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Neil Baertlein, Julie Defilippi, Steve Brown, and Alan Bianchi

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Neil Baertlein[1], Julie Defilippi[2], Steve Brown[3], and Alan Bianchi[4]

[1]NOAA Fisheries, Southeast Fisheries Science Center
Sustainable Fisheries Division, 75 Virginia Beach Drive, Miami, FL 33149

[2]Atlantic Coastal Cooperative Statistics Program
1050 N Highland Street, Suite 200A-N, Arlington, VA 22201

[3]Florida Fish and Wildlife Conservation Commission
Fish and Wildlife Research Institute, 100 Eighth Avenue SE, St Petersburg, FL 33701

[4]North Carolina Division of Marine Fisheries
Trip Ticket Program, 3441 Arendell Street, Morehead City, NC 28557

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Introduction

Commercial landings for the US Atlantic snowy grouper stock were developed by gear (handline, longline, traps and pots, trawl, and other) in whole weight for the period 1950−2012 based on federal and state databases.

Commercial landings of snowy grouper were compiled from 1950 through 2012 for the entire US Atlantic Coast. Sources for landings in the US South Atlantic (Florida through North Carolina) included the Florida Fish and Wildlife Conservation Commission trip ticket program (FWC), North Carolina Division of Marine Fisheries (NCDMF), and the Atlantic Coastal Cooperative Statistics Program (ACCSP). Landings from the mid and North Atlantic (north of the NC-VA border) were solely from ACCSP. Detailed descriptions of historical federal and state data collections can be found in Appendix A.

Methods and Results

Commercial Gears Considered

In keeping with landings as provided in SEDAR4 (SEDAR 2004), landings were provided for five gear groups. These gear groups are handline, longline, traps and pots, trawl, and other. A list of ACCSP gears considered for each of the gear groups can be found in Table 1.

Stock Boundaries

Similar to SEDAR4, landings of snowy grouper were provided for the entire South Atlantic. This region extends from the NC-VA border south to the Florida Keys, Gulf of Mexico/South Atlantic council boundary. In addition to these South Atlantic landings, landings from the mid and North Atlantic were also provided, ranging from the NC-VA border north to Maine. These northern landings will provide new data that were not included in the previous assessment. See Figures 1 and 2.

Unclassified Grouper

From 1950 into the 1980s, depending on the state, all grouper (with the exception of goliath and warsaw groupers) were reported as unclassified grouper. After this point, reporting to species improved and the proportion of unclassified grouper decreased. For years in which landings to species can be found, proportions of snowy grouper to other identified grouper, with the exception of goliath and warsaw grouper, were calculated by year, state, and gear. These proportions were then applied to unclassified grouper landings by the same strata. For the earlier years in which all groupers were unclassified, a mean snowy grouper proportion was created by state and gear for all years prior to 1992 in which groupers were reported to species. Therefore, a mean proportion of snowy grouper by gear was created for: Florida – 1986-1991; Georgia – 1981-1991; South Carolina - 1980-1991; and North Carolina – 1981-1991. These proportions by state and gear were then applied back to 1950.

Commercial Landings by Gear and State

Statistics on commercial landings (1950 to present) for all species on the Atlantic coast are maintained in the ACCSP Data Warehouse. The Data Warehouse is an online database of fisheries dependent data provided by the ACCSP state and federal partners. Data sources and collection methods are illustrated by state in Figure 3. The Data Warehouse was queried in June 2013 for all grouper landings (annual summaries by state and gear category) from 1950−2012 from Florida (east coast including Monroe County) through Maine (ACCSP, 2013). Data are presented using the gear categories as determined. Commercial landings in pounds (whole weight) were developed based on methodologies for gear as defined by the workgroup for each state as available by gear for 1950−2012.

