Overview of Florida's Cooperative East Coast Red Snapper Tagging Program, 2011-2013

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SEDAR41-DW10

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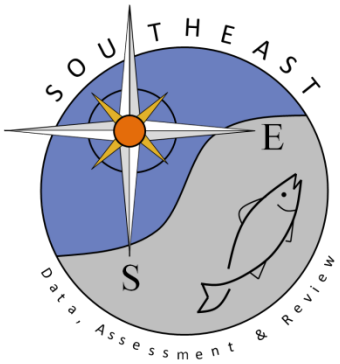

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Overview of Florida's Cooperative East Coast Red Snapper Tagging Program, 2011-2013.

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OVERVIEW

In an effort to better understand red snapper population dynamics off the east coast of Florida, the Florida Fish and Wildlife Conservation Commission (FWC) with federal and industry funding worked cooperatively with various sectors of the recreational, for-hire, and commercial fisheries to initiate a Cooperative East Coast Red Snapper Tagging program in 2011. It was hoped that the knowledge and experience of local fishing partners combined with their familiarity with the fishery would contribute greatly to the overall effectiveness of the tagging program and allow accurate targeting of Red Snapper habitat to ensure that a sufficient number of tags were released into the study area to meet the objectives of the program. The program was designed to aid fishery managers in better understanding patterns of distribution, seasonal and spatial dynamics of movement patterns, ontogenetic changes in habitat selectivity, and site fidelity of Red Snapper based on recapture rates throughout the study area.

This angler-based tagging program was overseen by FWC personnel who were responsible for coordinating regional training workshops for interested participants, distribution of tagging kits, tagging database management, responding to tag returns, and all aspects of public outreach associated with this project. All Red Snapper released by participating fishermen were tagged externally with a 100-mm Hallprint dart tag. Additional information recorded by the fisher to aid in the understanding of Red Snapper population dynamics included the coordinates of capture, water depth, and associated catch-specific information (e.g., total length, release condition). Recaptured individuals were identified by reports from recreational or commercial anglers to an existing FWC tag return hotline. To improve reporting rates, rewards (T-shirts) were given to all individuals that reported data for recaptured fishes. They also received a letter outlining the goals of the proposed project in addition to detailed tag and recapture information for the reported fish.

GEOGRAPHIC COVERAGE:

This tagging study was focused in NMFS statistical zones 722 (Jacksonville), 728 (St. Augustine), and 732 (Cape Canaveral) along the Atlantic coast of Florida (between 28^0 30'N and 30^0 45'N; Figure 1). The study area is part of the South Atlantic Bight and supports a multi-million dollar commercial and recreational reef fishery. The study area was also chosen due to elevated historical landings data for adult Red Snapper in offshore waters at these latitudes (White and Palmer 2004).

OBJECTIVES:

The primary goal of this project was to develop and implement a long-term angler-based tagging program along the Atlantic coast of Florida that would aid fishery

managers in understanding Red Snapper population dynamics. To accomplish this, there were several objectives:

1) Convene tag training workshops to solicit input from recreational and commercial anglers as well as provide them with necessary training that would focus on the proper techniques for handling, tagging, venting, and releasing reef fish as well as data reporting expectations of tag and recapture events;

2) Evaluate ontogenetic patterns of Red Snapper distribution and site fidelity throughout the study area in relation to several factors (i.e. habitat type, water depth, latitude);

3) Evaluate seasonal and spatial dynamics of movement patterns, ontogenetic changes in habitat selectivity, and mixing rates of Red Snapper throughout the study area;

4) Incorporate information obtained from this cooperative tagging into the design of exploratory fisheries-independent monitoring surveys targeting Red Snapper along the United States south Atlantic coast.

Tag Training Workshops

Anglers wishing to participate in the program were required to attend a training workshop that focused on the proper techniques for handling, tagging, venting, and releasing reef fish as well as data reporting expectations of tag and recapture events before being issued tags and equipment. The workshop included a “hands-on” tagging component where participants had the opportunity to practice tagging on dead fish. This enabled FWC staff to verify that anglers were using correct tagging methods prior to placing a tag in a live fish.

Recreational Tag Kits

After completing the tag training, anglers were given a tagging kit (Figure 2). The tagging kit consisted of a plastic Plano© storage box that included a tag applicator and individually packaged tags that were each placed on a corresponding tag data card. In addition, review instructions on how to properly tag a fish as well as a measuring device and pencil were included.

Tagging Data Cards

Participating recreational anglers were asked to complete a Fish Tagging Data Card (Figure 3) for every fish tagged. Before releasing the fish, anglers were instructed to measure the pinched-tail total length (nearest inch) of the fish and record other observations about their catch. Other data fields included the date of tagging, water

depth (feet), the habitat type they were fishing (if known), and specific location coordinates. Information was also collected about the condition of the fish by describing any visible barotrauma, whether the fish was vented or not, and the condition of the fish after release. Anglers were also asked to supply information about hook position, whether the hook was removed, and the type of bait they were using (see Appendix 1 for metadata). Upon completion of the Fish Tagging Data Card, anglers were asked to place each pre-stamped card in the mail upon return to the dock. The cards were directed to the project data managers and input into a scientific database by FWC personnel.

Recognizing the need to include for-hire fishing vessels (charter boats, party boats, etc.) in this project and also understanding their method of operation and need to focus on their clients, we developed a separate data sheet that included all the information found on the recreational fish tagging data card in a format better suited to handle multiple individuals tagged at the same location. Many times a for-hire vessel will stay on one spot for an extended duration and have many different clients fishing at the same time. Captains/mates used one sheet for each location that they tagged fish. Once the data sheets were completed, captains coordinated with project staff to get the sheets back and the information was entered into the tagging database.

Tag Returns

Recaptured individuals were reported to an existing FWC tag return hotline. The reporting angler was asked to supply the tag number, date and time of capture, location, and the length of the fish (pinched-tail total length; Figure 4). When a recapture was reported, both the angler who reported the recapture as well as the original tagger received a letter detailing the history of the fish including how long ago the fish had been tagged, how far the fish traveled, and how much the fish grew. The angler reporting the recapture also received a T-shirt reward.

Directed Tagging

The Southeastern Fisheries Association and the Gulf and South Atlantic Fisheries Foundation, Inc. were able to secure additional funding to aid the Florida Cooperative East Coast Red Snapper Tagging Program by sponsoring directed Red Snapper tagging trips from association members. These directed tagging trips were conducted aboard charter and commercial vessels out of Mayport, St. Augustine, Ponce Inlet, and Port Canaveral. FWC biologists accompanied these directed cruises to aid in the tagging process and data collection. Data collection for these directed tagging trips followed standardized procedures developed by FIM staff for recording data associated with active fishing methods (i.e. hook-and-line sampling). Detailed procedures and descriptions of data collected can be found in SEDAR41-DW08. During 2011, Captains

used any rigs, bait, hook sizes, and monofilament sizes that they chose (Captains Choice). In 2012-2013, the directed sampling used a combination of Captains Choice rigs and the standardized Elec-tra-mate© rigs developed by FIM in other grant funded reef fish projects.

