

**The Directed Shark Gillnet Fishery:
Non-Right Whale Season, 2000 and 2001.**

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Introduction

Observations of the east Florida-Georgia shark drift gillnet fishery have been previously conducted and reports of the catch and bycatch from these observations were developed (Trent et al., 1997; Carlson and Lee, 1999; Carlson and Lee, 2000; Carlson, 2000). In 1999, a revised Fishery Management Plan for Highly Migratory Species (HMS-FMP) established a 100% observer coverage requirement for this fishery at all times to improve estimates of catch, effort, bycatch, and bycatch mortality. However, an interim final rule published in March 2001 (March 30, 2001; 66 FR 17370) to the Fishery Management Plan for Highly Migratory Species, rescinded the 100% requirement outside the right whale season and established a level of coverage equal to that which would attain a sample size needed to provide estimates of sea turtle or marine mammal interactions with an expected coefficient of variation of 0.3. Because information on catch and bycatch for this fishery has been reported during the right whale season (15 Nov-31 Mar) (Carlson, 2000), the objectives of this report are to describe the catch and bycatch in the directed shark gillnet fishery outside the right whale season for 2000 and 2001.

Methods

Prior to the non-right whale season 2000, funds to continue 100% observer coverage of the directed shark drift gillnet fishery were exhausted. Through a Memorandum of Agreement with the Georgia Department of Natural Resources and the National Marine Fisheries Service, 100% coverage of fishing activities in federal waters off the state of Georgia was accomplished from July-September 2000. In April 2001 after rescinding of the 100% requirement outside the right whale season, vessels were randomly selected from a universe of 6 vessels for a 2-week coverage period. Selection letters requiring observer coverage were issued by the SEFSC observer coordinator beginning on 1 April 2001. After the fisher made initial contact with the observer coordinator, an observer was deployed to the port where the vessel was currently active. Details of the methods used to obtain data can be found in Carlson and Lee (1999). In general, observations were made as the net was hauled aboard. The observer remained about 3-8 m forward of the net reel in a position with an unobstructed view and recorded species, numbers and lengths (± 30 cm) of sharks and other species caught as they were suspended in the net just after passing over the power roller. Weights (in kg) were estimated from these estimated lengths using length-weight relationships provided in Castro (1993), Kohler et al. (1994), and Carlson

(unpublished data). When species identification was questionable, the crew stopped the reel so that the observer could examine the animal(s) for positive identification. Disposition of each species brought onboard was recorded as kept, discarded alive, or discarded dead. Data were submitted to the SEFSC Sustainable Fisheries Division on a weekly basis. The data were examined and entered by NMFS/SEFSC Sustainable Fisheries Division staff, and reviewed with Johnson Controls contract staff to resolve any questions.

Results and Discussion

Strikenet Fishery

Strikenet fishing techniques were somewhat different from those described in Carlson (2000). Whereas during the right whale season, a smaller strike boat worked with a larger driftnet vessel with power rollers, observations during the summer of 2000 and 2001 found that only the driftnet vessel would actively set the net. Aggregations of sharks was located by actively communicating with shrimp vessels using VHF radio. Once the shrimp vessel began haulback of the trawl, the driftnet vessel would set its gear directly behind the wake of the shrimp vessel. Set times averaged 0.09 hrs (± 0.03 S.D.) and soak times (time net was first set minus time haulback began) averaged 0.16 hrs (± 0.05 S.D.). Haulback averaged 0.37 hrs (± 0.3 S.D.). The entire strikenetting process (time net was first set minus time haulback was completed) averaged 0.52 hrs (± 0.3 S.D.). For strikenetting, vessels used nets 45.6-729.6 m long, 9.1-24.3 m deep and included stretched mesh sizes 22.8-25.4 cm. This type of fishing technique occurred during day and nighttime hours.

Observed strikenet catches

A total of 8 strikenet sets (3 in 2000 and 5 in 2001) were observed from August to September. Observed catch in the strikenet fishery consisted of 4 species of sharks (99.9% of total number caught) and 1 species of ray (0.01% of total number caught) (Table 1). No marine mammals or sea turtles were observed caught. The blacknose shark, *Carcharhinus acronotus*, made up 61.3% of the total number of sharks caught. Bycatch included only the cownose ray, *Rhinoptera bonasus*.