Florida

Comparisons were made between Florida's commercial trip ticket data (1985-2012) to both the NMFS general canvas (1976-1996) and logbook data (1992-2012). All three datasets were very similar in landings trends and level of landings reported for matching years. It was decided to use the landings from the Florida trip ticket data over the general canvas and logbook since general canvas data are Florida trip ticket data since 1997, and trip ticket data were more complete and are of a longer time series than the logbook data. Two issues arose with regard to snowy grouper landings from Florida South Atlantic waters: how to proportion snowy grouper from unclassified grouper, and how to separate South Atlantic from Gulf of Mexico landings in Monroe county (Florida Keys). Snowy grouper landings in Monroe county were as much as 52% of statewide snowy landings, and as much as 32% of all identified grouper landings in Monroe county for a given year. Since it was believed that fisher reported area fished and gear data were generally more accurate in the logbook data than in the dealer reported trip ticket data, it was decided to use the NMFS logbook data to proportion out South Atlantic snowy grouper by gear from Monroe county and from the unclassified groupers in the trip ticket data.

The amount of South Atlantic snowy grouper by year in the Florida trip ticket data was determined by calculating the proportion of Monroe county South Atlantic snowy grouper separately from the rest of South Atlantic Florida in the logbook data for years 1992-2012. This was done by dividing the amount of SA snowy grouper into total snowy grouper as well as total identified grouper landings for both Monroe county and non-Monroe SA Florida, then applying those proportions to the corresponding years for Monroe county and the non-Monroe SA Florida snowy grouper landings and unclassified grouper landings from the trip ticket data. An average proportion from these same categories was then calculated from the combined 1992-2012 logbook data and applied to corresponding total snowy grouper and unclassified grouper landings in the trip ticket data from 1985-1991. The adjusted landings from all categories were then combined into total SA snowy grouper by year from 1985-2012 in the Florida trip ticket data. NMFS logbook data were then used to calculate proportions of Florida SA snowy grouper harvest by gear. This was done by dividing landings for each gear into total Florida SA landings, then applying those proportions to the Florida trip ticket SA landings by year from 1992-2012. The average proportion of logbook landings over all years by gear was then applied to trip ticket landings from 1985-1991.

Landings for the years 1950-1984 were from the ACCSP database. Since all grouper landings prior to 1985 were unclassified, snowy grouper landings were apportioned based on the mean proportions of snowy to all known grouper landings (except goliath and warsaw) for each gear group. Mean proportions were derived from Florida data 1986-1991.

Combined final landings can be found in Table 2 and Figure 4. Data used for the final landings came from the following sources:

- VA-North: 1950-2012 (ACCSP)
- NC: 1950-2012 (NC DMF)
- SC: 1950-2012 (ACCSP)
- GA: 1950-2012 (ACCSP)
- FL: 1950-1984 (ACCSP)
  1985-2012 (FL FWC)

References:

Atlantic Coastal Cooperative Statistics Program. 2013. Annual landings by custom gear category; generated by Julie Defilippi using ACCSP Data Warehouse, Arlington, VA: accessed June 2013.

SEDAR. 2004. SEDAR4-SAR1: Stock Assessment of the Deepwater Snapper-Grouper Complex in the South Atlantic.

Tables

Table 1. Specific ACCSP gears in each gear category for snowy grouper commercial landings.

HANDLINE			
GEAR CODE	**GEAR NAME**	**TYPE CODE**	**GEAR TYPE**
300	HOOK AND LINE	007	HOOK AND LINE
301	HOOK AND LINE, MANUAL	007	HOOK AND LINE
302	HOOK AND LINE, ELECTRIC	007	HOOK AND LINE
303	ELECTRIC/HYDRAULIC, BANDIT REELS	007	HOOK AND LINE
304	HOOK AND LINE, CHUM	007	HOOK AND LINE
305	HOOK AND LINE, JIG	007	HOOK AND LINE
306	HOOK AND LINE, TROLL	007	HOOK AND LINE
307	HOOK AND LINE, CAST	007	HOOK AND LINE
308	HOOK AND LINE, DRIFTING EEL	007	HOOK AND LINE
309	HOOK AND LINE, FLY	007	HOOK AND LINE
310	HOOK AND LINE, BOTTOM	007	HOOK AND LINE
320	TROLL LINES	007	HOOK AND LINE
321	TROLL LINE, MANUAL	007	HOOK AND LINE
322	TROLL LINE, ELECTRIC	007	HOOK AND LINE
323	TROLL LINE, HYDRAULIC	007	HOOK AND LINE
324	TROLL LINE, GREEN-STICK	007	HOOK AND LINE
330	HAND LINE	013	HAND LINE
331	TROLL & HAND LINE CMB	013	HAND LINE
340	AUTO JIG	013	HAND LINE
700	HAND LINE	013	HAND LINE
701	TROLL AND HAND LINES CMB	013	HAND LINE
702	HAND LINES, AUTO JIG	013	HAND LINE
LONGLINE			
GEAR CODE	**GEAR NAME**	**TYPE CODE**	**GEAR TYPE**
400	LONG LINES	008	LONG LINES
401	LONG LINES, VERTICAL	008	LONG LINES
402	LONG LINES, SURFACE	008	LONG LINES
403	LONG LINES, BOTTOM	008	LONG LINES
404	LONG LINES, SURFACE, MIDWATER	008	LONG LINES
405	LONG LINES, TROT	008	LONG LINES
406	LONG LINES, TURTLE HOOKS	008	LONG LINES
407	LONG LINES, DRIFT W/HOOOKS	008	LONG LINES
408	BOUY GEAR	008	LONG LINES
POTS AND TRAPS			
GEAR CODE	**GEAR NAME**	**TYPE CODE**	**GEAR TYPE**