Additional Red Snapper were opportunistically tagged during Fisheries-Dependent Monitoring (FDM) survey trips (FWC and NOAA sponsored) aboard headboat charters in support of other grant funded projects. Red Snapper were also tagged during FIM gear-testing cruises in support of other reef fish research projects being developed.

RESULTS:

Tagging

A total of 3,441 Red Snapper were tagged by all participating sectors of the Cooperative East Coast Red Snapper Tagging program from 2011 through 2013 (Table 1). The majority (n=1,507; 43.8%) of Red Snapper tagged were by FWC Fisheries-Independent Monitoring (FIM) staff during either industry-funded directed tagging efforts or other scientific research studies. Program participants tagged the second most Red Snapper (n=1,162; 33.8%). Fisheries-Dependent Monitoring (FDM) staff (federal and state) opportunistically tagged a total of 772 Red Snapper (22.4%) while conducting routine headboat surveys. The majority of tagged fish were collected within the selected study area, though some recreational anglers did tag Red Snapper in areas to the south (Figure 5).

Program participants were classified into one of four fishing industry sectors: private recreational anglers, charter boat operators, headboat operators, and commercial anglers (Table 2). The majority of participants were recreational anglers (n=64; 74.4%). Charter boat operators (n=11; 12.8%) were the second most abundant sector represented. Headboat operators (n=6; 7.0%) and commercial anglers (n=5; 5.8%) were the least represented sectors. The recreational sector tagged 454 Red Snapper which represented 39.1% of the total fish tagged by program participants. Charter boat and headboat operators tagged 348 (29.9%) and 320 (27.5%) fish, respectively. Commercial anglers tagged the least amount of Red Snapper (n=40; 3.4%).

A total of 3,430 tagged Red Snapper (out of the 3,441 total tagged) were included in size analysis; other individuals were excluded due to missing or improperly recorded length data. The mean TL (± SE) of all tagged Red Snapper was 536.8 mm ± 2.6 (Table 3). Red Snapper tagged by commercial anglers had the largest mean size (595.6 ± 22.1 mm TL) while the FDM headboat had the smallest mean size (453.7 ± 5.2

mm TL). All sectors tagged a broad size range of Red Snapper (Figure 6; Table 3). The smallest fish tagged was 203 mm TL and the largest was 1,118 mm TL.

There was no correlation of size of fish tagged to water depth of capture (Figure 7; R^2 = 0.0479). There was a broad size range of fish over all capture depths of tagged Red Snapper (Figure 8). The majority of tagged fish (n=1,933) were collected in the 21-30 m depth range. Only 4.3% (n=134) of tagged fish were caught in water depths greater than 40 m.

Recaptures

There were a total of 211 Red Snapper recaptured from 2011 through 2013, for an overall tag return rate of 6.1%. The time-at-large (days between initial tagging and recapture) of tagged fish ranged from 0 to 887 days. The distance traveled of tagged fish from the initial tag location ranged from 0 to 237 km. Eight fish were recaptured twice and one fish was recaptured three times.

The headboat (n=68) and recreational (n=62) sectors reported the most recaptured Red Snapper (Table 4). The least amount of recaptures were reported by the FIM (n=20) and commercial (n=15) sectors. There were no recaptures directly reported by the FDM headboat sector as staff served as observers and any tag returns reported would have come from the individual fisher and be accounted for under the headboat sector. The recapture sector of five fish was unknown. The FIM group tagged the most red snapper (n=1,507) of all sectors, but only 62 (4.1%) of those fish were recaptured (Table 5). The FDM headboat (n=772) and Headboat (n=320) sectors combined to tag 31.7% of the total tagged fish. Recapture rates of fish tagged by those two sectors were 9.5% and 9.1%, respectively. These higher recapture rates may be due to the fishing behavior of headboat operators. Generally speaking, the headboat sector has fishing sites that they regularly fish which, combined with presumed high site-fidelity of Red Snapper, would result in an increased probability of recapturing tagged fish. No fish tagged by commercial anglers were subsequently recaptured.

Red Snapper were recaptured over all tagged size ranges, except for the smallest size class (200-250 mm TL; Table 6). The greatest number of fish tagged (n=399; 11.6%) were from the 600-650 mm TL size range. The next most abundant size classes of tagged fish were from the 350-400 mm TL (n=392; 11.4%) and the 550-600 mm TL (n=378; 11.0%) ranges. Analysis of recapture rates of initial tagging size classes showed the greatest number of recaptured fish (n=30) came from the 450-500 mm TL size class of originally tagged fish, though the greatest percentage of recaptures were from the 500-550 mm TL range (n=24; 8.8%).

The greatest number of tagged fish (n=1933) were captured in the 20-30 m water depth range (Table 7). Analysis of recapture rates of initial tagging depth showed the

greatest number of recaptured fish (n=112) were also from the 20-30 m original tagged depth, although the greatest recapture percentages were from the >50 m (7.2%) and <20 m (7.0%) ranges.

The majority of recaptured fish with confirmed location information were caught <1 km from where they were initially tagged (Figure 9), which is indicative of high site fidelity. Analysis of distance traveled in regards to direction of movement (bearing) from initial tag position for fish that moved 3-16 km (n=36) showed no clear ontogenetic movement patterns (Figure 10). Fish were seen to travel in all directions from their initial tag locations. These relatively small movement patterns are most likely a result of fish moving short distances within similar depth strata to nearby available habitat. Generally speaking, water depths and habitat types within the study area, over relatively short distances (3-16 km), change very little. Analysis of fish that moved >16 km from their initial tagging location (n=14), showed a general north-south movement pattern (Figure 11). These movement patterns indicate that fish are most likely moving between habitat types within a similar depth range instead of showing an inshore-offshore movement pattern within habitat types over varying water depth.

Analysis of catch-specific information of initially tagged fish in regards to location of hook position, showed that 84.3% of fish were hooked in the lip (n=2,902; Table 8). Other hook position categories included Gut (n=96), Throat / Inside Mouth (n=91), Gill (n=6), and Foul (n=23). A total of 323 tagged fish did not have a hook position recorded. Fish were recaptured from all hook position categories except Gill and Foul. Recapture rates of tagged fish showed the greatest number of recaptured fish had an initial hook position recorded as Lip (n=170), but the greatest percentage of recaptures were from fish with an initial hook position recorded as Throat / Inside Mouth (n=10; 11.0%). Twenty-nine recaptured fish did not have an initial hook position recorded.

A total of 3,010 tagged fish (87.5%) had an initial release condition reported as Good (Table 9). Other release condition categories included Poor (n=91) and Preyed (n=4). A total of 336 tagged fish had no initial release condition recorded. Recapture rates of tagged fish showed the greatest number of recaptured fish had an initial release condition recorded as Good (n=182). The greatest percentage of recaptures were from fish that had no initial release condition recorded (n=27; 8.0%). Two recaptured fish had an initial release condition recorded as Poor. As one would expect, no fish initially recorded as preyed upon were recaptured.

