	1995	1	1	2
17	1996	1	1	3

17	1996	1	2	1
18	1995	1	3	1
18	1996	1	3	4
18	1997	1	3	1
18	1995	1	2	1
19	1997	1	3	1
19	1999	1	3	1
19	2013	1	2	1
20	1997	1	4	5
20	1998	1	4	1
20	1997	1	3	12
20	1998	1	3	33
20	1999	1	3	5
20	2000	1	3	1
20	1997	1	1	25
20	1998	1	1	15
20	1997	1	2	1
20	1998	1	2	4
21	1998	1	3	1
22	1998	1	4	2
22	1999	1	4	1
22	1998	1	3	13
22	1999	1	3	19
22	2000	1	3	4
22	2002	1	3	1
22	1998	1	1	3
22	1999	1	1	16
22	2000	1	1	4
22	1999	1	2	1
23	1998	1	4	2
23	1999	1	4	1
23	1998	1	3	70
23	1999	1	3	5
23	2000	1	3	1
23	1998	1	1	37
23	1999	1	1	1
23	1998	1	2	2
23	1999	1	2	1
23	2000	1	2	1
24	1998	1	3	1
24	2000	1	3	1
24	2001	1	3	1
25	1999	1	4	1
25	2000	1	4	1
25	1999	1	3	3
25	2000	1	3	19

25	2001	1	3	6
25	2002	1	3	1
25	1999	1	1	2
25	2000	1	1	7
25	2001	1	1	8
25	2000	1	2	1
26	1999	1	4	1
26	1999	1	3	27
26	2000	1	3	3
26	2002	1	3	1
26	1999	1	1	9
26	2000	1	1	9
27	2001	1	3	1
28	2000	1	4	2
28	2001	1	4	1
28	2000	1	3	4
28	2001	1	3	21
28	2002	1	3	5
28	2000	1	1	2
28	2001	1	1	8
28	2002	1	1	3
29	2000	1	4	1
29	2001	1	4	1
29	2000	1	3	40
29	2001	1	3	15
29	2000	1	1	9
29	2001	1	1	10
29	2002	1	1	1
29	2001	1	2	1
30	2001	1	4	1
31	2001	1	4	1
31	2001	1	3	18
31	2002	1	3	7
31	2001	1	1	7
31	2002	1	1	3
31	2001	1	2	1

0 #_no_morphcomp_data
999 #_successful end
Appendix x. Stock Synthesis control file for the northern stock base model.
#C -- Executed: 2015-06-22 22:35:42
1 #_N_Growth_Patterns
1 #_N_Morphs_Within_GrowthPattern
1 #_Nblock_Patterns then blkc/pattrn
3 #_blocks_per_pattern
1976 1991 1992 1998 1999 2013 # begin and end years of pattern 1
0.5 #_fracfemale

3
#_natM_type:_0=1Parm;1=N_breakpoints;2=Lorenzen;3=agespecific;4=agespec_withseasinterp
olate
0.195
0.129
0.098
0.086
0.080
0.076
0.073
0.072
0.071
0.070
0.069
0.069
0.069
0.068
0.068
0.067
0.067
0.067
0.066
0.066
0.065
0.065
0.064
0.064
0.064
0.064
0.063
0.063
0.063
0.063
0.062
0.062
0.062
0.062
0.062
0.062
0.062
0.062
0.061
0.061
0.061
0.060

3
#_GrowthModel:1=vonBert_with_L1&L2;2=Richards_with_L1&L2;3=not_implemented;4=not_implemented
0.5 #_Growth_Age_for_L1
999 #_Growth_Age_for_L2(999_to_use_as_Linf)
1 #_first Kdev age
4 #_last Kdev age
0 #_SD_add_to_LAA(set_to_0.1_for_SS2_V1.x_compatibility)--Recommend using a value of 0.0
0
#_CV_Growth_Pattern:0_CV=f(LAA);1_CV=F(A);2_SD=F(LAA);3_SD=F(A);4_logSD=F(A)
3 #_maturity_option:1=length_logistic;2=age_logistic;3=read_age-maturity_matrix_by growth_pattern;4=read_age-fecundity;5=read_fec_and_wt_from_wtatage.ss
0 0 0.07 0.991 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1 1 1
1 1 1 1 1
2 #_First_Mature_Age--overridden_with_mat_option=3,4_but_must_exist
3 #_fecundity option:(1)eggs=Wt*(a+b*Wt);(2)eggs=a*L^b;(3)eggs=a*Wt^b or [fec = ssb](4)eggs=a+b*L;(5)eggs=a+b*W--note:irrelevant_if_Maturity_Option=4_or_5
0 #_hermaphroditism option: 0=none;1=age-specific_fxn
1 #_parameter_offset_approach(1=none,2= M,G,CV_G_as_offset_from_female-GP1,3=like SS2 V1.x)
2
#_env/block/dev_adjust_method(1=standard;2=logistic_transform_keeps_in_base_parm_bounds;3=standard_w/_no_bound_check)
#_MG parameter initialization ****
#_LO HI INIT PRIOR PR_type SD PHASE env-var use_dev dev_minyr dev_maxyr dev_stddev Block Block_Fxn description
21.23 63.68 32.14 42.45 -1 0.01 4 0 0 0 0 0 0
0 #_L_at_Amin_Fem_GP_1 (cm)
94.09 176.42 119.24 117.61 -1 0.01 4 0 0 0 0 0 0
0 #_L_at_Amax_Fem_GP_1 (cm)
0.1 0.29 0.27 0.19 -1 0.01 4 0 0 0 0 0 0
0 #_VonBert_K_Fem_GP_1, per yr
-2 2 0.43 1 -1 0.1 4 0 0 0 0 0 0 0
#_Kdev_begAge_9
1e-04 0.25 0.23 0.1 -1 0.15 4 0 0 0 0 0 0
0 #_CV_young_Fem_GP_1
1e-04 0.25 0.03 0.1 -1 0.04 4 0 0 0 0 0 0
0 #_CV_old_Fem_GP_1
1.28e-05 1.56e-05 1.41e-05 1.41e-05 -1 1e-04 -3 0 0
0 0 0 0 0 #_Wtlen_1_Fem
2.665 3.257 2.931 2.931 -1 1e-04 -3 0 0 0 0 0 0
0 #_Wtlen_2_Fem

```
1.57	4.7	2.35	2.35	-1	0.1	-3	0	0	0	0	0	0
	0	#_Mat50%_Fem
-14.55	-4.85	-7.275	-7.275	-1	0.1	-3	0	0	0	0	0	0
	0	#_Mat_slope_Fem (must be negative)
-3	3	0.5	1	-1	10	-99	0	0	0	0	0	0
	0	#_Eggs/kg_inter_Fem..a_of_fec=aW^b,if a=b=1_then_SSB
-3	3	1	1	-1	10	-99	0	0	0	0	0	0
	0	#_Eggs/kg_slope_wt_Fem..b_of_above
-4	4	0	0	-1	0.1	-2	0	0	0	0	0	0
	0	#_RecrDist_GP_1
-4	4	0	1	-1	0.1	-2	0	0	0	0	0	0
	0	#_RecrDist_Area_1
-4	4	0	-4	-1	0.1	-2	0	0	0	0	0	0
	0	#_RecrDist_Seas_1
0	1	1	1	-1	0.1	-3	0	0	0	0	0	0
	0	#_CohortGrowDev
#_seasonal_effects_on_biology_parms
0 0 0 0 0 0 0 0 0 0
3  #_SR_function:2=Ricker;3=std_B-H;4=SCAA;5=Hockey;6=B-H_flattop;7=survival_3Parm
#_LO_____HI______INIT___PRIOR_PR_type___SD___PHASE_____description
2.89	8.67	5.69	5.78	-1	0.1	2	#_SR_LN(R0)
0.2	1	0.99	1	-1	0.1	-2	#_SR_BH_steep
0.15	2.4	0.75	0.6	-1	0.1	2	#_R_sigma
-5	5	0	0	-1	0.1	-4	#_SR_envlink
-5	5	0	0	-1	0.1	-3	#_SR_R1_offset
-0.01	0.01	0	0	-1	0.1	-3	#_SR_autocorr
#_additional_spawner_recruit_conditions
0 #_SR_env_link --index of the envirnmntal variable that will be used for adjustment of SR expectations
0 #_SR_env_target_0=none;1=devs;_2=R0;_3=steepness
1 #do_recdev:0=none(all R from SR);1=devvector;2=simple deviations
1992 #_first_year_of_main_recr_devs;_early_devs_can_preceed_this_era
2013 #_last_year_of_main_recr_devs;_forecast_devs_start_in_following_year
2 #_recdev_phase
1 # (0/1) to read 13 advanced options
1950  #_recdev_early_start(0=none;neg_value_makes_relative_to_recdev_start)  was 0
3 #_recdev_early_phase
0 #_forecast_recruitment_phase(incl._late_recr)(0_value_resets_to_maxphase+1)
1 #_lambda for Fcast_recr_like occurring before endyr+1
1887.0   #_last_early_yr_nobias_adj_in_MPD
1983.6   #_first_yr_fullbias_adj_in_MPD
2012.9   #_last_yr_fullbias_adj_in_MPD
2046.5   #_first_recent_yr_nobias_adj_in_MPD
0.9865   #_max_bias_adj_in_MPD (1.0 to mimic pre-2009 models)
0 #_period_of_cycles_in_recruitment(N_parms_read_below)
-5 #min_rec_dev
```

5 #max_rec_dev
0 #_read_recdevs
#_Fishing_mortality
0.2 # _F_ballpark_for_tuning_early_phases
-2003 # _F_ballpark_year(neg_value_to_disable)
2 # _F_Method:1=Pope;2=instan_F;3=hybrid(hybrid_is_recommended)
4 # _max_F_or_harvest_rate,_depends_on_F_Method (4 is recommended)
#5 # tuning iters for f_method 3
0.1 # starting value of each F
1 # phase of F becoming active
66 # number of F detail inputs below
#fleet, yr, seas, F, se, phase

3	1981	1	0.1	0.238	1
3	1982	1	0.1	0.191	1
3	1983	1	0.1	0.196	1
3	1984	1	0.1	0.250	1
3	1985	1	0.1	0.210	1
3	1986	1	0.1	0.191	1
3	1987	1	0.1	0.168	1
3	1988	1	0.1	0.171	1
3	1989	1	0.1	0.172	1
3	1990	1	0.1	0.165	1
3	1991	1	0.1	0.162	1
3	1992	1	0.1	0.165	1
3	1993	1	0.1	0.160	1
3	1994	1	0.1	0.160	1
3	1995	1	0.1	0.155	1
3	1996	1	0.1	0.156	1
3	1997	1	0.1	0.170	1
3	1998	1	0.1	0.154	1
3	1999	1	0.1	0.154	1
3	2000	1	0.1	0.153	1
3	2001	1	0.1	0.157	1
3	2002	1	0.1	0.162	1
3	2003	1	0.1	0.158	1
3	2004	1	0.1	0.162	1
3	2005	1	0.1	0.158	1
3	2006	1	0.1	0.162	1
3	2007	1	0.1	0.160	1
3	2008	1	0.1	0.155	1
3	2009	1	0.1	0.155	1
3	2010	1	0.1	0.150	1
3	2011	1	0.1	0.152	1
3	2012	1	0.1	0.168	1
3	2013	1	0.1	0.155	1
4	1981	1	0.1	0.224	1

4	1982	1	0.1	0.210	1
4	1983	1	0.1	0.197	1
4	1984	1	0.1	0.250	1
4	1985	1	0.1	0.199	1
4	1986	1	0.1	0.179	1
4	1987	1	0.1	0.181	1
4	1988	1	0.1	0.188	1
4	1989	1	0.1	0.182	1
4	1990	1	0.1	0.195	1
4	1991	1	0.1	0.171	1
4	1992	1	0.1	0.165	1
4	1993	1	0.1	0.175	1
4	1994	1	0.1	0.170	1
4	1995	1	0.1	0.162	1
4	1996	1	0.1	0.164	1
4	1997	1	0.1	0.166	1
4	1998	1	0.1	0.158	1
4	1999	1	0.1	0.159	1
4	2000	1	0.1	0.159	1
4	2001	1	0.1	0.158	1
4	2002	1	0.1	0.161	1
4	2003	1	0.1	0.162	1
4	2004	1	0.1	0.152	1
4	2005	1	0.1	0.157	1
4	2006	1	0.1	0.155	1
4	2007	1	0.1	0.154	1
4	2008	1	0.1	0.151	1
4	2009	1	0.1	0.156	1
4	2010	1	0.1	0.150	1
4	2011	1	0.1	0.156	1
4	2012	1	0.1	0.156	1
4	2013	1	0.1	0.153	1

#_Initial_Fishing_mortality
#_LO_____HI____INIT___PRIOR_PR_type_____SD___PHASE
0.001 4 0.08 0 -1 0.01 1 #_InitF_VAMDNCcomGNBS
0.001 4 0.02 0 -1 0.01 1 #_InitF_VAMDNCcomSE
0.001 4 0.45 0 -1 0.01 1 #_InitF_NCVAMDrecAB1
0.00001 4 0.001 0 -1 0.01 1 #_InitF_recB2
#_Q_type_options:<0=mirror,0=median_float,1=mean_float,2=parameter,3=parm_w_random_dev,4=parm_w_randwalk,5=mean_unbiased_float_assign_to_parm
#_Den-dep__env-var__extra_se__Q_type
0 0 0 0 #VAMDNCcomGNBS
0 0 0 0 #VAMDNCcomSE
0 0 0 0 #NCVAMDrecAB1
0 0 0 0 #recB2

0 0 0 0 #NCJAI
0 0 0 0 #NCIGNS1
0 0 0 0 #NCIGNS2
0 0 0 0 #NC_LL
0 0 0 0 #MRIP
#_initialize_catchability---note_this_is_the_ln(q)
#__________LO______HI____INIT___PRIOR_PR_type______SD___PHASE____description
-6.25 -3.33 -5 -5 1 0.01 3 #_Q_base_1_FD_fishery1
-12.5 -6.67 -10 -10 1 0.01 3 #_Q_base_2_SURVEY1
-5 5 0 0 1 0.01 3 #_Q_base_3_RECRUIT2
#_size_selex_types
#pattrn_discard_male___special
24 0 0 0 #VAMDNCcomGNBS
24 0 0 0 #VAMDNCcomSE
24 0 0 0 #NCVAMDrecAB1
24 0 0 0 #recB2
0 0 0 0 #NCJAI
0 0 0 0 #NCIGNS1
0 0 0 0 #NCIGNS2
1 0 0 0 #NC_LL
24 0 0 0 #MRIP
#_age_selex_types
#pattrn_discard_male___special
0 0 0 0 #VAMDNCcomGNBS
0 0 0 0 #VAMDNCcomSE
0 0 0 0 #NCVAMDrecAB1
0 0 0 0 #recB2
11 0 0 0 #NCJAI
11 0 0 0 #NCIGNS1
11 0 0 0 #NCIGNS2
0 0 0 0 #NC_LL
0 0 0 0 #MRIP
#Selectivity_parameters_to_be_estimated
#_LO____HI_____INIT_PRIOR____PR_type_____SD___PHASE_env-var_use_dev_dev_minyr_dev_maxyr_dev_stddev_Block_Block_Fxn___description
13 100 38.3 38.3 -1 3 -2 0 0 0 0 0 1 2 #_VAMDNCcomGNBS_SizeSel_p1-peak
-9 3 -3 -3 -1 1 -3 0 0 0 0 0 1 2 #_VAMDNCcomGNBS_SizeSel_p2-top
0 9 5 5 -1 3 -2 0 0 0 0 0 1 2 #_VAMDNCcomGNBS_SizeSel_p3-asc
0 9 6.4 6.4 -1 1 -5 0 0 0 0 0 1 2 #_VAMDNCcomGNBS_SizeSel_p4-dec
-10 5 -10 -10 -1 0.05 -3 0 0 0 0 0 0 0 #_VAMDNCcomGNBS_SizeSel_p5-init

-5	5	-3	-3	-1	1	-5	0	0	0	0	0	1	2	#_VAMDNCcomGNBS_SizeSel_p6-final
13	100	38.5	38.5	-1	3	-2	0	0	0	0	0	1	2	#_VAMDNCcomSE_SizeSel_p1-peak
-9	3	-3.6	-3.6	-1	1	-3	0	0	0	0	0	1	2	#_VAMDNCcomSE_SizeSel_p2-top
0	9	5	5	-1	3	-2	0	0	0	0	0	1	2	#_VAMDNCcomSE_SizeSel_p3-asc
0	9	6.5	6.5	-1	1	-5	0	0	0	0	0	1	2	#_VAMDNCcomSE_SizeSel_p4-dec
-10	5	-10	-10	-1	0.05	-3	0	0	0	0	0	0	0	#_VAMDNCcomSE_SizeSel_p5-init
-5	5	-2.2	-2.2	-1	1	-5	0	0	0	0	0	1	2	#_VAMDNCcomSE_SizeSel_p6-final
13	100	38.3	38.3	-1	3	-2	0	0	0	0	0	1	2	#_NCVAMDrecAB1_SizeSel_p1-peak
-9	3	-3.6	-3.6	-1	1	-3	0	0	0	0	0	1	2	#_NCVAMDrecAB1_SizeSel_p2-top
0	9	5	5	-1	3	-2	0	0	0	0	0	1	2	#_NCVAMDrecAB1_SizeSel_p3-asc
0	9	6.5	6.5	-1	1	-5	0	0	0	0	0	1	2	#_NCVAMDrecAB1_SizeSel_p4-dec
-9	5	-9	-9	-1	0.05	-3	0	0	0	0	0	0	0	#_NCVAMDrecAB1_SizeSel_p5-init
-5	5	-2.9	-2.9	-1	1	-5	0	0	0	0	0	1	2	#_NCVAMDrecAB1_SizeSel_p6-final
13	100	28.7	28.7	-1	3	-2	0	0	0	0	0	1	2	#_recB2_SizeSel_p1-peak
-9	3	-8.5	-8.5	-1	1	-3	0	0	0	0	0	1	2	#_recB2_SizeSel_p2-top
0	9	5.7	5.7	-1	3	-2	0	0	0	0	0	1	2	#_recB2_SizeSel_p3-asc
0	9	6.5	6.5	-1	1	-5	0	0	0	0	0	1	2	#_recB2_SizeSel_p4-dec
-10	5	-10	-10	-1	0.05	-3	0	0	0	0	0	0	0	#_recB2_SizeSel_p5-init
-5	5	-4.6	-4.6	-1	1	-5	0	0	0	0	0	1	2	#_recB2_SizeSel_p6-final
60	120	92.1	90	-1	10	4	0	0	0	0	0	0	0	#_NC_LL_p1_inflec
5	45	12.9	12	-1	2	4	0	0	0	0	0	0	0	#_NC_LL_p2_width
13	100	46.1	32.5	-1	0.05	3	0	0	0	0	0	0	0	#_MRIP_SizeSel_p1
-9	3	-1	-0.8	-1	0.05	3	0	0	0	0	0	0	0	#_MRIP_SizeSel_p2

0 9 4.5 4.8 -1 0.05 3 0 0 0 0 0 0
0 #_MRIP_SizeSel_p3
0 9 4.6 5.1 -1 0.05 3 0 0 0 0 0 0
0 #_MRIP_SizeSel_p4
-10 5 -10 -10 -1 0.05 -3 0 0 0 0 0 0
0 #_MRIP_SizeSel_p5
-5 5 -2.3 -2.2 -1 0.05 3 0 0 0 0 0 0
0 #_MRIP_SizeSel_p6
0.1 0.2 0 0 -1 99 -1 0 0 0 0 0 0
0 #_NCJAI_ageSel_p1
0.1 0.2 0 0 -1 99 -1 0 0 0 0 0 0
0 #_NCJAI_ageSel_p2
0.1 0.2 0 0 -1 99 -1 0 0 0 0 0 0
0 #_NCIGNS1_AgeSel_p1
0.1 0.2 0 0 -1 99 -1 0 0 0 0 0 0
0 #_NCIGNS1_AgeSel_p2
1.1 1.2 1 1 -1 99 -1 0 0 0 0 0 0
0 #_NCIGNS2_AgeSel_p1
1.1 1.2 1 1 -1 99 -1 0 0 0 0 0 0
0 #_NCIGNS2_AgeSel_p2

1 #_custom_sel-blk_setup (0/1)
13 100 35.8 37.4 -1 3 2 #_VAMDNCcomGNBS_SizeSel_p1-1976
13 100 48.9 49.5 -1 3 2 #_VAMDNCcomGNBS_SizeSel_p1_1992
13 100 59.4 65 -1 3 2 #_VAMDNCcomGNBS_SizeSel_p1_1999
-9 3 -2.8 -4.8 -1 1 3 #_VAMDNCcomGNBS_SizeSel_p2-1976
-9 3 -2.3 -7.2 -1 1 3 #_VAMDNCcomGNBS_SizeSel_p2_1992
-9 3 -7.3 -8.4 -1 1 3 #_VAMDNCcomGNBS_SizeSel_p2_1999
0 9 4.1 3.7 -1 3 2 #_VAMDNCcomGNBS_SizeSel_p3-asc
0 9 4.6 4.5 -1 3 2 #_VAMDNCcomGNBS_SizeSel_p3_1992
0 9 5.8 5.7 -1 3 2 #_VAMDNCcomGNBS_SizeSel_p3_1998
0 9 6 4.6 -1 1 5 #_VAMDNCcomGNBS_SizeSel_p4-1976
0 9 5.3 4.9 -1 1 5 #_VAMDNCcomGNBS_SizeSel_p4_1992
0 9 4.1 3.4 -1 1 5 #_VAMDNCcomGNBS_SizeSel_p4_1999
-5 5 -5 -4.7 -1 1 5 #_VAMDNCcomGNBS_SizeSel_p6-1976
-5 5 -5 -2.9 -1 1 5 #_VAMDNCcomGNBS_SizeSel_p6_1992
-5 5 -5 -4.5 -1 1 5 #_VAMDNCcomGNBS_SizeSel_p6_1999
13 100 42.3 38.5 -1 3 2 #_VAMDNCcomSE_SizeSel_p1-1976
13 100 63.2 50 -1 3 2 #_VAMDNCcomSE_SizeSel_p1_1992
13 100 60.9 67.6 -1 3 2 #_VAMDNCcomSE_SizeSel_p1_1999
-9 3 -6 -4.8 -1 1 3 #_VAMDNCcomSE_SizeSel_p2-1976
-9 3 -5.6 -2.8 -1 1 3 #_VAMDNCcomSE_SizeSel_p2_1992
-9 3 -5.3 -8.6 -1 1 3 #_VAMDNCcomSE_SizeSel_p2_1999
0 9 5.2 5 -1 3 2 #_VAMDNCcomSE_SizeSel_p3-1976
0 9 5.6 5 -1 3 2 #_VAMDNCcomSE_SizeSel_p3_1992
0 9 4.8 5.1 -1 3 2 #_VVAMDNCcomSE_SizeSel_p3_1999

0	9	5.6	5.5	-1	1	5	#_VAMDNCcomSE_SizeSel_p4-1976
0	9	6	5.4	-1	1	5	#_VAMDNCcomSE_SizeSel_p4_1992
0	9	4.2	3.9	-1	1	5	#_VAMDNCcomSE_SizeSel_p4_1999
-5	5	-3.4	-1.3	-1	1	5	#_VAMDNCcomSE_SizeSel_p6-1976
-5	5	-3.8	-1.3	-1	1	5	#_VAMDNCcomSE_SizeSel_p6_1992
-5	5	-4.9	-2.9	-1	1	5	#_VAMDNCcomSE_SizeSel_p6_1999
13	100	45	40	-1	3	2	#_NCVAMDrecAB1_SizeSel_p1-1976
13	100	62.7	62.4	-1	3	2	#_NCVAMDrecAB1_SizeSel_p1_1992
13	100	54.4	52.4	-1	3	2	#_NCVAMDrecAB1_SizeSel_p1_1999
-9	3	-6.1	-3	-1	1	3	#_NCVAMDrecAB1_SizeSel_p2-1976
-9	3	-6.1	-8.6	-1	1	3	#_NCVAMDrecAB1_SizeSel_p2_1992
-9	3	-2.4	-1.8	-1	1	3	#_NCVAMDrecAB1_SizeSel_p2_1999
0	9	5.2	5.5	-1	3	2	#_NCVAMDrecAB1_SizeSel_p3-1976
0	9	5.6	6.3	-1	3	2	#_NCVAMDrecAB1_SizeSel_p3_1992
0	9	4.4	5	-1	3	2	#_NCVAMDrecAB1_SizeSel_p3_1999
0	9	5.6	6.3	-1	1	5	#_NCVAMDrecAB1_SizeSel_p4-1976
0	9	4.2	4.8	-1	1	5	#_NCVAMDrecAB1_SizeSel_p4_1992
0	9	4.6	4.2	-1	1	5	#_NCVAMDrecAB1_SizeSel_p4_1999
-5	5	-4.8	-2.2	-1	1	5	#_NCVAMDrecAB1_SizeSel_p6-1976
-5	5	-4.7	-2.2	-1	1	5	#_NCVAMDrecAB1_SizeSel_p6_1992
-5	5	-4.6	-2.9	-1	1	5	#_NCVAMDrecAB1_SizeSel_p6_1999
13	100	43.3	39	-1	3	2	#_recB2_SizeSel_p1-1976
13	100	37.7	34.9	-1	3	2	#_NCVAMDrecB2_SizeSel_p1_1992
13	100	45.4	39.9	-1	3	2	#_NCVAMDrecB2_SizeSel_p1_1999
-9	3	-5	-3	-1	1	3	#_recB2_SizeSel_p2-1976
-9	3	-2.6	-7	-1	1	3	#_NCVAMDrecB2_SizeSel_p2_1992
-9	3	-0.8	-0.6	-1	1	3	#_NCVAMDrecB2_SizeSel_p2_1999
0	9	5.5	5.5	-1	3	2	#_recB2_SizeSel_p3-1976
0	9	3.6	4.1	-1	3	2	#_NCVAMDrecB2_SizeSel_p3_1992
0	9	4.2	4.1	-1	3	2	#_NCVAMDrecB2_SizeSel_p3_1999
0	9	2	5.4	-1	1	5	#_recB2_SizeSel_p4-1976
0	9	0.5	5.8	-1	1	5	#_NCVAMDrecB2_SizeSel_p4_1992
0	9	4.4	4.9	-1	1	5	#_NCVAMDrecB2_SizeSel_p4_1999
-5	5	-4.4	-3	-1	1	5	#_recB2_SizeSel_p6-1976
-5	5	-2.6	-1.3	-1	1	5	#_NCVAMDrecB2_SizeSel_p6_1992
-5	5	-2	-1.3	-1	1	5	#_NCVAMDrecB2_SizeSel_p6_1999

2 #_Selparm_Adjust_Method: 1 = no bounds, 2= previous bounds
1 #_TG_custom:0=no_read;1=read_if_tags_exist
-10 10 -10 0 -1 0.001 -4 0 0 0 0 0 0 0 # TG_loss_init_1
-10 10 -10 0 -1 0.001 -4 0 0 0 0 0 0 0 # TG_loss_init_2
-10 10 -10 0 -1 0.001 -4 0 0 0 0 0 0 0 # TG_loss_init_3
-10 10 -10 0 -1 0.001 -4 0 0 0 0 0 0 0 # TG_loss_init_4
-10 10 -10 0 -1 0.001 -4 0 0 0 0 0 0 0 # TG_loss_init_5
-10 10 -10 0 -1 0.001 -4 0 0 0 0 0 0 0 # TG_loss_init_6
-10 10 -10 0 -1 0.001 -4 0 0 0 0 0 0 0 # TG_loss_init_7

-10 10 -10 0 -1 0.001 -4 0 0 0 0 0 0 0 # TG_loss_init_8
-10 10 -10 0 -1 0.001 -4 0 0 0 0 0 0 0 # TG_loss_init_9
-10 10 -10 0 -1 0.001 -4 0 0 0 0 0 0 0 # TG_loss_init_10
-10 10 -10 0 -1 0.001 -4 0 0 0 0 0 0 0 # TG_loss_init_11
-10 10 -10 0 -1 0.001 -4 0 0 0 0 0 0 0 # TG_loss_init_12
-10 10 -10 0 -1 0.001 -4 0 0 0 0 0 0 0 # TG_loss_init_13
-10 10 -10 0 -1 0.001 -4 0 0 0 0 0 0 0 # TG_loss_init_14
-10 10 -10 0 -1 0.001 -4 0 0 0 0 0 0 0 # TG_loss_init_15
-10 10 -10 0 -1 0.001 -4 0 0 0 0 0 0 0 # TG_loss_init_16
-10 10 -10 0 -1 0.001 -4 0 0 0 0 0 0 0 # TG_loss_init_17
-10 10 -10 0 -1 0.001 -4 0 0 0 0 0 0 0 # TG_loss_init_18
-10 10 -10 0 -1 0.001 -4 0 0 0 0 0 0 0 # TG_loss_init_19
-10 10 -10 0 -1 0.001 -4 0 0 0 0 0 0 0 # TG_loss_init_20
-10 10 -10 0 -1 0.001 -4 0 0 0 0 0 0 0 # TG_loss_init_21
-10 10 -10 0 -1 0.001 -4 0 0 0 0 0 0 0 # TG_loss_init_22
-10 10 -10 0 -1 0.001 -4 0 0 0 0 0 0 0 # TG_loss_init_23
-10 10 -10 0 -1 0.001 -4 0 0 0 0 0 0 0 # TG_loss_init_24
-10 10 -10 0 -1 0.001 -4 0 0 0 0 0 0 0 # TG_loss_init_25
-10 10 -10 0 -1 0.001 -4 0 0 0 0 0 0 0 # TG_loss_init_26
-10 10 -10 0 -1 0.001 -4 0 0 0 0 0 0 0 # TG_loss_init_27
-10 10 -10 0 -1 0.001 -4 0 0 0 0 0 0 0 # TG_loss_init_28
-10 10 -10 0 -1 0.001 -4 0 0 0 0 0 0 0 # TG_loss_init_29
-10 10 -10 0 -1 0.001 -4 0 0 0 0 0 0 0 # TG_loss_init_30
-10 10 -10 0 -1 0.001 -4 0 0 0 0 0 0 0 # TG_loss_init_31
-10 1 -2.31 -2.31 -1 0.001 -3 0 0 0 0 0 0 0 # TG_loss_chronic_cinch_1
-10 1 -2.31 -2.31 -1 0.001 -3 0 0 0 0 0 0 0 # TG_loss_chronic_intanc_2
-10 1 -2.31 -2.31 -1 0.001 -3 0 0 0 0 0 0 0 # TG_loss_chronic_intanc_3
-10 1 -1.05 -1.05 -1 0.001 -3 0 0 0 0 0 0 0 # TG_loss_chronic_ssdt_4
-10 1 -1.05 -1.05 -1 0.001 -3 0 0 0 0 0 0 0 # TG_loss_chronic_ssdt_5
-10 1 -2.31 -2.31 -1 0.001 -3 0 0 0 0 0 0 0 # TG_loss_chronic_intanc_6
-10 1 -1.05 -1.05 -1 0.001 -3 0 0 0 0 0 0 0 # TG_loss_chronic_nydt_7
-10 1 -1.05 -1.05 -1 0.001 -3 0 0 0 0 0 0 0 # TG_loss_chronic_ssdt_8
-10 1 -2.31 -2.31 -1 0.001 -3 0 0 0 0 0 0 0 # TG_loss_chronic_intanc_9
-10 1 -1.05 -1.05 -1 0.001 -3 0 0 0 0 0 0 0 # TG_loss_chronic_ssdt_10
-10 1 -2.31 -2.31 -1 0.001 -3 0 0 0 0 0 0 0 # TG_loss_chronic_intanc_11
-10 1 -1.05 -1.05 -1 0.001 -3 0 0 0 0 0 0 0 # TG_loss_chronic_nydt_12
-10 1 -1.05 -1.05 -1 0.001 -3 0 0 0 0 0 0 0 # TG_loss_chronic_ssdt_13
-10 1 -2.31 -2.31 -1 0.001 -3 0 0 0 0 0 0 0 # TG_loss_chronic_intanc_14
-10 1 -1.05 -1.05 -1 0.001 -3 0 0 0 0 0 0 0 # TG_loss_chronic_nydt_15
-10 1 -1.05 -1.05 -1 0.001 -3 0 0 0 0 0 0 0 # TG_loss_chronic_ssdt_16
-10 1 -2.31 -2.31 -1 0.001 -3 0 0 0 0 0 0 0 # TG_loss_chronic_intanc_17
-10 1 -1.05 -1.05 -1 0.001 -3 0 0 0 0 0 0 0 # TG_loss_chronic_ssdt_18
-10 1 -1.05 -1.05 -1 0.001 -3 0 0 0 0 0 0 0 # TG_loss_chronic_ssdt_19
-10 1 -2.31 -2.31 -1 0.001 -3 0 0 0 0 0 0 0 # TG_loss_chronic_intanc_20
-10 1 -1.05 -1.05 -1 0.001 -3 0 0 0 0 0 0 0 # TG_loss_chronic_ssdt_21
-10 1 -2.31 -2.31 -1 0.001 -3 0 0 0 0 0 0 0 # TG_loss_chronic_intanc_22

```
-10 1 -2.31 -2.31 -1 0.001 -3 0 0 0 0 0 0 0 # TG_loss_chronic_intanc_23
-10 1 -1.05 -1.05  -1 0.001 -3 0 0 0 0 0 0 0 # TG_loss_chronic_ssdt_24
-10 1 -2.31 -2.31 -1 0.001 -3 0 0 0 0 0 0 0 # TG_loss_chronic_intanc_25
-10 1 -2.31 -2.31 -1 0.001 -3 0 0 0 0 0 0 0 # TG_loss_chronic_intanc_26
-10 1 -1.05 -1.05  -1 0.001 -3 0 0 0 0 0 0 0 # TG_loss_chronic_ssdt_27
-10 1 -2.31 -2.31 -1 0.001 -3 0 0 0 0 0 0 0 # TG_loss_chronic_intanc_28
-10 1 -2.31 -2.31 -1 0.001 -3 0 0 0 0 0 0 0 # TG_loss_chronic_intanc_29
-10 1 -1.05 -1.05  -1 0.001 -3 0 0 0 0 0 0 0 # TG_loss_chronic_ssdt_30
-10 1 -2.31 -2.31 -1 0.001 -3 0 0 0 0 0 0 0 # TG_loss_chronic_intanc_31
1 10 2 2 -1 0.001 -3 0 0 0 0 0 0 0 # TG_overdispersion_1
 1 10 2 2 -1 0.001 -3 0 0 0 0 0 0 0 # TG_overdispersion_2
 1 10 2 2 -1 0.001 -3 0 0 0 0 0 0 0 # TG_overdispersion_3
 1 10 2 2 -1 0.001 -3 0 0 0 0 0 0 0 # TG_overdispersion_4
 1 10 2 2 -1 0.001 -3 0 0 0 0 0 0 0 # TG_overdispersion_5
 1 10 2 2 -1 0.001 -3 0 0 0 0 0 0 0 # TG_overdispersion_6
 1 10 2 2 -1 0.001 -3 0 0 0 0 0 0 0 # TG_overdispersion_7
 1 10 2 2 -1 0.001 -3 0 0 0 0 0 0 0 # TG_overdispersion_8
 1 10 2 2 -1 0.001 -3 0 0 0 0 0 0 0 # TG_overdispersion_9
 1 10 2 2 -1 0.001 -3 0 0 0 0 0 0 0 # TG_overdispersion_10
 1 10 2 2 -1 0.001 -3 0 0 0 0 0 0 0 # TG_overdispersion_11
 1 10 2 2 -1 0.001 -3 0 0 0 0 0 0 0 # TG_overdispersion_12
 1 10 2 2 -1 0.001 -3 0 0 0 0 0 0 0 # TG_overdispersion_13
 1 10 2 2 -1 0.001 -3 0 0 0 0 0 0 0 # TG_overdispersion_14
 1 10 2 2 -1 0.001 -3 0 0 0 0 0 0 0 # TG_overdispersion_15
 1 10 2 2 -1 0.001 -3 0 0 0 0 0 0 0 # TG_overdispersion_16
 1 10 2 2 -1 0.001 -3 0 0 0 0 0 0 0 # TG_overdispersion_17
 1 10 2 2 -1 0.001 -3 0 0 0 0 0 0 0 # TG_overdispersion_18
 1 10 2 2 -1 0.001 -3 0 0 0 0 0 0 0 # TG_overdispersion_19
 1 10 2 2 -1 0.001 -3 0 0 0 0 0 0 0 # TG_overdispersion_20
 1 10 2 2 -1 0.001 -3 0 0 0 0 0 0 0 # TG_overdispersion_21
 1 10 2 2 -1 0.001 -3 0 0 0 0 0 0 0 # TG_overdispersion_22
 1 10 2 2 -1 0.001 -3 0 0 0 0 0 0 0 # TG_overdispersion_23
 1 10 2 2 -1 0.001 -3 0 0 0 0 0 0 0 # TG_overdispersion_24
 1 10 2 2 -1 0.001 -3 0 0 0 0 0 0 0 # TG_overdispersion_25
 1 10 2 2 -1 0.001 -3 0 0 0 0 0 0 0 # TG_overdispersion_26
 1 10 2 2 -1 0.001 -3 0 0 0 0 0 0 0 # TG_overdispersion_27
 1 10 2 2 -1 0.001 -3 0 0 0 0 0 0 0 # TG_overdispersion_28
 1 10 2 2 -1 0.001 -3 0 0 0 0 0 0 0 # TG_overdispersion_29
 1 10 2 2 -1 0.001 -3 0 0 0 0 0 0 0 # TG_overdispersion_30
 1 10 2 2 -1 0.001 -3 0 0 0 0 0 0 0 # TG_overdispersion_31
-10 10 -1.27 -1.5 -1 0.001 2 0 0 0 0 0 0 0 # TG_report_fleet_1
-10 10 -0.40 -1.5 -1 0.001 2 0 0 0 0 0 0 0 # TG_report_fleet_2
-10 10 -2.33 -0.04 -1 0.001 2 0 0 0 0 0 0 0 # TG_report_fleet_3
-10 10 10 -0.04 -1 0.001 -2 0 0 0 0 0 0 0 # TG_report_fleet_4
 -2  0 0 -0.1 -1  0.001 -3 0 0 0 0 0 0 0 # TG_rpt_decay_1
 -2  0 0 -0.1 -1  0.001 -3 0 0 0 0 0 0 0 # TG_rpt_decay_2
```

-2 0 0 -0.1 -1 0.001 -3 0 0 0 0 0 0 0 # TG_rpt_decay_3
-2 0 0 -0.1 -1 0.001 -3 0 0 0 0 0 0 0 # TG_rpt_decay_4
1 #_Variance_adjustments_to_input_values
0 0 0 0 0 0 0 0 0 #_add_to_survey_CV[actually sd(log(survey)]--0 for no effect
0 0 0 0 0 0 0 0 0 #_add_to_discard_stddev--0 for no effect
0 0 0 0 0 0 0 0 0 #_add_to_bodywt_CV--0 for no effect
1 1 1 1 1 1 1 1 1 #_mult_by_lencomp_N--1 for no effect
1 1 1 1 1 1 1 1 1 #_mult_by_agecomp_N--1 for no effect
1 1 1 1 1 1 1 1 1 #_mult_by_size-at-age_N--1 for no effect
#_Lambda(emphasis_factors)
7 #_maxlambdaphase
1 #_sd_offset,0=loglike omits log(s) term, 1= include log(s)in CPUE,discard,meanbodywt,recruitment deviations
0 #_number_of_changes_to_make_to_default_Lambdas(lambda default_value_is_1.0,this_equals_no_lines_below)
#----lambda change details----

#_Like_comp_codes:1=surv;2=disc;3=mnwt;4=length;5=age;6=SizeFreq;7=sizeage;8=catch;
#_9=init_equ_catch;10=recrdev;11=parm_prior;12=parm_dev;13=CrashPen;14=Morphcomp;15=Tag-comp;16=Tag-negbin
#_like_comp_fleet/survey__phase__value(lambda)__sizefreq_method
4 2 4 0.001 1 #_survey1
1 3 3 1 1 #_env
10 2 1 1 1 ##_recdevs
(0/1) read specs for more stddev reporting (if 0 then read no line)
0
#_fleet,len/age,year,N_selex_bins,Growth_pattern,N_growth_ages,NatAge_area(-1_for_all),NatAge_yr,N_Natages # 1 1 -1 5 1 5 1 -1 5
#-1 15 25 35 75 #_vector_with_selex_std_bin_picks_(-1_in_first_bin_to_self-generate)--lengths
#-1 2 14 26 40 #_vector_with_growth_std_bin_picks_(-1_in_first_bin_to_self-generate)--ages
#-1 2 14 26 40 #_vector_with_NatAge_std_bin_picks_(-1_in_first_bin_to_self-generate)--ages
999
Appendix x. Stock Synthesis forecast file for the northern stock base model.
#C -- Executed: 2015-06-22 22:38:25
1 # Benchmarks: 0=skip; 1=calc F_spr,F_btgt,F_msy
2 # MSY: 1= set to F(SPR); 2=calc F(MSY); 3=set to F(Btgt); 4=set to F(endyr) --must match depletion basis
0.4 # SPR target (e.g. 0.40)
0.4 # Biomass target (e.g. 0.40)
0 0 0 0 0 0
1 # Bmark_relF_Basis: 1 = use year range; 2 = set relF same as forecast below
0 # Forecast: 0=none; 1=F(SPR); 2=F(MSY) 3=F(Btgt); 4=Ave F (uses first-last relF yrs); 5=input annual F scalar
0 # N forecast years
0.2 # F scalar (only used for Do_Forecast==5)
0 0 0 0

1 # Control rule method (1=catch=f(SSB) west coast; 2=F=f(SSB))
0.4 # Control rule Biomass level for constant F (as frac of Bzero, e.g. 0.40); (Must be > the no F level below)
0.1 # Control rule Biomass level for no F (as frac of Bzero, e.g. 0.10)
0.75 # Control rule target as fraction of Flimit (e.g. 0.75)
3 # _N forecast loops (1=OFL only; 2=ABC; 3=get F from forecast ABC catch with allocations applied)
3 # _First forecast loop with stochastic recruitment
0 # _Forecast loop control #3 (reserved for future bells&whistles)
0 # _Forecast loop control #4 (reserved for future bells&whistles)
0 # _Forecast loop control #5 (reserved for future bells&whistles)
2021 # FirstYear for caps and allocations (should be after years with fixed inputs)
0 # stddev of log(realized catch/target catch) in forecast (set value>0.0 to cause active impl_error)
0 # Do West Coast gfish rebuilder output (0/1)
2021 # Rebuilder: first year catch could have been set to zero (Ydecl)(-1 to set to 1999)
-1 # Rebuilder: year for current age structure (Yinit) (-1 to set to endyear+1)
1 # fleet relative F: 1=use first-last alloc year; 2=read seas(row) x fleet(col) below
2 # basis for fcast catch tuning and for fcast catch caps and allocation (2=deadbio; 3=retainbio; 5=deadnum; 6=retainnum)
-1 -1
-1 -1
max totalcatch by fleet (-1 to have no max) must enter value for each fleet -1
max totalcatch by area (-1 to have no max); must enter value for each fleet 0
0 0
0 # fleet assignment to allocation group (enter group ID# for each fleet, 0 for not included in an alloc group)
0 # Number of forecast catch levels to input (else calc catch from forecast F)
2 # basis for input Fcast catch: 2=dead catch; 3=retained catch; 99=input Hrate(F) (units are from fleetunits; note new codes in SSV3.20)
999 # verify end of input
Appendix x. Stock Synthesis starter file for the southern stock base model.
#C -- Executed: 2015-06-19 16:34:48
rd_south.dat
rd_south.ctl
0 #_Intial_Values_Values__0=use_init_values_in_control_file;1=use_ss3.par
0 #_Run_Display_Detail__(0=ADMB_only,1=one_line_per_iteration,2=fuller_display)
1 #_Detailed_Age-structured_Reports_in_REPORT.SSO__(0=omit_CAA_for_each_fleet&cohort,1=include_all)
0 #_Write_detailed_checkup.sso_file_(0,1),used_be_developer
3 #_Parameter_Trace_writes_parm_values_to_ParmTrace.sso__(0=no,1=good,active;2=good,all;3=every_iter,all_parms;4=every,active)
2 #_Cumulative_Report_writes_to cumreport.sso_(0=no,1=like&timeseries;2=add survey fits)

1 #_Full_Priors__include_prior_like_for_non-estimated_parameters_(0_only_include_priors_for_active_parameters,1_all_priors_included_in_logL)
0
#_Soft_Boundaries_to_aid_convergence_(0_no,1_yes)_(recommended_uses_weak_symmetric_beta_penalty_near_bound)
1
#_Number_of_datafiles_to_produce:_1st_is_input,2nd_is_estimates,3rd_and_higher_are_bootstrap
10 #_Turn_off_estimation_for_parameters_entering_after_this_phase__-1=input_read_only_0=exit_after_one_call_to_calcs_N>0=last_phase
10 #_MCeval_burn_interval
2 #_MCeval_thin_interval
0 #_Jitter_Initial_parm_value_by_this_fraction
-1 #_min_yr_for_sdreport_outputs_(-1_for_styr)
-1 #_max_yr_for_sdreport_outputs_(-1_for_endyr;-2_for_endyr+Nforecastyrs
0 #_additional_N_individual_STD_years
#_vector_of_year_values_for_STD
#_**no_std_report_years**
0.0001 #_final_convergence_criteria_(e.g._1.0e-04)
0 #_retrospective_year_relative_to_end_year_(e.g. -4)
1 #_min_age_for_calc_of_summary_biomass used for reporting exploitation
1 #_Depletion_basis_for_degree_of_depletion_in_SSB:__denom_is:0=skip;1=rel X*B0;2=rel_X*Bmsy;3=rel_X*B_styr
0.4
#_Fraction_(X)_for_Depletion_denominator(e.g.if_basis_is_2_X*Bmsy_then_0.4Bmsy_is_denom)
4 #_SPR_report_basis: 0=skip; 1=(1-SPR)/(1-SPR_tgt);2=(1-SPR)/(1-SPR_MSY);3=(1-SPR)/(1-SPR_Btarget);4=rawSPR
4
#_F_report_units:0=skip;1=exploitation(Bio);2=exploitation(Num);3=sum(Frates);4=true_F_for_range_of_ages
0 #_min_age_with_reported_F
10 #_max_age_with_reported_F
0 #_F_report_basis:0=raw;1=F/Fspr;2=F/Fmsy;3=F/Fbtgt
999 #_check_value_for_end_of_file
Appendix x. Stock Synthesis data file for the southern stock base model.
SS-V3.24S-safe;_07/24/2013;_Stock_Synthesis_by_Richard_Methot_(NOAA)_using_ADMB_10.1
#C -- Executed: 2015-07-31 16:04:26 RD_south
##
1950 #start_yr
2013 #end_yr
1 #__nseas
12 #_mo/seas
1 #__spawn_seas

```
6    #__nfleets --
11   #__nsurveys
1    #__nareas
##########################################################################
FLcom%FL_AB1%FL_B2%GA_AB1%SC_AB1%GASC_B2%SCstopn%SCtn1%SCtn2%SCll_1%SCll.3%GAgn%GAll%FLhs2%FLhs3%FL_IRJXsn%MRIP #Fleet_and_survey_names
-1	-1	-1	-1	-1	-1	0.75	0.75	0.5	0.83	0.83	0.5	0.83
	0.5	0.5	0	0.5	#_fishery&surveys_timing_in_season -- neg. for fleet uses actual CAA
1	1	1	1	1	1	1	1	1	1	1	1	1
	1	1	1	1	#_fishery&surveys_area_assignments
1	2	2	2	2	2
#___units_of_catch_for_FLEETS_ONLY:_1=bio;2=num
0.100	0.100	0.100	0.100	0.100	0.100
#_se_of_log(catch)_for_each_fleet:_only_used_for_init_eq_catch_and_for_Fmethod_2_and_3, -1 for discard fleet
1    #_Ngenders(1/2)_(females_are_gender_1)
40   #_Nages--large_enough_to_accumulate_note_SS3_alwas_starts_at_age_0
##########################################################################
#_FLcom__FL_AB1_FL_B2___GA_AB1__SC_AB1__GASC_B2_____
80.433 138.115	1.256	48.651 69.374 0.436	#_init_equil_catch_for_each_fishery
64   #_N_lines_of_catch_to_read
#catch_biomass(mt):_columns_are_fisheries_catch_(in order),year,season
# FLcom__FL_AB1__FL_B2__GA_AB1__SC_AB1__GASC_B2__Year__seasn
110.089	120.050	1.091	42.126 60.597 0.380	1950	1
124.967	123.792	1.125	43.439 62.485 0.392	1951	1
98.250 127.534	1.159	44.751 64.374 0.403	1952	1
88.906 131.275	1.193	46.064 66.263 0.415	1953	1
77.021 135.017	1.227	47.377 68.151 0.427	1954	1
76.840 138.759	1.262	48.690 70.040 0.439	1955	1
74.799 142.500	1.296	50.003 71.928 0.451	1956	1
49.261 146.242	1.330	51.316 73.817 0.463	1957	1
46.494 149.984	1.364	52.629 75.706 0.474	1958	1
59.512 165.098	1.501	59.955 79.641 0.512	1959	1
60.601 169.117	1.537	60.873 81.579 0.523	1960	1
52.799 187.241	1.702	62.493 86.673 0.549	1961	1
67.722 176.621	1.606	64.515 94.234 0.588	1962	1
60.873 180.459	1.641	71.356 104.732	0.652	1963	1
59.195 189.153	1.720	75.056 108.017	0.677	1964	1
66.362 199.745	1.816	84.070 116.964	0.740	1965	1
70.716 204.894	1.863	94.415 107.257	0.727	1966	1
69.764 222.814	2.026	86.291 140.425	0.848	1967	1
78.246 223.978	2.036	82.262 142.600	0.847	1968	1
55.521 235.355	2.140	81.935 160.761	0.925	1969	1
67.768 254.076	2.310	85.156 119.528	0.755	1970	1
39.781 318.566	2.896	91.047 127.584	0.806	1971	1
```

60.329	330.130	3.001	93.570	137.907	0.858	1972	1
77.475	348.939	3.172	96.781	145.732	0.901	1973	1
64.729	376.718	3.425	103.542	159.440	0.979	1974	1
47.946	393.097	3.574	106.975	166.548	1.019	1975	1
52.572	371.120	3.374	103.414	174.504	1.044	1976	1
49.578	333.847	3.035	96.097	164.452	0.980	1977	1
49.601	301.525	2.741	91.885	158.118	0.941	1978	1
43.267	323.383	2.940	95.029	157.788	0.948	1979	1
89.278	265.873	2.417	92.872	157.089	0.939	1980	1
53.161	239.149	1.627	60.315	150.413	0.692	1981	1
28.635	212.426	0.837	27.757	143.738	0.446	1982	1
21.638	342.716	4.567	52.148	95.429	0.863	1983	1
26.930	548.085	3.938	238.013	122.808	1.511	1984	1
18.297	245.078	16.169	172.639	384.598	1.828	1985	1
19.852	117.682	8.350	93.162	182.790	6.213	1986	1
8.839	54.595	31.602	123.801	477.051	24.434	1987	1
0.059	7.211	19.495	127.641	270.587	35.406	1988	1
0.000	32.985	14.390	46.346	119.686	8.866	1989	1
0.000	45.209	5.734	69.122	113.270	20.070	1990	1
0.000	99.336	53.632	146.835	112.968	15.248	1991	1
0.000	98.176	23.749	76.290	103.249	13.446	1992	1
0.000	66.971	38.920	96.151	113.460	22.567	1993	1
0.000	119.696	57.673	121.655	119.561	37.451	1994	1
0.000	95.198	57.034	124.357	183.302	56.201	1995	1
0.000	144.798	41.799	55.991	124.906	21.259	1996	1
0.000	69.369	46.802	35.337	125.771	17.088	1997	1
0.000	105.163	40.509	23.449	45.791	9.413	1998	1
0.000	128.499	48.206	61.662	43.140	8.861	1999	1
0.000	193.962	59.190	85.222	35.425	17.686	2000	1
0.000	182.701	71.562	81.656	59.147	36.831	2001	1
0.000	124.550	55.862	83.356	39.694	25.080	2002	1
0.000	156.213	61.823	110.621	154.111	55.785	2003	1
0.000	136.728	80.545	138.893	107.803	46.412	2004	1
0.000	195.550	112.477	105.655	130.655	66.249	2005	1
0.000	145.860	67.782	68.813	48.703	54.099	2006	1
0.000	161.427	60.695	113.237	72.261	53.022	2007	1
0.000	159.246	71.164	133.107	119.471	69.277	2008	1
0.000	79.635	41.733	68.857	70.326	73.506	2009	1
0.000	175.828	113.129	194.826	172.708	101.608	2010	1
0.000	180.001	84.091	106.962	161.503	70.246	2011	1
0.000	238.191	63.954	45.766	121.068	50.708	2012	1
0.000	297.527	123.323	73.827	97.386	69.768	2013	1