163	POTS AND TRAPS, LOBSTER DOUBLE PARLOR	005	POTS AND TRAPS
162	POTS AND TRAPS, LOBSTER OFFSHORE	005	POTS AND TRAPS
160	POTS AND TRAPS, LOBSTER	005	POTS AND TRAPS
161	POTS AND TRAPS, LOBSTER INSHORE	005	POTS AND TRAPS
182	BOX TRAPS	005	POTS AND TRAPS
180	POTS AND TRAPS, OTHER	005	POTS AND TRAPS
181	POTS, UNCLASSIFIED	005	POTS AND TRAPS
184	SLAT TRAPS (VIRGINIA)	005	POTS AND TRAPS
183	WIRE BASKETS	005	POTS AND TRAPS
130	POTS AND TRAPS	005	POTS AND TRAPS
147	POTS AND TRAPS, BLACK SEA BASS	005	POTS AND TRAPS
132	POTS AND TRAPS, BLUE CRAB	005	POTS AND TRAPS
164	POTS AND TRAPS, COLLAPSIBLE CRAB	005	POTS AND TRAPS
131	POTS AND TRAPS, CONCH	005	POTS AND TRAPS
136	POTS AND TRAPS, CRAB, PEELER	005	POTS AND TRAPS
137	POTS AND TRAPS, CRAYFISH	005	POTS AND TRAPS
138	POTS AND TRAPS, EEL	005	POTS AND TRAPS
139	POTS AND TRAPS, FISH	005	POTS AND TRAPS
150	POTS AND TRAPS, GOLDEN CRAB	005	POTS AND TRAPS
149	POTS AND TRAPS, HAGFISH	005	POTS AND TRAPS
141	POTS AND TRAPS, OCTOPUS	005	POTS AND TRAPS
142	POTS AND TRAPS, PERIWINKLE OR CONKLE	005	POTS AND TRAPS
151	POTS AND TRAPS, PUFFER	005	POTS AND TRAPS
148	POTS AND TRAPS, REEF FISH	005	POTS AND TRAPS
146	POTS AND TRAPS, SCUP	005	POTS AND TRAPS
143	POTS AND TRAPS, SHRIMP	005	POTS AND TRAPS
140	POTS AND TRAPS, SPINY LOBSTER	005	POTS AND TRAPS
145	POTS AND TRAPS, STONE CRAB	005	POTS AND TRAPS
144	POTS AND TRAPS, TURTLE	005	POTS AND TRAPS
	TRAWLS		
GEAR CODE	**GEAR NAME**	**TYPE CODE**	**GEAR TYPE**
080	BEAM TRAWLS	004	TRAWLS
081	BEAM TRAWLS, FISH	004	TRAWLS
082	BEAM TRAWLS, OTHER - SHRIMP, CHOPSTICKS	004	TRAWLS
118	BUTTERFLY NETS	004	TRAWLS
119	DANISH SEINE	004	TRAWLS
120	FLY NET	004	TRAWLS
110	OTHER TRAWLS	004	TRAWLS
113	OTTER TRAWL BOTTOM, PAIRED	004	TRAWLS
112	OTTER TRAWL MIDWATER, PAIRED	004	TRAWLS
117	SCOTTISH SEINE	004	TRAWLS