REFERENCES

White, D. B. and S. M. Palmer (2004). "Age, growth, and reproduction of the red snapper, *Lutjanus campechanus*, from the Atlantic waters of the southeastern U.S." Bulletin of Marine Science 75(3): 335-360.

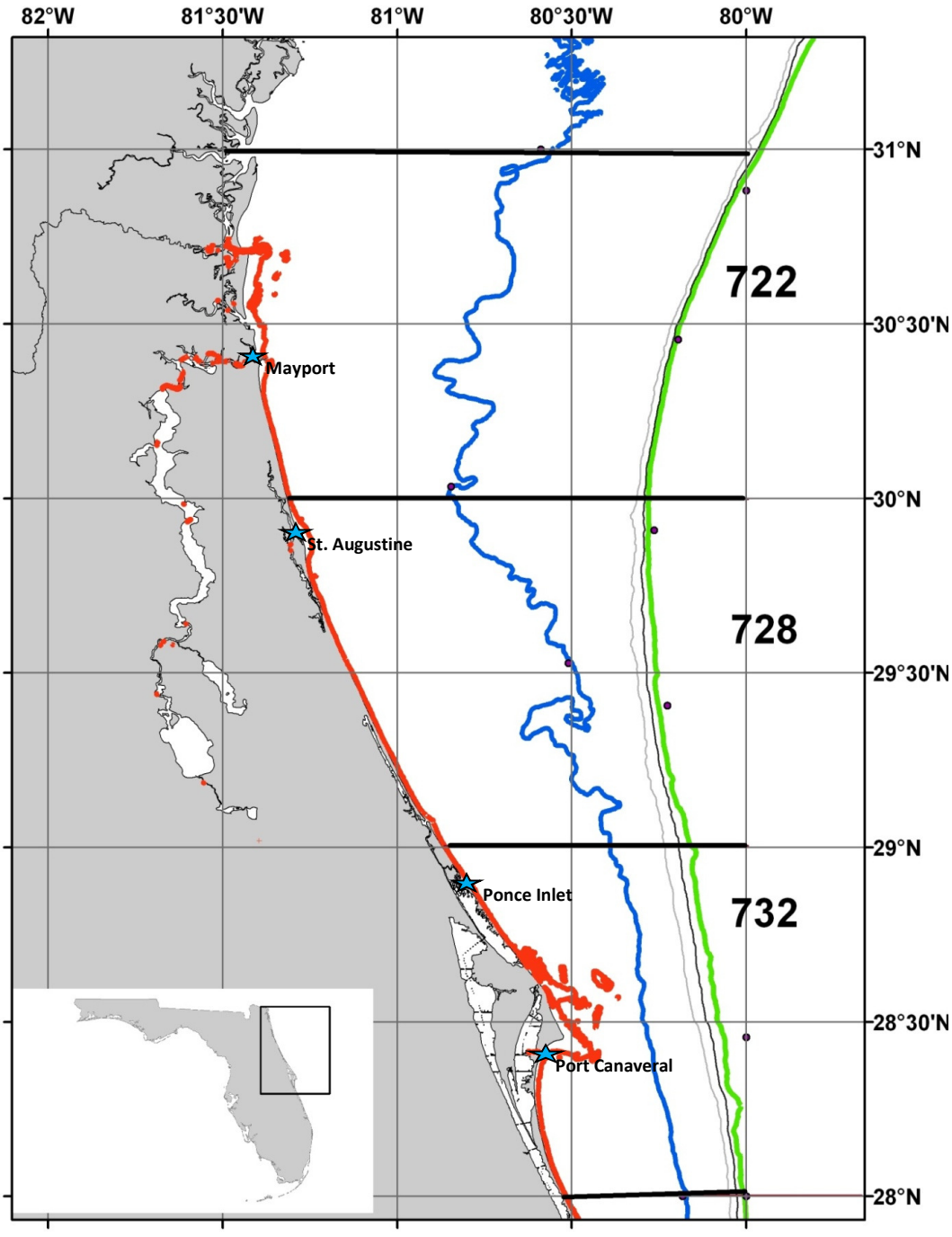

Figure 1. Cooperative East Coast Red Snapper Tagging Program study area (sampling bounded by 28° 00'N and 30° 45'N). The colored lines represent the 10 m (red), 30 m (blue), and 70 m (green) isobaths. Blue stars mark inlets to major ports where recreational and commercial vessels operate from.

Figure 2. Tagging kit supplied to participants of the Cooperative East Coast Red Snapper Tagging program. Kits contain detailed tagging instructions, individually bagged Hallprint dart tags and associated tagging data cards, a tag applicator, a measuring device, and a pencil.

COOPERATIVE EAST COAST RED SNAPPER TAGGING PROGRAM

FISH TAGGING DATA

- PLEASE PRINT -

TAG NUMBER

Pre-Populated & Angler Assigned

SPECIES TAGGED

☐ Red Snapper ☐ Other: _____

DATE TAGGED (mo/day/yr) / /

DEPTH FISHED (feet)

HABITAT TYPE

☐ Artificial Reef
☐ Natural Structure
☐ No Structure
☐ Unknown

	DEGREES	MINUTES
LATITUDE		
LONGITUDE		

NAME OF AREA:

TOTAL LENGTH (inches)

-PINCHED TAIL-

☐ Estimated ☐ Measured

EVIDENCE OF BAROTRAUMA

☐ Yes: _____ ☐ No

VENTED

☐ Yes ☐ No

RELEASE CONDITION

☐ Good ☐ Poor ☐ Preyed

HOOK POSITION

☐ Lip ☐ Throat ☐ Gut ☐ Gills ☐ Other:_____

HOOK REMOVED

☐ Yes ☐ No

BAIT TYPE

☐ Artificial ☐ Live ☐ Dead

REMARKS:

FOR QUESTIONS CONCERNING THE FLORIDA EAST COAST RED SNAPPER COPERATIVE TAGGING PROGRAM, CALL (904) 745 - 3057

Figure 3. Tagging data card supplied to participating recreational anglers of the Cooperative East Coast Red Snapper Tagging program. One card was filled out for each fish tagged.

Figure 4. Reward signs that were placed at local boat ramps and tackle shops informing recreational and commercial anglers about the procedures for reporting a tagged reef fish.

