GEOGRAPHIC COMPARISON OF AGE, GROWTH, REPRODUCTION, MOVEMENT, AND SURVIVAL OF RED SNAPPER OFF THE STATE OF FLORIDA

SUBMITTED BY:

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ABSTRACT

One hundred seven (107) undersized red snapper suffered acute mortality during 11 headboat trips and were brought back to the laboratory for necropsy. Of the 107 mortalities, 23 died from rapid depressurization from relatively deep areas and 64 from stress (heat and handling), improper venting, and undetermined causes; however, most (84) suffered from J hook damage. Capture on circle hooks did not increase red snapper recaptures. Venting starting at depths of 39.9 m did enhance red snapper survival. Sampled red snapper from the Gulf of Mexico ranged in age from 1 – 7 years (261 – 800 mm TL), while those from the Florida east coast ranged 1 – 17 years (129 – 875 mm TL). East coast female red snapper are reproductively capable and actively spawning from June – October. Results mirror those of White and Palmer (2004) for east coast red snapper (North Carolina – Key West). Due to multiple hurricanes and closed seasons during the study duration, only a limited number of samples were collected in the Dry Tortugas, the Florida Panhandle, and the southwest coast of Florida for a meaningful assessment. However, data from available samples showed the Dry Tortugas females were reproductively capable and actively spawning during June – August. There is a significant relationship between length and batch fecundity for Florida east coast fish. No such relationship was found for Dry Tortugas females. The extremely low fecundity estimates calculated for Dry Tortugas females (relative fecundity: 27 ± 11 eggs/g) are similar to those in the northern Gulf of Mexico (Collins *et al.*, 2001). No published fecundity estimate exists for the Florida east coast; however, estimates from this study show a relative fecundity of 235 ± 56 eggs/g. Spawning frequency estimates also varied between the Florida east coast (2.2 days) and the Dry Tortugas (4.3 days). The difference in fecundity and spawning frequency, and thus reproductive potential, among Florida red snapper clearly needs additional investigation. From 10/01/2002 to 09/30/2006, 1,107 red snapper were measured by Mote Marine Laboratory (MML) staff and student interns and by MML volunteer taggers in the Gulf of Mexico (n = 770) and South Atlantic (n = 337). Fish ranged in size from 179 – 635 mm in the Gulf and 203 – 559 mm in the Atlantic. Fish size differed with area. Florida Panhandle fish were significantly smaller than those measured off southwest Florida. Southwest Florida fish size was similar to that of east coast fish. Of the 57 double-tagged fish, four were recaptured with both tags. Red snapper (n = 4,090) were tagged and released by MML staff and student interns and by MML volunteer taggers. In the Gulf of Mexico, 2,100 red snapper were captured and released from Galveston, TX, to Dry Tortugas, FL. Fish (n = 1,992) were tagged off the eastern coast of Florida from St. Augustine to Fort Lauderdale. A total of 355 red snapper were recaptured, 147 in the Gulf of Mexico and 208 in the South Atlantic. Of the 355 recaptures, 24 were multiple recaptures, with all those fish being recaptured twice. Fish were at liberty from 2 – 819 days. One hundred forty-seven (147) fish exhibited site fidelity and were recaptured at the same location where they were originally caught. One hundred eighteen (118) showed movements of less than 10 km, and 47 showed large scale movements of 10 km or greater. One red snapper traveled from the northern Gulf to the Atlantic.

EXECUTIVE SUMMARY

Reef fish, particularly snappers, support extremely important commercial and recreational fisheries in both the Gulf of Mexico and South Atlantic, resulting in the necessity to resolve critical management issues. Although catch quotas, trip limits, and closed seasons are used to regulate the fishery, minimum size limits are the primary tool used to manage reef fish fisheries. Minimum size limits are intended to prevent growth and recruitment overfishing by allowing some portion of fish in a cohort to grow and reproduce at least once before dying of natural or fishing-related causes. Minimum size limits apply to both commercial and recreational fishers and require that all undersized fish be released regardless of the location, water depth, or condition of fish. Survival rates of these undersized fish become critical in determining the efficacy of the minimum size rule.

Hook and depth-induced mortality due to injuries sustained during capture and rapid decompression are two factors that seriously impact survival of undersized discards (Render and Wilson, 1993; Gitschlag and Renaud, 1994, personal observation). Research results from MARFIN Awards NA97FF0349 and NA87FF0421 have shown that, although all reef fish species can suffer mortality from hook or rapid decompression injuries, there are differences in mortality rates among species related to their anatomy, physiology, and behavior. Red snapper are much more susceptible to J hook mortality because of their feeding behavior. There have been some encouraging reports regarding increased survival of red snapper with the use of circle hooks (SEDAR 7 2005). Results of circle versus J hook experiments conducted as part of this study showed no difference in red snapper recaptures by hook type. Although red snapper can easily survive rapid decompression from 21 and 27 m (70 and 90 ft, respectively), there are marked differences in their ability to tolerate rapid decompression from deeper depths, those greater than 40 m (140+ ft). Some red snapper can suffer mortality or sub-lethal effects at depths greater than or equal to 40 m (140 ft). Fish caught at depths of 39.9 m or deeper by either hook type had higher survival rates when vented.

Knowledge of the number and percent of reef fish that succumb to immediate mortality is important to management of the species. Recording the number of undersized red snapper caught on headboats and necropsying dead fish to determine cause of death provided additional data on the effects of hook release and decompression-induced mortality. Two hook types (circle and J) were evaluated with respect to red snapper hook mortality.

Many studies have been conducted to understand the life history and genetics of red snapper in the Northern Gulf of Mexico. These include age and growth information (Nelson and Manooch, 1982; Patterson *et al.*, 2001a; Wilson and Nieland, 2001), red snapper longevity (Baker and Wilson, 2001), and movement patterns and site fidelity (Patterson *et al.*, 2001b; Patterson and Cowan, 2003; Szedlmayer and Ship, 1994; Watterson *et al.*, 1998) to name a few. The genetics of red snapper in the northern Gulf have also been studied and are believed to represent one panmictic stock, based on findings of similar mitochondrial DNA haplotype frequencies from different areas of the Gulf (Camper *et al.*, 1993; Gold *et al.*, 1997; Heist and Gold, 2000; Gold, 2003; Pruett *et al.*, 2005). No studies on the genetics of red snapper

captured off the southwest coast of Florida have been conducted (John Gold, personal communication).

Allman *et al.* (2002) sampled all red snapper fishing sectors (recreational, recreational-for-hire, and commercial) of the Gulf of Mexico from Texas to the west coast of Florida, however the number of eastern Gulf (Florida, Alabama, and Mississippi) fish captured by commercial long-line was small (n = 25 in 1998). They reported collecting red snapper ranging in age from 1 – 39 years of age during 1998 and 1999. They found that age three fish dominated in 1998 samples and age four fish in 1999. They stated that it looked as if age three was the age that red snapper recruited into the recreational, recreational-for-hire, and commercial hand-line sectors and recruitment into the commercial long-line occurred at age five or six.

Little or no research has been conducted on red snapper off the southwest coast of Florida since they were fished out in the 1970s (Futch and Bruger, 1976). Although red snapper had been so heavily overfished that they no longer were caught off the southwest coast of Florida, wild stocks began re-recruiting to the Florida Middle Grounds and later offshore of St. Petersburg/Madeira Beach and South Venice, Florida, in the 1990s (personal observation). The observed fish were juveniles and were too small to enter into the recreational or commercial fisheries at that time, and have not been observed in great numbers in the fishery until the last few years. The second part of this project was to attempt to sample these fish and follow their entrance into the fisheries. As increased numbers of fishers target the growing number of red snapper off southwest Florida, it becomes critical to know not only the natal area of the original recruits but whether the recruits will form reproductive populations.

Little information exists in the primary literature on the spawning and reproductive biology of red snapper, despite the importance of the species to the commercial and recreational fisheries. Information on spawning seasonality and size and age at maturity is available for the northern Gulf of Mexico (Bradley and Bryan, 1975; Wilson *et al.*, 1994; Collins *et al.*, 1996; Woods *et al.*, 2003), the southern Gulf of Mexico (Brulé *et al.*, 2004) and the southeastern U.S. Atlantic (White and Palmer, 2004). The only information available on the reproduction of red snapper for the southeastern Gulf of Mexico is 30 years old (Futch and Bruger, 1976). Current information indicates red snapper in the northern Gulf of Mexico reach sexual maturity at age two, have a reproductive season from April or May through September, are capable of spawning multiple times during the reproductive season, and exhibit a distinct diel spawning periodicity, with peak spawning occurring in the late afternoon (Collins *et al.*, 2001; Woods *et al.*, 2003; Jackson *et al.*, 2006). However, red snapper from the southern Gulf of Mexico (Yucatan Peninsula) were found to be reproductively active year-round, although the primary spawning season is from March through November with May and August-October peaks (Brulé *et al.*, 2004). Fecundity estimates are limited to reports from the northern Gulf of Mexico and suggest large variations with age and size of the fish (Woods, 2003; Collins *et al.*, 2001). Interestingly, size at maturity seems to differ for red snapper from Alabama and Louisiana, with Alabama fish achieving sexual maturity at a smaller size (but at the same age) than fish from Louisiana (Woods *et al.*, 2003). This observation suggests that there may indeed be geographical differences in the reproduction of the species in the northern Gulf of Mexico east and west of the Mississippi River. Similar differences could be found in red

snapper reproduction from differing areas of Florida (i.e. Florida east coast, Florida west coast, Dry Tortugas, and Florida panhandle), particularly since these regions have distinct salinity/temperature profiles and very different fishing pressures.

PURPOSE

The purpose of this project was two fold. The first was to test hypotheses related to the survival of undersized red snapper bycatch. The second was to investigate the re-recruitment of red snapper to the southwest coast of Florida and compare the biology of the red snapper there with that occurring in the northern Gulf of Mexico and the eastern coast of Florida.

A. PROBLEM DESCRIPTION

Red snapper are important both recreationally and commercially. Survival of undersized bycatch in these fisheries is critically important. Determination of the chief causes of mortality and the effects of different gear is vital to management of this species. Also essential to fisheries management is knowledge of the life history of the species throughout its range.

Red snapper have been studied extensively in the northern Gulf. However, the species was fished out off of southwest Florida in the 1970s but began to re-recruit in the early 1990s. At that time, only juveniles were caught. As of this writing, some recreational-for-hire and commercial fishers are now targeting red snapper, as the fish have increased in both size and abundance. The resurgence of active fisheries targeting red snapper off southwest Florida requires studies to provide data for comparison with the northern Gulf and the Florida east coast for future stock assessments.

B. PROJECT OBJECTIVES

- To test the hypothesis that red snapper will survive depth-induced trauma.
- To obtain life history information including age and growth and reproductive data for red snapper off the southwest and northeast coast of Florida and compare these data with those from the northern Gulf of Mexico.
- To test the hypothesis that circle hooks will greatly reduce release mortality in red snapper.
- To obtain catch and release mortality values relative to depth and gear for red snapper.
- To determine tag shedding rates for fish tagged with single barbed dart tags.
- To obtain movement and migration patterns for red snapper in the Gulf of Mexico and South Atlantic.

APPROACH

A. WORK PERFORMED

Task 1: To test the hypothesis that red snapper will survive depth-induced trauma.

This hypothesis was tested by three tasks. The first was to determine release condition of undersized red snapper caught off headboats. The second method was to collect all dead and dying undersized red snapper caught during headboat trips, bring them to the laboratory, and necropsy them to determine cause of death. The final task was to tag and release red snapper to determine survival by the number recaptured.

a. *Quantification of Undersized and Legal Catch:*

MML personnel recorded the number and size of as many red snapper caught during headboat trips as possible off the southwest coast of Florida, the eastern coast of Florida (St. Augustine), and in the northern Gulf of Mexico, off Panama City, FL. MML personnel recorded the water depth, fish condition, and fate of the fish. Undersized fish in good condition were used in the tagging portion of the study. The purpose was to gather data on the release condition of various sizes of red snapper to compare with red snapper swim bladder research funded by MARFIN Award No. NA17FF2010.

Additional survival and length/frequency data from charter boats and recreational vessels were gathered by participating fishers. Data included tagging data from dart tagged fish, tag returns, measurement of legal and undersized target species caught/trip, gear type, and number of hours fished.

b. *Initial Mortality:*

Undersized dead or dying red snapper were collected during headboat fishing trips. Fish were stored in large coolers filled with ice aboard ship and transported to MML for necropsy to determine cause of death. Necropsies were performed on all undersized dead or dying red snapper to distinguish between deaths related to trauma caused by rapid decompression from depth, damage caused by hooks, or injury resulting from other causes.

c. *Fish Tagging:*

Red snapper were tagged using single barbed Hallprint® plastic dart tags inserted at an angle next to the anterior portion of the dorsal fin (Figure 1). Fish were released immediately after being measured and tagged at the original capture site (Figure 2). This methodology has

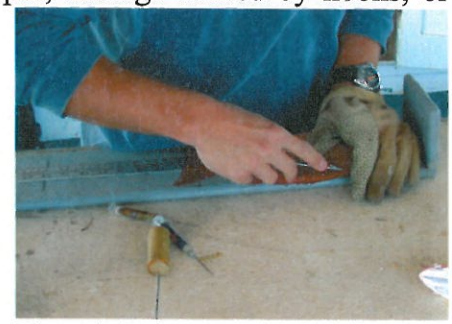


Figure 1. Red snapper being measured and tagged.

been used successfully in MML's Reef Fish Tagging Program. Information on the tag included tag number and the 1-800 dedicated tagging telephone number at MML. The telephone was answered personally during work hours and calls regarding tag return information were recorded on an answering machine on weekends, holidays, and evenings.

Tagging data included date, hook type, gear type, tag number, time of day, bait used, water depth, fork length in inches (converted to metric units in the laboratory), fish condition upon release, amount of time the fish was out of the water, whether or not the fish was vented, capture location to the nearest minute (1') of latitude and longitude, number of hours fished, and the number of hours of the trip. For those fish that MML staff double tagged, the PIT number was also included. Return data included tag number, species, date of capture, gear type, bait type, water depth, fork length in inches, capture location, the overall condition of the fish, the condition of the area around the tag insertion site, and whether the fish was kept or released. All data were entered on a PC computer using Paradox software. Data were transferred to NMFS semi-annually concurrent with semi-annual reports.

Figure 2. Tagged red snapper being released off the headboat "Gemini Queen."

If a fish was vented before release, abdomen deflation was accomplished by the use of a venting device and protocol currently used by MML. The sharpened tube of a small diameter (e.g., 18 gauge) needle was inserted at a 45° angle through the body wall of the bloated fish. The venting tool was held in place long enough to allow the expanded gases from the ruptured swim bladder to escape.

Tag returns were monitored to obtain estimates of survival. For all analyses only tag and recapture data that were complete for the analyses conducted were used. This evaluation of survivorship was accomplished by integrating new data into those of MML's ongoing long-term Reef Fish Tagging Program, data, which have proved very reliable (Schirripa and Burns, 1998). Returns from fish tagging can provide an effective means of estimating survival. This evaluation of survivorship can be accomplished by integrating the experimental design into MML's existing and long-term Reef Fish Tagging Program (discussion by Schirripa *et al.*, 1993; Wilson and Burns, 1996). The evaluation is especially useful for reef fish since they tend to exhibit a high degree of site fidelity (Wilson and Burns, 1996).

Task 2: Collection of biological samples (otoliths and gonads) for age and growth and reproduction analyses.

a. ***Age and Growth:***

Red snapper otoliths were collected aboard headboats by MML staff to determine age. Staff members extracted both the left and right saggital otoliths from the otic cavity. Otoliths from each fish were rinsed in fresh water and placed in labeled vials. Trip and fish data were recorded and included: sampling date, sampler's name, fish number, fork length (FL) in mm, total length (TL) in mm, gonad weight (g), sex, location (latitude and longitude), water depth (ft), catch time, and any comments. Following each trip, the staff member would sign over custody of the collected samples to the Otolith Specialist at which time the otoliths were inspected, given a unique number and logged in, and air dried. Trip data and sample numbers were entered using an Excel spreadsheet.

Otoliths were air-dried for 24 hours, and each left otolith was mounted onto a glass microscope slide using Crystal Bond adhesive; the right otolith was archived. An Isomet, low-speed, diamond blade saw, with three blades and two spacers, was used to cut two transverse sections (including the core) from each otolith. Both sections were mounted on the same slide as the cut otolith. Flo-Texx liquid cover was applied to the sections as a clearing agent, to remove all abrasions from the saw and to enable easier reading of the otolith sections. Slides were air dried for 24 h and were read using a dissecting microscope. The opaque rings, representing annuli, were counted from the core to the edge of the otolith. Edge codes were assigned according to the Gulf State Marine Fisheries Commission (VanderKooy and Guiden-Tisdel, 2003). After the annuli were counted and the edge code assigned, age was estimated to the nearest year. All otoliths were read twice. Data including trip information as well as unique otolith number, annuli count, edge code, and corresponding age were entered on a PC computer using Paradox. Slides were archived. Some slides were sent to NMFS-Panama City for quality assurance readings. The Otolith Specialist attended the yearly Gulf States Marine Fisheries Commission's Otolith Workshop in St. Petersburg, FL. Von Bertalanffy growth curves were calculated for pooled data sets following the equation:
$\mathbf{dl/dt = k[L\infty - l]}$ (Cushing, 1981) and minimizing the sum of the square residuals.

b. ***Reproductive Biology:***

Most gonadal samples were collected from red snapper caught on hook and line from headboat and commercial vessels, although a few were collected from fish caught on recreational boats. Four regions of Florida were sampled for reproductive biology analysis: Florida east coast (St. Augustine to Melbourne), the Dry Tortugas, Florida west coast (Cedar Key to Ft. Myers), and the Panhandle (Panama City area). The total length (TL, mm), fork length, (FL, mm), and gonad weight (GW, 0.1 g) were recorded for all fish collected for reproductive biology

analysis. Total weight (W, 1.0 g), when not recorded, was calculated using length-weight regressions developed by Nelson and Manooch (1982) for Florida east and west coast red snapper (Table 1).

Table 1. Length-weight regression equations used to calculate total weight of red snapper from four regions in Florida. Equations from Nelson and Manooch (1982).

Region	Equation	Applied to
East Coast	$W = 0.00136 * (TL^{3.017})$	East Coast
West Coast	$W = 0.00182 * (TL^{2.966})$	Panhandle, West Coast, Tortugas

Gonadal tissue was removed from fresh specimens within eight hours of capture. Most fish were sampled immediately after the vessel had docked. Fish that were captured during longer trips were sampled immediately. After removal, gonadal tissue was weighed and fixed whole in 10% neutral buffered formalin (NBF), and shipped to the University of Southern Mississippi (USM) laboratories for subsequent processing and analysis. At USM, gonadal tissue was re-weighed and a 1 cm^3 piece of tissue from the midsection of one gonad was placed in a cassette and stored in 10% NBF prior to histological processing. A 5 – 10 g piece of tissue from ovaries containing hydrated oocytes or oocytes undergoing final oocyte maturation (FOM) was removed, weighed (0.1g), and preserved in 10% NBF in a separate, labeled jar for fecundity analysis. Gonadal tissue for histological analysis was rinsed overnight in tap water, dehydrated in a series of graded ethanol, cleared, and embedded in paraffin following standard histological techniques. Tissues were cross sectioned at 4μm, mounted on slides, and stained with hematoxylin and eosin. Slides of ovarian tissue were inspected at 40X and 100X, and all oocyte stages, FOM stages, and postovulatory follicle (POF) stages were counted in one 100X field of view. The POF were staged following Hunter and Macewicz (1985), and FOM oocytes were staged following Brown-Peterson *et al.* (1988). Ovarian maturity was assigned based on Brown-Peterson (2003) and included the immature, early maturation, mid maturation, late maturation, FOM, regression, and regressed classes. Testicular tissue was inspected at 100X and 400X, and all stages of spermatogenesis present in the section were recorded. Testicular maturation was assigned based on criteria outlined by Brown-Peterson (2003) and included the early maturation, mid maturation, late maturation, regression, and regressed classes.

Fecundity was determined following the volumetric method (Bagenal and Braum, 1971). Ovarian tissue was rinsed in tap water overnight, and all oocytes were teased from the ovarian walls and membranes with gentle scraping. The oocytes were suspended in 200 – 300 ml of water, and six replicate 1-ml sub-samples were removed for fecundity determinations. All oocytes >600 μm representing the largest batch of oocytes (those undergoing FOM and/or hydrated) were counted in each sub-sample, typically, 40-90 oocytes. Fecundity is expressed as both batch

fecundity (mean number of eggs/batch) and relative fecundity (mean number of eggs/g ovary-free body weight (OFBW)).

The gonadosomatic index (GSI) was calculated for each fish as follows: GSI = (GW/OFBW)*100. Spawning frequency was estimated for females in the late developing and FOM gonadal maturation classes (i.e., spawning-capable females) on the basis of the percentage of females with oocytes undergoing FOM, following procedures used by Brown-Peterson and Warren (2001).

Task 3: To test the hypothesis that circle hooks will greatly reduce release mortality in red snapper.

This task was accomplished by asking volunteer taggers participating in this research to alternate their hook type between circle and J hooks during fishing trips. MML staff provided 4/0 circle hooks (donated to the project by EagleClaw) to participants. Participants were asked to tag and release red snapper alternating J and circle hooks per trip, and were kept informed of preliminary results in the MARFIN funded RFSS newsletters.

Task 4: To obtain catch and release mortality values relative to depth and gear for red snapper.

Tag and recapture data obtained during *Task 1* were used to determine survival of red snapper based on rates of recapture. Fish were captured by rod and reel, electric rod and reel, and long-line, tagged, and released by volunteer taggers. Recaptures were segregated by gear type and depth for comparison.

Task 5: To determine tag-shedding values for red snapper tagged with single-barbed dart tags.

Tag shedding data were obtained by conducting double tag experiments. Fish were tagged with two tags, a passive integrated transponder (PIT) tag and a Hallprint® plastic dart tag. Tag shedding rate was estimated from the frequency at which fish were originally double tagged and were returned with only one tag. PIT tags measuring 11 mm x 2 mm diameter were injected using modified hypodermic syringe/needles into the musculature directly behind a Hallprint® plastic dart tag. The PIT tags consisted of a microchip contained in a glass capsule about the size and shape of a grain of wild rice. The tag was read by a reader instrument (Figure 3) that energizes the chip by an inductive field. The microchip transmitted a unique digitally-coded signal that was

Figure 3. Scanning a red snapper for the presence of a PIT tag.

picked up by the reader instrument. When a microchip was detected, the reader instrument beeped and provided a digital readout of the tag number. The Hallprint® plastic dart tag was a single barb with an attached orange plastic streamer.

MML staff and student interns aboard headboats scanned all red snapper caught in areas where the double tagging experiment was conducted. Tag shedding rates were estimated using the number of returned PIT/Hallprint® tagged fish that shed their dart tags. All tagging data were entered at MML on a PC computer using Paradox software.

Task 6: To obtain movement and migration patterns for red snapper in the Gulf of Mexico and South Atlantic.

Red snapper tag and recapture data were used to examine fish movement patterns in both the Gulf of Mexico and along the east coast of Florida. Data were analyzed for general distributional trends. Red snapper movement was mapped by plotting capture and recaptures using GIS and by calculating distance between points. The spatial resolution of reporting (one minute of latitude and longitude) imposed restrictions on this analysis, so only distances greater than 3 km were used for analyses. A Chi square test was used to determine if fish size was related to movement. Tests were run for both Gulf and Atlantic fish. Directional movement trends were analyzed using polar plots and Rayleigh tests (Zar, 1999). Significance of directional movement at multiple scales was determined using data from all red snapper that moved more than one minute in latitude and longitude. A subset of those fish that moved more than the median of 9.46 km was tested separately.

Spatial analyses were conducted using ArcInfo 9.0 (ESRI, 2004). Ancillary data, such as bathymetry, were acquired from the state of Florida's Geographic Data Library. Movement data were projected in local UTM NAD 83 coordinate systems (16N and 17N in the Gulf and 18N in the Atlantic). Sigmaplot, Oriana, and GEODISTN (Syrjala, 1996) were used to perform statistical analyses.

Initial analyses were conducted to determine distributional trends within regions and size distribution among regions. Since data were non-normally distributed (Shapiro-Wilks W test; $P>0.05$), tests for significance of size differences between regions were conducted using a Kruskal-Wallis one-way analysis of variance. Correlations between fish size and distance to shore were examined with Gulf regions grouped and examined independently of the Atlantic regions.

Movement was mapped by plotting capture and recapture(s) locations within our GIS area and calculating the distance between initial capture and each successive recapture location. Movement was assumed to be in a straight line and instantaneous regardless of temporal separation between initial capture and subsequent recapture(s). Analysis was necessarily restricted to the spatial resolution (one minute of latitude and longitude) reported by participants, thus only

movement greater than this precision was included. A Chi square test was used to determine whether fish size was related to movement. Tests were run for both the Gulf and the Atlantic fish. Because median fish size in Florida Gulf of Mexico was significantly larger than those in the rest of the Gulf and because there is no recently published work on reproductive sizes of the red snapper in this area, the region was excluded from this statistical procedure. To test remaining fish, three size classes were created based on reported FL size at first reproduction (Woods *et al.*, 2003; White and Palmer, 2004). In the Gulf, these classes were defined as 1.) < 273 mm 10.75 in), 2.) ≥ 273 mm (10.75 in) – < 356 mm (14 in), and 3.) ≥ 356 mm (14 in). Atlantic size classes were defined as 1.) < 381 mm (15 in), 2.) ≥ 381 mm (15in) – < 432 mm (17 in), and 3.) ≥ 432 mm (17 in).

Directional movement trends were described using polar plots and analyzed using Rayleigh tests (Zar, 1999). Significance of directional movement at multiple scales was determined using data from all red snapper that moved more than one minute latitude and/or longitude. A subset of those fish that moved more than the median of 9.46 km (5.88 mi) was tested separately. Too few fish (n = 6) were recaptured in the Gulf, so these fish were excluded from this analysis.

B. PROJECT MANAGEMENT

Ms. Karen Burns (*MML Staff Scientist & Fish Biology Program Manager)* served as Principal Investigator and Project Manager. She provided overall supervision of the project ensuring that all work was completed in accordance with the S.O.W. She served as liaison among MML, NMFS, and USM-GCRL. Ms. Burns was responsible for the supervision of the laboratory and field research, reports, and newsletter publication.

Ms. Nancy Brown-Peterson (*Research Associate, USM-GCRL*), Co-Principal Investigator, was responsible for all reproductive biology work associated with this project, including reading and analyzing each histological slide for gonadal maturation class and reproductive seasonality, determining spawning frequency, and providing estimates of batch fecundity. She was responsible for photodocumentation of the reproductive biology section of the project. Ms. Brown-Peterson participated in report and manuscript preparation and publication. Ms. Brown-Peterson is currently PI or co-PI on two NMFS-sponsored reproductive biology studies (NA04NMF450208, black grouper; NA04NMF4540411, blue marlin) and has over 25 years experience with fish reproductive biology.

Dr. Robin Overstreet (*Professor, Department of Coastal Sciences, USM-GCRL*) was a Co-PI and served at no cost to the project. He was responsible for preparation of tissues and sectioning, participated in the analysis of sectioned gonadal tissues and preparation of reports and publications dealing with the GCRL aspect of the studies. He has been at GCRL since 1969, and although his primary interest has been parasites and diseases, he has been heavily involved with the biology and morphology of many of the host animals

including red snapper, groupers, mullets, sciaenids, and cobia. In addition to being Co-PI on the two MARFIN studies (NMFS, NA17FF2010 and NA17FF2881), he is a Co-PI of NMFS NA17FU2841 (blue crab), and Principal Investigator on USDA CSREES Grant No. 2002-38808-01381 (shrimp farming), and NSF Award Nos. 0508856, 0529684, and 0608603 (fish digeneans).

Mr. Nicholas Parnell (2002-2005) (*MML Senior Biologist*) participated in biological sample collection, tag/release, and fish measurement. Mr. Parnell was one the MML staff supervisors aboard headboat trips. He was responsible for biological sample data, making sure data were entered into the computer and that all samples were properly shipped to USM-GCRL. Mr. Parnell conducted initial mortality necropsies. He was also responsible for ensuring all field research protocols were followed. Mr. Parnell was responsible for preliminary and some final data analyses.

Mr. Jay Sprinkel (*MML Senior Biologist*) served as the data manager for this project. As such, he was responsible for supervising data entry, setting up files, and producing graphs and tables for newsletters, reports, and presentations.

Mr. Peter Simmons (*MML Staff Biologist*) was responsible for data entry and ensuring all recaptured information from volunteer taggers as obtained. Mr. Simmons participated in tagging trips aboard various headboats. He tagged and released undersized target species at sea, measured any legally kept fish, and removed biological samples.

Mr. Roger DeBruler (*MML Staff Biologist*) participated in headboat tagging trips. He tagged and released undersized target species at sea as well as collected otoliths and gonads for age, growth, and reproduction analyses. Mr. DeBruler taught interns proper procedures for tagging and sample removal while aboard vessels. He also acted as liaison between headboat captains and MML staff by setting up trips in various locations around the state of Florida. In addition, Mr. DeBruler was responsible for data QA.

Ms. Tanya Merkle (2002-2004) and Ms. Carolyn Weaver (2005-present) (*MML Staff Biologists*) were responsible for the layout of the articles about the project in the newsletter and formulated the data sheets. Both kept an inventory of all supplies and ordered needed supplies. Ms. Merkle and Ms. Weaver aided communication between anglers reporting recaptured fish and MML. Ms. Merkle and Ms. Weaver participated in some headboat tagging trips and data entry as well. In addition, they contacted tag lottery winners and were responsible for ensuring they received their prize. Ms. Merkle and Ms. Weaver were also responsible for student intern supervision. Ms. Weaver was responsible for some final analyses as well as final report preparation.

Ms. Teresa Starks-DeBruler (*MML Otolith Specialist*) processed the otoliths collected. She was also responsible for otolith data entry and ensured all otoliths were collected and processed according to the Gulf States Marine Fisheries Commission (GSMFC) otolith manual. Ms. Starks-DeBruler was responsible for coordinating all work with Steve

VanderKooy of the GSMFC. She has been a regular participant (including the 2006 meeting) at the GSMFC Otolith Workshop held yearly in May in St. Petersburg, FL.

Ms. Janet Gannon (*MML GIS Specialist*) carried out the GIS and fish movement analyses for the project. She transferred data into GIS format and mapped sampling locations and recapture sites to plot fish movements.

MML Volunteers and Student Interns helped MML get the biological samples ready for shipment, sort and package sampling and research supplies, photocopy datasheets, and help with mobilization and demobilization for fishing trips. Volunteers and interns also participated in tagging trips aboard headboats, data entry, recapture data retrieval, and data QA. Two veterinarian volunteers performed some of the necropsies.

FINDINGS

A. ACTUAL ACCOMPLISHMENTS AND FINDINGS

Task 1: To test the hypothesis that red snapper will survive depth-induced trauma.

a. *Quantification of Undersized and Legal Catch:*

1. Legal vs. Sub-legal Fish Measurement

A total of 1,130 red snapper were measured but not tagged during the project. They included 709 legal-sized fish and 421 undersized fish. Fish measurements came from the recreational-for-hire and recreational red snapper fisheries in the Gulf of Mexico from Pensacola to the Dry Tortugas and in the South Atlantic Ocean from Port Canaveral to St. Augustine. MML staff and student interns and some headboat captains and crew measured red snapper caught aboard headboats. Fish measurements from the recreational and charter sectors were made by volunteer fishers and charter boat captains and crew. Measurements consisted of both sub-legal and legal fish that were not tagged. All sub-legal fish were released. Some legal fish were kept and others released dependant upon season closure and bag limit (Figures 4 & 5). For comparison, data from the entire MML database was added (Figures 6 & 7).

* Figures 4 – 7; Those data without sector or area were omitted.

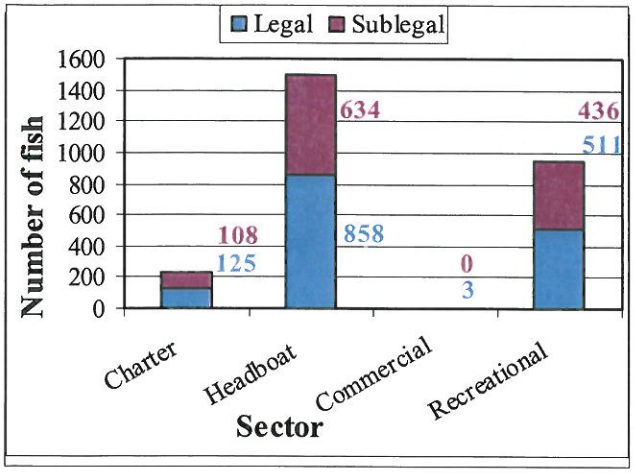


Figure 6. Number of red snapper measured/released (not tagged) or measured/kept by sector for entire MML database.