##
323 #_N_cpue_and_surveyabundance_observations
#___Units:____0=numbers;_1=biomass;____2=F
#___Errtype:_-1=normal;__0=lognormal;_>0=T

```
#flt__units__errtyp_____flt/survey
1	1	0	#_FLcom
2	0	0	#_FL_AB1
3	0	0	#_FL_B2
4	0	0	#_GA_AB1
5	0	0	#_SC_AB1
6	0	0	#_GASC_B2
7	0	0	#_SC Stop Net - Age 1
8	0	0	#_SC Trammel Net - Age 1
9	0	0	#_SC Trammel Net - Age 2
10	0	0	#_SC Longline Survey 1  mile
11	0	0	#_SC Longline Survey 1/3 mile
12	0	0	#_GA Age 1 Gill Net Survey (All Sampling Sites)
13	0	0	#_GA Longline
14	0	0	#_Age 2 FL Haul Seine Survey
15	0	0	#_Age 3 FL Haul Seine Survey
16	0	0	#_FL Coastwide Bagged Seine Survey
17	0	0	#_MRFSS/MRIP Aggregate
#_Observed_Landed-CPUE_and_Abundance_Indices__
#_yr__seasn__fleet______value__SE(log vals)___
-1981	1	2	0.8987 0.0353
-1982	1	2	0.6853 0.0283
-1983	1	2	0.9050 0.0237
-1984	1	2	3.7286 0.0335
-1985	1	2	2.7953 0.0150
-1986	1	2	0.7458 0.0108
-1987	1	2	0.8458 0.0093
-1988	1	2	1.1298 0.0122
-1989	1	2	0.5695 0.0099
-1990	1	2	1.1477 0.0297
-1991	1	2	0.8962 0.0120
-1992	1	2	1.0636 0.0175
-1993	1	2	1.1232 0.0246
-1994	1	2	1.5820 0.0277
-1995	1	2	1.3085 0.0232
-1996	1	2	1.1342 0.0271
-1997	1	2	0.7617 0.0334
-1998	1	2	0.4940 0.0178
-1999	1	2	0.5399 0.0098
-2000	1	2	0.5765 0.0155
-2001	1	2	0.7740 0.0164
-2002	1	2	0.7662 0.0181
-2003	1	2	0.8065 0.0146
-2004	1	2	0.8267 0.0133
-2005	1	2	0.9626 0.0159
-2006	1	2	0.4481 0.0110
```

-2007	1	2	0.8424	0.0121
-2008	1	2	0.7045	0.0143
-2009	1	2	0.5963	0.0116
-2010	1	2	1.4018	0.0140
-2011	1	2	0.6499	0.0149
-2012	1	2	0.2677	0.0093
-2013	1	2	1.0216	0.0268
-1981	1	3	0.0386	0.0177
-1982	1	3	0.0909	0.0062
-1983	1	3	0.1894	0.0099
-1984	1	3	0.0818	0.0101
-1985	1	3	0.3434	0.0163
-1986	1	3	0.3541	0.0204
-1987	1	3	1.2035	0.0252
-1988	1	3	0.9445	0.0167
-1989	1	3	0.8909	0.0213
-1990	1	3	0.3664	0.0261
-1991	1	3	1.4267	0.0113
-1992	1	3	0.8581	0.0146
-1993	1	3	1.2851	0.0109
-1994	1	3	1.2230	0.0095
-1995	1	3	1.2476	0.0108
-1996	1	3	1.0583	0.0136
-1997	1	3	1.0458	0.0117
-1998	1	3	1.0713	0.0119
-1999	1	3	1.0133	0.0074
-2000	1	3	1.0143	0.0084
-2001	1	3	1.3233	0.0080
-2002	1	3	1.1268	0.0082
-2003	1	3	1.1923	0.0089
-2004	1	3	1.7784	0.0088
-2005	1	3	1.4222	0.0090
-2006	1	3	1.1649	0.0074
-2007	1	3	1.0132	0.0069
-2008	1	3	1.0739	0.0093
-2009	1	3	1.1673	0.0112
-2010	1	3	1.8447	0.0099
-2011	1	3	1.3250	0.0102
-2012	1	3	1.2341	0.0063
-2013	1	3	1.5868	0.0121
-1981	1	4	0.8047	0.0266
-1982	1	4	0.5180	0.0179
-1983	1	4	0.7781	0.0170
-1984	1	4	3.1038	0.0232
-1985	1	4	2.7532	0.0124
-1986	1	4	0.7893	0.0096

-1987	1	4	0.8298	0.0076
-1988	1	4	1.1411	0.0104
-1989	1	4	0.6040	0.0088
-1990	1	4	1.0675	0.0231
-1991	1	4	0.9340	0.0105
-1992	1	4	1.0178	0.0140
-1993	1	4	1.1884	0.0218
-1994	1	4	1.5304	0.0224
-1995	1	4	1.3274	0.0197
-1996	1	4	1.2209	0.0245
-1997	1	4	0.8856	0.0327
-1998	1	4	0.4530	0.0137
-1999	1	4	0.6222	0.0095
-2000	1	4	0.6164	0.0139
-2001	1	4	0.8166	0.0145
-2002	1	4	0.8215	0.0163
-2003	1	4	0.8732	0.0133
-2004	1	4	0.9254	0.0126
-2005	1	4	0.9868	0.0137
-2006	1	4	0.4819	0.0099
-2007	1	4	0.9094	0.0110
-2008	1	4	0.7636	0.0130
-2009	1	4	0.6219	0.0102
-2010	1	4	1.5075	0.0127
-2011	1	4	0.6913	0.0133
-2012	1	4	0.2889	0.0085
-2013	1	4	1.1268	0.0248
-1981	1	5	1.7684	0.0537
-1982	1	5	1.8415	0.0439
-1983	1	5	1.8063	0.0424
-1984	1	5	1.5934	0.0411
-1985	1	5	1.5695	0.0313
-1986	1	5	1.1940	0.0263
-1987	1	5	3.7161	0.0284
-1988	1	5	2.1047	0.0194
-1989	1	5	1.6333	0.0240
-1990	1	5	1.7052	0.0211
-1991	1	5	1.0884	0.0357
-1992	1	5	1.1069	0.0344
-1993	1	5	1.0683	0.0262
-1994	1	5	0.9035	0.0214
-1995	1	5	1.0785	0.0199
-1996	1	5	1.0909	0.0218
-1997	1	5	1.0711	0.0178
-1998	1	5	0.6239	0.0174
-1999	1	5	0.5301	0.0153

-2000	1	5	0.2674	0.0140
-2001	1	5	0.4973	0.0155
-2002	1	5	0.2953	0.0164
-2003	1	5	0.5269	0.0248
-2004	1	5	0.5707	0.0216
-2005	1	5	0.3800	0.0134
-2006	1	5	0.1630	0.0095
-2007	1	5	0.2321	0.0101
-2008	1	5	0.3027	0.0118
-2009	1	5	0.3483	0.0114
-2010	1	5	0.5705	0.0136
-2011	1	5	0.4365	0.0120
-2012	1	5	0.3786	0.0123
-2013	1	5	0.5369	0.0177
-1981	1	6	0.0107	0.3232
-1982	1	6	0.0340	0.0089
-1983	1	6	0.0805	0.0214
-1984	1	6	0.0271	0.0068
-1985	1	6	0.1096	0.0061
-1986	1	6	0.4244	0.0080
-1987	1	6	1.1232	0.0089
-1988	1	6	1.1557	0.0154
-1989	1	6	0.4654	0.0121
-1990	1	6	0.7375	0.0276
-1991	1	6	0.6832	0.0135
-1992	1	6	0.6041	0.0121
-1993	1	6	1.0064	0.0248
-1994	1	6	1.2954	0.0241
-1995	1	6	2.0518	0.0271
-1996	1	6	1.1608	0.0409
-1997	1	6	0.8728	0.0535
-1998	1	6	0.5606	0.0283
-1999	1	6	0.4235	0.0136
-2000	1	6	0.8043	0.0151
-2001	1	6	1.4916	0.0193
-2002	1	6	1.1035	0.0209
-2003	1	6	1.2052	0.0178
-2004	1	6	1.2154	0.0240
-2005	1	6	1.3492	0.0219
-2006	1	6	0.9750	0.0260
-2007	1	6	1.1560	0.0227
-2008	1	6	1.5852	0.0175
-2009	1	6	1.8078	0.0273
-2010	1	6	2.2063	0.0250
-2011	1	6	1.8771	0.0328
-2012	1	6	1.1151	0.0281

-2013	1	6	2.2816	0.0338
1986	1	7	0.7287	0.2883
1987	1	7	1.7767	0.1774
1988	1	7	1.0649	0.1604
1989	1	7	0.8954	0.3103
1990	1	7	0.9519	0.4891
1991	1	7	1.3001	0.2280
1992	1	7	0.9265	0.1548
1993	1	7	0.6158	0.1424
1994	1	7	0.7400	0.2191
1994	1	8	0.9721	0.2108
1995	1	8	1.4074	0.1597
1996	1	8	0.6253	0.1746
1997	1	8	1.1234	0.2498
1998	1	8	0.5848	0.1838
1999	1	8	0.6300	0.1612
2000	1	8	0.2685	0.1385
2001	1	8	1.7360	0.1348
2002	1	8	1.4154	0.1167
2003	1	8	1.9650	0.1296
2004	1	8	0.8091	0.1897
2005	1	8	0.6659	0.1269
2006	1	8	0.4720	0.1464
2007	1	8	1.0670	0.1351
2008	1	8	1.2174	0.1387
2009	1	8	1.3660	0.1386
2010	1	8	1.7991	0.1110
2011	1	8	0.6478	0.1646
2012	1	8	0.5384	0.1405
2013	1	8	0.6894	0.1376
1994	1	9	1.3687	0.2384
1995	1	9	0.9314	0.1585
1996	1	9	1.5553	0.1667
1997	1	9	0.6357	0.1553
1998	1	9	0.8361	0.1539
1999	1	9	0.5953	0.1817
2000	1	9	0.6539	0.1370
2001	1	9	0.3613	0.1210
2002	1	9	2.2741	0.2000
2003	1	9	1.7696	0.1197
2004	1	9	1.8201	0.1111
2005	1	9	0.9432	0.1155
2006	1	9	1.0413	0.1177
2007	1	9	0.5054	0.1764
2008	1	9	1.0443	0.1423
2009	1	9	1.0694	0.1618

2010	1	9	1.0280	0.1328
2011	1	9	0.7134	0.1989
2012	1	9	0.4929	0.2252
2013	1	9	0.3608	0.1307
1994	1	10	1.4675	0.2238
1995	1	10	1.5837	0.1267
1996	1	10	1.2194	0.2100
1997	1	10	0.5282	0.1793
1998	1	10	0.8117	0.2011
1999	1	10	0.9279	0.1436
2000	1	10	0.5730	0.1981
2001	1	10	0.8220	0.2145
2002	1	10	0.6576	0.4489
2003	1	10	1.3460	0.1776
2004	1	10	1.0631	0.2622
2007	1	11	0.6621	0.2253
2008	1	11	0.7057	0.1659
2009	1	11	1.4403	0.1707
2010	1	11	0.8394	0.1200
2011	1	11	0.8063	0.1066
2012	1	11	1.3249	0.0950
2013	1	11	1.2213	0.0927
2003	1	12	1.3596	0.3038
2004	1	12	0.9867	0.2164
2005	1	12	1.1696	0.1443
2006	1	12	0.5006	0.1562
2007	1	12	0.8715	0.1909
2008	1	12	1.5038	0.1969
2009	1	12	0.9708	0.2407
2010	1	12	2.0140	0.1631
2011	1	12	0.5831	0.1744
2012	1	12	0.4500	0.2198
2013	1	12	0.5903	0.1963
2007	1	13	0.4709	0.3246
2008	1	13	0.7347	0.2635
2009	1	13	1.3659	0.2127
2010	1	13	0.6813	0.2462
2011	1	13	1.8101	0.2612
2012	1	13	0.4241	0.2406
2013	1	13	1.5129	0.2224
1997	1	14	0.7933	0.2414
1998	1	14	1.1058	0.2127
1999	1	14	0.6595	0.2289
2000	1	14	1.0035	0.1953
2001	1	14	0.6310	0.2323
2002	1	14	0.9772	0.1737

2003	1	14	0.7822	0.1857
2004	1	14	1.2067	0.1592
2005	1	14	1.4048	0.1411
2006	1	14	1.0805	0.1654
2007	1	14	1.3382	0.1396
2008	1	14	1.2855	0.1582
2009	1	14	0.9491	0.1703
2010	1	14	0.9930	0.1694
2011	1	14	0.9016	0.1648
2012	1	14	1.1059	0.1612
2013	1	14	0.7821	0.1839
1997	1	15	0.9595	0.2653
1998	1	15	1.5607	0.2411
1999	1	15	0.8468	0.2781
2000	1	15	0.9345	0.2781
2001	1	15	1.2028	0.2322
2002	1	15	1.1822	0.2036
2003	1	15	1.2746	0.2074
2004	1	15	1.4459	0.1878
2005	1	15	0.8039	0.2449
2006	1	15	1.2315	0.2099
2007	1	15	0.8624	0.2472
2008	1	15	1.0089	0.2255
2009	1	15	0.7122	0.2744
2010	1	15	0.8631	0.2195
2011	1	15	0.8053	0.2570
2012	1	15	0.6674	0.2661
2013	1	15	0.6383	0.3015
1998	1	16	0.4684	0.8082
1999	1	16	1.5122	0.3993
2000	1	16	0.3902	0.4391
2001	1	16	0.7937	0.3657
2002	1	16	0.7672	0.3215
2003	1	16	1.6598	0.2599
2004	1	16	1.3869	0.2780
2005	1	16	2.2509	0.2267
2006	1	16	0.5961	0.2929
2007	1	16	1.1251	0.2717
2008	1	16	0.9148	0.2890
2009	1	16	1.1839	0.2580
2010	1	16	1.2063	0.2455
2011	1	16	0.4470	0.3203
2012	1	16	0.4122	0.3354
2013	1	16	0.8851	0.2853
1991	1	17	0.7895	0.0858
1992	1	17	0.8293	0.0602

1993	1	17	0.9136	0.0620
1994	1	17	1.1011	0.0542
1995	1	17	1.2379	0.0483
1996	1	17	1.0555	0.0499
1997	1	17	0.8768	0.0521
1998	1	17	0.7959	0.0506
1999	1	17	0.7896	0.0439
2000	1	17	0.7776	0.0420
2001	1	17	1.0470	0.0398
2002	1	17	0.9038	0.0416
2003	1	17	1.0315	0.0418
2004	1	17	1.1231	0.0413
2005	1	17	1.1057	0.0392
2006	1	17	0.8620	0.0404
2007	1	17	0.8343	0.0428
2008	1	17	0.9178	0.0413
2009	1	17	1.0789	0.0409
2010	1	17	1.4980	0.0345
2011	1	17	1.2868	0.0340
2012	1	17	0.9644	0.0388
2013	1	17	1.1798	0.0451

```
###########################################################################
0 #_N_fleets_with_discard 3=FL_B2_and_6=GASC_B2
#_discard_units (1=same_as_catchunits(bio/num)  2=fraction  3=numbers)
#_discard_errtype:  >0 for DF of T-dist(read  CV below);  0 for normal with CV; -1= normal
with se; -2=lognormal
# Fleet  Disc_units      err_type          use se of ln(vals) for lognormal
#3       1         -2
#6       1         -2
0        #_N_discard_obs
#_year  seas     index   obs   err
###########################################################################
0  #_N_mean_bodywt_obs
30 #_DF_for_meanbodywt_T-distribution_like
###########################################################################
3       #_length_bin_method:1=use
databins;2=generate_from_binwidth,min,max_below;3=read_vector
68      #_Number_Pop_LengthBins -- this may be separate from length composition bins
#_Lower_edge_of_Pop_len_bins --same as databins
6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 62 64 66 68
70 72 74 76 78 80 82 84 86 88 90 92 94 96 98 100 102 104 106 108 110 112 114 116 118 120
122 124 126 128 130 132 134 136 138 140
-0.0001 #_comp_tail_compression_--_neg_value_causes_no_compression;
0.0001  #_add_to_comp
68      #_combine_males_into_females_at_or_below_this_bin_number
68      #_N_Data_LengthBins
```

```
#_data_length_bins_--_lower_edge
6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 62 64 66 68
70 72 74 76 78 80 82 84 86 88 90 92 94 96 98 100 102 104 106 108 110 112 114 116 118 120
122 124 126 128 130 132 134 136 138 140
233 #_N_Length_obs
#_Length_composition_data
#_Yr__Seas_ _Fleet___Gender_ _Part_ __Nsamp_ ____<<<<<<<<<data_vector>>>>>>>
1981 1 1 0 0 284 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.005859 0.000000
0.000000 0.000000 0.000000 0.003906 0.005859 0.037109
0.048828 0.060547 0.111328 0.144531 0.130859 0.132812
0.076172 0.042969 0.017578 0.017578 0.021484 0.023438
0.019531 0.019531 0.025391 0.017578 0.007812 0.009766
0.001953 0.007812 0.003906 0.003906 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.001953
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000
1982 1 1 0 0 500 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.006667 0.001111 0.001111
0.005556 0.004444 0.018889 0.036667 0.056667 0.086667
0.095556 0.100000 0.115556 0.052222 0.052222 0.040000
0.033333 0.017778 0.008889 0.005556 0.010000 0.008889
0.018889 0.015556 0.018889 0.025556 0.035556 0.028889
0.028889 0.022222 0.016667 0.012222 0.004444 0.001111
0.003333 0.003333 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.001111 0.001111 0.000000 0.001111
0.001111 0.001111 0.000000 0.000000 0.001111 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000
1983 1 1 0 0 128 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.004348 0.000000
0.008696 0.008696 0.082609 0.095652 0.095652 0.039130
0.026087 0.073913 0.108696 0.117391 0.052174 0.047826
0.039130 0.013043 0.013043 0.008696 0.004348 0.013043
0.017391 0.021739 0.017391 0.017391 0.017391 0.008696
0.026087 0.017391 0.004348 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000
1984 1 1 0 0 97 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.005714 0.028571 0.011429
0.011429 0.051429 0.068571 0.142857 0.097143 0.148571
```

	0.051429	0.137143	0.051429	0.028571	0.034286	0.022857		
	0.011429	0.005714	0.000000	0.005714	0.011429	0.000000		
	0.000000	0.005714	0.000000	0.000000	0.040000	0.005714		
	0.000000	0.000000	0.022857	0.000000	0.000000	0.000000		
	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000		
	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000		
	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000		
	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000		
	0.000000	0.000000	0.000000	0.000000	0.000000			
1985	1	1	0	0	36	0.000000	0.000000	0.000000
	0.000000	0.000000	0.000000	0.000000	0.030769	0.000000		
	0.030769	0.015385	0.153846	0.123077	0.107692	0.138462		
	0.153846	0.046154	0.046154	0.015385	0.015385	0.030769		
	0.000000	0.000000	0.030769	0.000000	0.000000	0.000000		
	0.000000	0.015385	0.000000	0.000000	0.015385	0.015385		
	0.000000	0.000000	0.000000	0.015385	0.000000	0.000000		
	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000		
	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000		
	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000		
	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000		
	0.000000	0.000000	0.000000	0.000000	0.000000			
1986	1	1	0	0	35	0.000000	0.000000	0.000000
	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000		
	0.000000	0.000000	0.000000	0.000000	0.047619	0.126984		
	0.063492	0.031746	0.031746	0.000000	0.047619	0.095238		
	0.015873	0.174603	0.015873	0.031746	0.063492	0.047619		
	0.047619	0.015873	0.015873	0.047619	0.047619	0.015873		
	0.015873	0.000000	0.000000	0.000000	0.000000	0.000000		
	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000		
	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000		
	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000		
	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000		
	0.000000	0.000000	0.000000	0.000000	0.000000			
1987	1	1	0	0	12	0.000000	0.000000	0.000000
	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000		
	0.000000	0.000000	0.000000	0.000000	0.000000	0.363636		
	0.000000	0.000000	0.045455	0.000000	0.045455	0.045455		
	0.000000	0.000000	0.090909	0.045455	0.000000	0.045455		
	0.090909	0.045455	0.000000	0.045455	0.000000	0.045455		
	0.000000	0.045455	0.000000	0.045455	0.000000	0.000000		
	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000		
	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000		
	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000		
	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000		
	0.000000	0.000000	0.000000	0.000000	0.000000			

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1988 1 1 0 0 26 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.021277 0.000000 0.000000 0.000000 0.000000 0.021277
0.000000 0.000000 0.021277 0.021277 0.000000 0.021277
0.042553 0.000000 0.042553 0.021277 0.021277 0.042553
0.106383 0.191489 0.127660 0.127660 0.106383 0.042553
0.021277 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000
1981 1 2 0 0 11 0.000000 0.000000 0.000000
0.000000 0.000000 0.026549 0.015236 0.030489 0.000000
0.000000 0.030489 0.121923 0.045725 0.054569 0.137159
0.124391 0.115531 0.063430 0.024097 0.000000 0.008844
0.000000 0.000000 0.059490 0.030489 0.015236 0.039333
0.015236 0.032941 0.000000 0.000000 0.000000 0.000000
0.008844 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000
1982 1 2 0 0 11 0.000000 0.000000 0.000000
0.000000 0.000000 0.018724 0.009366 0.001058 0.009973
0.023564 0.013755 0.008913 0.032462 0.088586 0.046001
0.178471 0.131927 0.202913 0.130770 0.002264 0.004874
0.023483 0.025677 0.023864 0.000755 0.000000 0.000000
0.000000 0.003633 0.000755 0.000755 0.000000 0.000000
0.000755 0.001439 0.000000 0.000755 0.001439 0.000755
0.000755 0.004120 0.000000 0.000000 0.000000 0.004874
0.001812 0.000000 0.000000 0.000000 0.000000 0.000000
0.000755 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000
1983 1 2 0 0 11 0.000000 0.000000 0.000000
0.000000 0.019173 0.000000 0.000925 0.000000 0.000925
0.007751 0.003242 0.094755 0.166677 0.122411 0.095168
0.039581 0.094708 0.127390 0.089030 0.064212 0.000000
0.001787 0.000895 0.001790 0.001747 0.009422 0.014875
0.002234 0.002234 0.002682 0.002234 0.000910 0.000447
0.000447 0.002234 0.011270 0.010314 0.008527 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
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0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000
1984 1 2 0 0 11 0.000000 0.000000 0.000000
0.000000 0.000000 0.000129 0.000219 0.000987 0.001833
0.002487 0.055581 0.046061 0.167746 0.146920 0.077141
0.079918 0.086116 0.121718 0.022577 0.045467 0.005193
0.026134 0.012624 0.000219 0.000000 0.000110 0.014776
0.000110 0.000000 0.003785 0.000000 0.000110 0.000110
0.026031 0.002588 0.000000 0.000000 0.018117 0.006039
0.000000 0.006039 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000 0.023113 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000
1985 1 2 0 0 11 0.000000 0.000000 0.000000
0.000095 0.000000 0.000000 0.000095 0.001138 0.005095
0.060379 0.108932 0.248998 0.179380 0.083353 0.068859
0.056914 0.024612 0.026991 0.026419 0.029076 0.016672
0.012084 0.013774 0.008335 0.003563 0.004204 0.001209
0.001209 0.005981 0.002863 0.002958 0.001813 0.000000
0.001209 0.001945 0.000000 0.000000 0.000095 0.000000
0.001145 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000 0.000604 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000
1986 1 2 0 0 11 0.000000 0.000000 0.000000
0.000000 0.000000 0.000195 0.000000 0.000000 0.000299
0.000299 0.002690 0.003587 0.009297 0.026965 0.073170
0.053050 0.076723 0.032314 0.043818 0.044668 0.020771
0.025435 0.005407 0.210044 0.024581 0.011498 0.020203
0.047737 0.000517 0.027965 0.054471 0.024190 0.033217
0.056591 0.023374 0.023547 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.023374 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000
1987 1 2 0 0 11 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.031337 0.016379 0.076895 0.074802 0.077935 0.104275
0.121888 0.104776 0.044918 0.063487 0.020935 0.030438
0.039258 0.021636 0.015938 0.016657 0.015938 0.015938
0.006417 0.003559 0.005698 0.025459 0.024040 0.000719
0.024740 0.001420 0.001420 0.000000 0.011660 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000

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     0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
     0.000719 0.000000 0.000000 0.000000 0.000000 0.000000
     0.000000 0.000000 0.000000 0.000000 0.000719 0.000000
     0.000000 0.000000 0.000000 0.000000 0.000000
1988 1 2 0 0 11 0.000000 0.000000 0.000000
     0.000000 0.000000 0.000000 0.000000 0.000000 0.002416
     0.000000 0.007048 0.002416 0.004631 0.016512 0.035240
     0.141160 0.181232 0.157672 0.134112 0.068264 0.030608
     0.028192 0.028192 0.014096 0.021144 0.021144 0.016512
     0.016512 0.011679 0.014096 0.004631 0.004631 0.007048
     0.004631 0.009464 0.002416 0.009464 0.000000 0.000000
     0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
     0.000000 0.000000 0.000000 0.000000 0.000000 0.002416
     0.002416 0.000000 0.000000 0.000000 0.000000 0.000000
     0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
     0.000000 0.000000 0.000000 0.000000 0.000000
1989 1 2 0 0 11 0.000000 0.000000 0.000000
     0.000000 0.000000 0.000000 0.002553 0.001446 0.001904
     0.004517 0.009097 0.008974 0.017861 0.028483 0.036417
     0.112213 0.134015 0.086399 0.123409 0.074147 0.031404
     0.059304 0.035752 0.030464 0.020456 0.012211 0.031837
     0.019072 0.031650 0.020487 0.018515 0.005845 0.005229
     0.005106 0.010243 0.007782 0.000707 0.009243 0.000000
     0.000000 0.002553 0.000000 0.000000 0.000000 0.000000
     0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
     0.000000 0.000000 0.000707 0.000000 0.000000 0.000000
     0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
     0.000000 0.000000 0.000000 0.000000 0.000000
1990 1 2 0 0 12 0.000000 0.000000 0.000000
     0.000000 0.000000 0.000000 0.000000 0.009189 0.013945
     0.000000 0.021059 0.000000 0.043232 0.022724 0.032689
     0.062994 0.099693 0.156252 0.107080 0.051537 0.023573
     0.012450 0.057570 0.023910 0.018940 0.007480 0.029243
     0.034238 0.055663 0.023332 0.012450 0.023910 0.002485
     0.016093 0.014935 0.002485 0.002485 0.000000 0.000000
     0.000000 0.013391 0.000000 0.000000 0.000000 0.002485
     0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
     0.000000 0.000000 0.000000 0.000000 0.000000 0.002485
     0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
     0.000000 0.000000 0.000000 0.000000 0.000000
1991 1 2 0 0 26 0.000000 0.000000 0.000000
     0.000000 0.000847 0.000000 0.000000 0.000399 0.002023
     0.005406 0.003879 0.008595 0.032595 0.011772 0.051336
     0.023890 0.071839 0.040140 0.067335 0.017139 0.021058
     0.017418 0.069966 0.037730 0.070786 0.020636 0.019666
     0.018209 0.019503 0.035486 0.120615 0.018007 0.069796
```

0.119694 0.000330 0.000330 0.001856 0.000000 0.000000
0.000399 0.000000 0.000000 0.000000 0.000000 0.000000
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2013	1	2	0	0	75	0.000000	0.000000	0.000000
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1984	1	3	0	0	10	0.000000	0.000000	0.000000
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	0.007089	0.174788	0.116837	0.457537	0.000000	0.014158		
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1985	1	3	0	0	10	0.000000	0.000000	0.000000
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	0.018009	0.007204	0.022205	0.003602	0.010806	0.007204		

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1989 1 3 0 0 10 0.000000 0.000000 0.000000
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1991	1	3	0	0	10	0.000000	0.000000	0.000000
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	0.085975		0.034586		0.053833	0.037092	0.037753	0.018782
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	0.000000		0.000000		0.000000	0.000000	0.000000	
2008	1	3	0	0	10	0.000000	0.000000	0.000000
	0.000000		0.000000		0.000000	0.000000	0.000000	0.000000
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0.000000 0.000000 0.000000 0.000000 0.000000
2009 1 3 0 0 10 0.000000 0.000000 0.000000
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0.000000 0.000000 0.000000 0.000000 0.000000
2010 1 3 0 0 10 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.002250 0.005758
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0.002250 0.000000 0.002250 0.002250 0.004500 0.000000
0.002250 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000
2011 1 3 0 0 10 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.007349 0.003691
0.000000 0.016623 0.012672 0.009224 0.014764 0.007327
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0.000000 0.001859 0.000000 0.000000 0.000000 0.000000
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2012 1 3 0 0 10 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000

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     0.060587  0.011692  0.071204  0.024417  0.034980  0.018897
     0.002066  0.020994  0.006959  0.016653  0.004931  0.008828
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2013 1    3    0    0    10   0.000000  0.000000  0.000000
     0.000000  0.000000  0.000000  0.000000  0.000000  0.000000
     0.002599  0.002599  0.000000  0.002599  0.002599  0.025912
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     0.001299  0.002599  0.000000  0.001299  0.000000  0.000000
     0.000000  0.000000  0.000000  0.000000  0.000000  0.000000
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1981 1    4    0    0    13   0.000000  0.000000  0.000000
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     0.000000  0.035346  0.141382  0.053018  0.055293  0.159055
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     0.000000  0.000000  0.029221  0.035346  0.017673  0.037620
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     0.000000  0.000000  0.000000  0.000000  0.000000  0.000000
     0.000000  0.000000  0.000000  0.000000  0.000000  0.000000
     0.000000  0.000000  0.000000  0.000000  0.000000
1982 1    4    0    0    13   0.000000  0.000000  0.000000
     0.000000  0.000000  0.027689  0.013812  0.000774  0.035369
     0.076869  0.077577  0.028397  0.119078  0.068161  0.095925
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     0.000000 0.000179 0.000000 0.000000 0.000000 0.000000
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1985 1 4 0 0 13 0.000000 0.000000 0.000000
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1986 1 4 0 0 13 0.000000 0.000000 0.000000
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     0.000349 0.000121 0.000228 0.000000 0.000000 0.000000
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     0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
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	0.233767	0.186544	0.076574	0.055946	0.016437	0.017574
	0.010502	0.011331	0.012349	0.008603	0.009647	0.005636
	0.011656	0.006799	0.005832	0.006166	0.004310	0.000000
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	0.014736	0.005744	0.000043	0.001043	0.000000	0.000000
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	0.000000	0.000000	0.000000	0.000000	0.000000	
1989	1 4	0 0	37 0.000000	0.000000	0.000000	
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	0.061247	0.006869	0.032416	0.013759	0.010455	0.035884
	0.017025	0.023528	0.009687	0.011074	0.000022	0.000030
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	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
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1990	1 4	0 0	13 0.000000	0.000000	0.000000	
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1992	1	4	0	0	52	0.000000	0.000000	0.000000
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1993	1	4	0	0	35	0.000000	0.000000	0.000000
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	0.114694	0.131801	0.107456	0.079637	0.030924	0.044193		
	0.050928	0.053508	0.071192	0.055044	0.016446	0.030386		
	0.019629	0.023531	0.016966	0.028032	0.012909	0.002655		
	0.012067	0.006634	0.008371	0.000267	0.006235	0.003025		
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	0.000000	0.000000	0.000000	0.000000	0.000071			
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	0.071180	0.154303	0.131953	0.140717	0.083813	0.033849		
	0.032957	0.034556	0.041091	0.048279	0.040051	0.009456		
	0.012497	0.037148	0.017297	0.033093	0.012482	0.007842		
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	0.000000	0.000000	0.000000	0.000348	0.000000	0.000102		
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	0.007339		0.000368		0.001703	0.000692	0.001203	0.000747	
	0.000081		0.000809		0.000770	0.000969	0.000328	0.000241	
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	0.010193		0.002452		0.007643	0.003483	0.004167	0.001660	
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2007	1	5	0	0	150	0.000000	0.000000	0.000000	
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	0.013291		0.050363		0.117433	0.126615	0.108202	0.060254	
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	0.042615	0.023165	0.005282	0.016363	0.018499	0.019156		
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	0.000036	0.000036	0.000576	0.005231	0.006224	0.011603		
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	0.000000	0.000000	0.000000	0.000000	0.000000			
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2012	1	5	0	0	217	0.000000	0.000000	0.000000
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	0.000000	0.000000	0.000000	0.000000	0.000000			
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        0.000000    0.000000    0.000000    0.000000    0.000000    0.000000
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        0.000000    0.000000    0.000000    0.000000    0.000000
1983    1     6     0     0     10    0.000000    0.000000    0.000000
        0.000000    0.003435    0.000000    0.003528    0.000000    0.002228
        0.007055    0.015689    0.213609    0.390085    0.001114    0.001114
        0.177126    0.178240    0.001114    0.004549    0.001114    0.000000
        0.000000    0.000000    0.000000    0.000000    0.000000    0.000000
        0.000000    0.000000    0.000000    0.000000    0.000000    0.000000
        0.000000    0.000000    0.000000    0.000000    0.000000    0.000000
        0.000000    0.000000    0.000000    0.000000    0.000000    0.000000
        0.000000    0.000000    0.000000    0.000000    0.000000    0.000000
        0.000000    0.000000    0.000000    0.000000    0.000000    0.000000
        0.000000    0.000000    0.000000    0.000000    0.000000    0.000000
        0.000000    0.000000    0.000000    0.000000    0.000000
1984    1     6     0     0     10    0.000000    0.000000    0.000000
        0.000000    0.000000    0.002369    0.004738    0.019289    0.011675
        0.039763    0.213367    0.227580    0.415228    0.013875    0.011675
        0.003215    0.014213    0.002369    0.004738    0.004738    0.008799
        0.002369    0.000000    0.000000    0.000000    0.000000    0.000000
        0.000000    0.000000    0.000000    0.000000    0.000000    0.000000
        0.000000    0.000000    0.000000    0.000000    0.000000    0.000000
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        0.000000    0.000000    0.000000    0.000000    0.000000    0.000000
        0.000000    0.000000    0.000000    0.000000    0.000000
1985    1     6     0     0     10    0.000000    0.000000    0.000000
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        0.047563    0.179443    0.289752    0.221843    0.009626    0.008182
        0.026035    0.001706    0.056314    0.000875    0.061783    0.026735
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        0.000000    0.000000    0.000000    0.000000    0.000000    0.000000
        0.000000    0.000000    0.000000    0.000000    0.000000    0.000000
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        0.000000    0.000000    0.000000    0.000000    0.000000    0.000000
        0.000000    0.000000    0.000000    0.000000    0.000000    0.000000
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	0.020422	0.011421	0.008588	0.000000	0.000000	0.000000
	0.001610	0.000000	0.020319	0.000000	0.020319	0.000000
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	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
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1987	1 6	0 0	10	0.000000	0.000000	0.000000
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	0.123483	0.061743	0.304840	0.181357	0.057873	0.175722
	0.049596	0.045386	0.000000	0.000000	0.000000	0.000000
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	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	0.000000	0.000000	0.000000	0.000000	0.000000	
1988	1 6	0 0	10	0.000000	0.000000	0.000000
	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	0.000000	0.000000	0.000000	0.093476	0.233689	0.203217
	0.224264	0.004689	0.000000	0.000000	0.088786	0.000000
	0.063095	0.000000	0.000000	0.000000	0.000000	0.000000
	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	0.088786	0.000000	0.000000	0.000000	0.000000	0.000000
	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
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	0.000000	0.000000	0.000000	0.000000	0.000000	
1989	1 6	0 0	10	0.000000	0.000000	0.000000
	0.000000	0.000000	0.000000	0.000000	0.000000	0.025130
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	0.025130	0.108760	0.058418	0.000000	0.000686	0.000000
	0.000000	0.048330	0.000000	0.025807	0.000000	0.000686
	0.000000	0.000000	0.000081	0.000000	0.010088	0.000000
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	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000

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	0.000000	0.000000	0.000000	0.000000	0.000000			
1990	1	6	0	0	10	0.000000	0.000000	0.000000
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	0.000000	0.000000	0.020245	0.016347	0.000000	0.000000		
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	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000		
	0.000000	0.000000	0.000000	0.000000	0.000000			
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	0.040804	0.171841	0.074729	0.038327	0.017288	0.000000		
	0.018217	0.012508	0.025247	0.003673	0.011212	0.000000		
	0.002592	0.020672	0.003673	0.003673	0.016994	0.003400		
	0.006265	0.000000	0.000000	0.000000	0.000000	0.000000		
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	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000		
	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000		
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	0.000000	0.000000	0.000000	0.000000	0.000000			
1992	1	6	0	0	10	0.000000	0.000000	0.000000
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	0.042504	0.123751	0.071924	0.009989	0.015314	0.002118		
	0.024589	0.006604	0.022745	0.021680	0.004510	0.031949		
	0.038464	0.038041	0.013743	0.010251	0.013970	0.022745		
	0.017081	0.005027	0.025970	0.004563	0.008793	0.009025		
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1993	1	6	0	0	10	0.000000	0.000000	0.000000
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     0.045884  0.096797  0.025479  0.067706  0.073828  0.076329
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     0.000000  0.000000  0.000000  0.000000  0.000000
2000 1 6       0 0       10 0.000000 0.000000 0.000000
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2001 1 6       0 0       10 0.000000 0.000000 0.000000
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2002	1	6	0	0	10	0.000000	0.000000	0.000000
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2003	1	6	0	0	10	0.000000	0.000000	0.000000
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	0.001153	0.006951	0.008090	0.008285	0.015594	0.005194		
	0.023542	0.023664	0.046801	0.046582	0.015836	0.045913		
	0.082116	0.076772	0.025134	0.109721	0.075594	0.074762		
	0.060687	0.004837	0.036838	0.022942	0.033017	0.023856		
	0.013599	0.010120	0.010866	0.018639	0.006945	0.006103		
	0.023530	0.004249	0.002085	0.001512	0.009076	0.004570		
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2004	1	6	0	0	10	0.000000	0.000000	0.000000
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2005	1	6	0	0	10	0.000000	0.000000	0.000000
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     0.000000   0.000000   0.000000   0.000000   0.000000
2006 1    6     0    0     10   0.000000   0.000000   0.000000
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     0.000000   0.000000   0.000000   0.000000   0.000000
2007 1    6     0    0     10   0.000000   0.000000   0.000000
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     0.010931   0.054884   0.014581   0.081065   0.058552   0.057777
     0.104652   0.024007   0.090276   0.074034   0.056283   0.039651
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     0.000000   0.000000   0.000000   0.000000   0.000000   0.000000
     0.000000   0.000000   0.000000   0.000000   0.000000
2008 1    6     0    0     10   0.000000   0.000000   0.000000
     0.000000   0.000000   0.000000   0.000000   0.000000   0.000000
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1998 1 17 0 0 28 0.000000 0.000000 0.000000
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0.000000 0.000000 0.000000 0.004278 0.005764 0.011677
0.021683 0.030908 0.036555 0.022880 0.019341 0.013385
0.014920 0.016389 0.030958 0.040423 0.018698 0.044538
0.046641 0.036795 0.030099 0.063702 0.074384 0.067730
0.071024 0.026688 0.076537 0.035638 0.045358 0.027822
0.007026 0.024419 0.010432 0.011545 0.000000 0.001646
0.001723 0.000913 0.000004 0.000000 0.000892 0.001478
0.000000 0.004310 0.000000 0.000733 0.000000 0.000000

	0.000000		0.000000		0.000000	0.000000	0.000000	0.000000	
	0.000000		0.000000		0.000000	0.000000	0.000000		
1999	1	17	0	0	28	0.000000	0.000000	0.000000	
	0.000000		0.000000		0.000000	0.000000	0.000000	0.000000	
	0.000000		0.002503		0.000000	0.000033	0.000000	0.003987	
	0.013722		0.039088		0.042245	0.040015	0.019207	0.012159	
	0.029003		0.019507		0.035955	0.028059	0.022296	0.036599	
	0.070858		0.081511		0.027744	0.059924	0.058994	0.053081	
	0.074826		0.018143		0.057302	0.038816	0.048729	0.017281	
	0.007633		0.014614		0.004553	0.011825	0.007132	0.000816	
	0.000000		0.000000		0.000000	0.000000	0.000000	0.000000	
	0.000000		0.000000		0.001839	0.000000	0.000000	0.000000	
	0.000000		0.000000		0.000000	0.000000	0.000000	0.000000	
	0.000000		0.000000		0.000000	0.000000	0.000000		
2000	1	17	0	0	31	0.000000	0.000000	0.000000	
	0.000000		0.000000		0.000000	0.000000	0.000000	0.000000	
	0.000000		0.002409		0.002076	0.005690	0.005440	0.010108	
	0.019912		0.029310		0.020157	0.018949	0.024415	0.016279	
	0.027319		0.025404		0.015008	0.035069	0.027388	0.058140	
	0.047498		0.064813		0.016283	0.067157	0.061471	0.057001	
	0.069396		0.024555		0.045490	0.049855	0.047289	0.034044	
	0.011149		0.018279		0.010985	0.002193	0.000006	0.006449	
	0.006986		0.001966		0.003498	0.002403	0.003894	0.000000	
	0.000000		0.004268		0.000000	0.000000	0.000000	0.000000	
	0.000000		0.000000		0.000000	0.000000	0.000000	0.000000	
	0.000000		0.000000		0.000000	0.000000	0.000000		
2001	1	17	0	0	30	0.000000	0.000000	0.000000	
	0.000000		0.000000		0.000000	0.000000	0.000000	0.000000	
	0.000000		0.002470		0.000000	0.005175	0.010624	0.018705	
	0.031284		0.030640		0.025459	0.015316	0.008802	0.006764	
	0.006640		0.014446		0.018016	0.019449	0.017189	0.038858	
	0.042469		0.056714		0.025852	0.071044	0.057342	0.038533	
	0.059034		0.019017		0.074235	0.085521	0.049488	0.036975	
	0.015570		0.013944		0.027241	0.021820	0.004031	0.005527	
	0.004132		0.004758		0.000000	0.000000	0.013101	0.001522	
	0.000000		0.002290		0.000000	0.000000	0.000000	0.000000	
	0.000000		0.000000		0.000000	0.000000	0.000000	0.000000	
	0.000000		0.000000		0.000000	0.000000	0.000000		
2002	1	17	0	0	35	0.000000	0.000000	0.000000	
	0.000000		0.000000		0.000000	0.000000	0.000000	0.000000	
	0.000000		0.000000		0.000000	0.001797	0.000676	0.014629	
	0.019340		0.066996		0.044061	0.030885	0.030860	0.022371	
	0.030244		0.023724		0.031054	0.031948	0.014594	0.026232	
	0.037026		0.026426		0.013190	0.039853	0.034495	0.039435	
	0.052395		0.008971		0.048152	0.048414	0.043929	0.047071	
	0.008286		0.017873		0.040163	0.023574	0.006193	0.006709	

0.012010 0.010102 0.005552 0.000573 0.013812 0.008918
0.010914 0.003591 0.000000 0.002962 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000
2003 1 17 0 0 34 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.012227 0.024454
0.012227 0.012715 0.012398 0.000473 0.033731 0.011089
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0.000000 0.000000 0.000000 0.000000 0.000000
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0.000102 0.000794 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.000234 0.000000 0.000000
2005 1 17 0 0 29 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.000012 0.000000 0.000239 0.002505
0.011694 0.016138 0.030229 0.013033 0.017021 0.010725
0.020527 0.027133 0.035253 0.027951 0.017712 0.054633
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0.002774 0.018098 0.010120 0.014629 0.008487 0.003333
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0.000000 0.000000 0.000000 0.000000 0.000000
2006 1 17 0 0 28 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.037965 0.000000
0.037965 0.000000 0.000000 0.000000 0.000000 0.000053
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0.000000 0.000000 0.000000 0.000000 0.000000
2007 1 17 0 0 27 0.000000 0.000000 0.000000
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0.000000 0.000000 0.001048 0.000000 0.003479 0.006562
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0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000
2008 1 17 0 0 34 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
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0.016864 0.018233 0.027757 0.026096 0.026209 0.014574
0.017386 0.019685 0.038796 0.039034 0.022867 0.058910
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0.000000 0.000000 0.000000 0.000000 0.000000
2009 1 17 0 0 34 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000009 0.000000 0.000000 0.013383 0.000491 0.012593
0.029641 0.014159 0.021305 0.026228 0.039905 0.028840
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0.000932 0.000000 0.000000 0.002608 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000
2010 1 17 0 0 35 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000273 0.000273 0.000052 0.000311 0.002985 0.012966
0.023754 0.032114 0.028976 0.021097 0.024722 0.011989

```
     0.040132  0.019950  0.027614  0.038514  0.024079  0.043424
     0.073642  0.083376  0.021841  0.091456  0.056118  0.057776
     0.066287  0.018099  0.049082  0.010102  0.025888  0.020375
     0.002407  0.010874  0.010100  0.009285  0.004934  0.001669
     0.006973  0.001754  0.004857  0.002407  0.002293  0.002125
     0.002407  0.000000  0.001755  0.002407  0.004076  0.000000
     0.002407  0.000000  0.000000  0.000000  0.000000  0.000000
     0.000000  0.000000  0.000000  0.000000  0.000000
2011 1  17     0   0    34  0.000000  0.000000  0.000000
     0.000000  0.000000  0.000000  0.000000  0.000000  0.000000
     0.000000  0.000225  0.000310  0.000000  0.005003  0.007064
     0.008549  0.031013  0.025358  0.017158  0.024252  0.015049
     0.033530  0.028564  0.022280  0.060466  0.025646  0.053206
     0.060584  0.080234  0.032930  0.086344  0.085165  0.067602
     0.059161  0.013773  0.044321  0.019889  0.027606  0.012732
     0.000000  0.009645  0.004583  0.006888  0.001183  0.002148
     0.011723  0.000000  0.009923  0.000000  0.000000  0.001962
     0.000000  0.001965  0.000000  0.000000  0.000000  0.000000
     0.000000  0.000000  0.000000  0.001965  0.000000  0.000000
     0.000000  0.000000  0.000000  0.000000  0.000000
2012 1  17     0   0    30  0.000000  0.000000  0.000000
     0.000000  0.000000  0.000000  0.000000  0.000000  0.000000
     0.000000  0.002092  0.000000  0.000000  0.003423  0.004702
     0.006359  0.031939  0.027482  0.022939  0.017659  0.019069
     0.034385  0.033322  0.026368  0.048763  0.027361  0.048243
     0.059203  0.085054  0.028670  0.071947  0.086376  0.058549
     0.048677  0.009596  0.055671  0.018414  0.029125  0.015346
     0.001237  0.017820  0.004493  0.012317  0.003310  0.005951
     0.015095  0.003687  0.001773  0.001627  0.004620  0.001508
     0.000000  0.001627  0.000000  0.000947  0.001627  0.000000
     0.001627  0.000000  0.000000  0.000000  0.000000  0.000000
     0.000000  0.000000  0.000000  0.000000  0.000000
2013 1  17     0   0    27  0.000000  0.000000  0.000000
     0.000000  0.000000  0.000000  0.000027  0.000000  0.000000
     0.002349  0.003107  0.000239  0.002172  0.002759  0.024463
     0.023956  0.051559  0.044315  0.031858  0.028900  0.013402
     0.028117  0.029275  0.028041  0.031261  0.021614  0.038214
     0.032718  0.070933  0.021075  0.050768  0.075971  0.059160
     0.055530  0.017219  0.034781  0.034248  0.029022  0.025960
     0.005601  0.017347  0.009445  0.008731  0.002210  0.007236
     0.006207  0.005326  0.009052  0.001136  0.005216  0.005292
     0.001136  0.002095  0.000000  0.000959  0.000000  0.000000
     0.000000  0.000000  0.000000  0.000000  0.000000  0.000000
     0.000000  0.000000  0.000000  0.000000  0.000000
15   #_N_observed_age_bins
#_data_age_bins
```