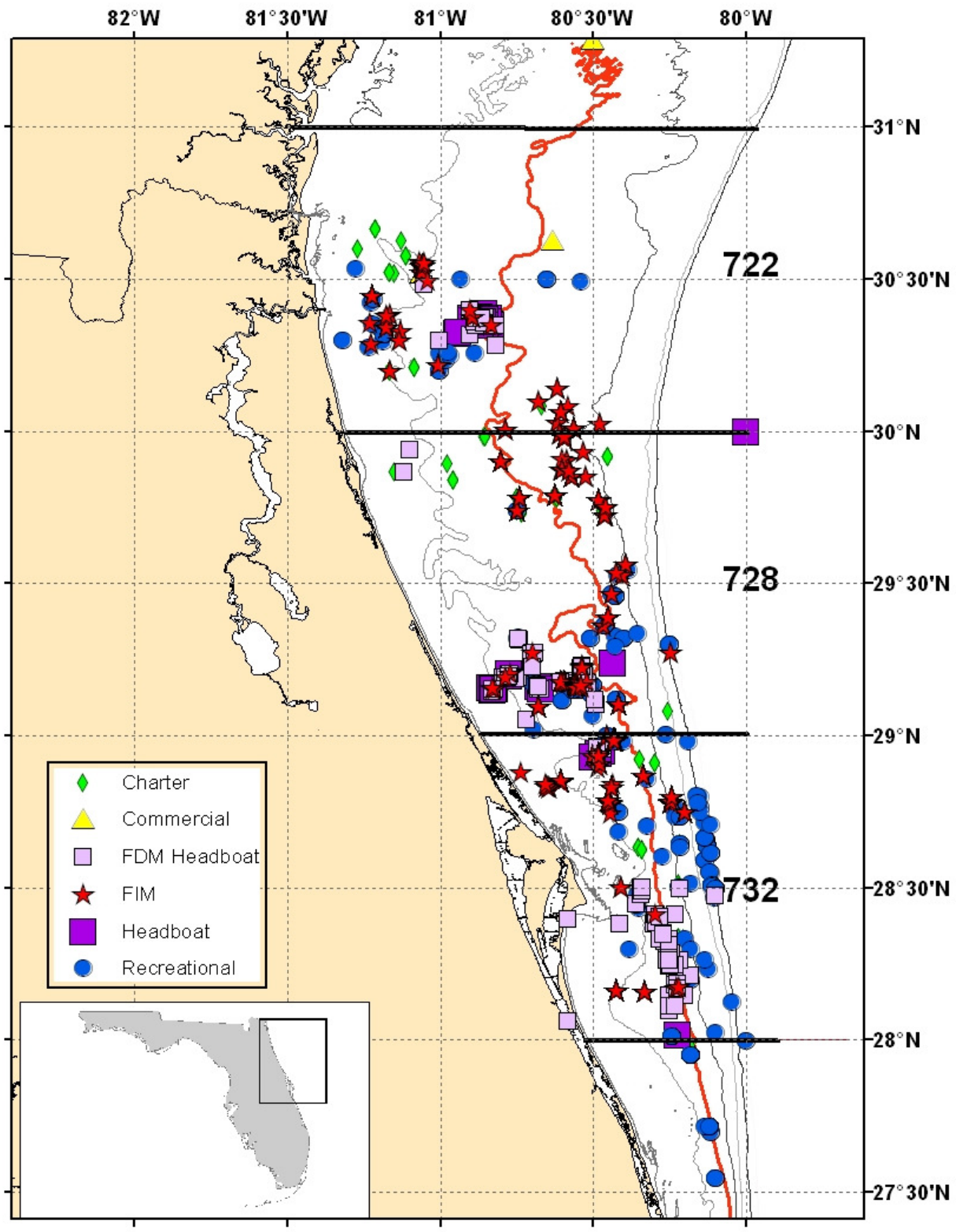

Figure 5. Geographical distribution of tagged Red Snapper, *Lutjanus campechanus,* along the Florida east coast by sector/group, 2011-2013. The red line indicates the 30 meter isobath.

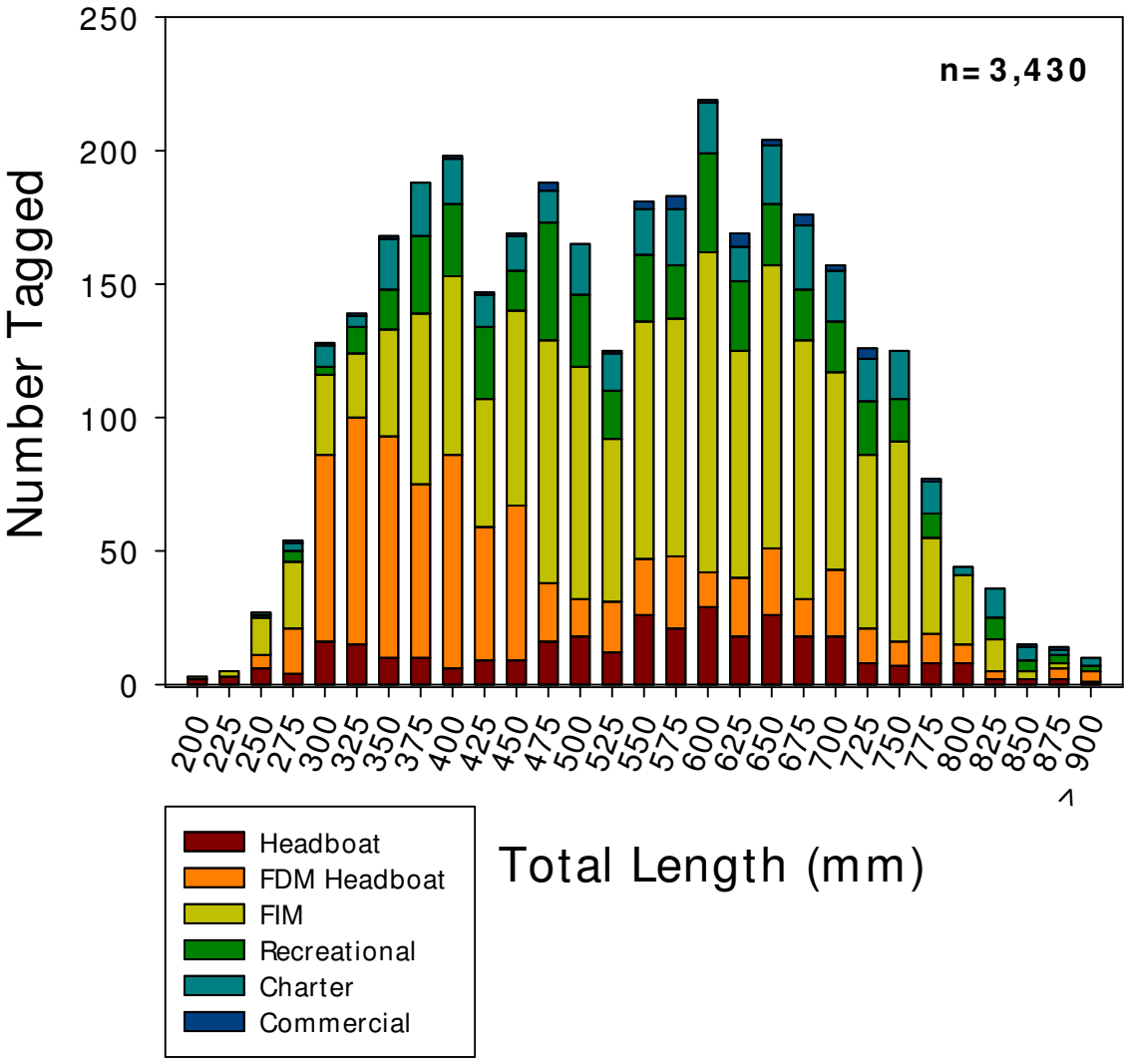

Figure 6. Length frequency (total length (mm)) of tagged Red Snapper, *Lutjanus campechanus,* by representative sector or scientific group, 2011-2013.