111	TRAWL, CLAM KICKING	004	TRAWLS
114	TRAWL, ROLLER	004	TRAWLS
115	TRAWL, ROLLER FRAME	004	TRAWLS
116	TRAWL, SKIMMER	004	TRAWLS
091	OTTER TRAWL BOTTOM, CRAB	004	TRAWLS
092	OTTER TRAWL BOTTOM, FISH	004	TRAWLS
093	OTTER TRAWL BOTTOM, LOBSTER	004	TRAWLS
096	OTTER TRAWL BOTTOM, OTHER	004	TRAWLS
094	OTTER TRAWL BOTTOM, SCALLOP	004	TRAWLS
095	OTTER TRAWL BOTTOM, SHRIMP	004	TRAWLS
097	OTTER TRAWL MIDWATER	004	TRAWLS
090	OTTER TRAWLS	004	TRAWLS
098	OTTER TRAWL, HADDOCK SEPARATOR	004	TRAWLS
121	OTTER TRAWL, PEELER	004	TRAWLS
099	OTTER TRAWL, RUHLE	004	TRAWLS
	OTHER		
GEAR CODE	**GEAR NAME**	**TYPE CODE**	**GEAR TYPE**
*	All other gears	*	All other gear types

Table 2. Snowy grouper landings, in whole weight pounds, for the US Atlantic. Cells with a '*' indicate confidential data and therefore were removed.

Year	Handline	Longline	Pots & Traps	Trawl	Other
1950	130,210	0	0	0	0
1951	186,588	0	0	0	5
1952	128,693	0	0	0	0
1953	106,577	0	0	0	2
1954	106,663	0	0	0	8
1955	54,037	0	0	0	0
1956	61,009	0	0	0	0
1957	108,342	0	0	0	0
1958	36,197	0	0	0	0
1959	29,476	0	0	0	0
1960	37,844	0	0	0	0
1961	38,003	0	0	0	0
1962	80,274	0	0	0	0
1963	76,459	1,686	7	0	0
1964	79,992	1,541	37	0	0
1965	70,799	0	4,088	4	0
1966	56,727	0	65	0	0
1967	116,336	0	55	73	0
1968	144,041	0	171	1,126	0
1969	108,204	118	3,215	0	0
1970	150,018	0	7,411	0	0
1971	155,982	0	3,112	29	0
1972	133,483		11,414		
1973	138,110	0	2,322	16	0
1974	186,762	0	404	0	0
1975	216,287	0	55	78	0
1976	278,402	0	243	156	25
1977	256,067	0	540	1,550	30
1978	421,682	45,868	0	117	667
1979	382,141	41,965	0	673	537
1980	310,972	42,735	0	2,001	333
1981	574,834	47,161	0	236	579
1982	420,939	103,695	0	4,284	661
1983	509,333	323,408	0	1,730	558
1984	358,566	225,399	0	403	719
1985	303,902	149,225	0	0	1,378
1986	315,148	171,107	0	206	1,082
1987	239,839	183,702	41	0	755
1988	179,550	153,103	17	0	657

1989	333,364	191,677	0	0	1,168
1990	382,841	227,529	1,256	0	625
1991	329,528	154,204	3,472	0	3,502
1992	348,013	226,727	0	0	7,692
1993	247,885	196,670	0	0	5,075
1994	176,507	109,419	9	0	1,852
1995	257,433	97,469	1,113	*	*
1996	234,525	64,304	0	0	155
1997	337,947	174,130	*	*	1,513
1998	224,699	84,563	*	*	481
1999	333,556	92,135	55	485	1,650
2000	257,016	100,481	736	0	4,693
2001	236,222	42,862	137	6,852	3,265
2002	218,588	26,952	462	4,145	94
2003	180,203	22,564	69	3,656	55
2004	177,411	53,759	0	61	0
2005	187,218	36,256	*	*	0
2006	185,688	42,481	*	*	0
2007	111,091	3,701	*	*	0
2008	66,496	10,815	*	*	0
2009	71,038	8,296	*	*	378
2010	87,824	3,074	0	1	0
2011	39,447	1,450	0	0	0
2012	93,024	2,750	7	0	29

Figures

Figure 1. Region of snowy grouper landings included all landings along the US Atlantic Coast.