```
0 1 2 3 4 5 6 7 8 9 10 15 20 25 30
#_N_ageerror_definitions
1
#_ageing_error_matrix(all_ages_not_just_bins,must_start_from_zero)
-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
	-1	-1	-1	-1
0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
	0.001	0.001	0.001	0.001
733 #_N_Agecomp_obs
3  #_Lbin_method:1=poplenbins_ndx;2=datalenbins_ndx;3=actual_lengths
15  #_combine_males_into_females_at_or_below_this_bin_NUMBER
#___Age_composition_observations___
#_Yr___Szn_____Flt_____Gdr____Part___ageerr__Lbin-lo_Lbin-hi__Nsamp____<<<<<<<
proportions >>>>>>
1981	1	1	0	0	1	30	30	2	0.000000	1.000000
	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	0.000000
1981	1	1	0	0	1	32	32	1	0.000000	1.000000
	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	0.000000
1981	1	1	0	0	1	34	34	5	0.000000	1.000000
	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	0.000000
1981	1	1	0	0	1	36	36	5	0.000000	1.000000
	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	0.000000
1981	1	1	0	0	1	38	38	6	0.000000	1.000000
	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	0.000000
1981	1	1	0	0	1	40	40	7	0.000000	1.000000
	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	0.000000
1981	1	1	0	0	1	42	42	6	0.000000	1.000000
	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	0.000000
```

1981	1	1	0	0	1	44	44	4	0.000000	1.000000
	0.000000		0.000000		0.000000		0.000000		0.000000	0.000000
	0.000000		0.000000		0.000000		0.000000		0.000000	0.000000
	0.000000									
1981	1	1	0	0	1	46	46	3	0.000000	1.000000
	0.000000		0.000000		0.000000		0.000000		0.000000	0.000000
	0.000000		0.000000		0.000000		0.000000		0.000000	0.000000
	0.000000									
1981	1	1	0	0	1	48	48	8	0.000000	1.000000
	0.000000		0.000000		0.000000		0.000000		0.000000	0.000000
	0.000000		0.000000		0.000000		0.000000		0.000000	0.000000
	0.000000									
1981	1	1	0	0	1	50	50	5	0.000000	0.800000
	0.200000		0.000000		0.000000		0.000000		0.000000	0.000000
	0.000000		0.000000		0.000000		0.000000		0.000000	0.000000
	0.000000									
1981	1	1	0	0	1	52	52	4	0.000000	0.500000
	0.500000		0.000000		0.000000		0.000000		0.000000	0.000000
	0.000000		0.000000		0.000000		0.000000		0.000000	0.000000
	0.000000									
1981	1	1	0	0	1	54	54	5	0.000000	0.400000
	0.600000		0.000000		0.000000		0.000000		0.000000	0.000000
	0.000000		0.000000		0.000000		0.000000		0.000000	0.000000
	0.000000									
1981	1	1	0	0	1	56	56	4	0.000000	0.250000
	0.750000		0.000000		0.000000		0.000000		0.000000	0.000000
	0.000000		0.000000		0.000000		0.000000		0.000000	0.000000
	0.000000									
1981	1	1	0	0	1	58	58	2	0.000000	0.000000
	1.000000		0.000000		0.000000		0.000000		0.000000	0.000000
	0.000000		0.000000		0.000000		0.000000		0.000000	0.000000
	0.000000									
1981	1	1	0	0	1	60	60	5	0.000000	0.000000
	0.800000		0.200000		0.000000		0.000000		0.000000	0.000000
	0.000000		0.000000		0.000000		0.000000		0.000000	0.000000
	0.000000									
1981	1	1	0	0	1	62	62	2	0.000000	0.000000
	1.000000		0.000000		0.000000		0.000000		0.000000	0.000000
	0.000000		0.000000		0.000000		0.000000		0.000000	0.000000
	0.000000									
1981	1	1	0	0	1	64	64	3	0.000000	0.000000
	0.666667		0.000000		0.333333		0.000000		0.000000	0.000000
	0.000000		0.000000		0.000000		0.000000		0.000000	0.000000
	0.000000									
1981	1	1	0	0	1	66	66	3	0.000000	0.000000
	1.000000		0.000000		0.000000		0.000000		0.000000	0.000000

0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000
1981 1 1 0 0 1 68 68 4 0.000000 0.000000
1.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000
1981 1 1 0 0 1 70 70 4 0.000000 0.000000
0.750000 0.250000 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000
1981 1 1 0 0 1 74 74 4 0.000000 0.000000
0.250000 0.250000 0.250000 0.250000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000
1981 1 1 0 0 1 76 76 4 0.000000 0.000000
0.500000 0.250000 0.250000 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000
1981 1 1 0 0 1 78 78 4 0.000000 0.000000
0.250000 0.500000 0.250000 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000
1981 1 1 0 0 1 82 82 1 0.000000 0.000000
0.000000 1.000000 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000
1981 1 1 0 0 1 96 96 1 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 1.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000
1982 1 1 0 0 1 26 26 3 0.000000 1.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000
1982 1 1 0 0 1 28 28 11 0.000000 1.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000
1982 1 1 0 0 1 30 30 11 0.000000 1.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000
1982 1 1 0 0 1 32 32 10 0.000000 1.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000

1982	1	1	0	0	1	34	34	7	0.000000	1.000000
	0.000000		0.000000		0.000000		0.000000		0.000000	0.000000
	0.000000		0.000000		0.000000		0.000000		0.000000	0.000000
	0.000000									
1982	1	1	0	0	1	36	36	10	0.000000	0.900000
	0.100000		0.000000		0.000000		0.000000		0.000000	0.000000
	0.000000		0.000000		0.000000		0.000000		0.000000	0.000000
	0.000000									
1982	1	1	0	0	1	38	38	7	0.000000	1.000000
	0.000000		0.000000		0.000000		0.000000		0.000000	0.000000
	0.000000		0.000000		0.000000		0.000000		0.000000	0.000000
	0.000000									
1982	1	1	0	0	1	40	40	14	0.000000	0.571429
	0.428571		0.000000		0.000000		0.000000		0.000000	0.000000
	0.000000		0.000000		0.000000		0.000000		0.000000	0.000000
	0.000000									
1982	1	1	0	0	1	42	42	9	0.000000	0.444444
	0.555556		0.000000		0.000000		0.000000		0.000000	0.000000
	0.000000		0.000000		0.000000		0.000000		0.000000	0.000000
	0.000000									
1982	1	1	0	0	1	44	44	13	0.000000	0.153846
	0.846154		0.000000		0.000000		0.000000		0.000000	0.000000
	0.000000		0.000000		0.000000		0.000000		0.000000	0.000000
	0.000000									
1982	1	1	0	0	1	46	46	12	0.000000	0.250000
	0.750000		0.000000		0.000000		0.000000		0.000000	0.000000
	0.000000		0.000000		0.000000		0.000000		0.000000	0.000000
	0.000000									
1982	1	1	0	0	1	48	48	9	0.000000	0.000000
	1.000000		0.000000		0.000000		0.000000		0.000000	0.000000
	0.000000		0.000000		0.000000		0.000000		0.000000	0.000000
	0.000000									
1982	1	1	0	0	1	50	50	11	0.000000	0.000000
	1.000000		0.000000		0.000000		0.000000		0.000000	0.000000
	0.000000		0.000000		0.000000		0.000000		0.000000	0.000000
	0.000000									
1982	1	1	0	0	1	52	52	9	0.000000	0.111111
	0.888889		0.000000		0.000000		0.000000		0.000000	0.000000
	0.000000		0.000000		0.000000		0.000000		0.000000	0.000000
	0.000000									
1982	1	1	0	0	1	54	54	8	0.000000	0.125000
	0.875000		0.000000		0.000000		0.000000		0.000000	0.000000
	0.000000		0.000000		0.000000		0.000000		0.000000	0.000000
	0.000000									
1982	1	1	0	0	1	56	56	9	0.000000	0.000000
	1.000000		0.000000		0.000000		0.000000		0.000000	0.000000

0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000
1982 1 1 0 0 1 58 58 7 0.000000 0.000000
0.857143 0.142857 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000
1982 1 1 0 0 1 60 60 5 0.000000 0.000000
0.600000 0.400000 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000
1982 1 1 0 0 1 62 62 11 0.000000 0.000000
0.545455 0.363636 0.090909 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000
1982 1 1 0 0 1 64 64 10 0.000000 0.000000
0.300000 0.700000 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000
1982 1 1 0 0 1 66 66 10 0.000000 0.000000
0.200000 0.700000 0.100000 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000
1982 1 1 0 0 1 68 68 15 0.000000 0.000000
0.133333 0.800000 0.066667 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000
1982 1 1 0 0 1 70 70 13 0.000000 0.000000
0.076923 0.846154 0.000000 0.076923 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000
1982 1 1 0 0 1 72 72 12 0.000000 0.000000
0.166667 0.833333 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000
1982 1 1 0 0 1 74 74 20 0.000000 0.000000
0.100000 0.800000 0.100000 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000
1982 1 1 0 0 1 76 76 10 0.000000 0.000000
0.100000 0.900000 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000
1982 1 1 0 0 1 78 78 11 0.000000 0.000000
0.000000 0.818182 0.181818 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000

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1982 1 1 0 0 1 80 80 4 0.000000 0.000000
0.000000 0.750000 0.250000 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000
1982 1 1 0 0 1 82 82 8 0.000000 0.000000
0.000000 0.500000 0.500000 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000
1982 1 1 0 0 1 84 84 4 0.000000 0.000000
0.000000 0.500000 0.250000 0.000000 0.250000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000
1982 1 1 0 0 1 86 86 5 0.000000 0.000000
0.000000 0.200000 0.400000 0.000000 0.400000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000
1982 1 1 0 0 1 88 88 5 0.000000 0.000000
0.000000 0.000000 0.800000 0.200000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000
1982 1 1 0 0 1 90 90 1 0.000000 0.000000
0.000000 0.000000 0.000000 1.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000
1982 1 1 0 0 1 92 92 1 0.000000 0.000000
0.000000 0.000000 0.000000 1.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000
1982 1 1 0 0 1 98 98 1 0.000000 0.000000
0.000000 0.000000 0.000000 1.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000
1982 1 1 0 0 1 100 100 1 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 1.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000
1982 1 1 0 0 1 102 102 3 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.333333 0.000000
0.000000 0.333333 0.000000 0.333333 0.000000 0.000000
0.000000
1982 1 1 0 0 1 104 104 2 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.500000
0.000000 0.000000 0.000000 0.000000 0.000000 0.500000
0.000000
1982 1 1 0 0 1 108 108 1 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
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0.000000 0.000000 0.000000 0.000000 0.000000 1.000000
0.000000
1982 1 1 0 0 1 110 110 2 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000 0.500000 0.500000 0.000000 0.000000 0.000000
0.000000
1982 1 1 0 0 1 112 112 1 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
1.000000
1982 1 1 0 0 1 116 116 1 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 1.000000
0.000000
1983 1 1 0 0 1 34 34 1 0.000000 0.000000
1.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000
1983 1 1 0 0 1 38 38 1 0.000000 0.000000
1.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000
1983 1 1 0 0 1 40 40 4 0.000000 0.250000
0.750000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
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1983 1 1 0 0 1 42 42 3 0.000000 0.000000
1.000000 0.000000 0.000000 0.000000 0.000000 0.000000
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1983 1 1 0 0 1 44 44 3 0.000000 0.000000
1.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000
1983 1 1 0 0 1 46 46 4 0.000000 0.000000
1.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
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1983 1 1 0 0 1 48 48 5 0.000000 0.000000
1.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
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1983 1 1 0 0 1 50 50 8 0.000000 0.000000
1.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000

1983	1	1	0	0	1	52	52	1	0.000000	0.000000		
	1.000000		0.000000		0.000000		0.000000		0.000000	0.000000		
	0.000000		0.000000		0.000000		0.000000		0.000000	0.000000		
	0.000000											
1983	1	1	0	0	1	54	54	2	0.000000	0.000000		
	1.000000		0.000000		0.000000		0.000000		0.000000	0.000000		
	0.000000		0.000000		0.000000		0.000000		0.000000	0.000000		
	0.000000											
1983	1	1	0	0	1	56	56	3	0.000000	0.000000		
	0.333333		0.666667		0.000000		0.000000		0.000000	0.000000		
	0.000000		0.000000		0.000000		0.000000		0.000000	0.000000		
	0.000000											
1983	1	1	0	0	1	58	58	3	0.000000	0.000000		
	0.333333		0.666667		0.000000		0.000000		0.000000	0.000000		
	0.000000		0.000000		0.000000		0.000000		0.000000	0.000000		
	0.000000											
1983	1	1	0	0	1	60	60	2	0.000000	0.000000		
	0.000000		1.000000		0.000000		0.000000		0.000000	0.000000		
	0.000000		0.000000		0.000000		0.000000		0.000000	0.000000		
	0.000000											
1983	1	1	0	0	1	62	62	1	0.000000	0.000000		
	0.000000		1.000000		0.000000		0.000000		0.000000	0.000000		
	0.000000		0.000000		0.000000		0.000000		0.000000	0.000000		
	0.000000											
1983	1	1	0	0	1	64	64	2	0.000000	0.000000		
	0.000000		1.000000		0.000000		0.000000		0.000000	0.000000		
	0.000000		0.000000		0.000000		0.000000		0.000000	0.000000		
	0.000000											
1983	1	1	0	0	1	66	66	3	0.000000	0.000000		
	0.000000		1.000000		0.000000		0.000000		0.000000	0.000000		
	0.000000		0.000000		0.000000		0.000000		0.000000	0.000000		
	0.000000											
1983	1	1	0	0	1	68	68	5	0.000000	0.000000		
	0.000000		1.000000		0.000000		0.000000		0.000000	0.000000		
	0.000000		0.000000		0.000000		0.000000		0.000000	0.000000		
	0.000000											
1983	1	1	0	0	1	70	70	3	0.000000	0.000000		
	0.000000		0.666667		0.333333		0.000000		0.000000	0.000000		
	0.000000		0.000000		0.000000		0.000000		0.000000	0.000000		
	0.000000											
1983	1	1	0	0	1	72	72	6	0.000000	0.000000		
	0.000000		0.833333		0.166667		0.000000		0.000000	0.000000		
	0.000000		0.000000		0.000000		0.000000		0.000000	0.000000		
	0.000000											
1983	1	1	0	0	1	74	74	4	0.000000	0.000000		
	0.000000		0.500000		0.500000		0.000000		0.000000	0.000000		

0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
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1983 1 1 0 0 1 76 76 6 0.000000 0.000000
0.000000 0.000000 1.000000 0.000000 0.000000 0.000000
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1983 1 1 0 0 1 78 78 3 0.000000 0.000000
0.000000 0.000000 0.666667 0.333333 0.000000 0.000000
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1983 1 1 0 0 1 80 80 1 0.000000 0.000000
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1983 1 1 0 0 1 82 82 3 0.000000 0.000000
0.000000 0.000000 0.666667 0.000000 0.000000 0.333333
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
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1983 1 1 0 0 1 84 84 5 0.000000 0.000000
0.000000 0.000000 0.800000 0.000000 0.200000 0.000000
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1983 1 1 0 0 1 86 86 3 0.000000 0.000000
0.000000 0.000000 0.666667 0.333333 0.000000 0.000000
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1983 1 1 0 0 1 88 88 2 0.000000 0.000000
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1983 1 1 0 0 1 96 96 1 0.000000 0.000000
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1981 1 2 0 0 1 74 74 1 0.000000 0.000000
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1981 1 2 0 0 1 78 78 1 0.000000 0.000000
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1981 1 2 0 0 1 102 102 1 0.000000 0.000000
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1981 1 2 0 0 1 118 118 1 0.000000 0.000000
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1982 1 2 0 0 1 62 62 2 0.000000 0.000000
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1982 1 2 0 0 1 64 64 1 0.000000 0.000000
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1982 1 2 0 0 1 66 66 1 0.000000 0.000000
1.000000 0.000000 0.000000 0.000000 0.000000 0.000000
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1982 1 2 0 0 1 68 68 1 0.000000 0.000000
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1982 1 2 0 0 1 70 70 1 0.000000 0.000000
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1982 1 2 0 0 1 72 72 2 0.000000 0.000000
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1982 1 2 0 0 1 76 76 2 0.000000 0.000000
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1982 1 2 0 0 1 78 78 2 0.000000 0.000000
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1982 1 2 0 0 1 90 90 1 0.000000 0.000000
0.000000 0.000000 0.000000 1.000000 0.000000 0.000000
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1982 1 2 0 0 1 96 96 1 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 1.000000 0.000000 0.000000 0.000000
0.000000
1982 1 2 0 0 1 100 100 1 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000

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     0.000000  0.000000  0.000000  1.000000  0.000000  0.000000
     0.000000
1982 1    2    0    0    1    102  102  2    0.000000  0.000000
     0.000000  0.000000  0.000000  0.000000  0.000000  0.000000
     0.000000  0.000000  0.000000  0.500000  0.000000  0.500000
     0.000000
1982 1    2    0    0    1    104  104  2    0.000000  0.000000
     0.000000  0.000000  0.000000  0.000000  0.000000  0.000000
     0.000000  0.500000  0.500000  0.000000  0.000000  0.000000
     0.000000
1982 1    2    0    0    1    106  106  1    0.000000  0.000000
     0.000000  0.000000  0.000000  0.000000  0.000000  0.000000
     0.000000  0.000000  0.000000  0.000000  0.000000  1.000000
     0.000000
1982 1    2    0    0    1    108  108  1    0.000000  0.000000
     0.000000  0.000000  0.000000  0.000000  0.000000  0.000000
     0.000000  0.000000  1.000000  0.000000  0.000000  0.000000
     0.000000
1982 1    2    0    0    1    112  112  1    0.000000  0.000000
     0.000000  0.000000  0.000000  0.000000  0.000000  0.000000
     0.000000  0.000000  0.000000  0.000000  0.000000  1.000000
     0.000000
2006 1    2    0    0    1    48   48   4    0.000000  0.000000
     1.000000  0.000000  0.000000  0.000000  0.000000  0.000000
     0.000000  0.000000  0.000000  0.000000  0.000000  0.000000
     0.000000
2006 1    2    0    0    1    52   52   1    0.000000  0.000000
     0.000000  1.000000  0.000000  0.000000  0.000000  0.000000
     0.000000  0.000000  0.000000  0.000000  0.000000  0.000000
     0.000000
2006 1    2    0    0    1    54   54   1    0.000000  0.000000
     0.000000  1.000000  0.000000  0.000000  0.000000  0.000000
     0.000000  0.000000  0.000000  0.000000  0.000000  0.000000
     0.000000
2006 1    2    0    0    1    56   56   4    0.000000  0.000000
     0.000000  1.000000  0.000000  0.000000  0.000000  0.000000
     0.000000  0.000000  0.000000  0.000000  0.000000  0.000000
     0.000000
2006 1    2    0    0    1    58   58   3    0.000000  0.000000
     0.000000  0.666667  0.333333  0.000000  0.000000  0.000000
     0.000000  0.000000  0.000000  0.000000  0.000000  0.000000
     0.000000
2006 1    2    0    0    1    60   60   1    0.000000  0.000000
     0.000000  1.000000  0.000000  0.000000  0.000000  0.000000
     0.000000  0.000000  0.000000  0.000000  0.000000  0.000000
     0.000000
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2006 1 2 0 0 1 62 62 1 0.000000 0.000000
0.000000 1.000000 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000
2006 1 2 0 0 1 64 64 1 0.000000 0.000000
0.000000 1.000000 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000
2006 1 2 0 0 1 66 66 1 0.000000 0.000000
0.000000 1.000000 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000
2013 1 2 0 0 1 54 54 1 0.000000 0.000000
0.000000 1.000000 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000
2013 1 2 0 0 1 58 58 2 0.000000 0.000000
1.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000
2013 1 2 0 0 1 60 60 1 0.000000 0.000000
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2013 1 2 0 0 1 62 62 1 0.000000 0.000000
1.000000 0.000000 0.000000 0.000000 0.000000 0.000000
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0.000000
2013 1 2 0 0 1 64 64 1 0.000000 0.000000
1.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000
2013 1 2 0 0 1 66 66 3 0.000000 0.000000
0.666667 0.000000 0.333333 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000
2013 1 2 0 0 1 68 68 1 0.000000 0.000000
1.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000
1986 1 5 0 0 1 30 30 1 0.000000 1.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000
1986 1 5 0 0 1 32 32 2 0.000000 1.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000

0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000
1986 1 5 0 0 1 34 34 5 0.000000 1.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000
1986 1 5 0 0 1 36 36 5 0.000000 1.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000
1986 1 5 0 0 1 38 38 9 0.000000 1.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000
1986 1 5 0 0 1 40 40 5 0.000000 1.000000
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0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000
1986 1 5 0 0 1 42 42 7 0.000000 1.000000
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0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000
1986 1 5 0 0 1 44 44 6 0.000000 1.000000
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0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000
1986 1 5 0 0 1 52 52 1 0.000000 0.000000
1.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
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1997 1 5 0 0 1 50 50 4 0.000000 0.000000
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1997 1 5 0 0 1 52 52 3 0.000000 0.000000
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1997 1 5 0 0 1 54 54 9 0.000000 0.000000
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1997 1 5 0 0 1 56 56 6 0.000000 0.000000
0.166667 0.833333 0.000000 0.000000 0.000000 0.000000

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	0.000000									
1997	1	5	0	0	1	58	58	8	0.000000	0.000000
	0.375000		0.625000		0.000000		0.000000		0.000000	0.000000
	0.000000		0.000000		0.000000		0.000000		0.000000	0.000000
	0.000000									
1997	1	5	0	0	1	60	60	9	0.000000	0.000000
	0.222222		0.777778		0.000000		0.000000		0.000000	0.000000
	0.000000		0.000000		0.000000		0.000000		0.000000	0.000000
	0.000000									
1997	1	5	0	0	1	62	62	18	0.000000	0.000000
	0.166667		0.833333		0.000000		0.000000		0.000000	0.000000
	0.000000		0.000000		0.000000		0.000000		0.000000	0.000000
	0.000000									
1997	1	5	0	0	1	64	64	12	0.000000	0.000000
	0.000000		1.000000		0.000000		0.000000		0.000000	0.000000
	0.000000		0.000000		0.000000		0.000000		0.000000	0.000000
	0.000000									
1997	1	5	0	0	1	66	66	7	0.000000	0.000000
	0.142857		0.714286		0.142857		0.000000		0.000000	0.000000
	0.000000		0.000000		0.000000		0.000000		0.000000	0.000000
	0.000000									
1997	1	5	0	0	1	68	68	8	0.000000	0.000000
	0.000000		0.875000		0.125000		0.000000		0.000000	0.000000
	0.000000		0.000000		0.000000		0.000000		0.000000	0.000000
	0.000000									
1997	1	5	0	0	1	70	70	1	0.000000	0.000000
	0.000000		1.000000		0.000000		0.000000		0.000000	0.000000
	0.000000		0.000000		0.000000		0.000000		0.000000	0.000000
	0.000000									
1997	1	5	0	0	1	72	72	1	0.000000	0.000000
	0.000000		1.000000		0.000000		0.000000		0.000000	0.000000
	0.000000		0.000000		0.000000		0.000000		0.000000	0.000000
	0.000000									
1998	1	5	0	0	1	34	34	1	0.000000	1.000000
	0.000000		0.000000		0.000000		0.000000		0.000000	0.000000
	0.000000		0.000000		0.000000		0.000000		0.000000	0.000000
	0.000000									
1998	1	5	0	0	1	36	36	12	0.000000	1.000000
	0.000000		0.000000		0.000000		0.000000		0.000000	0.000000
	0.000000		0.000000		0.000000		0.000000		0.000000	0.000000
	0.000000									
1998	1	5	0	0	1	38	38	21	0.000000	0.952381
	0.047619		0.000000		0.000000		0.000000		0.000000	0.000000
	0.000000		0.000000		0.000000		0.000000		0.000000	0.000000
	0.000000									

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1998 1 5 0 0 1 44 44 8 0.000000 0.750000
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1998 1 5 0 0 1 46 46 5 0.000000 0.000000
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1998 1 5 0 0 1 66 66 1 0.000000 0.000000
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1999 1 5 0 0 1 42 42 14 0.000000 0.857143
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1999 1 5 0 0 1 44 44 9 0.000000 0.666667
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1999 1 5 0 0 1 46 46 5 0.000000 0.000000
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1999 1 5 0 0 1 48 48 6 0.000000 0.166667
0.833333 0.000000 0.000000 0.000000 0.000000 0.000000
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1999 1 5 0 0 1 50 50 6 0.000000 0.000000
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1999 1 5 0 0 1 52 52 7 0.000000 0.000000
0.714286 0.285714 0.000000 0.000000 0.000000 0.000000
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1999 1 5 0 0 1 54 54 5 0.000000 0.000000
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1999 1 5 0 0 1 56 56 4 0.000000 0.000000
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1999 1 5 0 0 1 60 60 2 0.000000 0.000000
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1999 1 5 0 0 1 62 62 5 0.000000 0.000000
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1999 1 5 0 0 1 64 64 5 0.000000 0.000000
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1999 1 5 0 0 1 66 66 2 0.000000 0.000000
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1999 1 5 0 0 1 68 68 1 0.000000 0.000000
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2000 1 5 0 0 1 34 34 3 0.000000 1.000000
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2000 1 5 0 0 1 36 36 21 0.000000 1.000000
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2000 1 5 0 0 1 38 38 32 0.000000 1.000000
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2000 1 5 0 0 1 46 46 15 0.000000 0.000000
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2000 1 5 0 0 1 48 48 11 0.000000 0.000000
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2000 1 5 0 0 1 50 50 10 0.000000 0.000000
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2000 1 5 0 0 1 52 52 5 0.000000 0.000000
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2000 1 5 0 0 1 54 54 17 0.000000 0.000000
0.941176 0.058824 0.000000 0.000000 0.000000 0.000000
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2000 1 5 0 0 1 56 56 14 0.000000 0.000000
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2000 1 5 0 0 1 58 58 17 0.000000 0.000000
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2000 1 5 0 0 1 60 60 18 0.000000 0.000000
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2000 1 5 0 0 1 62 62 11 0.000000 0.000000
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2000 1 5 0 0 1 64 64 9 0.000000 0.000000
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2000 1 5 0 0 1 66 66 5 0.000000 0.000000
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2000 1 5 0 0 1 68 68 3 0.000000 0.000000
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2000 1 5 0 0 1 70 70 4 0.000000 0.000000
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2000 1 5 0 0 1 80 80 1 0.000000 0.000000
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2001 1 5 0 0 1 34 34 1 0.000000 1.000000
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2001 1 5 0 0 1 36 36 7 0.000000 0.714286
0.285714 0.000000 0.000000 0.000000 0.000000 0.000000
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2001 1 5 0 0 1 38 38 14 0.000000 0.714286
0.285714 0.000000 0.000000 0.000000 0.000000 0.000000
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2001 1 5 0 0 1 40 40 23 0.000000 0.391304
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2001 1 5 0 0 1 42 42 24 0.000000 0.083333
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2001 1 5 0 0 1 44 44 11 0.000000 0.090909
0.909091 0.000000 0.000000 0.000000 0.000000 0.000000

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2001 1 5 0 0 1 46 46 11 0.000000 0.090909
0.909091 0.000000 0.000000 0.000000 0.000000 0.000000
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2001 1 5 0 0 1 48 48 4 0.000000 0.000000
0.750000 0.250000 0.000000 0.000000 0.000000 0.000000
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2001 1 5 0 0 1 50 50 1 0.000000 0.000000
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2001 1 5 0 0 1 52 52 1 0.000000 0.000000
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2001 1 5 0 0 1 56 56 4 0.000000 0.000000
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2001 1 5 0 0 1 58 58 7 0.000000 0.000000
0.428571 0.428571 0.142857 0.000000 0.000000 0.000000
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2001 1 5 0 0 1 60 60 3 0.000000 0.000000
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2001 1 5 0 0 1 62 62 4 0.000000 0.000000
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2001 1 5 0 0 1 64 64 11 0.000000 0.000000
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2001 1 5 0 0 1 66 66 7 0.000000 0.000000
0.000000 0.714286 0.285714 0.000000 0.000000 0.000000
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2001	1	5	0	0	1	68	68	1	0.000000	0.000000
	0.000000		1.000000		0.000000		0.000000		0.000000	0.000000
	0.000000		0.000000		0.000000		0.000000		0.000000	0.000000
	0.000000									
2001	1	5	0	0	1	70	70	3	0.000000	0.000000
	0.000000		1.000000		0.000000		0.000000		0.000000	0.000000
	0.000000		0.000000		0.000000		0.000000		0.000000	0.000000
	0.000000									
2001	1	5	0	0	1	76	76	1	0.000000	0.000000
	0.000000		0.000000		1.000000		0.000000		0.000000	0.000000
	0.000000		0.000000		0.000000		0.000000		0.000000	0.000000
	0.000000									
2002	1	5	0	0	1	36	36	4	0.000000	0.750000
	0.250000		0.000000		0.000000		0.000000		0.000000	0.000000
	0.000000		0.000000		0.000000		0.000000		0.000000	0.000000
	0.000000									
2002	1	5	0	0	1	38	38	22	0.000000	0.590909
	0.409091		0.000000		0.000000		0.000000		0.000000	0.000000
	0.000000		0.000000		0.000000		0.000000		0.000000	0.000000
	0.000000									
2002	1	5	0	0	1	40	40	42	0.000000	0.619048
	0.380952		0.000000		0.000000		0.000000		0.000000	0.000000
	0.000000		0.000000		0.000000		0.000000		0.000000	0.000000
	0.000000									
2002	1	5	0	0	1	42	42	25	0.000000	0.480000
	0.520000		0.000000		0.000000		0.000000		0.000000	0.000000
	0.000000		0.000000		0.000000		0.000000		0.000000	0.000000
	0.000000									
2002	1	5	0	0	1	44	44	31	0.000000	0.096774
	0.903226		0.000000		0.000000		0.000000		0.000000	0.000000
	0.000000		0.000000		0.000000		0.000000		0.000000	0.000000
	0.000000									
2002	1	5	0	0	1	46	46	12	0.000000	0.000000
	1.000000		0.000000		0.000000		0.000000		0.000000	0.000000
	0.000000		0.000000		0.000000		0.000000		0.000000	0.000000
	0.000000									
2002	1	5	0	0	1	48	48	22	0.000000	0.000000
	1.000000		0.000000		0.000000		0.000000		0.000000	0.000000
	0.000000		0.000000		0.000000		0.000000		0.000000	0.000000
	0.000000									
2002	1	5	0	0	1	50	50	11	0.000000	0.000000
	1.000000		0.000000		0.000000		0.000000		0.000000	0.000000
	0.000000		0.000000		0.000000		0.000000		0.000000	0.000000
	0.000000									
2002	1	5	0	0	1	52	52	8	0.000000	0.000000
	1.000000		0.000000		0.000000		0.000000		0.000000	0.000000

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2002 1 5 0 0 1 54 54 14 0.000000 0.000000
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2002 1 5 0 0 1 56 56 17 0.000000 0.000000
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2002 1 5 0 0 1 58 58 7 0.000000 0.000000
0.857143 0.142857 0.000000 0.000000 0.000000 0.000000
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2002 1 5 0 0 1 60 60 6 0.000000 0.000000
0.666667 0.333333 0.000000 0.000000 0.000000 0.000000
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2002 1 5 0 0 1 62 62 2 0.000000 0.000000
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2003 1 5 0 0 1 36 36 2 0.000000 1.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
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2003 1 5 0 0 1 38 38 9 0.000000 0.777778
0.222222 0.000000 0.000000 0.000000 0.000000 0.000000
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2003 1 5 0 0 1 40 40 6 0.000000 0.333333
0.666667 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
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2003 1 5 0 0 1 42 42 12 0.000000 0.250000
0.750000 0.000000 0.000000 0.000000 0.000000 0.000000
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2003 1 5 0 0 1 44 44 10 0.000000 0.000000
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2003 1 5 0 0 1 46 46 22 0.000000 0.000000
1.000000 0.000000 0.000000 0.000000 0.000000 0.000000
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2003	1	5	0	0	1	48	48	18	0.000000	0.000000
	1.000000		0.000000		0.000000		0.000000		0.000000	0.000000
	0.000000		0.000000		0.000000		0.000000		0.000000	0.000000
	0.000000									
2003	1	5	0	0	1	50	50	22	0.000000	0.000000
	1.000000		0.000000		0.000000		0.000000		0.000000	0.000000
	0.000000		0.000000		0.000000		0.000000		0.000000	0.000000
	0.000000									
2003	1	5	0	0	1	52	52	15	0.000000	0.000000
	1.000000		0.000000		0.000000		0.000000		0.000000	0.000000
	0.000000		0.000000		0.000000		0.000000		0.000000	0.000000
	0.000000									
2003	1	5	0	0	1	54	54	17	0.000000	0.000000
	0.823529		0.176471		0.000000		0.000000		0.000000	0.000000
	0.000000		0.000000		0.000000		0.000000		0.000000	0.000000
	0.000000									
2003	1	5	0	0	1	56	56	18	0.000000	0.000000
	0.722222		0.277778		0.000000		0.000000		0.000000	0.000000
	0.000000		0.000000		0.000000		0.000000		0.000000	0.000000
	0.000000									
2003	1	5	0	0	1	58	58	15	0.000000	0.000000
	0.266667		0.733333		0.000000		0.000000		0.000000	0.000000
	0.000000		0.000000		0.000000		0.000000		0.000000	0.000000
	0.000000									
2003	1	5	0	0	1	60	60	10	0.000000	0.000000
	0.300000		0.700000		0.000000		0.000000		0.000000	0.000000
	0.000000		0.000000		0.000000		0.000000		0.000000	0.000000
	0.000000									
2003	1	5	0	0	1	62	62	3	0.000000	0.000000
	0.000000		1.000000		0.000000		0.000000		0.000000	0.000000
	0.000000		0.000000		0.000000		0.000000		0.000000	0.000000
	0.000000									
2003	1	5	0	0	1	64	64	1	0.000000	0.000000
	0.000000		1.000000		0.000000		0.000000		0.000000	0.000000
	0.000000		0.000000		0.000000		0.000000		0.000000	0.000000
	0.000000									
2004	1	5	0	0	1	38	38	1	0.000000	1.000000
	0.000000		0.000000		0.000000		0.000000		0.000000	0.000000
	0.000000		0.000000		0.000000		0.000000		0.000000	0.000000
	0.000000									
2004	1	5	0	0	1	40	40	9	0.000000	0.222222
	0.777778		0.000000		0.000000		0.000000		0.000000	0.000000
	0.000000		0.000000		0.000000		0.000000		0.000000	0.000000
	0.000000									
2004	1	5	0	0	1	42	42	14	0.000000	0.071429
	0.928571		0.000000		0.000000		0.000000		0.000000	0.000000

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2004 1 5 0 0 1 44 44 10 0.000000 0.000000
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2004 1 5 0 0 1 46 46 9 0.000000 0.000000
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2004 1 5 0 0 1 48 48 10 0.000000 0.000000
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2004 1 5 0 0 1 50 50 8 0.000000 0.000000
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2004 1 5 0 0 1 52 52 12 0.000000 0.000000
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2004 1 5 0 0 1 54 54 9 0.000000 0.000000
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2004 1 5 0 0 1 56 56 6 0.000000 0.000000
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2004 1 5 0 0 1 58 58 1 0.000000 0.000000
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2004 1 5 0 0 1 60 60 3 0.000000 0.000000
0.333333 0.333333 0.333333 0.000000 0.000000 0.000000
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2004 1 5 0 0 1 64 64 1 0.000000 0.000000
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2005 1 5 0 0 1 36 36 3 0.000000 1.000000
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2005 1 5 0 0 1 38 38 8 0.000000 1.000000
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2005 1 5 0 0 1 40 40 2 0.000000 0.500000
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2005 1 5 0 0 1 42 42 4 0.000000 0.500000
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2005 1 5 0 0 1 44 44 3 0.000000 0.000000
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2005 1 5 0 0 1 46 46 5 0.000000 0.000000
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2005 1 5 0 0 1 48 48 9 0.000000 0.000000
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2005 1 5 0 0 1 50 50 2 0.000000 0.000000
0.500000 0.500000 0.000000 0.000000 0.000000 0.000000
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2005 1 5 0 0 1 52 52 7 0.000000 0.000000
0.714286 0.285714 0.000000 0.000000 0.000000 0.000000
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2005 1 5 0 0 1 54 54 7 0.000000 0.000000
0.571429 0.285714 0.142857 0.000000 0.000000 0.000000
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2005 1 5 0 0 1 56 56 5 0.000000 0.000000
0.600000 0.400000 0.000000 0.000000 0.000000 0.000000
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2005 1 5 0 0 1 58 58 9 0.000000 0.000000
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2005 1 5 0 0 1 60 60 2 0.000000 0.000000
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2005 1 5 0 0 1 62 62 1 0.000000 0.000000
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2006 1 5 0 0 1 38 38 3 0.000000 1.000000
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2006 1 5 0 0 1 40 40 13 0.000000 0.461538
0.538462 0.000000 0.000000 0.000000 0.000000 0.000000
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2006 1 5 0 0 1 42 42 7 0.000000 0.285714
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2006 1 5 0 0 1 44 44 11 0.000000 0.090909
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2006 1 5 0 0 1 46 46 11 0.000000 0.090909
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2006 1 5 0 0 1 48 48 8 0.000000 0.000000
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2006 1 5 0 0 1 50 50 9 0.000000 0.000000
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2006 1 5 0 0 1 52 52 11 0.000000 0.000000
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2006 1 5 0 0 1 54 54 5 0.000000 0.000000
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2008 1 11 0 0 1 100 100 5 0.000000 0.000000
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0.000000 0.000000 0.200000 0.400000 0.200000 0.000000
0.200000
2008 1 11 0 0 1 102 102 5 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.200000 0.200000 0.200000 0.000000
0.400000
2008 1 11 0 0 1 104 104 6 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.333333 0.500000 0.000000
0.166667
2008 1 11 0 0 1 106 106 3 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.333333 0.000000 0.000000
0.666667
2008 1 11 0 0 1 110 110 3 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.333333 0.333333
0.333333
2008 1 11 0 0 1 112 112 2 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
1.000000
2009 1 11 0 0 1 68 68 1 0.000000 0.000000
0.000000 1.000000 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000
2009 1 11 0 0 1 72 72 1 0.000000 0.000000
0.000000 0.000000 1.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000
2009 1 11 0 0 1 74 74 1 0.000000 0.000000
0.000000 1.000000 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000
2009 1 11 0 0 1 78 78 3 0.000000 0.000000
0.000000 0.000000 0.666667 0.333333 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000
2009 1 11 0 0 1 80 80 1 0.000000 0.000000
0.000000 0.000000 1.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000

2009 1 11 0 0 1 82 82 2 0.000000 0.000000
0.000000 0.000000 0.000000 0.500000 0.000000 0.000000
0.500000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000
2009 1 11 0 0 1 84 84 1 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 1.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000
2009 1 11 0 0 1 86 86 4 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.750000 0.000000
0.000000 0.250000 0.000000 0.000000 0.000000 0.000000
0.000000
2009 1 11 0 0 1 88 88 5 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.200000 0.200000
0.600000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000
2009 1 11 0 0 1 90 90 6 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.333333 0.000000
0.333333 0.333333 0.000000 0.000000 0.000000 0.000000
0.000000
2009 1 11 0 0 1 92 92 6 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.166667
0.000000 0.000000 0.666667 0.166667 0.000000 0.000000
0.000000
2009 1 11 0 0 1 94 94 3 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.333333 0.000000 0.666667 0.000000
0.000000
2009 1 11 0 0 1 96 96 7 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.428571 0.428571 0.000000 0.142857
0.000000
2009 1 11 0 0 1 98 98 6 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.166667 0.333333 0.333333 0.000000
0.166667
2009 1 11 0 0 1 100 100 5 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.200000 0.200000 0.600000 0.000000
0.000000
2009 1 11 0 0 1 102 102 8 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.125000 0.625000 0.125000
0.125000
2009 1 11 0 0 1 104 104 3 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000

0.000000 0.000000 0.000000 0.000000 0.333333 0.000000
0.666667
2009 1 11 0 0 1 106 106 2 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.500000
0.500000
2009 1 11 0 0 1 108 108 2 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
1.000000
2009 1 11 0 0 1 110 110 1 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 1.000000
0.000000
2009 1 11 0 0 1 114 114 1 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
1.000000
2010 1 11 0 0 1 78 78 3 0.000000 0.000000
0.000000 0.333333 0.333333 0.333333 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000
2010 1 11 0 0 1 80 80 1 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 1.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000
2010 1 11 0 0 1 82 82 3 0.000000 0.000000
0.000000 0.000000 0.666667 0.333333 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000
2010 1 11 0 0 1 84 84 1 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000 1.000000 0.000000 0.000000 0.000000 0.000000
0.000000
2010 1 11 0 0 1 86 86 4 0.000000 0.000000
0.000000 0.000000 0.000000 0.500000 0.000000 0.250000
0.000000 0.250000 0.000000 0.000000 0.000000 0.000000
0.000000
2010 1 11 0 0 1 88 88 6 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000 0.166667 0.500000 0.333333 0.000000 0.000000
0.000000
2010 1 11 0 0 1 90 90 4 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.250000
0.250000 0.250000 0.250000 0.000000 0.000000 0.000000
0.000000

2010 1 11 0 0 1 92 92 7 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.857143 0.142857 0.000000 0.000000
0.000000
2010 1 11 0 0 1 94 94 9 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.111111 0.000000 0.222222 0.444444 0.222222 0.000000
0.000000
2010 1 11 0 0 1 96 96 13 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.076923 0.000000
0.000000 0.076923 0.461538 0.000000 0.307692 0.076923
0.000000
2010 1 11 0 0 1 98 98 10 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.100000 0.500000 0.400000 0.000000
0.000000
2010 1 11 0 0 1 100 100 13 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.076923 0.461538 0.307692 0.076923
0.076923
2010 1 11 0 0 1 102 102 17 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.058824 0.352941 0.352941 0.235294
0.000000
2010 1 11 0 0 1 104 104 7 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.142857 0.142857 0.285714 0.285714
0.142857
2010 1 11 0 0 1 106 106 2 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.500000
0.500000
2010 1 11 0 0 1 110 110 1 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 1.000000
0.000000
2010 1 11 0 0 1 118 118 1 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 1.000000
0.000000
2011 1 11 0 0 1 74 74 1 0.000000 0.000000
0.000000 1.000000 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000
2011 1 11 0 0 1 76 76 1 0.000000 0.000000
0.000000 0.000000 1.000000 0.000000 0.000000 0.000000

0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000
2011 1 11 0 0 1 84 84 1 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 1.000000 0.000000 0.000000 0.000000
0.000000
2011 1 11 0 0 1 86 86 2 0.000000 0.000000
0.000000 0.000000 0.000000 0.500000 0.000000 0.000000
0.000000 0.500000 0.000000 0.000000 0.000000 0.000000
0.000000
2011 1 11 0 0 1 90 90 4 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.750000 0.000000 0.250000 0.000000
0.000000
2011 1 11 0 0 1 92 92 8 0.000000 0.000000
0.000000 0.000000 0.000000 0.125000 0.000000 0.000000
0.125000 0.125000 0.250000 0.375000 0.000000 0.000000
0.000000
2011 1 11 0 0 1 94 94 2 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.500000 0.500000 0.000000
0.000000
2011 1 11 0 0 1 96 96 9 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.444444 0.333333 0.111111 0.111111
0.000000
2011 1 11 0 0 1 98 98 7 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.142857 0.285714 0.285714 0.285714
0.000000
2011 1 11 0 0 1 100 100 8 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.125000 0.375000 0.125000 0.375000
0.000000
2011 1 11 0 0 1 102 102 5 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.600000 0.200000
0.200000
2011 1 11 0 0 1 104 104 3 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.666667
0.333333
2011 1 11 0 0 1 106 106 3 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.333333 0.000000 0.333333
0.333333

2011	1 11	0 0	1 108	108 1	0.000000	0.000000
	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	1.000000					
2012	1 11	0 0	1 72	72 1	0.000000	0.000000
	0.000000	0.000000	1.000000	0.000000	0.000000	0.000000
	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	0.000000					
2012	1 11	0 0	1 76	76 1	0.000000	0.000000
	0.000000	0.000000	0.000000	0.000000	0.000000	1.000000
	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	0.000000					
2012	1 11	0 0	1 78	78 1	0.000000	0.000000
	0.000000	0.000000	1.000000	0.000000	0.000000	0.000000
	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	0.000000					
2012	1 11	0 0	1 80	80 3	0.000000	0.000000
	0.000000	0.000000	0.666667	0.333333	0.000000	0.000000
	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	0.000000					
2012	1 11	0 0	1 84	84 2	0.000000	0.000000
	0.000000	0.000000	0.000000	0.500000	0.000000	0.500000
	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	0.000000					
2012	1 11	0 0	1 86	86 3	0.000000	0.000000
	0.000000	0.000000	0.333333	0.000000	0.000000	0.000000
	0.000000	0.000000	0.666667	0.000000	0.000000	0.000000
	0.000000					
2012	1 11	0 0	1 88	88 4	0.000000	0.000000
	0.000000	0.000000	0.000000	0.000000	0.250000	0.000000
	0.250000	0.000000	0.000000	0.500000	0.000000	0.000000
	0.000000					
2012	1 11	0 0	1 90	90 5	0.000000	0.000000
	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	0.000000	0.400000	0.200000	0.400000	0.000000	0.000000
	0.000000					
2012	1 11	0 0	1 92	92 5	0.000000	0.000000
	0.000000	0.000000	0.000000	0.000000	0.000000	0.200000
	0.000000	0.000000	0.600000	0.200000	0.000000	0.000000
	0.000000					
2012	1 11	0 0	1 94	94 16	0.000000	0.000000
	0.000000	0.000000	0.000000	0.000000	0.062500	0.000000
	0.000000	0.187500	0.375000	0.312500	0.062500	0.000000
	0.000000					
2012	1 11	0 0	1 96	96 7	0.000000	0.000000
	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000

	0.000000	0.000000	0.142857	0.428571	0.428571	0.000000
	0.000000					
2012	1 11	0 0	1 98	98 7	0.000000	0.000000
	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	0.000000	0.000000	0.000000	0.428571	0.428571	0.142857
	0.000000					
2012	1 11	0 0	1 100	100 16	0.000000	0.000000
	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	0.000000	0.000000	0.187500	0.125000	0.312500	0.312500
	0.062500					
2012	1 11	0 0	1 102	102 11	0.000000	0.000000
	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	0.000000	0.000000	0.000000	0.181818	0.272727	0.363636
	0.181818					
2012	1 11	0 0	1 104	104 4	0.000000	0.000000
	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	0.000000	0.000000	0.000000	0.250000	0.250000	0.500000
	0.000000					
2012	1 11	0 0	1 106	106 1	0.000000	0.000000
	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	0.000000	0.000000	0.000000	0.000000	0.000000	1.000000
	0.000000					
2012	1 11	0 0	1 108	108 4	0.000000	0.000000
	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	0.000000	0.000000	0.000000	0.000000	0.000000	0.250000
	0.750000					
2013	1 11	0 0	1 72	72 1	0.000000	0.000000
	0.000000	1.000000	0.000000	0.000000	0.000000	0.000000
	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	0.000000					
2013	1 11	0 0	1 76	76 1	0.000000	0.000000
	0.000000	0.000000	0.000000	1.000000	0.000000	0.000000
	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	0.000000					
2013	1 11	0 0	1 78	78 1	0.000000	0.000000
	0.000000	0.000000	1.000000	0.000000	0.000000	0.000000
	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	0.000000					
2013	1 11	0 0	1 82	82 3	0.000000	0.000000
	0.000000	0.000000	0.333333	0.666667	0.000000	0.000000
	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	0.000000					
2013	1 11	0 0	1 84	84 3	0.000000	0.000000
	0.000000	0.000000	0.333333	0.000000	0.000000	0.666667
	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
	0.000000					

2013 1 11 0 0 1 86 86 2 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 1.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000
2013 1 11 0 0 1 88 88 7 0.000000 0.000000
0.000000 0.000000 0.000000 0.142857 0.000000 0.000000
0.142857 0.000000 0.428571 0.000000 0.000000 0.285714
0.000000
2013 1 11 0 0 1 90 90 9 0.000000 0.000000
0.000000 0.000000 0.000000 0.222222 0.000000 0.000000
0.000000 0.111111 0.444444 0.111111 0.000000 0.111111
0.000000
2013 1 11 0 0 1 92 92 8 0.000000 0.000000
0.000000 0.000000 0.125000 0.125000 0.000000 0.000000
0.000000 0.000000 0.125000 0.250000 0.250000 0.125000
0.000000
2013 1 11 0 0 1 94 94 13 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.076923
0.000000 0.000000 0.461538 0.307692 0.000000 0.153846
0.000000
2013 1 11 0 0 1 96 96 15 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.133333
0.000000 0.000000 0.400000 0.200000 0.200000 0.066667
0.000000
2013 1 11 0 0 1 98 98 15 0.000000 0.000000
0.000000 0.000000 0.066667 0.000000 0.066667 0.000000
0.000000 0.000000 0.133333 0.066667 0.266667 0.400000
0.000000
2013 1 11 0 0 1 100 100 13 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.230769 0.076923 0.307692 0.384615
0.000000
2013 1 11 0 0 1 102 102 12 0.000000 0.000000
0.000000 0.000000 0.083333 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.583333 0.250000
0.083333
2013 1 11 0 0 1 104 104 4 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.500000 0.500000
0.000000
2013 1 11 0 0 1 106 106 3 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
1.000000
2013 1 11 0 0 1 108 108 2 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000

0.000000 0.000000 0.000000 0.000000 0.000000 1.000000
0.000000
2013 1 11 0 0 1 110 110 3 0.000000 0.000000
0.000000 0.000000 0.333333 0.000000 0.000000 0.000000
0.000000 0.000000 0.000000 0.000000 0.000000 0.000000
0.666667
0 #_N_MeanSize-at-Age_obs
0 #_N_environ_variables
0 #_N_environ_obs
#_year_environmental-effect
#_NONE
0 #_N_sizefreq_methods_to_read
1 #_Do_tag?_1=yes,0=no
112 #_Number_of_tag_groups
403 #_Number_of_recap_events
0.75
#_Mixing_latency_period:_N_periods_to_delay_before_comparing_observed_expected_recoveries_(0=release_period)
3 #_Max_no_seasons_to_track_recoveries,_after_which_tags_enter_accumulator
#__Release Data__

#TG	area	yr	season	<tfill>	gender	Age	Nrelease
1	1	1989	1	999	0	0	1151
2	1	1989	1	999	0	1	536
3	1	1989	1	999	0	2	311
4	1	1990	1	999	0	0	343
5	1	1990	1	999	0	0	1475
6	1	1991	1	999	0	0	590
7	1	1991	1	999	0	0	2081
8	1	1991	1	999	0	1	361
9	1	1991	1	999	0	1	346
10	1	1992	1	999	0	0	588
11	1	1992	1	999	0	0	3306
12	1	1992	1	999	0	1	743
13	1	1992	1	999	0	1	1350
14	1	1992	1	999	0	2	572
15	1	1992	1	999	0	4	386
16	1	1993	1	999	0	0	520
17	1	1993	1	999	0	0	1296
18	1	1993	1	999	0	1	592
19	1	1993	1	999	0	1	1770
20	1	1993	1	999	0	2	1272
21	1	1993	1	999	0	4	974
22	1	1994	1	999	0	0	507
23	1	1994	1	999	0	0	462
24	1	1994	1	999	0	1	601
25	1	1994	1	999	0	1	643

26	1	1994	1	999	0	2	1239
27	1	1994	1	999	0	4	1075
28	1	1995	1	999	0	0	1182
29	1	1995	1	999	0	0	783
30	1	1995	1	999	0	1	592
31	1	1995	1	999	0	1	1027
32	1	1995	1	999	0	2	1035
33	1	1995	1	999	0	4	1572
34	1	1996	1	999	0	0	428
35	1	1996	1	999	0	1	1081
36	1	1996	1	999	0	1	1814
37	1	1996	1	999	0	2	1399
38	1	1996	1	999	0	4	1748
39	1	1997	1	999	0	0	878
40	1	1997	1	999	0	1	907
41	1	1997	1	999	0	2	1848
42	1	1997	1	999	0	4	1659
43	1	1998	1	999	0	0	936
44	1	1998	1	999	0	1	1360
45	1	1998	1	999	0	2	1058
46	1	1998	1	999	0	5	2413
47	1	1999	1	999	0	0	519
48	1	1999	1	999	0	1	711
49	1	1999	1	999	0	2	727
50	1	1999	1	999	0	5	1136
51	1	2000	1	999	0	1	771
52	1	2000	1	999	0	2	670
53	1	2000	1	999	0	5	1101
54	1	2001	1	999	0	0	336
55	1	2001	1	999	0	0	304
56	1	2001	1	999	0	2	630
57	1	2001	1	999	0	5	1279
58	1	2002	1	999	0	0	368
59	1	2002	1	999	0	1	1316
60	1	2002	1	999	0	1	925
61	1	2002	1	999	0	2	612
62	1	2002	1	999	0	5	1314
63	1	2003	1	999	0	0	439
64	1	2003	1	999	0	1	1213
65	1	2003	1	999	0	1	1103
66	1	2003	1	999	0	2	1764
67	1	2003	1	999	0	4	1556
68	1	2004	1	999	0	1	1353
69	1	2004	1	999	0	1	694
70	1	2004	1	999	0	2	882
71	1	2004	1	999	0	2	873

72	1	2004	1	999	0	4	628
73	1	2004	1	999	0	5	1063
74	1	2005	1	999	0	1	578
75	1	2005	1	999	0	1	462
76	1	2005	1	999	0	2	1286
77	1	2005	1	999	0	4	1369
78	1	2006	1	999	0	1	595
79	1	2006	1	999	0	1	394
80	1	2006	1	999	0	2	956
81	1	2006	1	999	0	4	1493
82	1	2007	1	999	0	0	427
83	1	2007	1	999	0	1	408
84	1	2007	1	999	0	2	648
85	1	2007	1	999	0	5	879
86	1	2008	1	999	0	0	489
87	1	2008	1	999	0	1	821
88	1	2008	1	999	0	1	354
89	1	2008	1	999	0	2	455
90	1	2008	1	999	0	4	760
91	1	2009	1	999	0	0	451
92	1	2009	1	999	0	1	967
93	1	2009	1	999	0	2	546
94	1	2009	1	999	0	4	461
95	1	2010	1	999	0	0	460
96	1	2010	1	999	0	1	951
97	1	2010	1	999	0	1	327
98	1	2010	1	999	0	2	749
99	1	2010	1	999	0	4	652
100	1	2011	1	999	0	0	418
101	1	2011	1	999	0	1	758
102	1	2011	1	999	0	2	608
103	1	2011	1	999	0	4	573
104	1	2012	1	999	0	0	465
105	1	2012	1	999	0	1	785
106	1	2012	1	999	0	2	524
107	1	2012	1	999	0	4	432
108	1	2013	1	999	0	0	1186
109	1	2013	1	999	0	1	1016
110	1	2013	1	999	0	2	307
111	1	2013	1	999	0	2	525
112	1	2013	1	999	0	4	675

#__Recapture Data__

#TG	year	season	fleet	Number
1	1989	1	5	39
1	1990	1	5	6
1	1989	1	6	2

2	1989	1	5	23
2	1990	1	5	3
2	1991	1	5	1
3	1989	1	5	6
3	1990	1	5	4
3	1991	1	5	2
4	1990	1	5	58
4	1991	1	5	9
4	1992	1	5	6
4	1993	1	5	2
5	1990	1	5	72
5	1991	1	5	5
5	1990	1	6	2
6	1991	1	5	72
6	1992	1	5	19
6	1993	1	5	6
6	1994	1	5	1
6	1991	1	6	1
7	1991	1	5	135
7	1992	1	5	12
7	1996	1	5	1
7	1991	1	6	3
8	1991	1	5	53
8	1992	1	5	33
8	1993	1	5	8
8	1994	1	5	1
9	1991	1	5	31
9	1992	1	5	7
10	1992	1	5	49
10	1993	1	5	14
10	1994	1	5	4
10	1995	1	5	1
10	1992	1	6	2
11	1992	1	5	205
11	1993	1	5	19
11	1994	1	5	4
11	1992	1	6	4
12	1992	1	5	75
12	1993	1	5	27
12	1994	1	5	10
12	1995	1	5	2
13	1992	1	5	75
13	1993	1	5	15
13	1994	1	5	2
13	1992	1	6	1
14	1992	1	5	56

14	1993	1	5	9
14	1994	1	5	2
14	1997	1	5	1
14	1992	1	6	1
15	1992	1	5	27
15	1993	1	5	4
15	1992	1	6	1
16	1993	1	5	43
16	1994	1	5	8
16	1995	1	5	1
16	1996	1	5	1
16	1997	1	5	1
16	1993	1	6	1
17	1993	1	5	86
17	1994	1	5	6
17	1993	1	6	2
18	1993	1	5	49
18	1994	1	5	20
18	1995	1	5	6
18	1996	1	5	1
18	1993	1	6	1
19	1993	1	5	94
19	1994	1	5	16
19	1995	1	5	1
19	1993	1	6	2
19	1994	1	6	1
20	1993	1	5	66
20	1994	1	5	4
20	1993	1	6	3
21	1993	1	5	53
21	1994	1	5	4
21	1993	1	6	3
22	1994	1	5	36
22	1995	1	5	8
22	1996	1	5	3
22	1994	1	6	2
23	1994	1	5	16
23	1995	1	5	5
23	1997	1	5	1
23	1994	1	6	1
24	1994	1	5	81
24	1995	1	5	13
24	1996	1	5	4
24	1998	1	5	1
24	1994	1	6	1
25	1994	1	5	31

25	1995	1	5	3
25	1994	1	6	1
26	1994	1	5	71
26	1995	1	5	10
26	1996	1	5	1
26	1994	1	6	3
26	1995	1	6	1
27	1994	1	5	43
27	1995	1	5	3
27	1994	1	6	2
27	1995	1	6	1
28	1995	1	5	64
28	1996	1	5	20
28	1997	1	5	5
28	1998	1	5	3
28	1995	1	6	3
29	1995	1	5	43
29	1996	1	5	4
29	1995	1	6	1
30	1995	1	5	56
30	1996	1	5	15
30	1995	1	6	2
30	1996	1	6	1
31	1995	1	5	45
31	1996	1	5	6
31	1995	1	6	3
31	1996	1	6	1
32	1995	1	5	39
32	1996	1	5	2
32	1997	1	5	1
32	1995	1	6	2
32	1996	1	6	2
33	1995	1	5	30
33	1996	1	5	3
33	1997	1	5	2
33	1995	1	6	4
33	1996	1	6	1
34	1996	1	5	20
34	1997	1	5	2
34	1996	1	6	1
35	1996	1	5	113
35	1997	1	5	30
35	1998	1	5	12
35	1996	1	6	3
35	1997	1	6	1
36	1996	1	5	76

36	1997	1	5	7
36	1998	1	5	2
36	1996	1	6	5
36	1997	1	6	1
37	1996	1	5	63
37	1997	1	5	5
37	1996	1	6	5
37	1997	1	6	2
37	1998	1	6	1
38	1996	1	5	35
38	1997	1	5	2
38	1996	1	6	7
38	1997	1	6	1
39	1997	1	5	39
39	1998	1	5	5
39	1997	1	6	1
40	1997	1	5	40
40	1998	1	5	14
40	1997	1	6	2
40	1998	1	6	1
41	1997	1	5	46
41	1998	1	5	2
41	1997	1	6	6
41	1998	1	6	1
42	1997	1	5	22
42	1997	1	6	4
43	1998	1	5	30
43	1999	1	5	4
43	1998	1	6	2
44	1998	1	5	68
44	1999	1	5	8
44	2000	1	5	1
44	1998	1	6	3
44	1999	1	6	1
45	1998	1	5	44
45	1999	1	5	1
45	1998	1	6	3
45	1999	1	6	1
46	1998	1	5	28
46	1999	1	5	2
46	2002	1	5	1
46	1998	1	6	7
46	1999	1	6	1
47	1999	1	5	20
47	2000	1	5	1
47	1999	1	6	1

48	1999	1	5	29
48	2000	1	5	2
48	1999	1	6	2
49	1999	1	5	12
49	1999	1	6	2
50	1999	1	5	9
50	1999	1	6	3
51	2000	1	5	22
51	2001	1	5	4
51	2000	1	6	2
52	2000	1	5	9
52	2001	1	5	2
52	2000	1	6	3
53	2000	1	5	5
53	2002	1	5	1
53	2000	1	6	3
54	2001	1	5	5
54	2002	1	5	1
54	2003	1	5	2
55	2001	1	5	4
55	2002	1	5	1
55	2001	1	6	1
56	2001	1	5	11
56	2001	1	6	2
57	2001	1	5	5
57	2001	1	6	4
57	2002	1	6	1
58	2002	1	5	13
58	2003	1	5	6
58	2002	1	6	1
59	2002	1	5	57
59	2003	1	5	26
59	2004	1	5	5
59	2002	1	6	3
59	2003	1	6	5
59	2004	1	6	1
60	2002	1	5	14
60	2003	1	5	3
60	2002	1	6	2
61	2002	1	5	10
61	2003	1	5	1
61	2002	1	6	1
61	2003	1	6	1
62	2002	1	5	2
62	2002	1	6	3
62	2003	1	6	1

63	2003	1	5	4
63	2004	1	5	4
63	2005	1	5	1
63	2008	1	5	1
63	2003	1	6	1
64	2003	1	5	86
64	2004	1	5	20
64	2005	1	5	4
64	2003	1	6	4
64	2004	1	6	3
64	2005	1	6	1
65	2003	1	5	14
65	2004	1	5	4
65	2003	1	6	3
65	2004	1	6	1
66	2003	1	5	34
66	2004	1	5	4
66	2003	1	6	7
66	2004	1	6	3
67	2003	1	5	6
67	2004	1	5	1
67	2003	1	6	5
67	2004	1	6	1
68	2004	1	5	97
68	2005	1	5	15
68	2006	1	5	3
68	2004	1	6	4
68	2005	1	6	2
68	2006	1	6	1
69	2004	1	5	9
69	2005	1	5	1
69	2004	1	6	1
70	2004	1	5	24
70	2005	1	5	6
70	2004	1	6	4
70	2005	1	6	2
70	2006	1	6	1
71	2004	1	5	6
71	2004	1	6	2
72	2004	1	5	8
72	2004	1	6	2
73	2004	1	6	2
74	2005	1	5	27
74	2006	1	5	10
74	2008	1	5	2
74	2005	1	6	1

74	2006	1	6	1
74	2007	1	6	1
75	2005	1	5	10
75	2006	1	5	2
75	2005	1	6	1
76	2005	1	5	12
76	2006	1	5	1
76	2005	1	6	3
76	2006	1	6	3
76	2007	1	6	1
77	2005	1	5	3
77	2006	1	5	1
77	2005	1	6	3
77	2006	1	6	2
78	2006	1	5	38
78	2007	1	5	5
78	2006	1	6	1
78	2007	1	6	1
78	2008	1	6	1
79	2006	1	5	15
79	2006	1	6	1
79	2007	1	6	1
80	2006	1	5	11
80	2007	1	5	1
80	2006	1	6	4
80	2007	1	6	1
81	2006	1	5	2
81	2006	1	6	9
81	2007	1	6	2
82	2007	1	5	4
82	2008	1	5	2
83	2007	1	5	27
83	2008	1	5	2
83	2007	1	6	1
83	2008	1	6	1
84	2007	1	5	4
84	2007	1	6	2
84	2008	1	6	1
85	2007	1	6	4
85	2008	1	6	1
86	2008	1	5	1
86	2009	1	5	2
87	2008	1	5	47
87	2009	1	5	6
87	2010	1	5	1
87	2008	1	6	2

87	2009	1	6	2
87	2010	1	6	2
88	2008	1	5	4
88	2009	1	5	1
88	2008	1	6	1
89	2008	1	5	2
89	2008	1	6	1
89	2009	1	6	1
90	2008	1	5	2
90	2008	1	6	4
90	2009	1	6	1
91	2009	1	5	2
91	2010	1	5	4
92	2009	1	5	41
92	2010	1	5	11
92	2009	1	6	3
92	2010	1	6	3
92	2011	1	6	1
93	2009	1	5	3
93	2009	1	6	2
93	2010	1	6	1
94	2009	1	6	2
94	2010	1	6	1
95	2010	1	5	1
95	2011	1	5	1
95	2010	1	6	1
96	2010	1	5	49
96	2011	1	5	9
96	2010	1	6	3
96	2011	1	6	1
97	2010	1	6	1
98	2010	1	5	9
98	2010	1	6	4
98	2011	1	6	1
99	2011	1	5	1
99	2010	1	6	4
99	2011	1	6	1
100	2011	1	5	9
100	2012	1	5	4
100	2013	1	5	1
100	2011	1	6	1
101	2011	1	5	36
101	2012	1	5	13
101	2013	1	5	1
101	2011	1	6	2
101	2012	1	6	2

101	2013	1	6	1
102	2011	1	5	2
102	2012	1	5	1
102	2011	1	6	4
102	2012	1	6	1
103	2011	1	6	4
103	2012	1	6	1
103	2013	1	6	1
104	2012	1	5	2
104	2013	1	5	4
104	2012	1	6	1
105	2012	1	5	49
105	2013	1	5	12
105	2012	1	6	2
105	2013	1	6	2
106	2012	1	5	3
106	2013	1	5	2
106	2012	1	6	2
106	2013	1	6	2
107	2012	1	5	1
107	2012	1	6	2
107	2013	1	6	1
108	2013	1	5	9
108	2013	1	6	5
109	2013	1	5	36
109	2013	1	6	4
110	2013	1	5	4
110	2013	1	6	2
111	2013	1	5	4
111	2013	1	6	3
112	2013	1	5	1
112	2013	1	6	5

0 #_no_morphcomp_data
999 #_successful end

Appendix x. Stock Synthesis control file for the southern stock base model.

SS-V3.24S-
safe;_07/24/2013;_Stock_Synthesis_by_Richard_Methot_(NOAA)_using_ADMB_10.1
#C -- Executed: 2015-07-31 16:05:02
#C
###
1 #_N_Growth_Patterns
1 #_N_Morphs_Within_GrowthPattern
3 #_Nblock_designs -blocks_per_design -block_time_span
1 3 4
1986 2013
1986 1991 1992 2002 2003 2013

1986 1992 1993 2001 2002 2007 2008 2013
0.5 #_fracfemale
3
#_natM_type:_0=1Parm;1=N_breakpoints;2=Lorenzen;3=agespecific;4=agespec_withseasinterpolate
0.26384640 0.18403380 0.15194530 0.13744770 0.12849540 0.12113950 0.11474780
0.10985730 0.10663310 0.10469540 0.10356790 0.10290010 0.10248110 0.10219460
0.10197710 0.10179240 0.10161720 0.10143300 0.10122230 0.10096570 0.10064160
0.10022970 0.09971932 0.09912170 0.09848023 0.09786630 0.09735495 0.09699182
0.09677546 0.09666848 0.09662475 0.09660990 0.09660567 0.09660463 0.09660441
0.09660437 0.09660436 0.09660436 0.09660436 0.09660436 0.09660436
3
#_GrowthModel:1=vonBert_with_L1&L2;2=Richards_with_L1&L2;3=not_implemented;4=not_implemented
0.5 #_Growth_Age_for_L1
999 #_Growth_Age_for_L2(999_to_use_as_Linf)
1 #_number of Kdevs
9 #_first Kdev age
0 #_SD_add_to_LAA(set_to_0.1_for_SS2_V1.x_compatibility)--Recommend using a value of 0.0
0
#_CV_Growth_Pattern:0_CV=f(LAA);1_CV=F(A);2_SD=F(LAA);3_SD=F(A);4_logSD=F(A)
2 #_maturity_option:1=length_logistic;2=age_logistic;3=read_age-maturity_matrix_by growth_pattern;4=read_age-fecundity;5=read_fec_and_wt_from_wtatage.ss
3 #_First_Mature_Age--overridden_with_mat_option=3,4_but_must_exist
3 #_fecundity option:(1)eggs=Wt*(a+b*Wt);(2)eggs=a*L^b;(3)eggs=a*Wt^b or [fec = ssb](4)eggs=a+b*L;(5)eggs=a+b*W--note:irrelevant_if_Maturity_Option=4_or_5
0 #_hermaphroditism option: 0=none;1=age-specific_fxn
1 #_parameter_offset_approach(1=none,2= M,G,CV_G_as_offset_from_female-GP1,3=like SS2 V1.x)
2
#_env/block/dev_adjust_method(1=standard;2=logistic_transform_keeps_in_base_parm_bounds;3=standard_w/_no_bound_check)
#_MG parameter initialization ****

#_LO	HI	INIT	PRIOR	PR_type	SD	PHASE	env-var	use_dev	dev_minyr	dev_maxyr	dev_stddev	Block	Block_Fxn	description
6	51	34	34	1	3	3	0	0	0	0	0	0	0	#_L_at_Amin_Fem_GP_1 (cm)
52	156	104	104	-1	0.01	3	0	0	0	0	0	0	0	#_L_at_Amax_Fem_GP_1 (cm)
0.12	0.46	0.23	0.23	-1	0.01	3	0	0	0	0	0	0	0	#_VonBert_K_Fem_GP_1, per yr
-5	5	1	1	-1	0.1	2	0	0	0	0	0	0	0	#_Kdev_begAge_9
0.0001	0.5	0.05	0.05	-1	0.01	4	0	0	0	0	0	0	0	#_CV_young_Fem_GP_1

0.0001 0.5 0.05 0.05 -1 0.01 4 0 0 0 0 0 0
0 #_CV_old_Fem_GP_1
9.9e-06 1.2e-05 1.1e-05 1.1e-05 -1 99 -2 0 0
0 0 0 0 0 #_Wtlen_1_Fem
2.7e+00 3.3e+00 3e+00 3e+00 -1 99 -3 0 0 0 0
0 0 0 #_Wtlen_2_Fem
2.8e+00 8.5e+00 4.3e+00 4.3e+00 -1 99 -3 0 0
0 0 0 0 0 #_Mat50%_Fem
-2.79 -0.792 -1.79 -1.79 -1 99 -3 0 0 0 0 0 0
0 #_Mat_slope_Fem (must be negative)
-3 3 0.5 0.5 -1 -99 -1 0 0 0 0 0 0
0 #_Eggs/kg_inter_Fem..a_of_fec=aW^b,if a=0.5,b=1_then_SSB=0.5SSB (work around 1-gender model)
-3 3 1 1 -1 -99 -1 0 0 0 0 0 0
0 #_Eggs/kg_slope_wt_Fem..b_of_above
-4 4 0 0 -1 0.1 -2 0 0 0 0 0 0
0 #_RecrDist_GP_1
-4 4 1 1 -1 0.1 -2 0 0 0 0 0 0
0 #_RecrDist_Area_1
-4 4 -4 -4 -1 0.1 -2 0 0 0 0 0 0
0 #_RecrDist_Seas_1
0 1 1 1 -1 0.1 -3 0 0 0 0 0 0
0 #_CohortGrowDev
#_seasonal_effects_on_biology_parms
#Fwtln1 Fwtln2 mat1__mat2__fec1__ fec2__ Mwtln1 Mwtln2 L1___ K___
0 0 0 0 0 0 0 0 0 0
###
3 #_SR_function:2=Ricker;3=std_B-H;4=SCAA;5=Hockey;6=B-H_flattop;7=survival_3Parm
#_LO_____HI______INIT___PRIOR_PR_type___SD___PHASE_____description
3.635 14.54 7.27 7.27 -1 0.1 1 #_SR_LN(R0)
0.2 0.99 0.99 0.99 -1 0.1 -1 #_SR_BH_steep
0.15 2.4 0.6 0.6 -1 0.1 -4 #_R_sigma
-5 5 0 0 -1 0.1 -3 #_SR_envlink
-5 5 -0.1 -0.1 -1 0.1 1 #_SR_R1_offset
-5 5 0 0 -1 0.1 2 #_SR_autocorr
#_additional_spawner_recruit_conditions
0 #_SR_env_link --index of the envirnmntal variable that will be used for adjustment of SR expectations
0 #_SR_env_target_0=none;1=devs;_2=R0;_3=steepness
1 # do_recdev:0=none(all R from SR);1=devvector;2=simple deviations
1983 #_first_year_of_main_recr_devs;_early_devs_can_preceed_this_era
2013 #_last_year_of_main_recr_devs;_forecast_devs_start_in_following_year
2 #_recdev_phase
1 #_(0/1)_to_read_13_advanced_options
1911 #_recdev_early_start(0=none;neg_value_makes_relative_to_recdev_start)
4 #_recdev_early_phase-turn on the early era during a later phase

0 #_forecast_recruitment_phase(incl._late_recr)(0_value_resets_to_maxphase+1)
1 #_lambda for Fcast_recr_like occurring before endyr+1
1958 #_last_early_yr_with_no_bias_adj_in_MPD
1984 #_first_yr_fullbias_adj_in_MPD
2013 #_last_yr_fullbias_adj_in_MPD
2029 #_first_recent_yr_nobias_adj_in_MPD
0.9877 #_max_bias_adj_in_MPD(-
1_to_override_ramp_and_set_biasadj=1.0_for_all_estimated_recdevs)
0 #_period_of_cycles_in_recruitment(N_parms_read_below)
-5 #min_rec_dev
5 #max_rec_dev
0 #_read_recdevs
#_finished_recdevs_advanced_options
##
#_Fishing_mortality
0.5 # _F_ballpark_for_tuning_early_phases -- from south base apical-overall F in 2000 -- prob with comm fishery end year
1984 # _F_ballpark_year(neg_value_to_disable)
2 # _F_Method:1=Pope;2=instan_F;3=hybrid(hybrid_is_recommended)
4 # _max_F_or_harvest_rate,_depends_on_F_Method (4 is recommended)
0.1 # starting value of each F
1 # phase of F becoming active
320 # number of F detail inputs below

#fleet	yr	seas	F	se	phase
2	1950	1	0.01320	0.172	1
2	1951	1	0.01361	0.172	1
2	1952	1	0.01402	0.172	1
2	1953	1	0.01443	0.172	1
2	1954	1	0.01484	0.172	1
2	1955	1	0.01526	0.172	1
2	1956	1	0.01567	0.172	1
2	1957	1	0.01608	0.172	1
2	1958	1	0.01649	0.172	1
2	1959	1	0.01815	0.172	1
2	1960	1	0.01859	0.172	1
2	1961	1	0.02059	0.172	1
2	1962	1	0.01942	0.172	1
2	1963	1	0.01984	0.172	1
2	1964	1	0.02080	0.172	1
2	1965	1	0.02196	0.172	1
2	1966	1	0.02253	0.172	1
2	1967	1	0.02450	0.172	1
2	1968	1	0.02462	0.172	1
2	1969	1	0.02588	0.172	1
2	1970	1	0.02793	0.172	1
2	1971	1	0.03502	0.172	1

2	1972	1	0.03629	0.172	1
2	1973	1	0.03836	0.172	1
2	1974	1	0.04142	0.172	1
2	1975	1	0.04322	0.172	1
2	1976	1	0.04080	0.172	1
2	1977	1	0.03670	0.172	1
2	1978	1	0.03315	0.172	1
2	1979	1	0.03555	0.172	1
2	1980	1	0.02923	0.172	1
2	1981	1	0.00726	0.173	1
2	1982	1	0.01781	0.201	1
2	1983	1	0.03794	0.143	1
2	1984	1	0.25000	0.12	1
2	1985	1	0.08381	0.14	1
2	1986	1	0.01074	0.141	1
2	1987	1	0.00565	0.22	1
2	1988	1	0.00100	0.327	1
2	1989	1	0.00230	0.159	1
2	1990	1	0.00635	0.155	1
2	1991	1	0.01089	0.096	1
2	1992	1	0.01277	0.072	1
2	1993	1	0.00920	0.074	1
2	1994	1	0.02317	0.066	1
2	1995	1	0.01524	0.075	1
2	1996	1	0.02009	0.119	1
2	1997	1	0.00646	0.086	1
2	1998	1	0.00636	0.069	1
2	1999	1	0.00849	0.057	1
2	2000	1	0.01368	0.054	1
2	2001	1	0.01730	0.057	1
2	2002	1	0.01167	0.062	1
2	2003	1	0.01541	0.059	1
2	2004	1	0.01383	0.051	1
2	2005	1	0.02303	0.071	1
2	2006	1	0.00800	0.052	1
2	2007	1	0.01664	0.056	1
2	2008	1	0.01372	0.067	1
2	2009	1	0.00581	0.059	1
2	2010	1	0.03015	0.058	1
2	2011	1	0.01431	0.051	1
2	2012	1	0.00780	0.06	1
2	2013	1	0.03718	0.049	1
3	1950	1	0.00005	0.159	1
3	1951	1	0.00005	0.159	1
3	1952	1	0.00005	0.159	1
3	1953	1	0.00006	0.159	1

3	1954	1	0.00006	0.159	1
3	1955	1	0.00006	0.159	1
3	1956	1	0.00006	0.159	1
3	1957	1	0.00006	0.159	1
3	1958	1	0.00006	0.159	1
3	1959	1	0.00007	0.159	1
3	1960	1	0.00007	0.159	1
3	1961	1	0.00008	0.159	1
3	1962	1	0.00007	0.159	1
3	1963	1	0.00008	0.159	1
3	1964	1	0.00008	0.159	1
3	1965	1	0.00008	0.159	1
3	1966	1	0.00009	0.159	1
3	1967	1	0.00009	0.159	1
3	1968	1	0.00009	0.159	1
3	1969	1	0.00010	0.159	1
3	1970	1	0.00011	0.159	1
3	1971	1	0.00013	0.159	1
3	1972	1	0.00014	0.159	1
3	1973	1	0.00015	0.159	1
3	1974	1	0.00016	0.159	1
3	1975	1	0.00017	0.159	1
3	1976	1	0.00016	0.159	1
3	1977	1	0.00014	0.159	1
3	1978	1	0.00013	0.159	1
3	1979	1	0.00014	0.159	1
3	1980	1	0.00011	0.159	1
3	1981	1	0.00004	0.162	1
3	1982	1	0.00009	0.185	1
3	1983	1	0.00104	0.13	1
3	1984	1	0.00039	0.096	1
3	1985	1	0.00665	0.082	1
3	1986	1	0.00354	0.082	1
3	1987	1	0.04556	0.085	1
3	1988	1	0.02206	0.184	1
3	1989	1	0.01536	0.098	1
3	1990	1	0.00252	0.098	1
3	1991	1	0.09166	0.102	1
3	1992	1	0.02441	0.076	1
3	1993	1	0.05992	0.08	1
3	1994	1	0.08450	0.093	1
3	1995	1	0.08524	0.093	1
3	1996	1	0.05299	0.092	1
3	1997	1	0.05863	0.084	1
3	1998	1	0.05199	0.096	1
3	1999	1	0.05852	0.102	1

3	2000	1	0.07192	0.088	1
3	2001	1	0.11344	0.132	1
3	2002	1	0.07541	0.084	1
3	2003	1	0.08830	0.074	1
3	2004	1	0.17160	0.101	1
3	2005	1	0.19163	0.078	1
3	2006	1	0.09459	0.095	1
3	2007	1	0.07367	0.092	1
3	2008	1	0.09155	0.078	1
3	2009	1	0.05836	0.085	1
3	2010	1	0.25000	0.091	1
3	2011	1	0.13348	0.092	1
3	2012	1	0.09455	0.108	1
3	2013	1	0.23443	0.081	1
4	1950	1	0.01147	0.147	1
4	1951	1	0.01183	0.147	1
4	1952	1	0.01219	0.147	1
4	1953	1	0.01254	0.147	1
4	1954	1	0.01290	0.147	1
4	1955	1	0.01326	0.147	1
4	1956	1	0.01362	0.147	1
4	1957	1	0.01397	0.147	1
4	1958	1	0.01433	0.147	1
4	1959	1	0.01633	0.147	1
4	1960	1	0.01658	0.147	1
4	1961	1	0.01702	0.147	1
4	1962	1	0.01757	0.147	1
4	1963	1	0.01943	0.147	1
4	1964	1	0.02044	0.147	1
4	1965	1	0.02289	0.147	1
4	1966	1	0.02571	0.147	1
4	1967	1	0.02350	0.147	1
4	1968	1	0.02240	0.147	1
4	1969	1	0.02231	0.147	1
4	1970	1	0.02319	0.147	1
4	1971	1	0.02479	0.147	1
4	1972	1	0.02548	0.147	1
4	1973	1	0.02636	0.147	1
4	1974	1	0.02820	0.147	1
4	1975	1	0.02913	0.147	1
4	1976	1	0.02816	0.147	1
4	1977	1	0.02617	0.147	1
4	1978	1	0.02502	0.147	1
4	1979	1	0.02588	0.147	1
4	1980	1	0.02529	0.147	1
4	1981	1	0.00156	0.196	1

4	1982	1	0.00487	0.078	1
4	1983	1	0.01373	0.167	1
4	1984	1	0.25000	0.136	1
4	1985	1	0.16085	0.076	1
4	1986	1	0.02488	0.085	1
4	1987	1	0.03477	0.075	1
4	1988	1	0.04929	0.085	1
4	1989	1	0.00947	0.089	1
4	1990	1	0.02497	0.129	1
4	1991	1	0.04641	0.103	1
4	1992	1	0.02628	0.067	1
4	1993	1	0.03867	0.111	1
4	1994	1	0.06301	0.181	1
4	1995	1	0.05586	0.244	1
4	1996	1	0.02313	0.106	1
4	1997	1	0.01059	0.076	1
4	1998	1	0.00359	0.071	1
4	1999	1	0.01298	0.103	1
4	2000	1	0.01778	0.098	1
4	2001	1	0.02257	0.115	1
4	2002	1	0.02317	0.091	1
4	2003	1	0.03269	0.098	1
4	2004	1	0.04350	0.069	1
4	2005	1	0.03528	0.072	1
4	2006	1	0.01122	0.094	1
4	2007	1	0.03485	0.078	1
4	2008	1	0.03440	0.076	1
4	2009	1	0.01449	0.066	1
4	2010	1	0.09939	0.058	1
4	2011	1	0.02502	0.061	1
4	2012	1	0.00447	0.082	1
4	2013	1	0.02815	0.061	1
5	1950	1	0.00504	0.345	1
5	1951	1	0.00519	0.345	1
5	1952	1	0.00535	0.345	1
5	1953	1	0.00551	0.345	1
5	1954	1	0.00567	0.345	1
5	1955	1	0.00582	0.345	1
5	1956	1	0.00598	0.345	1
5	1957	1	0.00614	0.345	1
5	1958	1	0.00629	0.345	1
5	1959	1	0.00662	0.345	1
5	1960	1	0.00678	0.345	1
5	1961	1	0.00720	0.345	1
5	1962	1	0.00783	0.345	1
5	1963	1	0.00871	0.345	1

5	1964	1	0.00898	0.345	1
5	1965	1	0.00972	0.345	1
5	1966	1	0.00892	0.345	1
5	1967	1	0.01167	0.345	1
5	1968	1	0.01185	0.345	1
5	1969	1	0.01336	0.345	1
5	1970	1	0.00994	0.345	1
5	1971	1	0.01061	0.345	1
5	1972	1	0.01146	0.345	1
5	1973	1	0.01211	0.345	1
5	1974	1	0.01325	0.345	1
5	1975	1	0.01384	0.345	1
5	1976	1	0.01451	0.345	1
5	1977	1	0.01367	0.345	1
5	1978	1	0.01314	0.345	1
5	1979	1	0.01312	0.345	1
5	1980	1	0.01306	0.345	1
5	1981	1	0.00214	0.424	1
5	1982	1	0.01244	0.37	1
5	1983	1	0.00810	0.241	1
5	1984	1	0.00920	0.228	1
5	1985	1	0.02837	0.174	1
5	1986	1	0.01026	0.132	1
5	1987	1	0.08333	0.127	1
5	1988	1	0.02677	0.162	1
5	1989	1	0.00919	0.127	1
5	1990	1	0.00908	0.109	1
5	1991	1	0.00578	0.134	1
5	1992	1	0.00537	0.068	1
5	1993	1	0.00570	0.071	1
5	1994	1	0.00508	0.062	1
5	1995	1	0.00929	0.055	1
5	1996	1	0.00641	0.056	1
5	1997	1	0.00633	0.058	1
5	1998	1	0.00134	0.052	1
5	1999	1	0.00107	0.047	1
5	2000	1	0.00045	0.043	1
5	2001	1	0.00138	0.044	1
5	2002	1	0.00055	0.054	1
5	2003	1	0.00382	0.05	1
5	2004	1	0.00289	0.042	1
5	2005	1	0.00233	0.054	1
5	2006	1	0.00037	0.037	1
5	2007	1	0.00079	0.041	1
5	2008	1	0.00170	0.047	1
5	2009	1	0.00115	0.032	1

5	2010	1	0.00463	0.039	1
5	2011	1	0.00331	0.042	1
5	2012	1	0.00215	0.03	1
5	2013	1	0.00246	0.048	1
6	1950	1	0.00001	0.293	1
6	1951	1	0.00001	0.293	1
6	1952	1	0.00001	0.293	1
6	1953	1	0.00001	0.293	1
6	1954	1	0.00001	0.293	1
6	1955	1	0.00001	0.293	1
6	1956	1	0.00001	0.293	1
6	1957	1	0.00001	0.293	1
6	1958	1	0.00001	0.293	1
6	1959	1	0.00001	0.293	1
6	1960	1	0.00001	0.293	1
6	1961	1	0.00001	0.293	1
6	1962	1	0.00001	0.293	1
6	1963	1	0.00001	0.293	1
6	1964	1	0.00001	0.293	1
6	1965	1	0.00001	0.293	1
6	1966	1	0.00001	0.293	1
6	1967	1	0.00001	0.293	1
6	1968	1	0.00001	0.293	1
6	1969	1	0.00001	0.293	1
6	1970	1	0.00001	0.293	1
6	1971	1	0.00001	0.293	1
6	1972	1	0.00001	0.293	1
6	1973	1	0.00001	0.293	1
6	1974	1	0.00001	0.293	1
6	1975	1	0.00001	0.293	1
6	1976	1	0.00001	0.293	1
6	1977	1	0.00001	0.293	1
6	1978	1	0.00001	0.293	1
6	1979	1	0.00001	0.293	1
6	1980	1	0.00001	0.293	1
6	1981	1	0.00001	0.364	1
6	1982	1	0.00001	0.289	1
6	1983	1	0.00003	0.225	1
6	1984	1	0.00002	0.091	1
6	1985	1	0.00007	0.134	1
6	1986	1	0.00098	0.096	1
6	1987	1	0.01020	0.077	1
6	1988	1	0.01521	0.087	1
6	1989	1	0.00153	0.118	1
6	1990	1	0.00550	0.141	1
6	1991	1	0.00387	0.141	1

6	1992	1	0.00302	0.083	1
6	1993	1	0.00844	0.161	1
6	1994	1	0.01803	0.074	1
6	1995	1	0.04287	0.085	1
6	1996	1	0.00917	0.094	1
6	1997	1	0.00554	0.095	1
6	1998	1	0.00196	0.067	1
6	1999	1	0.00139	0.086	1
6	2000	1	0.00529	0.073	1
6	2001	1	0.02042	0.078	1
6	2002	1	0.01029	0.068	1
6	2003	1	0.02499	0.062	1
6	2004	1	0.02097	0.059	1
6	2005	1	0.03323	0.053	1
6	2006	1	0.01961	0.054	1
6	2007	1	0.02278	0.054	1
6	2008	1	0.04082	0.063	1
6	2009	1	0.04940	0.054	1
6	2010	1	0.08333	0.049	1
6	2011	1	0.04902	0.045	1
6	2012	1	0.02102	0.035	1
6	2013	1	0.05917	0.045	1

#_Initial_Fishing_mortality

#__LO______HI_____INIT__PRIOR__PR_type__SD____PHASE_____description

0.00100	1.18890	0.23778	0.23778	-1	4.5	1
#_InitF_FLcom						
0.00100	2.04150	0.40830	0.40830	-1	4	1
#_InitF_FL_B2						
0.00100	0.01855	0.00371	0.00371	-1	4	1
#_InitF_FL_AB1						
0.00100	0.71915	0.14383	0.14383	-1	4	1
#_InitF_GA_AB1						
0.00100	1.02545	0.20509	0.20509	-1	4	1
#_InitF_SC_AB1						
0.00100	0.00645	0.00129	0.00129	-1	4	1
#_InitF_GASC_B2						

#_Q_type_options:<0=mirror,0=median_float,1=mean_float,2=parameter,3=parm_w_random_dev,4=parm_w_randwalk,5=mean_unbiased_float_assign_to_parm

#Dendep_env-var_xtra_se_Q_type__flt/survey__

0	0	0	0	#_1_FLcom
0	0	0	0	#_2_FL_AB1
0	0	0	0	#_3_FL_B2
0	0	0	0	#_4_GA_AB1
0	0	0	0	#_5_SC_AB1
0	0	0	0	#_6_GASC_B2
0	0	0	0	#_7_SCstopn