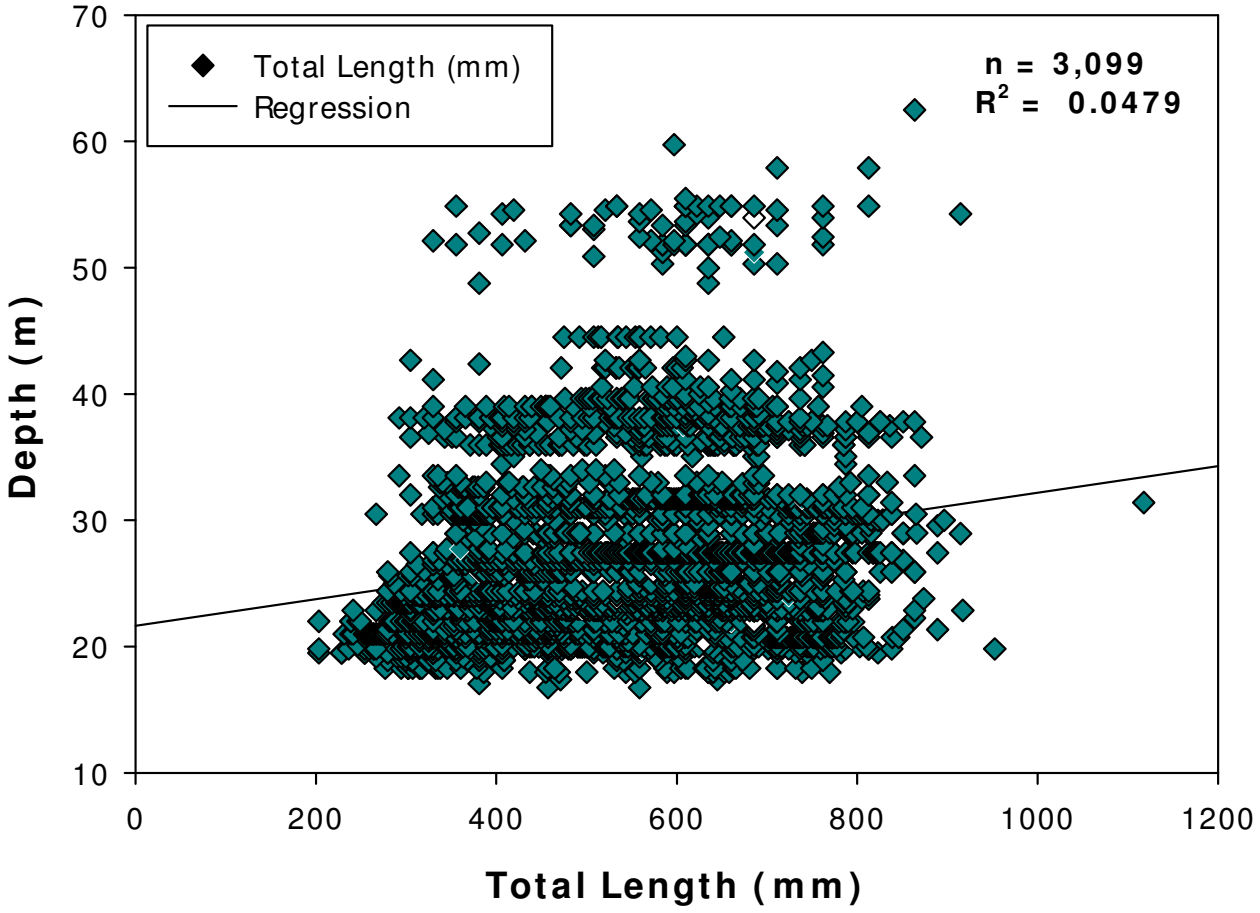

Figure 7. Total length (mm) at depth (m) of capture for tagged Red Snapper, *Lutjanus campechanus,* with linear regression line superimposed (2011-2013).

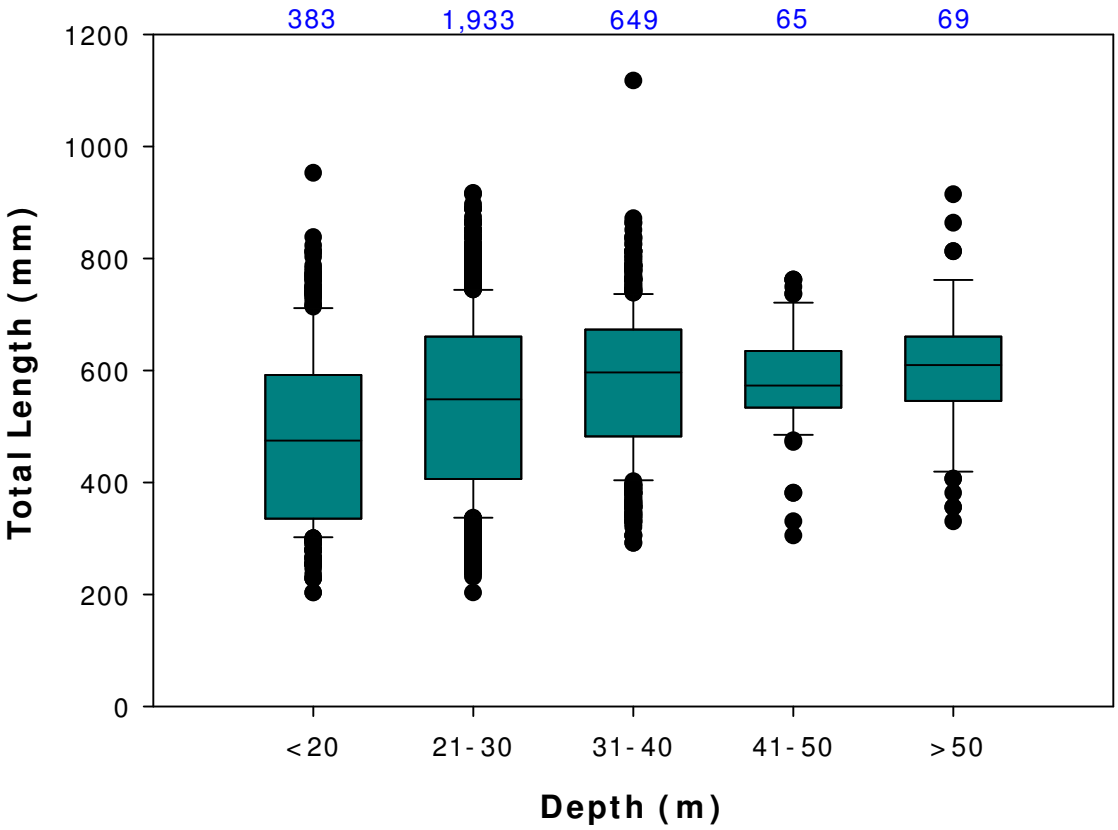

Figure 8. Total length (mm) of tagged Red Snapper, *Lutjanus campechanus,* by depth (m) strata (2011–2013). Horizontal line represents the median total length value. Box represents the 25th-75th percentiles. Error bars represent the 10th-90th percentiles. The blue number above each plot represents the number of Red Snapper used in calculations for that depth stratum.