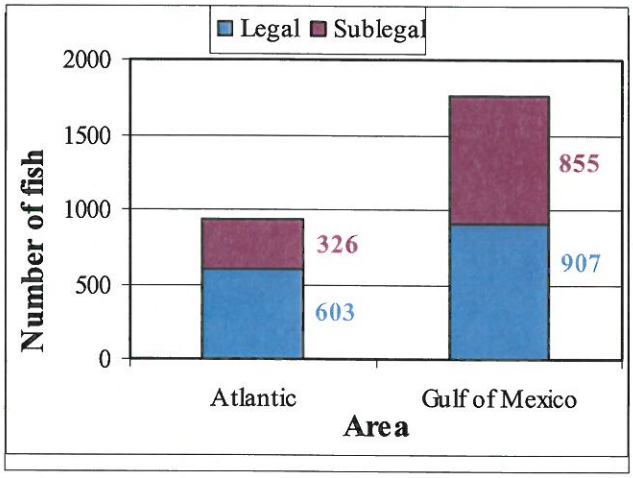
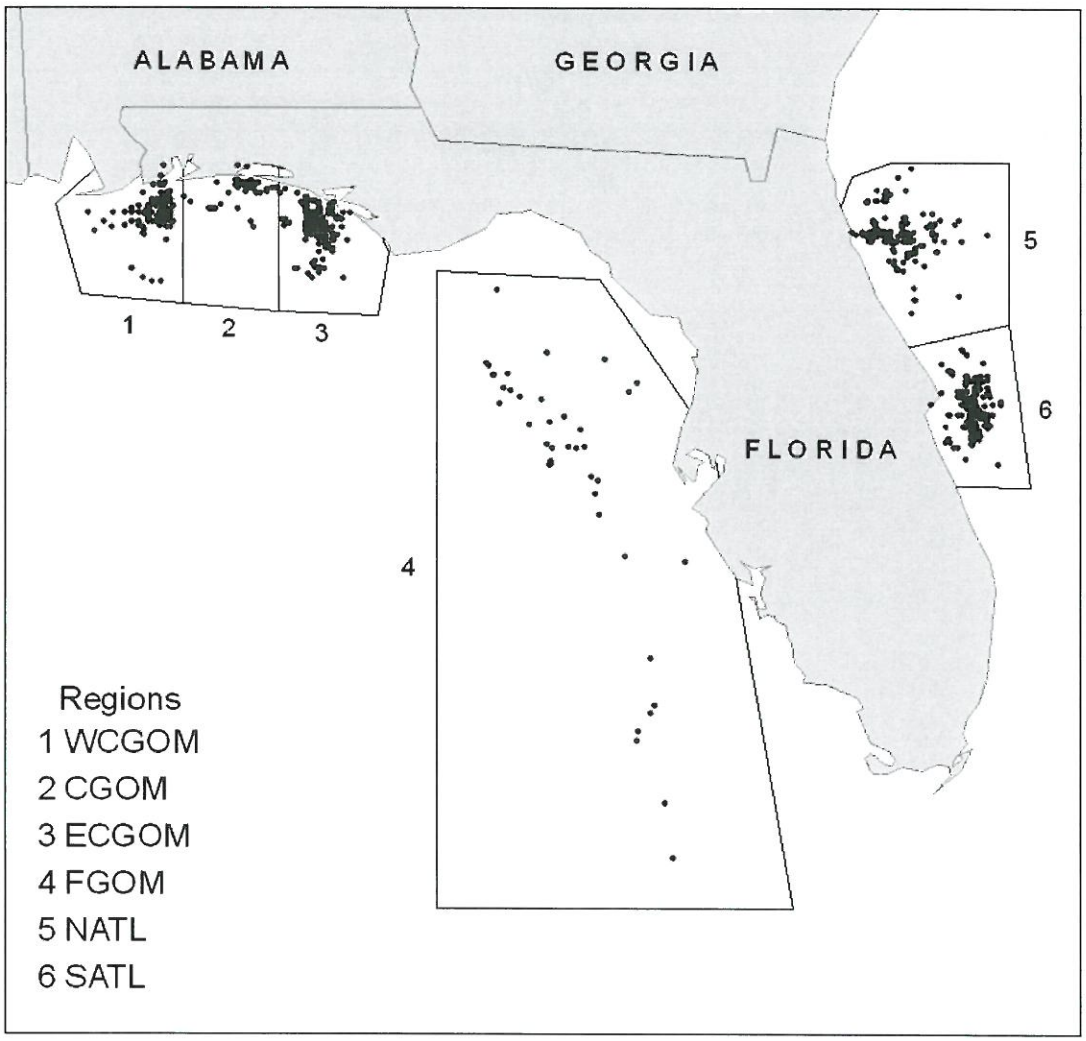


Figure 7. Number of red snapper measured/released (not tagged) and measured/kept by area for entire MML database.

2. Size Distribution

Figure 8 illustrates both the areas where red snapper were tagged and released, measured, and sampled. Captured fish were clustered into six distinct regions due to proximity to ports. Two regions were along the Florida east coast, 1) North Atlantic (NATL) situated off St. Augustine and 2) South Atlantic (SATL) located off Cape Canaveral. Four regions were in the Gulf of Mexico: three were located on the narrow central Gulf shelf and one on the broader Florida west shelf. The Gulf regions were designated as 1) West Central Gulf of Mexico (WCGOM), 2) Central Gulf of Mexico (CGOM), 3) East Central Gulf of Mexico (ECGOM), and 4) Florida Gulf of Mexico (FGOM). Regions are illustrated in greater detail in Figure 9. Red snapper sampling sites, bathymetry, location on shelf contours, and distance are shown.



Region	Total Fish	Median FL (in)	Mean FL (in)	S.D.
WCGOM	1449	12.0	12.7	2.1
CGOM	1139	14.0	13.4	1.9
ECGOM	2213	12.8	12.6	2.1
FGOM	125	15.3	15.8	3.7
NATL	2585	15	15.0	2.8
SATL	1636	15.5	15.5	2.5

Figure 8. Red snapper study sites where fish were tagged, sampled, and measured. Sites were divided into regions based on fish lengths.

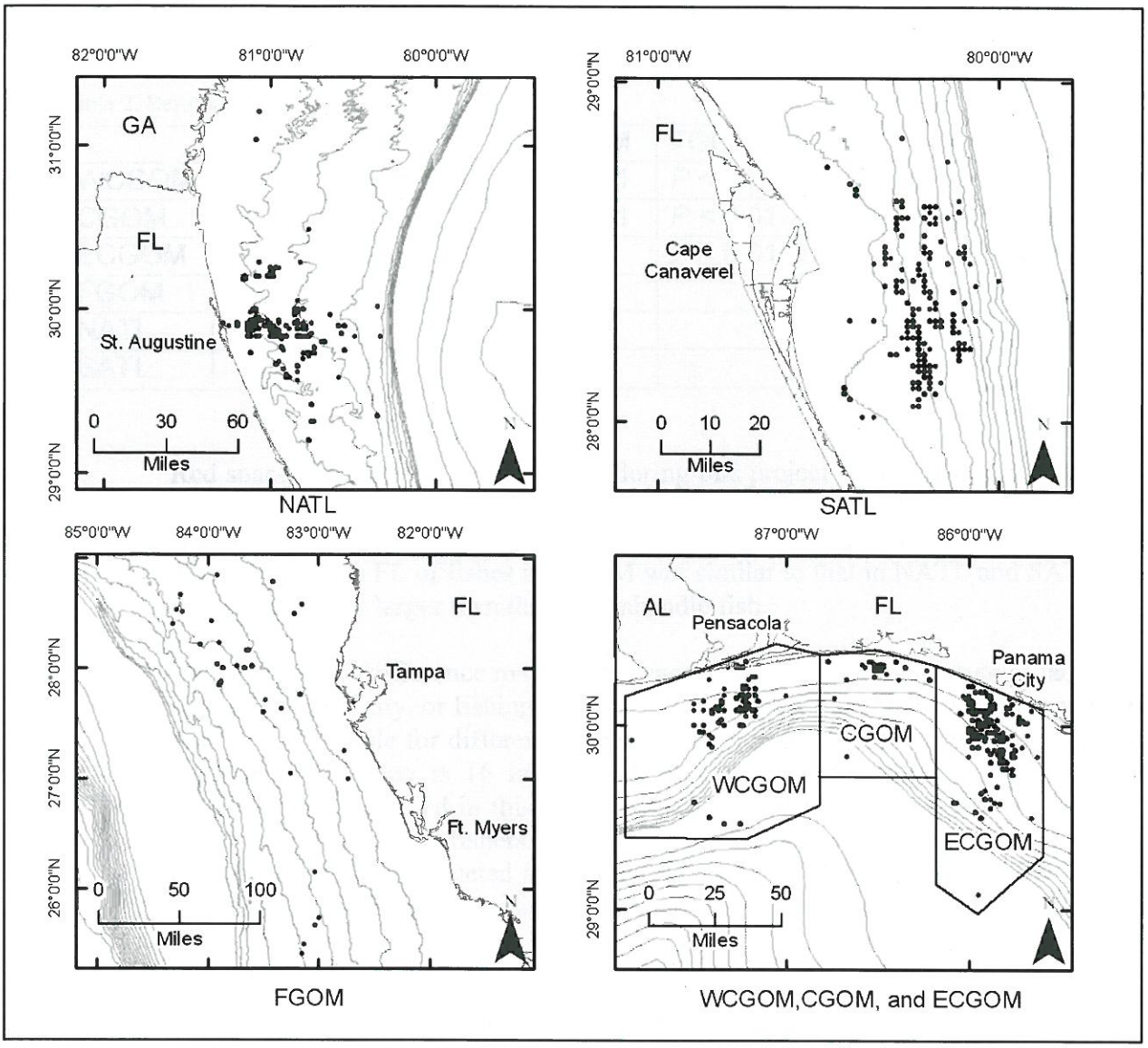


Figure 9. Six distinct regions where fish captures were clustered.

Size distributions were non-normal in all six regions. Median fish size was largest in FGOM, followed by NATL and SATL, while the smallest median fish sizes were found at WCGOM, CGOM, and EGCOM. Red snapper lengths from each region were compared using a Kruskall-Wallis rank sum test. Results showed there were significant differences in length among regions:

$X^2_{0.5,5}=2141.9$, $p<0.001$

A Dunn's Post hoc test was run to determine if there were differences among the regions (Table 2). Size distributions indicated that NATL, SATL, and FGOM were not significantly different ($P>0.05$, $df=5$). Comparatively, WCGOM, CGOM, and

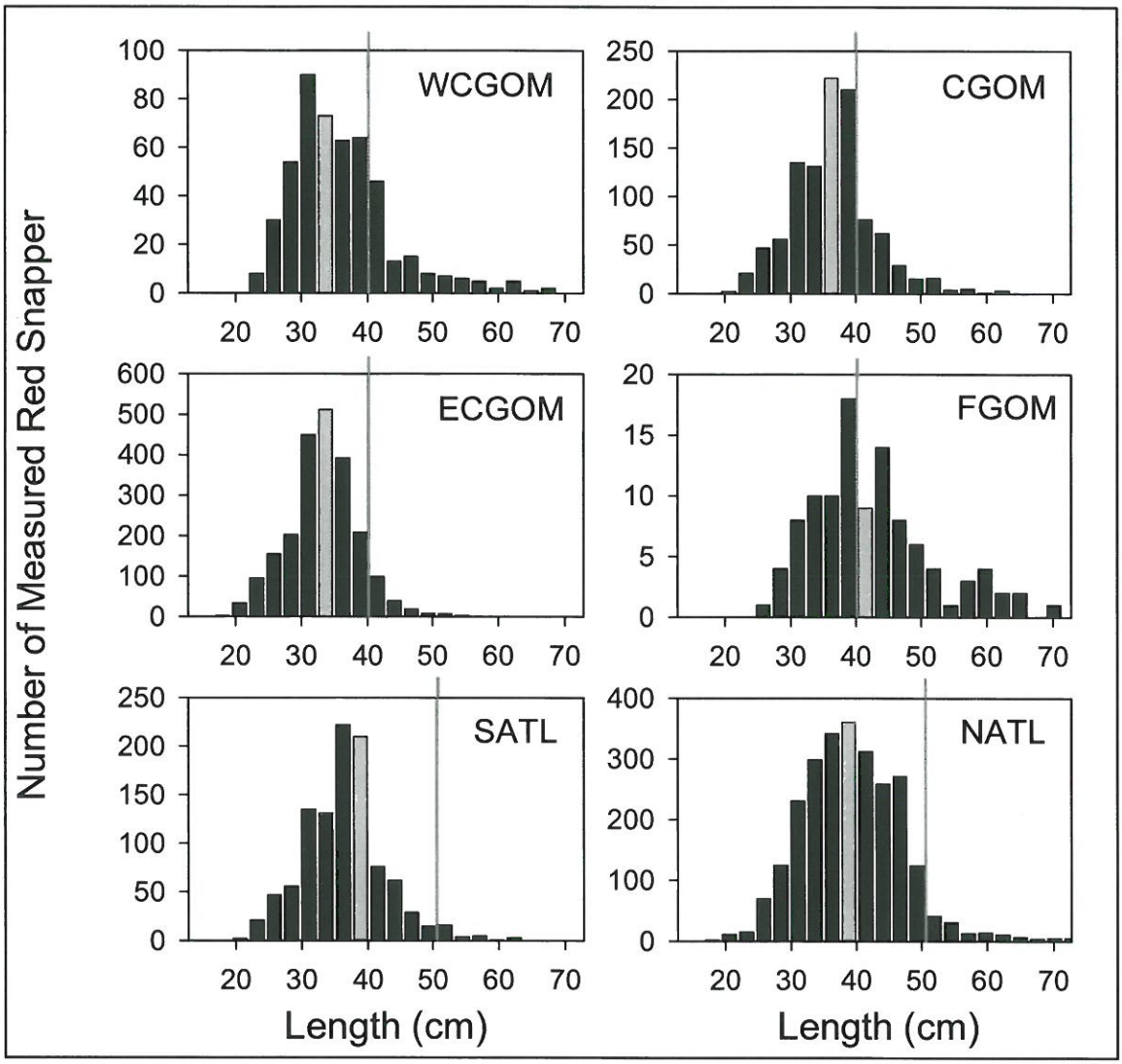


Figure 10. Length/frequency of red snapper by area showing differences in the legal size limits (solid line) and median class size (light grey bar) among locations.

3. Release Condition

Data on release condition of red snapper discards were collected. Information included date, data type (fishing sector), hook type, water depth, and release condition and observed predation. A 28-page table which includes these data for each individual fish is in the Appendix. In summary, data were collected for 590 red snapper discards over three depth ranges (0 – 12.5 m, 21.6 – 30.8 m, and 30.8 m and deeper). Table 3 shows that at all depths combined, 76% swam straight down, 13% swam down slowly, and 11% floated.

Table 3. Summary of red snapper discard release observations by depth

Depth (m)	Release Observation	Number of Fish
0 - 12.5	Floating	1
21.6 - 30.8	Straight Down	329
	Down Slowly	51
	Floating	44
30.8 +	Straight Down	122
	Down Slowly	24
	Floating	19

b. ***Initial Mortality:***

A total of 171 undersized red snapper suffered acute mortality during 11 headboat trips, and these were brought back to the laboratory for necropsy. Of the 171 mortalities, 23 died from rapid depressurization, 64 from stress (heat and handling), improper venting, and undetermined causes; however, most (84) fish died from J hook damage (Figure 11). Most of the trauma from J hooks was caused by the hook either puncturing the heart or the liver, depending on the orientation of the hook when swallowed.

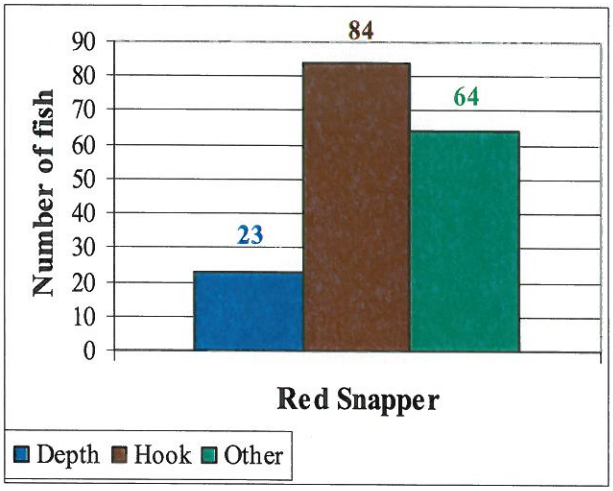


Figure 11. Causes of death as determined by necropsy for red snapper acute mortalities.

c. ***Fish Tagging:***

Of the 4,090 red snapper that were tagged and released in the Gulf of Mexico (n = 2,100, including 2 multiple recaptures) and South Atlantic Ocean (n = 1,992) during this project, 355 (Gulf = 147 and South Atlantic = 208) fish were recaptured. An additional 40 fish that had been tagged previously were reported as recaptured during this project.

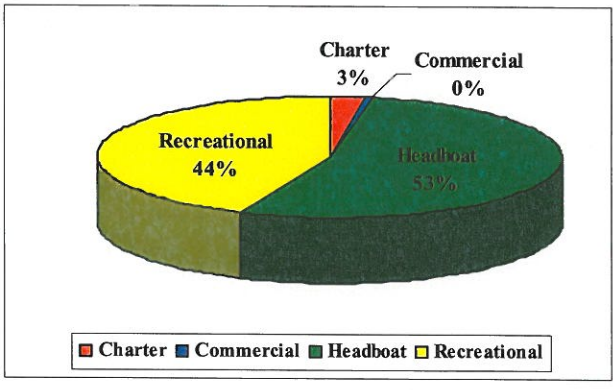


Figure 12. Percent of red snapper tagged by fishing sector. (Fish with no data type recorded were omitted.)

Because of this, some analyses in this report include data from previous red snapper research. Including fish tagged during this project, the total number of tagged red snapper in the MML database is 8,600 (Gulf = 4,756 and South Atlantic = 3,849), and the total number of recaptures is 726 (Gulf = 318 and South Atlantic = 408).

Most tagged fish were caught aboard headboats and recreational vessels. Fish tagged during this project by sector included 107 off charter boats, 14 off commercial vessels, 2,202 off headboats, and 1,796 off recreational vessels (Figure 12).

Although there were 4,090 fish tagged during the project, there were 4,125 release events due to individual tagged fish being recaptured and re-released. Similarly, even though the total number of fish tagged in the MML database was 8,600, there were 8,701 release events. Number of releases by sector included 261 from charter boats, 34 from commercial vessels, 5,653 from headboats, and 2,589 from recreational sources.

Recreational and headboat fishing trips are often conducted closer to shore than commercial and some charter trips. Thus, red snapper releases occurred over the broad depth range of 9.9 – 81.7 m (32.5 – 268.0 ft). Figures 13 – 16 show release depths (m) by fishing sector during the project. The same information for all red snapper in the MML database is shown as Figures 17 – 20. Data for all red snapper tagged off commercial vessels are shown in Table 4.

Figures 13 – 20; Data without sector and/or tagging depth are omitted.

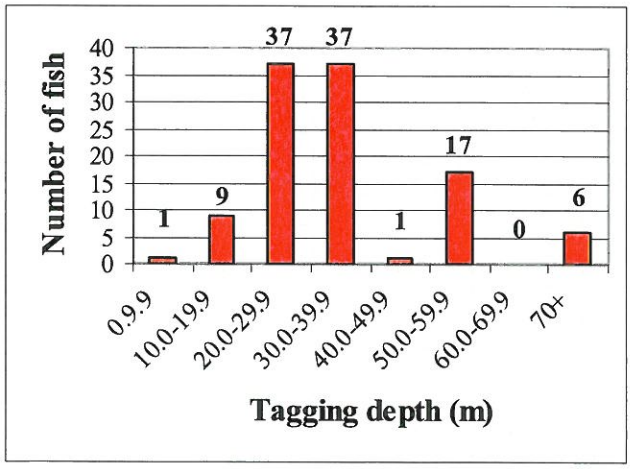


Figure 13. Total number of red snapper tagged and released on charter vessels by capture/tagging depth for duration of project.

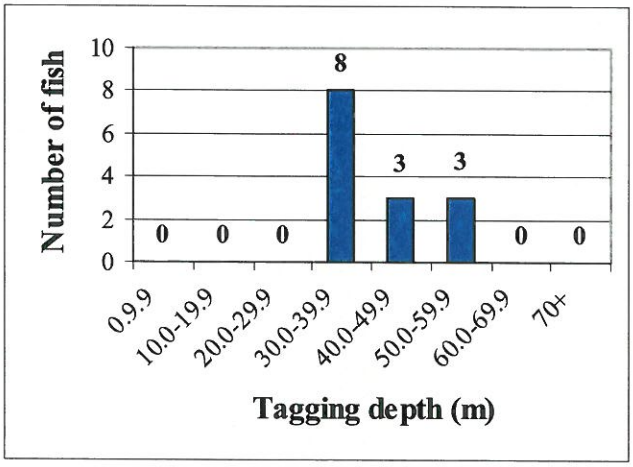


Figure 14. Number of red snapper tagged and released on commercial vessels by capture/tagging depth for duration of project.

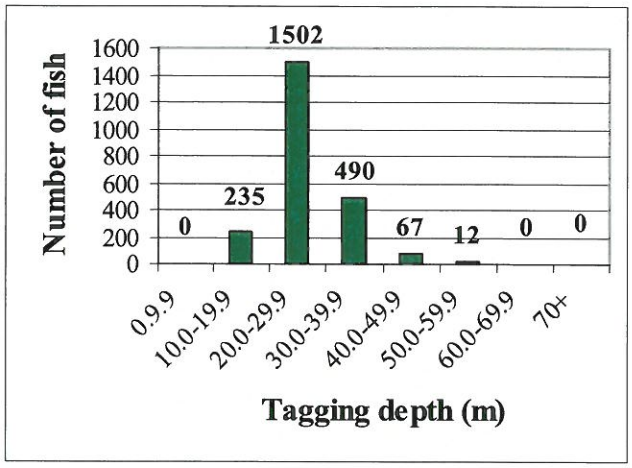


Figure 15. Number of red snapper tagged and released on headboat vessels by capture/tagging depth for duration of project.

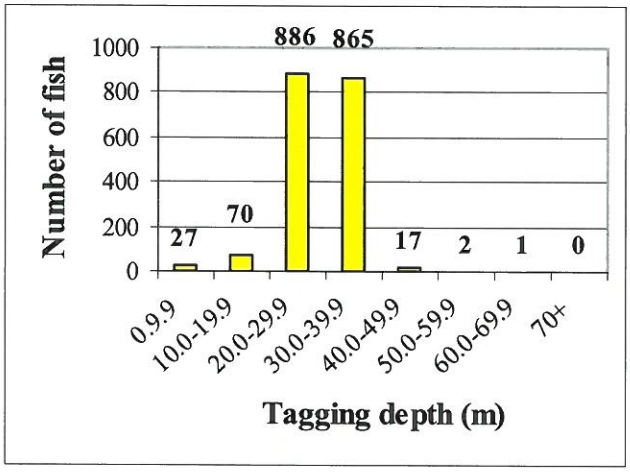


Figure 16. Number of red snapper tagged and released on recreational vessels by capture/tagging depth for duration of project.

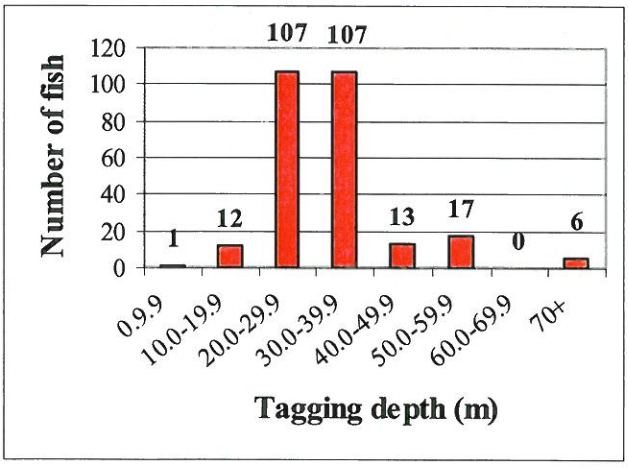


Figure 17. Number of red snapper using the entire MML database that were tagged and released on charter vessels by capture/tagging depth.

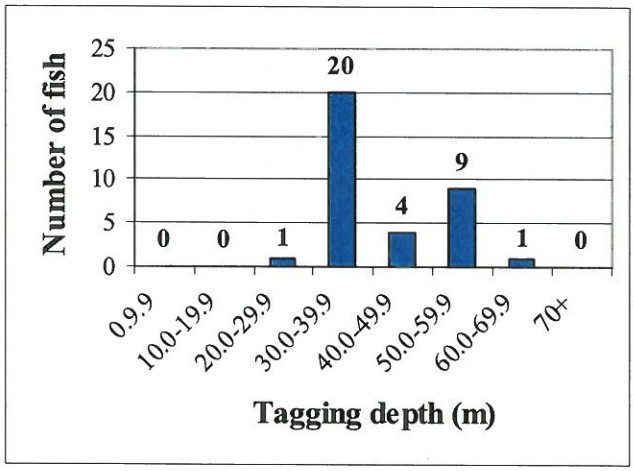


Figure 18. Number of red snapper using the entire MML database that were tagged and released on commercial vessels by capture/tagging depth.

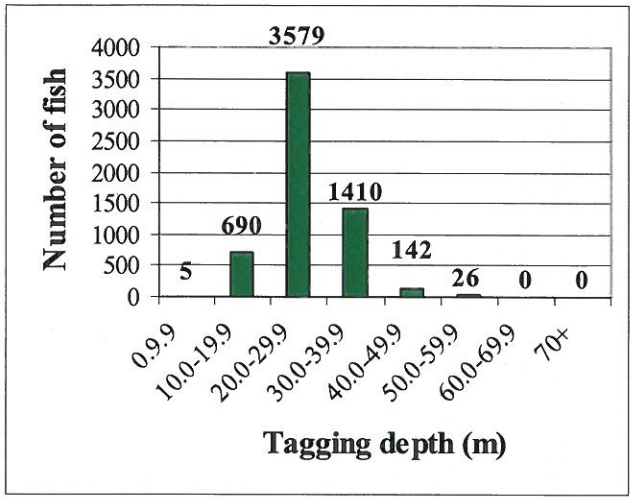


Figure 19. Number of red snapper using the entire MML database that were tagged and released on headboat vessels by capture/tagging depth.

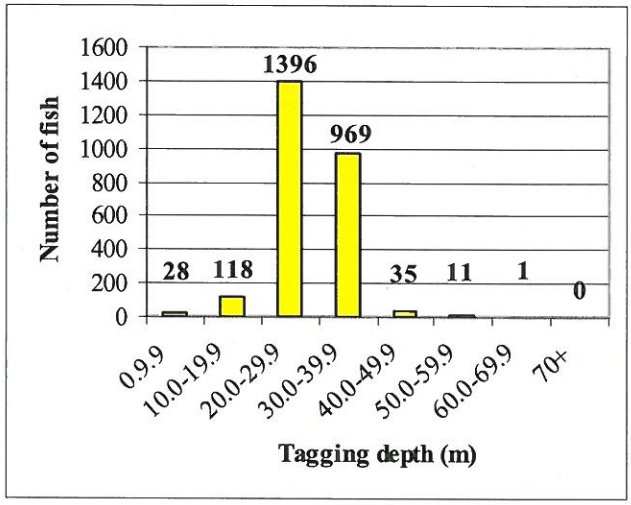


Figure 20. Number of red snapper using the entire MML database that were tagged and released on recreational vessels by capture/tagging depth.

Table 4. Break down of commercially tagged and released red snapper by gear type and depth.

Tagged Red Snapper Project Duration 10/1/02 - 9/30/06

Number of fish	Datatype	Gear type	Depth (m)
8	Commercial	RR	30.0 - 39.9
3	Commercial	ERR	40.0 - 49.9
3	Commercial	ERR	50.0 - 59.9

Tagged Red Snapper Entire Database 10/1/90 - 9/30/06

Number of fish	Datatype	Gear type	Depth (m)
1	Commercial	LL	20.0 - 29.9
9	Commercial	LL	30.0 - 39.9
11	Commercial	RR	30.0 - 39.9
3	Commercial	ERR	40.0 - 49.9
1	Commercial	RR	40.0 - 49.9
3	Commercial	ERR	50.0 - 59.9
6	Commercial	LL	50.0 - 59.9
1	Commercial	RR	60.0 - 69.9

LL = long-line
RR = rod and reel
ERR = electric rod and reel

The inclusion of volunteer participants from as many fishing sectors as possible provided data over various depth ranges. Not unexpectedly, data show that larger fish are found further offshore in deeper water. This agrees with the findings of Allman *et al.* (2002) that "larger and older fish" were most common in the commercial sector, since commercial fishermen operate in deeper, less accessible waters than recreational and recreational-for-hire sectors. This observation held true for most areas studied. The only exception in our study areas involved a group of red snapper caught by charter captains in the Dry Tortugas. Figure 21 shows mean distance from shore for tagged fish in the Atlantic and Gulf waters. Regression for all data points (dotted line) and another for the means (solid line) are shown. Both are shown because although there is a trend for bigger fish to be farther offshore, some larger fish were found closer to shore and some small fish occurred offshore.

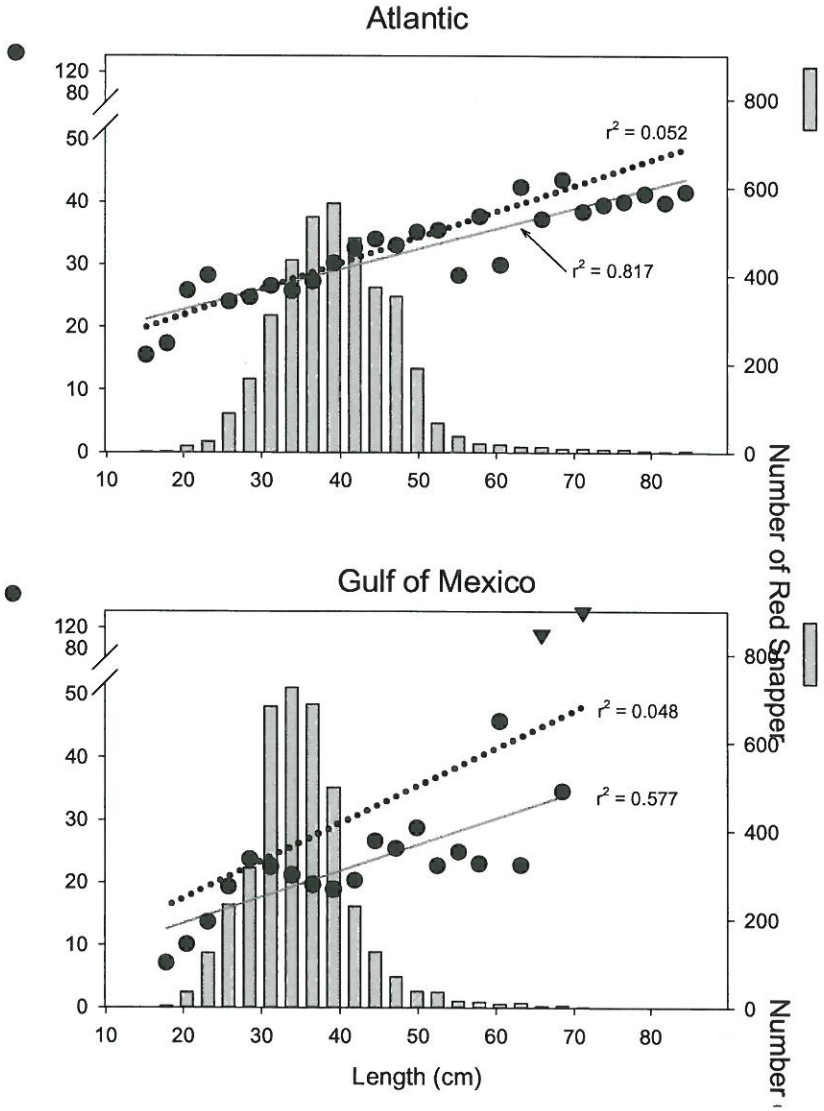


Figure 21. Mean distance from shore versus red snapper fork length (cm). Dotted lines represent the regression line of mean distance from shore by fish size, in 1-cm increments. Circles show mean distance from shore of each size class.

d. *Fish Recaptures:*

A total of 395 red snapper were recaptured during the project. In most cases, fish were tagged and recaptured by the same sector of fishers (Figure 22). The number of red snapper tagged, recaptured, and arranged by sector for this project and those in the MML database are shown as Figures 23 and 24. Data for the three (project duration and entire database) fish recaptured by commercial vessels are shown in Table 5.

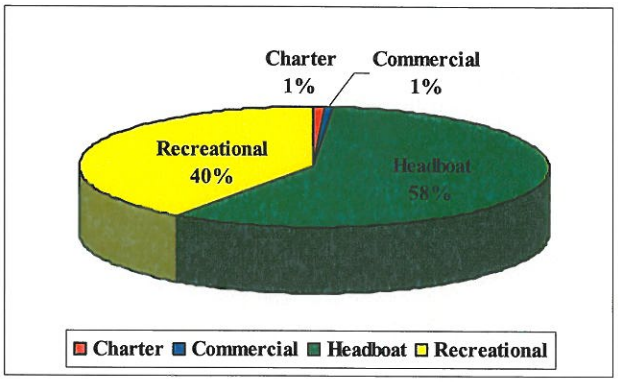


Figure 22. Percent of red snapper recaptured by tagging fishing sector.