```
0	0	0	0	#_8_SCtn1
0	0	0	0	#_9_SCtn2
0	0	0	0	#_10_SCll_1
0	0	0	0	#_11_SCll.3
0	0	0	0	#_12_GAgn
0	0	0	0	#_13_GAll
0	0	0	0	#_14_FLhs2
0	0	0	0	#_15_FLhs3
0	0	0	0	#_16_FL_JXsn
0	0	0	0	#_17_MRIP
#_initialize_catchability---note_this_is_the_ln(q)
#_________LO______HI____INIT___PRIOR_PR_type______SD__PHASE____description
#	-6.25	-3.33	-5	-5	1	0.01	-2	#_Q_base_1_FD_fishery1
#	-12.5	-6.67	-10	-10	1	0.01	-2	#_Q_base_2_SURVEY1
#	-5	5	0	0	1	0.01	-2	#_Q_base_3_RECRUIT2
######################################################################
#_size_selex_types
#pattrn_discard_male___special__flt/survey
24	0	0	0	#_1_FLcom
24	0	0	0	#_2_FL_AB1
24	0	0	0	#_3_FL_B2
24	0	0	0	#_4_GA_AB1
24	0	0	0	#_5_SC_AB1
24	0	0	0	#_6_GASC_B2
0	0	0	0	#_7_SCstopn
0	0	0	0	#_8_SCtn1
0	0	0	0	#_9_SCtn2
1	0	0	0	#_10_SCll_1
1	0	0	0	#_11_SCll.3
0	0	0	0	#_12_GAgn
1	0	0	0	#_13_GAll
0	0	0	0	#_14_FLhs2
0	0	0	0	#_15_FLhs3
0	0	0	0	#_16_FL_JXsn
24	0	0	0	#_17_MRIP
#_age_selex_types
#pattrn_discard_male___special
0	0	0	0	#_1_FLcom
0	0	0	0	#_2_FL_AB1
0	0	0	0	#_3_FL_B2
0	0	0	0	#_4_GA_AB1
0	0	0	0	#_5_SC_AB1
0	0	0	0	#_6_GASC_B2
11	0	0	0	#_7_SCstopn
11	0	0	0	#_8_SCtn1
11	0	0	0	#_9_SCtn2
```

0 0 0 0 #_10_SCll_1
0 0 0 0 #_11_SCll.3
11 0 0 0 #_12_GAgn
0 0 0 0 #_13_GAll
11 0 0 0 #_14_FLhs2
11 0 0 0 #_15_FLhs3
11 0 0 0 #_16_FL_JXsn
0 0 0 0 #_17_MRIP
#Selectivity_parameters_to_be_estimated
#_LO____HI_____INIT_PRIOR____PR_type_____SD___PHASE_env-var_use_dev_dev_minyr_dev_maxyr_dev_stddev_Block_Block_Fxn___description
#1FLcom ### ### ### ### ### ### ### ### ### ### ### ### ### ###
9 90 30 30 1 2 2 0 0 0 0 0 0 0 #_1_FLcom_SizeSel_p1-peak
-12 2 0 0 1 1 3 0 0 0 0 0 0 0 #_1_FLcom_SizeSel_p2-top
1 7 5 5 1 2 2 0 0 0 0 0 0 0 #_1_FLcom_SizeSel_p3-asc width
1 8 5 5 1 1 3 0 0 0 0 0 0 0 #_1_FLcom_SizeSel_p4-dec width
-10 -2 -9 -9 1 2 -2 0 0 0 0 0 0 0 #_1_FLcom_SizeSel_p5-init
-7 1 -1 -1 1 1 2 0 0 0 0 0 0 0 #_1_FLcom_SizeSel_p6-final
#2FLab1 ### ### ### ### ### ### ### ### ### ### ### ### ### ###
9 90 30 30 1 2 2 0 0 0 0 0 1 2 #_2_FL_AB1_SizeSel_p1-peak
-12 2 0 0 1 1 3 0 0 0 0 0 1 2 #_2_FL_AB1_SizeSel_p2-top
1 7 5 5 1 2 2 0 0 0 0 0 1 2 #_2_FL_AB1_SizeSel_p3-asc width
1 8 5 5 1 1 3 0 0 0 0 0 1 2 #_2_FL_AB1_SizeSel_p4-dec width
-10 -2 -9 -9 1 2 -2 0 0 0 0 0 1 2 #_2_FL_AB1_SizeSel_p5-init
-7 1 -1 -1 1 1 2 0 0 0 0 0 1 2 #_2_FL_AB1_SizeSel_p6-final
#3FL_b2 ### ### ### ### ### ### ### ### ### ### ### ### ### ###
9 90 30 30 1 2 2 0 0 0 0 0 1 2 #_3_FL_B2_SizeSel_p1-peak
-12 2 0 0 1 1 3 0 0 0 0 0 1 2 #_3_FL_B2_SizeSel_p2-top

1	7	5	5	1	2	2	0	0	0	0	0	1
	2	#_3_FL_B2_SizeSel_p3-asc width										
1	8	5	5	1	1	3	0	0	0	0	0	1
	2	#_3_FL_B2_SizeSel_p4-dec width										
-10	-2	-9	-9	1	2	-2	0	0	0	0	0	1
	2	#_3_FL_B2_SizeSel_p5-init										
-7	1	-1	-1	1	1	2	0	0	0	0	0	1
	2	#_3_FL_B2_SizeSel_p6-final										
#4GAab1		###	###	###	###	###	###	###	###	###	###	###
	###	###	###									
9	90	30	30	1	2	2	0	0	0	0	0	2
	2	#_4_GA_AB1_SizeSel_p1-peak										
-12	2	0	0	1	1	3	0	0	0	0	0	2
	2	#_4_GA_AB1_SizeSel_p2-top										
1	7	5	5	1	2	2	0	0	0	0	0	2
	2	#_4_GA_AB1_SizeSel_p3-asc width										
1	8	5	5	1	1	3	0	0	0	0	0	2
	2	#_4_GA_AB1_SizeSel_p4-dec width										
-10	-2	-9	-9	1	2	-2	0	0	0	0	0	2
	2	#_4_GA_AB1_SizeSel_p5-init										
-7	1	-1	-1	1	1	2	0	0	0	0	0	2
	2	#_4_GA_AB1_SizeSel_p6-final										
#5SCab1		###	###	###	###	###	###	###	###	###	###	###
	###	###	###									
9	90	30	30	1	2	2	0	0	0	0	0	3
	2	#_5_SC_AB1_SizeSel_p1-peak										
-12	2	0	0	1	1	3	0	0	0	0	0	3
	2	#_5_SC_AB1_SizeSel_p2-top										
1	7	5	5	1	2	2	0	0	0	0	0	3
	2	#_5_SC_AB1_SizeSel_p3-asc width										
1	8	5	5	1	1	3	0	0	0	0	0	3
	2	#_5_SC_AB1_SizeSel_p4-dec width										
-10	-2	-9	-9	1	2	-2	0	0	0	0	0	3
	2	#_5_SC_AB1_SizeSel_p5-init										
-7	1	-1	-1	1	1	2	0	0	0	0	0	3
	2	#_5_SC_AB1_SizeSel_p6-final										
#6GASCb2		###	###	###	###	###	###	###	###	###	###	###
	###	###	###									
9	90	30	30	1	2	2	0	0	0	0	0	2
	2	#_6_GASC_B2_SizeSel_p1-peak										
-12	2	0	0	1	1	3	0	0	0	0	0	2
	2	#_6_GASC_B2_SizeSel_p2-top										
1	7	5	5	1	2	2	0	0	0	0	0	2
	2	#_6_GASC_B2_SizeSel_p3-asc width										
1	8	5	5	1	1	3	0	0	0	0	0	2
	2	#_6_GASC_B2_SizeSel_p4-dec width										

-10	-2	-9	-9	1	2	-2	0	0	0	0	0	2	2	#_6_GASC_B2_SizeSel_p5-init
-7	1	-1	-1	1	1	2	0	0	0	0	0	2	2	#_6_GASC_B2_SizeSel_p6-final
#10SCll	###	###	###	###	###	###	###	###	###	###	###	###	###	###
30	120	60	60	-1	99	3	0	0	0	0	0	0	0	#_10_SCll_1_logistic inflection_1P
1	30	20	20	-1	99	4	0	0	0	0	0	0	0	#_10_SCll_1_logistic slope_2P
#11SCll	###	###	###	###	###	###	###	###	###	###	###	###	###	###
30	120	60	60	-1	99	3	0	0	0	0	0	0	0	#_11_SCll.3_logistic inflection_1P
1	30	20	20	-1	99	4	0	0	0	0	0	0	0	#_11_SCll.3_logistic slope_2P
#13GAll	###	###	###	###	###	###	###	###	###	###	###	###	###	###
30	120	60	60	-1	99	3	0	0	0	0	0	0	0	#_13_GAll_logistic inflection_1P
1	30	20	20	-1	99	4	0	0	0	0	0	0	0	#_13_GAll_logistic slope_2P
#17MRIP	###	###	###	###	###	###	###	###	###	###	###	###	###	###
9	90	30	30	1	2	2	0	0	0	0	0	0	0	#_17_MRIP_SizeSel_p1-peak
-12	2	0	0	1	1	3	0	0	0	0	0	0	0	#_17_MRIP_SizeSel_p2-top
1	7	5	5	1	2	2	0	0	0	0	0	0	0	#_17_MRIP_SizeSel_p3-asc width
1	8	5	5	1	1	3	0	0	0	0	0	0	0	#_17_MRIP_SizeSel_p4-dec width
-10	-2	-9	-9	1	2	-2	0	0	0	0	0	0	0	#_17_MRIP_SizeSel_p5-init
-7	1	-1	-1	1	1	2	0	0	0	0	0	0	0	#_17_MRIP_SizeSel_p6-final
#7SCsto	###	###	###	###	###	###	###	###	###	###	###	###	###	###
0.1	0.9	0.1	0.1	-1	99	-4	0	0	0	0	0	0	0	#_7_SCstopn_minimum_age_1P
0.1	0.9	0.9	0.9	-1	99	-4	0	0	0	0	0	0	0	#_7_SCstopn_maximum_age_2P
#8SCtn1	###	###	###	###	###	###	###	###	###	###	###	###	###	###
0.1	0.9	0.1	0.1	-1	99	-4	0	0	0	0	0	0	0	#_8_SCtn1_minimum_age_1P

0.1 0.9 0.9 0.9 -1 99 -4 0 0 0 0 0 0
0 #_8_SCtn1_maximum_age_2P
#9SCtn2 ### ### ### ### ### ### ### ### ### ### ###
###
1.1 1.9 1.1 1.1 -1 99 -4 0 0 0 0 0 0
0 #_9_SCtn2_minimum_age_1P
1.1 1.9 1.9 1.9 -1 99 -4 0 0 0 0 0 0
0 #_9_SCtn2_maximum_age_2P
#12GAgn ### ### ### ### ### ### ### ### ### ### ###
###
0.1 0.9 0.1 0.1 -1 99 -4 0 0 0 0 0 0
0 #_12_GAgn_minimum_age_1P
0.1 0.9 0.9 0.9 -1 99 -4 0 0 0 0 0 0
0 #_12_GAgn_maximum_age_2P
#14FLh1 ### ### ### ### ### ### ### ### ### ### ###
###
1.1 1.9 1.1 1.1 -1 99 -4 0 0 0 0 0 0
0 #_14_FLhs2_minimum_age_1P
1.1 1.9 1.9 1.9 -1 99 -4 0 0 0 0 0 0
0 #_14_FLhs2_maximum_age_2P
#15FLh2 ##### ##### ##### ##### ##### ##### ##### ##### ##### ##### #####
#####
2.1 2.9 2.1 2.1 -1 99 -4 0 0 0 0 0 0
0 #_15_FLhs3_minimum_age_1P
2.1 2.9 2.9 2.9 -1 99 -4 0 0 0 0 0 0
0 #_15_FLhs3_maximum_age_2P
0.1 0.9 0.1 0.1 -1 99 -4 0 0 0 0 0 0
0 #_16_FL_JXsn_minimum_age_1P
0.1 0.9 0.9 0.9 -1 99 -4 0 0 0 0 0 0
0 #_16_FL_JXsn_maximum_age_2P
1 #_custom_sel-blk_setup (0/1)
#_LO_____HI______INIT___PRIOR_PR_type___SD___PHASE_____description
9 90 30 30 1 2 2 #_2_FL_AB1_SizeSel_p1-peak--1986
-12 2 0 0 1 1 3 #_2_FL_AB1_SizeSel_p2-top--1986
1 7 5 5 1 2 2 #_2_FL_AB1_SizeSel_p3-asc width--1986
1 8 5 5 1 1 3 #_2_FL_AB1_SizeSel_p4-dec width--1986
-10 -2 -9 -9 1 2 -2 #_2_FL_AB1_SizeSel_p5-init--1986
-7 1 -1 -1 1 1 2 #_2_FL_AB1_SizeSel_p6-final--1986
9 90 30 30 1 2 2 #_3_FL_B2_SizeSel_p1-peak--1986
-12 2 0 0 1 1 3 #_3_FL_B2_SizeSel_p2-top--1986
1 7 5 5 1 2 2 #_3_FL_B2_SizeSel_p3-asc width--1986
1 8 5 5 1 1 3 #_3_FL_B2_SizeSel_p4-dec width--1986
-10 -2 -9 -9 1 2 -2 #_3_FL_B2_SizeSel_p5-init--1986
-7 1 -1 -1 1 1 2 #_3_FL_B2_SizeSel_p6-final--1986
9 90 30 30 1 2 2 #_4_GA_AB1_SizeSel_p1-peak--1986
9 90 30 30 1 2 2 #_4_GA_AB1_SizeSel_p1-peak--1992

9	90	30	30	1	2	2	#_4_GA_AB1_SizeSel_p1-peak--2003
-12	2	0	0	1	1	3	#_4_GA_AB1_SizeSel_p2-top--1986
-12	2	0	0	1	1	3	#_4_GA_AB1_SizeSel_p2-top--1992
-12	2	0	0	1	1	3	#_4_GA_AB1_SizeSel_p2-top--2003
1	7	5	5	1	2	2	#_4_GA_AB1_SizeSel_p3-asc width--1986
1	7	5	5	1	2	2	#_4_GA_AB1_SizeSel_p3-asc width--1992
1	7	5	5	1	2	2	#_4_GA_AB1_SizeSel_p3-asc width--2003
1	8	5	5	1	1	3	#_4_GA_AB1_SizeSel_p4-dec width--1986
1	8	5	5	1	1	3	#_4_GA_AB1_SizeSel_p4-dec width--1992
1	8	5	5	1	1	3	#_4_GA_AB1_SizeSel_p4-dec width--2003
-10	-2	-9	-9	1	2	-2	#_4_GA_AB1_SizeSel_p5-init--1986
-10	-2	-9	-9	1	2	-2	#_4_GA_AB1_SizeSel_p5-init--1992
-10	-2	-9	-9	1	2	-2	#_4_GA_AB1_SizeSel_p5-init--2003
-7	1	-1	-1	1	1	2	#_4_GA_AB1_SizeSel_p6-final--1986
-7	1	-1	-1	1	1	2	#_4_GA_AB1_SizeSel_p6-final--1992
-7	1	-1	-1	1	1	2	#_4_GA_AB1_SizeSel_p6-final--2003
9	90	30	30	1	2	2	#_5_SC_AB1_SizeSel_p1-peak--1986
9	90	30	30	1	2	2	#_5_SC_AB1_SizeSel_p1-peak--1993
9	90	30	30	1	2	2	#_5_SC_AB1_SizeSel_p1-peak--2002
9	90	30	30	1	2	2	#_5_SC_AB1_SizeSel_p1-peak--NA
-12	2	0	0	1	1	3	#_5_SC_AB1_SizeSel_p2-top--1986
-12	2	0	0	1	1	3	#_5_SC_AB1_SizeSel_p2-top--1993
-12	2	0	0	1	1	3	#_5_SC_AB1_SizeSel_p2-top--2002
-12	2	0	0	1	1	3	#_5_SC_AB1_SizeSel_p2-top--NA
1	7	5	5	1	2	2	#_5_SC_AB1_SizeSel_p3-asc width--1986
1	7	5	5	1	2	2	#_5_SC_AB1_SizeSel_p3-asc width--1993
1	7	5	5	1	2	2	#_5_SC_AB1_SizeSel_p3-asc width--2002
1	7	5	5	1	2	2	#_5_SC_AB1_SizeSel_p3-asc width--NA
1	8	5	5	1	1	3	#_5_SC_AB1_SizeSel_p4-dec width--1986
1	8	5	5	1	1	3	#_5_SC_AB1_SizeSel_p4-dec width--1993
1	8	5	5	1	1	3	#_5_SC_AB1_SizeSel_p4-dec width--2002
1	8	5	5	1	1	3	#_5_SC_AB1_SizeSel_p4-dec width--NA
-10	-2	-9	-9	1	2	-2	#_5_SC_AB1_SizeSel_p5-init--1986
-10	-2	-9	-9	1	2	-2	#_5_SC_AB1_SizeSel_p5-init--1993
-10	-2	-9	-9	1	2	-2	#_5_SC_AB1_SizeSel_p5-init--2002
-10	-2	-9	-9	1	2	-2	#_5_SC_AB1_SizeSel_p5-init--NA
-7	1	-1	-1	1	1	2	#_5_SC_AB1_SizeSel_p6-final--1986
-7	1	-1	-1	1	1	2	#_5_SC_AB1_SizeSel_p6-final--1993
-7	1	-1	-1	1	1	2	#_5_SC_AB1_SizeSel_p6-final--2002
-7	1	-1	-1	1	1	2	#_5_SC_AB1_SizeSel_p6-final--NA
9	90	30	30	1	2	2	#_6_GASC_B2_SizeSel_p1-peak--1986
9	90	30	30	1	2	2	#_6_GASC_B2_SizeSel_p1-peak--1992
9	90	30	30	1	2	2	#_6_GASC_B2_SizeSel_p1-peak--2003
-12	2	0	0	1	1	3	#_6_GASC_B2_SizeSel_p2-top--1986
-12	2	0	0	1	1	3	#_6_GASC_B2_SizeSel_p2-top--1992
-12	2	0	0	1	1	3	#_6_GASC_B2_SizeSel_p2-top--2003

1 7 5 5 1 2 2 #_6_GASC_B2_SizeSel_p3-asc width--1986
1 7 5 5 1 2 2 #_6_GASC_B2_SizeSel_p3-asc width--1992
1 7 5 5 1 2 2 #_6_GASC_B2_SizeSel_p3-asc width--2003
1 8 5 5 1 1 3 #_6_GASC_B2_SizeSel_p4-dec width--1986
1 8 5 5 1 1 3 #_6_GASC_B2_SizeSel_p4-dec width--1992
1 8 5 5 1 1 3 #_6_GASC_B2_SizeSel_p4-dec width--2003
-10 -2 -9 -9 1 2 -2 #_6_GASC_B2_SizeSel_p5-init--1986
-10 -2 -9 -9 1 2 -2 #_6_GASC_B2_SizeSel_p5-init--1992
-10 -2 -9 -9 1 2 -2 #_6_GASC_B2_SizeSel_p5-init--2003
-7 1 -1 -1 1 1 2 #_6_GASC_B2_SizeSel_p6-final--1986
-7 1 -1 -1 1 1 2 #_6_GASC_B2_SizeSel_p6-final--1992
-7 1 -1 -1 1 1 2 #_6_GASC_B2_SizeSel_p6-final--2003
Selparm_dev_phase -- if any parm have annal deviations
1 #_Env_link/any_blocks_Deviance_Adjust_Method: 1 = standard, 2= previous bounds, 3 = standard w_no_bounds_check
##
#_Tag_loss_and_Tag_reporting _parameters_go_next
1 #_TG_custom:0=no_read;1=read_if_tags_exist
#_LO____HI_____INIT_PRIOR____PR_type_____SD___PHASE_env-var_use_dev_dev_minyr_dev_maxyr_dev_stddev_Block_Block_Fxn___description
-10 10 -10 0 -1 0.001 -4 0 0 0 0 0 0 0 # TG_loss_init_
-10 10 -10 0 -1 0.001 -4 0 0 0 0 0 0 0 # TG_loss_init_
-10 10 -10 0 -1 0.001 -4 0 0 0 0 0 0 0 # TG_loss_init_
-10 10 -10 0 -1 0.001 -4 0 0 0 0 0 0 0 # TG_loss_init_
-10 10 -10 0 -1 0.001 -4 0 0 0 0 0 0 0 # TG_loss_init_
-10 10 -10 0 -1 0.001 -4 0 0 0 0 0 0 0 # TG_loss_init_
-10 10 -10 0 -1 0.001 -4 0 0 0 0 0 0 0 # TG_loss_init_
-10 10 -10 0 -1 0.001 -4 0 0 0 0 0 0 0 # TG_loss_init_
-10 10 -10 0 -1 0.001 -4 0 0 0 0 0 0 0 # TG_loss_init_
-10 10 -10 0 -1 0.001 -4 0 0 0 0 0 0 0 # TG_loss_init_

-10 10 -10 0 -1 0.001 -4 0 0 0 0 0 0
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-10 10 -10 0 -1 0.001 -4 0 0 0 0 0 0
0 # TG_loss_init_
-10 10 -10 0 -1 0.001 -4 0 0 0 0 0 0
0 # TG_loss_init_
-10 1 -1.05 -1.05 -1 0.001 -3 0 0 0 0 0 0
0 # TG_loss_chronic_
-10 1 -1.05 -1.05 -1 0.001 -3 0 0 0 0 0 0
0 # TG_loss_chronic_
-10 1 -1.05 -1.05 -1 0.001 -3 0 0 0 0 0 0
0 # TG_loss_chronic_
-10 1 -2.31 -2.31 -1 0.001 -3 0 0 0 0 0 0
0 # TG_loss_chronic_
-10 1 -1.05 -1.05 -1 0.001 -3 0 0 0 0 0 0
0 # TG_loss_chronic_
-10 1 -2.31 -2.31 -1 0.001 -3 0 0 0 0 0 0
0 # TG_loss_chronic_
-10 1 -1.05 -1.05 -1 0.001 -3 0 0 0 0 0 0
0 # TG_loss_chronic_
-10 1 -2.31 -2.31 -1 0.001 -3 0 0 0 0 0 0
0 # TG_loss_chronic_
-10 1 -1.05 -1.05 -1 0.001 -3 0 0 0 0 0 0
0 # TG_loss_chronic_
-10 1 -2.31 -2.31 -1 0.001 -3 0 0 0 0 0 0
0 # TG_loss_chronic_
-10 1 -1.05 -1.05 -1 0.001 -3 0 0 0 0 0 0
0 # TG_loss_chronic_
-10 1 -2.31 -2.31 -1 0.001 -3 0 0 0 0 0 0
0 # TG_loss_chronic_
-10 1 -1.05 -1.05 -1 0.001 -3 0 0 0 0 0 0
0 # TG_loss_chronic_

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-10	1	-1.05	-1.05	-1	0.001	-3	0	0	0	0	0	0
	0	# TG_loss_chronic_
-10	1	-1.05	-1.05	-1	0.001	-3	0	0	0	0	0	0
	0	# TG_loss_chronic_
-10	1	-2.31	-2.31	-1	0.001	-3	0	0	0	0	0	0
	0	# TG_loss_chronic_
-10	1	-1.05	-1.05	-1	0.001	-3	0	0	0	0	0	0
	0	# TG_loss_chronic_
-10	1	-2.31	-2.31	-1	0.001	-3	0	0	0	0	0	0
	0	# TG_loss_chronic_
-10	1	-1.05	-1.05	-1	0.001	-3	0	0	0	0	0	0
	0	# TG_loss_chronic_
-10	1	-1.05	-1.05	-1	0.001	-3	0	0	0	0	0	0
	0	# TG_loss_chronic_
-10	1	-1.05	-1.05	-1	0.001	-3	0	0	0	0	0	0
	0	# TG_loss_chronic_
-10	1	-2.31	-2.31	-1	0.001	-3	0	0	0	0	0	0
	0	# TG_loss_chronic_
-10	1	-1.05	-1.05	-1	0.001	-3	0	0	0	0	0	0
	0	# TG_loss_chronic_
-10	1	-2.31	-2.31	-1	0.001	-3	0	0	0	0	0	0
	0	# TG_loss_chronic_
-10	1	-1.05	-1.05	-1	0.001	-3	0	0	0	0	0	0
	0	# TG_loss_chronic_
-10	1	-1.05	-1.05	-1	0.001	-3	0	0	0	0	0	0
	0	# TG_loss_chronic_
-10	1	-1.05	-1.05	-1	0.001	-3	0	0	0	0	0	0
	0	# TG_loss_chronic_
-10	1	-2.31	-2.31	-1	0.001	-3	0	0	0	0	0	0
	0	# TG_loss_chronic_
-10	1	-1.05	-1.05	-1	0.001	-3	0	0	0	0	0	0
	0	# TG_loss_chronic_
-10	1	-2.31	-2.31	-1	0.001	-3	0	0	0	0	0	0
	0	# TG_loss_chronic_
-10	1	-1.05	-1.05	-1	0.001	-3	0	0	0	0	0	0
	0	# TG_loss_chronic_
-10	1	-1.05	-1.05	-1	0.001	-3	0	0	0	0	0	0
	0	# TG_loss_chronic_
-10	1	-1.05	-1.05	-1	0.001	-3	0	0	0	0	0	0
	0	# TG_loss_chronic_
-10	1	-1.05	-1.05	-1	0.001	-3	0	0	0	0	0	0
	0	# TG_loss_chronic_
-10	1	-2.31	-2.31	-1	0.001	-3	0	0	0	0	0	0
	0	# TG_loss_chronic_
-10	1	-1.05	-1.05	-1	0.001	-3	0	0	0	0	0	0
	0	# TG_loss_chronic_
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-10 1 -1.05 -1.05 -1 0.001 -3 0 0 0 0 0 0
0 # TG_loss_chronic_
-10 1 -1.05 -1.05 -1 0.001 -3 0 0 0 0 0 0
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-10 1 -1.05 -1.05 -1 0.001 -3 0 0 0 0 0 0
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-10 1 -1.05 -1.05 -1 0.001 -3 0 0 0 0 0 0
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-10 1 -2.31 -2.31 -1 0.001 -3 0 0 0 0 0 0
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-10 1 -1.05 -1.05 -1 0.001 -3 0 0 0 0 0 0
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-10 1 -1.05 -1.05 -1 0.001 -3 0 0 0 0 0 0
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-10 1 -2.31 -2.31 -1 0.001 -3 0 0 0 0 0 0
0 # TG_loss_chronic_
-10 1 -2.31 -2.31 -1 0.001 -3 0 0 0 0 0 0
0 # TG_loss_chronic_

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-10 1 -1.05 -1.05 -1 0.001 -3 0 0 0 0 0 0
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-10 1 -1.05 -1.05 -1 0.001 -3 0 0 0 0 0 0
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-10 1 -2.31 -2.31 -1 0.001 -3 0 0 0 0 0 0
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-10 1 -2.31 -2.31 -1 0.001 -3 0 0 0 0 0 0
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-10 1 -1.05 -1.05 -1 0.001 -3 0 0 0 0 0 0
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-10 1 -2.31 -2.31 -1 0.001 -3 0 0 0 0 0 0
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-10 1 -1.05 -1.05 -1 0.001 -3 0 0 0 0 0 0
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-10 1 -1.05 -1.05 -1 0.001 -3 0 0 0 0 0 0
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-10 1 -2.31 -2.31 -1 0.001 -3 0 0 0 0 0 0
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-10 1 -1.05 -1.05 -1 0.001 -3 0 0 0 0 0 0
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-10 1 -2.31 -2.31 -1 0.001 -3 0 0 0 0 0 0
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0 # TG_loss_chronic_
-10 1 -1.05 -1.05 -1 0.001 -3 0 0 0 0 0 0
0 # TG_loss_chronic_
-10 1 -1.05 -1.05 -1 0.001 -3 0 0 0 0 0 0
0 # TG_loss_chronic_
-10 1 -2.31 -2.31 -1 0.001 -3 0 0 0 0 0 0
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-10 1 -1.05 -1.05 -1 0.001 -3 0 0 0 0 0 0
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-10 1 -1.05 -1.05 -1 0.001 -3 0 0 0 0 0 0
0 # TG_loss_chronic_
-10 1 -1.05 -1.05 -1 0.001 -3 0 0 0 0 0 0
0 # TG_loss_chronic_
-10 1 -2.31 -2.31 -1 0.001 -3 0 0 0 0 0 0
0 # TG_loss_chronic_
```

```
-10  1  -2.31  -2.31  -1  0.001  -3  0  0  0  0  0  0
     0  # TG_loss_chronic_
-10  1  -1.05  -1.05  -1  0.001  -3  0  0  0  0  0  0
     0  # TG_loss_chronic_
-10  1  -1.05  -1.05  -1  0.001  -3  0  0  0  0  0  0
     0  # TG_loss_chronic_
-10  1  -2.31  -2.31  -1  0.001  -3  0  0  0  0  0  0
     0  # TG_loss_chronic_
-10  1  -2.31  -2.31  -1  0.001  -3  0  0  0  0  0  0
     0  # TG_loss_chronic_
-10  1  -1.05  -1.05  -1  0.001  -3  0  0  0  0  0  0
     0  # TG_loss_chronic_
-10  1  -1.05  -1.05  -1  0.001  -3  0  0  0  0  0  0
     0  # TG_loss_chronic_
-10  1  -1.05  -1.05  -1  0.001  -3  0  0  0  0  0  0
     0  # TG_loss_chronic_
-10  1  -2.31  -2.31  -1  0.001  -3  0  0  0  0  0  0
     0  # TG_loss_chronic_
-10  1  -2.31  -2.31  -1  0.001  -3  0  0  0  0  0  0
     0  # TG_loss_chronic_
-10  1  -1.05  -1.05  -1  0.001  -3  0  0  0  0  0  0
     0  # TG_loss_chronic_
-10  1  -1.05  -1.05  -1  0.001  -3  0  0  0  0  0  0
     0  # TG_loss_chronic_
-10  1  -2.31  -2.31  -1  0.001  -3  0  0  0  0  0  0
     0  # TG_loss_chronic_
-10  1  -2.31  -2.31  -1  0.001  -3  0  0  0  0  0  0
     0  # TG_loss_chronic_
-10  1  -1.05  -1.05  -1  0.001  -3  0  0  0  0  0  0
     0  # TG_loss_chronic_
-10  1  -1.05  -1.05  -1  0.001  -3  0  0  0  0  0  0
     0  # TG_loss_chronic_
-10  1  -1.05  -1.05  -1  0.001  -3  0  0  0  0  0  0
     0  # TG_loss_chronic_
-10  1  -2.31  -2.31  -1  0.001  -3  0  0  0  0  0  0
     0  # TG_loss_chronic_
-10  1  -2.31  -2.31  -1  0.001  -3  0  0  0  0  0  0
     0  # TG_loss_chronic_
-10  1  -1.05  -1.05  -1  0.001  -3  0  0  0  0  0  0
     0  # TG_loss_chronic_
-10  1  -1.05  -1.05  -1  0.001  -3  0  0  0  0  0  0
     0  # TG_loss_chronic_
-10  1  -2.31  -2.31  -1  0.001  -3  0  0  0  0  0  0
     0  # TG_loss_chronic_
-10  1  -2.31  -2.31  -1  0.001  -3  0  0  0  0  0  0
     0  # TG_loss_chronic_
```