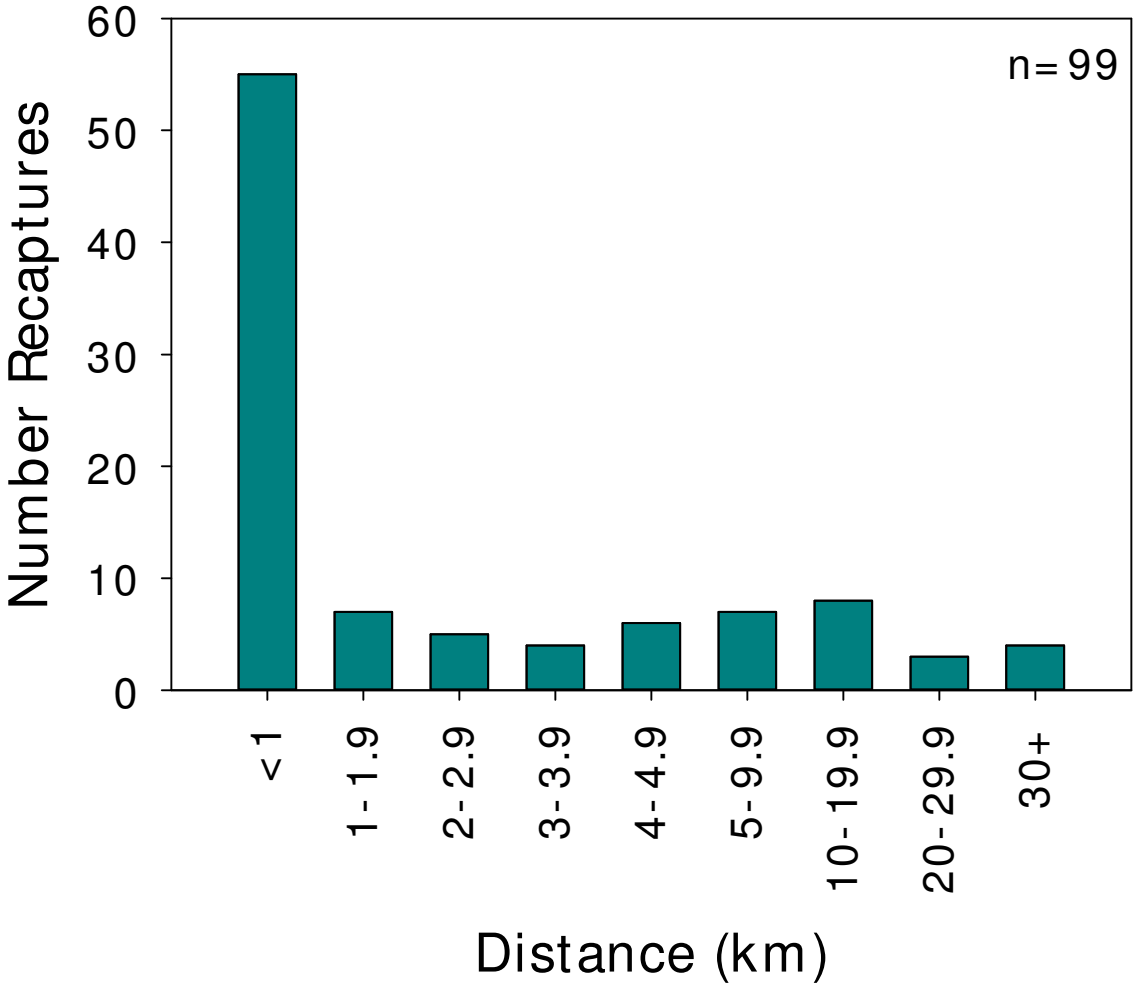

Figure 9. Number of recaptured Red Snapper, *Lutjanus campechanus,* by distance (km) traveled from original tagging location (2011-2013).