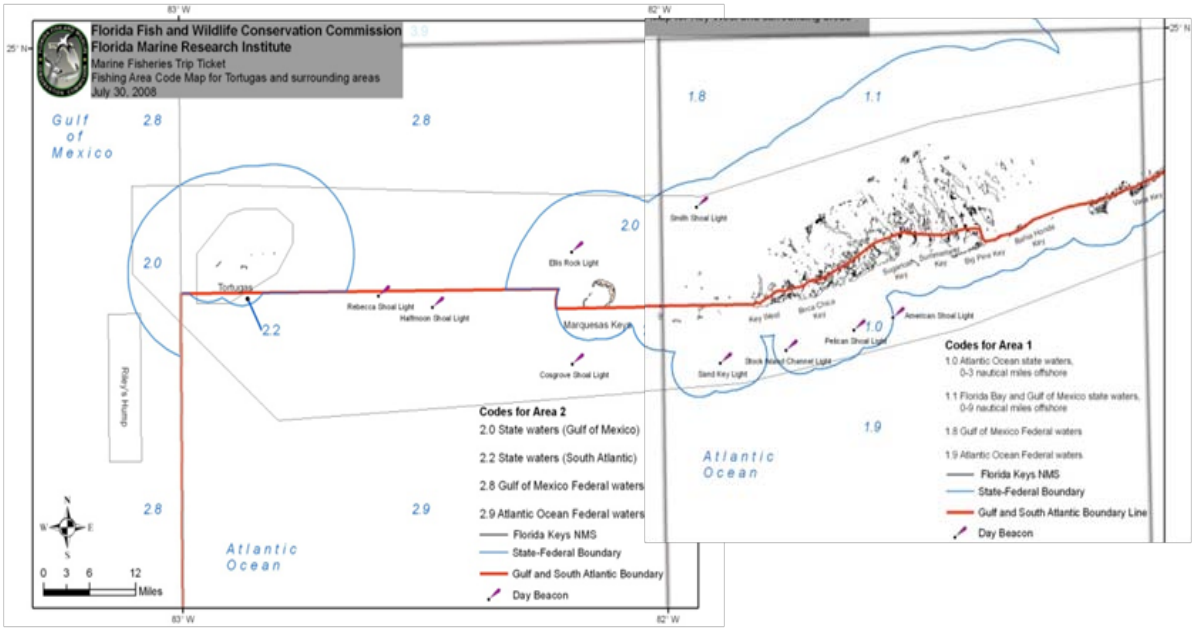

Figure 2. Close-up of the southern boundary as defined by the Gulf of Mexico/South Atlantic Council boundary.