Figures 23 – 26; Fish with no data type recorded were omitted.

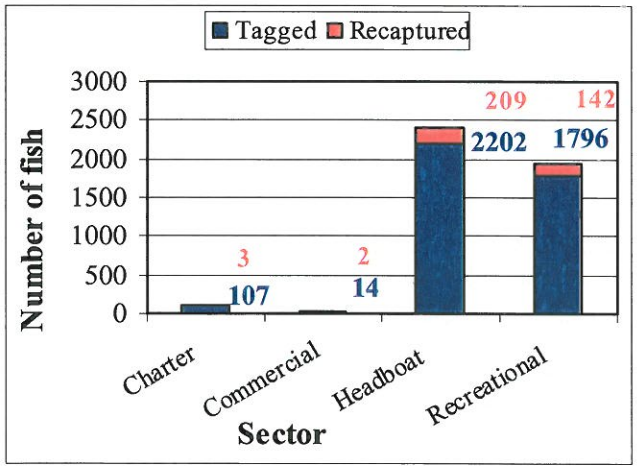


Figure 23. Number of red snapper tagged and recaptured by sector during the project.

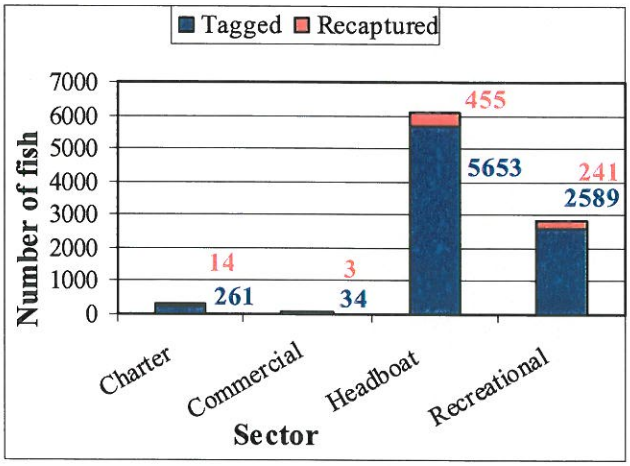


Figure 24. Number of red snapper tagged and recaptured by sector for entire MML database.

Table 5. Recaptured red snapper by commercial gear type and depth.

Recaptured Red Snapper Project Duration 10/1/02 - 9/30/06

Number of fish	Datatype	Gear type	Depth (m)	Recapture Gear type
2	Commercial	RR	30.0 - 39.9	RR

Recaptured Red Snapper Entire Database 10/1/90 - 9/30/06

Number of fish	Datatype	Gear type	Depth (m)	Recapture Gear type
1	Commercial	LL	50.0 - 59.9	RR
2	Commercial	RR	30.0 - 39.9	RR

LL = long-line
RR = rod and reel

Although only 108 more red snapper were tagged in the Gulf of Mexico than in the Atlantic Ocean, more fish were reported as recaptured from the Atlantic (Figure 25). The percentage of tagged and released fish returned in the Atlantic was 10.4% versus 7% for Gulf fish. This return value by area mirrored recapture values from the Atlantic (10.6%) and Gulf (6.7%) for all red snapper within the MML database (Figure 26).

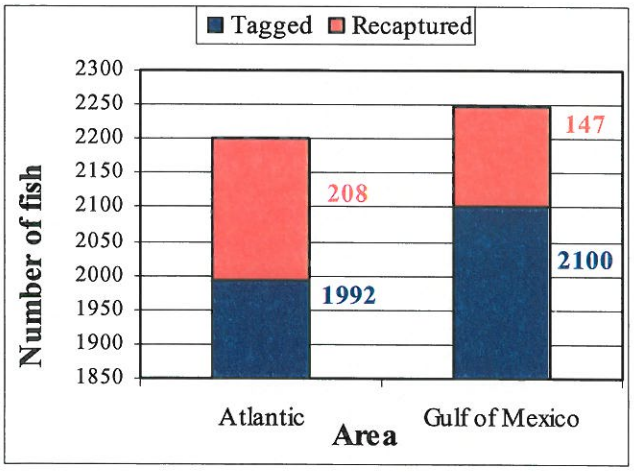


Figure 25. Number of red snapper tagged and released by area during the project.

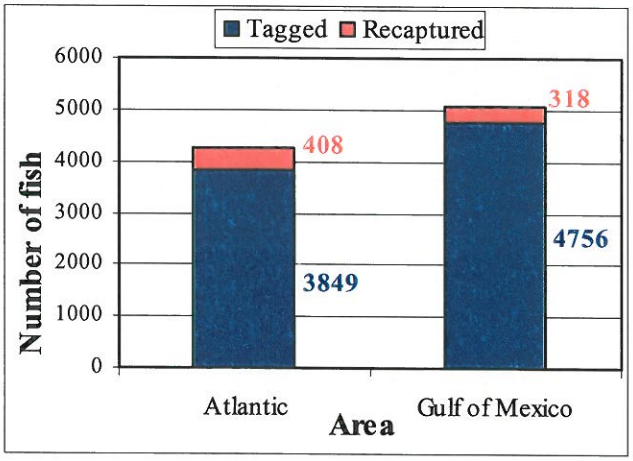


Figure 26. Number of red snapper tagged and released by area entire MML database.

Volunteer taggers in the northern Gulf have informed MML personnel that some red snapper recaptures are not reported. This is true for some red snapper landed by commercial fishers at Panama City fish houses and by some recreational-for-hire

vessels, especially headboats out of Panama City (Figure 27). The number of unreported recaptured fish is unknown, but it is expected to be significant because personnel on the specific boats that allow MML staff aboard to tag fish off Panama City do not report recaptures. Unless MML staff are aboard these headboats tagging fish, no recaptured fish is reported from these vessels. Since red snapper exhibit strong site fidelity (Szedlmayer and Ship, 1994; Watterson *et al.*, 1998; Patterson *et al.*, 2001a; Ingram and Patterson, 2001), one would expect more recaptures than are reported. No information regarding under-reporting of recaptured red snapper has been reported for Atlantic fish; however, it would be naïve to think that all Atlantic recaptures are reported. On the other hand, the most active MML volunteer red snapper tagger in the Atlantic is a headboat captain. He and his crew report all recaptures, which are usually the fish they originally tagged. Some of the disparity in recaptures is definitely due to under reporting in the Gulf. However, whether this difference in reporting is responsible for all variation in recapture values between both areas cannot be determined at this time.

Figure 27. The headboat, "Gemini Queen", one of the fleet of headboats that fishes off Panama City. MML staff have tagged many red snapper from this vessel.

Of the 395 red snapper recaptures during this project, 24 fish were recaptured twice (Figure 28). The total number of red snapper that were recaptured multiple times in the MML database is 45. Of these, 41 were recaptured twice and four were recaptured three times (Figure 29).

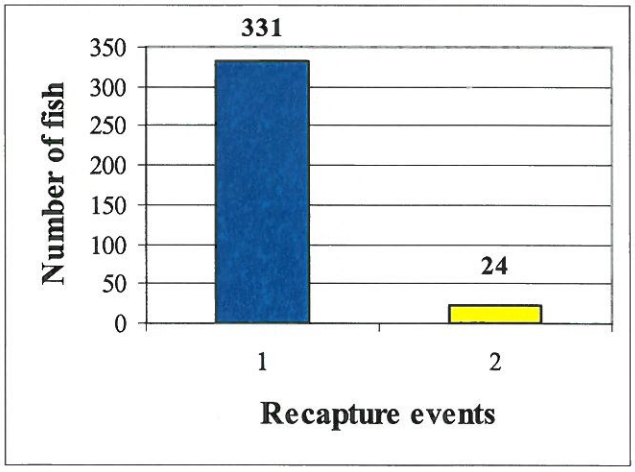


Figure 28. Red snapper recapture events during project.

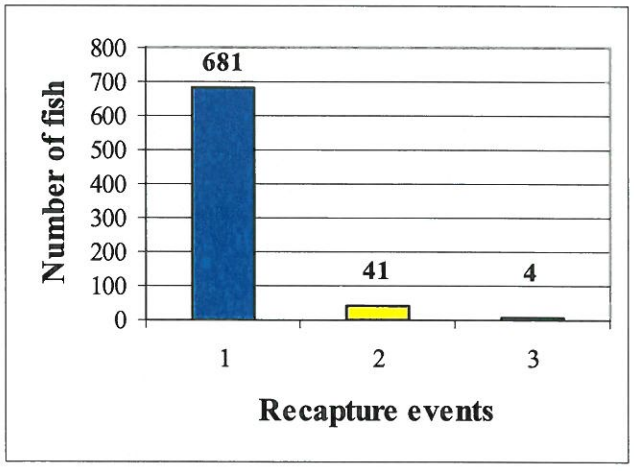


Figure 29. Red snapper recapture events for entire MML database.

During this project, most fish (350) were recaptured within the year they were tagged and released. Twenty-eight (28) fish were at large for almost two years and

one fish for a little less than three years (Figure 30). These results mirrored the trend of days of freedom for red snapper recaptures within the entire MML database. The majority of fish (679) were recaptured within a year of release. Seventy-six fish were at large for less than two years. All of the other recaptured fish (n = 6) were at liberty for less than six years (Figure 31).

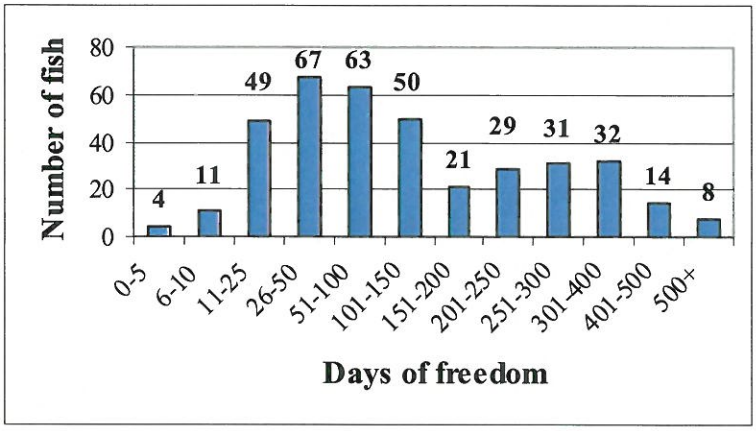


Figure 30. Days of freedom for red snapper tagged and recaptured during project dates. (Includes multiple recaptures.)

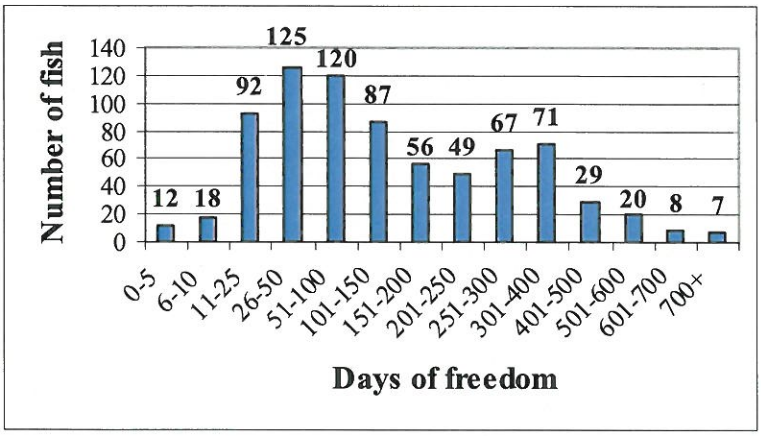


Figure 31. Days of freedom for all recaptured red snapper in the MML database. (Includes multiple recaptures.)

Most tagged red snapper were recaptured at the same or similar depths at which they were originally released (Figures 32). Results involving days of freedom showed that those data collected during the project agreed with those obtained from the entire MML database (Figures 33). These results were not unexpected as red snapper exhibit high site fidelity for long periods of time (Szedlmayer and Ship, 1994; Watterson *et al.*, 1998; Patterson *et al.*, 2001a; Ingram and Patterson, 2001).

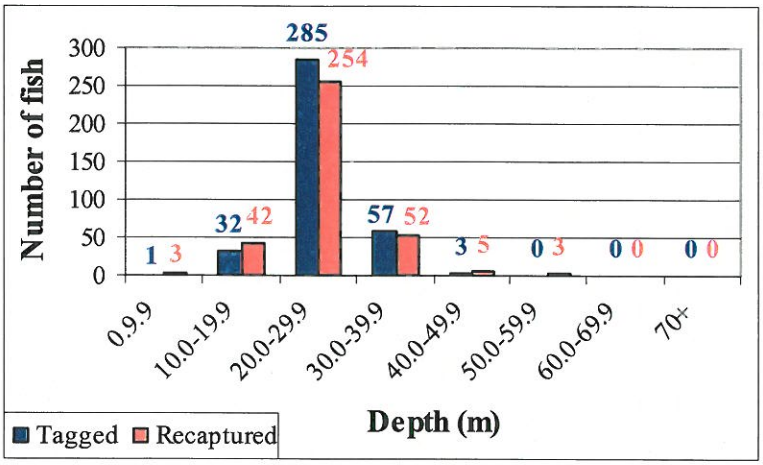


Figure 32. Original tagging and recapture depths for red snapper tagged and recaptured during the project.

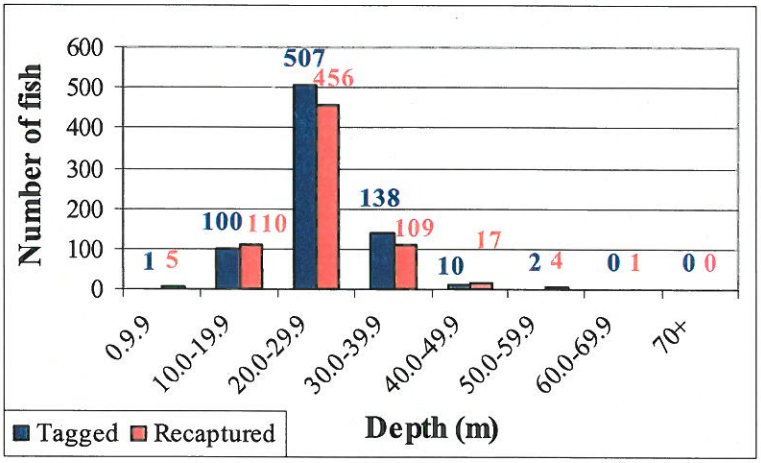


Figure 33. Original tagging and recapture depths for all red snapper recaptured in MML database.

Task 2: Collection of biological samples (otoliths and gonads) for age and growth and reproduction analyses.

a. ***Age and Growth***:

A total of 228 otoliths were collected from red snapper at various sites off Florida. The Gulf of Mexico was sampled in three locations: the Florida Panhandle (n = 68), south Florida Gulf (n = 67), and the Dry Tortugas (n = 90). In the South Atlantic off the Florida east coast, sampling focused off Cape Canaveral (n = 44) and St. Augustine (n = 18). Fish were divided into three subsets based on location: Panhandle, south Florida Gulf, and Atlantic. Panhandle fish ranged in age from 1 – 3 years with the majority of the fish being aged at two years. Lengths for these fish were 261 – 470 mm TL. Red snapper collected from the south Florida Gulf had a wider range of ages than Panhandle fish, with the majority collected in the 2 – 5 year range. These fish ranged in length from 343 – 800 mm TL. Atlantic caught red

snapper had the greatest age range, 1 – 17 years, but the majority of the fish caught were younger, ranging from 3 – 4 years. Length for the Atlantic fish ranged from 129 – 937 mm TL (Table 6).

Table 6. Number of samples, age range, and total length (TL, mm) range by sex for each area sampled.

Males			
	Number	*Age Range*	*TL range (mm)*
Panhandle	34	1-3	261-365
South Florida Gulf	47	2-7	343-742
Atlantic	27	2-8	234-810
Females			
	Number	*Age Range*	*TL range (mm)*
Panhandle	34	1-3	280-470
South Florida Gulf	56	2-6	410-800
Atlantic	35	1-17	129-937
Unknown			
	Number	*Age Range*	*TL range (mm)*
Panhandle	0	0	0
South Florida Gulf	54	1-6	390-760
Atlantic	0	0	0

Data were sorted into male (m) and female (f) subsets (Table 6). The small sample size in each of the six subsets precluded the calculation of meaningful growth models. The data were pooled into Gulf of Mexico and Atlantic groups and a von Bertalanffy growth curve was determined. Fish in the Gulf of Mexico were calculated to have an $L\infty = 1547.8$ mm, $k = .07$, and $t_0 = -2.4$. A scatter plot of actual lengths with the predicted curve is shown in Figure 34. Fish in the Atlantic were calculated to have an $L\infty = 1133.0$ mm, $k = 0.13$, and $t_0 = -1.1$. A scatter plot of the actual lengths with the predicted curve is shown in Figure 35.

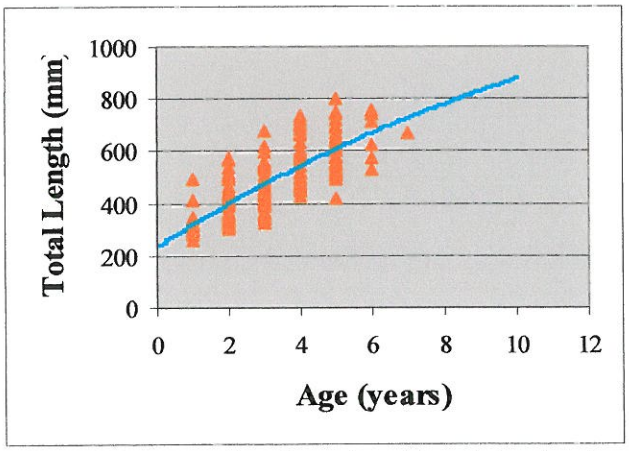


Figure 34. Scatter plot of actual total length (mm) and the predicted von Bertalanffy growth curve for all red snapper aged in the Gulf of Mexico during this project.

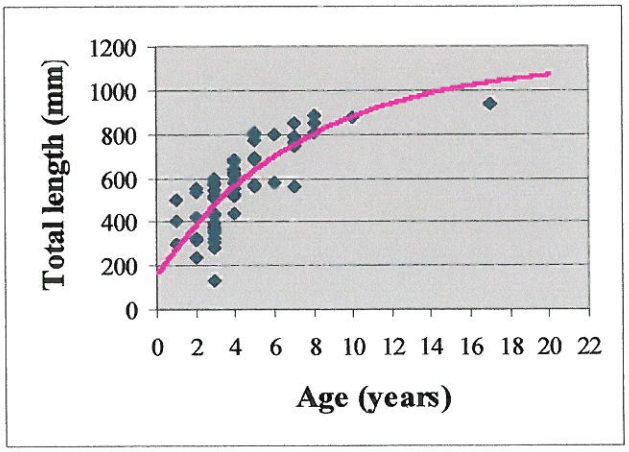


Figure 35. Scatter plot of actual total length (TL mm) and the predict von Bertalanffy growth curve for all red snapper aged in the Atlantic during this project.

The majority of fish caught during this study were less than five years old. Fifty of the Panhandle fish (74%), 74 of the south Florida Gulf fish (47%) and 29 of the Atlantic fish (47%) were between two and three years old. Although red snapper age within the Gulf of Mexico has been validated to up to 50 years of age (Baker, 1999), three and four year old fish were the most abundant size caught in 1998 – 1999 Gulf wide survey of all red snapper fishery sectors conducted by Allman *et al.* (2002). With such a high representation of young fish and little to no representation of older fish, legitimate assessment of growth cannot be made for the data collected. Additional discussion on this topic will be included in a manuscript currently in preparation. Continued sampling of these areas would increase sample size as well as fill in age gaps.

The small sample size collected result from circumstances including hurricanes and weather fronts, which postponed many trips and limited the amount of time to collect samples. However, the biggest obstacle was the absence of red snapper off the southwest coast of Florida. At the beginning of the project, red snapper were rare in the Gulf of Mexico off southwest Florida because they were in the process of re-recruiting within the area. Collection of Panhandle fish was only done as a QA procedure to compare our ageing techniques to published values (Nelson and Manooch, 1982; Szedlmayer and Ship, 1994; Patterson *et al.*, 2001a; Wilson and Nieland, 2001). Most fish captured in the Gulf of Mexico were juveniles. As the project progressed, the number and size of red snapper being caught on trips increased. If red snapper were sampled now, more samples could be collected because red snapper numbers have dramatically increased off southwest Florida and they are now caught in all sectors of the fishery from the Florida Middle Grounds to the Dry Tortugas, (personal observation).

***b. Reproductive Biology*:**

A total of 199 red snapper gonadal samples (114 female, 85 male) were histologically analyzed for this project; the samples represented 37 fish from the Panhandle, 66 from the Florida east coast, 81 from the Dry Tortugas, and 15 from the Florida west coast. Only 6 immature females were captured during the study; the smallest immature female was 280 mm TL, and the largest immature female was 361 mm TL. Immature females were captured from the Florida east coast and the Panhandle. The smallest sexually mature female captured was 300 mm TL (corresponding to age 1), and the smallest female captured with hydrated oocytes was 394 mm TL (age 3). Due to the small sample size of immature fish, length at 50% maturity could not be estimated. No immature male was captured during the course of the study; the smallest mature male was 261 mm TL (early maturation class).

Red snapper were captured monthly from June through November along the Florida east coast. Peak GSI values for both males and females were evident in July, with a secondary peak for females in September (Figure 36). Elevated GSI values from

June through September in both sexes suggest these are the prime reproductive months for red snapper along the Florida east coast. Insufficient monthly samples were available from the other Florida regions for a similar analysis.

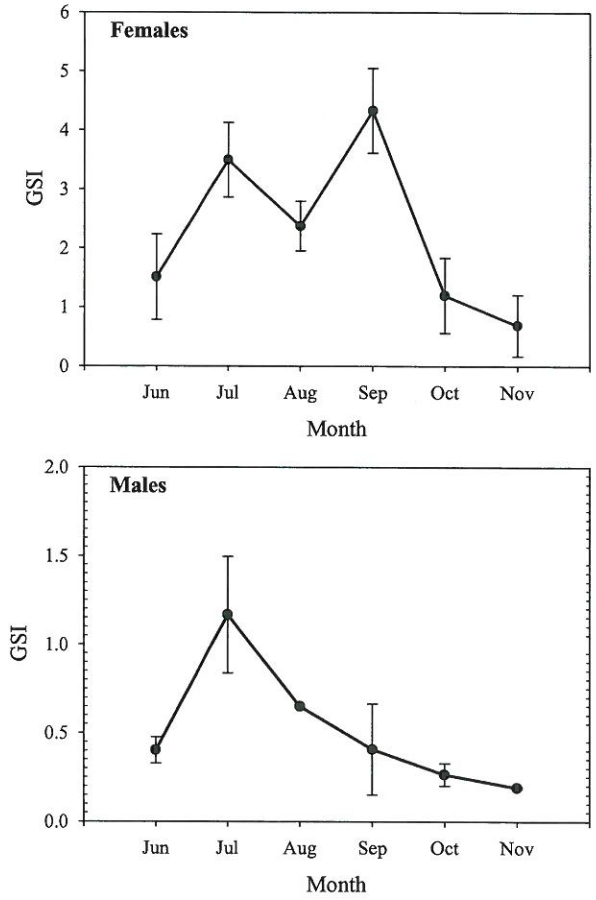


Figure 36. Mean (± S.E.) monthly GSI values for female and male red snapper from the Florida east coast.

Histological examination of ovarian and testicular tissues showed red snapper from the Florida east coast were spawning-capable from June through October, with females captured in the late maturation or FOM classes during those 5 months (Table 7). Many spawning-capable females had hydrated oocytes in the ovary (Figure 37), suggesting that spawning would have occurred within 2 – 6 hours of capture. All sexually mature males and females from Florida east coast were undergoing gonadal recrudescence by June, but fish of neither sex with regressed gonads were captured from this region until November (Tables 7 & 8). Males from the Florida east coast were also spawning-capable from June through October. By October, active spermatogenesis had ceased although the lobules remained full of spermatozoa and proliferation of spermatogonia along the periphery of the testis was evident (Figure 38). Such fish were beginning preparations for the next spawning season.

Red snapper from Dry Tortugas were captured only during May, June, and August. Ovarian recrudescence appears to begin in May in this region since some females were in the early maturation class in May, while 43% were still regressed (Table 7). By June, 40% of females were spawning capable, and in both June and August females were in the FOM class, indicating the probability of spawning within the next 24 hours. However, some females from Dry Tortugas were always found in the regressed class (Table 7), suggesting some females from this region may not spawn or have a very short spawning season. In contrast to females, 85% of males captured in May and 95% in June appeared to be spawning capable (Table 8; Figure 39), and even regressed males had spermatozoa in the testis. No male was captured in August from Dry Tortugas, and the duration of the reproductive season in the Dry Tortugas is unknown due to limited data.

Female red snapper were captured sporadically from the Florida west coast from February through October. Ovarian recrudescence begins in February along the Florida west coast, as all females captured during February were in the early

Table 8. Monthly gonadal maturation classes of male red snapper from four regions in Florida. Numbers are expressed as percentage.

Month	Region	N	Early Maturation	Mid Maturation	Late Maturation	Regression	Regressed
February	West FL	1	100				
April	Panhandle	7	71	29			
May	West FL	2		50			50
	Dry Tortugas	14	35	35	15		15
June	East FL	7	28	28	28	16	
	West FL	1				100	
	Dry Tortugas	17	35	24	24	12	5
July	East FL	9	33	33	34		
August	East FL	1			100		
September	East FL	2	100				
October	Panhandle	15	60	7	20	13	
	East FL	5			20	60	20
	West FL	2					100
November	East FL	2				50	50

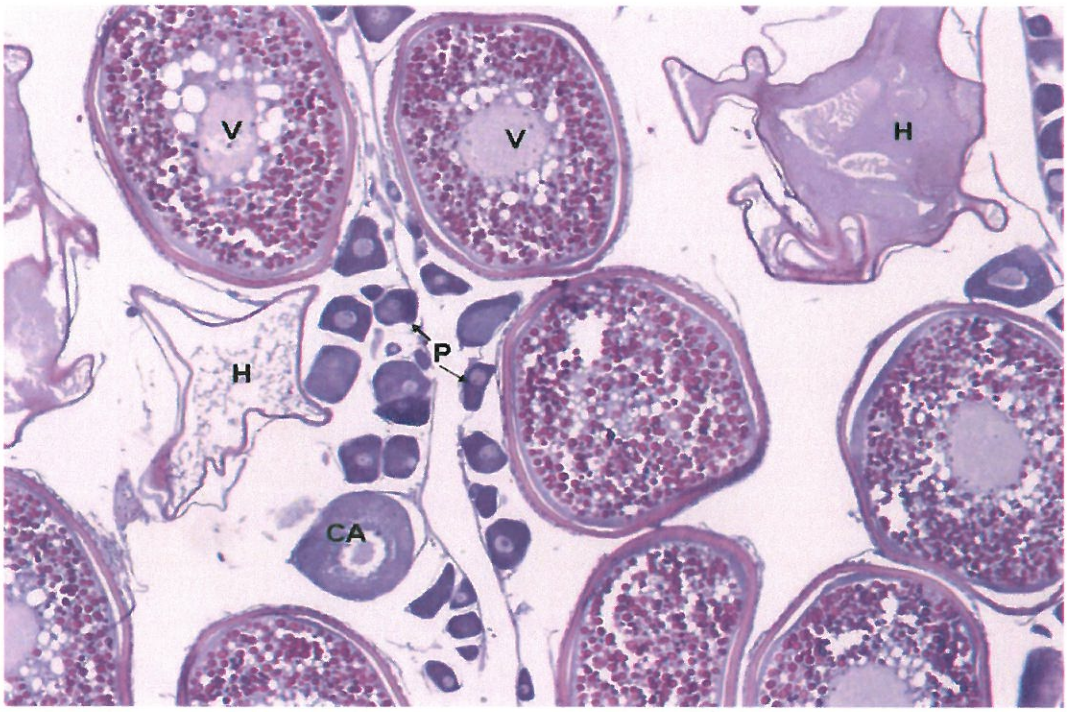


Figure 37. Female red snapper in the FOM class with hydrated oocytes from Florida east coast. (CA = cortical alveolar oocyte; H = hydrated oocyte; P = primary growth oocytes; V = vitellogenic oocytes)

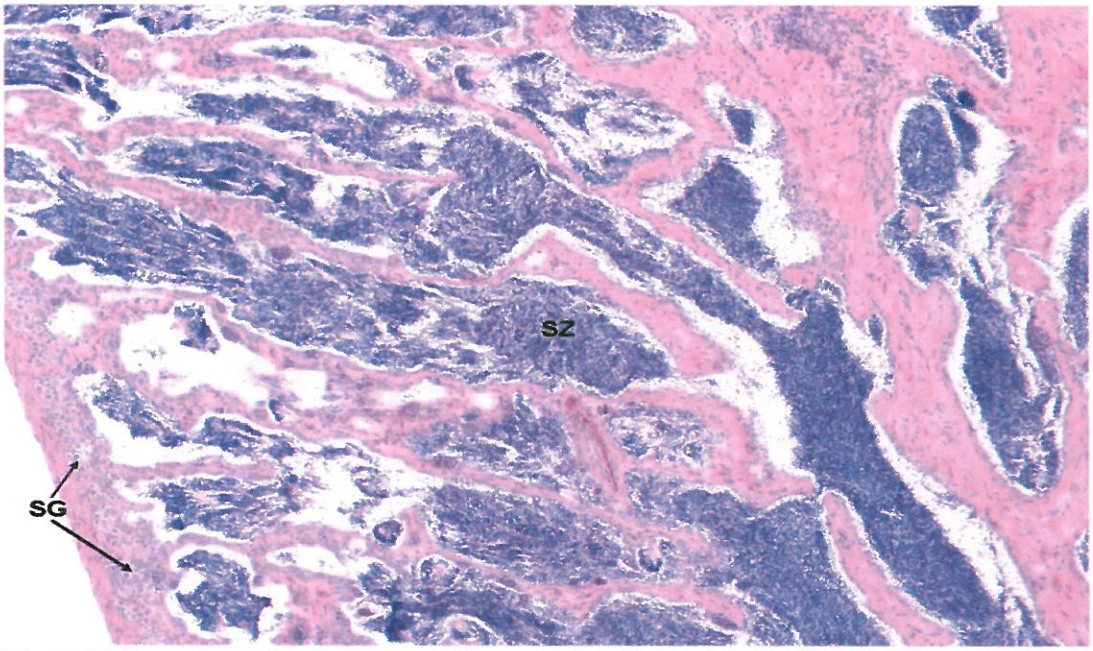


Figure 38. Spawning male red snapper in the regression class captured at the end of the spawning season from the Florida east coast. Active spermatogenesis has ceased, and few spermatocysts are present. (SG = spermatogonia; SZ = spermatozoa)

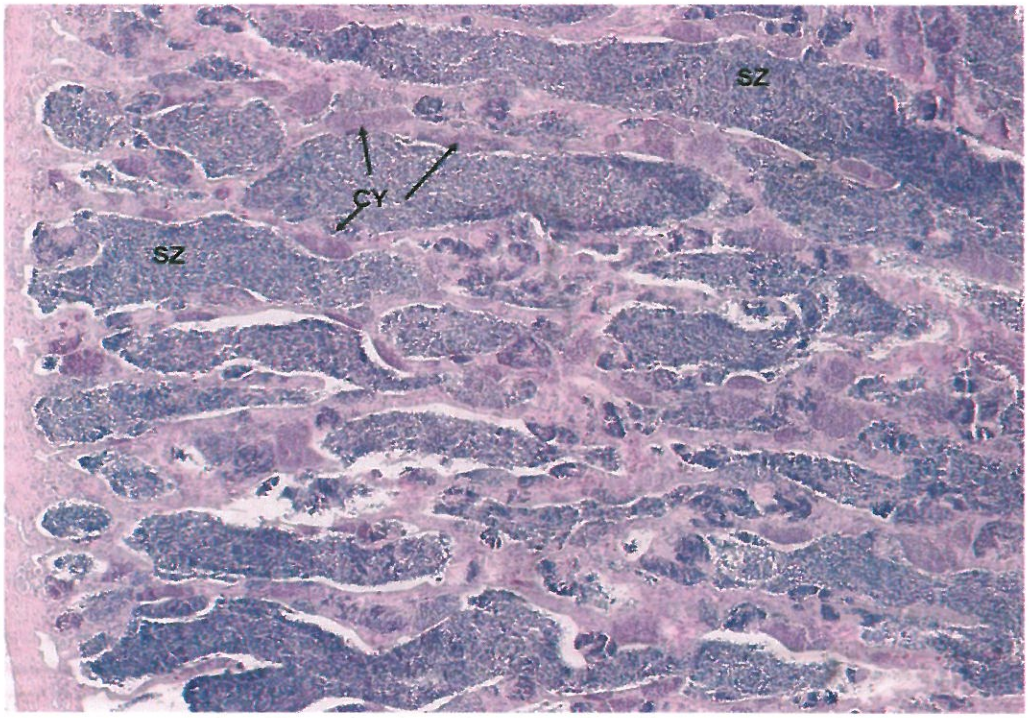


Figure 39. Actively spawning male red snapper in the late maturation class from the Dry Tortugas. (CY = spermatogenic cysts, indicating active spermatogenesis; SZ = spermatozoa)

Figure 40. Female red snapper in the early maturation class from the Florida west coast in February. (CA = cortical alveolar oocyte; YG = yolk granule oocytes just beginning to sequester vitellogenin)

maturation class (Table 7; Figure 40). No spawning female was captured from the Florida west coast, but spawning-capable females (late maturation class) were present in July (Table 7). Females were regressed by August. Male red snapper captured in February in West Florida were also in the early maturation class and were not yet spawning capable (Figure 41). Male red snapper collected in May and June from the Florida west coast were spawning capable, but males had ceased spawning and were regressed in October (Table 8). The small sample size from the Florida west coast, due to the unavailability of legal-size red snapper to the fishery, precluded an accurate estimate of the initiation and duration of the spawning season in this region.