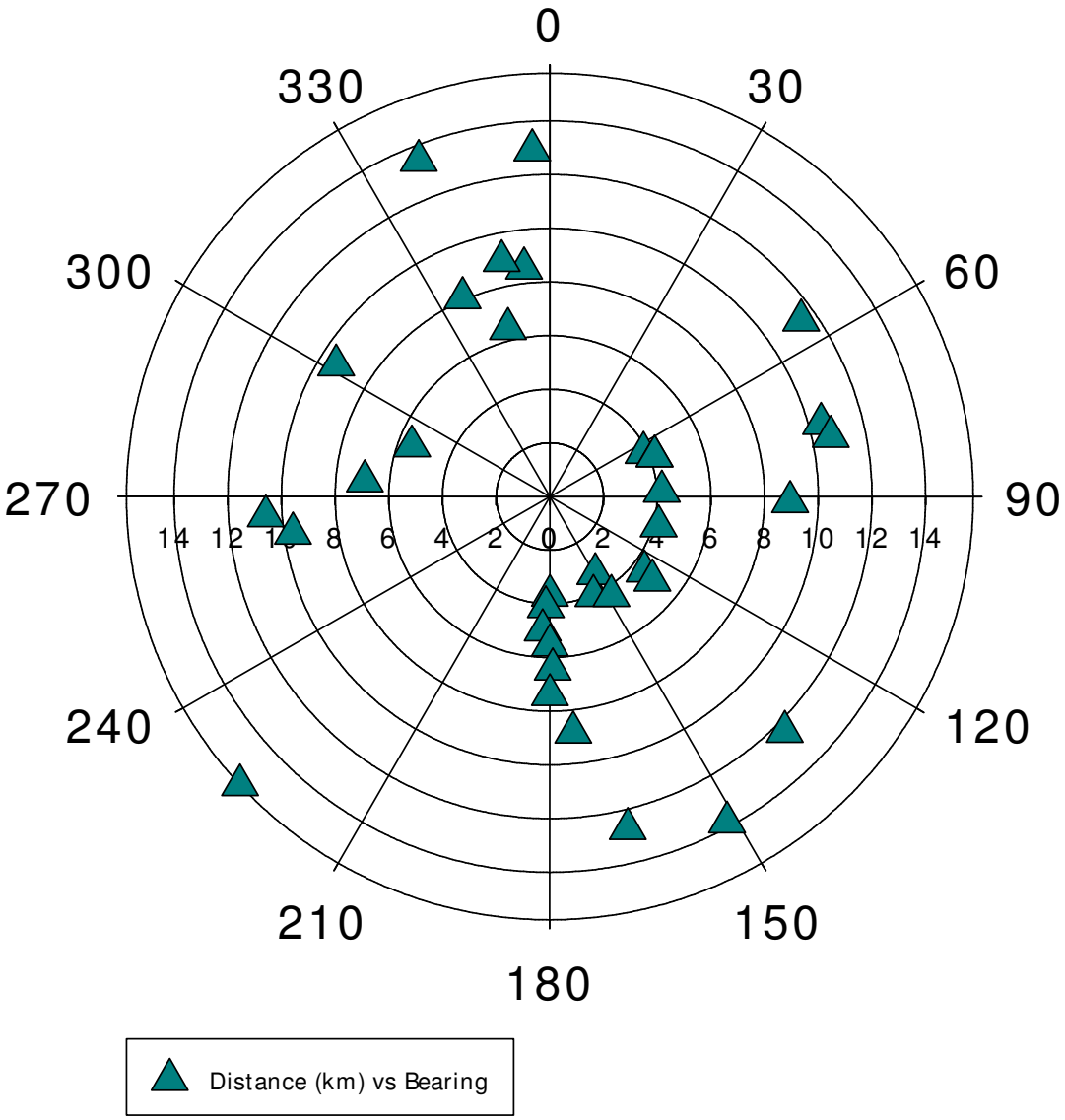

Figure 10. Polar plot of recaptured Red Snapper, *Lutjanus campechanus,* (2011-2013; n=36) movement patterns in terms of distance traveled (3–16 km) from original tagging location versus bearing (compass degrees).

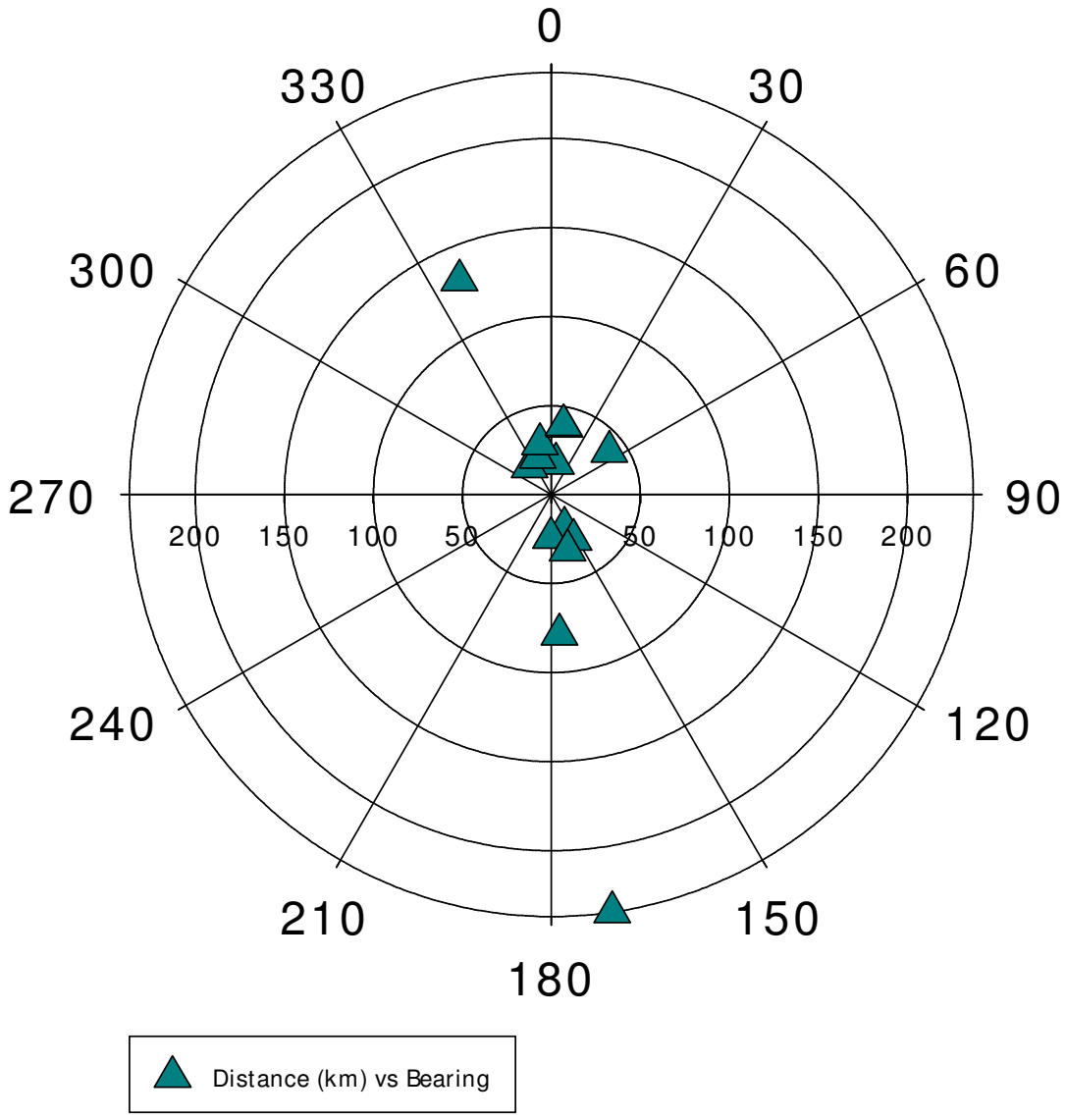

Figure 11. Polar plot of recaptured Red Snapper, *Lutjanus campechanus,* (2011-2013; n=14) movement patterns in terms of distance traveled (> 16 km) from original tagging location versus bearing (compass degrees).

Sector	Tagged Red Snapper	
	Number	Percentage (%)
Program Participants	1,162	33.8%
FIM	1,507	43.8%
FDM Headboats	772	22.4%
Total Red Snapper Tagged	***3,441***	***100%***

Table 1. Total number and percentage of Red Snapper, *Lutjanus campechanus,* tagged by all participating sectors of the Cooperative East Coast Red Snapper Tagging Program (2011-2013).

Sector	Program Participants		Tagged Red Snapper	
	Number	Percentage of Participants (%)	Number	Percentage of Participants (%)
Recreational Anglers	64	74.4%	454	39.1%
Charter Vessels	11	12.8%	348	29.9%
Headboats	6	7.0%	320	27.6%
Commercial Anglers	5	5.8%	40	3.4%
Totals	***86***	***100%***	***1,162***	***100%***

Table 2. Number and percentage of Cooperative East Coast Red Snapper Tagging Program participants by fishing sector. Also shown is the associated number and percentage of Red Snapper, *Lutjanus campechanus,* that each sector tagged (2011-2013).

Sector	n	Mean Total Length (mm)	SE	Min	Max
Recreational	451	552.2	6.6	241	953
Charter	347	578.8	8.3	254	1,118
Headboat	320	554.1	8.7	203	914
Commercial	40	595.6	22.1	279	864
FIM	1,506	559.5	3.6	203	866
FDM Headboat	766	453.7	5.2	246	945
All Tagged Fish	***3,430***	***536.8***	***2.6***		

Table 3. Number and mean total length (mm) of tagged Red Snapper, *Lutjanus campechanus,* by fishing sector (2011-2013). SE = standard error; Min = minimum size observed; Max = maximum size observed. Also shown are the number, mean total length (mm), and SE of all fish combined.