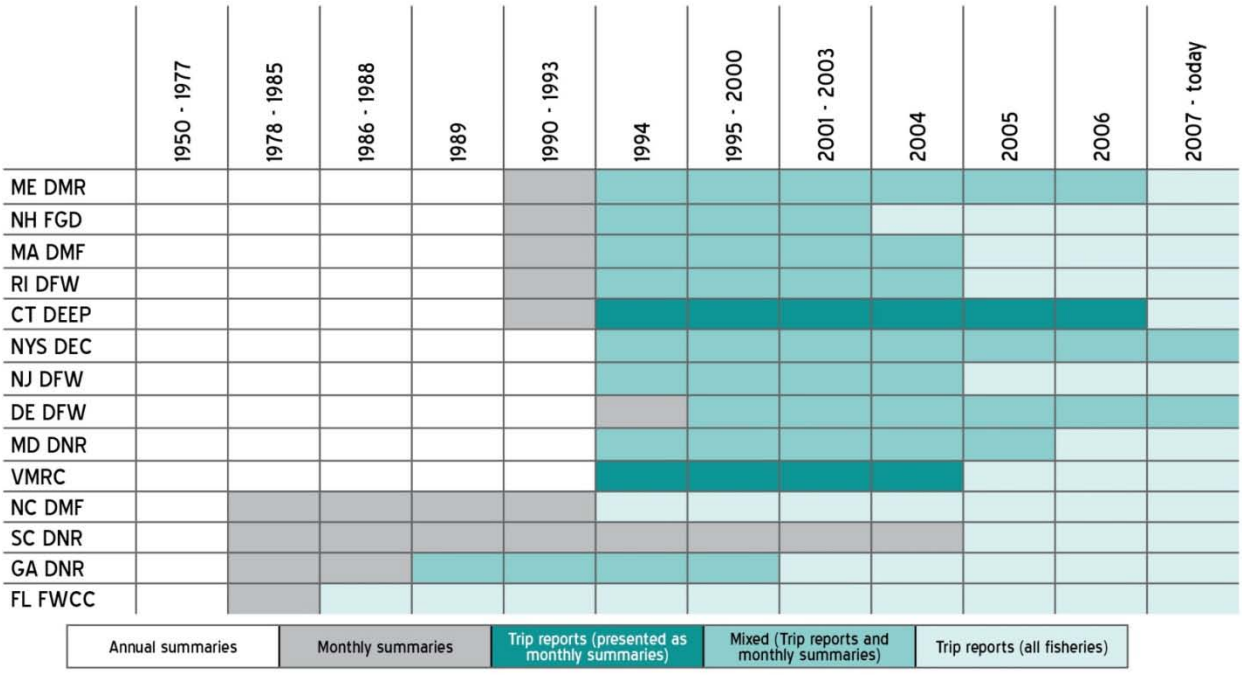

Figure 3. ACCSP Data Warehouse – data sources and collection methods by state. Early summaries provided by NMFS.

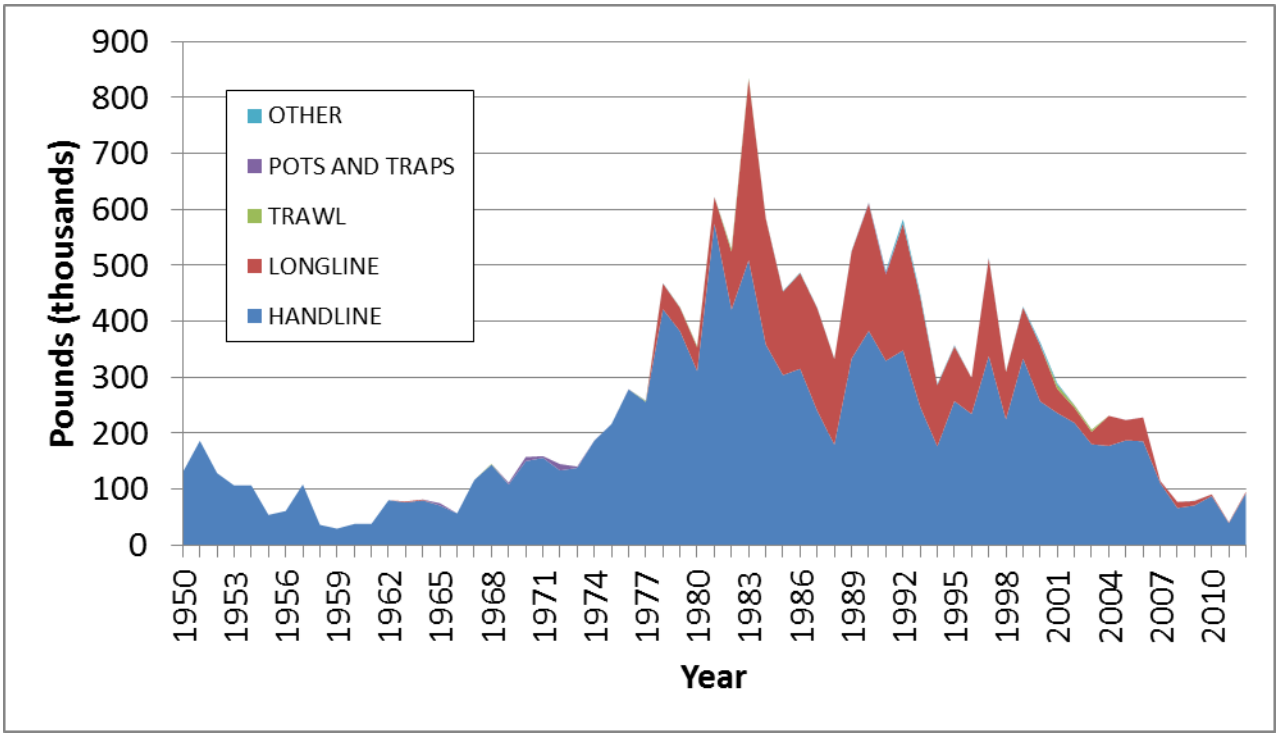

Figure 4. Snowy grouper landings by gear, in whole weight pounds, for the US Atlantic.