-10 1 -1.05 -1.05 -1 0.001 -3 0 0 0 0 0 0
0 # TG_loss_chronic_
-10 1 -1.05 -1.05 -1 0.001 -3 0 0 0 0 0 0
0 # TG_loss_chronic_
-10 1 -2.31 -2.31 -1 0.001 -3 0 0 0 0 0 0
0 # TG_loss_chronic_
-10 1 -2.31 -2.31 -1 0.001 -3 0 0 0 0 0 0
0 # TG_loss_chronic_
-10 1 -2.31 -2.31 -1 0.001 -3 0 0 0 0 0 0
0 # TG_loss_chronic_
-10 1 -1.05 -1.05 -1 0.001 -3 0 0 0 0 0 0
0 # TG_loss_chronic_
-10 1 -1.05 -1.05 -1 0.001 -3 0 0 0 0 0 0
0 # TG_loss_chronic_
1 10 2 2 -1 0.001 -3 0 0 0 0 0 0
0 # TG_overdispersion_
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1 10 2 2 -1 0.001 -3 0 0 0 0 0 0
0 # TG_overdispersion_
1 10 2 2 -1 0.001 -3 0 0 0 0 0 0
0 # TG_overdispersion_
-10 10 -0.04 -0.04 -1 0.001 -5 0 0 0 0 0 0
0 # TG_report_fleet_
-10 10 -0.04 -0.04 -1 0.001 -5 0 0 0 0 0 0
0 # TG_report_fleet_
-10 10 -0.04 -0.04 -1 0.001 -5 0 0 0 0 0 0
0 # TG_report_fleet_
-10 10 -0.04 -0.04 -1 0.001 -5 0 0 0 0 0 0
0 # TG_report_fleet_
-10 10 -0.04 -0.04 -1 0.001 2 0 0 0 0 0 0
0 # TG_report_fleet_
-10 10 -0.04 -0.04 -1 0.001 2 0 0 0 0 0 0
0 # TG_report_fleet_
-2 0 0 -0.1 -1 0.001 -5 0 0 0 0 0 0
0 # TG_rpt_decay_
-2 0 0 -0.1 -1 0.001 -5 0 0 0 0 0 0
0 # TG_rpt_decay_
-2 0 0 -0.1 -1 0.001 -5 0 0 0 0 0 0
0 # TG_rpt_decay_
-2 0 0 -0.1 -1 0.001 -5 0 0 0 0 0 0
0 # TG_rpt_decay_
-2 0 0 -0.1 -1 0.001 -3 0 0 0 0 0 0
0 # TG_rpt_decay_
-2 0 0 -0.1 -1 0.001 -3 0 0 0 0 0 0
0 # TG_rpt_decay_
###
1 #_Variance_adjustments_to_input_values
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 #_add_to_survey_CV[actually sd(log(survey)]--0 for no effect
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 #_add_to_discard_stddev--0 for no effect
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 #_add_to_bodywt_CV--0 for no effect
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 #_mult_by_lencomp_N--1 for no effect
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 #_mult_by_agecomp_N--1 for no effect
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 #_mult_by_size-at-age_N--1 for no effect
#_Lambda(emphasis_factors)
7 #_maxlambdaphase
1 #_sd_offset,0=loglike omits log(s) term, 1= include log(s)in CPUE,discard,meanbodywt,recruitment deviations
0 #_number_of_changes_to_make_to_default_Lambdas(lambda default_value_is_1.0,this_equals_no_lines_below)

#----lambda change details----
#_Like_comp_codes:1=surv;2=disc;3=mnwt;4=length;5=age;6=SizeFreq;7=sizeage;8=catch;
#_9=init_equ_catch;10=recrdev;11=parm_prior;12=parm_dev;13=CrashPen;14=Morphcomp;15=Tag-comp;16=Tag-negbin
#likec_flt/s_phase__lmbda__szfrq-meth__descript
15 5 1 0 1 #_tag-comp_SCAB1
16 5 1 0 1 #_tag-negbin_SCAB1
8 1 1 0.0000000001 1 #_fleet
1 1 2 1 1 #_fleet
4 1 4 0.001 1 #_fleet
9 1 1 0.0000000001 1 #_initC_flt1
9 2 1 0.0000000001 1 #_initC_flt2
9 3 1 0.0000000001 1 #_initC_flt3
9 4 1 0.0000000001 1 #_initC_flt4
9 5 1 0.0000000001 1 #_initC_flt5
9 6 1 0.0000000001 1 #_initC_flt6
4 1 1 0.0000000001 1 #_length_flt1
4 2 1 100 1 #_length_flt2
4 3 1 0.0000000001 1 #_length_flt3
4 4 1 0.0000000001 1 #_length_flt4
4 5 1 0.0000000001 1 #_length_flt5
4 6 1 0.0000000001 1 #_length_flt6
1 3 3 1 1 #_env
10 2 1 1 1 ##_recdevs
###
0 #__(0/1) read specs for more stddev reporting (if 0 then read no line)
#_fleet__len/age__year__N_selex_bins__Growth_pattern__N_growth_ages__NatAge_area(-1_for_all)__NatAge_yr__N_Natages
1 1 -1 5 1 5 1 -1 5
999
Appendix x. Stock Synthesis forecast file for the southern stock base model.
#V3.21e
#C
1 # Benchmarks: 0=skip; 1=calc F_spr,F_btgt,F_msy
2 # MSY: 1= set to F(SPR); 2=calc F(MSY); 3=set to F(Btgt); 4=set to F(endyr) --must match depletion basis
0.4 # SPR target (e.g. 0.40)
0.4 # Biomass target (e.g. 0.40)
0 0 0 0 0 0
1 # Bmark_relF_Basis: 1 = use year range; 2 = set relF same as forecast below
0 # Forecast: 0=none; 1=F(SPR); 2=F(MSY) 3=F(Btgt); 4=Ave F (uses first-last relF yrs); 5=input annual F scalar
0 # N forecast years
0.2 # F scalar (only used for Do_Forecast==5)
0 0 0 0
1 # Control rule method (1=catch=f(SSB) west coast; 2=F=f(SSB))

0.4 # Control rule Biomass level for constant F (as frac of Bzero, e.g. 0.40); (Must be > the no F level below)
0.1 # Control rule Biomass level for no F (as frac of Bzero, e.g. 0.10)
0.75 # Control rule target as fraction of Flimit (e.g. 0.75)
3 # _N forecast loops (1=OFL only; 2=ABC; 3=get F from forecast ABC catch with allocations applied)
3 # _First forecast loop with stochastic recruitment
0 # _Forecast loop control #3 (reserved for future bells&whistles)
0 # _Forecast loop control #4 (reserved for future bells&whistles)
0 # _Forecast loop control #5 (reserved for future bells&whistles)
2021 # FirstYear for caps and allocations (should be after years with fixed inputs)
0 # stddev of log(realized catch/target catch) in forecast (set value>0.0 to cause active impl_error)
0 # Do West Coast gfish rebuilder output (0/1)
2021 # Rebuilder: first year catch could have been set to zero (Ydecl)(-1 to set to 1999)
-1 # Rebuilder: year for current age structure (Yinit) (-1 to set to endyear+1)
1 # fleet relative F: 1=use first-last alloc year; 2=read seas(row) x fleet(col) below
2 # basis for fcast catch tuning and for fcast catch caps and allocation (2=deadbio; 3=retainbio; 5=deadnum; 6=retainnum)
-1 # max totalcatch by fleet (-1 to have no max) must enter value for each fleet
-1 # max totalcatch by area (-1 to have no max); must enter value for each fleet
0 # fleet assignment to allocation group (enter group ID# for each fleet, 0 for not included in an alloc group)
0 # Number of forecast catch levels to input (else calc catch from forecast F)
2 # basis for input Fcast catch: 2=dead catch; 3=retained catch; 99=input Hrate(F) (units are from fleetunits; note new codes in SSV3.20)
999 # verify end of input

SEDAR

Southeast Data, Assessment, and Review

SEDAR 44

Atlantic Red Drum

SECTION III: Review Workshop Report

September 2015

SEDAR
4055 Faber Place Drive, Suite 201
North Charleston, SC 29405

Table of Contents

1. Introduction

1.1 Workshop Time and Place

The SEDAR 44 Review Workshop for Atlantic red drum was held August 25-27, 2015 in Charleston, SC.

1.2 Terms of Reference

1. Evaluate the thoroughness of data collection and the presentation and treatment of fishery-dependent and fishery-independent data in the assessment, including the following but not limited to:
    a. Presentation of data source variance (e.g., standard errors).
    b. Justification for inclusion or elimination of available data sources,
    c. Consideration of data strengths and weaknesses (e.g., temporal and spatial scale, gear selectivities, aging accuracy, sample size),
    d. Calculation and/or standardization of abundance indices.
    e. Estimation of discards and size composition of discards.

2. Evaluate the definition of stock structure used in the assessment. Is the definition appropriate given the biology and management of red drum?

3. Evaluate the methods and models used to estimate population parameters (e.g., F, biomass, abundance) and biological reference points, including but not limited to:
    a. Evaluate the choice and justification of the preferred model(s). Was the most appropriate model (or model averaging approach) chosen given available data and life history of red drum?
    b. If multiple models were considered, evaluate the analysts' explanation of any differences in results.
    c. Evaluate model parameterization and specification (e.g., choice of CVs, effective sample sizes, likelihood weighting schemes, calculation/specification of M, stock-recruitment relationship, choice of time-varying parameters, plus group treatment).

4. Evaluate the diagnostic analyses performed, including but not limited to:
    a. Sensitivity analyses to determine model stability and potential consequences of major model assumptions
    b. Retrospective analysis

5. Evaluate the methods used to characterize uncertainty in estimated parameters. Ensure that the implications of uncertainty in technical conclusions are clearly stated.
6. If a minority report has been filed, review minority opinion and any associated analyses. If possible, make recommendation on current or future use of alternative assessment approach presented in minority report.

7. Recommend best estimates of stock biomass, abundance, and exploitation from the assessment for use in management, if possible, or specify alternative estimation methods.

8. Evaluate the choice of reference points and the methods used to estimate them. Recommend stock status determination from the assessment, or, if appropriate, specify alternative methods/measures.

9. Review the research, data collection, and assessment methodology recommendations provided by the TC and make any additional recommendations warranted. Clearly prioritize the activities needed to inform and maintain the current assessment, and provide recommendations to improve the reliability of future assessments.

10. Recommend timing of the next benchmark assessment and updates, if necessary, relative to the life history and current management of red drum.

11. Prepare a peer review panel terms of reference and advisory report summarizing the panel's evaluation of the stock assessment and addressing each peer review term of reference. Develop a list of tasks to be completed following the workshop. Complete and submit the report within 4 weeks of workshop conclusion.

1.3 List of Participants

Review Workshop Panelists

Jeff Brust	Review Panel Chair	ASMFC Appointee
Carmen Fernandez	Reviewer	CIE
Jaime Gibson	Reviewer	CIE
Sven Kupschus	Reviewer	CIE
Gavin Fay	Reviewer	ASMFC Appointee

Analytical Representatives

Jeff Kipp	Assessment Team	ASMFC
Mike Murphy	Assessment Team	FL FWCC
Steve Arnott	Assessment Team	SCDNR
Lee Paramore	Assessment Team	NCDMF

Observers

Pat Geer	South Atlantic Board Chair	ASMFC / GADNR

Council and Comission Staff

Julia Byrd	SEDAR Coordinator	SEDAR
Mike Collins	Admin.	SEDAR/SAFMC
Megan Ware	Red Drum Plan Coordinator	ASMFC

Pat Campfield Science Program Director ASMFC

Review Workshop Attendees

None

1.4 List of Background Documents and Review Workshop Working Papers

Atlantic red drum review workshop document list.

Document #	Title	Authors
SEDAR44-DWReport	SEDAR 44 Atlantic Red Drum Data Workshop Report	
SEDAR44-AWReport	SEDAR 44 Atlantic Red Drum Assessment Workshop Report	
Documents Prepared for the Data Workshop		
SEDAR44-DW01	Adult Red Drum Genetic Diversity and Population Structure	Cushman, Jamison, and Darden 2014
SEDAR44-DW02	Red Drum Maturity Analysis	Arnott 2015 & South Carolina DNR
SEDAR44-DW03	Distance moved by red drum recaptured by recreational anglers	Arnott 2014
SEDAR44-DW04	Recreational Landings and Live Releases of Red drum (Sciaenops ocellatus) in the Southeast US using MRFSS-MRIP intercept data, 1981-2013.	Murphy 2014
SEDAR44-DW05	Sizes of tag recaptured red drum that were released alive by recreational anglers.	Arnott & Paramore 2015
SEDAR44-DW06	Estimating the age composition of the MRIP/MRFSS estimated landings and live-releases for red drum along the Atlantic coast, 1981-2013.	Murphy 2014
SEDAR44-DW07	Development of historical annual recreational landings of red drum from 1950 through 1980 for the Atlantic coast states from Florida through New Jersey.	Murphy 2015
SEDAR44-DW08	NC Biological Data Survey Descriptions and Background Information	Paramore 2014
SEDAR44-DW09	Fishery Independent Surveys of Sub-Adult Red Drum in South Carolina	Arnott 2014
SEDAR44-DW10	SCDNR adult red drum 1/3rd mile longline survey	Frazier and Shaw 2014
SEDAR44-DW11	Relative indices of abundance for Red drum (*Sciaenops ocellatus*) inhabiting estuarine waters along the Atlantic coast of Florida, 1997-2014.	Murphy 2014

SEDAR44-DW12	Relative indices of abundance for Red drum (*Sciaenops ocellatus*) inhabiting inland waters along the Atlantic coast based on 1991-2013 angler catch rate data.	Murphy 2014
Documents Prepared for the Review Workshop		
SEDAR44-RW01	Red Drum SEDAR 44 Stock Assessment Research Recommendations	Red Drum Technical Committee & Stock Assessment Sub-Committee
Final Assessment Reports		
SEDAR44-SAR1	Atlantic Red Drum Stock Assessment Report	To be prepared by SEDAR 44
Additional Supplementary Materials		
SEDAR44-RD01	SEDAR18-AW02: Nonparametric growth model for Atlantic red drum, and changes to natural mortality (M) estimates	Cadigan
SEDAR44-RD02	SEDAR 18 Atlantic Red Drum Review Workshop Report (excerpt from full Stock Assessment Report)	SEDAR 18 Review Panel
*The last assessment for Atlantic Red Drum was SEDAR 18. All SEDAR 18 documents (final assessment report, working papers, and reference documents) are available in a separate folder on the FTP site and on the SEDAR 18 web page (http://sedarweb.org/sedar-18). The two SEDAR 18 reference documents mentioned above were specifically suggested as supplementary materials for the SEDAR 44 Review Workshop.		

2. Review Panel Report

Executive Summary

Prior to the RW, the Panel was informed that the Analytical Team (AT) had encountered some issues with model stability and performance, and as such final "base run" models for red drum assessments were not available for either the northern or southern regions. The focus of the RW was therefore modified to provide guidance to the AT on how to modify, stabilize and improve the models for management use following the RW. The Panel approved of the move from an SCA model to Stock Synthesis (SS3) to address concerns identified in previous assessments and to include new data. SS3 is generally more flexible than SCA, but the Panel did note several shortcomings of the model relative to red drum life history and fishery dynamics. The Panel determined that relevant data sources had been identified, and the decisions and assumptions regarding their use were generally sound, although the Panel provided guidance to improve data selection/inclusion in the future. Stock structure decisions are well supported. During evaluation of initial (pre-RW) model runs the Panel determined that the complexity of the models made model interpretation and diagnostics difficult, and recommended that the AT simplify the models to facilitate exploration. Additional exploratory and diagnostic runs were completed during the RW using the simplified models. It was not possible during the RW to diagnose all aspects of the model and develop working models suitable for management, but the Panel was able to provide guidance to the AT on aspects of the model to explore, such as survey selection, selectivity patterns, treatment of age and length data, tag reporting rates, and coherence of strong year classes. The Panel further recommended that once credible "simplified" models are developed, complexity should be added back into the model in a step-wise fashion to ensure model performance does not deteriorate. Since no final model runs were available, it was not possible to evaluate population and fishery trends or stock status. Research recommendations were reviewed, and the Panel recommended that research that directly contributes to completion of the assessments in a short time period be given highest priority.

2.1 Statements Addressing Each ToR

Overview

Prior to the Review Workshop (RW) the Review Panel (Panel) was informed that there was no final "base run" for either region of the stock assessment. The Analytical Team (AT) had conducted many diagnostic runs, but was having trouble corroborating the results given the input data, model stability, inconsistencies with the previous (SEDAR 18) results, and the plausibility of the model outputs. As a result, the AT specifically requested that the Panel provide guidance on model inputs and parameterization rather than review completed models for their utility in management. This request was reiterated at the start of the RW and is summarized in the Assessment Report as follows.

> The [Stock Assessment Subcommittee (SAS)] encountered several difficulties developing stable SS3 models that estimate plausible stock conditions and dynamics. The generalizable framework of SS3 allows many options for model configurations and exploration of alternative configurations are detailed in section 2.3 [of the Assessment Report]. The SS3 model results provided in this report are not intended to be evaluated in the current state for management use, but rather to provide the peer-review panel

> with background information on efforts to transition to the SS3 modeling framework. It is the hope of the SAS that the peer-review panel can provide alternative perspectives and expertise to modify, stabilize, and improve the SS3 models for management use following the peer-review workshop.

As a result of this request, during the RW, the Panel spent the majority of their time addressing this request for advice on model inputs and parameterization, and the AT was able to make significant advances in model performance during the meeting. However, due to this change in emphasis for the workshop, and because neither region had a working model, the Panel was not able to address all of the Terms of Reference (TOR). The following sections summarize the main comments the Panel made for each of the TOR they could address, summarizes the recommendations made by the Panel, and identifies those TOR for which there was insufficient information.

To further set the stage for this report, it should be noted that this is intended as a consensus report, and that the Panel is in general agreement on the major points in this document. During the meeting significant progress was made in developing the models, but the models are still works-in-progress, as discussed under TOR 3. The progress by the AT resulted from an initial implementation of the Panel's primary recommendation that the first main step in moving forward is to greatly simplify model structure to facilitate diagnostics and comprehension of model behavior; and, once sufficiently stable and credible "simplified" models are available, the AT should re-introduce complexity in a step-wise fashion by evaluating individual aspects of added complexity separately, selecting the one that provides the most benefit, using that as the next baseline, and repeating the process. However, because this is an iterative process and the models are still under development, there are a variety of inter-related options that can be explored as model development proceeds. In order to provide the AT with as much assistance as is possible in improving the models, under TOR 3, various options are discussed rather than a recommendation of a single path forward.

Panel's comments

1. *Evaluate the thoroughness of data collection and the presentation and treatment of fishery-dependent and fishery-independent data in the assessment, including the following but not limited to:*
    a. *Presentation of data source variance (e.g., standard errors).*
    b. *Justification for inclusion or elimination of available data sources,*
    c. *Consideration of data strengths and weaknesses (e.g., temporal and spatial scale, gear selectivities, aging accuracy, sample size),*
    d. *Calculation and/or standardization of abundance indices.*
    e. *Estimation of discards and size composition of discards.*

The AT provided a thorough overview of the many data sources available for the two red drum stocks. Data types included life history information such as age-at-maturation, length-weight conversion coefficients and natural mortality; commercial landings including discards and discard mortality; recreational fisheries harvests, live releases, and mortality rates of released fish; abundance indices based on both fishery-dependent and fishery-independent surveys; length and age data for several fisheries and surveys; and results from tagging studies.

Life History Information

The life cycle of red drum was well described by the AT. In brief, juveniles settle in estuaries and then move into lower estuary areas where they remain until they are about three to five years old. Adults live in deeper coastal waters, moving back into the estuaries to spawn. Red drum spawn annually. The maximum length is about 50 inches and the maximum age is 40 to 60 years. Female age-at-50%-maturity was estimated to be 4.1 years for the northern stock, and 5.1 years for the southern stock.

The AT chose to estimate age-specific natural mortality (*M*) via a Lorenzen curve standardized to a cumulative lifetime mortality equal to a Hoenig-type constant *M*. Von Bertalanffy growth models do not fit red drum length-at-age data very well, particularly for middle-aged fish. For this reason, the AT chose to use a non-parametric growth model for this analysis, although variants of a von Bertalanffy growth model were used in the assessment model. The Panel noted that this created an inconsistency between the growth model used to estimate *M* and the growth component of the assessment model. The results indicate that mortality is higher for the southern stock than for the northern stock. A catch curve analysis undertaken at the RW for the older age classes (for which fishing mortality is thought to be very low) in the southern region provided an estimate of total mortality close to the estimate of *M* for those older age classes. This result is suggestive that the estimates of *M* provided as model inputs by the AT are not inconsistent with the longline survey age composition data for this stock. This approach was not fully explored during the RW however, and should be explored further, possibly within the assessment model.

Abundance Indices

The DW report provided a thorough review of the available indices, considering a total of 23 indices for the northern stock, and 25 indices for the southern stock. Seven criteria, including the length of the time series; proportion of positive samples, unrealistic magnitude changes, ability to track year classes, extent of correlation with nearby surveys, extent of geographic coverage, and representativeness with regional stocks, were considered when deciding whether to include the survey in the model. A comparison of the indices against these criteria was clearly presented in the DW report. The working group retained five abundance indices for the northern stock and eleven abundance indices for the southern stock. The Review Panel noted that there was an element of subjectivity associated with the selection criteria. With integrated assessment approaches such as SS3, those indices considered less representative (but still containing relevant information) can be included with less weight in the model. Hence, in the future, it may be possible to extend the set of indices currently included in the stock assessment models. For example, the SC trammel net age 3 index was not used in the model due to large observed variances. An analysis conducted during the RW, however, indicated that relative cohort strengths from this survey corresponded well with cohort signals in the longline survey. Inclusion of this index in the model, even at reduced weight, could provide useful information on cohort strength. In addition, the Panel noted that although the AT's decisions were based on an explicit set of criteria, it appears not all of the criteria were fully evaluated during the Data Workshop. More detail on this concern is provided in General Comments section of this TOR.

Abundance indices included standard errors and/or coefficients of variation associated with the point estimates. These were calculated from the data collected during the survey, and were generally considered appropriate measures of the uncertainty associated with the estimate. However, there may be some inconsistencies in the weighting of the indices within the assessment models, particularly where the spatial coverage of the survey is limited and where modeled estimates of abundance are used (Florida indices).

As pointed out by the AT, the majority of indices pertain only to the youngest ages, primarily ages 1-3. In contrast, the North Carolina Adult Longline Survey, a stratified-random survey, has been consistently undertaken since 2007 providing information about the adult component of the population for the northern stock. The South Carolina and Georgia Longline Surveys provide similar information for the southern stock, in two time blocks in the case of South Carolina (1994-2006 and 2007-2013) and since 2007 in the case of Georgia. The paucity of information about the adult component of the population in earlier time periods is a significant source of uncertainty in the assessment, particularly as it pertains to changes in selectivity during the earlier time periods. Because of the coherent and extensive age structure in the longline survey data, these indices also have the potential to provide significant information on the relative year class strengths at the beginning of the time series. More discussion on the longline survey data are presented in TOR 3.

Commercial Landings and Discards

The AT provided a thorough overview of the commercial landings by state and gear type as available for the two stocks. For the southern stock, all commercial fisheries were grouped into a single commercial fishery, and data from 1950 to 1986 were used (the commercial fishery was closed in the mid-1980's). Little biological sampling occurred in this fishery, with most samples coming from Florida, where the majority of landings occurred, in the 1980's. For the northern stock, data from 1950 to 2013 were used, with 90-95% of commercial harvest being reported from North Carolina. Estuarine gillnets were the dominant fleet during the last 30 years, whereas prior to this the proportion of the catch taken by beach seines was considerably higher. The AT made the decision to model the gillnet and beach seine landings as coming from a single fleet in the model, and to model all other gears as a separate fleet, a decision that seemed practical given the limited biological sampling prior to 1989. The Panel noted that the selectivities of the various gears would be expected to differ, but that the decision was practical given the limited age or length data available for the different gears.

Commercial discards for the northern stock are available from North Carolina for the periods 2004 to 2006 and 2008 to 2013. No other data are available. The AT made the pragmatic decision to extrapolate to the entire time series using the ratio to the North Carolina gillnet landings. The Panel agreed this was a reasonable decision in the absence of other data; however, discard rates in this fishery for the earlier years remain a source of uncertainty, particularly given regulatory changes. A discard mortality rate of

5% was applied to the discards from the commercial fishery, but the Panel noted there is limited information available to support this value.

Recreational Harvests and Releases

The AT presented state-specific data for the harvests and live releases of red drum in the recreational fishery in both stocks. There is an increasing trend in catch-and-release fishing practices in this fishery. The MRFSS and MRIP survey were used to provide estimates of the harvest and releases from 1981 to present, whereas CPUE data from the MRFSS (1981 to 1985) were used to estimate harvests from 1950 to 1980. It was unclear at the review whether the avidity bias had been corrected for in the MRFSS data. For both stocks, the recreational fisheries were modeled as two fleets: one for the landed portion of the catch, and a second fleet for the released fish. A hook-and-release mortality rate of 8% was assumed for the release fleet. The Panel generally accepted the estimates of total harvests and releases in the recreational fisheries, noting there is greater uncertainty in the estimates for the earlier time period due to survey methodology and sample size. In addition, with the increasing catch-and-release fishing practices, the total removals from the recreational fishery are becoming increasingly sensitive to the value for hook-and-release mortality used in its estimation.

Age and Length Data

The paucity of available information about the number of fish-at-age and length for many fleets and years for both the recreational and commercial fisheries led the AT to make numerous decisions about data sharing across fleets and years. The decisions on when and how to share data across years or fleets can affect the input data (*e.g.,* smearing of years classes), which can carry through to model performance. Although discussed in the DW report, there was limited mention of data sharing during the RW. It was not clear to the review panel till later in the meeting that there had been a significant amount of data sharing among fleets and years. Although necessary for a more restrictive age-based SCA approach, at least theoretically there is a much reduced requirement to share data in the length-based likelihood based SS3 approach weighted by effective sample size. The idea behind the integrated approach is that it should down weight the importance of data represented by few samples compared to those data representing the conglomerate of many independent samples.

Within the recreational fisheries, there is no empirical data to infer the length-frequency of the B2 (released alive) component of the catch. The AT made the decision to assume the length-frequency of the B2 component was the same as that of tagged fish that had been recaptured, measured, released alive and reported. The Panel questioned the validity of this assumption, particularly if the length-frequency of the tagged population was not representative of the total population. During discussion, it became clear that smaller fish may be under-represented because they can be more difficult to tag; and that larger fish may be over-represented if only larger fish are tagged (for some years North Carolina asked volunteer anglers to only tag fish over 27 inches). There was consensus between the Panel and the AT that the B2 length-frequency was a significant data gap, an important issue given that assumptions made about the length-frequency ultimately determine the age-specific removals by this increasingly larger component of the fishery.

An additional issue with the length-frequency data is the determination of the effective sample size. The appropriate effective sample size of length measurements taken from a landing is somewhere between one and the number of fish measured, but it is not possible from the sample itself to determine where in this range the effective sample size is located. The data workshop decided to use the lower end of the range (i.e. 1) for the effective sample sizes. This has little impact when the number of fish measured per sampling event are similar over time and among fleets, but particularly with a declining commercial fishery and large differences in the number of length samples between commercial and recreational fleets in this model it has the potential to inappropriately weight the certainty in different data sources. Methods exist to estimate the degree of clustering in the samples external to the model, however SS3 can be used to replicate this estimation in a more integrated approach using iterative re-weighting (Francis and Hilborn 2011) to ensure that the corresponding variance estimate is in line with the estimated effective sample size. Uncertainty is affected by the combination of effective sample size and variance so even this methodology remains somewhat subjective on the initial estimate of variation. There is therefore no easy objective method to fix this problem, but once a base assessment is developed it is possible to assess the additional uncertainty caused by the clustering of samples. An alternative that could be used in the future is the Dirichlet likelihood for composition data that will be implemented in future versions of SS3. Here, the effective sample size is estimated based on the observed and predicted proportions.

Tagging Data

The available tagging data was well described by the AT. Tagging occurred primarily in North and South Carolina, beginning in the 1980’s for the northern stock and in the late 1970’s for the southern stock. Fish were tagged with primarily two tag types: internal anchor tags and steel dart tags. The AT developed a set of criteria for selecting tagging data for inclusion in SS3, including the need for information such as the length at tagging, the recapture fleet, and a sufficiently long time between release and recapture (7 days). The AT only included tag groups (age/year/tag/type) with more than 300 tagged fish and recaptures observed over the first three years after tagging. Different tag types were entered as separate tag groups.

Three key sources of uncertainty with the tagging data are the initial mortality associated with the tagging process (capture, tagging and release), tag loss, and reporting rate. A hook and release mortality rate of 8% was assumed for all fish tagged by recreational anglers, with no assumed mortality on fish tagged by fishery-independent sources. Initial tag loss was fixed at 0 in the tag recapture model. In general the Panel agreed with the decisions made by the AT with respect to filtering the tagging data, but consider the issues of hook and release mortality, tag loss and reporting rate to be sources of uncertainty in the assessment and topics for further research (particularly reporting rate). Additionally, an issue with the 0.75 value selected for the latency period was detected after the RW; the issue is described under TOR 3 and requires additional investigation.

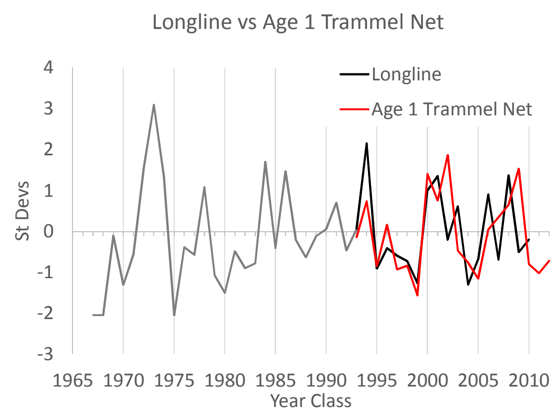
A major difference between the analyses presented at SEDAR 18 and at SEDAR 44 is the way the tagging data were incorporated in the model. In SEDAR 18, fishing mortality rates were estimated externally to the assessment model and input as data for the northern stock, while in SEDAR 44 the analysis of the available tag recapture data was implemented internally within the SS3 model. Exploratory runs conducted during the RW indicated that the treatment of the tagging data may have a substantial influence on the model output for the northern stock, particularly with respect to scale of the model results. More detail is provided in TOR 3.

General Comments

It was noted during the RW that a sizeable portion of the DW report refers to the development of data files for the SCA model, whereas the assessment report largely dealt with the SS3 models. If input data are treated differently for different candidate models, the DW report should fully describe the different methods and the justification for the differences. During the RW presentations on data sources, more emphasis on data inputs for SS3 (in particular, discussion of age conditional on length versus random age data) would have been useful.

There was consensus within the Panel that an important function of the data workshop should be to not only aggregate data, but also characterize the trends in the data and compare those trends among data sources where possible. A qualitative assessment of the utility of certain data sources and the trends that they imply is very helpful in structuring model development, especially in SS3 where there are many different implementation options that emphasize different informational content in the data. Following the suggestion of a Panel member during the RW, the AT standardized some of the longline survey age composition data to determine whether strong and weak year classes could be tracked consistently for both the southern (Figure 2.1) and northern (Figure 2.2) red drum stocks. These analyses demonstrated that cohorts could be tracked within these data, providing justification for the use of these surveys in age-structured models. Additionally, when the trammel survey data are summarized by cohort year and overlaid on the cohort composition data for the southern stock, it is evident that the age-1 trammel net survey index, and to a lesser extent the age-2 trammel net survey index, are relatively consistent with the longline survey age data. As discussed above, the SC trammel net age 3 index was not used in the model due to large observed variances. However a similar analysis with these data indicated that relative cohort strength from this survey corresponded well with cohort signals in the longline survey, a reason to possibly include it in the model. These investigations illustrate the consistency within and among indices and highlight the importance of carefully examining the dynamics in the individual data sources. These kinds of exploratory analyses can be very useful when selecting among modelling approaches.

Additionally, further exploration of the data for the data workshop would have revealed a problem of converting lengths measured in inch bins into 2 cm bins identified during the RW.



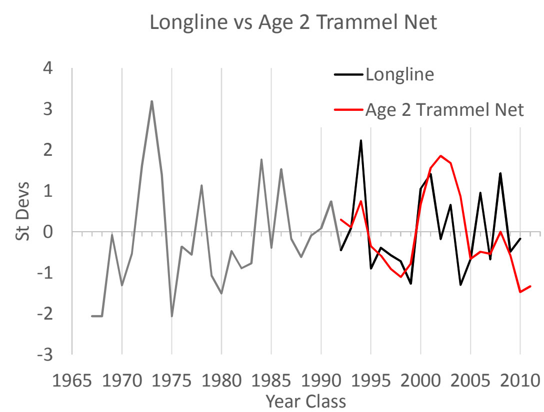


Figure 2.1. Comparison of the z-score standardized South Carolina longline survey age composition data (by age class) with the South Carolina age-1 (top) and age-2 (bottom) trammel net survey data.

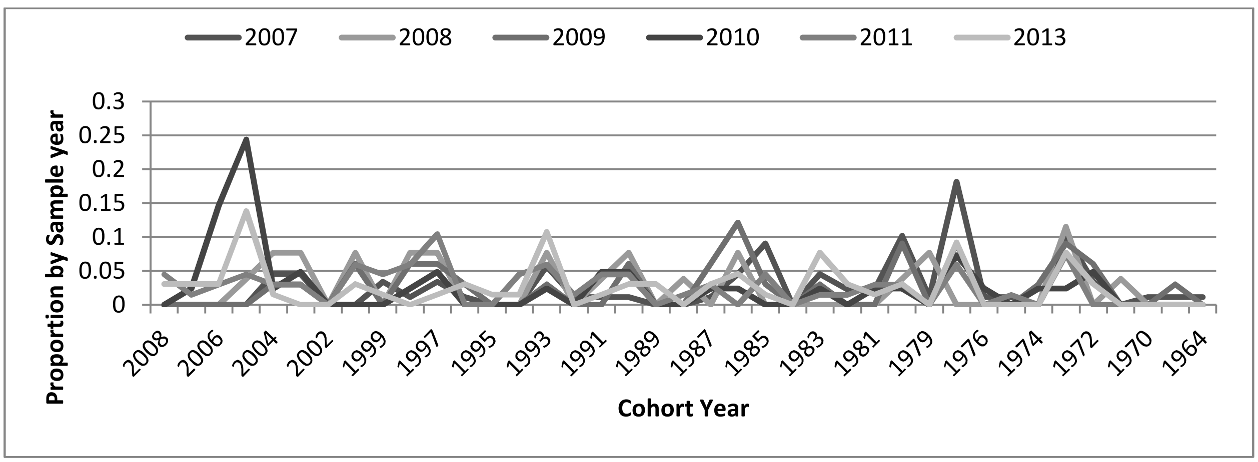


Figure 2.2. Comparison of the proportion of each cohort in the longline survey age composition data for the northern stock for the sampling years 2007 to 2013.

2. *Evaluate the definition of stock structure used in the assessment. Is the definition appropriate given the biology and management of red drum?*

Since 1996, Atlantic red drum assessments have broken analyses into two stocks: one inhabiting Atlantic waters from Florida through South Carolina (southern stock), and one inhabiting more northern waters (northern stock). The AT continued this approach in defining stock structure, with separate northern and southern assessments. This separation is primarily based on differences in life history characteristics. Estimates of growth, maximum age (and consequently natural mortality), and maturity schedules are different between fish from northern and southern areas.

Insights from tagging information indicate limited movement of red drum, with the majority of tag recaptures occurring close to (<125 miles) their release location, even with long times at liberty. There is evidence of movement of fish between North Carolina and Virginia, and also among adjacent southern states, but the majority of red drum recaptures during tagging studies occurred in the state of release.

Mitochondrial genetic studies indicated a genetic transition occurring between Gulf of Mexico and Atlantic red drum around the southern Florida peninsula. Although prior studies have been inconclusive for structuring of Atlantic fish, recent genetic work by SC DNR does suggest a genetic break exists between NC and locations south of NC during spawning, but that some mixing of adults does occur during the non-spawning season.

There is perhaps some concern around the Indian River Lagoon/Mosquito Lagoon (Florida) complex. Here there are adults inshore year round, with some genetic distinction from the rest of the southern stock. These fish are a significant component of the southern fishery, and the adult portion is significantly underrepresented in the assessment as there are no fishery independent indices. Given the likely relatively small size of the substock and the limited movement of adults suggested by tagging and genetics, it seems there is little risk of mismanaging the remainder of the southern stock based on a combined dataset. However there remains a currently unknown risk of local depletion which could have locally deleterious consequences. Once a final southern stock model is available, it may be possible to ascertain the scale of this uncertainty by comparing data specific to this area with the results from the model for the entire southern stock.

The AT presented the above information. The Panel agreed that the decision to follow previous assessments and model red drum as two distinct northern and southern stocks was appropriate. The Panel noted that the limited movement patterns of red drum may indicate the potential for estuary specific depletion to occur, with recovery from any such depletion likely being slow due to limited mixing and the long life span.

3. *Evaluate the methods and models used to estimate population parameters (e.g., F, biomass, abundance) and biological reference points, including but not limited to:*

a. *Evaluate the choice and justification of the preferred model(s). Was the most appropriate model (or model averaging approach) chosen given available data and life history of red drum?*
b. *If multiple models were considered, evaluate the analysts' explanation of any differences in results.*
c. *Evaluate model parameterization and specification (e.g., choice of CVs, effective sample sizes, likelihood weighting schemes, calculation/specification of M, stock-recruitment relationship, choice of time-varying parameters, plus group treatment).*

The Panel was not able to provide guidance on the final assessment models due to neither region having a completed base run approved by the AT and ASMFC Red Drum Technical Committee. Regardless, the Panel provides the following comments on the apparent direction of the modeling work and several of the key components.

Model framework and development

As described in the assessment report, several limitations of the SCA model framework were identified during the SEDAR 18 review workshop. The red drum AT focused their model development efforts on SS3 to address these limitations and to incorporate new information in the model. The Panel endorsed the transition from the previous SCA methodology to an SS3 implementation of the red drum assessment in that it would allow addressing some of the main recommendations made by SEDAR 18 without having to develop new functionality in the SCA model. Although it is possible to implement similar changes in the SCA approach through further development of that model, many of the planned improvements to the SCA (*e.g.*, integrated evaluation of the tagging data, length based selectivities, and non-parametric selectivity functions) were already available in SS3. The AT's approach had been to try to recreate the SCA dynamics in SS3. However, the wealth of additional options and the move from age-based to length-based selectivity resulted in a complex model that produced results that were both different than those produced by the SCA and were often implausible. The AT was finding it difficult to make progress in model improvements because the complexity of the interactions between parameters made it difficult to diagnose the origin of the unrealistic population dynamics within the model. The Panel, having examined the development of the red drum assessment, was having similar difficulty in diagnosing the cause of non-intuitive results and stability issues of the model. As a remedy the Panel suggested that considerable simplification of the model would facilitate identifying the underlying cause. This suggestion should not be interpreted as a recommendation to use a simplified model for the advisory process; it is possible that the final model accepted for management advice will incorporate as much complexity (or more) than the original model presented at the RW. However, use of a simplified model at the outset facilitates understanding of model dynamics, compared to trying to diagnose issues in a highly complex model with poorly understood dynamics, and provides a platform to add complexity in a step-wise fashion. Simplification of the original model according to these principles provided an opportunity to examine some potential avenues to improve model dynamics suggested by the Panel.

Initial thoughts on the simplified model:
The simplified northern stock model appeared not to be able to reflect the contrast in cohort strength coherently indicated by a number of independent data sources going into the model. The Panel agreed on two points, first that this was somehow due to a conflict between different sources of length information, or between the length and age information going into the model; and second, in agreement with SEDAR 18, the Panel concluded that red drum growth was poorly represented by a von Bertalanffy growth model. The definitive causes and the possible impacts on the model estimates as a whole could not be identified. Consequently the Panel could not reach consensus on model / data changes that would have the best chance of improving the model without seeing the options implemented and studying the diagnostics. What follows are a number of options suggested throughout the review meeting by different reviewers all with their unique pros and cons. The suitability of different model outcomes should be viewed in light of their effects on the cohort structure and their costs in terms of model complexity and realism.

Length vs Age data contributions to the total likelihood function
The relatively poor fit of the Von Bertalanffy growth model could exacerbate the effects of conflicts in information between the length and age likelihoods. One approach to improving the ability to track cohorts is to alter the relative weighting of the two information sources in the model. An attempt was made to do this during the review by down weighting the length data through a reduction in the effective samples size. At first glance this appeared to have little effect in the parameter estimation, although it had substantial effects on the selectivity estimates of the recreational CPUE index, longline index, and B2 recreational removals, for lengths over 80 cm. A more detailed investigation of the diagnostics should be conducted as to why a 90% decrease in the likelihood component of lengths had little overall effect.

A yet untried alternate approach would be to increase the weight of the age composition by increasing its effective sample size to see if this improved the fit to the age data.

Improved estimation of growth model.
Because of the interactions between growth and selectivities, it was difficult to optimize the growth function based on model diagnostics, but comparing the raw age at length information with the predicted growth from the model indicated that the model continued to have difficulties in fitting the data predominantly for the intermediate ages. The northern model was using 2 k estimates, one below age 5 and one above, but the data suggested that switching between the two k's at an older age should improve the fit. A new run for the north using a transition age of 8 years improved the fit, improving the log-likelihood by 55 units. At first glance however it did not fix the problem of a lack of contrast in the cohort structure. Further analysis of the diagnostics should be conducted to examine what caused the improvement of the fit.

Ultimately, other ways of estimating growth including cohort specific growth should be implemented, but this is not under the control of the AT so is unlikely to be a solution available in the short term. A more flexible von Bertalanffy growth model, with more than 2 values of k, could be explored in SS3.

One potential avenue for exploration could be to input size at age directly based on external estimates of growth. This would allow for a non von Bertalanffy growth model to see if a growth model change addresses some of these perceived issues. However, because much of the current information on size at older ages comes from the longline survey, it is not clear that the effects of a different growth model will be distinguishable from the effects of using the age data more directly, as described below.

Treatment of longline survey age directly:
A more radical approach than down weighting the length information to force the model to accept the cohort structure information available in the data is to implement the use of the age information of the longline survey directly via age-based selectivity for the survey. This avoids any potential issues with the compromised growth model interfering with the estimation of the relative cohort size. Because the age information for this survey is collected randomly, rather than length stratified, this would not result in likelihood biases as it does for other data sources that have been collected length stratified and therefore have to be estimated through the length-conditional age likelihood in order to retain unbiased estimates of size at age.

What is suggested is to explore the implementation of the longline surveys as age-based selectivities, providing the multinomial probability directly rather than providing length information, either through internally estimated growth or externally estimated growth. It differs from the previous approach in that it requires no length information at all from the longline surveys. It will likely suffer from the same alteration of the growth estimation due to the loss of the age-length pairs from the data. In addition the process of longline captures is thought to be a length-based process, rather than an age-based process, which is not ideally modeled by an age-based approach. However without cohort specific differences in growth implemented in this model, length selectivity can be directly related to age selectivity. Consequently the inappropriateness of the age-based implementation will be dependent on the complexity of the respective selectivity functions. Another alternative intermediate approach that could be considered is to retain a modeled size-based selectivity but fit to the raw age frequencies.

A consideration for age-based selectivities for the longline surveys in the southern model is the removal of the age bins in the data. However, some clarification of why bins were implemented in the southern model might be helpful in understanding the implications, as it will be difficult to separate any changes in model parameterization between the un-binning and age-based selectivity effects.

Each of these runs should be conducted and the diagnostics evaluated by the AT. Among the suite of diagnostics, the fit of the model to the age frequency data from the longline surveys, unconditional on length, could be displayed. In cases where the age data are used conditionally on length, it is still possible to show this diagnostic in SS3 by entering the age-frequency data from the surveys, unconditional on length with a minus sign in front of the fleet number in the input files (see SS3 manual for details). These data do not enter into the likelihood calculations but model predictions are generated which can be contrasted with the observed age composition data.

If on conducting these exploratory runs it becomes obvious where the problem is, the AT could use that knowledge to improve the model. If it is not obvious, the AT would have to consider the merits of each of the alternate models and select the most appropriate way forward. It was noted that using age-based selectivities will remove a large portion of length data available for the growth curve, which will almost certainly alter the growth model parameterization, so the effect of the length conditional probability cannot be effectively isolated. Also, issues with improbable selectivity estimates may be driven by the poor fit of the growth model, so these runs may provide little information on how to move forward until an adequate growth model is achieved.

Selectivity

The SS3 stock assessment configurations available from the AT at the start of the RW used length-based selectivities for all fishing fleets and abundance indices, except for those abundance indices that were constructed specifically to reflect one particular age.

The SS3 double-normal selectivity form had been selected for all fishing fleets. This selectivity function is defined by 6 parameters, which were all estimated except for the parameter defining the selectivity at the first length bin (which was fixed so that selectivity at that length equals 0). Several of the abundance indices are considered to represent one particular age (0, 1 or 2, depending on the index) and an age-based selectivity concentrated on the age they are considered to represent was assumed for those indices. Length-based selectivities had been used for the indices that represent a conglomerate of ages, in particular, double-normal shapes for the recreational CPUE indices and logistic shapes for the long-line indices (North Carolina, South Carolina and Georgia surveys) that represent the adult fish in the population.

Time blocks of constant selectivity were assumed for the fishing fleets based on the regulations expected to affect selectivity of each of the fleets, with all selectivity parameters assumed to be block-specific. Four time blocks were chosen for all fishing fleets in the north (same blocks for all fleets). In the south, no blocks were chosen for the Florida commercial fleet (this fleet ended in 1988), two blocks were chosen for the Florida recreational fleets, four blocks for Georgia AB1 (recreational harvest) and Georgia-South Carolina B2 (recreational live releases assumed to die) fleets, and five blocks for South Carolina AB1 (recreational harvest). Time-varying selectivities were not implemented for any of the indices of abundance.