Red snapper were sampled from the Florida Panhandle in April and October only. The majority of males and females were in the early maturation class in April (Tables 7 & 8), and no female was capable of spawning in April. In contrast, most males were in spawning condition in April. Red snapper from the Panhandle were still capable of spawning in October, and males and females from the early maturation class to the regression class were captured (Tables 7 & 8). Some females were clearly at the end of the reproductive season (Figure 42), exhibiting numerous atretic oocytes in the ovary. The lack of complete seasonal data precludes an estimate of the length of the reproductive season of red snapper in the panhandle region.

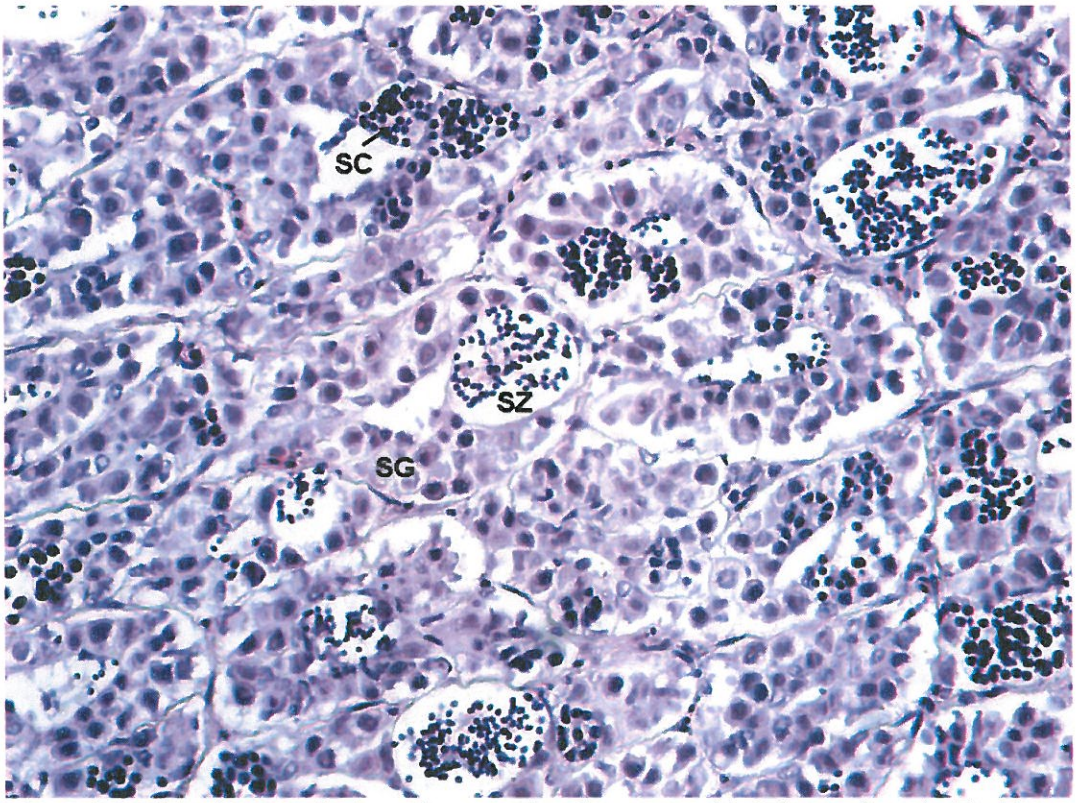


Figure 41. Male red snapper in the early maturation class captured in February from the Florida west coast. This fish is undergoing active spermatogenesis but is not yet capable of spawning. (SC = spermatocytes; SG = spermatogonia; SZ = spermatozoa)

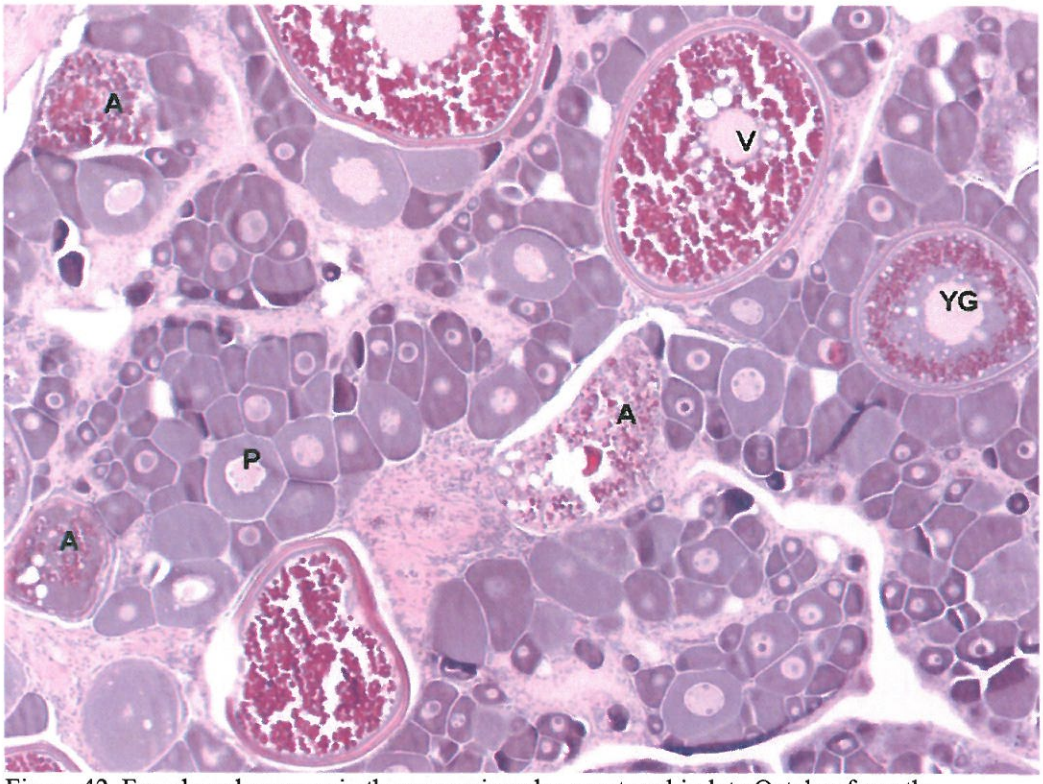


Figure 42. Female red snapper in the regression class captured in late October from the Florida Panhandle. (A = atretic oocytes; P = primary growth oocytes; V = vitellogenic oocyte; YG = yolk granule oocyte)

Additional seasonal data comes from MML tagging reports from 1999. Some tag/recapture data from the Florida Panhandle were analyzed using GIS spatial software combined with surface water temperature from the Pathfinder AVHRR on the NASA polar orbiting satellite in an attempt to understand some red snapper movements. These data were groundtruthed by matching the dates and coordinates with those where MML staff were aboard a headboat tagging fish off Panama City, FL (Figures 43 & 44). Both female and male fish were running ripe in August and September with both milt and eggs flowing freely (Figure 45) during capture. These results are discussed more completely in the *Movement* section.

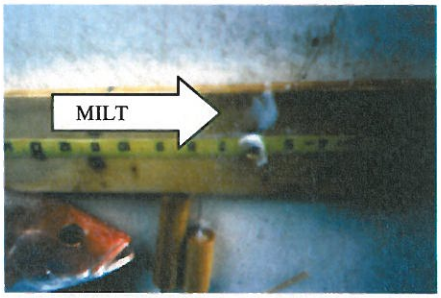


Figure 45. Running ripe male red snapper captured exuding milt.

Red snapper in Florida are capable of spawning multiple times during the reproductive season as indicated by asynchronous oocyte development and the presence of vitellogenic oocytes in the ovaries of spawning fish (i.e. a subsequent batch of oocytes in the same ovary with hydrated oocytes, Figure 37). Additional evidence of multiple spawning is the presence of POFs in ovaries with

mature vitellogenic oocytes. Ovaries with POF were only occasionally observed in our samples, and those were found exclusively in fish from the Florida east coast.

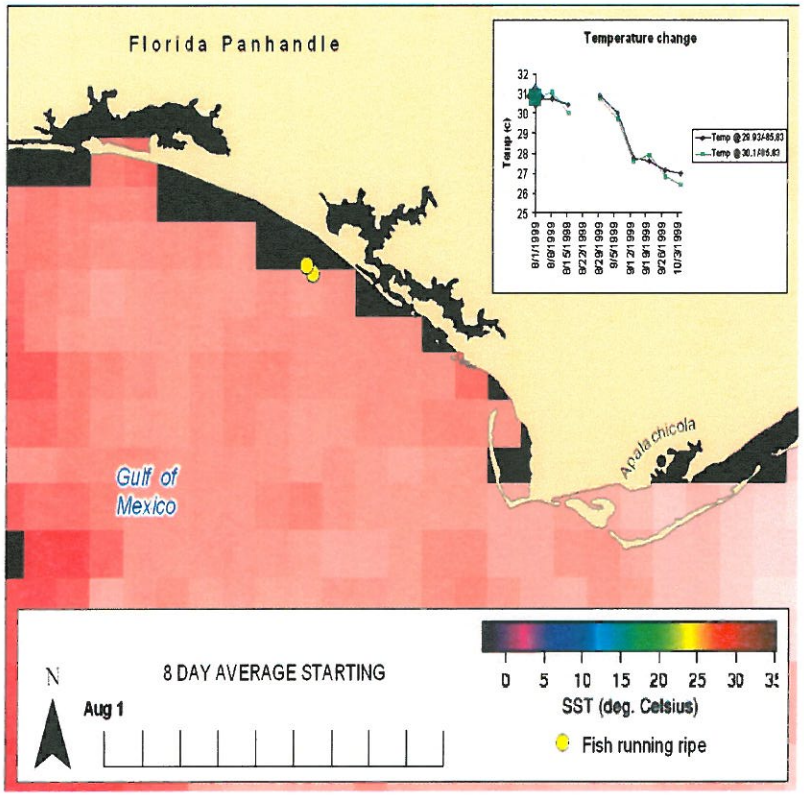


Figure 43. Location, time, and surface water temperature off Panama City, FL, where running ripe red snapper were tagged and released on 1 August 1999.

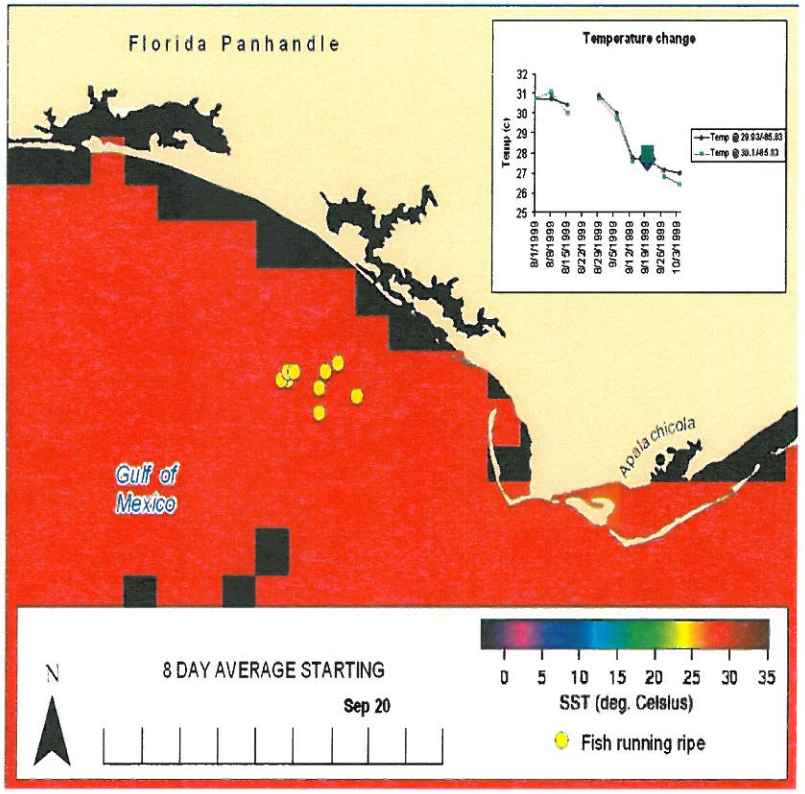


Figure 44. Location, time, and surface water temperature off Panama City, FL where running ripe red snapper were tagged and released on 20 September 1999.

Spawning frequency was estimated for red snapper from the Florida east coast and the Dry Tortugas based on the percentage of fish with hydrated but non-ovulated oocytes. Insufficient numbers of spawning-capable females were captured from the Florida west coast and the Panhandle for meaningful calculations. The spawning frequency was estimated to be every 2.2 days for the Florida east coast based on 12 of 26 spawning-capable females with hydrated oocytes from June through October. Red snapper spawn less frequently in the Dry Tortugas than on the Florida east coast, with an estimate of every 4.3 days based on 3 of 13 spawning-capable fish with hydrated oocytes in June and August. These estimates should be viewed with caution as they are based on a small number of fish and may not represent the entire population.

Batch fecundity was calculated for females from the Florida east coast (n = 12) and the Dry Tortugas (n = 6); no hydrated female or female undergoing FOM was sampled in the other two regions. There is a significant, positive relationship between TL and batch fecundity for the Florida east coast (Fecundity = 9,548*TL – 5,224,104; $r^2 = 0.67$, p = 0.002; Figure 46). The Florida east coast fish ranged from 560 – 937 mm TL, corresponding to ages 3 – 17. In contrast, there is no relationship between batch fecundity and TL for Dry Tortugas females (p = 0.95; Figure 46). The Dry Tortugas fish ranged from 632 – 750 mm TL, corresponding to ages 4 – 5. Relative fecundity for Florida east coast females is 235 ± 56 eggs/g OFBW; relative fecundity for Dry Tortugas females is a low 27 ± 11 eggs/g OFBW. Combining the batch fecundity estimates with spawning frequency for Florida east coast females suggests an "average size female" of 2,900 g would be capable of spawning 669,750 eggs during each spawning event, for a total of 46,578,068 eggs over the 6-month reproductive season (June – October). However, these estimates are based on a small

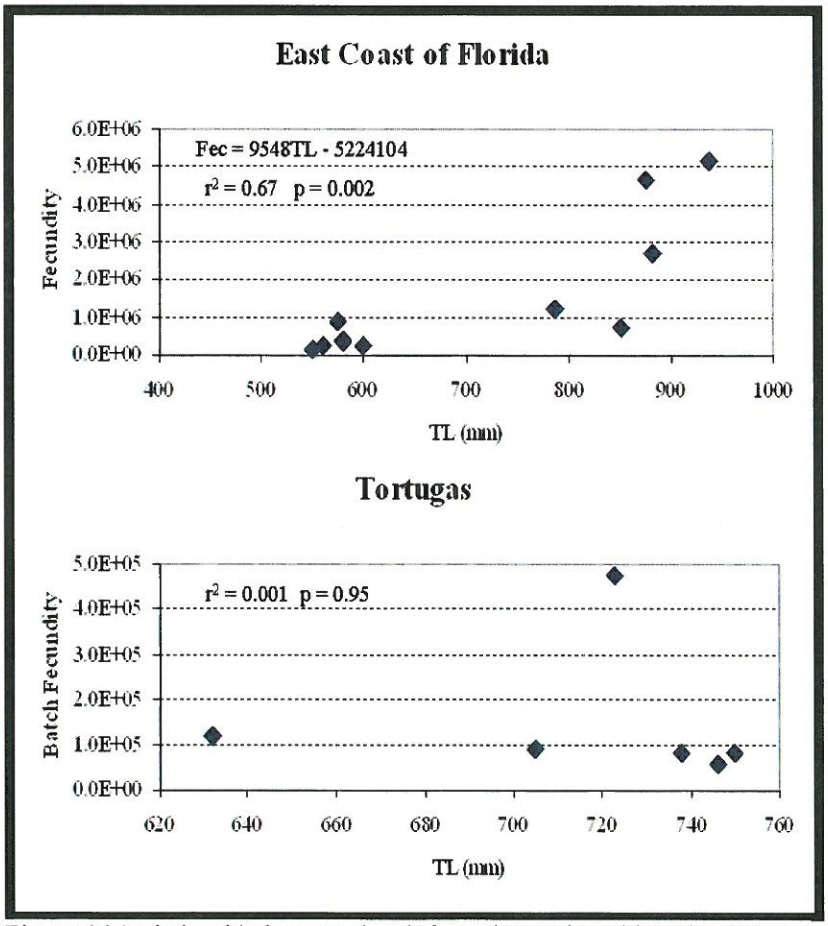


Figure 46. Relationship between batch fecundity and total length (TL) for red snapper from the Florida east coast and the Dry Tortugas.

sample size.

Data from this study represent an extension of existing knowledge of red snapper reproductive biology from the Florida east coast (White and Palmer, 2004) and the first report on the reproductive biology of red snapper from the Dry Tortugas. Unfortunately, comparisons of red snapper reproductive biology among four different areas in Florida (Florida east and west coasts, Dry Tortugas and Panhandle) are limited due to lack of data from the west coast and the Panhandle. Adult red snapper were just beginning to recruit into the fishery on the west coast of Florida when sampling was occurring for this project, and the small sample sizes reflect the lack of available fish during the entire project period.

Our findings on the reproductive biology of red snapper from the east coast of Florida confirm previously reported data from the region (White and Palmer, 2004), although our sample size (n = 66) is much smaller than the previous study (n = 1,027). Size at maturity appears similar for both males and females when compared with that in the previous study. Sampling for this study began during the reproductive period in June, and histological evidence showed females in spawning condition from June through October with peak activity from July through September, similar to previous reports of a May through October reproductive period (White and Palmer, 2004). A greater proportion of females with hydrated oocytes was observed in this study, based on the higher GSI values during the reproductive season (mean GSI range 0.69 – 4.33, this study; mean GSI range 0.35 – 2.67, White and Palmer, 2004). Finally, while White and Palmer (2004) provided histological evidence that east coast red snapper spawn several times during the reproductive season (based on presence of POFs), this study represents the first estimate of batch fecundity and spawning frequency for the region. Batch fecundity estimates are similar to those previously reported for red snapper off Alabama (Woods, 2003). However, east coast red snapper appear to have a higher spawning frequency (2.2 days) than that reported for the northern Gulf of Mexico (3 – 4 days; Woods, 2003).

Limited data from the Dry Tortugas preclude a complete analysis of the seasonality of red snapper reproduction from this region of Florida. However, spawning definitely occurs from June through August in the Dry Tortugas. Additional collections in other months will no doubt extend the spawning season of red snapper from this most southern locale in the United States. Red snapper off the Yucatan Peninsula have a March through November 9-month reproductive season (Brulé *et al.*, 2004). The lack of correlation between batch fecundity and TL in Dry Tortugas red snapper is surprising and can no doubt be explained by the limited data set. The extremely low batch fecundities reported (57,366 – 475,879) for the Dry Tortugas region are consistent with findings by Collins *et al.* (2001) for fish < 8 years from St. Petersburg, FL to South Padre Island, TX; the Dry Tortugas fish were 4 – 5 years old. Finally, spawning frequency estimates for Dry Tortugas red

snapper (every 4.3 days) are similar to the 3 – 4 day spawning frequency reported for northern Gulf of Mexico red snapper (Woods, 2003).

The limited data available suggest there are differences in the reproductive biology of red snapper on the east and west coasts of Florida. While the duration of the spawning season appears similar among regions, fecundity and spawning frequency are higher in east coast red snapper than in those from the Dry Tortugas. Regional differences have been reported in size and age at maturity for red snapper from Alabama and Louisiana (Woods *et al.*, 2003), and those authors suggested that mortality differences due to fishing might explain these demographic differences. Fishing pressure on red snapper, in the form of minimum length limits and seasonal closures, also differs between the Florida east coast and the west coast/Dry Tortugas regions. Additionally, fishers are much more likely to catch red snapper during an offshore/reef trip in the Gulf of Mexico than in the southeastern U.S. Atlantic (personal observations). These observations may explain the differences observed in red snapper reproductive biology between Florida regions. Clearly, additional research is necessary to gain a better and more complete understanding of red snapper reproductive biology throughout Florida. Regional differences in life history may require implementation of regional management strategies for red snapper similar to the existing regional management plans in Florida for spotted seatrout (VanderKooy and Muller, 2003).

Task 3: To test the hypothesis that circle hooks will greatly reduce release mortality in red snapper.

Necropsy results showed that J hook mortality was the leading cause of acute mortality in red snapper caught aboard the headboats sampled. Circle hooks have become very prevalent in recreational and recreational-for-hire fisheries, being promoted as a means of reducing hook mortality (Cooke and Suski, 2004). Data from the entire MML database include red snapper (n = 3,208) caught on circle hooks and on J hooks (n = 4,894) that were tagged and released. Of these two types, 7.7% (n = 246) of the circle hook caught fish were recaptured and 8.5% (n = 414) J hook caught fish were recaptured (Figure 47).

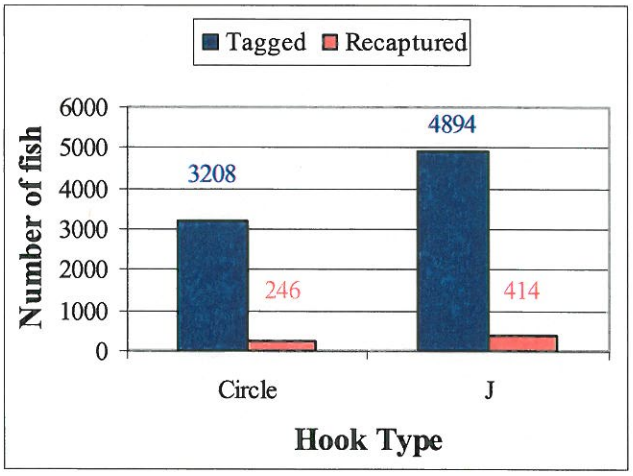


Figure 47. Number of red snapper tagged and recaptured by hook type.

Data collected during this project for circle and J hook caught fish broken down by fishing sector show an 8% recapture rate for both hook types in the recreational sector. For headboats, there was a 6% return rate for fish originally caught on circle hook and released and an 11% recapture rate for J hook fish (Figures 48 & 49). Percentages by sector were similar when red snapper recaptures in the entire database were examined. Recreational returns were 9% for

circle hook fish and 13% for J-hook fish. The return rate for fish originally caught on circle hook off headboats was 6% and 9% for J hooks (Figures 50 & 51).

Figures 48 – 51; Data without hook type and sector are omitted.

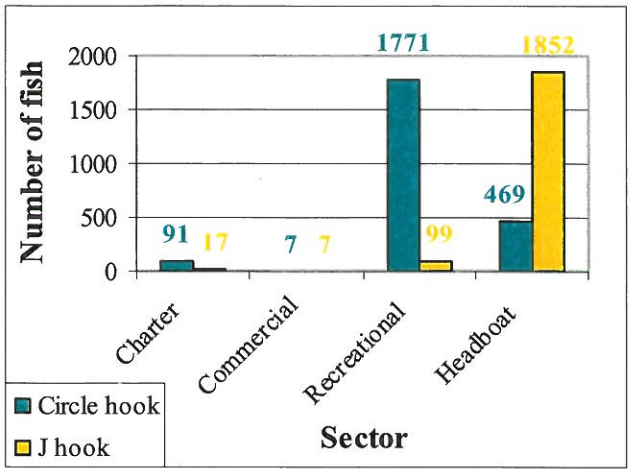


Figure 48. Red snapper tagged/released during the entire project by sector and hook type.

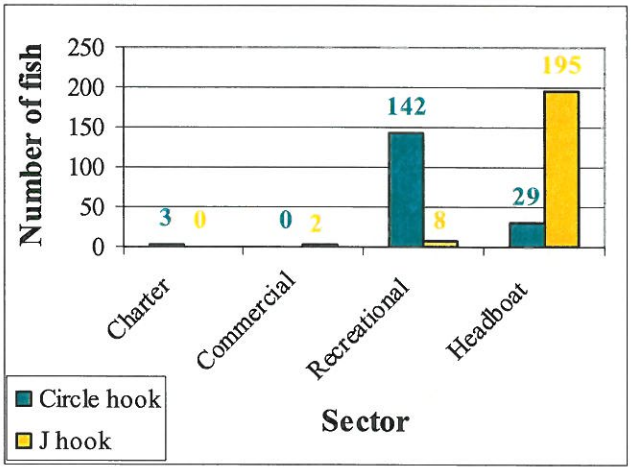


Figure 49. Red snapper recaptured during the entire project by sector and original tagging hook type.

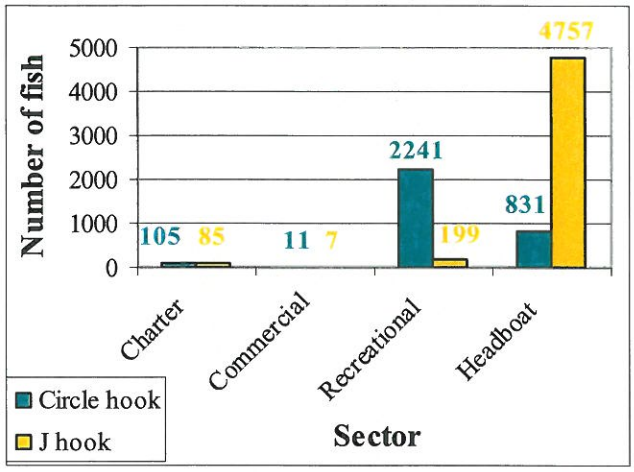


Figure 50. Red snapper from the entire MML database tagged/released by sector and hook type.

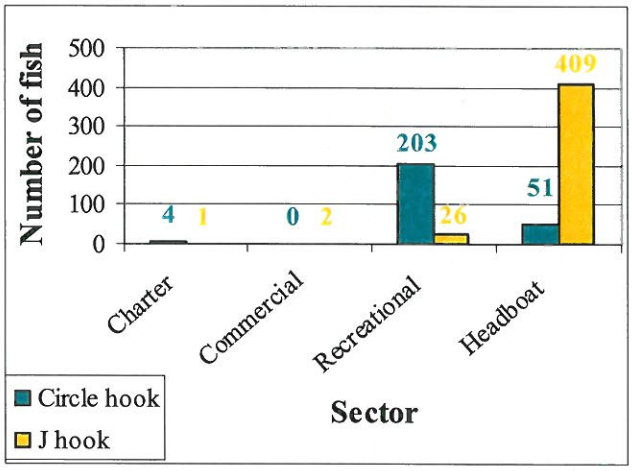


Figure 51. Red snapper from the entire MML database recaptured by sector and original tagging hook type.

Unlike the favorable reports of increased survival of red snapper caught on circle hooks from other researchers (SEDAR, 2005), results from this study as well as data from other MML research on red snapper returns by circle and J hooks, does not demonstrate any benefit or harm in influencing the survival of red snapper by the use of circle hooks. Results from hook (circle versus J) comparison studies reveal differential efficacy of circle hooks with dramatically reduced mortality for some species (Prince *et al.*, 2002; Skomal *et al.*, 2002; Trumble *et al.*, 2002), minimal or no benefit for others

(Cooke *et al.*, 2003a; Cooke *et al.*, 2003b; Malchoff *et al.*, 2002; Zimmerman and Bochenek, 2002) and severe injury to others (Cooke *et al.*, 2003b).

It is unfortunate that red snapper data from this study do not support the hypothesis that circle hooks increase red snapper survival, especially as J hook mortality was found to be the leading cause of acute mortality for this species. Apparently, just as differential J hook acute mortality rates vary by reef fish species (Overton and Zabawski, 2004), so can the efficacy of circle hooks. A more in depth discussion of this topic will be found in the upcoming publication, "Comparison of hook mortality between red snapper, *Lutjanus campechanus,* and red grouper, *Epinephalus morio*, in the eastern Gulf of Mexico and Atlantic Ocean off Florida, with emphasis on differences in feeding behavior and jaw morphology," by K.M. Burns and N.F. Parnell.

Task 4: To obtain catch and release mortality rates relative to depth and gear for red snapper

Red snapper (n = 4,295 during project; n = 8,303 total database) were caught, tagged, and released by recreational, recreational-for-hire, and a few commercial (bandit/electric rod and reel) fishers. Most data came from headboats and recreational vessels, both during the project and in the MML database (Figures 52 – 55). Fish from both sources were caught on one of two hook types (circle and J) and released at depths ranging 9.9 – 70 + m. Recreational anglers tended to fish at shallower depths, while recreational-for-hire vessels generally fished a broader depth range (Figures 52 – 57). The few fish tagged and recaptured by fishers aboard commercial vessels came from deeper depths (Figures 58 & 59).

Figures 52 – 59; Data includes only recaptures with tag depth, recapture depth, and hook type, all other recaptures omitted.

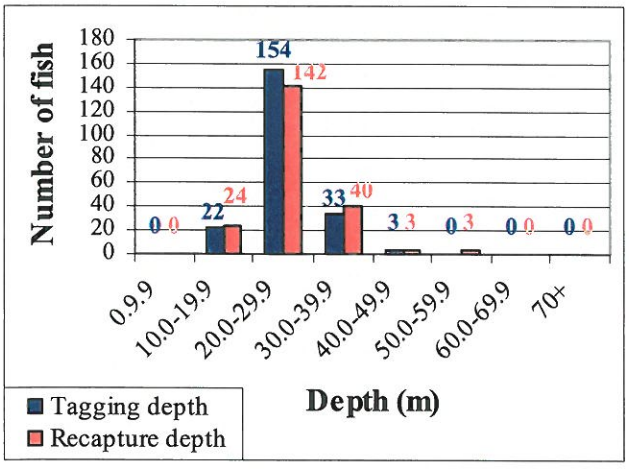


Figure 52. Tagging and recapture depths of red snapper caught during the project from headboats.

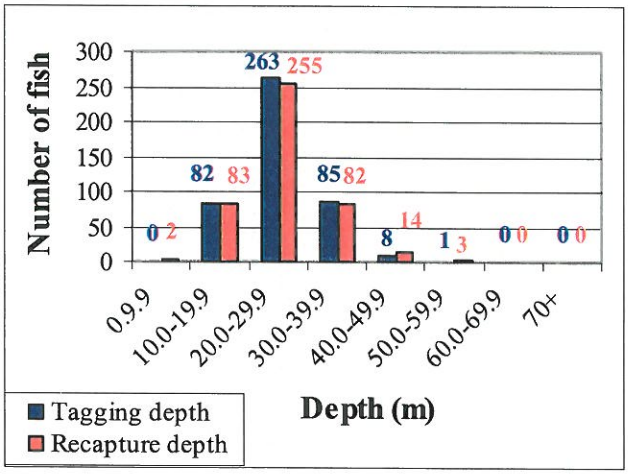


Figure 53. Tagging and recapture depths of red snapper in the MML database caught from headboats.

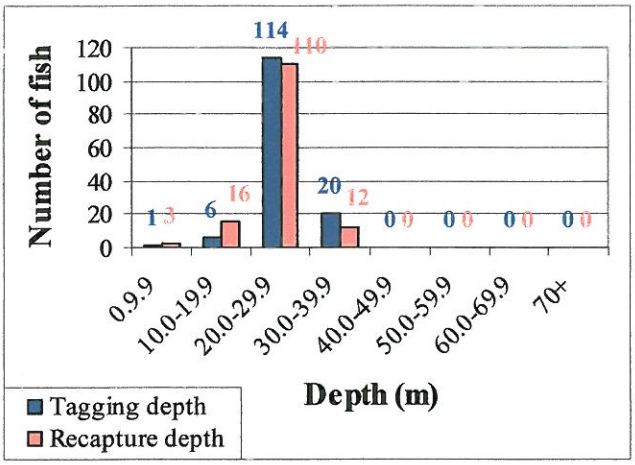


Figure 54. Tagging and recapture depths of red snapper caught during the project by recreational anglers.

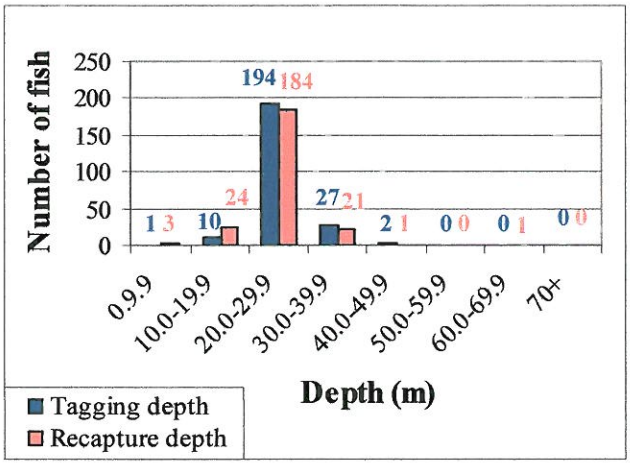


Figure 55. Tagging and recapture depths of red snapper in MML database caught by recreational anglers.