Sector	Recapture Data	
	n	% of Recaptures
FIM	20	9.5%
FDM Headboat	0	0.0%
Recreational	62	29.4%
Charter	41	19.4%
Headboat	68	32.2%
Commercial	15	7.1%
Unknown	5	2.4%
Totals	***211***	***100%***

Table 4. Number and percentage of recaptured Red Snapper, *Lutjanus campechanus,* by fishing sector or scientific group (2011-2013).

Sector	Original Tag Data		Recaptured Data	
	n	% Original	n	% Recaptured by Sector
FIM	1,507	43.8%	62	4.1%
FDM Headboat	772	22.4%	73	9.5%
Recreational	454	13.2%	26	5.7%
Charter	348	10.1%	19	5.5%
Headboat	320	9.3%	29	9.1%
Commercial	40	1.2%	0	0.0%
Totals	***3,441***	***100%***	***209***	

Table 5. Summary of the number and percentage of Red Snapper, *Lutjanus campechanus*, that were tagged and recaptured by fishing sector or scientific group (2011-2013). Values for recaptured individuals represent the proportion of initially-tagged individuals within each sector that were subsequently recaptured.

Total Length (mm)	Original Tag Data		Recaptured Data	
	n	% Original	n	% Recaptured in Size Class
200-250	16	0.5%	0	0.0%
250-300	113	3.3%	2	1.8%
300-350	285	8.3%	23	8.1%
350-400	392	11.4%	28	7.1%
400-450	325	9.5%	16	4.9%
450-500	355	10.3%	30	8.5%
500-550	273	8.0%	24	8.8%
550-600	378	11.0%	27	7.1%
600-650	399	11.6%	26	6.5%
650-700	345	10.1%	17	4.9%
700-750	267	7.8%	9	3.4%
750-800	191	5.6%	3	1.6%
>800	91	2.7%	6	6.6%
Totals	***3,430***		***211***	

Table 6. Summary of the number and percentage of tagged and recaptured Red Snapper, *Lutjanus campechanus,* by total length (mm) size ranges (2011-2013). Values for recaptured individuals represent the proportion of initially-tagged individuals within each size class that were subsequently recaptured.

Depth (m)	Original Tag Data		Recaptured Data	
	n	% Original	n	% Recaptured in Depth Strata
<20	383	12.4%	27	7.0%
20-30	1,933	62.4%	112	5.8%
30-40	649	20.9%	31	4.8%
40-50	65	2.1%	4	6.2%
>50	69	2.2%	5	7.2%
Totals	***3,099***		***179***	

Table 7. Summary of the number and percentage of tagged and recaptured Red Snapper, *Lutjanus campechanus*, by depth strata (2011-2013). Values for recaptured individuals represent the proportion of initially-tagged individuals within each depth strata that were subsequently recaptured.

Hook Position	Original Tag Data		Recaptured Data	
	n	% Original	n	% Recaptured by Hook Position
None reported	323	9.4%	29	9.0%
Lip	2,902	84.3%	170	5.9%
Gut	96	2.8%	2	2.1%
Throat / Inside Mouth	91	2.6%	10	11.0%
Gill	6	0.2%	0	0.0%
Foul	23	0.7%	0	0.0%
Totals	***3,441***		***211***	

Table 8. Summary of the number and percentage of tagged and recaptured Red Snapper, *Lutjanus campechanus*, by reported hook position (2011-2013). Values for recaptured individuals represent the proportion of initially-tagged individuals within each hook position category that were subsequently recaptured.

Release Condition	Original Tag Data		Recaptured Data	
	n	% Original	n	% Recaptured by Release Condition
None reported	336	9.8%	27	8.0%
Good	3,010	87.5%	182	6.0%
Poor	91	2.6%	2	2.2%
Preyed	4	0.1%	0	0.0%
Totals	***3,441***		***211***	

Table 9. Summary of the number and percentage of tagged and recaptured Red Snapper, *Lutjanus campechanus*, by reported release condition (2011-2013). Values for recaptured individuals represent the proportion of initially-tagged individuals within each release condition category that were subsequently recaptured.

Field Name	Units of Measure	Description
Tag Number	.	Identifies the unique number of the tag used.
Species Tagged	.	Species of fish that was tagged
Date	month/day/year	Date that the fish was tagged
Depth Fished	feet	Depth (in feet) at which the tagged fish was collected
Habitat Type	.	Identifies the habitat type that the tagged fish was collected at: Artificial Reef would indicate any man-made object that was sunk on purpose or accidentally that creates habitat for reef fish; Natural Structure is any naturally occurring hard bottom reef structure or areas of higher relief (ledges, rocks, depressions); No Structure would indicate that fishing was in either open water or over a bottom with no known relief; Unknown is if the fisher does not know what the bottom type is
Latitude	degrees-minutes	Latitude at which tagged fish was collected
Longitude	degrees-minutes	Longitude at which tagged fish was collected
Name of Area	.	Name of specific area that tagged fish was collected at (if available) - local name of site, reef, wreck, or fishing location
Total Length	inches	Total pinched-tail length of tagged fish in inches
Evidence of Barotrauma	yes/no	Identifies any visual sign of barotrauma in the tagged fish - If yes, what type of barotrauma should be manually indicated: Bloated would indicate that the abdomen of the fish is expanded; Stomach would indicate that the fishes stomach can be visibly seen in the throat of the fish or hanging out of its mouth; Intestines would indicate that the intestines are visibly seen coming out of the fish's anus; Pop-Eye would indicate that the eyes of the fish are expanded
Vented	yes/no	Identifies whether the tagged fish was vented before release
Release Condition	.	Identifies the condition of the tagged fish upon release: Good indicates that the fish swam quickly back down in the water column; Poor indicates that the fish struggled at the surface or was seen by the fisher floating for an extended period of time at the waters surface; Preyed indicates that upon release, the fish was seen to be preyed upon (eaten) by another animal
Hook Position	.	Identifies where the fish was hooked. Lip would indicate any hook location directly around the mouth of the fish; Throat would indicate a hook position entirely inside the mouth, but not in any organs; Gut would indicate that the fish has completely swallowed the hook and is lodged (punctured) in the stomach of the fish; Gills would indicate that the hook has been lodged in the gills - either from inside the mouth or outside of the fish; Other would indicate any other hook position not listed and should be manually written in
Hook Removed	yes/no	Identifies whether or not the hook was removed from the fish upon capture
Bait Type	.	Identifies what type of bait was used to collect this specimen
Remarks	.	Manually written remarks/comments from the fisher that pertains to the catch that they feel is important for researchers to know
Vessel	.	Identifies the charter boat/party boat that the fish was tagged off of (**only on for-hire tagging data sheets**)
Captain	.	Identifies the captain of the charter boat/party boat that the fish was tagged on (**only on for-hire tagging data sheets**)

Appendix 1. Metadata for Cooperative East Coast Red Snapper Tagging Program data cards.