Length composition data are available for the fishing fleets since the mid-1980s and for the abundance indices that represent a conglomerate of ages generally for the entire duration of the indices (the abundance indices rarely start before the mid-1990s and some longline indices are much more recent). Age composition data are sparser and entirely lacking for some of the fleets and abundance indices.

The Panel considered the above to be an overall sensible approach to model selectivities. However, as already explained in this report, the Panel considered that as a starting point for making progress with the development of the SS3 stock assessments during the RW, it was best to start with simpler models, starting the stock assessments at the beginning of the "data-rich" periods (i.e. at some point during the 1980s) and without time blocks for the selectivities. Examining residuals of length compositions should then provide indications of selectivity changes over time, which could be compared with knowledge about the surveys, fisheries and fishery regulations. These were considered as refinements that could be done once "basic", but stable and reasonably realistic stock assessment configurations were achieved in SS3.

The use of the SS3 double-normal selectivity form seems generally appropriate, as it can approximate a wide variety of shapes. It is listed as the recommended option in the SS3 manual. However, the Panel considered that a more flexible selectivity form that does not impose unimodality would likely be more appropriate for the B2 component of the recreational removals, as one might expect increased selectivity just outside the edges of the slot limit in which retention has been mainly allowed in the last 2 or so decades (i.e. 18-27 inches or, approximately, 46-69 cm). This could be expected to lead to two modes in the B2 selectivity-at-length, below 46 cm and above 69 cm, which cannot be modelled by the double-normal selectivity. Therefore, further work extending that done during the RW by investigating more flexible forms allowing for local modes in the B2 selectivity-at-length around the 2 extremes of the slot limit seems appropriate. This could be done using the non-parametric or cubic spline selectivity patterns in SS3, choosing a sufficient number of waypoints to allow enough flexibility (perhaps around 6 or 8 waypoints) and judiciously choosing the locations of the end waypoints.

For the northern region, it was noted during the RW that the B2 length composition often displayed positive residuals around 120-125 cm, which must be related to the fact that these very large fish seem to appear in the B2 catches but are almost completely absent from the North Carolina longline survey (for which asymptotic selectivity is assumed). The AT considered that the lengths of the longline survey are correct whereas the lengths of the larger fish may be overestimated in the B2 catches (i.e. the fish reported as 120-125 cm are likely biased measurements). The Panel cautioned that this difference in the length frequency distributions may be sending conflicting signals to the model, with unknown effects on the results, and encouraged further exploration of this issue. Options for investigation include using a flexible selectivity function for the B2 fish (as recommended above) with the freedom to incorporate a local mode at large sizes, using a more flexible selectivity function for the longline survey, or manually "resizing" the large B2 fish to be consistent with the longline survey data. Diagnostics from these runs should be evaluated to inform the most appropriate way forward.

The Panel noted that the split of recreational fleets into AB1 and B2 is mainly artificial and does not facilitate thinking about selectivities. Modelling the AB1 and B2 removals (i.e. harvest + live releases that die) as a single fleet with a discard pattern, rather than as two separate fleets, could be considered as an alternative. However, the pattern of discarding in the recreational fishery, with retention prohibited outside the 46-69 cm slot limit, cannot currently be implemented in SS3 because only logistic discarding patterns are available. In view of this limitation, the Panel supports the approach taken by the AT of splitting the AB1 (harvest) and B2 (live releases that die) components of the recreational fishery into two different fleets in the SS3 implementation. In the longer term, inclusion of a retention pattern in SS3 that allows for dome-shaped behavior rather than solely logistic may be preferred if the AB1 and B2 removals are to be modelled as a single fleet.

More progress on the SS3 assessment was achieved for the north than for the south during the RW. For the south, the runs conducted during the RW produced some selectivity shapes indicating very high selectivity for very small fish lengths, which resulted in very clear misfits to the length composition data. This was particularly problematic for the South Carolina AB1 component, but the feature also appeared in other fleets depending on run configuration. It was not possible to understand the causes of this behavior during the RW, and this behavior only occurred to a much lesser extent in the run presented by the AT at the start of the RW. This needs to be understood and resolved in order to make progress towards a stock assessment that can serve as the basis for management advice. The run for the south presented by the AT at the start of the RW made extensive use of symmetric beta priors to get around the problem of illogical selectivity estimates, but examination of the SS3 control file provided by the AT for the first run conducted during the RW revealed that priors do not appear to have been used in the runs conducted during the RW. It may be that this feature is needed to get sensible selectivity estimates, just as the AT had noticed in their earlier work. Another possibility is that the lower bound of the first selectivity parameter (the parameter that determines the lower end of the double-normal selectivity peak) needs to be increased to more realistic values for the different fleets (e.g. the current value in the control file appears to be 9 cm for all fleets, which seems far too low for most fleets, particularly the harvest fleets). Adding additional constraints on these parameters is a common requirement when using the double normal selectivity function in SS3 to guide parameters away from implausible values. In addition, it was noted following the RW that the observed sample sizes for the length frequency data in the pre-RW runs were different (higher) than those conducted during the RW. It is recommended that the input files be double checked for consistency, particularly since the runs conducted at the RW had a different number of fleets than the original runs, which will require restructuring of the input file.

There was also concern raised during the RW that using the recreational CPUE (which includes all recreational catches, both harvested and discarded) as an abundance index, and also including the length compositions of this recreational index might be redundant with the AB1 and B2 components of the removals. This could give excessive weight to the datasets associated with recreational catches during the model fit. The observed length frequency distributions of the recreational CPUE abundance index seem very similar to those observed for the B2 components of the recreational fishery, as do the length residual patterns of both fleets. This suggests that there is substantial commonality between these data sources. The Panel could not predict whether the inclusion of the data as both removals and abundance index was overweighting the model towards these data. It was recommended that a sensitivity run be conducted with the CPUE and associated length frequency data removed. An alternative would be to exclude the length composition data from the recreational CPUE abundance index and model its selectivity as a mirror of the B2 fishery selectivity. However, since the recreational

CPUE also includes the AB1 component of the catch, such a sensitivity run would not be as informative as removing the index data altogether.

Tagging

By moving to SS3, the AT was able to include the tag release and recapture data in the model, and allow the model to fit to the tag recaptures. The Panel agreed that including these data within the model during estimation was a good step forward for the assessment.

The Panel largely agreed with the criteria used by the AT in the treatment of the tagging data in the model. There are some technical constraints with the tagging module in SS3 that required some assumptions to be made:

Assignment of ages at release: SS3 models each tag release group (a set of tags released at a specific time) as having a single assigned age of release. The AT was able to separate tag release groups by length for individual ages 0-2 in the north and 0-5 in the south, and then aggregated all tag releases above these ages into a single modeled tag release group for each year, with assigned age equal to the age predicted by the median length of those tag releases (based on the externally estimated growth curve). Creating unique tag groups for each age at release is infeasible because tags are released across a range of ages and cannot be separated by length for older ages. The Panel agreed that the approach was probably a reasonable approximation in this case, as the mortality on older ages is likely similar. Alternative approaches could include splitting these tag releases into a small number (3-5) of tag release groups with assigned ages as done with the current method to more closely approximate the age structure of these tag releases.

Latency period: Tagged fish in SS3 are assumed to be released at the beginning of the season (year in the current assessment models). However, red drum have a peak of tagging activity in the fall. The AT assigned a latency period of 0.75 (*i.e.* 9 months) to the tag releases, to accommodate for incomplete mixing. While this seemed a sensible solution in initial discussions, it is not clear this had the effect desired. Following the RW, it was determined that this parameter can only take integer inputs; inspection of the echoinput.sso files shows that in its calculations SS3 converted the input value of 0.75 to 0. Consequently, the predicted recaptures in the year of release are based on the full annual mortality. This has (at least) two implications: 1) the predicted number of recaptures for the year of release will be based on a full year of modeled fishing mortality (thus predicting more recaptures than if fish were only exposed to 3 months of mortality), and 2) The modeled number of fish in the tag groups will be deprecated by a full year's mortality. The effect of this on model results is unknown and should be investigated. In the current implementation of tagging in SS3 there is little that can be done other than moving to a seasonal model that would allow for tag releases at multiple times during the year, although the Panel recognizes that it would take a significant amount of effort to reconstruct the model as a seasonal model. In the short term the Panel recommends a sensitivity run with the latency period set to 1. This approach would not solve the second of the implications mentioned above but would provide some understanding of potential impacts to model results. In addition, this configuration would remove a large proportion of the tagging information given that recaptures are only considered for the first 3 years of release. This is particularly true for the northern model where there are fewer releases and recaptures. The southern model could perhaps include recaptures from additional years beyond the three year recapture period as there are more data available.

Reporting rate: In theory, the tag recapture data (after accounting for growth, selectivity, and natural mortality) can provide an absolute measure of the fishing mortality rate. Critical to the value for the fishing mortality rate suggested from the tag recaptures is the value for the tag reporting rate. The tag reporting rate will scale the absolute value for F, with a low tag reporting rate implying a higher *F*, and a higher value for the reporting rate implying that *F* is lower (requiring a larger stock to obtain the same catches). In SEDAR 18 and in the continuity models, the tag reporting rate was derived externally to the stock assessment model. The northern model implemented in SS3 was found to be very sensitive to the value for the tag reporting rate. Estimating the tag reporting rate in the assessment model effectively allows the model to adjust the *F* implied by the tag recaptures to match the information coming from the other data sources in the model, rather than providing independent information. This was shown during the RW by a sensitivity analysis that removed the tagging data from the model, with little influence on model results. In part this may be due to over-weighting of other data components in the models. The Panel agreed that it would be best to use external estimates of the tag reporting rate if these are available. Being able to fix the tag reporting rate at an external estimate for at least one fleet should provide an anchor for the model, and perhaps then enable the other reporting rates to be estimated if data on these are not available. The AT reported that an estimate of the tag reporting rate from the recreational fleet is available. The Panel recommended that this external estimate of the reporting rate be included in the model by fixing the rate for this fleet at this value, and exploring the consequences of alternative plausible values for the tag reporting rate through sensitivity analyses. The analyses conducted by the AT during the RW demonstrated the likely sensitivity of results for stock status determination to the tag reporting rate. Obtaining and including external information on this parameter should therefore be viewed as a high priority as these assessments develop.

The northern assessment model using SS3 omitted data from tags released after 2001 (and therefore recaptures after 2004). These were excluded due to expectations that reporting rate would have changed following the release of high-reward tags in 2005. The Panel agreed both with the AT's decision and that it would be preferable to include these in the model should it become possible to model changes in the reporting rate over time. The Panel suggested that these data be considered for inclusion in sensitivity analyses by fixing reporting rates for this period at those observed in earlier time frames (or at some alternative values that may be considered more plausible by the analysts), to determine whether there is likely to be information here that is not being picked up by other components of the model. The southern model has many more tag release and recapture observations and these can perhaps be disaggregated further.

The Panel also discussed the treatment of tag recaptures from the recreational releases (recreational discard fleet). As tag recaptures in SS3 are considered being the result of fishing mortality events, including these observations in the assessment model would bias the estimates of mortality because these fish are re-released and many (presumably) survive. In initial configurations, the AT reduced the number of recaptures to 8% of those observed and fixed the reporting rate at 100%. The 8% reflects hook and release mortality and is consistent with values used to determine the magnitude of the recreational discard harvest. In initial discussions, there was uncertainty among the Panel as to whether this approach was appropriate, and in additional analytic requests, the Panel asked the AT to remove these recapture events from the likelihood by setting the reporting rate to zero. Omitting these data appeared to have little effect on the general model results. It was eventually agreed that the AT approach was probably the most reasonable of alternatives for including these data, but the Panel recommended that the reporting rate not be fixed at 100% and instead reflect those estimates that are available.

The diagnostics for evaluating the fit of the model to the tag recapture data were appropriate and included standard plots from the r4ss R package, which included observed and predicted tag recaptures by tag group and also by fleet. While the Panel agreed that including the tag-recapture information in the assessment model is an improvement for red drum assessments, there are several technical constraints associated with how the SS3 software handles these data. Some further development of the tagging module in SS3 could lead to an expanded role for tagging information in red drum stock assessments.

Recruitment

The assessment models made an assumption of annual recruitment deviations around an average level of recruitment for the entire time series, with parameters for year class strength estimated prior to the start year of the assessment models. This appeared warranted given the apparent consistent information regarding relative year class strength at least since the early 1970s, with suggestions of a strong cohort in/around 1973 in the fishery independent age data. In practical purposes, recruitment was estimated assuming a Beverton-Holt stock-recruitment relationship with steepness set to 0.99, effectively assuming no relationship between recruitment and spawning biomass. While the Panel agreed that this assumption was reasonable given the available data and the timeframe of the assessment history, it was recommended that once the immediate issues with these assessments are addressed, the AT should investigate alternative values for steepness, perhaps utilizing additional historical data. The magnitude of the bias adjustment applied to the estimated recruitment residuals was determined using current best practices (Methot and Taylor 2011), and the diagnostic plots suggested that the approach taken by the AT to deal with the level of process error was appropriate. As part of the theme to simplify the assessment models to explore behavior, the Panel recommended fixing the process error variance (sigmaR) for the recruitments.

4. *Evaluate the diagnostic analyses performed, including but not limited to:*
    a. *Sensitivity analyses to determine model stability and potential consequences of major model assumptions*
    b. *Retrospective analysis*

The AT used standard diagnostic plots to evaluate model fit (residual plots, minimum likelihood values, likelihood profiles), with the use of sensitivity analysis to explore the consequences of major model assumptions. The Panel emphasized that the sensitivity approach is important in this model development phase, and that it is important to only change one thing at a time to fully understand the implications of different choices regarding parameters and data. The Panel agreed that the approach taken by the AT during the RW is appropriate and recommended this process continue. Retrospective analysis should be conducted, particularly once configurations that are close to what may be considered a final model are achieved. In addition to conducting retrospective analysis on the usual quantities (recruitment, SSB, F or SPR), examining the retrospective behavior of other key parameters can sometimes provide useful insights on model behavior.

5. *Evaluate the methods used to characterize uncertainty in estimated parameters. Ensure that the implications of uncertainty in technical conclusions are clearly stated.*

Options available for characterizing uncertainty in estimated parameters include the use of sensitivity tests, inspection of asymptotic standard error estimates, profile likelihoods of both estimated parameters and derived model quantities, and the use of Markov Chain Monte Carlo (MCMC) methods to obtain samples from the posterior distribution. The Panel recommends that the use of these options continue as the red drum assessment models are developed. Use of profile likelihoods separated by data source contributions to the overall likelihood help to evaluate those data sources that may be in conflict surrounding the value of a parameter or are most contributing to changes in the likelihood over the profiled parameter. The Panel recommends exploring the use of MCMC to characterize uncertainty once base models are developed.

6. *If a minority report has been filed, review minority opinion and any associated analyses. If possible, make recommendation on current or future use of alternative assessment approach presented in minority report.*

No minority report was presented to the Panel.

7. *Recommend best estimates of stock biomass, abundance, and exploitation from the assessment for use in management, if possible, or specify alternative estimation methods.*

The Panel is not able to provide guidance on the regional model results (abundance, biomass, exploitation rates) or their utility for management due to neither region having a completed base run approved by the AT and Technical Committee. Given the change in scope of the RW (focus on improving the SS3 models to provide reliable results), no alternative estimation methods were considered, and it is not appropriate for the Panel to recommend any in this document, although some of the individual panelist reports address this issue. The Panel does support continued efforts to finalize these assessments using the SS3 modeling framework as it can address many of the concerns raised by the SEDAR 18 review, presumably resulting in better estimates of biomass, fishing mortality and SPR providing more relevant management advice than the previous modeling framework.

8. *Evaluate the choice of reference points and the methods used to estimate them. Recommend stock status determination from the assessment, or, if appropriate, specify alternative methods/measures.*

The Panel is not able to provide guidance on stock status determinations due to neither region having a completed base run approved by the AT and Technical Committee. The Panel did note that there was likely insufficient contrast in the SSB and recruitment data to reliably estimate a spawner-recruit relationship. In the absence of a SR relationship, the Panel recommends using SPR based reference points as done in previous assessments. Unfortunately both the north and south base assessments had difficulty in estimating realistic estimates of realized SPR levels. Some progress was made in improving the stability of the models but it remains to be seen if this is sufficient to support the estimation of SPR for comparison against reference point values.

9. *Review the research, data collection, and assessment methodology recommendations provided by the TC and make any additional recommendations warranted. Clearly prioritize the activities needed to inform and maintain the current assessment, and provide recommendations to improve the reliability of future assessments.*

Research recommendations were presented to the Panel in working document RW01 and are reiterated below in italic font followed by comments by the Panel. Generally speaking, the Panel agreed with the list of recommendations, as well as the prioritization. Additional recommendations by the Panel are included at the end of the list provided by the AT. The Panel noted that the recommendations generally fell into two categories: those that addressed gaps in life history information, and those that addressed issues with the model. While both are important, it was recommended that the research to address model concerns should be given higher priority.

Short Term

• *Conduct experiments using logbooks to develop estimates of the B2 catch length composition in both the North and South regions.*

Recreational releases are becoming an increasingly important component of the total catch. Unfortunately, the recreational survey does not collect length information from released fish, so length composition for this sector was characterized with length frequency data borrowed from available tagging data. The Panel noted several concerns surrounding the tagging data, such as minimum size requirements for tagging. The Panel therefore agrees that this research recommendation receive a high priority in the short term. For the long term, the Panel recommends modeling the recreational harvest and discards as a single fleet with a discard function; however, this will require assistance from SS3 developers since SS3 software currently only allows a logistic retention function that is not appropriate for a slot limit. It was cautioned that the combined fleet should exclude any fleet that has "non-standard" discarding practices (*e.g.*, releases all red drum regardless of size) that might have a different selectivity pattern.

• *Determine if existing and historic recreational data sources (e.g., tagging) can be used to evaluate better B2 selectivities.*
The Panel noted that the selectivity pattern of recreational live releases is expected to be bimodal and cannot be modeled with the double normal selectivity option used for the other fleets. The Panel recommended investigating the non-parametric selectivity function available in SS3 in the short term, and modelling recreational live releases with recreational harvest as a single fleet in the long term (see previous recommendation).

• *Further study is needed to determine discard mortality estimates for the Atlantic coast, both for recreational and commercial gears. Additionally, discard estimates should examine the impact of slot-size limit management and explore regulatory discard impacts due to high-grading. Investigate covariates affecting discard mortality (e.g., depth, size, seasonality).*
A better understanding of discard mortality rates in the commercial and recreational sectors, and the covariates that influence mortality rates, is important to adequately characterize the removals by these sectors. This and the previous two recommendations should receive high priority to gain a better understanding of discard practices which are becoming a larger component of the fishery.

• *Continued and expand observer coverage for the NC and VA gill net fisheries (5-10% coverage).*
It was noted that the scale of discards in the gill net fishery is substantial, and an accurate characterization of these fish should be included in the total removals. Priority for this research/monitoring should be based on the scale of commercial discard removals relative to the recreational release mortalities.

• *Expand observer coverage to include other gears of concern (i.e. haul seine, pound net, trawls).*
The AT confirmed that harvest from these gears is substantially less than gill nets, and discard mortality is expected to be low. The Panel recommended that priority of this research recommendation be evaluated relative to other sectors of the red drum fishery in terms of their overall contribution to removals.

• *Expand biostatistical sampling (ages and lengths) to better cover all statistical strata (gears/states - principally NC and VA) and collect more ages proportional to lengths, preferably otoliths. Conduct statistical analysis to determine appropriate sample sizes to adequately characterize the age-size composition of removals.*
The Panel commented that having sufficient data is certainly important to inform the model, but cautioned that sampling for the sake of increasing sample size can be counterproductive. Targeted

sampling plans should be developed that fill identified data gaps and improve the model and/or management decisions but minimize over sampling. It may be necessary to collect large numbers of samples in the short term to better understand key life history characteristics, such as growth patterns, but over time sample sizes could be scaled back to a maintenance level of sampling.

• *Conduct a tagging study using emerging technologies (i.e., acoustic tagging, satellite tagging, genetic tags) to evaluate stock mixing and identify movement of sub-adult fish transitioning to maturity.*
The Panel noted that the information presented on stock structure was sufficient and informative, so while a tagging program could provide useful information, it is more of a long term issue. The AT expressed a concern that there may be substantial mixing of stocks in offshore waters. However, harvest from the offshore areas is low, so there should be little concern for mixed stock harvest. The Panel suggested that this research recommendation receive a lower priority and also be considered as a long term monitoring project along with otolith microchemistry and genetic analyses (discussed below).

• *Determine batch fecundity estimates of red drum. Need to include age-specific spawning frequency and spawning season length for this indeterminate spawner.*
The model does not currently use fecundity information, and using spawning stock biomass as a proxy for fecundity is a commonly accepted practice, so this does not need to be considered a high priority research recommendation. That being said, basic life history information such as fecundity is important to have, particularly as it relates to size and age. For example, it is known that fecundity of some sciaenids is not linear with spawner biomass, and therefore the metric used may have management implications.

• *Update maturity schedules for Atlantic red drum from Florida to Virginia. Preferably, gonad histology samples should be collected from all sizes over time and archived.*
The Panel agreed that collecting histological samples to standardize maturity classification, confirm maturity schedules, and provide a reference collection is important but cautioned that such a program may be expensive. Cost should therefore be considered during prioritization of sample collection.

• *Otolith microchemistry analysis should be considered to look at state level differences between regions to support stock structure differentiation.*
As with the research recommendation on archival tagging, the Panel commented that the stock structure information provided during the RW was sufficient and informative. It was recommended that this research be considered as a long term project in conjunction with the genetic analysis (discussed below).

• *Continue cooperation between state ageing labs, such as the October 2008 red drum ageing workshop, to provide consistent age verification between labs.*
The Panel noted that coordination/verification of ageing practices is very important and that work should be ongoing and conducted at regular intervals. The Panel also recommended that the work be broadened to include coordinating the collection of age samples and the development of an ageing error matrix.

Long Term

• *Investigate iterative re-weighting of data components to identify the appropriate weights given to each data component in the objective function.*

The Panel recommended that this work be viewed as a short term recommendation in terms of improving the model. In addition, the Panel noted that the work should include additional methods for weighting the model inputs, with iterative reweighting as one possible method.

• *Investigate alternative functions for retention to include recreational harvest and dead releases in the same fleets. Commercial discards should also be considered as a discard component of the landings fleet.*

The Panel agreed that combining the recreational harvest and discards into a single fleet would be more appropriate but reiterated that SS3 does not currently have that functionality given the characteristics of the red drum fishery (slot limit). In addition, this step is not necessary to get a solid working model, so the Panel recommended that this work receive lower priority.

• *Allow for time varying reporting rate of tag recaptures in the assessment model. This would allow use of more recent tag-recapture data from NC and estimates of changes over time in both regions.*

The Panel recommended that both regions should continue their tagging programs to evaluate tag return rates, but identified two concerns with this research recommendation. First, given the available data, it is unlikely that SS3 would be able to reliably estimate time varying reporting rates. Second, even if the functionality were available, the data should be evaluated prior to use in the model to confirm that they are informative. It was cautioned that including uninformative data on this (or any other) parameter may be counterproductive to the model fitting process.

• *Continue genetic analyses (i.e, SC DNR analyses) to evaluate stock structure and mixing and temporal changes in genetic composition of the red drum population.*

Details regarding stock structure and stock mixing rates are important to understand in non-migratory stocks that extend over wide geographic scales. It was noted that the information pertaining to Atlantic red drum stock structure was informative, with the split between northern and southern, and southern and Gulf stocks clearly defined. However, monitoring of mixing rates and confirmation of stock boundaries is important over the long term, as well as investigating the possibility for finer scale stock structure, as new techniques are developed. Several research recommendations addressed stock structure and mixing, including acoustic tagging, otolith microchemistry, and genetic analysis. It was recommended that long term monitoring be conducted at modest levels of sampling using a combination of these three techniques.

• *Consider a pilot Virginia adult survey and expanding current adult fishery independent survey coverage in Florida waters.*

The Panel commented that fishery independent sampling should be representative of the entire population. The AT should evaluate the adequacy of current sampling levels and expand as necessary.

• *Identify impacts of water quality, environmental, and ecosystem changes on red drum stock dynamics. Incorporate in the stock assessment models.*

The Panel agreed that understanding external drivers on stock dynamics is important, but noted that this research recommendation is very broad and generic. Preliminary work should be done using available data to identify potential factors that affect red drum so that more directed work could be conducted moving forward. It was also suggested that the work be conducted by non-assessment biologists since it is less of a priority.

• *Quantify habitat changes for future management planning*
The Panel commented that the specific components of the previous recommendation could all be considered aspects of habitat. In that regard, this recommendation which addresses physical habitat can be included in with the previous recommendation.

Additional research recommendations identified by the Panel
In addition to the short and long term research recommendations provided by the Red Drum Technical Committee, the Panel identified a number of items that could improve the current model and future assessments.

The AT should conduct a comprehensive review of tag reporting rates, including identifying additional data sources, evaluating alternative estimation methodologies, and/or using information from similar species. This work should be done in the short term to update (or corroborate) data currently being used. The final value used should be sufficiently justified because of its apparent impact on the scale of model results.

As discussed under TOR 3, the AT should investigate the treatment of age and length data to fit selectivites for the longline survey. During this exploration the team should pay particular attention to the fitting of the growth function and its effect on model fitting for the other surveys, age composition, and historic recruitment; changes in selectivity estimates for the different fleets and fits to other datasets should also be examined for possible indication of conflict in the signals provided.

The Panel noticed an abnormal length frequency distribution (certain lengths in the heart of the distribution with 0 frequency) in the northern GNBS data which is likely an artifact of converting lengths in inch bins to centimeter bins. These data could be influencing the length composition fits (and therefore overall model results) and should be rectified before moving forward.

The AT should explore the effect of changing sample size cutoffs, such as the number of tag returns necessary for each tag group (currently using N = 300) or minimum sample size before data borrowing is necessary. This work should be viewed as a diagnostic and sensitivity exercise and should be explored in the short term but only after a solid base model is available.

One potential avenue for exploration could be to input size at age directly based on external estimates of growth. This would allow for non von Bertalanffy growth model to see if a different growth model addresses some of these perceived issues.

For this and future assessments, the Panel reiterates their recommendation to start simple and add complexity only after the model is providing credible results and the AT understands how the model is performing. This is particularly important when new data sources or alternative data treatments are being considered. Once a "simple" model has been developed, the Panel recommends investigating two "add-ons" independently of each other (*e.g.* extending the time series vs. adding selectivity blocks), and selecting the one that provides more information as the next scenario. This process should be repeated, adding complexity in a step-wise fashion, until sufficient complexity is achieved or model performance breaks down.

As noted in TOR 1, the Panel recommends additional time be spent evaluating available data sources prior to their use in the model. Simple exercises such as checking whether the different data sources corroborate one another or indices can track strong year classes can help determine the information content of a particular data source. A thorough understanding of the input data strengths and weaknesses can be useful to pinpoint issues in model performance.

10. Recommend timing of the next benchmark assessment and updates, if necessary, relative to the life history and current management of red drum.

Given the fact that stock assessments that could serve as the basis for management advice could not be achieved by the end of the RW, the Panel considers that the immediate priority should be to finalize these assessments. Progress was achieved during the RW, particularly for the northern assessment, where the main issue that appears to remain is that of overall scaling of the assessment (connected with the SPR levels estimated from the assessment), which is now understood to be closely linked to tag reporting rates. For the southern region, the RW encountered an issue with unrealistic selectivity estimates for the small fish in some fleets, and this needs to be resolved before progress towards a final assessment can occur; some ideas to help progress were offered under TORs 3 and 9.

After completion of this assessment, the timing of the next benchmark may depend on the results of the current process and the resulting uncertainties. As mentioned, results from the model for the northern stock are currently very sensitive to assumptions about the tag reporting rate, and, in addition, the mortality rate assumed for the discards is an important determinant of the removals by the fisheries. The conclusions about status may ultimately depend on these values. The timing of the next benchmark might then be as soon as data can be collected to resolve uncertainties about these and other constant rates assumed in the model. Following this, potentially longer time periods between future benchmarks may be appropriate not withholding any new understanding in stock dynamics that the improved models may provide. However, based on the analyses and data from this RW, there appears to be fairly high recruitment variability with a few strong year classes contributing significantly to the overall biomass. If this is indeed the case, then overexploitation of a large year class might be expected to have longer-term population-level effects, as would relatively longer periods of low recruitment. After completion of this assessment and the dynamics of the red drum stocks are better understood, development of a set of relatively simple indicators that could be regularly used for status updates could be informative about whether changes are occurring in the stock that are sufficient to warrant a new assessment.

11. *Prepare a peer review panel terms of reference and advisory report summarizing the panel's evaluation of the stock assessment and addressing each peer review term of reference. Develop a list of tasks to be completed following the workshop. Complete and submit the report within 4 weeks of workshop conclusion.*

This report constitutes the Panel's summary evaluation of the stock assessment and discussion of the Terms of Reference.

2.2 Summary Results of Analytical Requests

Given that neither region had a completed base model run prior to the RW, and the AT specifically requested guidance on how to improve model performance, the Panel suggested many investigative and diagnostic runs. The majority of time was spent evaluating the northern model because it was more complete and robust than the southern model, but many of the suggestions were relevant to both models. Suggestions for improvements to both models are discussed throughout this report. Below is a description of some of the more "important" runs requested by the Panel. Since there is no base run against which to compare the results of the additional runs, results are presented in terms of information learned from the runs.

The Panel was concerned with the nonsensical results in both regions and how these might be influenced by the apparent over-parameterization of the models (both had roughly one parameter estimated for every four data points provided). The first main recommendation was therefore to simplify the models significantly. For both regions, the Panel recommended removing catch data prior to the start of biological sampling (1950-1988) and using a single selectivity block. For the northern region, there was uncertainty how the model was using the recreational discard tag reporting data, so these data were dropped and the reporting rate was set to zero. The simplified model is not being advocated as a final base run, but simply a way to develop a credible working model to which additional complexity can be added as appropriate. All subsequent investigations discussed below were conducted on these "simplified" model configurations.

Both regions were having trouble fitting ages based on length, which was considered could be a result of the poorly fit growth curve (*e.g.* overestimating uncertainty in age at larger sizes). In an effort to improve these fits, the Panel recommended a number of exploratory runs. An exploratory run of the northern model increased the age at which the change in growth rate occurs from 5 to 9. This improved the total likelihood function moderately; however, the improvements were seen primarily in the fits to the length data with minimal changes to other components of the likelihood. A northern model run was conducted that down weighted the length composition data by a factor of 10. Initial model runs had observed sample sizes on the order of hundreds, with model estimated effective sample sizes on the order of tens. The reweighting was implemented by applying a lambda of 0.1. The change had little effect other than altering recreational selectivity at larger sizes. It was discussed that the results might still be confounded in the poorly fit growth curve, and that this should be revisited once the growth model was improved. For the southern region, the Panel noted that some of the issue surrounding poorly fit age at length might be due to older ages grouped into 5 year bins rather than individual ages. A run using individual ages was conducted, but results were confounded by persistent nonsensical selectivity patterns in the recreational discard fleet. A longer term (post RW) recommendation made to address the non-informative length at age results was to evaluate different methods to estimate longline survey selectivity (see TOR 3), although it was noted that these selectivities may be driven by the growth model.

For the northern region, the Panel was concerned that the model estimated tag reporting rates were not intuitive, with the commercial fleets returning a higher proportion of tags than the recreational sector. A recommendation was made to fix the tag rates at relatively high values, and with recreational higher than commercial, to see how the model performed. Results showed similar patterns in F and biomass, but their scales were significantly decreased and increased, respectively. It was noted that the continuity SCA run used data inputs based on tag reporting rates estimated externally, which may have given the model its scale. Estimating tag reporting rates internally in SS3 may be overriding the tag information with other sources of information. This was supported by the results of a run with the tag data removed showing only minor differences to the original model results. An intermediate run using a fixed recreational reporting rate and allowing the commercial rates to be estimated provided results similar to the run where all three rates were fixed. To investigate the scaling issue from another angle, the Panel recommended allowing all three tag reporting rates to be estimated but fixing R0 at the value estimated from the run where all three tag rates were fixed. This configuration provided tag reporting rate estimates approximately double those found in the run where all tag rates and R0 were free. This confirmed for the Panel that the tag reporting rates affect the scale of the results, but the model may not be able to estimate all three concurrently. However, if the AT can provide one reliable estimate of tag reporting rate from one of the three sectors, the others could be adequately estimated. A research recommendation was made to conduct a comprehensive review of reporting rate values.

The Panel expressed concern that the recreational data might be overly influential in the model because it was used in both the removals and as a survey index of abundance with length composition information. An exploratory run of the northern region with the MRIP index removed showed very little difference to the original simplified model. This indicates that model results are not overly dependent on the recreational data being input in both components. In addition, there was very little change in the fits to the recruitment deviations and juvenile indices. A similar run was suggested for the southern region, but was not conducted during the workshop.

Simplification of the southern region model resulted in nonsensical selectivity patterns for the SC recreational discard sector. The Panel suggested mirroring the selectivity of one of the other recreational discard fleets to possibly circumvent this issue. A run with the SC fleet mirroring the FL fleet simply shifted the poor fit to the FL fleet, indicating that the problem is not in the length frequency data. It was also suggested that simplifying the model may have resulted in a misspecification in the input data, such as a mismatch in the numbering of fleets and indices. Attempts were made by the AT to address the issue, but it was not resolved during the workshop. As such, no additional exploratory runs were conducted during the workshop. The Panel recommends that the exploratory runs conducted for the north also be evaluated for south, as well as the following suggestions specific to the southern model.

- Combine the state specific recreational fleets into a single harvest fleet and a single discard fleet to reduce the number of parameters. Alternatively, the selectivities of the individual (state specific) fleets could be mirrored against a "baseline" fleet.
- Switch from the CAGEAN style stock recruit curve to a Beverton-Holt curve with steepness fixed at 0.99. This should be done as an exploratory run and compared with the current CAGEAN style SR curve. If the alternate configurations affect recruitment patterns, consider why this is, then select the most appropriate choice.
- Remove the estimation of the spawner-recruit auto correlation parameter and the recruitment process error variance (sigma R), and allow R0 to be estimated.
- Conduct a sensitivity run excluding the the MRIP CPUE index and associated length data.
- Investigate the order of phases to determine if it affects parameter estimates.
- Following the workshop, the Panel took the time to review the input and output files for the various runs. One reviewer noted some potential inconsistencies in the input files between the pre-workshop runs and those conducted during the workshop. In particular, the observed sample sizes for the length frequency data in the pre RW runs were different (higher) than those conducted at the RW. In addition, the Assessment Report indicates soft betas were used on some parameters to keep them from hitting bounds, but these are not apparent in the input file from RW. It is recommended that the input files be double checked for consistency. Checking the echoed input file also revealed that the model was setting the input latency parameter for the tagging to 0 (input value of 0.75). Inspection of the SS3 code revealed that this parameter has to be integer.

SEDAR

Southeast Data, Assessment, and Review

SEDAR 44

Atlantic Red Drum

SECTION IV: Addendum

September 2015

SEDAR
4055 Faber Place Drive, Suite 201
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Addendum to the SEDAR 44 Red Drum Stock Assessment Report

Purpose

The assessment results presented in the SEDAR 44 Assessment Report for the red drum stocks were based on unfinished age-structured population model analyses formulated within the Stock Synthesis 3 integrated assessment framework. Model convergence and stability was questionable based on the final gradients, parameter traces, and preliminary jitter analyses indicating a sensitivity of results to initial parameter values. These issues with stability and estimates are further described in the Assessment Report and were the primary focus throughout the Peer Review Workshop. Given red drum management objectives and conflicts with the Statistical Catch-at-Age (SCA) model used in the last benchmark stock assessment (SEDAR 18), the Stock Assessment Subcommittee (SAS) determined the most beneficial function of the Peer Review Workshop was to draw from the Peer Review Panel's (Panel) experience, particularly with Stock Synthesis 3, to make improvements following the workshop so the models can be evaluated for management advice. Therefore, the Panel suggested model configuration changes to improve model stability and reviewed the results of these changes during the workshop. Additional guidance was provided for the analysts to improve the models following the workshop. There were also some additional data analyses external to the models requested by the Panel to inform potential issues with the models. This addendum provides a summary of the additional analyses requested at the workshop and outlines the strategies for completing the models for final evaluation.

Additional Data Analyses

Cohort Tracking in Fishery-Independent Surveys

The initial models were configured to estimate length compositions of the adult red drum indices and expected age-at-length for surveys with age data (i.e., NC and SC Longline surveys). However, poor fitting growth models and flat growth trajectories among adults result in length compositions that are uninformative of age structure.

Instead, the Panel suggested the possibility of using externally derived age composition data or down-weighting the length composition data in the models. The question then arose as to whether relative year class abundance in the adult surveys corresponds with other sub-adult indices.

Northern Stock

Age data were available from 391 red drum captured by the NCDMF 1-mile longline survey between 2007 and 2013 (see Tables 1 & 2 for year class and age composition, respectively). The survey specifically targets adult red drum in estuarine waters of Pamlico Sound. Specimens were selected from the longline catches by sacrificing every 5th fish caught from a stratified random sample survey design. It was assumed that this resulted in random sampling. Otoliths were removed, sectioned and read independently by two separate readers. The youngest fish was 3 years and the oldest was 43 years.

The age composition of all fish (2007-2013 sampling) is shown in Fig. 1.

For each year of sampling, the proportion of red drum by age was calculated as

$$p_{ay} = \frac{n_{ay}}{\sum n_{ay}}$$

where p_{ay} is the proportion of fish at age a from sampling year y and n_{ay} is the number of fish at age a during sampling year y. The mean proportion at age across all sampling years was calculated as

$$\bar{p}_a = \frac{\sum_{y=2007}^{y=2013} p_{ay}}{Y}$$

where the number of sampling years $Y = 7$ (see Table 3). The mean relative abundance A of year class c across all sampling years was then calculated as:

$$\bar{A}_c = \frac{\sum_{y=2007}^{y=2013} (p_{ayc}/\bar{p}_a)}{t}$$

where t is the number of sampling years in which year class c could potentially be sampled (based on minimum and maximum observed ages of 3 and 41 years, respectively) (see Table 4).

The relative year class abundance of adult fish was compared against the:

i. NCDMF Pamlico Sound independent gill net survey age 1 index,
ii. NCDMF Pamlico Sound independent gill net survey age 2 index,
iii. NCDMF red drum juvenile seine age 0 index

For visual comparison (Fig. 3), indices were initially transformed to z-scores to standardize their scaling (e.g. $A'_c = \frac{A_c - \bar{A}}{SD}$, where $\bar{A}$ and SD are the mean and standard deviation, respectively, of the year class abundance indices over the period of overlapping survey year classes).

There was reasonably good agreement between the NC sub-adult indices and the adult indices.

Southern Stock

Age data were available from 538 red drum captured by the SCDNR 1/3rd mile longline survey between 2007 and 2013 (see Tables 5 & 6 for year class and age composition, respectively). The survey specifically targets adult red drum in deeper coastal waters than the estuarine-dwelling sub-adults. Specimens were selected from the longline catches by sacrificing every 3rd – 5th fish caught until maximum storage capacity of the boat (~10 fish) was met. It was assumed that this resulted in random sampling. Otoliths were removed, sectioned and read independently by two separate readers. The youngest fish was 3 years and the oldest was 40 years.

The age composition of all fish (2007-2013 sampling) is shown in Fig. 4. A synthetic catch curve analysis of fish aged 20-35 years produced a slope of -0.115, giving a similar mortality to the empirically derived natural mortality used in the stock assessment (Fig. 5).

For each year of sampling, the proportion of red drum by age was calculated as

$$p_{ay} = \frac{n_{ay}}{\sum n_{ay}}$$

where p_{ay} is the proportion of fish at age a from sampling year y and n_{ay} is the number of fish at age a during sampling year y. The mean proportion at age across all sampling years was calculated as

$$\bar{p}_a = \frac{\sum_{y=2007}^{y=2013} p_{ay}}{Y}$$

where the number of sampling years $Y = 7$ (see Table 7). The mean relative abundance A of year class c across all sampling years was then calculated as:

$$\bar{A}_c = \frac{\sum_{y=2007}^{y=2013} (p_{ayc}/\bar{p}_a)}{t}$$

where t is the number of sampling years in which year class c could potentially be sampled (based on minimum and maximum observed ages of 3 and 40 years, respectively) (see Table 8).

The relative year class abundance of adult fish was compared against the:

iv. SCDNR trammel net survey age 1 index,
v. SCDNR trammel net survey age 2 index,
vi. SCDNR stop net age 1 index,
vii. SCDNR rotenone age 1 index,
viii. GADNR gill net age 1 index,
ix. FL bag seine age 1 index,
x. FL haul seine age 2 index,
xi. FL haul seine age 3 index, and
xii. MRFS/MRIP recreational catch per unit effort index for red drum (annual index of all ages combined across the southern region).

For visual comparison (Fig. 7), all indices were initially transformed to z-scores to standardize their scaling (e.g. $A'_c = \frac{A_c - \bar{A}}{SD}$, where $\bar{A}$ and SD are the mean and standard deviation, respectively, of the year class abundance indices over the period of overlapping survey year classes).

There was reasonably good agreement between the SC sub-adult indices and the adult indices, and also with the GA age 1 indices. The FL indices did not agree as well with the SC adult indices. The recreational aggregated (multi-year class) indices showed reasonable agreement when lagged by one year.

Northern Data Revisions

It was suggested that the analytical team should consider inclusion of the age-3 index from the Pamlico Sound Independent Gill Net Survey. The age-3 index was originally not included due to low catch rates and high CVs. However, there was some discussion that if the survey tracked the age-1 and age-2 indices, it may be informative to include in the model. The indices for ages 1-3 and associated CV's are provided in Table 9. A plot of the indices by cohort year is provided in Figure 8. Overall, there appears to be relatively good agreement between the three indices.

An error in the length composition data for the Comm_GNBS fleet due to converting length data in inches to the 2cm bins used in the Stock Synthesis 3 model was identified during the workshop. This error resulted in some lengths incorrectly being assigned to the surrounding bins, leaving some bins empty (figure 9). The error was correctly following the workshop (figure 10).

Additional Model Configurations

Northern Model Alternative Configurations and Results

The Panel's first suggestion was to reduce the complexity of the model by simplifying model parameterization with the changes below.

The model originally started in 1950, as there were removals data available or reconstructed back to this year and the SAS believed this would inform the model of stock productivity and reaction to varying fishing mortalities in these earlier years. However, as the Panel pointed out, during model development the steepness of the spawner-recruit relationship was fixed at 0.99 due to inability to estimate this parameter, essentially specifying no relationship between spawners and recruits (i.e., fixed productivity). The lack of other data types during the early years (1950-mid-1980s) may not inform the parameters being estimated during these years leading to an overparameterized model. ***Change: Start the model in 1989.*** Time-varying selectivities due to management changes were modeled in the original base model, mirroring the selectivity configuration of the SCA used in SEDAR 18. However, the Panel suggested removing time-varying selectivities due to the number of parameters being estimated for time-varying, double normal selectivities and potential insignificant effects of management changes on selectivity. The exponential-logistic selectivity can be seen as a further simplification of fleets with dome-shaped selectivity expected (three parameters vs. six for the double normal). ***Change: Remove time-varying selectivities and change the Comm_GNBS fleet to the exponential-logistic selectivity function.*** The original base model was configured to estimate a fishing mortality parameter for each year and fleet, resulting in 256 parameters under the original base configuration. This parameterization was selected due to the imprecise estimates of recreational removals and the less restrictive requirements of the model to match these observed removals exactly. However, the Panel suggested this may be a beneficial trade-off for model parameterization. ***Change: Switch to the recommended hybrid F option to more closely match the input removals.*** The catchabilities of the surveys used for indices of abundance were derived nuisance parameters in the original base configuration. The Panel recommended directly estimating these parameters. ***Change: Directly estimate survey catchabilities.*** Recaptures by the Rec_Discard fleet were assumed inputs (8% discard mortality * reported releases of recaptured fish in the recreational fishery) and the reporting rate was fixed at one. The Panel originally suggested excluding these assumed inputs and fixing the reporting rate at zero, but later suggested that the assumed inputs are appropriate as long as the reporting rate of this fleet is estimated. ***Change: Exclude assumed recaptures by the Rec _Discard fleet and fix the reporting rate of this fleet ≈0. Consider including the assumed recaptures and estimating the reporting rate for this fleet following the workshop.***

Other changes dependent on these changes were estimating early recruitment deviations before the model start year (approximately the same time series of recruitment deviations as the original base model from ≈1950-2013), fixing the R sigma parameter due to high correlation with the ln(R0) parameter, and changing the equilibrium catch to the mean of the catch from 1979-1988.

A jitter analysis resulted in convergence on the same solution for thirty runs of this model configuration (table 10), indicating improvements in stability of the model. Therefore, fits and estimates of alternative model configurations requested at the workshop were evaluated against this simplified model configuration and not the original base configuration described in the Assessment Report. There were no abrupt changes in residual patterns for length composition data, relative to the original base model, suggesting time-varying selectivity in more recent years (1989-2013) may not be supported by the data (figures 11). However, the overall estimates of the model were very similar to the estimates from the original base model, with the scale of the key population estimates (F, R, SPR, and SSB) still being a concern given the management and biology of the stock (figures 12). This scaling issue was the focus of most subsequent alternative configurations requested.

There was discussion that the model may be struggling to estimate precise year class strength of older fish due to the asymptote of growth at a relatively young age and the conversion from length composition data and this estimated growth to abundance-at-age. For example, the model is estimating the strong 1974 year class (see the tracking cohort analysis for the northern stock), but appears to be blending this year class signal over the surrounding year classes (figure 13), possibly due to the overlapping length-at-age for these ages. The Panel suggested down-weighting the contribution of the length compositions to evaluate if the model would fit more to the sparser conditional age data. The likelihood weighting factor (lambda) for all length composition components was changed to 0.1. There were no apparent changes in model fits or estimates. The Panel also suggested exploring alternative ages for the transition in growth rate to improve expected growth estimates, with age-9 ultimately suggested as an alternative. Despite the slight change in growth (figure 14), the overall results were similar, but it was noted that the total negative log-likelihood did decrease slightly from the new model configuration (table 11).

There was some concern about how the recreational fishery data were configured in the model. Panel members believed the recreational data are essentially being double counted by including removals and an index of abundance developed from recreational CPUE. An alternative analysis excluding the recreational CPUE component from the objective function was completed by changing the lambda of the index and length composition to zero. This alternative configuration had negligible impacts on the model estimates. The Panel also focused on the recreational discards being configured as a fishing fleet and not modeled as discards from a combined recreational fishery (i.e., harvest and discards in one fleet). This was a major hindrance during model development and remains an issue for the assessment of red drum given the lack of size data for these discards, the inability to identify age classes in these removals, and the nature of discards (angler behavior and slot management). As discussed in the Assessment Report, there currently is not the ability in Stock Synthesis 3 to model retention/discarding of fish with a function other than a logistic function. The management of red drum with a slot size limit precludes the use of this type of function. In addition, bag limits and changing angler behavior (i.e., catch and release sport fishing) result in fish in the slot being discarded. The selectivity of these discarded fish was being modeled with a unimodal selectivity pattern (i.e., double normal) when there is the possibility of a multimodal selectivity pattern. Confounding this issue is the lack of robust size data for these fish and the reliance on lengths of released fish with tags as a proxy for the size of these dead discards. The panel suggested exploration of alternative, non-parametric selectivity functions. Bimodal selectivity was configured with the non-parametric selectivity option, but this configuration resulted in negligible changes in the model estimates other than the selectivity pattern (figures 15). The Panel suggested that a configuration with addition modes be explored, with possible modes at both ends of the slot limit and a mode for larger fish.

The tag reporting rates estimated in the original base model could be considered somewhat counterintuitive with a lower reporting rate estimated for the recreational harvest fishery than the Comm_Other fishery. The panel suggested fixing the reporting rates at greater values, with the greatest for the Rec_Harv fleet, to evaluate the effects on the fishing mortality rates that are supported by the tag-recapture components of the model. The reporting rates were fixed at 0.5 for the recreational harvest fleet and 0.30 for both commercial fleets. Fixing the reporting rates did scale the fishing mortality rates down as expected (figure 16), and had a significant impact on the scale of the ln(R0) parameter (6.46 vs. 5.55 with the reporting rates freely estimated), and, consequently the other key stock estimates (figure 16). However, the total negative log-likelihood did increase relative to the new base configuration (table 11). To evaluate this apparent correlation between ln(R0) and reporting rates, the Panel suggested fixing ln(R0) at the value estimated with tag reporting rates fixed, but allowing the tag reporting rates to be freely estimated. The reporting rate estimates were similar to the fixed values when ln(R0) was freely estimated (0.29 for the Comm_GNBS fleet, 0.52 for the Comm_other fleet, and 0.32 for the Rec_Harv fleet). There was also discussion about whether ln(R0) was highly correlated with just one of the tag reporting parameters. The Panel requested that just the Rec_Harv reporting rate be fixed at 0.5 and the commercial reporting rates and ln(R0) parameter be estimated. The ln(R0) value was estimated at 6.62

and the scale of the commercial reporting rates relative to the Rec_Harv fixed reporting rate (0.39 for the Comm_GNBS fleet and 0.70 for the Comm_Other fleet) was estimated the same as in the new simplified model. Therefore, fixing the reporting rate of just one fleet has significant implications on the scale of the stock estimates. To evaluate the effect of the tag-recapture model on the overall model, the tag recapture model was excluded from the objective function (lambda = 0). The results of this configuration were very similar to the simplified configuration.

Strategy to Complete Northern Stock Assessment

The highest priorities moving forward to improve the northern model for consideration for management advice are to evaluate how best to configure the tag-recapture components of the model, given the identified sensitivity to the tag reporting rate estimates. One possibility is to fix the reporting rates based on literature values to anchor the model and estimate other parameters of the tag-recapture model. Another consideration will be how to configure the recaptures and reporting rate of the Rec_Discard fleet, as discussed earlier. The goal will be to reduce the sensitivity of the model estimates to tag reporting rates.

Following these priorities, efforts will be made to build in additional complexity to more accurately reflect the stock dynamics and available data (i.e., selectivity blocks, historic removals data, estimate other key parameters such as R sigma, use the original continuous F parameterization to allow more variation from the observed removals, inclusion of the North Carolina Independent Gill Net index for age-3 fish, and model a multimodal selectivity pattern for the Rec_Discard fleet). Model diagnostics and uncertainty analyses will be evaluated to determine the most beneficial changes to model fit and precision, if any.

Southern Model Alternative Configurations and Results

The initial modification was to shorten the time series (1989-2013), eliminate any time blocks, simplify the estimation of recruitment deviations to be made only during the 1989-2013 period, and change the F estimation method to the hybrid Pope's approximation/instantaneous F method. While a number of parameters were estimated at or near their bounds, this analysis converged with a maximum gradient less than 0.001 (Table 12). The large reduction in number of parameters from the Assessment Report model occurred due to the change in fishing mortality estimation method, elimination of blocks, and the simplified recruitment deviation setup. The findings suggested a stock that was about 69% depleted (1-1989 biomass/virgin biomass) but was steadily increasing throughout the 1989-2013 period with an increase in the abundance of red drum surviving to older ages (Fig. 17). Recruitment varied without trend though it had declined to average/below-average levels after 2010 following a period of high recruitment in the 2007-2010. The summary fishing mortality showed variability but an overall increasing trend which was reflected in the decreasing estimate of static spawning potential ratio.

A major problem with this analysis before it could be used as the basis for adding complexity to the model was the unrealistic estimation of length selectivity for the South Carolina recreational harvest fleet. This solution indicated that red drum were highly vulnerable to the harvest by this fishery at very small sizes. The lack of fit to the length composition for that fishery's landings reflects this misspecification (Fig. 17). Initial indications from phase plots were that the parameters for this selectivity function were not stable during the last phase of parameter estimation (Fig. 18).

Other diagnostics investigated during the meeting included profiling across important parameters, e.g., steepness, and correlation analyses among groups of parameters showing erratic solution traces. These were not satisfactorily completed during the meeting and are not included in this report.

The Panel requested residual plots for the length composition fits made in the initial simplified model and found several instances where the residuals showed patterns of positive and negative residuals across both length classes and across time. There appeared to be a consistent shift in the residual pattern after 1992, especially for the live-release fisheries (Fig. 19). Ways to choose time-blocks, initial values for size selectivity parameters, their bounds, phase order, and whether some parameters should be fixed were discussed with the Panel. These were suggested areas of investigation to try and limit the model solution space to that area where local minima in the likelihood would not impede model resolution to a global minimum.

Alternative runs designed to gain insight into the selectivity-estimation problem were made: 1) estimate a single size selectivity for the South Carolina and the Florida harvest fleets (SC 'mirrored' FL) and 2) include a selectivity time-block in the Georgia/South Carolina (GASC) and the Florida live-release fleets. The 'mirrored' selectivity run did not show any significant changes to the estimated abundance or fishing mortality but extended the mismatch between the model and the observed catch length structure seen in the South Carolina harvest fleet to the Florida harvest and GASC live-release fleet (Fig. 20). An additional, somewhat unrelated, model run was made that included an early selectivity (1989-1992) time-block for the live-release fisheries for Georgia/South Carolina and Florida. This run was made as an attempt to remove the observed residual patterns seen in the fits to length composition for these fleets in the initial simplified model (Fig. 19). This seemed to have little effect on the output and was considered an implausible solution again due to the unrealistically high selectivities for small red drum that occurred during the early time-block for the Florida harvest and for both periods in the GASC live-release fleets (Fig. 21).