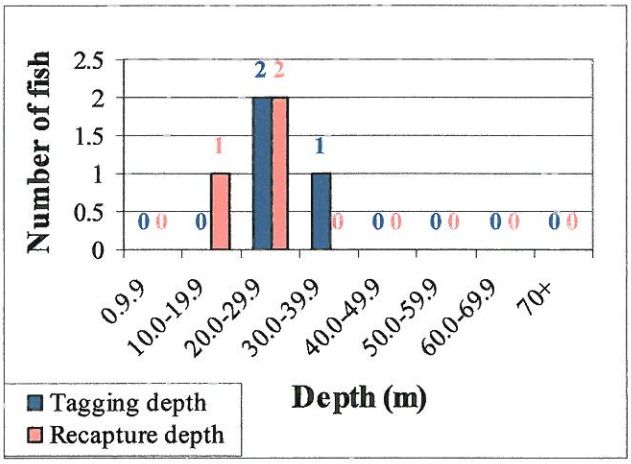


Figure 56. Tagging and recapture depths of red snapper caught during the project off charter boats.

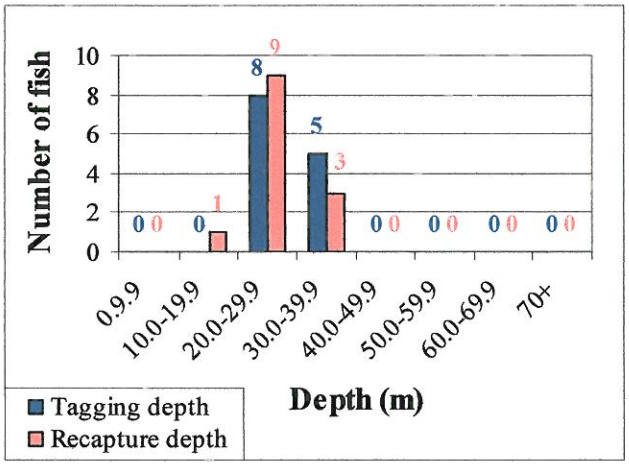


Figure 57. Tagging and recapture depths of red snapper in MML database caught on charter boats.

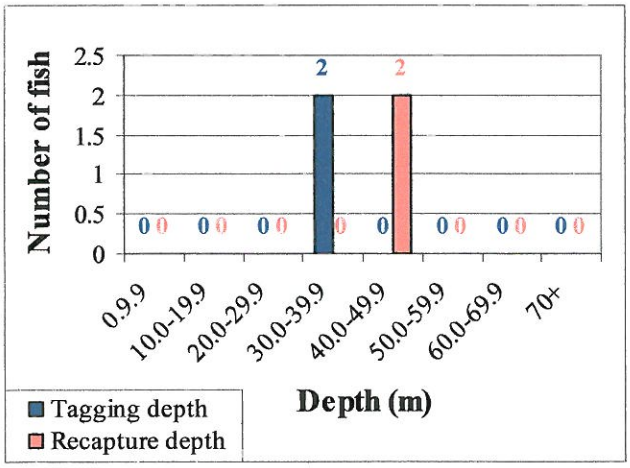


Figure 58. Tagging and recapture depths of red snapper during the project off commercial vessels.

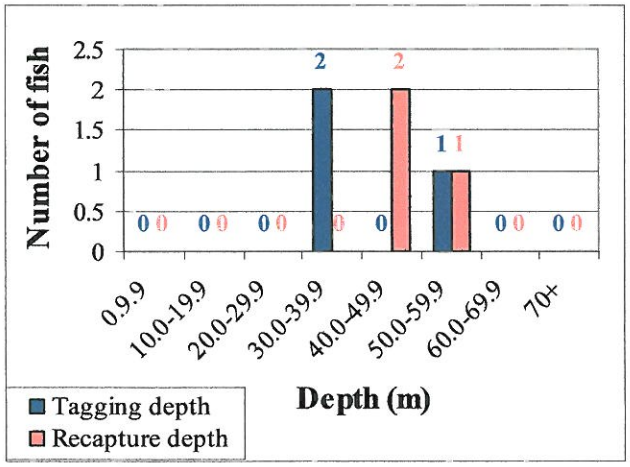


Figure 59. Tagging and recapture depths of red snapper in the MML database, commercially caught.

During this project, 2,336 fish were caught on circle hooks and released over the stated depth range and 7.4% (173) were recaptured. Another 1,959 fish were captured on J hooks over the same depth ranges. Of these, 10.5 % (205) were recaptured. Most recaptures for both hook types (circle = 165; J = 177) were fish originally tagged at depths ranging 20 – 40 m (Figures 60 & 61). Additional data from the MML database did not change the conclusions from this project (Figures 62 & 63).

Figures 60 – 63; Data without tagging depth and or hook type are omitted.

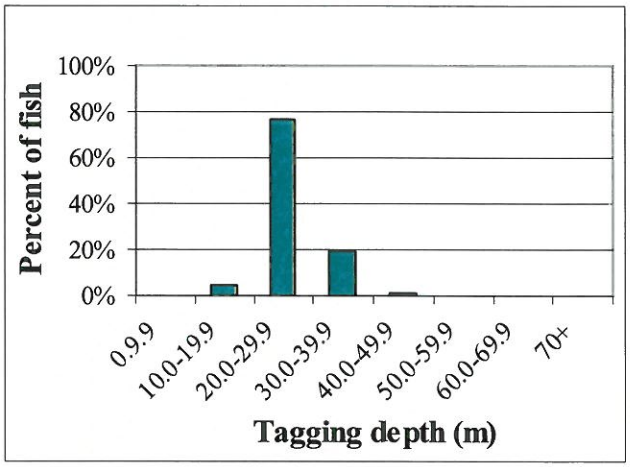


Figure 60. Percent of red snapper recaptured, which were originally caught on circle hooks during the course of the project, by original tagging depth.

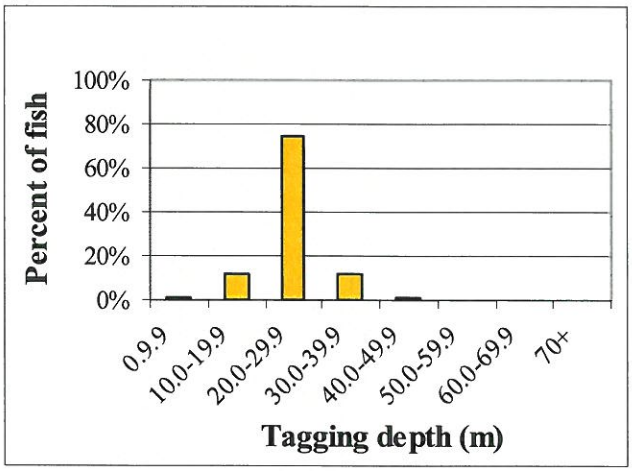


Figure 61. Percent of red snapper recaptured, which were originally caught on J hooks during the course of the project, by original tagging depth during.

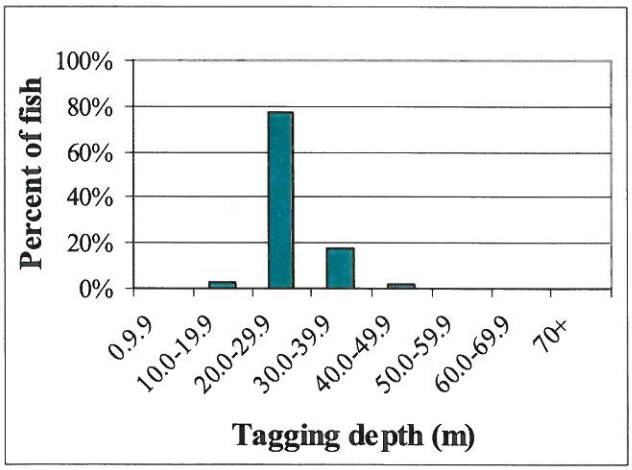


Figure 62. Percent of red snapper recaptured, which were originally caught on circle hooks by original tagging depth throughout the entire MML database.

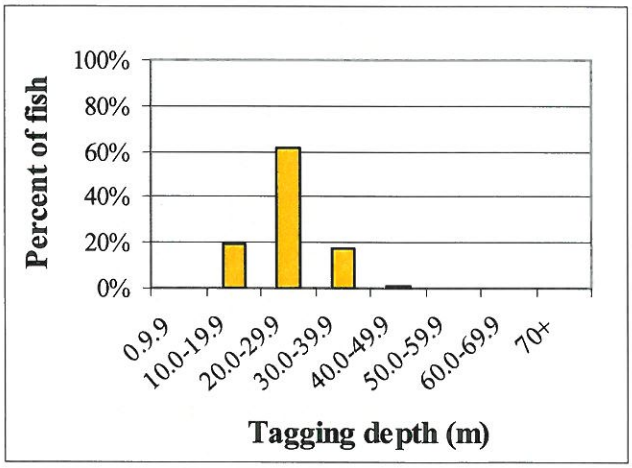


Figure 63. Percent of red snapper recaptured, which were originally caught on J hooks by original tagging depth throughout the entire MML database.

Comparison of recaptures by hook type at depths ranging 20 – 29.9 m (65.6 – 98 ft) and 30 – 39.9 m (98.4 – 130.9 ft) revealed a shift from approximately equal recapture rates for both hook types at 20 – 29.9 m to double the survival rate for J hook caught red snapper caught at 30 – 39.9 m (Table 9).

Table 9. Comparison of circle and J hook caught red snapper, recaptured at 20 – 29.9 m and 30 – 39.9 m.

Hook type	Depth (m)	Data source	Number of fish tagged	Number of fish recaptured	Recapture rate
Circle	20-29.9	Project	1115	132	11.8%
Circle	20-29.9	Database	1754	200	11.4%
J	20-29.9	Project	1308	153	11.7%
J	20-29.9	Database	3097	272	8.8%
Circle	30-39.9	Project	1075	33	3.1%
Circle	30-39.9	Database	1231	45	3.7%
J	30-39.9	Project	326	24	7.4%
J	30-39.9	Database	1206	78	6.5%

Examination of all recaptures from 20 m and deeper by hook type revealed that depth became an important factor affecting survival of red snapper caught deeper than 29.9 m regardless of hook type. Red snapper survival at depths greater than 29.9 varied by treatment (vented or not vented). More fish caught on J hooks at deeper depths were vented than those caught on circle hooks at the same depths. Although a few non-vented fish were recaptured at depths deeper than 29.9 m, more vented fish were recaptured (Table 10). Differences in number of recaptures and percent survival in Table 10 and Table 9 are because Table 10 only includes recaptures with venting data. Recaptures lacking data related to venting at release were excluded from Table 10.

Table 10. Red snapper recaptures by depth and treatment (vented/not vented).

Depth (m)	Hook type	Data	Recapture number: vented	Percent survival: vented	Recapture number: not vented	Percent survival: not vented	Total percent survival
20-29.9	Circle	Project	10	0.9%	114	10.20%	11.1%
30-39.9	Circle	Project	23	2.1%	10	0.90%	3.1%
40-49.9	Circle	Project	1	2.3%	0	N/A	2.3%
20-29.9	Circle	Database	45	2.6%	145	8.30%	10.9%
30-39.9	Circle	Database	33	2.7%	11	90.00%	3.6%
40-49.9	Circle	Database	5	7.4%	0	N/A	7.4%
50-59.9	Circle	Database	1	1.9%	0	N/A	1.9%
20-29.9	J	Project	114	8.7%	29	2.20%	10.9%
30-39.9	J	Project	17	5.2%	7	2.10%	7.4%
40-49.9	J	Project	1	2.2%	1	2.20%	4.4%
20-29.9	J	Database	221	7.1%	36	1.20%	8.3%
30-39.9	J	Database	69	5.7%	9	70.00%	6.5%
40-49.9	J	Database	3	3.3%	1	1.10%	4.3%

Task 5: To determine percentage of tag shedding for red snapper tagged with single-barbed dart tags.

A total of 547 red snapper were double tagged with PIT and Hallprint® plastic dart tags. Of these, 36 (7%) fish were recaptured. Most (34 = 94%) were recaptured with both tags. Only 2 (6%) of the recaptured fish shed the external Hallprint® plastic dart tag.

Task 6: To obtain movement and migration patterns for red snapper in the Gulf of Mexico and South Atlantic.

Movement data from this project were combined with other red snapper data already in the MML database because 40 recaptures from previously tagged red snapper were reported during this project. A total of 726 MML tagged red snapper (761 events due to multiple recaptures) have been recaptured. Of these, 133 fish were recorded without recapture locations and 264 fish were recaptured at the same site at which they were originally tagged and released. Data agree with published accounts indicating strong site fidelity over long periods of time (Szedlmayer and Ship, 1994;

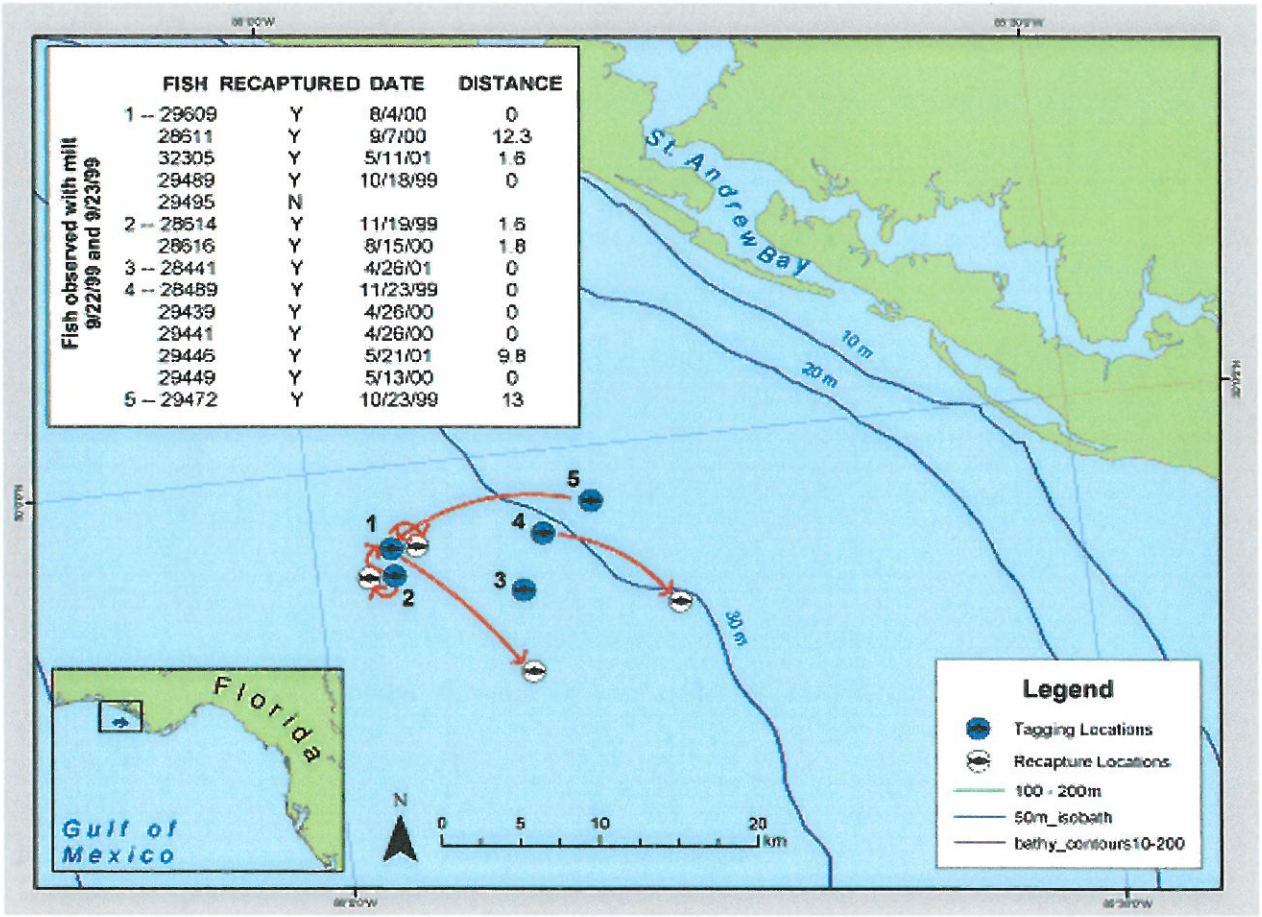


Figure 64. Recapture locations of running ripe red snapper originally tagged September 1999. Fish were at liberty 25 to 607 days.

Watterson *et al.*, 1998; Patterson *et al.*, 2001a; Ingram and Patterson, 2001). Some of the short-term movement appears to be associated with offshore movement for spawning (Figure 64). Red snapper in Figure 64 were running ripe when tagged. These offshore fish were larger than those tagged inshore in two northern Gulf bays. Both Pensacola Bay and St. Andrew's Bay appear to serve as red snapper nursery grounds. Fish tagged within these bays were significantly smaller than fish tagged offshore (Figure 65).

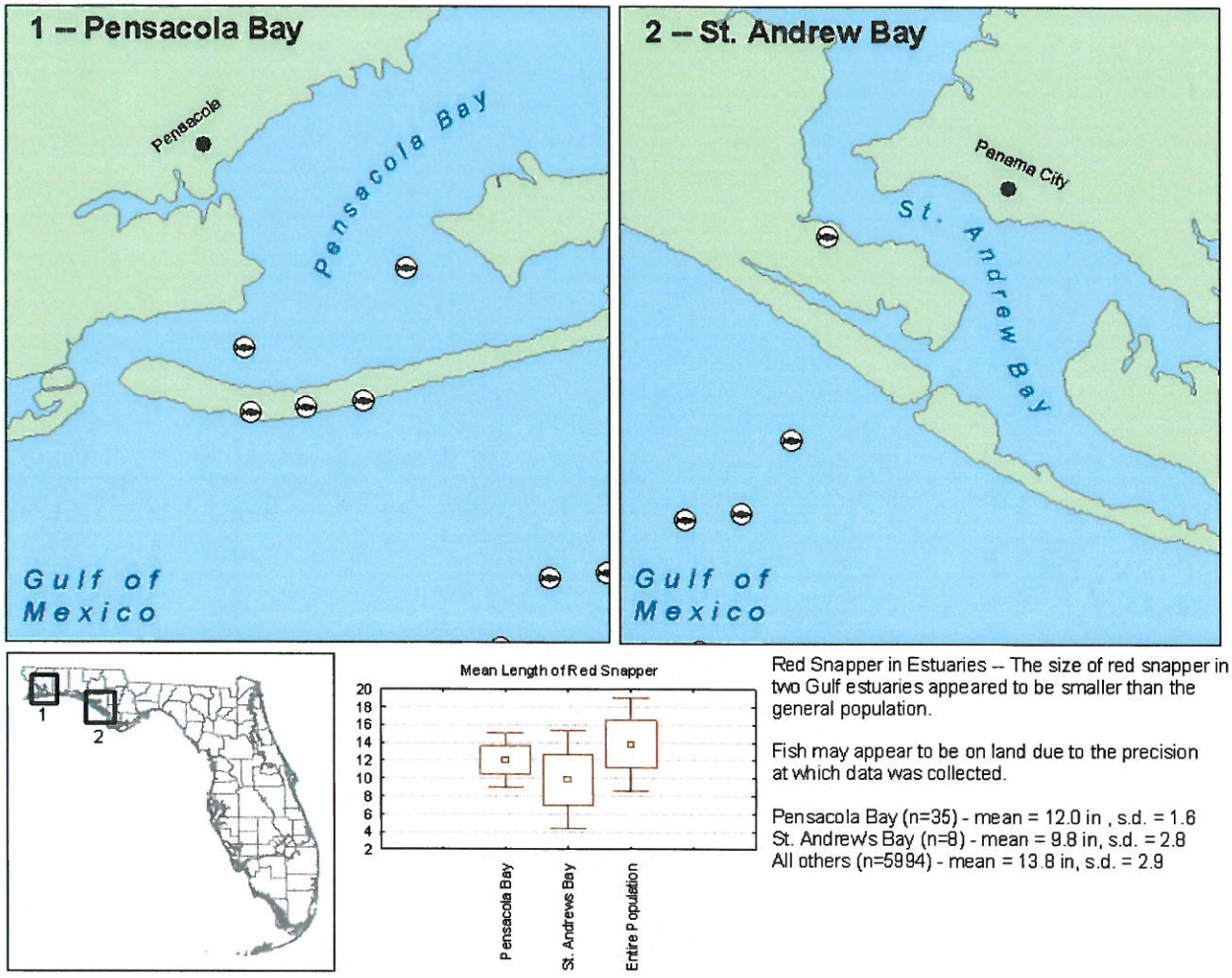


Figure 65. Possible nursery areas for red snapper in the Florida Panhandle area.

Other recaptured red snapper traveled further distances than those running ripe fish caught offshore. For red snapper tagged off the Florida Panhandle by MML staff and volunteers, the movement trend was to the east and southeast and was consistent with a clockwise direction along the Gulf coast, as was reported for red snapper in previous studies (Ingram and Patterson, 2001a; Patterson *et al.*, 2001b).

Although the majority of fish were site faithful, spatial analyses of recapture data from all regions showed some red snapper moved considerable distances both in the Gulf of Mexico and South Atlantic off the east coast of Florida. These recaptured red snapper traveled further distances than those running ripe fish caught offshore. For red snapper tagged off the Florida Panhandle by MML staff and volunteers, the movement trend was to the east and southeast.. This was consistent with a clockwise direction along the Gulf coast, as was reported for red snapper in previous studies (Ingram and Patterson, 2001a; Patterson *et al.*, 2001b). Figure 66 shows long distance recaptures along both coasts of Florida.

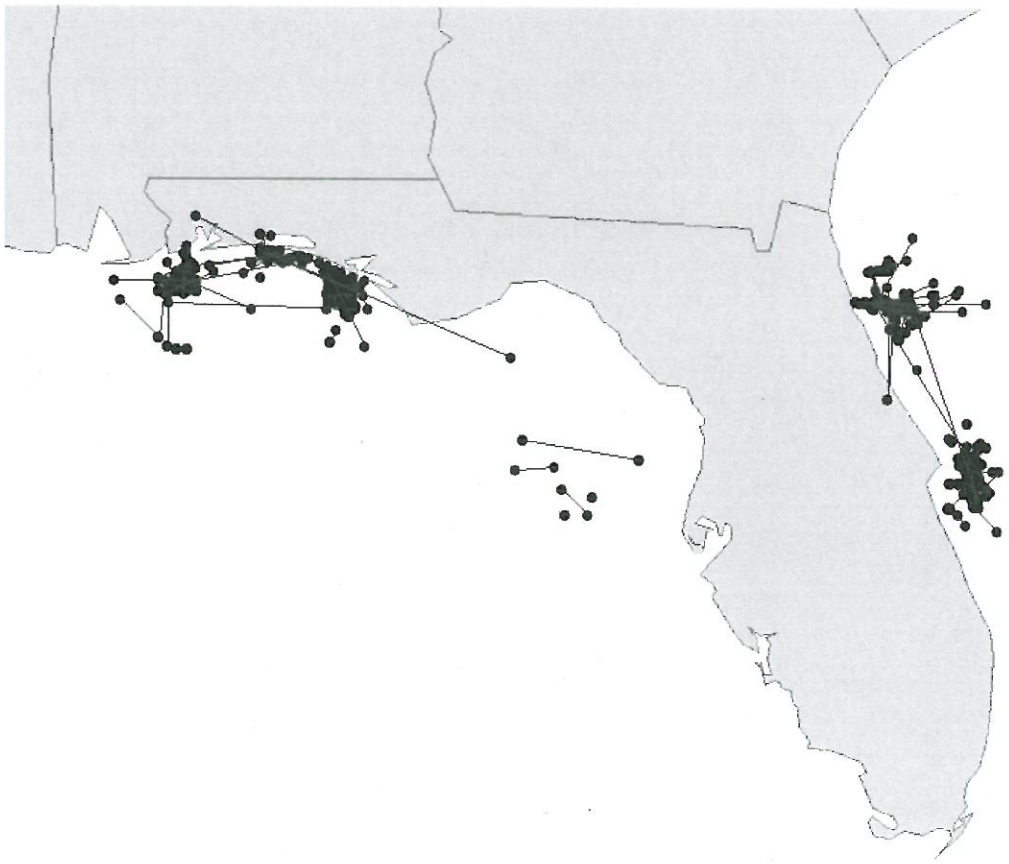


Figure 66. Red snapper movements from Gulf of Mexico and Florida east coast recapture data

Polar graphs (Figure 67) of the areas depicted in Figure 66 show directional long distance movements of red snapper by region. Fish from all regions exhibited movement.

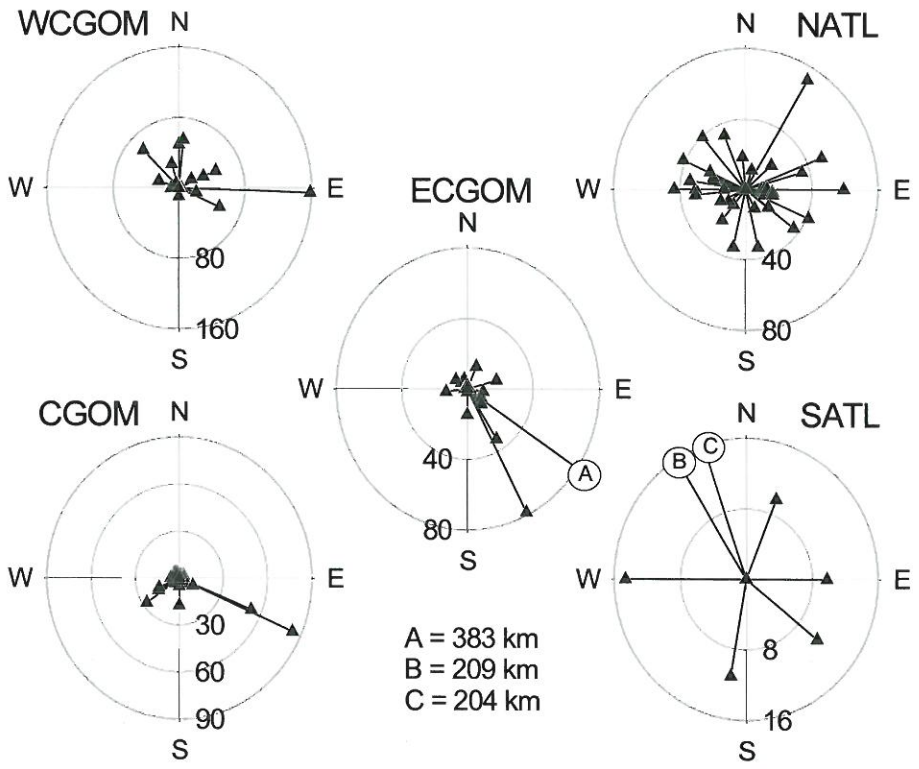


Figure 67. Polar plots showing direction of fish movement by region. The center of each circle represents the tagging site, and concentric circles represent distance in km from the tagging site. Triangles show recapture location by distance and bearing. For distance greater than the scale of each plot, distance is listed adjacent to the triangle.

Mean direction of movement in the WCGOM and ECGOM was significantly different ($p < 0.05$) from random movement when movements greater than the median (5.88 km) were analyzed. The only fish not accurately depicted is the fish that traveled the greatest distance. This red snapper moved from the Florida Panhandle (Pensacola) to the Atlantic coast (St. Augustine) and is represented by the straight line to the east in the WCGOM region. This fish was tagged on 28 August 2002, measuring 368 mm, and was recaptured on 5 April 2004 and measured 521mm; it traveled 582 km.

Additional analyses such as movement correlated with size as well as with hurricanes as reported by Ingram and Patterson (2001) and Patterson *et al.* (2001a) will be included in an upcoming paper currently in preparation, entitled "Red snapper distribution, size, and movement patterns in the eastern Gulf of Mexico and Atlantic Ocean off Florida" by K.M. Burns, J.G. Gannon, J.M. Sprinkel, and B.D. Robbins. Possible explanations for red snapper re-recruitment of the southwest coast of Florida are also given in the paper.

B. SIGNIFICANT PROBLEMS

Although all project objectives were met, data are more complete for some areas than others. There were difficulties obtaining samples in some areas for two main reasons. The first problem was weather. Many sampling trips had to be shortened or repeatedly cancelled because of the numerous hurricanes, which affected both coasts during the duration of the project. This was especially true for Gulf of Mexico sites because collection could only occur during the open season (last week in April – October), which overlaps almost completely with the hurricane season (June 1 – November 30). There were more sampling opportunities on the east coast of Florida because there is no closed season for red snapper in the South Atlantic.

The second challenge to fish collections was fish availability. Red snapper were abundant in the northern Gulf of Mexico and off the east coast of Florida. When this project began, red snapper samples were difficult to obtain off southwest Florida. Most of the fish were undersized and uncommon and could not be kept by anglers; thus, there was no targeted fishery for these small red snapper.

C. NEED FOR ADDITIONAL RESEARCH

When this project began, red snapper were not common off the southwest coast of Florida, and most fish available in the area were undersized. Later, red snapper were far more abundant and were available closer to shore than when they originally re-recruited to the recreational-for-hire and commercial fisheries. Additional research is needed on age, growth, reproduction, and movements of fish off southwest Florida. The fishery should also be monitored to determine the effects of the 16-inch Gulf of Mexico size limit on the fishery.

Research to determine the natal origin of the red snapper that have re-recruited to their former habitat off southwest Florida should be an imperative. The return of the red snapper fishery to this area should be documented and must be included in the next red snapper stock assessment.

Selective predation on red snapper by bottlenose dolphins was observed on numerous trips, especially in the waters off Panama City. As presented in the final report for MARFIN No. NA 97FF0349, dolphins preferred to prey on red snapper discards over discards of all other species. On one trip, 6.9% of the red snapper discards were confirmed as consumed and 21.7% were chased downward by the dolphins and probably consumed. On

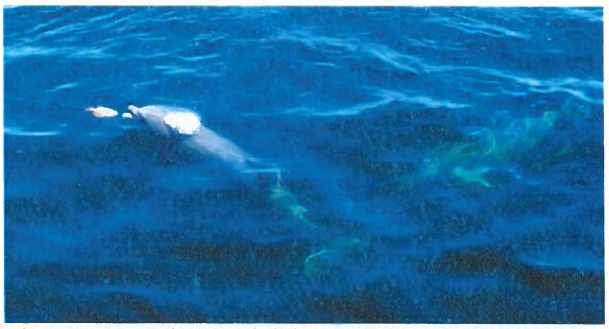


Figure 68. Bottlenose dolphins poised to consume red snapper discard from a headboat out of Panama City, FL.

another trip, 2.9% were confirmed consumed and 20% were chased downward by the dolphins and probably consumed (Figures 68 & 69). The headboat captain and crew said this was a daily event at most sites fished. Future research on quantifying predation needs to be conducted to determine mortality of discards by predation.

Figure 69. Bottlenose dolphins leaving with hooked red snapper and rod and reel. The rod was pulled from an angler's grasp as he was reeling in the red snapper while aboard a headboat out of Panama City, FL.

EVALUATION

A. EXTENT TO WHICH THE PROJECT GOALS AND OBJECTIVES WERE ATTAINED

Project goals and objectives were attained to the extent possible and in spite of two years of major hurricanes affecting all of Florida, decimating some parts of Florida, and causing massive damage at the University of Southern Mississippi's Gulf Coast Research Laboratory campus (Hurricane Katrina). Hurricanes and tropical storms radically reduced the number of samples collected. This was especially true for samples from the southwest coast of Florida. This project started when red snapper had just begun to re-recruit to areas off southwest Florida before there were any directed fisheries for them. The plan was to collect from the northern Gulf of Mexico and the Florida east coast where red snapper were abundant and then to focus sampling off the southwest Florida coast after the fish had more time to become established. Directed fisheries for red snapper off the southwest coast of Florida began about the same time as the unusually active hurricane seasons. Samples could not be collected during most months before hurricane season because samples were obtained from fish captured by headboats that could not target red snapper because of the closed season.

Despite these set-backs, a large quantity of data was collected as can be seen from this report. These data provide some new information regarding undersized red snapper bycatch and the life history of red snapper off the southwest Florida coast. They also provide interesting comparisons on the life history of red snapper in various regions of Florida.