APPENDIX A:
NMFS SECPR Accumulated Landings System (ALS)

Information on the quantity and value of seafood products caught by fishermen in the U.S. has been collected starting in the late 1800s (inaugural year is species dependent). Fairly serious collection activity began in the 1920s. The data set maintained by the Southeast Fisheries Science Center (SEFSC) in the SECPR database management system is a continuous dataset that begins in 1962.

In addition to the quantity and value, information on the gear used to catch the fish, the area where the fishing occurred and the distance from shore are also recorded. Because the quantity and value data are collected from seafood dealers, the information on gear and fishing location are estimated and added to the data by data collection specialists. In some states, this ancillary data are not available.

Commercial landings statistics have been collected and processed by various organizations during the 1962-to-present period that the SECPR data set covers. During the 16 years from 1962 through 1978, these data were collected by port agents employed by the Federal government and stationed at major fishing ports in the southeast. The program was run from the Headquarters Office of the Bureau of Commercial Fisheries in Washington DC until 1970. After 1970 it was run by the newly created National Marine Fisheries Service, which had replaced the Bureau of Commercial Fisheries. Data collection procedures were established by Headquarters and the data were submitted to Washington for processing and computer storage. In 1978, the responsibility for collection and processing were transferred to the SEFSC.

In the early 1980s, the NMFS and the state fishery agencies within the Southeast began to develop a cooperative program for the collection and processing of commercial fisheries statistics. With the exception of two counties, one in Mississippi and one in Alabama, all of the general canvass statistics are collected by the fishery agency in the respective state and provided to the SEFSC under a comprehensive Cooperative Statistics Program (CSP).

The purpose of this documentation is to describe the current collection and processing procedures that are employed for the commercial fisheries statistics maintained in the SECPR database.

1960 - Late 1980s
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Although the data processing and database management responsibility were transferred from the Headquarters in Washington DC to the SEFSC during this period, the data collection procedures remained essentially the same. Trained data collection personnel, referred to as fishery reporting specialists or port agents, were stationed at major fishing ports throughout the Southeast Region. The data collection procedures for commercial landings included two parts.

The primary task for the port agents was to visit all seafood dealers or fish houses within their assigned areas at least once a month to record the pounds and value for each species or product type that were purchased or handled by the dealer or fish house. The agents summed the landings and value data and submitted these data in monthly reports to their area supervisors. All of the monthly data were submitted in essentially the same form.

The second task was to estimate the quantity of fish that were caught by specific types of gear and the location of the fishing activity. Port agents provided this gear/area information for all of the landings data that they collected. The objective was to have gear and area information assigned to all monthly commercial landings data.

There are two problems with the commercial fishery statistics that were collected from seafood dealers. First, dealers do not always record the specific species that are caught and second, fish or shellfish are not always purchased at the same location where they are unloaded, i.e., landed. Dealers have always recorded fishery products in ways that meet their needs, which sometimes make it ambiguous for scientific uses. Although the port agents can readily identify individual species, they usually were not at the fish house when fish were being unloaded and thus, could not observe and identify the fish.

The second problem is to identify where the fish were landed from the information recorded by the dealers on their sales receipts. The NMFS standard for fisheries statistics is to associate commercial statistics with the location where the product was first unloaded, i.e., landed, at a shore-based facility. Because some products are unloaded at a dock or fish house and purchased and transported to another dealer, the actual 'landing' location may not be apparent from the dealers' sales receipts. Historically, communications between individual port agents and the area supervisors were the primary source of information that was available to identify the actual unloading location.

Cooperative Statistics Program

In the early 1980s, it became apparent that the collection of commercial fisheries statistics was an activity that was conducted by both the Federal government and individual state fishery agencies. Plans and negotiations were initiated to develop a program that would provide the fisheries statistics that are needed for management by both Federal and state agencies. By the mid-1980s, formal cooperative agreements had been signed between the NMFS/SEFSC and each of the eight coastal states in the southeast, Puerto Rico and the US Virgin Islands.