There was some concern among the Panel that the total-catch rate index developed from the Marine Recreational Information Program angler interview data could contain redundant information about the stock that was also included in the recreational landings and its length structure. Therefore, an analysis was run with this index deleted from the input data. This provided similar results to the initial simplified model run except for an increase in the lack of fit to the length compositions for the two live-release fisheries (Fig. 22).

During the discussions about the age composition data for the South Carolina long line index, the Panel also asked that the aggregated age-composition data (individual ages through age 9 and then grouped for 10-14, 15-19, 20-24, 25-29, and 30^{+} years) be disaggregated so that the age-class signal apparent in the age composition for the South Carolina longline data be useable in the model fits.

Several other suggestions for model configuration were made. Initially, tag reporting rate was only estimated for fleets that had recorded tag recoveries but there was concern that tag reporting rates for all fleets needed to be estimated within the model to avoid any bias. On some exploratory runs the estimated coefficients of variation for the von Bertalanffy growth model were estimated to be quite large leading to implausible results (Fig. 22). A reviewer suggested that these can be fixed at 0.2 for the young fish and 0.1 for the old fish, as had been recommended for previous assessments using the Stock Synthesis model. Additionally, to make it easier to compare the abundance scales between the old SEDAR 18 model results and the SS3 results, explicit parameters for fleet- and survey-specific catchability coefficients were included in the simplified model.

During discussions on the last morning of the workshop, the Panel became aware that the southern model runs were using the CAGEAN set-up of estimating recruitment directly (no distributional assumption with each recruitment as a parameter) without a spawner-recruit function. The Panel suggested that further model development should include a Beverton-Holt spawner recruit function with the steepness fixed at 0.99 to take advantage of the implemented bias correction features (mean-based recruitment) that apparently weren't used under the CAGEAN approach (median-based recruitment).

Strategy to Complete Southern Stock Assessment

The development of a stable simplified model is the initial step in developing a final base assessment model. During the workshop, model runs were made to try and understand why the estimated size selectivity functions for the South Carolina harvest and the Georgia/South Carolina live-release fleets fit the length compositions for these fleets so poorly. It was concluded that some of the parameters for the double normal function may need to be fixed at logical values, e.g., positioning initial ascent from zero at a specific minimum size, and not estimated. Also, changes to the sequence of estimation for the parameters affect the ability to converge. Once these issues are resolved, the residuals to the model fits to the data will be examined for patterns and the model configuration will be modified to improve the fits as much as possible. Changes to the model configuration could include the addition of time blocks, deletion of indices, and variance adjustments (iterative reweighting). The Review Panel advised that after a robust, simplified model was attained then the sequential addition of more complexity should be attempted to accommodate the information excluded (early landings, additional time blocks, recruitment deviations and bias adjustment) during the simplification.

Tables

Table 1. Numbers of red drum assigned to different year classes in the NCDMF 1-mile longline survey.

Gear:	Longline, 1-mile							
Number of red drum	**Sampling year**							
Year Class	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**Total**
2008						3	2	5
2007				1		1	2	4
2006				6	5	2	2	15
2005		1		10	7	3	9	30
2004	4	2	1	1	2	2	1	13
2003	4	2	1	2	2	2		13
2002					1			1
2000		2	2		4	4	2	14
1999	3				1	3	1	8
1998	1	2	2	1	4	4		14
1997	3	2	2	2		7	1	17
1996	1		1		3		2	7
1995					1		1	2
1994					1	3	1	5
1993	5	2	1	1	4	4	7	24
1992	1					1		2
1991	1	1		2	1	3	1	9
1990	1	2	2	2	3	3	2	15
1989							2	2
1988		1				1		2
1987	1		2	1	1	2	2	9
1986	4	2	4	1			3	14
1985	8		1		9	3	1	22
1984					1			1
1983	4		1	1	2	1	5	14
1982	2				2	1	2	7
1981	2			1	2	2	1	8
1980	9	1	3	1	1	2	2	19
1979	1	2			2			5
1978	16		3	3	6	4	6	38
1976	1			1				2
1975	1					1		2
1974			1	1	3			5
1973	9	3	3	1	3	5	5	29
1972	3		2	2			2	9
1971		1						1
1970	1							1
1969	1		1					2
1964	1							1
Combined	**88**	**26**	**33**	**41**	**71**	**67**	**65**	**391**

Table 2. Numbers of red drum assigned to different ages in the NCDMF 1-mile longline survey.

Gear:	Longline, 1/3rd mile							
Number of red drum	**Sampling year**							
Age (calendar years)	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**Total**
3	4	1		1				6
4	4	2		6		3		15
5		2	1	10	5	1	2	21
6			1	1	7	2	2	13
7				2	2	3	2	9
8	3	2			2	2	9	18
9	1		2		1	2	1	7
10	3	2						5
11	1	2	2		4			9
12			2	1	1	4		8
13			1	2	4	3	2	12
14	5					4	1	10
15	1	2			3	7		13
16	1		1		1		1	4
17	1	1		1	1		2	6
18		2			4	3	1	10
19			2	2		4	1	9
20	1	1		2	1	1	7	13
21	4				3	3		10
22	8	2	2			3	1	16
23			4	1			2	7
24	4		1	1	1	1	2	10
25	2					2		4
26	2		1		9		2	14
27	9			1	1	3	3	17
28	1	1			2		1	5
29	16	2	3	1	2	1		25
30				1	2	1	5	9
31	1		3		1	2	2	9
32	1			3	2	2	1	9
33					6		2	8
34	9			1		4		14
35	3	3	1				6	13
36			3	1				4
37	1	1	2	1	3	1		9
38	1			2	3			6
39						5		5
40			1				5	6
41							2	2
42								0
43	1							1
Combined	**88**	**26**	**33**	**41**	**71**	**67**	**65**	**391**

Table 3. Proportions of red drum by age in the NCDMF 1-mile longline survey.

	Sample Year							
Age, yrs	2007	2008	2009	2010	2011	2012	2013	**$\bar{p}_a$ (mean proportion at age)**
3	0.0455	0.0385	0.0000	0.0244	0.0000	0.0000	0.0000	**0.0155**
4	0.0455	0.0769	0.0000	0.1463	0.0000	0.0448	0.0000	**0.0448**
5	0.0000	0.0769	0.0303	0.2439	0.0704	0.0149	0.0308	**0.0667**
6	0.0000	0.0000	0.0303	0.0244	0.0986	0.0299	0.0308	**0.0306**
7	0.0000	0.0000	0.0000	0.0488	0.0282	0.0448	0.0308	**0.0218**
8	0.0341	0.0769	0.0000	0.0000	0.0282	0.0299	0.1385	**0.0439**
9	0.0114	0.0000	0.0606	0.0000	0.0141	0.0299	0.0154	**0.0188**
10	0.0341	0.0769	0.0000	0.0000	0.0000	0.0000	0.0000	**0.0159**
11	0.0114	0.0769	0.0606	0.0000	0.0563	0.0000	0.0000	**0.0293**
12	0.0000	0.0000	0.0606	0.0244	0.0141	0.0597	0.0000	**0.0227**
13	0.0000	0.0000	0.0303	0.0488	0.0563	0.0448	0.0308	**0.0301**
14	0.0568	0.0000	0.0000	0.0000	0.0000	0.0597	0.0154	**0.0188**
15	0.0114	0.0769	0.0000	0.0000	0.0423	0.1045	0.0000	**0.0336**
16	0.0114	0.0000	0.0303	0.0000	0.0141	0.0000	0.0154	**0.0102**
17	0.0114	0.0385	0.0000	0.0244	0.0141	0.0000	0.0308	**0.0170**
18	0.0000	0.0769	0.0000	0.0000	0.0563	0.0448	0.0154	**0.0276**
19	0.0000	0.0000	0.0606	0.0488	0.0000	0.0597	0.0154	**0.0264**
20	0.0114	0.0385	0.0000	0.0488	0.0141	0.0149	0.1077	**0.0336**
21	0.0455	0.0000	0.0000	0.0000	0.0423	0.0448	0.0000	**0.0189**
22	0.0909	0.0769	0.0606	0.0000	0.0000	0.0448	0.0154	**0.0412**
23	0.0000	0.0000	0.1212	0.0244	0.0000	0.0000	0.0308	**0.0252**
24	0.0455	0.0000	0.0303	0.0244	0.0141	0.0149	0.0308	**0.0228**
25	0.0227	0.0000	0.0000	0.0000	0.0000	0.0299	0.0000	**0.0075**
26	0.0227	0.0000	0.0303	0.0000	0.1268	0.0000	0.0308	**0.0301**
27	0.1023	0.0000	0.0000	0.0244	0.0141	0.0448	0.0462	**0.0331**
28	0.0114	0.0385	0.0000	0.0000	0.0282	0.0000	0.0154	**0.0133**
29	0.1818	0.0769	0.0909	0.0244	0.0282	0.0149	0.0000	**0.0596**
30	0.0000	0.0000	0.0000	0.0244	0.0282	0.0149	0.0769	**0.0206**
31	0.0114	0.0000	0.0909	0.0000	0.0141	0.0299	0.0308	**0.0253**
32	0.0114	0.0000	0.0000	0.0732	0.0282	0.0299	0.0154	**0.0226**
33	0.0000	0.0000	0.0000	0.0000	0.0845	0.0000	0.0308	**0.0165**
34	0.1023	0.0000	0.0000	0.0244	0.0000	0.0597	0.0000	**0.0266**
35	0.0341	0.1154	0.0303	0.0000	0.0000	0.0000	0.0923	**0.0389**
36	0.0000	0.0000	0.0909	0.0244	0.0000	0.0000	0.0000	**0.0165**
37	0.0114	0.0385	0.0606	0.0244	0.0423	0.0149	0.0000	**0.0274**
38	0.0114	0.0000	0.0000	0.0488	0.0423	0.0000	0.0000	**0.0146**
39	0.0000	0.0000	0.0000	0.0000	0.0000	0.0746	0.0000	**0.0107**
40	0.0000	0.0000	0.0303	0.0000	0.0000	0.0000	0.0769	**0.0153**
41	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0308	**0.0044**
42	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	**0.0000**
43	0.0114	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	**0.0016**
Total	**1.0000**	**1.0000**	**1.0000**	**1.0000**	**1.0000**	**1.0000**	**1.0000**	**1.0000**

Table 4. Mean relative abundance of red drum year classes ($\bar{A}_c$) in the NCDMF 1-mile longline survey. t is the number of sampling years in which year class c could potentially be sampled, based on minimum and maximum observed ages of 3 and 43 years, respectively.

	Year of Sampling (y)											
Year Class (c)	2007	2008	2009	2010	2011	2012	2013	$\bar{A}_c$	SD	t	SE	PSE
2010	$p_{ayc}/\bar{p}_a$ → ↓						0.000	**0.000**	-	1	-	-
2009						0.000	0.000	**0.000**	-	2	-	-
2008					0.000	1.000	0.461	**0.487**	0.500	3	0.29	59%
2007				1.576	0.000	0.224	1.007	**0.702**	0.726	4	0.36	52%
2006			0.000	3.268	1.055	0.977	1.412	**1.342**	1.197	5	0.54	40%
2005		2.486	0.000	3.654	3.226	2.055	3.152	**2.429**	1.319	6	0.54	22%
2004	2.938	1.718	0.454	0.798	1.293	0.680	0.820	**1.243**	0.858	7	0.32	26%
2003	1.015	1.152	0.992	2.239	0.641	1.592	0.000	**1.090**	0.705	7	0.27	24%
2002	0.000	0.000	0.000	0.000	0.751	0.000	0.000	**0.107**	0.284	7	0.11	100%
2001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	**0.000**	-	7	-	-
2000	0.000	1.751	3.231	0.000	1.922	2.632	1.021	**1.508**	1.242	7	0.47	31%
1999	0.776	0.000	0.000	0.000	0.621	1.486	0.816	**0.528**	0.564	7	0.21	40%
1998	0.606	4.850	2.067	1.075	1.869	3.168	0.000	**1.948**	1.648	7	0.62	32%
1997	2.150	2.624	2.672	1.619	0.000	3.112	1.514	**1.956**	1.038	7	0.39	20%
1996	0.388	0.000	1.005	0.000	1.259	0.000	1.809	**0.637**	0.727	7	0.27	43%
1995	0.000	0.000	0.000	0.000	1.386	0.000	0.557	**0.278**	0.531	7	0.20	72%
1994	0.000	0.000	0.000	0.000	0.828	1.620	0.584	**0.433**	0.624	7	0.24	54%
1993	3.015	2.291	2.982	1.434	2.039	2.265	3.204	**2.461**	0.636	7	0.24	10%
1992	0.338	0.000	0.000	0.000	0.000	0.444	0.000	**0.112**	0.193	7	0.07	65%
1991	1.118	2.261	0.000	1.851	0.419	2.366	0.373	**1.198**	0.970	7	0.37	31%
1990	0.668	2.784	2.300	1.451	2.233	1.086	1.221	**1.678**	0.769	7	0.29	17%
1989	0.000	0.000	0.000	0.000	0.000	0.000	1.347	**0.192**	0.509	7	0.19	100%
1988	0.000	1.144	0.000	0.000	0.000	0.653	0.000	**0.257**	0.461	7	0.17	68%
1987	0.338	0.000	1.470	0.968	0.616	3.974	1.023	**1.199**	1.315	7	0.50	41%
1986	2.402	1.866	4.811	1.068	0.000	0.000	1.395	**1.649**	1.656	7	0.63	38%
1985	2.205	0.000	1.326	0.000	4.214	1.353	1.153	**1.465**	1.445	7	0.55	37%
1984	0.000	0.000	0.000	0.000	0.426	0.000	0.000	**0.061**	0.161	7	0.06	100%
1983	1.990	0.000	1.007	0.737	2.112	0.250	3.729	**1.404**	1.301	7	0.49	35%
1982	3.026	0.000	0.000	0.000	0.473	0.723	1.217	**0.777**	1.092	7	0.41	53%
1981	0.756	0.000	0.000	0.409	1.365	1.181	0.682	**0.628**	0.533	7	0.20	32%
1980	3.090	2.883	1.526	1.182	0.557	1.323	1.868	**1.776**	0.919	7	0.35	20%
1979	0.852	1.291	0.000	0.000	1.248	0.000	0.000	**0.484**	0.620	7	0.23	48%
1978	3.051	0.000	3.596	3.243	5.132	2.242	2.375	**2.806**	1.563	7	0.59	21%
1977	0.000	0.000	0.000	0.000	0.000	0.000	0.000	**0.000**	-	7	-	-
1976	0.449	0.000	0.000	0.916	0.000	0.000	0.000	**0.195**	0.359	7	0.14	70%
1975	0.504	0.000	0.000	0.000	0.000	0.544	0.000	**0.150**	0.256	7	0.10	100%
1974	0.000	0.000	0.780	1.481	1.540	0.000	0.000	**0.543**	0.720	7	0.27	50%
1973	3.841	2.969	5.519	0.889	2.888	7.000	5.022	**4.018**	2.015	7	0.76	19%
1972	0.877	0.000	2.210	3.335	0.000	0.000	7.000	**1.917**	2.583	7	0.98	51%
1971	0.000	1.402	0.000	0.000	0.000	0.000	0.000	**0.200**	0.530	7	0.20	100%
1970	0.414	0.000	0.000	0.000	0.000	0.000	0.000	**0.059**	0.157	7	0.06	100%
1969	0.777	0.000	1.978	0.000	0.000	0.000	0.000	**0.394**	0.756	7	0.29	73%
1968	0.000	0.000	0.000	0.000	0.000	0.000	0.000	**0.000**	-	7	-	-
1967	0.000	0.000	0.000	0.000	0.000	0.000	0.000	**0.000**	-	7	-	-
1966	0.000	0.000	0.000	0.000	0.000	0.000	0.000	**0.000**	-	7	-	-
1965	0.000	0.000	0.000	0.000	0.000	0.000	0.000	**0.000**	-	7	-	-
1964	7.000	0.000	0.000	0.000	0.000	0.000	0.000	**1.000**	2.646	7	1.00	100%

Table 5. Numbers of red drum assigned to different year classes in the SCDNR 1/3rd mile longline survey.

Gear:	Longline, 1/3rd mile							
Number of red drum	**Sampling year**							
Year Class	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**Total**
2010							1	**1**
2009							7	**7**
2008					1	5	8	**14**
2007				1	1	2	3	**7**
2006			2	4	2	2	5	**15**
2005			4	4		3	1	**12**
2004		1	2	2		2	1	**8**
2003	1	3	7	2	1	5	9	**28**
2002	1	3	2	2	2	3	3	**16**
2001	2	1	6	5	4	4	13	**35**
2000	1	4	3	13	3	7		**31**
1999			1	3	2	2		**8**
1998	1	1	3	1	1	2	2	**11**
1997		1		3	2	6	2	**14**
1996	1	3	4	3		1	4	**16**
1995	1	1	2	2	1	4		**11**
1994	2	6	4	7	8	7	5	**39**
1993	1	2		4	3	4	7	**21**
1992	1	1	1	5	1	4	2	**15**
1991	3	4	2	7		6	7	**29**
1990	3	1	1	6	4	2	3	**20**
1989		3	2	9	2	3	3	**22**
1988	2	1	3	3	1	1	1	**12**
1987			2	3	2	2	7	**16**
1986	2	4	2	2	5	3	9	**27**
1985		1	4	2		2	5	**14**
1984	2	3	3	5	3	5	3	**24**
1983	2	3				2	1	**8**
1982			1	3	2	1		**7**
1981				1	1	2	2	**6**
1980		1			1			**2**
1979			3				2	**5**
1978	3	3	1	1	1	1		**10**
1977		4				1		**5**
1976		1	2	1				**4**
1974	1	3	1			1	1	**7**
1973	1	2	1		1		1	**6**
1972		1	1					**2**
1971				1				**1**
1970		1						**1**
1969	1							**1**
Total	**32**	**63**	**70**	**105**	**55**	**95**	**118**	**538**

Table 6. Numbers of red drum assigned to different ages in the SCDNR 1/3rd mile longline survey.

Gear:	Longline, 1/3rd mile							
Number of red drum	**Sampling year**							
Age (calendar years)	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**Total**
3			2	1	1		1	**5**
4	1	1	4	4	1	5	7	**23**
5	1	3	2	4	2	2	8	**22**
6	2	3	7	2		2	3	**19**
7	1	1	2	2		3	5	**14**
8		4	6	2	1	2	1	**16**
9	1		3	5	2	5	1	**17**
10		1	1	13	4	3	9	**31**
11	1	1	3	3	3	4	3	**18**
12	1	3		1	2	7	13	**27**
13	2	1	4	3	1	2		**13**
14	1	6	2	3	2	2		**16**
15	1	2	4	2		6	2	**17**
16	3	1		7	1	1	2	**15**
17	3	4	1	4	8	4	4	**28**
18		1	2	5	3	7		**18**
19	2	3	1	7	1	4	5	**23**
20		1	2	6		4	7	**20**
21	2		3	9	4	6	2	**26**
22		4	2	3	2	2	7	**20**
23	2	1	2	3	1	3	3	**15**
24	2	3	4	2	2	1	3	**17**
25		3	3	2	5	2	1	**16**
26				5		3	7	**15**
27			1		3	2	9	**15**
28		1		3		5	5	**14**
29	3			1	2	2	3	**11**
30		3	3		1	1	1	**9**
31		4	1		1	2		**8**
32		1		1			2	**4**
33	1		2		1			**4**
34	1	3		1		1	2	**8**
35		2	1			1		**4**
36		1	1					**2**
37			1					**1**
38	1	1			1	1		**4**
39				1			1	**2**
40							1	**1**
Total	**32**	**63**	**70**	**105**	**55**	**95**	**118**	**538**

Table 7. Proportions of red drum by age in the SCDNR 1/3rd mile longline survey.

	Capture year							
Age, yrs	2007	2008	2009	2010	2011	2012	2013	$\bar{p}_a$ **(mean proportion at age)**
3	0.0000	0.0000	0.0286	0.0095	0.0182	0.0000	0.0085	**0.0093**
4	0.0313	0.0159	0.0571	0.0381	0.0182	0.0526	0.0593	**0.0389**
5	0.0313	0.0476	0.0286	0.0381	0.0364	0.0211	0.0678	**0.0387**
6	0.0625	0.0476	0.1000	0.0190	0.0000	0.0211	0.0254	**0.0394**
7	0.0313	0.0159	0.0286	0.0190	0.0000	0.0316	0.0424	**0.0241**
8	0.0000	0.0635	0.0857	0.0190	0.0182	0.0211	0.0085	**0.0309**
9	0.0313	0.0000	0.0429	0.0476	0.0364	0.0526	0.0085	**0.0313**
10	0.0000	0.0159	0.0143	0.1238	0.0727	0.0316	0.0763	**0.0478**
11	0.0313	0.0159	0.0429	0.0286	0.0545	0.0421	0.0254	**0.0344**
12	0.0313	0.0476	0.0000	0.0095	0.0364	0.0737	0.1102	**0.0441**
13	0.0625	0.0159	0.0571	0.0286	0.0182	0.0211	0.0000	**0.0290**
14	0.0313	0.0952	0.0286	0.0286	0.0364	0.0211	0.0000	**0.0344**
15	0.0313	0.0317	0.0571	0.0190	0.0000	0.0632	0.0169	**0.0313**
16	0.0938	0.0159	0.0000	0.0667	0.0182	0.0105	0.0169	**0.0317**
17	0.0938	0.0635	0.0143	0.0381	0.1455	0.0421	0.0339	**0.0616**
18	0.0000	0.0159	0.0286	0.0476	0.0545	0.0737	0.0000	**0.0315**
19	0.0625	0.0476	0.0143	0.0667	0.0182	0.0421	0.0424	**0.0420**
20	0.0000	0.0159	0.0286	0.0571	0.0000	0.0421	0.0593	**0.0290**
21	0.0625	0.0000	0.0429	0.0857	0.0727	0.0632	0.0169	**0.0491**
22	0.0000	0.0635	0.0286	0.0286	0.0364	0.0211	0.0593	**0.0339**
23	0.0625	0.0159	0.0286	0.0286	0.0182	0.0316	0.0254	**0.0301**
24	0.0625	0.0476	0.0571	0.0190	0.0364	0.0105	0.0254	**0.0369**
25	0.0000	0.0476	0.0429	0.0190	0.0909	0.0211	0.0085	**0.0329**
26	0.0000	0.0000	0.0000	0.0476	0.0000	0.0316	0.0593	**0.0198**
27	0.0000	0.0000	0.0143	0.0000	0.0545	0.0211	0.0763	**0.0237**
28	0.0000	0.0159	0.0000	0.0286	0.0000	0.0526	0.0424	**0.0199**
29	0.0938	0.0000	0.0000	0.0095	0.0364	0.0211	0.0254	**0.0266**
30	0.0000	0.0476	0.0429	0.0000	0.0182	0.0105	0.0085	**0.0182**
31	0.0000	0.0635	0.0143	0.0000	0.0182	0.0211	0.0000	**0.0167**
32	0.0000	0.0159	0.0000	0.0095	0.0000	0.0000	0.0169	**0.0060**
33	0.0313	0.0000	0.0286	0.0000	0.0182	0.0000	0.0000	**0.0111**
34	0.0313	0.0476	0.0000	0.0095	0.0000	0.0105	0.0169	**0.0166**
35	0.0000	0.0317	0.0143	0.0000	0.0000	0.0105	0.0000	**0.0081**
36	0.0000	0.0159	0.0143	0.0000	0.0000	0.0000	0.0000	**0.0043**
37	0.0000	0.0000	0.0143	0.0000	0.0000	0.0000	0.0000	**0.0020**
38	0.0313	0.0159	0.0000	0.0000	0.0182	0.0105	0.0000	**0.0108**
39	0.0000	0.0000	0.0000	0.0095	0.0000	0.0000	0.0085	**0.0026**
40	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0085	**0.0012**
Total	**1.0000**	**1.0000**	**1.0000**	**1.0000**	**1.0000**	**1.0000**	**1.0000**	**1.0000**

Table 8. Mean relative abundance of red drum year classes ($\bar{A}_c$) in the SCDNR 1/3rd mile longline survey. t is the number of sampling years in which year class c could potentially be sampled, based on minimum and maximum observed ages of 3 and 40 years, respectively.

Year Class (c)	Year of Sampling (y) 2007	2008	2009	2010	2011	2012	2013	$\bar{A}_c$	SD	t	SE	PSE
2010	$p_{ayc}/\bar{p}_a$ → ↓						0.916	**0.916**	-	1	-	-
2009						0.000	1.524	**0.762**	1.078	2	0.76	100%
2008					1.966	1.352	1.753	**1.690**	0.312	3	0.18	11%
2007				1.030	0.467	0.544	0.646	**0.672**	0.250	4	0.12	19%
2006			3.089	0.979	0.940	0.535	1.758	**1.460**	1.012	5	0.45	31%
2005		0.000	1.468	0.985	0.000	1.310	0.275	**0.673**	0.663	6	0.27	40%
2004	0.000	0.408	0.739	0.484	0.000	0.682	0.271	**0.369**	0.298	7	0.11	30%
2003	0.803	1.231	2.540	0.790	0.589	1.681	1.596	**1.319**	0.681	7	0.26	20%
2002	0.808	1.209	1.186	0.617	1.161	0.661	0.740	**0.912**	0.263	7	0.10	11%
2001	1.587	0.659	2.778	1.521	1.522	1.225	2.499	**1.684**	0.729	7	0.28	16%
2000	1.297	2.058	1.369	2.591	1.587	1.671	0.000	**1.510**	0.801	7	0.30	20%
1999	0.000	0.000	0.299	0.831	0.825	0.725	0.000	**0.383**	0.400	7	0.15	39%
1998	0.998	0.332	1.247	0.216	0.626	0.611	0.541	**0.653**	0.361	7	0.14	21%
1997	0.000	0.462	0.000	0.984	1.056	2.016	0.535	**0.722**	0.707	7	0.27	37%
1996	0.909	1.080	1.967	0.830	0.000	0.332	0.550	**0.810**	0.629	7	0.24	29%
1995	0.709	0.546	0.830	0.608	0.573	0.684	0.000	**0.564**	0.267	7	0.10	18%
1994	2.152	2.766	1.824	2.103	2.362	2.341	1.010	**2.080**	0.553	7	0.21	10%
1993	0.907	1.013	0.000	0.619	1.733	1.003	2.045	**1.046**	0.679	7	0.26	25%
1992	0.998	0.501	0.232	1.513	0.433	1.452	0.345	**0.782**	0.536	7	0.20	26%
1991	2.957	1.031	0.908	1.589	0.000	1.286	1.749	**1.360**	0.906	7	0.34	25%
1990	1.522	0.504	0.340	1.970	1.480	0.621	0.845	**1.040**	0.617	7	0.23	22%
1989	0.000	1.135	0.985	1.745	1.072	1.049	0.688	**0.953**	0.526	7	0.20	21%
1988	1.489	0.547	0.872	0.843	0.604	0.285	0.258	**0.700**	0.423	7	0.16	23%
1987	0.000	0.000	0.843	0.949	0.984	0.641	2.998	**0.916**	1.008	7	0.38	42%
1986	1.272	1.872	0.949	0.516	2.767	1.596	3.213	**1.741**	0.967	7	0.37	21%
1985	0.000	0.527	1.547	0.580	0.000	0.887	2.127	**0.810**	0.788	7	0.30	37%
1984	2.076	1.289	1.305	2.406	2.298	2.642	0.956	**1.853**	0.658	7	0.25	13%
1983	1.692	1.450	0.000	0.000	0.000	0.792	0.465	**0.628**	0.712	7	0.27	43%
1982	0.000	0.000	0.602	1.434	1.368	0.577	0.000	**0.569**	0.627	7	0.24	42%
1981	0.000	0.000	0.000	0.358	0.997	1.259	2.802	**0.774**	1.030	7	0.39	50%
1980	0.000	0.797	0.000	0.000	1.088	0.000	0.000	**0.269**	0.467	7	0.18	66%
1979	0.000	0.000	2.350	0.000	0.000	0.000	1.024	**0.482**	0.908	7	0.34	71%
1978	3.526	2.611	0.855	1.574	1.632	0.636	0.000	**1.548**	1.208	7	0.46	30%
1977	0.000	3.798	0.000	0.000	0.000	1.303	0.000	**0.729**	1.438	7	0.54	75%
1976	0.000	2.624	2.564	0.575	0.000	0.000	0.000	**0.823**	1.228	7	0.46	56%
1975	0.000	0.000	0.000	0.000	0.000	0.000	0.000	**0.000**	0.000	7	0.00	100%
1974	2.804	2.877	1.768	0.000	0.000	0.972	3.296	**1.674**	1.382	7	0.52	31%
1973	1.888	3.929	3.316	0.000	1.678	0.000	7.000	**2.544**	2.466	7	0.93	37%
1972	0.000	3.684	7.000	0.000	0.000	0.000		**1.781**	2.951	6	1.20	68%
1971	0.000	0.000	0.000	3.704	0.000			**0.741**	1.656	5	0.74	100%
1970	0.000	1.465	0.000	0.000				**0.366**	0.733	4	0.37	100%
1969	2.885	0.000	0.000					**0.962**	1.665	3	0.96	100%
1968	0.000	0.000						**0.000**	0.000	2	0.00	-
1967	0.000							**0.000**	-	1	-	-

Table 9. The CPUE and CVs from the Pamlico Sound Independent Gill Net Survey for red drum from 2001 to 2013.

Year	Age-1 CPUE	CV	Age-2 CPUE	CV	Age-3 CPUE	CV
2001	1.03	0.28	0.44	0.23	0.07	0.57
2002	2.63	0.16	0.55	0.22	0.03	0.33
2003	0.27	0.26	0.97	0.21	0.01	1.00
2004	1.85	0.16	0.06	0.33	0.07	0.57
2005	1.37	0.21	1.36	0.18	0.01	1.00
2006	1.64	0.15	1.21	0.18	0.03	0.33
2007	0.53	0.17	2.54	0.39	0.10	0.30
2008	1.61	0.18	0.61	0.25	0.08	0.38
2009	0.66	0.17	3.26	0.36	0.23	0.48
2010	1.49	0.18	0.64	0.19	0.28	0.36
2011	0.15	0.27	0.24	0.21	0.02	0.50
2012	3.03	0.19	0.01	1.00	0.00	
2013	1.24	0.24	5.3	0.19	0.01	1.00

Table 10. Jitter analysis results for the simplified northern stock model. Each run started with jittered initial parameter values that were adjusted by a random deviation from the base initial values.

Run	Total Negative Log-Likelihood	R0 (1,000s)	Virgin SSB (1000 mt)	Run	Total Negative Log-Likelihood	R0 (1,000s)	Virgin SSB (1000 mt)
Base	13,686.9	259	16.44	16	13,686.9	259	16.44
1	13,686.9	259	16.44	17	13,686.9	259	16.44
2	13,686.9	259	16.44	18	13,686.9	259	16.44
3	13,686.9	259	16.44	19	13,686.9	259	16.44
4	13,686.9	259	16.44	20	13,686.9	259	16.44
5	13,686.9	259	16.44	21	13,686.9	259	16.44
6	13,686.9	259	16.44	22	13,686.9	259	16.44
7	13,686.9	259	16.44	23	13,686.9	259	16.44
8	13,686.9	259	16.44	24	13,686.9	259	16.44
9	13,686.9	259	16.44	25	13,686.9	259	16.44
10	13,686.9	259	16.44	26	13,686.9	259	16.44
11	13,686.9	259	16.44	27	13,686.9	259	16.44
12	13,686.9	259	16.44	28	13,686.9	259	16.44
13	13,686.9	259	16.44	29	13,686.9	259	16.44
14	13,686.9	259	16.44	30	13,686.9	259	16.44
15	13,686.9	259	16.44				

Table 11. Likelihood values for each likelihood component and the total negative log-likelihood compared across alternative configurations requested by the Panel. The “base” configuration is the new simplified model. The model changes include fixing just the Rec_Harv tag reporting rate parameter (Fix Rec Report), fixing all tag reporting rate parameters (Fix All Report), fixing the ln(R0) parameter to the value estimated with the tag reporting rates fixed (Fix R0), excluding the tag-recapture component of the model (No Tag Data), excluding the Rec_CPUE index and length composition from the objective function (No Rec CPUE), and changing the age at which growth rate changes to age-9 (K Dev 9).

base	Fix Rec Report	Fix All Report	Fix R0	No Tag Data	No Rec CPUE	K Dev 9	Component
13686.90	14015.10	14036.70	13983.60	12408.00	11181.20	13632.40	TOTAL
0.000050804	0.000000000	0.000000000	0.000000000	0.000030616	0.000114197	0.000055287	Catch
0.05	2.30	2.01	2.29	0.05	0.06	0.03	Equil_catch
365.29	336.44	339.30	336.27	363.93	173.66	358.72	Survey
7899.43	8153.01	8131.36	8132.13	7902.81	5690.30	7854.38	Length_comp
4114.07	4166.24	4167.47	4167.77	4108.08	4016.24	4108.70	Age_comp
964.18	967.35	1000.81	965.75	NA	963.39	964.87	Tag_comp
310.63	353.53	359.73	343.74	NA	307.36	312.77	Tag_negbin
33.25	36.25	36.01	35.57	33.11	30.13	32.85	Recruitment
0.02	0.03	0.03	0.03	0.03	0.02	0.03	Parm_softbounds

Table 12. Negative log likelihood values, final gradient, number of parameters, and number of parameters estimated near bounds for the model reported in the SEDAR 14 RW report and subsequent revisions made during the Review Workshop. The initial simplified model (Initial short) changed the start year to 1989 from 1950, changed the F-estimation method to the Pope/instantaneous F hybrid, deleted any blocks functions or early recruitment deviations outside of 1989-2013, and included estimates of tag reporting rate for all fleets. Subsequent revisions were based on this version of this simple model but that explicitly estimated catchability (for comparisons of scale with the continuity runs) and estimated initial recruitment deviations to modify the initial age structure from the assumed equilibrium age structure. The modifications to this simplified model were: removed the MRIP total-catch rate index, mirror the South Carolina retained fishery selectivity to the Florida harvest fishery, and add a 1989-1993 selectivity block to the live-release fisheries.

Model	SEDAR44	Initial short	Remove MRIP ndx	Mirror sels	89-93 sel blk
Start year	1950	1989	1989	1989	1989
Final gradiaent	1.12E-03	6.58E-04	1.06E-03	3.06E-04	1.03E-03
TOTAL Likelihoods	11,175.6	5,277.0	5235.8	5598.5	5293.4
Catch	384.8	2.2E-10	2.1E-10	1.5E-10	2.5E-10
Equil_catch	23.7	1.1E-01	3.2E-03	3.2E-03	3.8E-03
Survey	131.2	102.8	44.5	99.2	105.6
Length_comp	3,530.8	1,060.3	738.2	966.8	755.2
Age_comp	1,935.8	1,150.7	1582.4	1556.2	1542.6
Tag_comp	2,785.3	1,190.2	1155.1	1147.9	1163.6
Tag_negbin	2,289.9	1,770.1	1712.4	1825.0	1723.2
Recruitment	6.2	2.8	3.1	3.4	3.2
Forecast_Recruitment	0.0	0.0	0.0	0.0	0.0
Parm_priors	86.6	0.0	0.0	0.0	0.0
Parm_devs	0.0	0.0	0.0	0.0	0.0
F_Ballpark	1.4				
Crash_Pen	0.0	0.0	0.0	0.0	0.0
Number parameters	580	86	133	134	149
Parm at/near bounds	5	17	13	16	18
Parameter types added/removed		*removed:* 78 recdevs, 1 initF, 353 instan F, 65 sel parms; *added:* 3 tag rpt	*removed:* 11 sel params, *added:* 41 early recdevs, 2 S-R params, 15 q's	*removed:* 6 sel params *added:* 6 sel params, 1 q's	*added:* 15 sel params

Figures

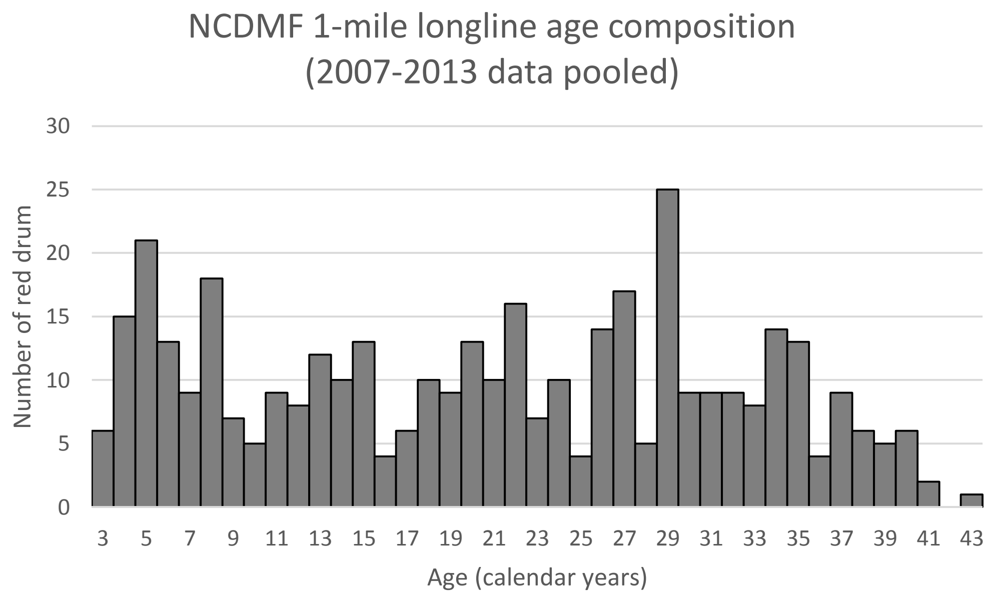


Figure 1. Age composition of adult red drum in the NCDMF 1-mile longline survey.

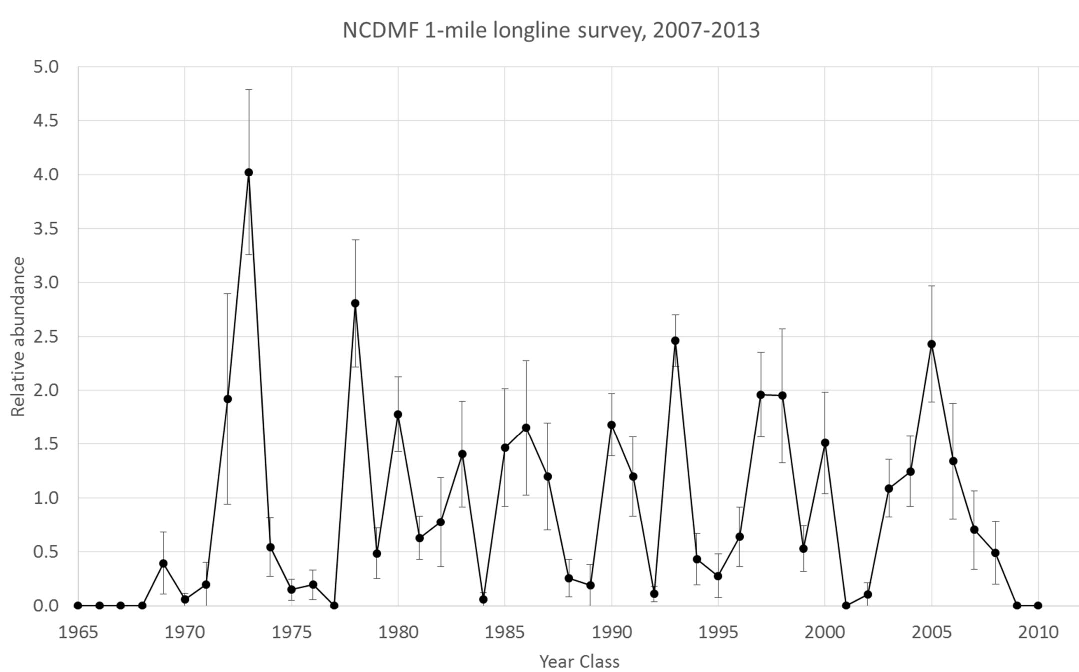


Figure 2. Mean (± s.e.) relative abundance of year classes in the NCDMF 1-mile longline survey.

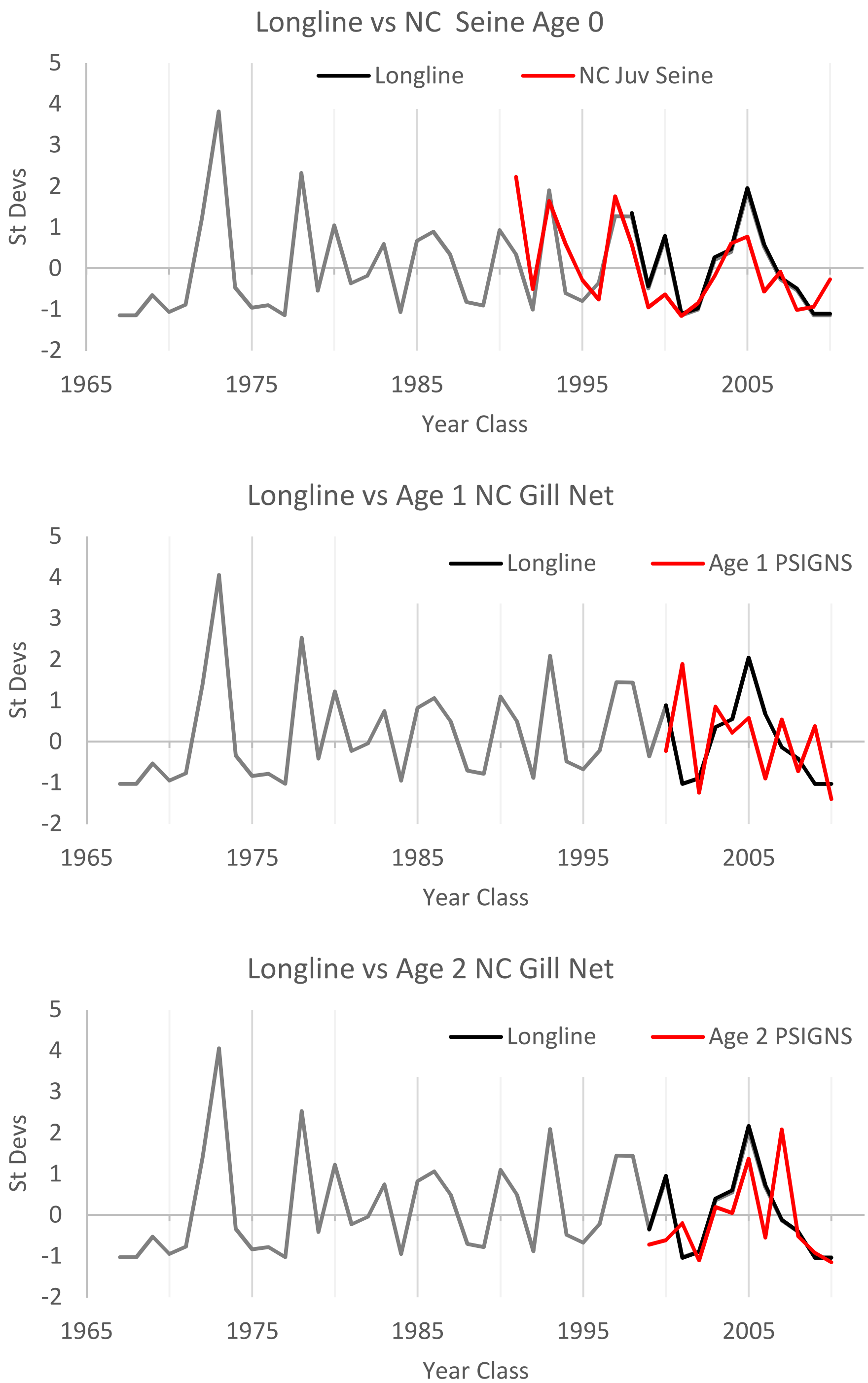


Figure 3. Alignment of the adult relative year class abundance with other abundance indices from NC.

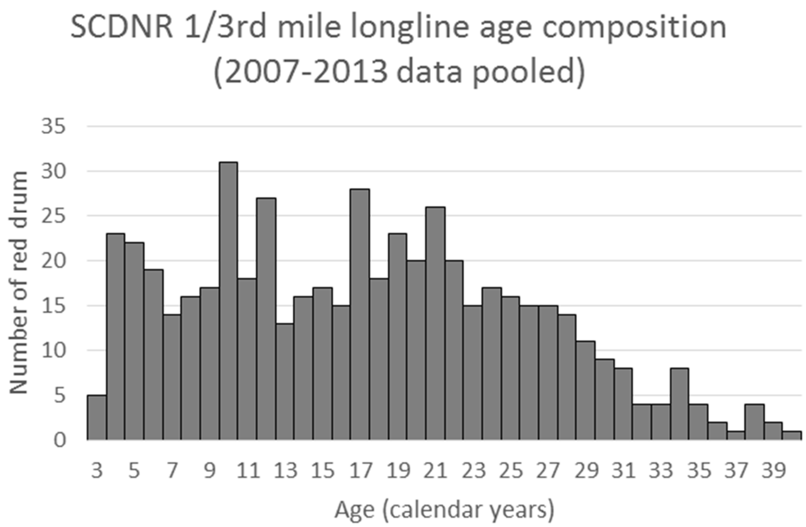


Figure 4. Age composition of adult red drum in the SCDNR 1/3rd mile longline survey.

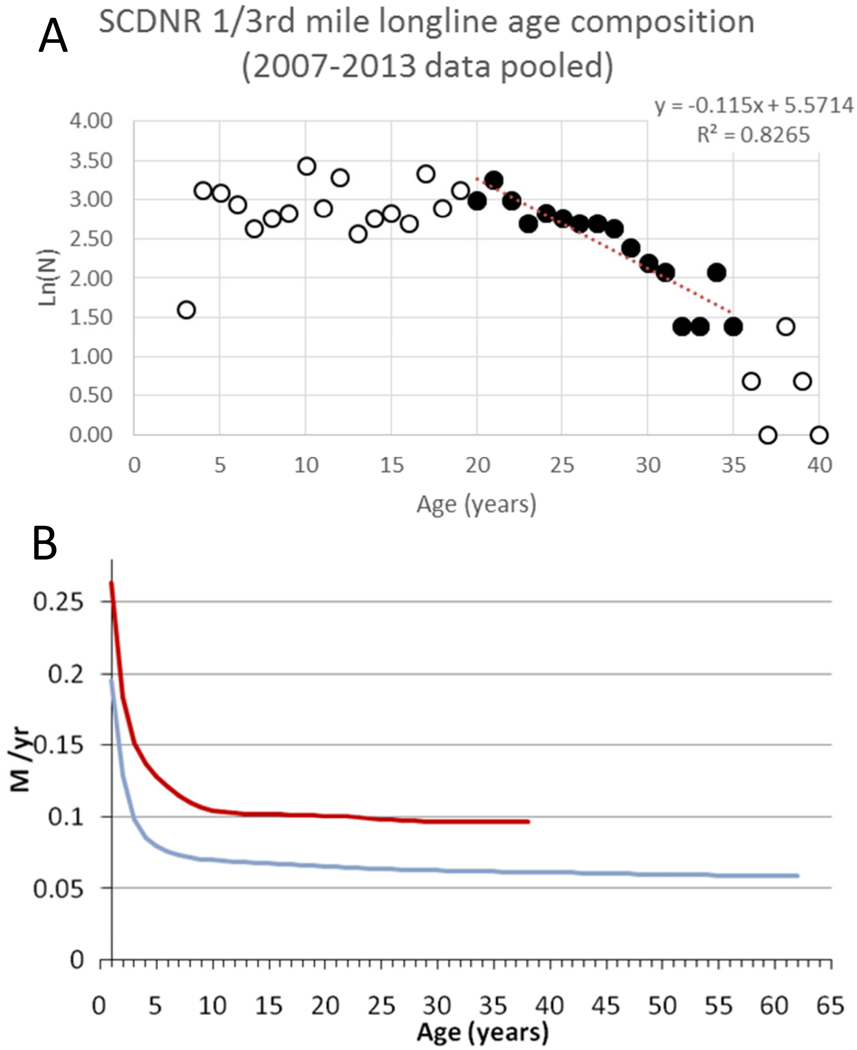


Figure 5. (A) Synthetic catch curve analysis of adult red drum caught by the SCDNR 1/3rd mile longline survey. The regression was fitted to the black dots (fish ages 20-35 years). (B) Stock assessment empirically derived natural mortality, *M*, for the southern (red) and northern (blue) red drum Atlantic regions.

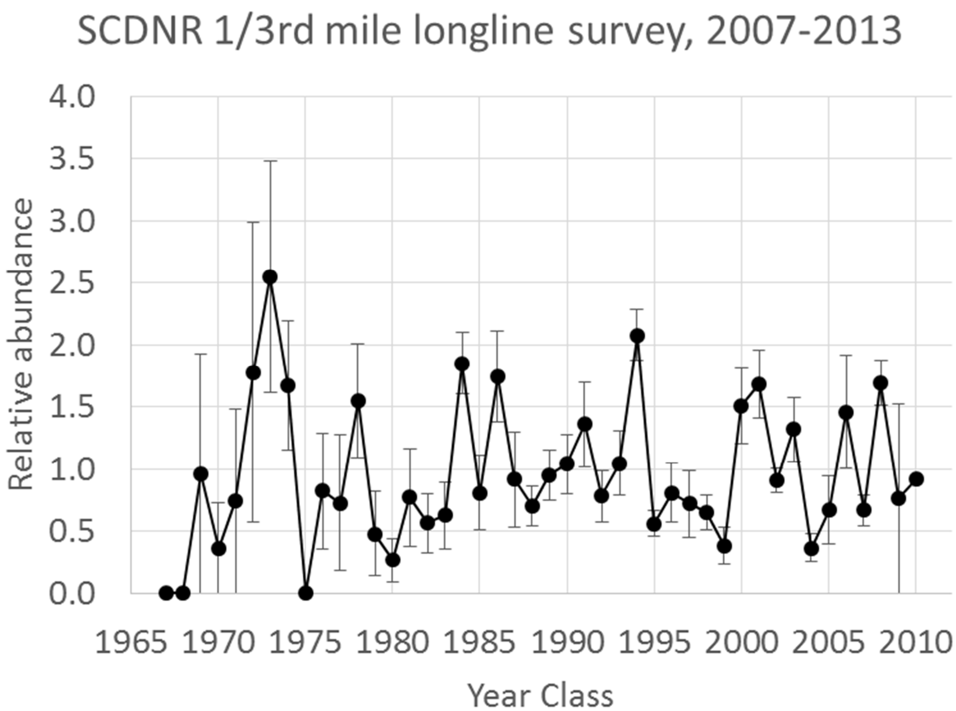


Figure 6. Mean (± s.e.) relative abundance of year classes in the SCDNR 1/3rd mile longline survey.

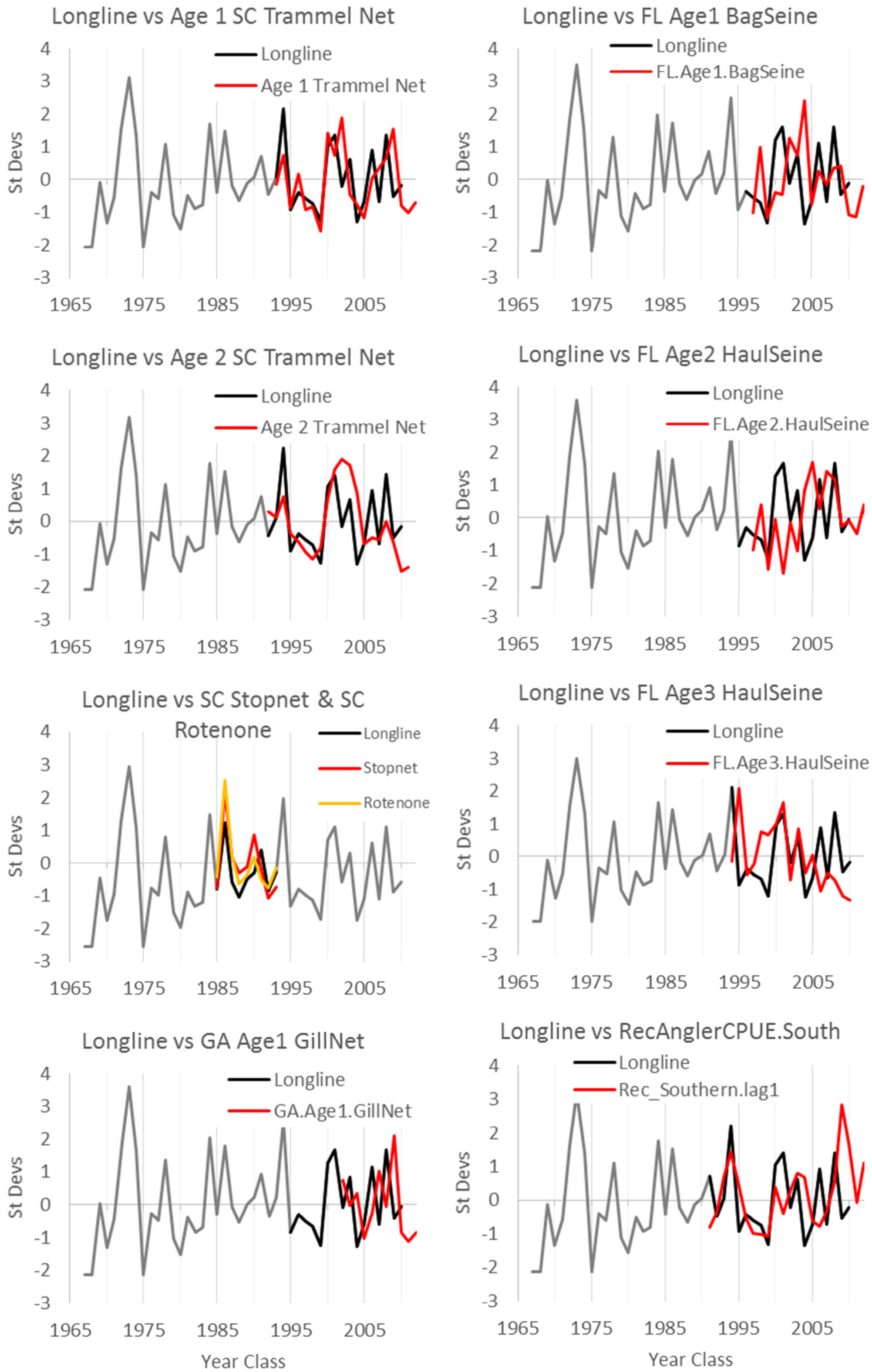


Figure 7. Alignment of the adult relative year class abundance with other abundance indices from SC, GA and FL. (n.b. Recreational index is plotted by fishing year, rather than year class, and is lagged by 1 year).