B. DISSEMINATION OF PROJECT RESULTS

Early results of this research were presented at the 2004 Red Snapper SEDAR Meeting that was held in New Orleans, LA. Some data were put in the RFSS MARFIN-funded reef fish newsletter, which was sent to MML volunteer taggers, fishery biologists and managers, members of the Gulf and South Atlantic Councils, and newspaper and fishing magazine writers. Project results were also disseminated through sending a copy of this report not only to NOAA, but also to the Gulf and South Atlantic Councils, and the state of Florida. Project results will be used as part of the doctoral dissertation of the Project Manager, Karen Burns, for completion of her Doctorate in Biological Oceanography at the University of South Florida. Finally, results will be published as papers in peer-reviewed scientific journals. The first four papers are currently in preparation. They include "Red snapper distribution, size, and movement patterns in the eastern Gulf of Mexico and Atlantic Ocean off Florida," by K.M. Burns, J.G. Gannon, J.M. Sprinkel, and B.D. Robbins, which was submitted to the *North Atlantic Journal of Fishery Management* and is in revision to divide the paper into two separate manuscripts, "Comparison of hook mortality between red snapper, *Lutjanus campechanus,* and red grouper, *Epinephalus morio*, in the eastern Gulf of Mexico and Atlantic Ocean off Florida, with emphasis on differences in feeding behavior and jaw morphology," by K.M. Burns and N.F. Parnell, which will be submitted to *Environmental Biology of Fishes*, and "Comparison of red snapper, *Lutjanus campechanus,* and red grouper, *Epinephalus morio* survival during rapid decompression from various fishing and simulated depths, by K.M. Burns and N.F. Parnell. Results from this project will also be presented at the 2007 MARFIN Conference.

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APPENDIX

Red Snapper release observations

Tag Number	Tag Date	Datatype	Hook type	Tag Depth (m)	Release Observations
24791	10/15/04	RECREATIONAL		24.4	RE-RELEASED
26582	11/05/05	HEADBOAT	J	29.9	RE-RELEASED WITH TAG
38366	11/21/03	RECREATIONAL	CIRCLE	10.7	RE-RELEASED
40364	10/12/02	RECREATIONAL	J	20.7	PROTRUDING STOMACH
40809	02/16/03	HEADBOAT	CIRCLE	24.4	RE-RELEASED
40809	02/28/03	HEADBOAT	CIRCLE	30.5	RE-RELEASED
40838	11/19/02	HEADBOAT	CIRCLE	38.1	FLOATED
40840	02/20/03	RECREATIONAL	CIRCLE	41.1	RE-RELEASED
40858	12/01/02	HEADBOAT	CIRCLE	39.6	FLOATED
40918	10/07/02	RECREATIONAL	J	0.0	RE-RELEASED WITH TAG
41305	10/23/02	HEADBOAT	CIRCLE	28.0	STRAIGHT DOWN
41307	10/23/02	HEADBOAT	CIRCLE	30.5	STRAIGHT DOWN
41311	10/22/02	HEADBOAT	CIRCLE	29.9	DOWN SLOWLY
41312	10/22/02	HEADBOAT	CIRCLE	29.9	STRAIGHT DOWN
41313	10/22/02	HEADBOAT	CIRCLE	29.9	STRAIGHT DOWN
41314	10/22/02	HEADBOAT	CIRCLE	29.9	STRAIGHT DOWN
41315	10/22/02	HEADBOAT	CIRCLE	29.9	STRAIGHT DOWN
41316	10/22/02	HEADBOAT	CIRCLE	29.9	STRAIGHT DOWN
41317	10/22/02	HEADBOAT	CIRCLE	29.9	STRAIGHT DOWN
41318	10/22/02	HEADBOAT	CIRCLE	29.9	DOWN SLOWLY
41320	10/22/02	HEADBOAT	CIRCLE	29.9	STRAIGHT DOWN
41321	10/22/02	HEADBOAT	CIRCLE	29.9	STRAIGHT DOWN
41322	10/22/02	HEADBOAT	CIRCLE	29.9	STRAIGHT DOWN
41323	10/22/02	HEADBOAT	CIRCLE	29.9	STRAIGHT DOWN
41324	10/22/02	HEADBOAT	CIRCLE	29.9	FLOATED, DOWN SLOWLY
41325	10/22/02	HEADBOAT	CIRCLE	29.9	STRAIGHT DOWN
41326	10/22/02	HEADBOAT	CIRCLE	29.9	STRAIGHT DOWN
41327	10/22/02	HEADBOAT	CIRCLE	29.9	STRAIGHT DOWN
41328	10/22/02	HEADBOAT	CIRCLE	29.9	BLEEDING FROM GILLS, DOWN SLOWLY
41329	10/22/02	HEADBOAT	CIRCLE	29.9	STRAIGHT DOWN
41330	10/22/02	HEADBOAT	CIRCLE	29.9	STRAIGHT DOWN
41331	10/22/02	HEADBOAT	CIRCLE	29.9	FLOATED, DOWN SLOWLY
41332	10/22/02	HEADBOAT	CIRCLE	29.9	STRAIGHT DOWN
41333	10/22/02	HEADBOAT	CIRCLE	29.9	STRAIGHT DOWN
41334	10/22/02	HEADBOAT	CIRCLE	30.5	STRAIGHT DOWN

41335	10/22/02	HEADBOAT	CIRCLE	30.5	STRAIGHT DOWN
41336	10/22/02	HEADBOAT	CIRCLE	30.5	STRAIGHT DOWN
41337	10/22/02	HEADBOAT	CIRCLE	30.5	STRAIGHT DOWN
41338	10/22/02	HEADBOAT	CIRCLE	30.5	FLOATING
41339	10/22/02	HEADBOAT	CIRCLE	30.5	DOWN SLOWLY
41340	10/22/02	HEADBOAT	CIRCLE	30.5	STRAIGHT DOWN
41341	10/22/02	HEADBOAT	CIRCLE	30.5	STRAIGHT DOWN
41342	10/22/02	HEADBOAT	CIRCLE	30.5	STRAIGHT DOWN
41343	10/22/02	HEADBOAT	CIRCLE	30.5	BLEEDING FROM GILLS, STRAIGHT DOWN
41351	10/22/02	HEADBOAT	CIRCLE	30.5	EATEN BY DOLPHIN
41352	10/22/02	HEADBOAT	CIRCLE	30.5	STRAIGHT DOWN
41353	10/22/02	HEADBOAT	CIRCLE	30.5	STRAIGHT DOWN
41354	10/22/02	HEADBOAT	CIRCLE	30.5	STRAIGHT DOWN
41355	10/22/02	HEADBOAT	CIRCLE	30.5	STRAIGHT DOWN
41356	10/22/02	HEADBOAT	CIRCLE	30.5	BLEEDING FROM GILLS, STRAIGHT DOWN
41357	10/22/02	HEADBOAT	CIRCLE	30.5	FLOATING
41358	10/22/02	HEADBOAT	CIRCLE	30.5	STRAIGHT DOWN
41358	05/29/04	CHARTER	CIRCLE	35.1	RE-RELEASED
41359	10/22/02	HEADBOAT	CIRCLE	30.5	STRAIGHT DOWN
41361	10/22/02	HEADBOAT	CIRCLE	29.3	STRAIGHT DOWN
41362	10/22/02	HEADBOAT	CIRCLE	29.3	DOWN SLOWLY
41363	10/22/02	HEADBOAT	CIRCLE	29.3	STRAIGHT DOWN
41364	10/22/02	HEADBOAT	CIRCLE	29.3	FLOATING, DOWN SLOWLY
41365	10/22/02	HEADBOAT	CIRCLE	29.3	BLEEDING FROM GILLS, FLOATING
41367	10/22/02	HEADBOAT	CIRCLE	29.3	STRAIGHT DOWN
41368	10/22/02	HEADBOAT	CIRCLE	29.3	STRAIGHT DOWN
41369	10/22/02	HEADBOAT	CIRCLE	29.3	STRAIGHT DOWN
41370	10/22/02	HEADBOAT	CIRCLE	29.3	STRAIGHT DOWN
41372	10/22/02	HEADBOAT	CIRCLE	29.3	FLOATING
41374	10/22/02	HEADBOAT	CIRCLE	29.3	STRAIGHT DOWN
41379	10/23/02	HEADBOAT	CIRCLE	30.5	STRAIGHT DOWN
41382	10/23/02	HEADBOAT	CIRCLE	28.0	STRAIGHT DOWN
41384	10/23/02	HEADBOAT	CIRCLE	28.0	STRAIGHT DOWN
41385	10/23/02	HEADBOAT	CIRCLE	28.0	STRAIGHT DOWN
41387	10/23/02	HEADBOAT	CIRCLE	28.0	BLEEDING FROM GILLS, FLOATING
41390	10/23/02	HEADBOAT	CIRCLE	28.0	STRAIGHT DOWN
41393	10/23/02	HEADBOAT	CIRCLE	28.0	STRAIGHT DOWN
41801	04/15/03	HEADBOAT	CIRCLE	26.8	STRAIGHT DOWN, PROJECT 659
41802	04/15/03	HEADBOAT	CIRCLE	26.8	STRAIGHT DOWN, PROJECT 659
41803	04/15/03	HEADBOAT	CIRCLE	26.8	STRAIGHT DOWN, PROJECT 659
41804	04/15/03	HEADBOAT	CIRCLE	26.8	STRAIGHT DOWN, PROJECT 659
41805	04/15/03	HEADBOAT	CIRCLE	26.8	STRAIGHT DOWN, PROJECT 659
41806	04/15/03	HEADBOAT	CIRCLE	26.8	STRAIGHT DOWN, PROJECT 659
41807	04/15/03	HEADBOAT	CIRCLE	26.8	STRAIGHT DOWN, PROJECT 659
41810	04/15/03	HEADBOAT	CIRCLE	26.8	STRAIGHT DOWN, PROJECT 659
41811	04/15/03	HEADBOAT	CIRCLE	26.8	STRAIGHT DOWN, PROJECT 659
41812	04/15/03	HEADBOAT	CIRCLE	26.8	STRAIGHT DOWN, PROJECT 659
41814	04/15/03	HEADBOAT	CIRCLE	26.8	STRAIGHT DOWN, PROJECT 659
41815	05/06/03	HEADBOAT	CIRCLE	30.5	STRAIGHT DOWN, .659

41816	05/06/03	HEADBOAT	CIRCLE	30.5	STRAIGHT DOWN, .659
41817	05/06/03	HEADBOAT	CIRCLE	30.5	STRAIGHT DOWN, .659
41818	05/06/03	HEADBOAT	CIRCLE	30.5	STRAIGHT DOWN, .659
41819	05/06/03	HEADBOAT	CIRCLE	30.5	STRAIGHT DOWN, .659
41820	05/06/03	HEADBOAT	CIRCLE	30.5	STRAIGHT DOWN, .659
41821	05/06/03	HEADBOAT	CIRCLE	31.4	STRAIGHT DOWN, .659
41822	05/06/03	HEADBOAT	CIRCLE	31.4	STRAIGHT DOWN, .659
41823	05/06/03	HEADBOAT	CIRCLE	31.4	STRAIGHT DOWN, .659
41824	05/06/03	HEADBOAT	CIRCLE	31.4	STRAIGHT DOWN, .659
41825	05/06/03	HEADBOAT	CIRCLE	31.4	STRAIGHT DOWN, .659
41826	05/06/03	HEADBOAT	CIRCLE	31.4	STRAIGHT DOWN, .659
41827	05/06/03	HEADBOAT	CIRCLE	31.4	STRAIGHT DOWN, .659
41828	05/06/03	HEADBOAT	CIRCLE	31.4	STRAIGHT DOWN, .659
41829	05/06/03	HEADBOAT	CIRCLE	31.4	STRAIGHT DOWN, .659
41830	05/06/03	HEADBOAT	CIRCLE	31.4	STRAIGHT DOWN, .659
41831	05/06/03	HEADBOAT	CIRCLE	31.4	STRAIGHT DOWN, .659
41832	05/06/03	HEADBOAT	CIRCLE	31.4	STRAIGHT DOWN, .659
41833	05/06/03	HEADBOAT	CIRCLE	30.8	STRAIGHT DOWN, .659
41834	05/06/03	HEADBOAT	CIRCLE	30.8	STRAIGHT DOWN, .659
41835	05/06/03	HEADBOAT	CIRCLE	30.8	STRAIGHT DOWN, .659
41836	05/06/03	HEADBOAT	CIRCLE	31.7	STRAIGHT DOWN, .659
41837	05/06/03	HEADBOAT	CIRCLE	31.7	STRAIGHT DOWN, .659
41838	05/06/03	HEADBOAT	CIRCLE	31.7	STRAIGHT DOWN, .659
41839	05/06/03	HEADBOAT	CIRCLE	31.7	STRAIGHT DOWN, .659
41840	05/06/03	HEADBOAT	CIRCLE	31.7	STRAIGHT DOWN, .659
41841	05/06/03	HEADBOAT	CIRCLE	31.7	STRAIGHT DOWN, .659
41842	05/06/03	HEADBOAT	CIRCLE	31.7	STRAIGHT DOWN, .659
41843	05/06/03	HEADBOAT	CIRCLE	31.7	STRAIGHT DOWN, .659
41844	05/06/03	HEADBOAT	CIRCLE	31.7	STRAIGHT DOWN, .659
41908	04/01/03	HEADBOAT	CIRCLE	31.1	STRAIGHT DOWN, PROJECT 659
41909	04/01/03	HEADBOAT	CIRCLE	31.1	STRAIGHT DOWN, PROJECT 659
41911	04/01/03	HEADBOAT	CIRCLE	31.1	STRAIGHT DOWN, PROJECT 659
41913	04/01/03	HEADBOAT	CIRCLE	31.1	STRAIGHT DOWN, PROJECT 659
41914	04/01/03	HEADBOAT	CIRCLE	31.1	STRAIGHT DOWN, PROJECT 659
41915	04/01/03	HEADBOAT	CIRCLE	31.1	STRAIGHT DOWN, PROJECT 659
41916	04/01/03	HEADBOAT	CIRCLE	31.1	STRAIGHT DOWN, PROJECT 659
41917	04/01/03	HEADBOAT	CIRCLE	31.1	STRAIGHT DOWN, PROJECT 659
41918	04/01/03	HEADBOAT	CIRCLE	31.1	STRAIGHT DOWN, PROJECT 659
41919	04/01/03	HEADBOAT	CIRCLE	31.1	STRAIGHT DOWN, PROJECT 659, EATEN BY DOLPHIN
41920	04/01/03	HEADBOAT	CIRCLE	31.1	STRAIGHT DOWN, PROJECT 659
41921	04/01/03	HEADBOAT	CIRCLE	29.3	STRAIGHT DOWN, PROJECT 659
41922	04/01/03	HEADBOAT	CIRCLE	29.3	STRAIGHT DOWN, PROJECT 659
41923	04/01/03	HEADBOAT	CIRCLE	29.3	STRAIGHT DOWN, PROJECT 659
41924	04/01/03	HEADBOAT	CIRCLE	29.3	STRAIGHT DOWN, PROJECT 659
41925	04/01/03	HEADBOAT	CIRCLE	29.3	STRAIGHT DOWN, PROJECT 659
41926	04/01/03	HEADBOAT	CIRCLE	29.3	STRAIGHT DOWN, PROJECT 659
41928	04/01/03	HEADBOAT	CIRCLE	29.3	STRAIGHT DOWN, PROJECT 659, EATEN BY DOLPHIN
41929	04/01/03	HEADBOAT	CIRCLE	29.3	FLOATING, PROJECT 659, EATEN BY DOLPHIN
41930	04/01/03	HEADBOAT	CIRCLE	29.3	STRAIGHT DOWN, PROJECT 659

41933	04/01/03	HEADBOAT	CIRCLE	29.3	STRAIGHT DOWN, PROJECT 659
41934	04/01/03	HEADBOAT	CIRCLE	29.3	STRAIGHT DOWN, PROJECT 659
41935	04/01/03	HEADBOAT	CIRCLE	29.3	STRAIGHT DOWN, PROJECT 659
41936	04/01/03	HEADBOAT	CIRCLE	29.3	DOWN SLOWLY, PROJECT 659
41937	04/01/03	HEADBOAT	CIRCLE	29.3	FLOATING, PROJECT 659
41938	04/01/03	HEADBOAT	CIRCLE	29.3	SINKING, PROJECT 659
41939	04/01/03	HEADBOAT	CIRCLE	29.3	STRAIGHT DOWN, PROJECT 659
41940	04/01/03	HEADBOAT	CIRCLE	29.3	STRAIGHT DOWN, PROJECT 659
41941	04/01/03	HEADBOAT	CIRCLE	29.3	STRAIGHT DOWN, PROJECT 659
41942	04/01/03	HEADBOAT	CIRCLE	29.3	STRAIGHT DOWN, PROJECT 659
41943	04/01/03	HEADBOAT	CIRCLE	29.3	STRAIGHT DOWN, PROJECT 659
41945	04/01/03	HEADBOAT	CIRCLE	29.3	STRAIGHT DOWN, PROJECT 659
41946	04/01/03	HEADBOAT	CIRCLE	29.3	STRAIGHT DOWN, PROJECT 659
41947	04/01/03	HEADBOAT	CIRCLE	29.3	DOWN SLOWLY, PROJECT 659
41948	04/01/03	HEADBOAT	CIRCLE	29.3	STRAIGHT DOWN, PROJECT 659
41949	04/01/03	HEADBOAT	CIRCLE	29.3	STRAIGHT DOWN, PROJECT 659
41950	04/01/03	HEADBOAT	CIRCLE	29.3	STRAIGHT DOWN, PROJECT 659
41951	04/01/03	HEADBOAT	CIRCLE	29.3	STRAIGHT DOWN, PROJECT 659
41952	04/01/03	HEADBOAT	CIRCLE	29.3	STRAIGHT DOWN, PROJECT 659
41953	04/01/03	HEADBOAT	CIRCLE	29.3	STRAIGHT DOWN, PROJECT 659
41954	04/01/03	HEADBOAT	CIRCLE	29.3	BLEEDING FROM GILLS, FLOATING, PROJECT 659
41955	04/01/03	HEADBOAT	CIRCLE	29.3	STRAIGHT DOWN, PROJECT 659
41956	04/01/03	HEADBOAT	CIRCLE	29.3	STRAIGHT DOWN, PROJECT 659
41957	04/01/03	HEADBOAT	CIRCLE	29.3	STRAIGHT DOWN, PROJECT 659
41958	04/01/03	HEADBOAT	CIRCLE	29.3	STRAIGHT DOWN, PROJECT 659
41961	04/02/03	HEADBOAT	CIRCLE	29.6	STRAIGHT DOWN, PROJECT 659
41970	04/02/03	HEADBOAT	CIRCLE	28.0	STRAIGHT DOWN, PROJECT 659
41971	04/02/03	HEADBOAT	CIRCLE	28.0	STRAIGHT DOWN, PROJECT 659
41974	04/15/03	HEADBOAT	CIRCLE	26.2	STRAIGHT DOWN, PROJECT 659
41975	04/15/03	HEADBOAT	CIRCLE	26.2	STRAIGHT DOWN, PROJECT 659
41976	04/15/03	HEADBOAT	CIRCLE	26.2	STRAIGHT DOWN, PROJECT 659
41977	04/15/03	HEADBOAT	CIRCLE	26.2	STRAIGHT DOWN, PROJECT 659
41978	04/15/03	HEADBOAT	CIRCLE	26.2	STRAIGHT DOWN, PROJECT 659
41979	04/15/03	HEADBOAT	CIRCLE	26.2	STRAIGHT DOWN, PROJECT 659
41980	04/15/03	HEADBOAT	CIRCLE	26.2	STRAIGHT DOWN, PROJECT 659
41981	04/15/03	HEADBOAT	CIRCLE	26.2	STRAIGHT DOWN, PROJECT 659
41982	04/15/03	HEADBOAT	CIRCLE	26.2	STRAIGHT DOWN, PROJECT 659
41983	04/15/03	HEADBOAT	CIRCLE	26.2	STRAIGHT DOWN, PROJECT 659
41984	04/15/03	HEADBOAT	CIRCLE	26.2	DOWN SLOWLY, PROJECT 659
41988	04/15/03	HEADBOAT	CIRCLE	25.9	STRAIGHT DOWN, PROJECT 659
41989	04/15/03	HEADBOAT	CIRCLE	25.9	STRAIGHT DOWN, PROJECT 659
41991	04/15/03	HEADBOAT	CIRCLE	25.9	STRAIGHT DOWN, PROJECT 659
41992	04/15/03	HEADBOAT	CIRCLE	26.2	STRAIGHT DOWN, PROJECT 659
41993	04/15/03	HEADBOAT	CIRCLE	26.2	STRAIGHT DOWN, PROJECT 659
41994	04/15/03	HEADBOAT	CIRCLE	26.2	STRAIGHT DOWN, PROJECT 659
41995	04/15/03	HEADBOAT	CIRCLE	23.2	STRAIGHT DOWN, PROJECT 659
41996	04/15/03	HEADBOAT	CIRCLE	27.4	STRAIGHT DOWN, PROJECT 659
41997	04/15/03	HEADBOAT	CIRCLE	27.4	STRAIGHT DOWN, PROJECT 659
41999	04/15/03	HEADBOAT	CIRCLE	27.4	STRAIGHT DOWN, PROJECT 659

42000	04/15/03	HEADBOAT	CIRCLE	27.4	STRAIGHT DOWN, PROJECT 659
42165	03/02/03	RECREATIONAL	J	15.2	RE-RELEASED
42342	09/20/03	RECREATIONAL	J	0.0	TAGGER LOST TRACK, FORGOT TO RECORD INFO
42414	04/14/03	HEADBOAT	CIRCLE	27.4	RE-RELEASED
43262	02/21/06	CHARTER	J	81.7	STRAIGHT DOWN; 460
44302	11/07/03	HEADBOAT	J	21.3	SWALLOWED HOOK, HOOK LEFT IN FISH
44522	05/03/03	HEADBOAT	J	20.7	RE-RELEASED
44522	06/03/03	CHARTER	J	18.3	RE-RELEASED WITHOUT TAG
44538	04/19/03	HEADBOAT	J	27.4	FLOATED, DIED
44556	07/21/03	CHARTER	J	18.3	RELEASED WITHOUT TAG
44609	05/01/03	HEADBOAT	CIRCLE	25.9	HOOK LEFT IN THROAT
44611	01/24/04	RECREATIONAL	J	42.7	RE-RELEASED
44620	05/01/03	HEADBOAT	CIRCLE	41.1	QUARTER SIZE BITE MARK ON THROAT, SCABBED OVER
44629	05/03/03	HEADBOAT	CIRCLE	25.9	HOOK LEFT IN THROAT
44640	05/04/03	HEADBOAT	CIRCLE	25.9	HOOK LEFT IN THROAT
44641	05/04/03	HEADBOAT	CIRCLE	25.9	HOOK LEFT IN THROAT
44643	05/04/03	HEADBOAT	CIRCLE	25.9	HOOK LEFT IN THROAT
45025	05/30/03	HEADBOAT	J	24.4	FLOATING
45051	05/19/05	HEADBOAT	J	19.2	RECAP AS A GAG, RE-RELEASED WITH TAG
45053	07/08/04	HEADBOAT	J	21.9	HOOK LEFT IN
45054	07/08/04	HEADBOAT	J	21.9	HOOK LEFT IN
45057	07/08/04	HEADBOAT	J	19.5	SANK SLOWLY
45061	07/08/04	HEADBOAT	J	20.7	HOOK LEFT IN
45062	07/08/04	HEADBOAT	J	20.7	HOOK LEFT IN
45070	07/08/04	HEADBOAT	J	20.7	HOOK LEFT IN
45071	07/08/04	HEADBOAT	J	20.7	HOOK LEFT IN
46081	10/17/03	HEADBOAT	J	24.4	STRAIGHT DOWN, PROJECT 659
46082	10/17/03	HEADBOAT	J	24.4	STRAIGHT DOWN, PROJECT 659
46086	10/17/03	HEADBOAT	J	23.2	STRAIGHT DOWN, PROJECT 659
47264	10/16/04	HEADBOAT	J	25.9	BLEEDING, FLOATING
47288	10/15/04	HEADBOAT	J	21.3	A LITTLE SLOW
47290	11/19/04	RECREATIONAL	J	18.3	RE-RELEASED
47291	10/31/04	HEADBOAT	J	22.6	STRAIGHT DOWN
47292	10/15/04	HEADBOAT	J	21.3	SLOW
47334	10/15/05	HEADBOAT	J	21.3	RE-RELEASED WITH TAG
47395	07/23/05	HEADBOAT	J	20.7	RE-RELEASED WITH TAG
47403	11/02/04	HEADBOAT	J	25.6	HOOK IN FISH, FLOATER
47406	11/02/04	HEADBOAT	J	25.6	HOOK IN FISH
47412	11/18/04	HEADBOAT	J	26.5	RE-RELEASED
47420	11/02/04	HEADBOAT	J	27.1	HOOK IN FISH
47432	11/22/04	HEADBOAT	J	27.4	RE-RELEASED
47437	11/02/04	HEADBOAT	J	28.0	HOOK IN FISH
47448	04/01/05	HEADBOAT	J	25.9	RE-RELEASED WITH TAG
47449	11/03/04	HEADBOAT	J	25.6	DOWN SLOWLY
47451	11/18/04	HEADBOAT	J	25.6	RE-RELEASED
47453	04/01/05	HEADBOAT	J	25.9	RE-RELEASED WITH TAG
47453	05/02/05	HEADBOAT	J	23.8	RE-RELEASED
47456	11/18/04	HEADBOAT	J	26.5	RE-RELEASED, FLOATING
47457	11/03/04	HEADBOAT	J	26.8	RE-RELEASED

47466	11/03/04	HEADBOAT	J	26.5	HOOK IN FISH
47467	12/05/04	HEADBOAT	J	24.4	RE-RELEASED
47470	11/18/04	HEADBOAT	J	25.6	RE-RELEASED
47489	03/17/06	HEADBOAT	J	26.2	RE-RELEASED
47491	12/05/04	HEADBOAT	J	25.3	RE-RELEASED
47491	12/21/04	HEADBOAT	J	30.5	RE-RELEASED WITH TAG
47492	11/03/04	HEADBOAT	J	23.8	DOWN SLOWLY
47496	11/03/04	HEADBOAT	J	23.8	HOOK IN FISH
47496	12/01/04	HEADBOAT	J	23.8	RE-RELEASED
47496	12/05/04	HEADBOAT	J	25.3	RE-RELEASED
47501	12/08/04	HEADBOAT	J	26.2	RE-RELEASED
47502	10/16/04	HEADBOAT	J	25.0	FLOATED
47505	11/03/04	HEADBOAT	J	24.4	RE-RELEASED
47506	12/05/04	HEADBOAT	J	24.4	RE-RELASED, FLOATER
47520	12/05/04	HEADBOAT	J	24.4	RE-RELEASED
47523	11/03/04	HEADBOAT	J	24.4	RE-RELEASED
47524	10/17/04	HEADBOAT	J	26.2	HOOK LEFT IN FISH
47527	12/08/04	HEADBOAT	J	23.5	RE-RELEASED, HOOK LEFT IN FISH
47527	03/27/05	HEADBOAT	J	23.8	RE-RELEASED WITH TAG
47539	10/19/04	HEADBOAT	J	25.3	HOOK LEFT IN FISH
47552	10/20/04	HEADBOAT	J	26.2	HOOK LEFT IN FISH
47556	11/04/04	HEADBOAT	J	26.2	RE-RELEASED, HOOK IN THROAT, DOWN SLOWLY
47561	10/20/04	HEADBOAT	J	24.7	HOOK LEFT IN FISH
47586	10/21/04	HEADBOAT	J	26.8	HOOK LEFT IN MOUTH
47744	06/15/04	HEADBOAT	J	19.8	DOWN SLOWLY, BARRACUDA ATE IT, VENT
47749	06/15/04	HEADBOAT	J	19.8	DOWN SLOWLY, VENT
47751	06/15/04	HEADBOAT	J	19.8	DOWN SLOWLY, VENT
47752	06/15/04	HEADBOAT	J	19.8	STRAIGHT DOWN, VENT
47753	06/16/04	HEADBOAT	J	25.9	STRAIGHT DOWN, VENT
47754	06/16/04	HEADBOAT	J	29.0	STRAIGHT DOWN, VENT
47757	06/16/04	HEADBOAT	J	29.0	STRAIGHT DOWN, VENT
47760	06/16/04	HEADBOAT	J	29.0	FLOATING, VENT
47761	06/16/04	HEADBOAT	J	29.0	STRAIGHT DOWN, VENT
47942	08/04/04	HEADBOAT	J	21.0	VERY SLOW
47946	08/04/04	HEADBOAT	J	21.0	PHOTOS
48201	10/15/04	HEADBOAT	J	21.3	FLOATED AWAY BLEEDING
48235	06/04/05	HEADBOAT	J	29.0	RE-RELEASED
48238	10/30/04	HEADBOAT	J	30.5	STRAIGHT DOWN
48267	10/02/04	HEADBOAT	J	30.2	RELEASED W/TAG
48273	11/20/04	HEADBOAT	J	33.5	RE-RELEASED
48274	11/20/04	HEADBOAT	J	33.5	RE-RELEASED
48297	05/29/05	HEADBOAT	J	21.0	RE-RELEASED
48502	07/14/05	HEADBOAT	J	20.7	FLOATING
48503	07/18/05	HEADBOAT	J	25.0	STRAIGHT DOWN, HOOK IN FISH
48504	07/18/05	HEADBOAT	J	25.0	STRAIGHT DOWN
48505	07/19/05	HEADBOAT	J	27.4	STRAIGHT DOWN
48506	07/19/05	HEADBOAT	J	27.4	FLOATING
48507	07/19/05	HEADBOAT	J	21.9	FLOATING, HOOK IN MOUTH
48508	07/19/05	HEADBOAT	J	21.9	STRAIGHT DOWN

48509	07/20/05	HEADBOAT	J	17.1	STRAIGHT DOWN
48510	07/20/05	HEADBOAT	J	17.1	STRAIGHT DOWN
48511	07/20/05	HEADBOAT	J	17.1	HOOK IN MOUTH, STRAIGHT DOWN, BLEEDING
48512	07/20/05	HEADBOAT	J	17.1	FLOATING THEN STRAIGHT DOWN, BLEEDING
48513	07/20/05	HEADBOAT	J	17.1	STRAIGHT DOWN
48514	07/20/05	HEADBOAT	J	17.1	STRAIGHT DOWN
48515	07/20/05	HEADBOAT	J	17.1	STRAIGHT DOWN
48516	07/20/05	HEADBOAT	J	17.1	FLOATING THEN STRAIGHT DOWN
48517	07/20/05	HEADBOAT	J	17.1	STRAIGHT DOWN
48518	07/20/05	HEADBOAT	J	17.1	STRAIGHT DOWN
48519	07/20/05	HEADBOAT	J	17.1	STRAIGHT DOWN
48520	07/20/05	HEADBOAT	J	17.1	STRAIGHT DOWN
48521	07/20/05	HEADBOAT	J	17.1	STRAIGHT DOWN
48522	07/20/05	HEADBOAT	J	17.1	STRAIGHT DOWN
48523	07/20/05	HEADBOAT	J	17.1	STRAIGHT DOWN
48524	07/20/05	HEADBOAT	J	16.2	DOWN SLOW
48525	07/20/05	HEADBOAT	J	16.2	DOWN SLOW
48526	07/20/05	HEADBOAT	J	16.2	STRAIGHT DOWN
48527	07/20/05	HEADBOAT	J	16.2	HOOK IN MOUTH, STRAIGHT DOWN
48528	07/20/05	HEADBOAT	J	16.2	STRAIGHT DOWN
48529	07/20/05	HEADBOAT	J	18.9	STRAIGHT DOWN, BLEEDING FORM GILLS
48530	07/20/05	HEADBOAT	J	18.9	STRAIGHT DOWN
48531	07/20/05	HEADBOAT	J	18.9	STRAIGHT DOWN, BLEEDING
48532	07/20/05	HEADBOAT	J	18.9	STRAIGHT DOWN
48533	07/20/05	HEADBOAT	J	18.9	STRAIGHT DOWN
48534	07/20/05	HEADBOAT	J	18.9	HOOK IN MOUTH, BLEEDING, STRAIGHT DOWN
48535	07/20/05	HEADBOAT	J	18.9	STRAIGHT DOWN
48536	07/20/05	HEADBOAT	J	18.9	STRAIGHT DOWN
48537	07/20/05	HEADBOAT	J	18.9	STRAIGHT DOWN
48537	10/02/05	RECREATIONAL	J	18.3	RE-RELEASED WITH TAG, STRAIGHT DOWN
48538	07/20/05	HEADBOAT	J	17.1	DOWN SLOW
48539	07/20/05	HEADBOAT	J	16.8	STRAIGHT DOWN
48541	07/20/05	HEADBOAT	J	16.8	STRAIGHT DOWN
48542	07/21/05	HEADBOAT	J	22.9	STRAIGHT DOWN
48544	07/27/05	HEADBOAT	J	36.3	STRAIGHT DOWN
48545	07/27/05	HEADBOAT	J	25.9	STRAIGHT DOWN
48554	08/30/05	HEADBOAT	J	16.5	STRAIGHT DOWN
48554	01/09/06	HEADBOAT	J	15.5	RE-RELEASED
48555	08/30/05	HEADBOAT	J	25.9	STRAIGHT DOWN
48555	09/14/05	RECREATIONAL	J	28.3	RE-RELEASED
48556	08/30/05	HEADBOAT	J	25.9	STRAIGHT DOWN
48557	08/30/05	HEADBOAT	J	27.1	DOWN SLOWLY
48559	08/30/05	HEADBOAT	J	27.1	BLEEDING FROM GILLS, STRAIGHT DOWN
48562	08/30/05	HEADBOAT	J	25.0	STRAIGHT DOWN
48564	08/31/05	HEADBOAT	J	18.9	DOWN SLOWLY
48566	08/30/05	HEADBOAT	J	26.5	HOOK IN MOUTH, STRAIGHT DOWN
48567	08/31/05	HEADBOAT	J	18.9	STRAIGHT DOWN
48568	08/31/05	HEADBOAT	J	18.9	STRAIGHT DOWN
48569	08/31/05	HEADBOAT	J	20.4	BLEEDING FROM GILLS, DOWN SLOWLY