Initially, the data collection procedures that were used by the states under the cooperative agreements were essentially the same as the historical NMFS procedures. As the states developed their data collection programs, many of them promulgated legislation that authorized their fishery agencies to collect fishery statistics. Many of the state statutes include mandatory data submission by seafood dealers.

Because the data collection procedures (regulations) are different for each state, the type and detail of data varies throughout the Region. The commercial landings database maintained in SECPR contains a standard set of data that is consistent for all states in the Region.

A description of the data collection procedures and associated data submission requirements for each state follows.

Florida

Prior to 1986, commercial landings statistics were collected by a combination of monthly mail submissions and port agent visits. These procedures provided quantity and value, but did not provide information on gear, area or distance from shore. Because of the large number of dealers, port agents were not able to provide the gear, area and distance information for monthly data. This information, however, is provided for annual summaries of the quantity and value and known as the Florida Annual Canvas data (see below).

Beginning in 1986, mandatory reporting by all seafood dealers was implemented by the State of Florida. The State requires that a report (ticket) be completed and submitted to the State for every trip. Dealers have to report the type of gear as well as the quantity (pounds) purchased for each species. Information on the area of catch can also be provided on the tickets for individual trips. As of 1986 the ALS system

relies solely on the Florida trip ticket data to create the ALS landings data for all species other than shrimp.

Georgia
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Prior to 1977, the National Marine Fisheries Service collected commercial landings data Georgia. From 1977 to 2001 state port agents visited dealers and docks to collect the information on a regular basis. Compliance was mandatory for the fishing industry. To collect more timely and accurate data, Georgia initiated a trip ticket program in 1999, but the program was not fully implemented to allow complete coverage until 2001. All sales of seafood products landed in Georgia must be recorded on a trip ticket at the time of the sale. Both the seafood dealer and the seafood harvester are responsible for insuring the ticket is completed in full.

South Carolina
==========
Prior to 1972, commercial landings data were collected by various federal fisheries agents based in South Carolina, either U.S. Fish or Wildlife or National Marine Fisheries Service personnel. In 1972, South Carolina began collecting landings data from coastal dealers in cooperation with federal agents. Mandatory monthly landings reports on forms supplied by the Department are required from all licensed wholesale dealers in South Carolina. Until fall of 2003, those monthly reports were summaries collecting species, pounds landed, disposition (gutted or whole) and market category, gear type, and area fished; since September 2003, landings have been reported by a mandatory trip ticket system collecting landings by species, disposition and market category, pounds landed, ex-vessel prices with associated effort data to include gear type and amount, time fished, area fished, along with vessel and fisherman information. South Carolina began collecting TIP length frequencies in 1983 as part of the Cooperative Statistics Program. Target species and length quotas were supplied by NMFS and sampling targets were established for monthly commercial trips by gear sampling was set to collect those species with associated length frequencies. In 2005, SCDNR began collecting age structures (otoliths and spines) in addition to length frequencies, using ACCSP funding to supplement CSP funding. Typically for every four fish measured a single age structure was collected. This sampling periodicity was changed in 2010 to collect both a length and age structure from every fish intercepted as a recommendation from the SEFSC.

North Carolina
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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.

NMFS SECPR Annual Canvas Data for Florida

The Florida Annual Data files from 1976–1996 represent annual landings by county (from dealer reports) which are broken out on a percentage estimate by species, gear, area of capture, and distance from shore. These estimates are submitted by Port agents, which were assigned responsibility for the particular county, from interviews and discussions from dealers and fishermen collected throughout the year. The estimates are processed against the annual landings totals by county on a percentage basis to create the estimated proportions of catch by the gear, area and distance from shore. The sum of percentages for a given Year, State, County, Species combination will equal 100.

Area of capture considerations: ALS is considered to be a commercial landings database which reports where the marine resource was landed. With the advent of some State trip ticket programs as the data source the definition is more loosely applied. As such one cannot assume reports from the ALS by State or county will accurately inform you of Gulf vs. South Atlantic vs. Foreign catch. To make that determination you must consider the area of capture.