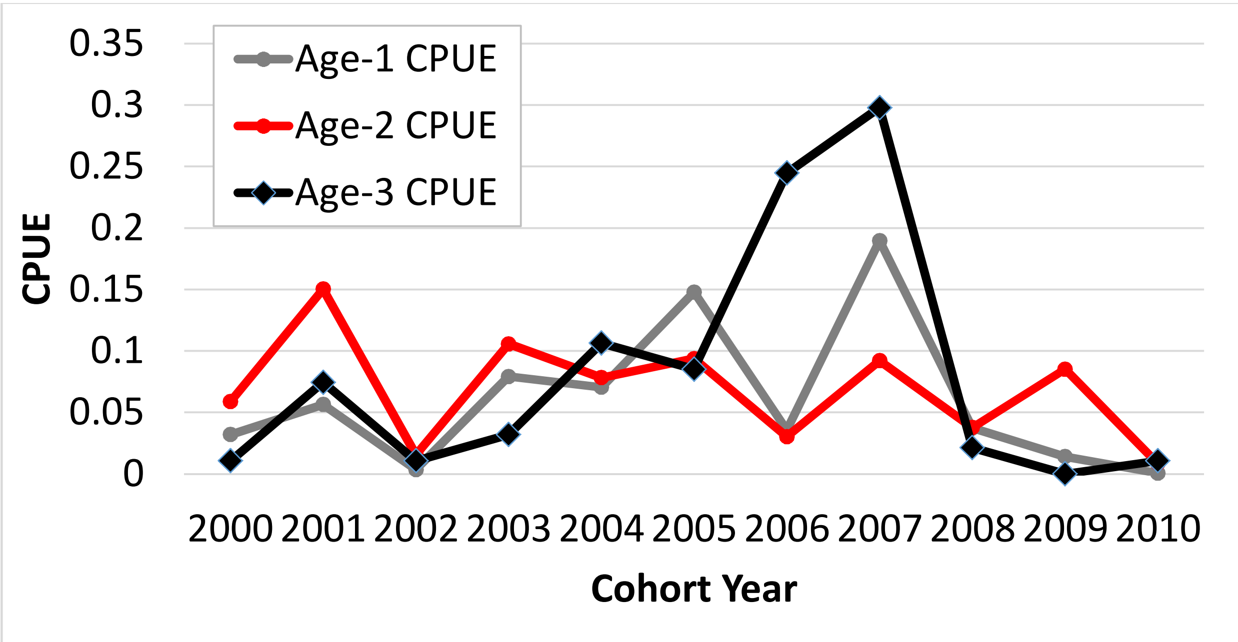


Figure 8. Pamlico Sound Independent Gill Net Survey Age 1-3 indices plotted by cohort (2000-2010).

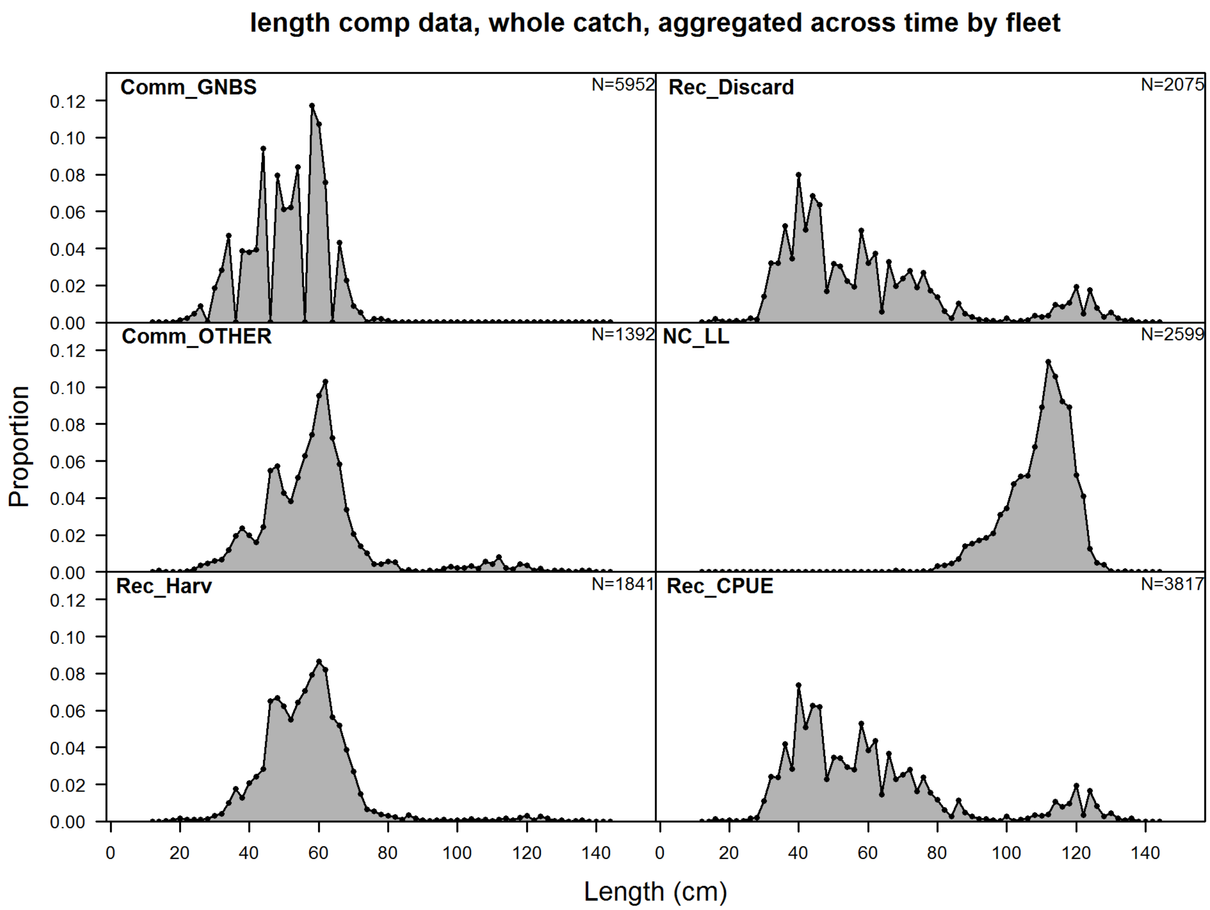


Figure 9. Original input length composition data for fishing fleets and surveys for the northern stock. Some commercial lengths were incorrectly assigned to surrounding 2cm length bins in the Comm_GNBS fleet resulting in the valleys seen in the top right panel.

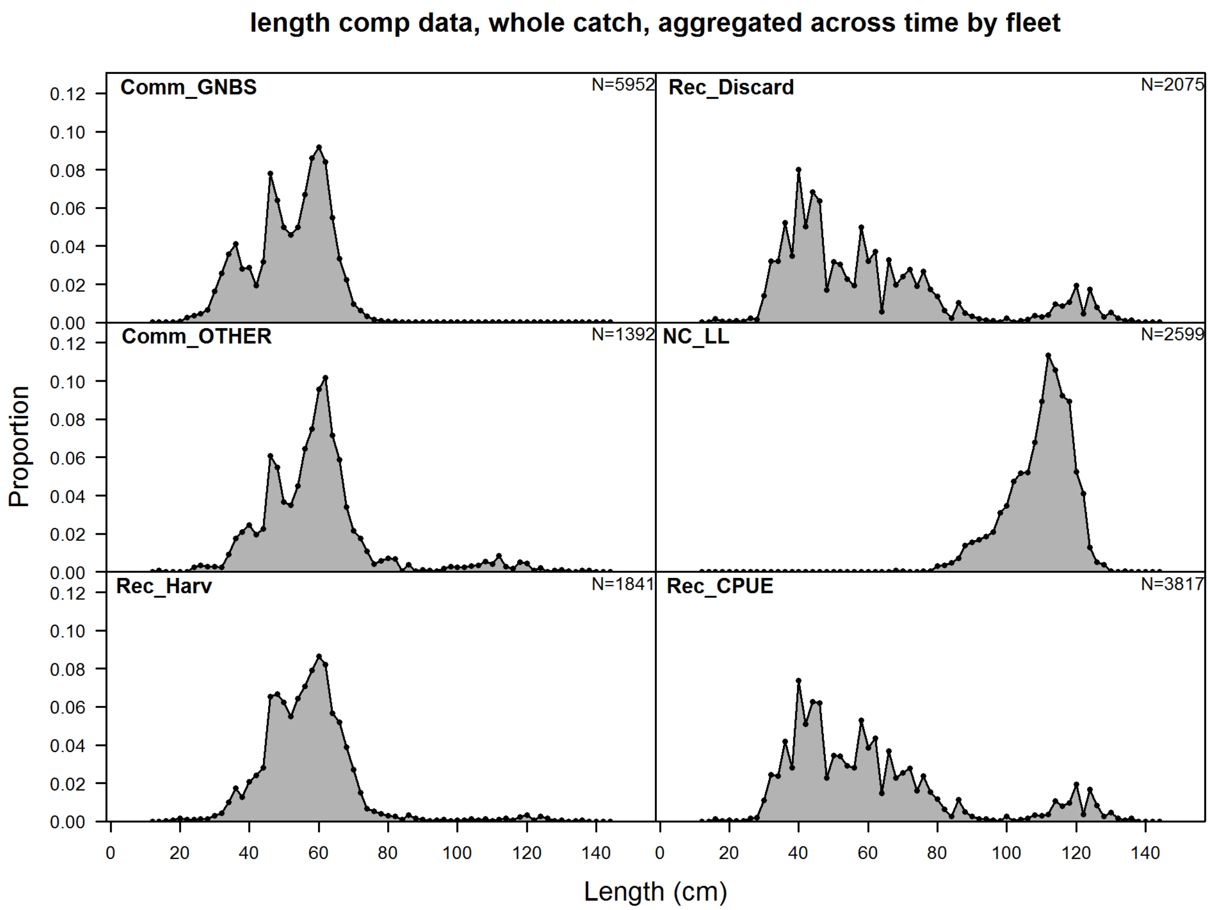


Figure 10. Corrected input length composition data for fishing fleets and surveys for the northern stock.

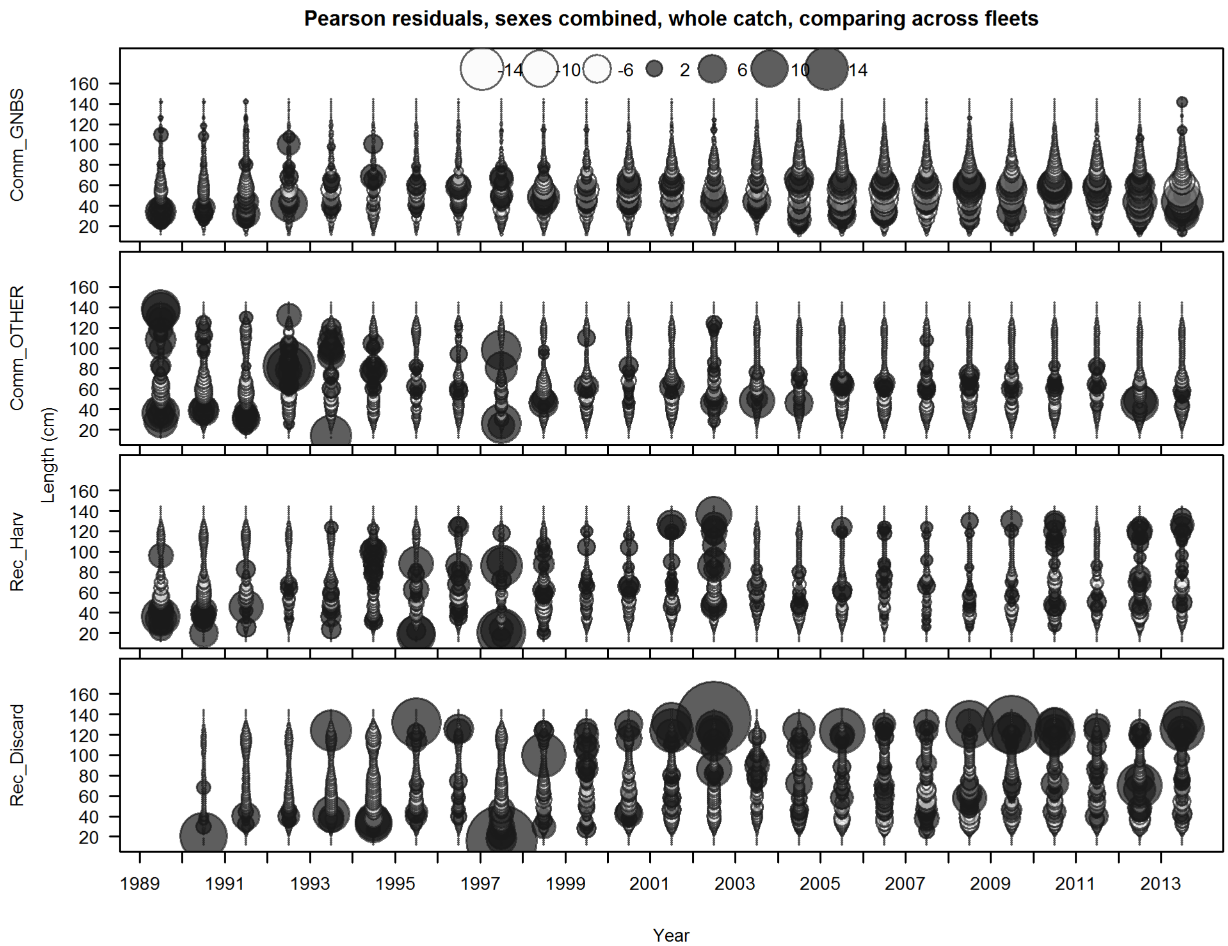


Figure 11. Simplified model fits to the length compositions for the fishing fleets of the northern stock.

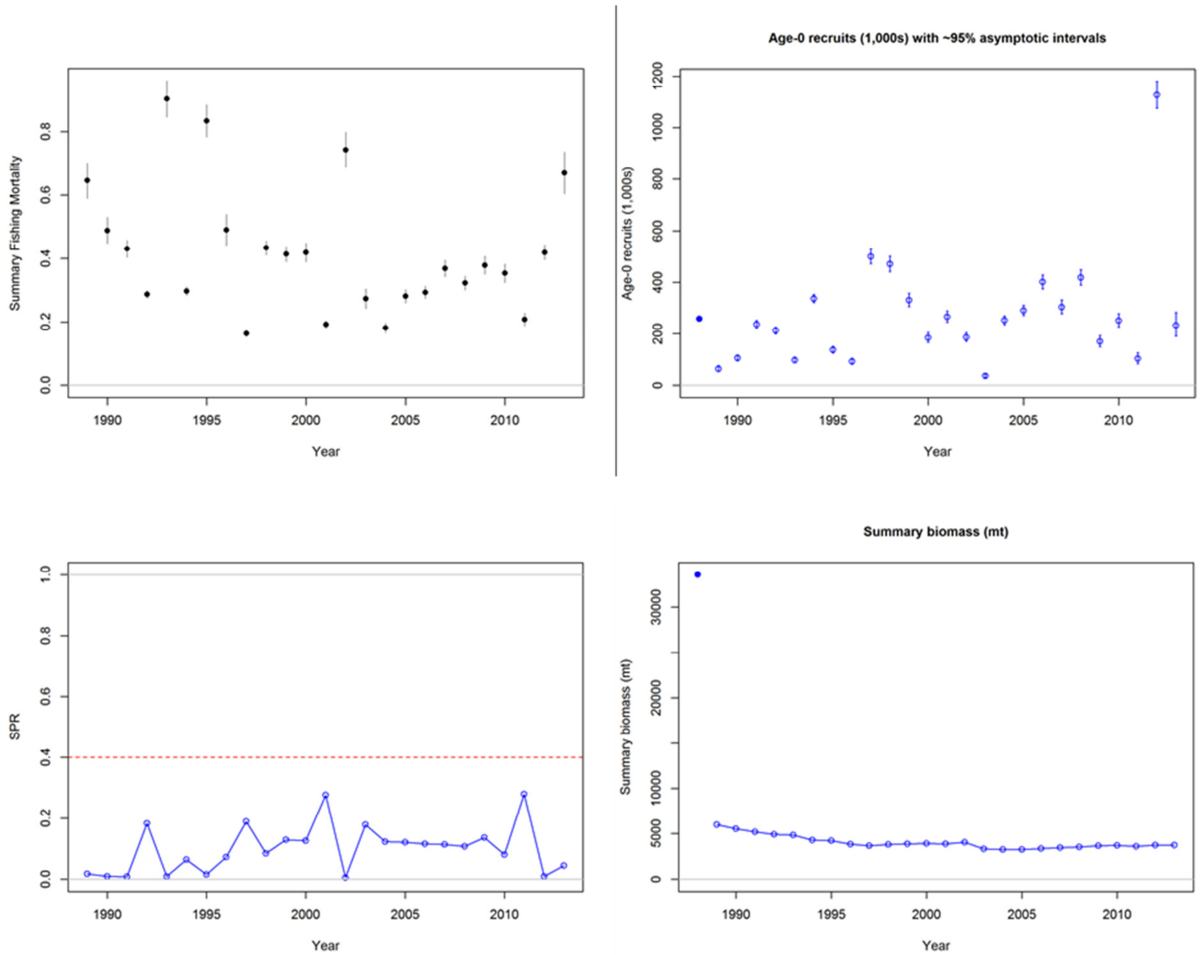


Figure 12. Summary fishing mortality of ages 0-10 (top left), age-0 recruits (top right), spawning potential ratio (bottom left), and spawning stock biomass (bottom right) estimates from the simplified northern stock model.

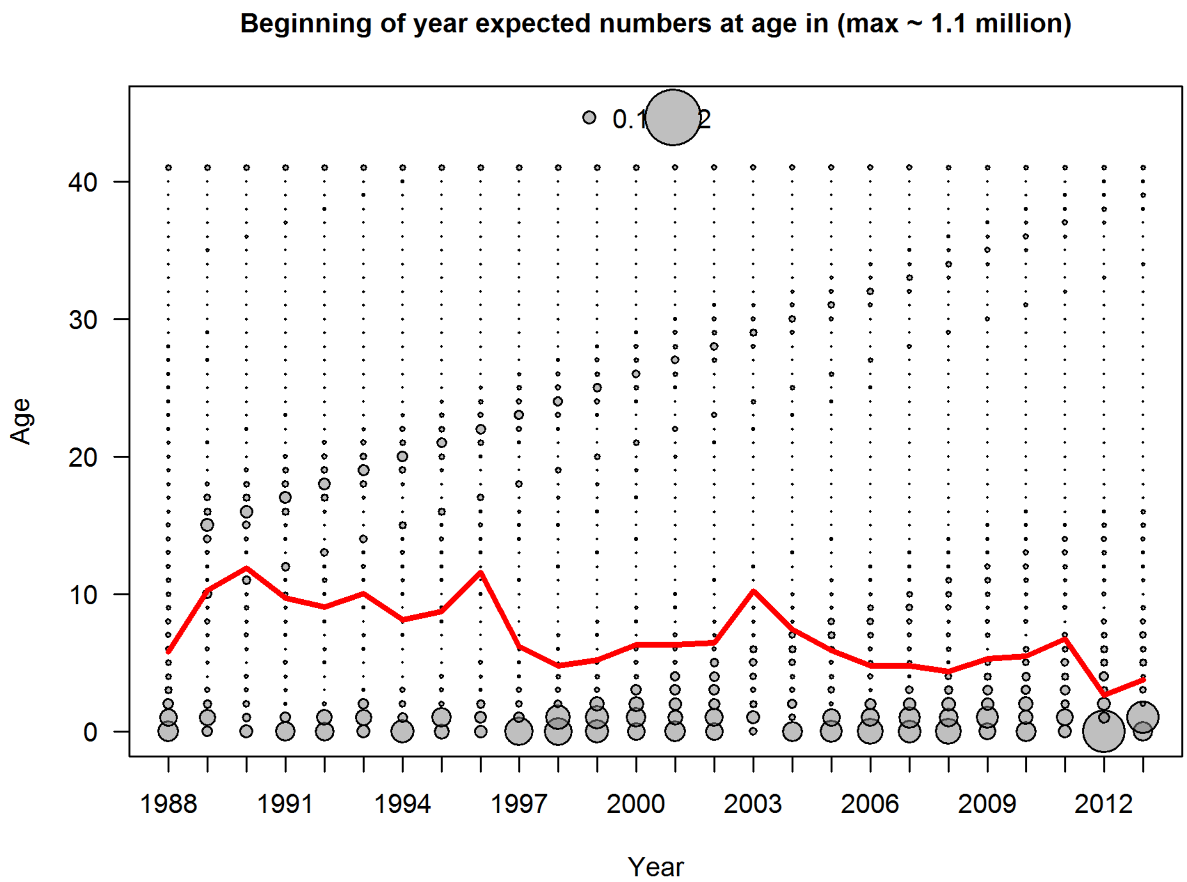


Figure 13. Abundance-at-age estimates from the simplified northern stock model.

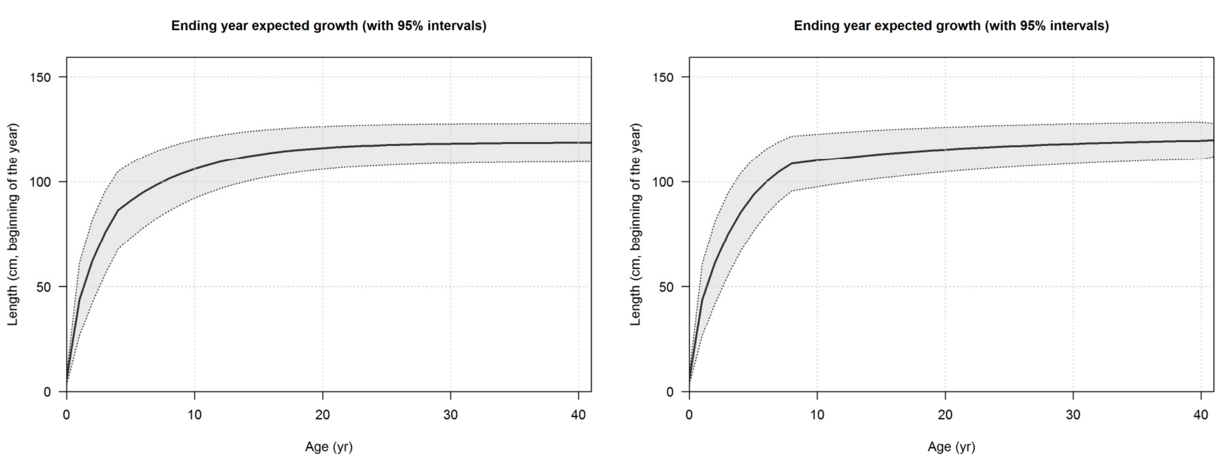


Figure 14. Estimated growth with the growth rate changing at age-4 and age-9.

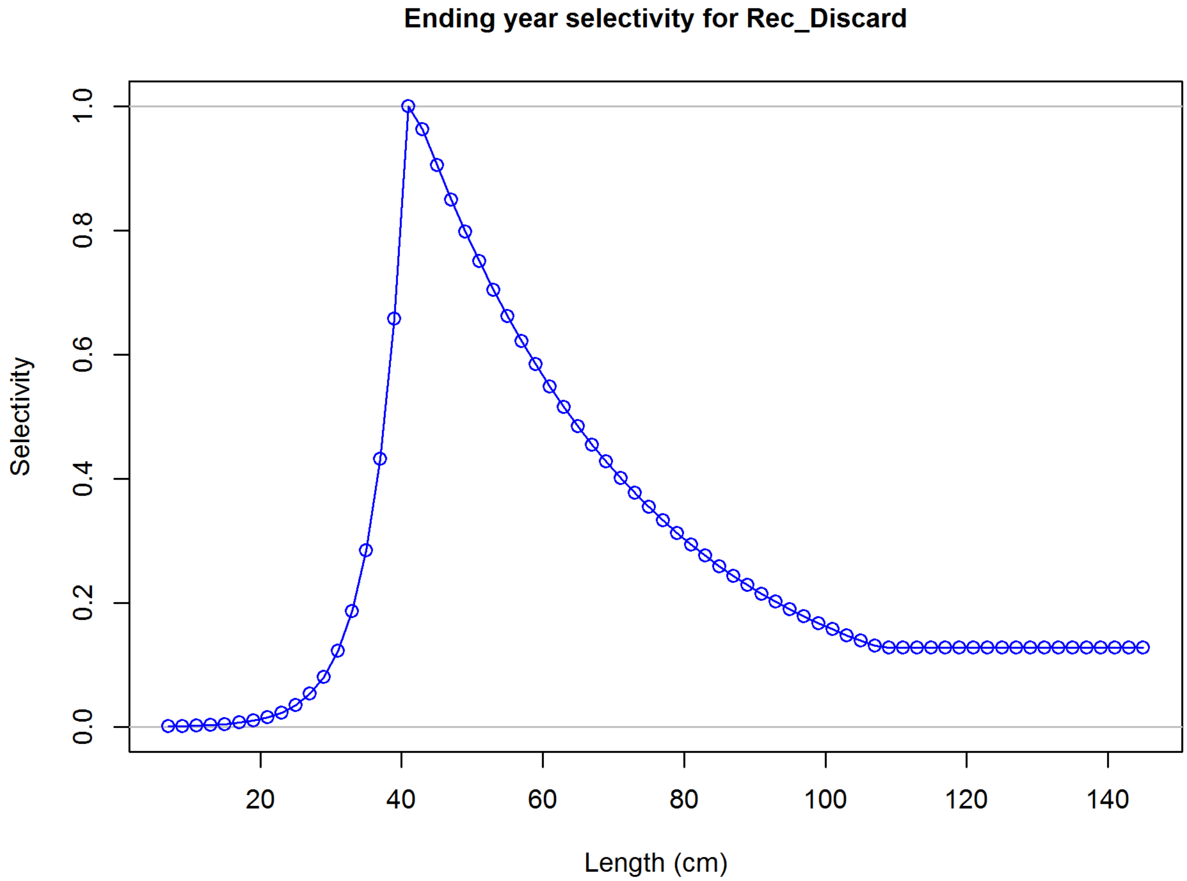


Figure 15. Non-parametric selectivity estimated for the Rec_Discard fleet.

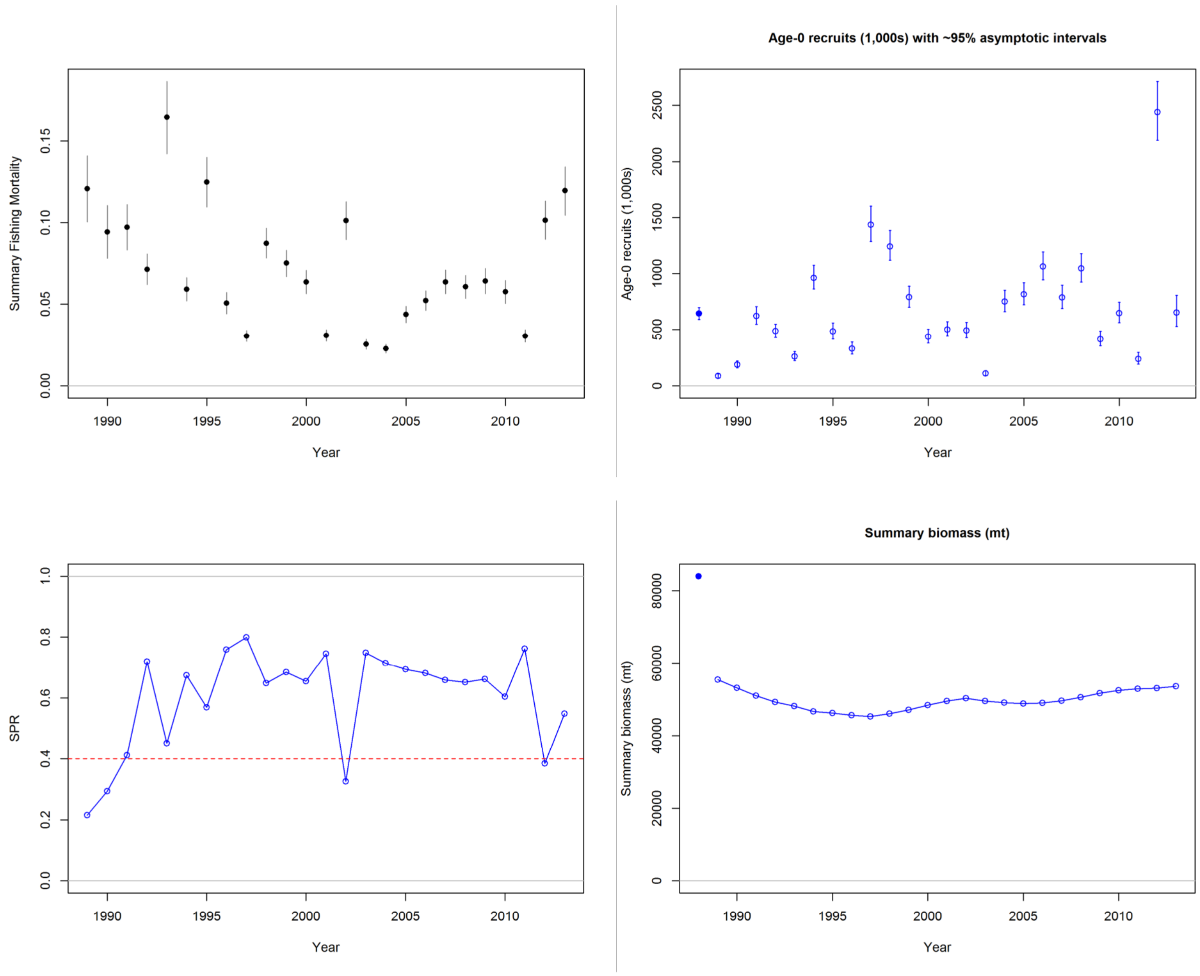


Figure 16. Summary fishing mortality of ages 0-10 (top left), age-0 recruits (top right), spawning potential ratio (bottom left), and spawning stock biomass (bottom right) estimates from the northern stock model with tag reporting rates fixed (0.5 for the Rec_Harv fleet, 0.3 for both commercial fleets, and 0 for the Rec_Discard fleet).

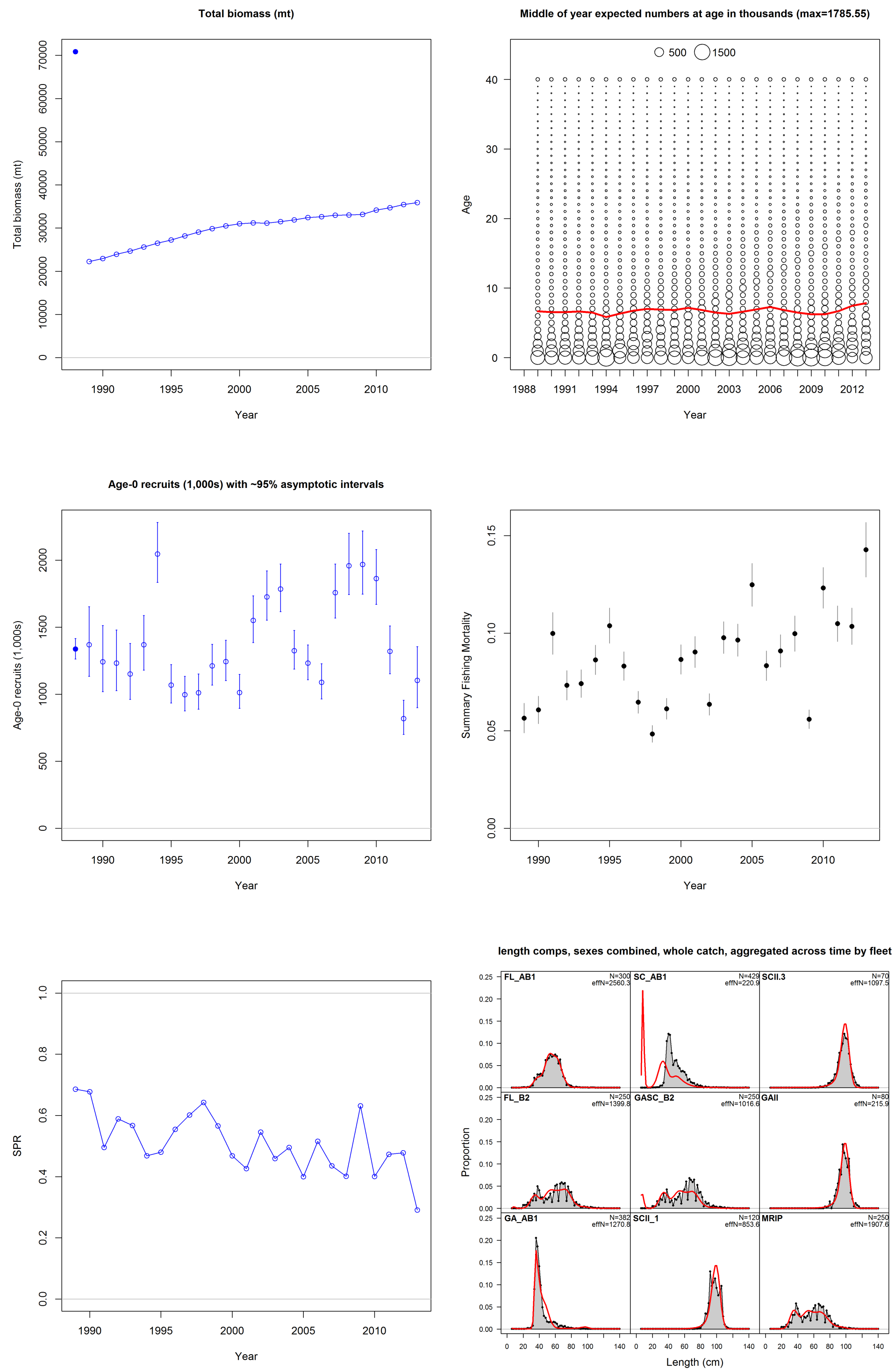


Figure 17. Initial 'simplified' 1989-2013 model run results for the southern red drum stock showing annual total biomass (mt), annual age composition (thousands),age-0 abundance (thousands), summary F for ages 1-5, static spawning potential ratio, and overall length composition fit (predicted in red).

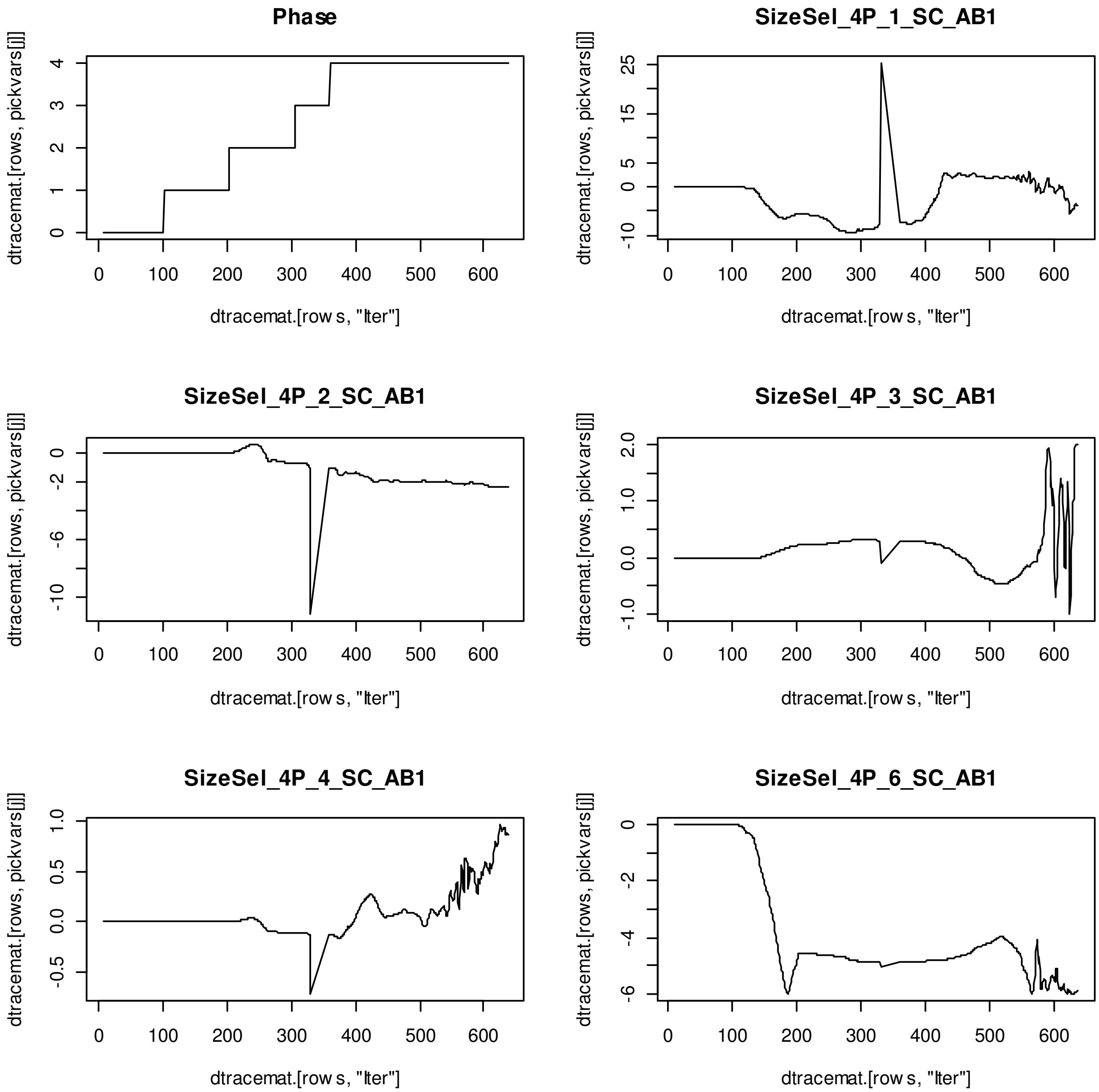


Figure 18. Phase sequence and parameter search trace for the active parameters of the size selectivity function (double normal) for the South Carolina harvest fleet. Traces show value of the parameter during each iteration of the model search for a solution.

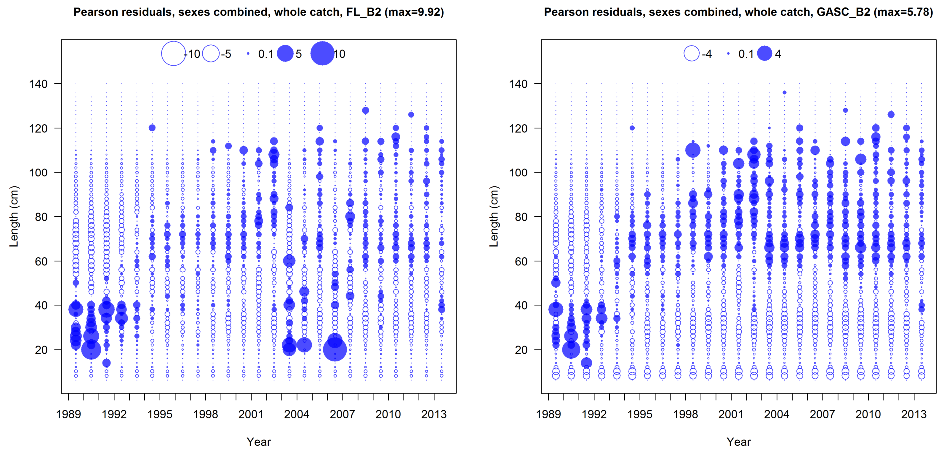


Figure 19. Example run where residual patterns in the live-release fisheries suggest a temporally consistent period of under- or over-estimation of abundance at length.

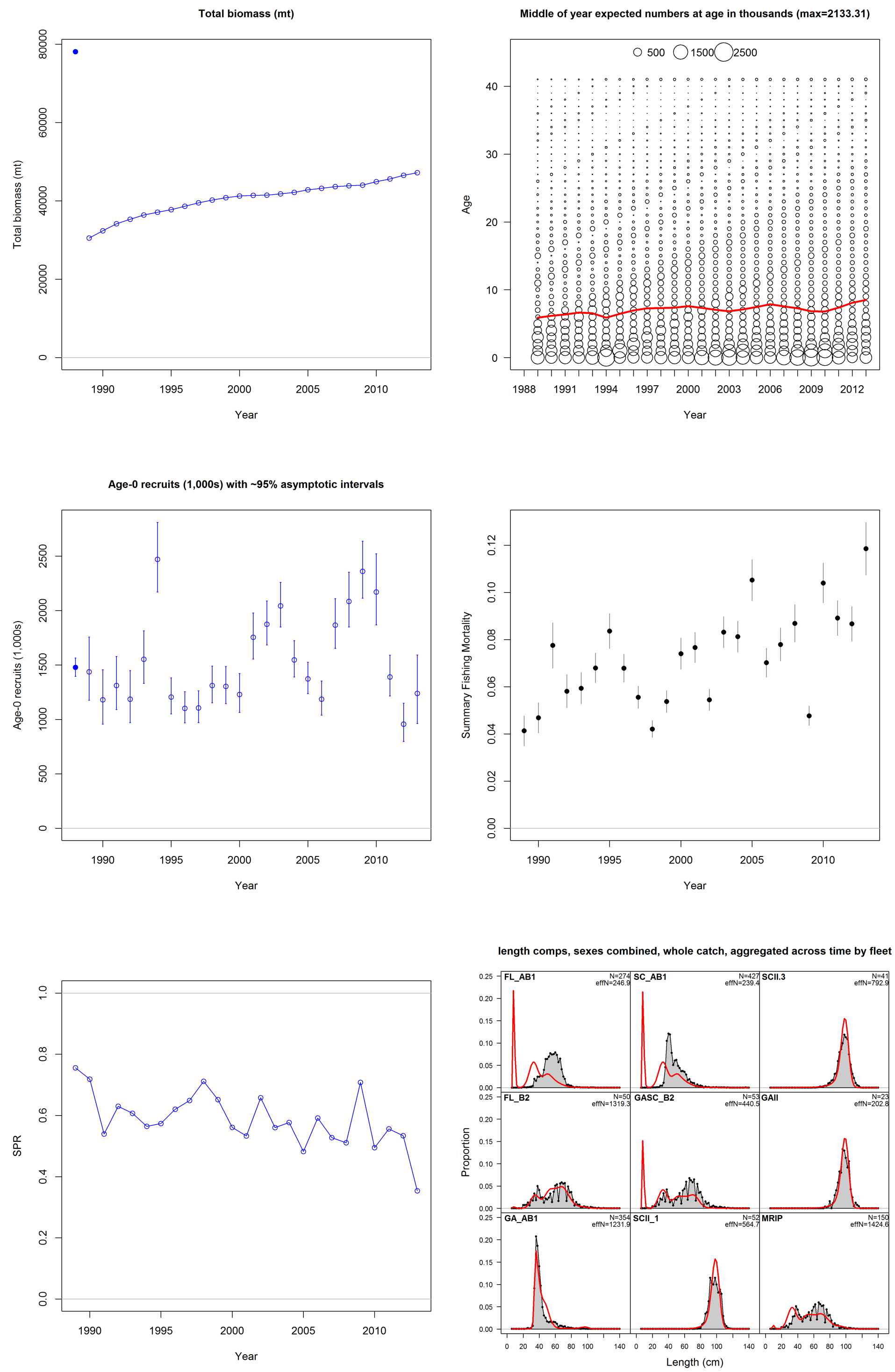
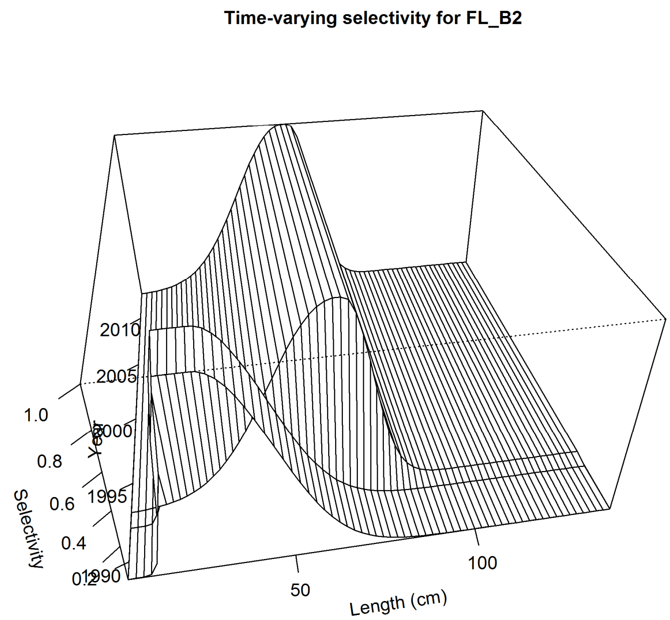


Figure 20. Model run results for the southern red drum stock where SC harvest fleet selectivity 'mirrors' the Florida harvest fleet selectivity. Panels show annual total biomass (mt), annual age composition (thousands),age-0 abundance (thousands), summary F for ages 1-5, static spawning potential ratio, and length composition fit (predicted in red).



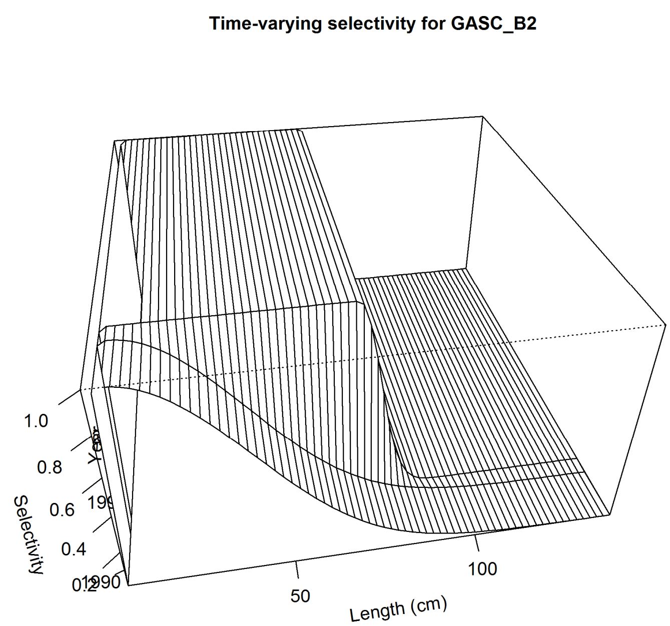


Figure 21. Size selectivity patterns estimated for the Florida and the Georgia/South Carolina live-release fleets when selectivity is estimated separately for an early time block, 1989-1992, and a later time block, 1993-2013.

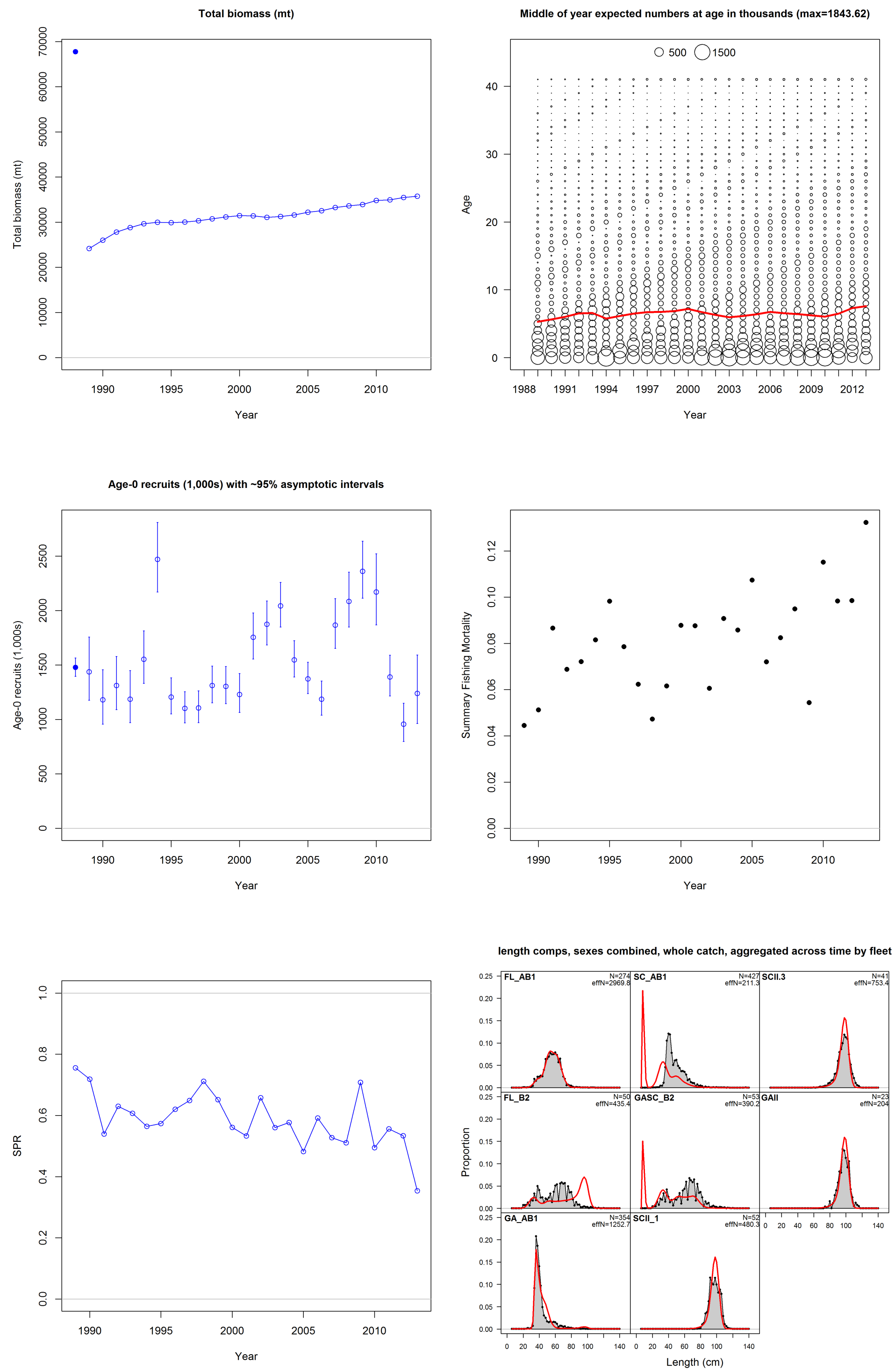
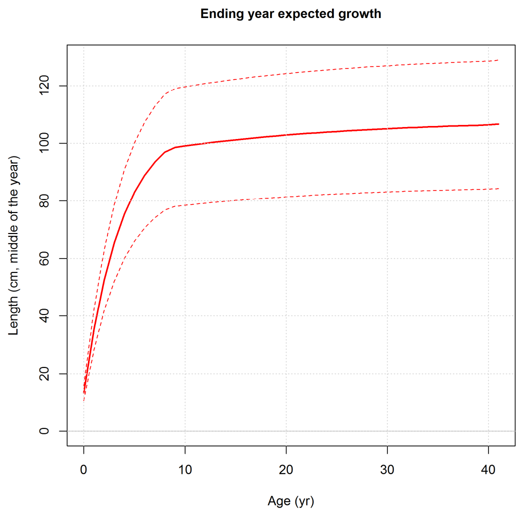


Figure 22. Model run results for the southern red drum stock where the MRIP total-catch index was removed. Panels show annual total biomass (mt), annual age composition (thousands),age-0 abundance (thousands), summary F for ages 1-5, static spawning potential ratio, and length composition fit (predicted in red).



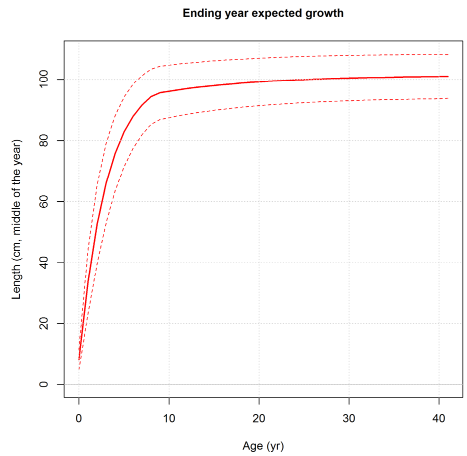


Figure 23. Examples of the simplified model's estimate of the two-segment von Bertalanffy growth function when the small and large fish coefficients of variation were unconstrained (left) and were constrained to 0.2 and 0.1, respectively (right).