48570	08/31/05	HEADBOAT	J	23.5	BLEEDING FROM GILLS, FLOATING
48571	08/31/05	HEADBOAT	J	23.5	STRAIGHT DOWN
48572	08/31/05	HEADBOAT	J	23.5	STRAIGHT DOWN
48573	08/31/05	HEADBOAT	J	23.5	STRAIGHT DOWN
48574	08/31/05	HEADBOAT	J	23.5	STRAIGHT DOWN
48575	08/31/05	HEADBOAT	J	23.5	STRAIGHT DOWN
48576	08/31/05	HEADBOAT	J	23.2	DOWN SLOWLY
48577	08/31/05	HEADBOAT	J	23.5	FLOATING, DOWN SLOWLY
48578	08/31/05	HEADBOAT	J	23.2	STRAIGHT DOWN
48579	08/31/05	HEADBOAT	J	23.2	STRAIGHT DOWN
48580	08/31/05	HEADBOAT	J	23.2	STRAIGHT DOWN
48581	08/31/05	HEADBOAT	J	23.2	STRAIGHT DOWN
48582	08/31/05	HEADBOAT	J	23.2	STRAIGHT DOWN
48583	08/31/05	HEADBOAT	J	23.2	STRAIGHT DOWN
48584	08/31/05	HEADBOAT	J	23.2	STRAIGHT DOWN
48585	08/31/05	HEADBOAT	J	35.4	STRAIGHT DOWN
48587	08/31/05	HEADBOAT	J	35.4	STRAIGHT DOWN
48588	09/01/05	HEADBOAT	J	22.3	HOOK IN THROAT, DOWN SLOWLY
48589	09/01/05	HEADBOAT	J	23.5	DOWN SLOWLY
48590	09/01/05	HEADBOAT	J	23.5	STRAIGHT DOWN
48591	09/01/05	HEADBOAT	J	23.5	DOWN SLOWLY
48592	09/01/05	HEADBOAT	J	23.5	BLEEDING FROM GILLS, STRIAGHT DOWN
48593	09/01/05	HEADBOAT	J	23.5	BLEEDING FROM GILLS, STRIAGHT DOWN
48595	09/01/05	HEADBOAT	J	35.1	BELLY HOOKED, STRAIGHT DOWN
48596	09/01/05	HEADBOAT	J	35.1	FLOATING
48597	09/01/05	HEADBOAT	J	35.1	DOWN SLOWLY
48598	09/01/05	HEADBOAT	J	39.0	STRAIGHT DOWN
48621	08/09/04	HEADBOAT	J	29.0	FLOATING
48622	08/10/04	HEADBOAT	J	41.1	FLOATED
48645	08/23/04	HEADBOAT	J	27.4	FLOATED
48656	08/26/04	HEADBOAT	J	16.8	HOOK LEFT IN THROAT
48663	10/18/04	HEADBOAT	J	27.4	RE-RELEASD
48674	08/28/04	HEADBOAT	J	25.0	HOOK LEFT IN FISH
48675	08/28/04	HEADBOAT	J	25.0	HOOK LEFT IN FISH
48683	03/29/05	HEADBOAT	J	25.3	RE-RELEASED WITH TAG
48684	11/19/04	HEADBOAT	J	25.6	RE-RELEASED
48688	10/04/04	HEADBOAT	J	36.0	WENT DOWN SLOWLY
48688	05/10/05	HEADBOAT	J	36.9	RE-RELEASED
48694	10/30/04	HEADBOAT	J	36.9	RE-RELEASED
48701	12/08/04	RECREATIONAL	CIRCLE	19.2	FISH LIP HOOKED
48703	12/08/04	RECREATIONAL	CIRCLE	19.2	FISH LIP HOOKED
48705	12/08/04	RECREATIONAL	CIRCLE	19.2	FISH LIP HOOKED
48706	12/08/04	RECREATIONAL	CIRCLE	19.2	FISH LIP HOOKED
48707	12/08/04	RECREATIONAL	CIRCLE	19.2	FISH LIP HOOKED
48708	12/08/04	RECREATIONAL	CIRCLE	19.2	FISH LIP HOOKED
49228	06/30/04	HEADBOAT	J	29.9	DOWN SLOW, VENT
49232	07/01/04	HEADBOAT	J	0.0	STRAIGHT DOWN, VENT
49233	07/01/04	HEADBOAT	J	0.0	STRAIGHT DOWN, VENT
49234	07/01/04	HEADBOAT	J	0.0	DOWN SLOW, VENT

49235	07/01/04	HEADBOAT	J	0.0	STRAIGHT DOWN, VENT
49236	07/01/04	HEADBOAT	J	0.0	SWALLOW HOOK, VENT
49237	07/01/04	HEADBOAT	J	0.0	VENT
49238	07/01/04	HEADBOAT	J	0.0	DOWN SLOW, VENT
49239	07/01/04	HEADBOAT	J	0.0	FLOATING, VENT
49240	07/01/04	HEADBOAT	J	0.0	STRAIGHT DOWN, VENT
49241	07/01/04	HEADBOAT	J	0.0	STRAIGHT DOWN, VENT
49242	07/01/04	HEADBOAT	J	0.0	FLOATING, VENT
49542	07/21/05	HEADBOAT	J	22.9	DOWN SLOW
49601	07/18/05	HEADBOAT	J	21.9	STRAIGHT DOWN
49602	07/18/05	HEADBOAT	J	21.9	STRAIGHT DOWN
49603	07/18/05	HEADBOAT	J	21.9	DOWN SLOW
49604	07/18/05	HEADBOAT	J	21.9	STRAIGHT DOWN, BLEEDING
49605	07/18/05	HEADBOAT	J	21.9	STRAIGHT DOWN
49606	07/18/05	HEADBOAT	J	21.9	STRAIGHT DOWN
49607	07/20/05	HEADBOAT	J	27.4	STRAIGHT DOWN
49608	07/21/05	HEADBOAT	J	22.9	STRAIGHT DOWN
49609	07/21/05	HEADBOAT	J	22.9	STRAIGHT DOWN
49610	07/21/05	HEADBOAT	J	22.9	DOWN SLOW
49611	07/21/05	HEADBOAT	J	22.9	STRAIGHT DOWN
49613	07/22/05	HEADBOAT	J	20.7	DOWN SLOW
50201	07/11/04	HEADBOAT	J	24.4	STRAIGHT DOWN
50202	07/11/04	HEADBOAT	J	24.4	STRAIGHT DOWN
50203	07/12/04	HEADBOAT	J	36.0	STRAIGHT DOWN, VENT
50204	07/12/04	HEADBOAT	J	36.0	STRAIGHT DOWN, VENT
50205	07/12/04	HEADBOAT	J	39.6	STRAIGHT DOWN, VENT
50206	07/12/04	HEADBOAT	J	39.6	DOWN SLOWLY, VENT
50207	07/12/04	HEADBOAT	J	39.6	STRAIGHT DOWN, VENT
50208	07/12/04	HEADBOAT	J	39.9	STRAIGHT DOWN, VENT
50209	07/12/04	HEADBOAT	J	39.9	STRAIGHT DOWN, VENT
50210	07/12/04	HEADBOAT	J	39.9	DOWN SLOWLY, VENT
50211	07/12/04	HEADBOAT	J	40.5	STRAIGHT DOWN, VENT
50212	07/12/04	HEADBOAT	J	40.5	STRAIGHT DOWN, VENT
50213	07/12/04	HEADBOAT	J	40.5	DOWN SLOWLY, VENT
50214	07/12/04	HEADBOAT	J	40.5	STRAIGHT DOWN, VENT
50216	07/12/04	HEADBOAT	J	40.5	DOWN SLOWLY, VENT
50217	07/12/04	HEADBOAT	J	40.5	FLOATING, KEPT, VENT
50218	07/13/04	HEADBOAT	J	20.4	BITTEN ON TAIL, STRAIGHT DOWN, VENT
50219	07/13/04	HEADBOAT	J	20.4	STRAIGHT DOWN, VENT
50220	07/13/04	HEADBOAT	J	20.4	STRAIGHT DOWN, VENT
50221	07/13/04	HEADBOAT	J	20.4	BLEEDING GILL, STRAIGHT DOWN, VENT
50222	07/13/04	HEADBOAT	J	20.4	STRAIGHT DOWN, VENT
50223	07/13/04	HEADBOAT	J	20.4	DOWN SLOWLY, VENT
50224	07/13/04	HEADBOAT	J	20.4	STRAIGHT DOWN, VENT
50225	07/13/04	HEADBOAT	J	20.4	DOWN SLOWLY, VENT
50226	07/13/04	HEADBOAT	J	20.4	STRAIGHT DOWN, VENT
50227	07/13/04	HEADBOAT	J	20.4	DOWN SLOWLY, VENT
50228	07/13/04	HEADBOAT	J	20.4	DOWN SLOWLY, VENT
50229	07/13/04	HEADBOAT	J	26.8	BLEEDING GILL, STRAIGHT DOWN, VENT

50230	07/13/04	HEADBOAT	J	26.8	STRAIGHT DOWN, VENT
50231	07/13/04	HEADBOAT	J	26.8	STRAIGHT DOWN, VENT
50232	07/13/04	HEADBOAT	J	26.8	STRAIGHT DOWN, VENT
50233	07/13/04	HEADBOAT	J	23.5	STRAIGHT DOWN, VENT
50235	07/24/04	HEADBOAT	J	24.4	BLEEDING FROM GILLS, STRAIGHT DOWN, VENT
50236	07/24/04	HEADBOAT	J	24.4	STRAIGHT DOWN, VENT
50237	07/24/04	HEADBOAT	J	24.4	FLOATING, THEN DOWN SLOWLY, VENT
50237	11/28/04	HEADBOAT	J	24.4	RE-RELEASED
50238	07/24/04	HEADBOAT	J	24.4	STRAIGHT DOWN, VENT
50239	07/26/04	HEADBOAT	J	27.4	BLEEDING FROM GILLS, DOWN SLOW, VENT
50240	07/26/04	HEADBOAT	J	27.4	DOWN SLOW, VENT
50241	07/26/04	HEADBOAT	J	27.4	STRAIGHT DOWN, VENT
50242	07/26/04	HEADBOAT	J	30.5	FLOATING, VENT
50243	07/26/04	HEADBOAT	J	30.5	BLEEDING FROM GILLS, STRAIGHT DOWN, VENT
50244	07/26/04	HEADBOAT	J	30.5	DOWN SLOW, VENT
50245	07/26/04	HEADBOAT	J	30.5	DOWN SLOW, VENT
50246	07/26/04	HEADBOAT	J	30.5	DOWN SLOW, VENT
50247	07/26/04	HEADBOAT	J	30.5	BLEEDING FROM GILLS, STRAIGHT DOWN, VENT
50248	07/26/04	HEADBOAT	J	30.5	STRAIGHT DOWN, VENT
50249	07/26/04	HEADBOAT	J	30.5	STRAIGHT DOWN, VENT
50250	07/26/04	HEADBOAT	J	30.5	STRAIGHT DOWN, VENT
50251	07/26/04	HEADBOAT	J	39.6	STRAIGHT DOWN, VENT
50252	07/26/04	HEADBOAT	J	39.6	STRAIGHT DOWN, VENT
50253	07/26/04	HEADBOAT	J	39.6	BULGING EYE, FLOATING, VENT
50254	07/26/04	HEADBOAT	J	41.8	STRAIGHT DOWN, VENT
50255	07/26/04	HEADBOAT	J	41.8	STRAIGHT DOWN, VENT
50256	07/27/04	HEADBOAT	J	16.8	STRAIGHT DOWN, VENT
50257	07/27/04	HEADBOAT	J	16.8	DOWN SLOWLY, VENT
50258	07/27/04	HEADBOAT	J	16.8	DOWN SLOWLY, VENT
50259	07/27/04	HEADBOAT	J	16.8	DOWN SLOWLY, VENT
50260	07/27/04	HEADBOAT	J	16.8	DOWN SLOWLY, VENT
50261	07/27/04	HEADBOAT	J	16.8	STRAIGHT DOWN, VENT
50262	07/27/04	HEADBOAT	J	16.8	STRAIGHT DOWN, VENT
50263	07/27/04	HEADBOAT	J	16.8	STRAIGHT DOWN, VENT
50264	07/27/04	HEADBOAT	J	16.8	HOOK IN MOUTH, STRAIGHT DOWN, VENT
50265	07/27/04	HEADBOAT	J	17.1	BLEEDING FROM GILLS, DOWN SLOWLY, VENT
50266	07/27/04	HEADBOAT	J	17.1	STRAIGHT DOWN, VENT
50267	07/27/04	HEADBOAT	J	17.1	STRAIGHT DOWN, VENT
50268	07/27/04	HEADBOAT	J	17.1	BLEEDING FROM GILLS, DOWN SLOWLY, VENT
50269	07/27/04	HEADBOAT	J	17.1	STRAIGHT DOWN, VENT
50270	07/27/04	HEADBOAT	J	17.1	DOWN SLOWLY, VENT
50271	07/27/04	HEADBOAT	J	17.1	STRAIGHT DOWN, VENT
50272	07/27/04	HEADBOAT	J	17.1	STRAIGHT DOWN, VENT
50273	07/27/04	HEADBOAT	J	17.1	DOWN SLOWLY, VENT
50274	07/27/04	HEADBOAT	J	17.1	DOWN SLOWLY, VENT
50275	07/27/04	HEADBOAT	J	17.1	DOWN SLOWLY, VENT
50276	07/27/04	HEADBOAT	J	17.1	BLEEDING FROM GILLS, DOWN SLOWLY, VENT
50295	08/08/04	HEADBOAT	J	27.4	FLOATING, BLEEDING
50296	08/08/04	HEADBOAT	J	27.4	FLOATING

50297	08/09/04	HEADBOAT	J	24.4	STRAGHT DOWN, VENT
50298	08/09/04	HEADBOAT	J	24.4	DOWN SLOW, VENT
50300	08/08/04	HEADBOAT	J	27.4	STRAIGHT DOWN
50317	10/06/04	HEADBOAT	J	20.7	RELEASED WITH TAG
50319	10/15/04	RECREATIONAL	J	24.4	RE-RELEASED
50330	08/18/04	HEADBOAT	J	20.7	BLEEDING FROM GILLS
50336	09/18/04	HEADBOAT	J	33.5	RELEASED WITH TAG
50339	08/19/04	HEADBOAT	J	36.6	DOWN SLOW
50339	09/18/04	HEADBOAT	J	33.5	RELEASED WITH TAG
50343	08/19/04	HEADBOAT	J	36.6	DOWN SLOW
50345	08/19/04	HEADBOAT	J	36.6	FLOATED
50347	10/02/04	HEADBOAT	J	30.2	RELEASED W/TAG
50643	06/02/05	HEADBOAT	J	25.0	STRAIGHT DOWN
50644	06/02/05	HEADBOAT	J	27.4	STRAIGHT DOWN
50645	07/15/05	HEADBOAT	J	26.8	FLOATING
50647	07/21/05	HEADBOAT	J	22.9	STRAIGHT DOWN
50650	07/21/05	HEADBOAT	J	22.9	DOWN SLOW
50663	07/27/05	HEADBOAT	J	37.8	DEAD
50664	07/27/05	HEADBOAT	J	37.8	STRAIGHT DOWN
50676	07/27/05	HEADBOAT	J	34.4	FLOATING
51701	07/12/04	HEADBOAT	J	42.7	STRAIGHT DOWN, VENT
51702	07/12/04	HEADBOAT	J	42.7	DOWN SLOWLY, VENT
51703	07/12/04	HEADBOAT	J	42.7	STRAIGHT DOWN, VENT
51704	07/12/04	HEADBOAT	J	42.7	STRAIGHT DOWN, VENT
51705	07/12/04	HEADBOAT	J	42.7	DOWN SLOWLY, VENT
51706	07/12/04	HEADBOAT	J	42.7	DOWN SLOWLY, VENT
51707	07/12/04	HEADBOAT	J	42.7	DOWN SLOWLY, VENT
51708	07/12/04	HEADBOAT	J	42.7	STRAIGHT DOWN, VENT
51709	07/12/04	HEADBOAT	J	42.7	DOWN SLOWLY, VENT
51710	07/12/04	HEADBOAT	J	42.7	FLOATING, VENT
51711	07/13/04	HEADBOAT	J	24.4	STRAIGHT DOWN, VENT
51712	07/13/04	HEADBOAT	J	24.4	STRAIGHT DOWN, VENT
51713	07/13/04	HEADBOAT	J	24.4	STRAIGHT DOWN, VENT
51714	07/13/04	HEADBOAT	J	24.4	STRAIGHT DOWN, VENT
51715	07/13/04	HEADBOAT	J	24.4	STRAIGHT DOWN, VENT
51716	07/13/04	HEADBOAT	J	24.4	FLOATING, VENT
51717	07/13/04	HEADBOAT	J	24.4	DOWN SLOWLY, VENT
51718	07/13/04	HEADBOAT	J	24.4	STRAIGHT DOWN, VENT
51719	07/13/04	HEADBOAT	J	24.4	STRAIGHT DOWN, VENT
51720	07/13/04	HEADBOAT	J	24.4	STRAIGHT DOWN, VENT
51726	07/14/04	HEADBOAT	J	30.5	HOOK IN THROAT
51752	06/28/04	HEADBOAT	J	24.4	HOOK IN THROAT
51758	06/30/04	HEADBOAT	J	36.6	HOOK IN FISH
51767	07/02/04	HEADBOAT	J	24.4	HOOK IN THROAT
51771	07/02/04	HEADBOAT	J	25.9	HOOK IN THROAT
51798	07/13/04	HEADBOAT	J	36.6	HOOK LEFT IN FISH
51801	08/09/04	HEADBOAT	J	24.4	STRAIGHT DOWN, BLEEDING, VENT
51802	08/09/04	HEADBOAT	J	24.1	STRAIGHT DOWN, VENT
51803	08/10/04	HEADBOAT	J	21.3	DOWN SLOW,VENT

51803A	08/09/04	HEADBOAT	J	25.9	STRAIGHT DOWN, BLEEDING FROM GILLS, VENT
51804	08/10/04	HEADBOAT	J	21.3	STRAIGHT DOWN, VENT
51805	08/10/04	HEADBOAT	J	21.3	DOWN SLOW, HOOK IN, VENT
51806	08/10/04	HEADBOAT	J	21.3	STRAGHT DOWN, VENT
51807	08/10/04	HEADBOAT	J	21.3	STRAGHT DOWN, VENT
51809	08/10/04	HEADBOAT	J	21.3	STRAGHT DOWN, VENT
51810	08/10/04	HEADBOAT	J	21.3	STRAGHT DOWN, VENT
51812	08/10/04	HEADBOAT	J	24.4	STRAGHT DOWN, VENT
51813	08/10/04	HEADBOAT	J	24.4	STRAGHT DOWN, VENT
51817	10/29/04	HEADBOAT	J	30.5	4576510A3F STRAIGHT DOWN
51818	10/29/04	HEADBOAT	J	30.2	FLOATER 457673587C
51819	10/29/04	HEADBOAT	J	30.2	STRAIGHT DOWN
51820	10/29/04	HEADBOAT	J	30.2	STRAIGHT DOWN
51821	10/29/04	HEADBOAT	J	30.2	45765E2A14 FLOATER
51823	10/29/04	HEADBOAT	J	30.2	HARD GOING DOWN
51827	10/29/04	HEADBOAT	J	30.2	STRAIGHT DOWN
51830	10/30/04	HEADBOAT	J	30.5	STRAIGHT DOWN
51831	10/30/04	HEADBOAT	J	30.5	STRAIGHT DOWN
51832	10/30/04	HEADBOAT	J	30.5	STRAIGHT DOWN
51832	06/04/05	HEADBOAT	J	29.0	RE-RELEASED
51833	10/30/04	HEADBOAT	J	30.5	STRAIGHT DOWN
51834	10/30/04	HEADBOAT	J	30.5	STRAIGHT DOWN
51835	10/30/04	HEADBOAT	J	30.5	STRAIGHT DOWN
51836	10/30/04	HEADBOAT	J	30.5	STRAIGHT DOWN
51837	10/30/04	HEADBOAT	J	30.5	STRAIGHT DOWN
51838	10/30/04	HEADBOAT	J	30.5	FLOATER
51839	10/30/04	HEADBOAT	J	29.0	STRAIGHT DOWN
51840	10/30/04	HEADBOAT	J	29.0	STRAIGHT DOWN
51841	10/30/04	HEADBOAT	J	29.0	STRAIGHT DOWN
51842	10/30/04	HEADBOAT	J	29.0	STRAIGHT DOWN
51843	10/30/04	HEADBOAT	J	29.0	STRAIGHT DOWN
51844	04/05/05	RECREATIONAL	CIRCLE	20.1	NO ORIGINAL DATASHEET, SEE RECAP FORM
51845	10/31/04	HEADBOAT	J	21.3	STRAIGHT DOWN
51846	10/31/04	HEADBOAT	J	21.3	STRAIGHT DOWN
51847	10/31/04	HEADBOAT	J	21.3	FLOATER
51848	10/31/04	HEADBOAT	J	21.3	STRAIGHT DOWN
51850	10/31/04	HEADBOAT	J	21.3	STRAIGHT DOWN
51850	07/14/05	HEADBOAT	J	18.3	RE-RELEASED WITH TAG. TAG COVERED WITH ALGAE
51851	10/31/04	HEADBOAT	J	21.3	STRAIGHT DOWN
51852	10/31/04	HEADBOAT	J	21.3	STRAIGHT DOWN
51853	10/31/04	HEADBOAT	J	21.3	STRAIGHT DOWN
51854	10/31/04	HEADBOAT	J	22.6	HOOK IN THROAT STRAIGHT DOWN
51855	10/31/04	HEADBOAT	J	22.6	STRAIGHT DOWN
51856	10/31/04	HEADBOAT	J	22.6	FLOATER - IN BUCKET FOR 10 MINS
51857	10/31/04	HEADBOAT	J	22.6	STRAIGHT DOWN OLD TAG UNREADABLE REPLACED TAG
51858	10/31/04	HEADBOAT	J	22.6	STRAIGHT DOWN
51859	10/31/04	HEADBOAT	J	22.6	STRAIGHT DOWN
51860	10/31/04	HEADBOAT	J	22.6	STRAIGHT DOWN HOOK IN THROAT

51861	10/31/04	HEADBOAT	J	22.6	DID GO DOWN-SANK
51862	10/31/04	HEADBOAT	J	22.6	DOWN SLOWLY
51863	10/31/04	HEADBOAT	J	22.6	STRAIGHT DOWN
51864	10/31/04	HEADBOAT	J	22.6	STRAIGHT DOWN
51865	10/31/04	HEADBOAT	J	22.6	FLOATER GUT HOOKED
51866	10/31/04	HEADBOAT	J	22.6	STRAIGHT DOWN
51867	10/31/04	HEADBOAT	J	22.6	STRAIGHT DOWN
51869	11/01/04	HEADBOAT	J	25.0	STRAIGHT DOWN
51870	11/01/04	HEADBOAT	J	25.0	STRAIGHT DOWN
51871	11/01/04	HEADBOAT	J	25.0	STRAIGHT DOWN
51872	11/01/04	HEADBOAT	J	25.0	STRAIGHT DOWN
51873	11/01/04	HEADBOAT	J	25.0	STRAIGHT DOWN
51874	11/01/04	HEADBOAT	J	25.0	KEPT
51875	11/01/04	HEADBOAT	J	25.0	STRAIGHT DOWN
51876	11/01/04	HEADBOAT	J	35.1	IN STOMACH / STRAIGHT DOWN
51877	11/01/04	HEADBOAT	J	35.1	STRAIGHT DOWN
51878	11/01/04	HEADBOAT	J	35.1	STRAIGHT DOWN
51879	11/01/04	HEADBOAT	J	35.1	STRAIGHT DOWN
51880	11/01/04	HEADBOAT	J	35.1	DOWN SLOW
51880	12/13/04	HEADBOAT	J	35.4	RE-RELEASED
51881	11/01/04	HEADBOAT	J	35.1	STRAIGHT DOWN
51883	11/01/04	HEADBOAT	J	35.1	STRAIGHT DOWN
51884	11/01/04	HEADBOAT	J	35.1	STRAIGHT DOWN
51884	11/08/04	HEADBOAT	J	35.1	RE-RELEASED
51885	11/01/04	HEADBOAT	J	33.5	STRAIGHT DOWN
51886	11/01/04	HEADBOAT	J	35.1	FLOATER / GUT HOOK
51887	11/01/04	HEADBOAT	J	33.5	BELLY HOOK / STRAIGHT DOWN
51888	11/01/04	HEADBOAT	J	33.5	DOWN SLOW
51889	11/01/04	HEADBOAT	J	33.5	DOWN SLOW
51890	11/01/04	HEADBOAT	J	33.5	STRAIGHT DOWN
51891	11/01/04	HEADBOAT	J	33.5	STRAIGHT DOWN
51892	11/01/04	HEADBOAT	J	33.5	STRAIGHT DOWN
51893	11/01/04	HEADBOAT	J	33.5	STRAIGHT DOWN
51894	11/01/04	HEADBOAT	J	33.5	STRAIGHT DOWN
51895	11/01/04	HEADBOAT	J	33.5	STRAIGHT DOWN
51896	11/01/04	HEADBOAT	J	33.5	DOWN SLOW
51897	11/01/04	HEADBOAT	J	33.5	STRAIGHT DOWN
51901	11/01/04	HEADBOAT	J	33.5	STRAIGHT DOWN
51902	11/01/04	HEADBOAT	J	32.0	STRAIGHT DOWN
51903	11/01/04	HEADBOAT	J	32.0	STRIAGHT DOWN
51904	11/01/04	HEADBOAT	J	32.0	STRAIGHT DOWN
51905	11/01/04	HEADBOAT	J	32.0	STRAIGHT DOWN
51906	11/01/04	HEADBOAT	J	32.0	STRAIGHT DOWN
51907	11/01/04	HEADBOAT	J	32.0	STRAIGHT DOWN / HOOK IN GUT
51908	11/01/04	HEADBOAT	J	32.0	STRAIGHT DOWN / HOOK IN GILL
51909	11/01/04	HEADBOAT	J	36.9	STRAIGHT DOWN
51910	11/01/04	HEADBOAT	J	36.9	STRAIGHT DOWN
51911	11/01/04	HEADBOAT	J	36.9	STRAIGHT DOWN
51913	11/01/04	HEADBOAT	J	36.9	STRAIGHT DOWN

51915	11/01/04	HEADBOAT	J	36.9	STRAIGHT DOWN
51915	07/06/05	RECREATIONAL	J	36.6	RE-RELEASED WITH TAG
51916	11/01/04	HEADBOAT	J	36.9	STRAIGHT DOWN
51964	07/27/04	HEADBOAT	J	18.3	DOWN SLOW, VENT
51965	07/27/04	HEADBOAT	J	18.3	STRAIGHT DOWN, VENT
51966	07/27/04	HEADBOAT	J	18.3	STRAIGHT DOWN, VENT
51967	07/27/04	HEADBOAT	J	18.3	STRAIGHT DOWN, VENT
51968	07/27/04	HEADBOAT	J	18.3	STRAIGHT DOWN, VENT
51969	07/27/04	HEADBOAT	J	18.3	STRAIGHT DOWN, VENT
51971	07/26/04	HEADBOAT	J	18.3	STRAIGHT DOWN, VENT
51972	07/26/04	HEADBOAT	J	18.3	DOWN SLOWLY, VENT
51974	07/26/04	HEADBOAT	J	18.9	DOWN SLOWLY, VENT
51975	07/26/04	HEADBOAT	J	16.8	STRAIGHT DOWN, VENT
51976	07/26/04	HEADBOAT	J	16.8	STRAIGHT DOWN, VENT
51977	07/26/04	HEADBOAT	J	16.8	STRAIGHT DOWN, VENT
51978	07/26/04	HEADBOAT	J	16.8	STRAIGHT DOWN, VENT
51979	07/26/04	HEADBOAT	J	16.8	STRAIGHT DOWN, VENT
51980	07/26/04	HEADBOAT	J	16.8	DOWN SLOWLY; INITIALLY NOT VENTED, RE-CAP BY NET
51981	07/26/04	HEADBOAT	J	16.8	STRAIGHT DOWN, VENT
51982	07/26/04	HEADBOAT	J	16.8	STRAIGHT DOWN, VENT
51983	07/26/04	HEADBOAT	J	16.8	STRAIGHT DOWN, VENT
51984	07/26/04	HEADBOAT	J	16.8	STRAIGHT DOWN, VENT
51985	07/26/04	HEADBOAT	J	16.8	STRAIGHT DOWN, VENT
51986	07/26/04	HEADBOAT	J	16.8	STRAIGHT DOWN, VENT
51987	07/26/04	HEADBOAT	J	16.8	BLEEDING, VENT
51988	07/26/04	HEADBOAT	J	16.8	STRAIGHT DOWN, VENT
51989	07/26/04	HEADBOAT	J	16.8	STRAIGHT DOWN, VENT
51990	07/26/04	HEADBOAT	J	16.8	STRAIGHT DOWN, VENT
51991	07/26/04	HEADBOAT	J	16.8	STRAIGHT DOWN, VENT
51991	01/04/05	HEADBOAT	J	26.5	RE-RELEASED
51992	07/26/04	HEADBOAT	J	16.8	STRAIGHT DOWN, VENT
51993	07/26/04	HEADBOAT	J	16.8	DOWN SLOWLY, VENT
51994	07/26/04	HEADBOAT	J	16.8	STRAIGHT DOWN, VENT
51995	07/26/04	HEADBOAT	J	16.8	STRAIGHT DOWN, VENT
51996	07/26/04	HEADBOAT	J	16.8	BLEEDING, DOWN SLOWLY, VENT
51997	07/26/04	HEADBOAT	J	16.8	STRAIGHT DOWN, VENT
51998	07/26/04	HEADBOAT	J	16.8	STRAIGHT DOWN, VENT
51999	07/26/04	HEADBOAT	J	16.8	STRAIGHT DOWN, VENT
52000	07/26/04	HEADBOAT	J	16.8	HOOK IN MOUTH, VENT
52155	06/28/04	HEADBOAT	J	22.9	STRAIGHT DOWN, VENT
52156	06/28/04	HEADBOAT	J	22.9	STRAIGHT DOWN, VENT
52157	06/28/04	HEADBOAT	J	22.9	STRAIGHT DOWN, VENT
52158	06/28/04	HEADBOAT	J	22.9	STRAIGHT DOWN, VENT
52159	06/28/04	HEADBOAT	J	22.9	STRAIGHT DOWN, VENT
52160	06/28/04	HEADBOAT	J	22.9	STRAIGHT DOWN, VENT
52161	06/28/04	HEADBOAT	J	22.9	STRAIGHT DOWN, VENT
52162	06/28/04	HEADBOAT	J	22.9	STRAIGHT DOWN, VENT
52163	06/28/04	HEADBOAT	J	22.9	STRAIGHT DOWN, VENT

52164	06/28/04	HEADBOAT	J	22.9	STRAIGHT DOWN, VENT
52165	06/28/04	HEADBOAT	J	22.9	STRAIGHT DOWN, VENT
52166	06/28/04	HEADBOAT	J	22.9	STRAIGHT DOWN, VENT
52167	06/28/04	HEADBOAT	J	22.9	STRAIGHT DOWN, VENT
52168	06/28/04	HEADBOAT	J	22.9	STRAIGHT DOWN, VENT
52169	06/28/04	HEADBOAT	J	22.9	STRAIGHT DOWN, VENT
52170	06/28/04	HEADBOAT	J	22.9	STRAIGHT DOWN, VENT
52171	06/28/04	HEADBOAT	J	24.4	STRAIGHT DOWN, VENT
52172	06/28/04	HEADBOAT	J	24.4	STRAIGHT DOWN, VENT
52173	06/28/04	HEADBOAT	J	24.4	STRAIGHT DOWN, VENT
52174	06/28/04	HEADBOAT	J	24.4	STRAIGHT DOWN, VENT
52175	06/28/04	HEADBOAT	J	29.0	STRAIGHT DOWN, VENT
52176	06/28/04	HEADBOAT	J	29.0	STRAIGHT DOWN, VENT
52177	06/28/04	HEADBOAT	J	29.0	STRAIGHT DOWN, VENT
52178	06/28/04	HEADBOAT	J	39.6	STRAIGHT DOWN, VENT
52179	06/28/04	HEADBOAT	J	39.6	FLOAT/BITE OFF TAIL, VENT
52180	06/28/04	HEADBOAT	J	39.6	SLOW TO SWIM DOWN, BUT GOT DOWN, VENT
52181	06/28/04	HEADBOAT	J	39.6	STRAIGHT DOWN, VENT
52182	06/28/04	HEADBOAT	J	39.6	STRAIGHT DOWN, VENT
52183	06/28/04	HEADBOAT	J	39.6	STRAIGHT DOWN, VENT
52184	06/28/04	HEADBOAT	J	39.6	FLOATING, STILL, VENT
52185	06/28/04	HEADBOAT	J	39.6	STRAIGHT DOWN, VENT
52186	06/28/04	HEADBOAT	J	39.6	FLOATING, STILL, VENT
52187	06/28/04	HEADBOAT	J	39.6	FLOATING, STILL, VENT
52188	06/28/04	HEADBOAT	J	39.9	STRAIGHT DOWN, VENT
52189	06/28/04	HEADBOAT	J	39.9	FLOATER, BLEEDING, VENT
52191	06/28/04	HEADBOAT	J	41.1	FLOATER, VENT
52193	07/12/04	HEADBOAT	J	36.6	FLOATING, VENT
52194	07/12/04	HEADBOAT	J	36.6	STRAIGHT DOWN, VENT
52195	07/12/04	HEADBOAT	J	42.7	STRAIGHT DOWN, VENT
52196	07/12/04	HEADBOAT	J	42.7	DOWN SLOWLY, VENT
52407	05/08/05	HEADBOAT	J	40.2	HOOK LEFT IN FISH
52421	05/08/05	HEADBOAT	J	39.6	HOOK IN FISH
52422	05/08/05	HEADBOAT	J	39.6	BUG-EYED W/ HOOK
52433	05/10/05	HEADBOAT	J	24.1	HOOK IN FISH
52453	05/12/05	HEADBOAT	J	26.2	FLOATED WITH HOOK IN THROAT
52477	03/03/06	HEADBOAT	J	23.5	RE-RELEASED
52484	05/19/05	HEADBOAT	J	23.2	HOOK LEFT IN FISH
52486	05/19/05	HEADBOAT	J	23.5	HOOK LEFT IN FISH
52497	05/19/05	HEADBOAT	J	23.8	HOOK LEFT IN FISH
52551	05/18/05	HEADBOAT	J	32.3	STRAIGHT DOWN
52566	05/18/05	HEADBOAT	J	33.5	STRAIGHT DOWN
52581	05/18/05	HEADBOAT	J	36.6	STRAIGHT DOWN
52587	05/18/05	HEADBOAT	J	36.6	STRAIGHT DOWN
52593	06/02/05	HEADBOAT	J	27.4	STRAIGHT DOWN
52593	09/17/05	CHARTER	J	25.9	RE-RELEASED WITH TAG, STRAIGHT DOWN
52598	07/18/05	HEADBOAT	J	21.9	STRAIGHT DOWN
52599	07/18/05	HEADBOAT	J	21.9	STRAIGHT DOWN
52961	09/29/05	HEADBOAT	J	21.3	RE-RELEASED WITH TAG

52967	09/29/05	HEADBOAT	J	21.3	RE-RELEASED WITH TAG
53020	10/08/05	HEADBOAT	J	24.1	BLEEDING/FLOATING
53051	06/15/05	HEADBOAT	J	18.9	HOOK LEFT IN FISH
53061	06/18/05	HEADBOAT	J	23.2	HOOK LEFT IN FISH
53073	09/16/05	HEADBOAT	J	25.0	FLOATED
53077	09/17/05	HEADBOAT	J	26.2	FLOATED
53082	09/18/05	HEADBOAT	J	25.0	FLOATED
53097	11/07/05	HEADBOAT	J	25.6	ALREADY TAGGED-WENT UNNOTICED
53114	01/20/06	HEADBOAT	J	23.8	HOOK LEFT IN FISH
53114	03/30/06	HEADBOAT	J	24.4	RE-RELEASED
53115	03/17/06	HEADBOAT	J	24.7	RE-RELEASED
53126	03/11/06	HEADBOAT	J	0.0	RE-RELEASED WITH TAG
53134	02/07/06	HEADBOAT	J	28.0	HOOK LEFT IN FISH/NO BLOOD
53135	04/06/06	HEADBOAT	J	25.0	RE-RELEASED
53140	03/30/06	HEADBOAT	J	24.4	RE-RELEASED
53162	10/19/05	RECREATIONAL	CIRCLE	30.5	RE-RELEASED
53723	09/17/05	HEADBOAT	J	24.4	RE-RELEASED
53806	07/19/05	RECREATIONAL	CIRCLE	22.9	RE-RELEASED
53841	06/30/05	RECREATIONAL	CIRCLE	24.4	RE-RELEASED
53841	09/20/05	RECREATIONAL	CIRCLE	26.2	RE-RELEASED WITH TAG
53844	08/23/05	RECREATIONAL	CIRCLE	25.9	RE-RELEASED
53854	07/19/05	RECREATIONAL	CIRCLE	22.9	RE-RELEASED
53897	09/20/05	RECREATIONAL	CIRCLE	25.9	RE-RELEASED
54211	03/25/05	HEADBOAT	J	26.2	RE-RELEASED W/TAG, VERY BLOOD UPON RELEASE
54211	04/29/05	HEADBOAT	J	25.3	RE-RELEASED
54221	11/18/04	HEADBOAT	J	25.6	HOOK IN GUT, INSIDES OUT
54224	11/18/04	HEADBOAT	J	25.6	HOOK IN THROAT
54231	03/29/05	HEADBOAT	J	26.2	RE-RELEASED WITH TAG
54235	01/04/05	HEADBOAT	J	26.2	RE-RELEASED
54242	11/19/04	HEADBOAT	J	26.2	SLOW GOING DOWN
54245	11/19/04	HEADBOAT	J	27.1	HOOK LEFT IN FISH
54254	01/05/05	HEADBOAT	J	29.9	SLOW GOING DOWN
54257	01/05/05	HEADBOAT	J	29.9	GUESS ON LENGTH
54267	01/05/05	HEADBOAT	J	26.5	HOOK IN FISH
54268	01/05/05	HEADBOAT	J	26.5	HOOK IN FISH
54269	02/20/05	RECREATIONAL	J	27.4	RE-RELEASED WITH TAG
54273	01/05/05	HEADBOAT	J	26.5	HOOK IN FISH
54303	11/19/04	HEADBOAT	J	36.6	SLOW TO GO DOWN
54327	12/06/04	HEADBOAT	J	25.0	RE-RELEASED
54329	11/16/04	HEADBOAT	J	22.9	HOOK LEFT IN FISH
54329	03/04/05	RECREATIONAL	J	26.2	RE-RELEASED WITH TAG
54345	11/26/04	HEADBOAT	J	39.6	SLOW GOING DOWN
54351	12/08/05	HEADBOAT	J	26.2	HOOK LEFT IN THROAT, RE-RELEASED
54360	06/02/05	HEADBOAT	J	27.4	RE-RELEASED, STRAIGHT DOWN
54373	04/04/05	HEADBOAT	J	24.4	RE-RELEASED WITH TAG
54377	12/08/04	HEADBOAT	J	22.9	FLOATED, THEN WENT DOWN AFTER 2 MINUTES
54381	04/04/05	HEADBOAT	J	22.9	RE-RELEASED WITH TAG
54404	03/27/05	HEADBOAT	J	23.8	RE-RELEASED
54431	01/04/05	HEADBOAT	J	25.0	HOOK LEFT IN THROAT

54440	01/05/05	HEADBOAT	J	28.7	SLOW GOING DOWN
54516	05/27/05	RECREATIONAL	CIRCLE	30.5	RE-RELEASED
54793	06/06/05	CHARTER	J	74.7	460
54794	06/06/05	CHARTER	J	74.7	460
54795	06/06/05	CHARTER	J	74.7	460
54796	06/06/05	CHARTER	J	74.7	460
54797	06/06/05	CHARTER	J	74.7	460
55751	04/14/05	HEADBOAT	J	24.4	RE-RELEASED WITH TAG
55756	02/15/05	HEADBOAT	J	26.2	SLOW GOING DOWN
55756	05/02/05	HEADBOAT	J	24.7	RE-RELEASED
55769	05/19/05	HEADBOAT	J	18.9	RE-RELEASED
55778	02/16/05	HEADBOAT	J	24.1	HOOK LEFT IN THROAT
55780	04/01/05	HEADBOAT	J	25.3	RE-RELEASED WITH TAG
55793	06/02/05	HEADBOAT	J	27.4	RE-RELEASED
55799	04/04/05	HEADBOAT	J	25.0	FLOATED
55802	04/04/05	HEADBOAT	J	25.0	FLOAT
55809	04/06/05	HEADBOAT	J	23.8	FISH WAS SIDE HOOKED
55821	04/06/05	HEADBOAT	J	22.6	HOOK IN THROAT
55830	05/14/05	HEADBOAT	J	25.0	RE-RELEASED
55847	04/11/05	HEADBOAT	J	26.2	BLOOD FROM MOUTH AREA
57300	03/29/06	HEADBOAT	J	27.4	HOOK LEFT IN FISH
57850	09/09/05	CHARTER	CIRCLE	7.6	FLOATING, SWALLED HOOK, 13 MILES SOUTH OF DESTIN
57994	12/13/05	RECREATIONAL	CIRCLE	24.4	RECAPTURED AS A GAG, KEPT
58067	05/06/06	RECREATIONAL	CIRCLE	24.4	RE-RELEASED, RECAPTURED AS A GAG
58124	04/05/06	RECREATIONAL	CIRCLE	30.5	RECAPTURED 2 SNAPPER BUT COULD NOT READ ANY #
58457	04/14/05	HEADBOAT	J	23.5	HOOK LEFT IN FISH
58462	05/02/05	HEADBOAT	J	24.1	RE-RELEASED
58470	04/14/05	HEADBOAT	J	24.1	SMALL FISH
58481	04/19/05	HEADBOAT	J	52.7	HOOK LEFT IN FISH
58507	04/26/05	HEADBOAT	J	24.7	HOOK LEFT IN FISH
58508	05/19/05	HEADBOAT	J	24.1	RE-RELEASED
58511	04/26/05	HEADBOAT	J	24.7	SEVER SCAR ON SIDE
58513	04/26/05	HEADBOAT	J	24.7	HOOK LEFT IN FISH
58517	05/19/05	HEADBOAT	J	23.8	RE-RELEASED
58521	04/26/05	HEADBOAT	J	25.0	HOOK LEFT IN FISH
58527	04/26/05	HEADBOAT	J	25.0	SLOW GOING DOWN
58533	04/26/05	HEADBOAT	J	22.6	HOOK LEFT IN FISH
58703	07/26/05	RECREATIONAL	CIRCLE	25.9	RE-RELEASED
58715	08/01/05	RECREATIONAL	CIRCLE	25.9	RE-RELEASED
58725	06/28/05	CHARTER	J	21.6	STRAIGHT DOWN
58733	06/08/05	CHARTER	J	24.4	RE-RELEASED WITH TAG
58744	08/15/05	RECREATIONAL	CIRCLE	25.9	RE-RELEASED
59011	11/06/05	HEADBOAT	J	24.4	SWAM DOWN
59012	11/06/05	HEADBOAT	J	24.4	SWAM DOWN
59013	11/06/05	HEADBOAT	J	24.4	SWAM DOWN
59014	11/06/05	HEADBOAT	J	24.4	SWAM DOWN
59015	11/06/05	HEADBOAT	J	24.4	SWAM DOWN
59016	11/06/05	HEADBOAT	J	24.4	SWAM DOWN

59017	11/06/05	HEADBOAT	J	24.4	SWAM DOWN
59018	11/06/05	HEADBOAT	J	24.4	SWAM DOWN
59019	11/06/05	HEADBOAT	J	24.4	SWAM DOWN
59019	12/05/05	HEADBOAT	J	25.9	RE-RELEASED
59020	11/06/05	HEADBOAT	J	24.4	SWAM DOWN
59239	07/16/05	RECREATIONAL	CIRCLE	19.8	STRAIGHT DOWN
59240	07/16/05	RECREATIONAL	CIRCLE	23.8	STRAIGHT DOWN
59979	09/20/05	RECREATIONAL	CIRCLE	25.9	RE-RELEASED
59987	08/23/05	RECREATIONAL	CIRCLE	25.9	RE-RELEASED
59988	08/08/05	HEADBOAT	J	24.4	RE-RELEASED WITH TAG
59992	08/15/05	RECREATIONAL	CIRCLE	0.0	RE-RELEASED
60012	09/02/05	RECREATIONAL	CIRCLE	24.4	RE-RELEASED
60160	04/24/06	RECREATIONAL	CIRCLE	24.1	"I BELIEVE THIS FISH DID NOT LIVE"
G2708	08/19/06	HEADBOAT	J	44.2	FLOATER
G39905	08/04/03	CHARTER	CIRCLE	24.4	RE-RELEASED
G42433	05/06/03	HEADBOAT	CIRCLE	30.8	FLOATING, .659
G42434	05/06/03	HEADBOAT	CIRCLE	30.8	DOWN SLOWLY, .659
G42435	05/06/03	HEADBOAT	CIRCLE	30.5	STRAIGHT DOWN, .659
G42436	05/06/03	HEADBOAT	CIRCLE	30.5	STRAIGHT DOWN, .659
G42437	05/06/03	HEADBOAT	CIRCLE	30.5	STRAIGHT DOWN, .659
G42438	05/06/03	HEADBOAT	CIRCLE	30.5	STRAIGHT DOWN, .659
G42439	05/06/03	HEADBOAT	CIRCLE	30.5	STRAIGHT DOWN, .659
G42440	05/06/03	HEADBOAT	CIRCLE	30.5	STRAIGHT DOWN, .659
G42441	05/06/03	HEADBOAT	CIRCLE	30.5	STRAIGHT DOWN, .659
G42442	05/06/03	HEADBOAT	CIRCLE	31.4	STRAIGHT DOWN, .659
G42443	05/06/03	HEADBOAT	CIRCLE	31.4	STRAIGHT DOWN, .659
G42444	05/06/03	HEADBOAT	CIRCLE	31.4	STRAIGHT DOWN, .659
G42445	05/06/03	HEADBOAT	CIRCLE	31.4	STRAIGHT DOWN, .659
G42446	05/06/03	HEADBOAT	CIRCLE	31.7	STRAIGHT DOWN, .659
G42447	05/06/03	HEADBOAT	CIRCLE	31.7	STRAIGHT DOWN, .659
G42448	05/06/03	HEADBOAT	CIRCLE	31.7	STRAIGHT DOWN, .659
G42449	05/06/03	HEADBOAT	CIRCLE	31.7	STRAIGHT DOWN, .659
G42450	05/06/03	HEADBOAT	CIRCLE	31.7	STRAIGHT DOWN, .659, DOLPHINS ARRIVED (SCAB)
G42662	09/29/05	HEADBOAT	J	21.3	RE-RELEASED WITH TAG
G42848	08/26/03	RECREATIONAL	CIRCLE	25.9	RE-RELEASED
G43167	06/11/04	CHARTER	CIRCLE	19.8	RE-RELEASED
G43185	06/23/03	RECREATIONAL	CIRCLE	25.9	RE-RELEASED
G43422	08/26/03	RECREATIONAL	CIRCLE	25.9	RE-RELEASED
G43435	05/18/04	RECREATIONAL	CIRCLE	25.9	RE-RELEASED
G43437	08/26/03	RECREATIONAL	CIRCLE	25.9	RE-RELEASED
G43441	06/04/04	RECREATIONAL	CIRCLE	25.9	RE-RELEASED
G43500	06/11/04	CHARTER	CIRCLE	19.8	RE-RELEASED
G43709	03/31/05	RECREATIONAL	J	24.4	NO ORIGINAL DATASHEET, SEE RECAP FORM
G43980	05/18/04	RECREATIONAL	CIRCLE	25.9	RE-RELEASED
G43993	03/20/04	RECREATIONAL	CIRCLE	22.9	RE-RELEASED
G44190	11/07/02	HEADBOAT	J	18.3	WAS TAG # 20844, REMOVED; RETAGGED W/ G44190
G44480	10/23/02	HEADBOAT	CIRCLE	28.0	STRAIGHT DOWN
G44483	10/23/02	HEADBOAT	CIRCLE	28.0	STRAIGHT DOWN
G44484	10/22/02	HEADBOAT	CIRCLE	29.9	STRAIGHT DOWN

G44485	10/22/02	HEADBOAT	CIRCLE	29.9	STRAIGHT DOWN
G44486	10/22/02	HEADBOAT	CIRCLE	29.9	DOWN SLOWLY
G44487	10/22/02	HEADBOAT	CIRCLE	29.9	FLOATED, DOWN SLOWLY
G44488	10/22/02	HEADBOAT	CIRCLE	29.9	FLOATED, DOWN SLOWLY
G44489	10/22/02	HEADBOAT	CIRCLE	30.5	FLOATING, DOWN SLOWLY
G44490	10/23/02	HEADBOAT	CIRCLE	28.0	STRAIGHT DOWN
G44491	10/22/02	HEADBOAT	CIRCLE	30.5	STRAIGHT DOWN
G44492	10/22/02	HEADBOAT	CIRCLE	30.5	STRAIGHT DOWN
G44494	10/22/02	HEADBOAT	CIRCLE	30.5	STRAIGHT DOWN
G44495	10/22/02	HEADBOAT	CIRCLE	29.3	STRAIGHT DOWN
G44496	10/22/02	HEADBOAT	CIRCLE	29.3	STRAIGHT DOWN
G44497	10/22/02	HEADBOAT	CIRCLE	29.3	BLEEDING FROM GILLS, FLOATING
G44498	10/22/02	HEADBOAT	CIRCLE	29.3	STRAIGHT DOWN
G44499	10/22/02	HEADBOAT	CIRCLE	29.3	STRAIGHT DOWN
G44500	10/22/02	HEADBOAT	CIRCLE	29.3	STRAIGHT DOWN
G45011	10/23/02	HEADBOAT	CIRCLE	28.0	STRAIGHT DOWN
G45022	10/23/02	HEADBOAT	CIRCLE	28.0	FLOATING
G45031	10/23/02	HEADBOAT	CIRCLE	28.0	STRAIGHT DOWN
G45039	10/23/02	HEADBOAT	CIRCLE	28.0	DOWN SLOWLY
G45053	04/01/03	HEADBOAT	CIRCLE	31.1	STRAIGHT DOWN, PROJECT 659
G45054	04/01/03	HEADBOAT	CIRCLE	31.1	STRAIGHT DOWN, PROJECT 659
G45055	04/01/03	HEADBOAT	CIRCLE	31.1	STRAIGHT DOWN, PROJECT 659
G45056	04/01/03	HEADBOAT	CIRCLE	31.1	STRAIGHT DOWN, PROJECT 659
G45057	04/01/03	HEADBOAT	CIRCLE	31.1	STRAIGHT DOWN, PROJECT 659
G45058	04/01/03	HEADBOAT	CIRCLE	29.3	STRAIGHT DOWN, PROJECT 659
G45059	04/01/03	HEADBOAT	CIRCLE	29.3	STRAIGHT DOWN, PROJECT 659
G45060	04/01/03	HEADBOAT	CIRCLE	29.3	STRAIGHT DOWN, PROJECT 659
G45061	04/01/03	HEADBOAT	CIRCLE	29.3	STRAIGHT DOWN, PROJECT 659
G45062	04/01/03	HEADBOAT	CIRCLE	29.3	STRAIGHT DOWN, PROJECT 659, EATEN BY DOLPHIN
G45063	04/01/03	HEADBOAT	CIRCLE	29.3	FLOATING, PROJECT 659
G45064	04/01/03	HEADBOAT	CIRCLE	29.3	STRAIGHT DOWN, PROJECT 659
G45065	04/01/03	HEADBOAT	CIRCLE	29.3	STRAIGHT DOWN, PROJECT 659
G45066	04/01/03	HEADBOAT	CIRCLE	29.3	STRAIGHT DOWN, PROJECT 659
G45067	04/01/03	HEADBOAT	CIRCLE	29.3	FLOATING, PROJECT 659
G45068	04/01/03	HEADBOAT	CIRCLE	29.3	STRAIGHT DOWN, PROJECT 659
G45069	04/01/03	HEADBOAT	CIRCLE	29.3	STRAIGHT DOWN, PROJECT 659
G45070	04/01/03	HEADBOAT	CIRCLE	29.3	STRAIGHT DOWN, PROJECT 659
G45071	04/01/03	HEADBOAT	CIRCLE	29.3	STRAIGHT DOWN, PROJECT 659
G45073	04/01/03	HEADBOAT	CIRCLE	29.3	STRAIGHT DOWN, PROJECT 659
G45074	04/01/03	HEADBOAT	CIRCLE	29.3	STRAIGHT DOWN, PROJECT 659
G45075	04/01/03	HEADBOAT	CIRCLE	29.3	STRAIGHT DOWN, PROJECT 659
G45076	04/01/03	HEADBOAT	CIRCLE	29.3	STRAIGHT DOWN, PROJECT 659
G45077	04/01/03	HEADBOAT	CIRCLE	29.3	STRAIGHT DOWN, PROJECT 659
G45078	04/01/03	HEADBOAT	CIRCLE	29.3	STRAIGHT DOWN, PROJECT 659
G45079	04/01/03	HEADBOAT	CIRCLE	29.3	STRAIGHT DOWN, PROJECT 659
G45086	04/02/03	HEADBOAT	CIRCLE	29.6	STRAIGHT DOWN, PROJECT 659
G45094	04/15/03	HEADBOAT	CIRCLE	23.2	STRAIGHT DOWN, PROJECT 659
G45098	04/02/03	HEADBOAT	CIRCLE	28.0	BLEEDING FROM GILLS, PROJECT 659
G45100	04/15/03	HEADBOAT	CIRCLE	26.8	STRAIGHT DOWN, PROJECT 659

G46824	10/20/03	RECREATIONAL	CIRCLE	25.9	DOLPHIN CONTINUE TO EAT TAGGED FISH
G46862	06/07/04	RECREATIONAL	CIRCLE	25.9	RE-RELEASED
G47041	06/04/04	RECREATIONAL	CIRCLE	25.9	RE-RELEASED
G47067	06/24/04	RECREATIONAL	CIRCLE	25.9	RE-RELEASED
G47068	05/18/04	RECREATIONAL	CIRCLE	25.9	RE-RELEASED
G48358	06/09/05	RECREATIONAL	CIRCLE	29.3	SAW FISH SURFACE
G48359	06/09/05	RECREATIONAL	CIRCLE	29.3	HOOKED IN LIP
G51151	07/26/04	HEADBOAT	J	16.8	STRAIGHT DOWN, VENT
G51152	07/26/04	HEADBOAT	J	16.8	FLOATING, VENT
G51153	07/27/04	HEADBOAT	J	18.3	STRAIGHT DOWN, VENT
G51154	07/27/04	HEADBOAT	J	18.3	STRAIGHT DOWN, VENT
G51155	07/27/04	HEADBOAT	J	18.3	SWIMMING UNDER BOAT, VENT
G51156	07/27/04	HEADBOAT	J	18.3	STRAIGHT DOWN, VENT
G51503	07/13/04	HEADBOAT	J	24.4	STRAIGHT DOWN, VENT
G51509	06/28/04	HEADBOAT	J	22.9	STRAIGHT DOWN, VENT
G51511	06/28/04	HEADBOAT	J	39.6	STRAIGHT DOWN, VENT
G51516	07/12/04	HEADBOAT	J	42.7	DOWN SLOWLY, VENT
G51521	07/13/04	HEADBOAT	J	24.4	DOWN SLOWLY, VENT
G51524	07/13/04	HEADBOAT	J	24.4	STRAIGHT DOWN, VENT
G51528	07/13/04	HEADBOAT	J	24.4	STRAIGHT DOWN, VENT
G51530	07/13/04	HEADBOAT	J	24.4	STRAIGHT DOWN, VENT
G51531	07/13/04	HEADBOAT	J	24.4	DOWN SLOWLY, VENT
G51535	07/13/04	HEADBOAT	J	24.4	STRAIGHT DOWN, VENT
G51537	07/13/04	HEADBOAT	J	24.4	DOWN SLOWLY, VENT
G51538	06/28/04	HEADBOAT	J	22.9	STRAIGHT DOWN, VENT
G51539	07/13/04	HEADBOAT	J	24.4	STRAIGHT DOWN, VENT
G51540	07/12/04	HEADBOAT	J	42.7	STRAIGHT DOWN, VENT
G51541	07/13/04	HEADBOAT	J	24.4	STRAIGHT DOWN, VENT
G51542	06/28/04	HEADBOAT	J	29.0	STRAIGHT DOWN, VENT
G51543	07/12/04	HEADBOAT	J	42.7	STRAIGHT DOWN, VENT
G51544	07/13/04	HEADBOAT	J	24.4	DOWN SLOWLY, VENT
G51545	06/28/04	HEADBOAT	J	39.6	STRAIGHT DOWN, VENT
G51547	07/13/04	HEADBOAT	J	24.4	STRAIGHT DOWN, VENT
G51548	07/26/04	HEADBOAT	J	39.6	DOWN SLOWLY, VENT
G51550	06/28/04	HEADBOAT	J	39.6	STRAIGHT DOWN, VENT
G51552	07/26/04	HEADBOAT	J	30.5	DOWN SLOWLY, VENT
G51553	07/26/04	HEADBOAT	J	30.5	STRAIGHT DOWN, VENT
G51555	07/26/04	HEADBOAT	J	39.6	STRAIGHT DOWN, VENT
G51556	07/26/04	HEADBOAT	J	39.6	STRAIGHT DOWN, VENT
G51567	10/31/04	HEADBOAT	J	22.6	STRAIGHT DOWN
G51568	10/31/04	HEADBOAT	J	22.6	STRAIGHT DOWN
G51568	07/14/05	HEADBOAT	J	20.7	RE-RELEASED WITH TAG
G51569	10/31/04	HEADBOAT	J	22.6	DOWN SLOWLY
G51577	07/19/05	HEADBOAT	J	22.9	SLOWLY DOWN
G51578	07/19/05	HEADBOAT	J	24.4	HOOK IN FISH, FLOATING
G51594	07/19/05	HEADBOAT	J	24.4	STRAIGHT DOWN
G51597	08/08/04	HEADBOAT	J	27.4	STRAIGHT DOWN
G51598	07/13/04	HEADBOAT	J	24.4	STRAIGHT DOWN, VENT
G51922	07/14/05	RECREATIONAL	CIRCLE	37.5	RE-RELEASED

G51929	10/14/04	HEADBOAT	J	20.1	FLOATER
G51929	10/31/04	HEADBOAT	J	21.3	STRAIGHT DOWN
G51934	10/31/04	HEADBOAT	J	21.3	SLOW VERY SLOW
G52098	07/27/05	HEADBOAT	J	37.8	STRAIGHT DOWN
G55951	09/09/05	CHARTER	CIRCLE	50.3	POTENTIAL PROB. W/ SERIES
G55952	09/09/05	CHARTER	CIRCLE	50.3	POTENTIAL PROB. W/ SERIES
G55953	09/09/05	CHARTER	CIRCLE	50.3	POTENTIAL PROB. W/ SERIES
G55954	09/09/05	CHARTER	CIRCLE	50.3	POTENTIAL PROB. W/ SERIES
G55955	09/09/05	CHARTER	CIRCLE	50.3	POTENTIAL PROB. W/ SERIES
G55957	09/09/05	CHARTER	CIRCLE	50.3	POTENTIAL PROB. W/ SERIES
G55958	09/09/05	CHARTER	CIRCLE	50.3	POTENTIAL PROB. W/ SERIES
G55959	09/09/05	CHARTER	CIRCLE	50.3	POTENTIAL PROB. W/ SERIES
G55960	09/09/05	CHARTER	CIRCLE	50.3	POTENTIAL PROB. W/ SERIES
G55961	09/09/05	CHARTER	CIRCLE	50.3	POTENTIAL PROB. W/ SERIES
G55962	09/09/05	CHARTER	CIRCLE	53.3	POTENTIAL PROB. W/ SERIES
G56001	09/04/05	CHARTER	CIRCLE	25.9	POTENTIAL PROB. W/ SERIES
G56002	09/04/05	CHARTER	CIRCLE	25.9	POTENTIAL PROB. W/ SERIES
G56003	09/04/05	CHARTER	CIRCLE	25.9	POTENTIAL PROB. W/ SERIES
G56004A	09/04/05	CHARTER	CIRCLE	25.9	POTENTIAL PROB. W/ SERIES
G56005	09/04/05	CHARTER	CIRCLE	25.9	POTENTIAL PROB. W/ SERIES
G56006	09/04/05	CHARTER	CIRCLE	25.9	POTENTIAL PROB. W/ SERIES
G56008	09/04/05	CHARTER	CIRCLE	27.4	POTENTIAL PROB. W/ SERIES
G56009	09/04/05	CHARTER	CIRCLE	27.4	POTENTIAL PROB. W/ SERIES
G56010	09/04/05	CHARTER	CIRCLE	27.4	POTENTIAL PROB. W/ SERIES
G56011	09/04/05	CHARTER	CIRCLE	27.4	POTENTIAL PROB. W/ SERIES
G56012	09/04/05	CHARTER	CIRCLE	27.4	POTENTIAL PROB. W/ SERIES
G56013	09/04/05	CHARTER	CIRCLE	27.4	POTENTIAL PROB. W/ SERIES
G56014	09/04/05	CHARTER	CIRCLE	27.4	POTENTIAL PROB. W/ SERIES
G56015	09/04/05	CHARTER	CIRCLE	27.4	POTENTIAL PROB. W/ SERIES
G56016	09/04/05	CHARTER	CIRCLE	27.4	POTENTIAL PROB. W/ SERIES
G56017	09/04/05	CHARTER	CIRCLE	27.4	POTENTIAL PROB. W/ SERIES
G56018	09/04/05	CHARTER	CIRCLE	27.4	POTENTIAL PROB. W/ SERIES
G56019	09/04/05	CHARTER	CIRCLE	27.4	GUT HOOKED, FLOATER; POTENTIAL PROB. W/ SERIES
G56020	09/04/05	CHARTER	CIRCLE	27.4	POTENTIAL PRB. W/ SERIES
G56021	09/04/05	CHARTER	CIRCLE	32.0	POTENTIAL PROB. W/ SERIES
G56023	09/04/05	CHARTER	CIRCLE	32.0	POTENTIAL PROB. W/ SERIES
G56024	09/04/05	CHARTER	CIRCLE	32.0	POTENTIAL PROB. W/ SERIES
G56025	09/04/05	CHARTER	CIRCLE	30.5	GUT HOOKED; POTENTIAL PROB. W/ SERIES
G56026	09/04/05	CHARTER	CIRCLE	30.5	POTENTIAL PROB. W/ SERIES
G56027	09/04/05	CHARTER	CIRCLE	30.5	POTENTIAL PROB. W/ SERIES
G56027	05/10/06	CHARTER	J	13.7	RE-RELEASED
G56028	09/04/05	CHARTER	CIRCLE	30.5	POTENTIAL PROB. W/ SERIES
G56029	09/04/05	CHARTER	CIRCLE	30.5	POTENTIAL PROB. W/ SERIES
G56030	09/04/05	CHARTER	CIRCLE	30.5	POTENTIAL PROB. W/ SERIES
G56031	09/04/05	CHARTER	CIRCLE	30.5	POTENTIAL PROB. W/ SERIES
G56032	09/04/05	CHARTER	CIRCLE	33.5	POTENTIAL PROB. W/ SERIES
G56033	09/04/05	CHARTER	CIRCLE	33.5	POTENTIAL PROB. W/ SERIES
G56034	09/04/05	CHARTER	CIRCLE	33.5	POTENTIAL PROB. W/ SERIES
G56035	09/04/05	CHARTER	CIRCLE	33.5	POTENTIAL PROB. W/ SERIES

G56036	09/04/05	CHARTER	CIRCLE	33.5	POTENTIAL PROB. W/ SERIES
G56037	09/04/05	CHARTER	CIRCLE	33.5	POTENTIAL PROB. W/ SERIES
G56038	09/04/05	CHARTER	CIRCLE	30.5	POTENTIAL PROB. W/ SERIES
G56039	09/04/05	CHARTER	CIRCLE	30.5	POTENTIAL PROB. W/ SERIES
G56040	09/04/05	CHARTER	CIRCLE	30.5	POTENTIAL PROB. W/ SERIES
G56041	09/04/05	CHARTER	CIRCLE	30.5	POTENTIAL PROB. W/ SERIES
G56042	09/04/05	CHARTER	CIRCLE	30.5	POTENTIAL PROB. W/ SERIES
G56043	09/09/05	CHARTER	CIRCLE	53.3	POTENTIAL PROB. W/ SERIES
G56044	09/09/05	CHARTER	CIRCLE	53.3	POTENTIAL PROB. W/ SERIES
G56045	09/09/05	CHARTER	CIRCLE	53.3	POTENTIAL PROB. W/ SERIES
G56048	09/09/05	CHARTER	CIRCLE	53.3	CUT HOOKED; POTENTIAL PROB. W/ SERIES
G56049	09/09/05	CHARTER	CIRCLE	53.3	POTENTIAL PROB. W/ SERIES
G56050	09/09/05	CHARTER	CIRCLE	53.3	POTENTIAL PROB. W/ SERIES
G56708	05/16/05	RECREATIONAL	CIRCLE	25.9	RE-RELEASED WITH TAG
G56712	08/03/05	RECREATIONAL	CIRCLE	28.7	RE-RELEASED, STRAIGHT DOWN
G56720	07/14/05	RECREATIONAL	CIRCLE	24.4	RE-RELEASED
G56739	08/15/05	RECREATIONAL	CIRCLE	0.0	RE-RELEASED