Species	Common name	Total number caught	Kept (%)	Discard Alive (%)	Discard Dead (%)
<i>Carcharhinus acronotus</i>	Blacknose shark	111	100.0	0.0	0.0
<i>Carcharhinus limbatus</i>	Blacktip shark	54	11.9	25.9	62.9
<i>Carcharhinus brevipinna</i>	Spinner shark	10	0.0	0.0	100.0
<i>Carcharhinus isodon</i>	Finetooth shark	4	100.0	0.0	0.0
<i>Rhinoptera bonasus</i>	Cownose ray	2	50.0	50.0	0.0

Table 1. Total strikenet shark catch and bycatch by species and species disposition in order of decreasing abundance during all observer trips, 2000 and 2001.

Driftnet fishery

A total of 37 driftnet sets (15 in 2000 and 22 in 2001) were observed from April-October between approximately 27° 18' N and 31° 07' N (Figure 1). Driftnet vessels carried nets ranging in length from 91.2-2,736 m, depths from 3.04-13.7 m, and stretch mesh sizes from 12.7-25.4 cm. Set duration averaged 0.3 hrs (± 0.2 S.D.). Haulback and processing of the catch averaged 3.1 hrs (± 1.9 S.D.). Average soak time for the driftnet (time net was first set minus time haulback began) was 5.6 hrs (± 3.3 S.D.). The entire drift netting process (time net was first set minus time haulback was completed) averaged 9.0 hrs (± 4.7 S.D.).

Observed driftnet catches

The observed driftnet catch consisted of 10 species of sharks, 25 species of teleosts and rays, and 1 species of sea turtle. Total observed catch composition (percent of numbers caught) were 70.59% sharks, 27.80% teleosts, 1.60% rays, 0.01% sea turtles and 0.0% marine mammals. Three species of sharks made up 96.9% (by number) of the observed shark catch (Table 2). These species were the Atlantic sharpnose shark, *Rhizoprionodon terraenovae* (85.6%), blacknose shark (7.2%), and blacktip shark (4.1%). By weight, the shark catch was made up primarily of Atlantic sharpnose shark (58.3%), blacknose shark (21.9%), and blacktip shark (12.5%).

Species	Common name	Total number caught	Kept (%)	Discard Alive (%)	Discard Dead (%)
<i>Rhizoprionodon terraenovae</i>	Atlantic sharpnose	8688	99.9	0.01	0.01
<i>Carcharhinus acronotus</i>	Blacknose	726	99.4	0.0	0.6
<i>Carcharhinus limbatus</i>	Blacktip	422	74.7	15.8	9.5
<i>Carcharhinus isodon</i>	Finetooth	164	100.0	0.0	0.0
<i>Sphyrna tiburo</i>	Bonnethead	123	100.0	0.0	0.0
<i>Sphyrna lewini</i>	Scalloped hammerhead	14	28.6	0.0	71.4
<i>Galeocerdo cuvier</i>	Tiger	3	0.0	66.7	33.3
<i>Carcharhinus leucas</i>	Bull	2	100.0	0.0	0.0
<i>Carcharhinus brevipinna</i>	Spinner	2	50.0	0.0	50.0
<i>Sphyrna mokarran</i>	Great hammerhead	1	100.0	0.0	0.0

Table 2. Total directed shark catch by species and species disposition in order of decreasing abundance during all driftnet observer trips.

Five species of teleosts and one species of ray made up 94.7% by number of the overall non-shark species. Little tunny, *Euthynnus alletteratus* (48.9), king mackerel, *Scomberomorus cavalla* (25.1%), barracuda, *Sphyrna tiburo* (10.3%), blue runner, *Caranx crysos* (5.3%) and cownose ray, *Rhinoptera bonasus* (5.1%), dominated the bycatch (Table 3).

Disposition of catch

Portions of both the targeted catch (sharks) and incidental catch were discarded. The proportions discarded varied between strikenet and driftnet catches. In the strikenet fishery, 36.5% of sharks were discarded (Table 1). Discards were related to fishing activity that occurred during the large coastal season closure. For incidental catch taken in the strikenet fishery, only cownose rays were discarded (50%; n=1).

For incidental driftnet catch species, the highest proportion discarded dead (with observed catch greater than 10 specimens) was for Atlantic moonfish (100.0%), Atlantic sailfish (100.0%), lookdown (100.0%), king mackerel (83.7%), and remora (42.9%) (Table 3). Cownose rays and remoras had the highest discard proportion alive, 78.7% and 57.1%, respectively.

Species	Common name	Total number caught	Kept (%)	Discard Alive (%)	Discard Dead (%)
<i>Euthynnus alletteratus</i>	Little tunny	2066	88.4	0.0	11.6
<i>Scomberomorus cavalla</i>	King mackerel	1059	16.3	0.0	83.7
<i>Sphyrænidae</i>	Barracuda	436	100.0	0.0	0.0
<i>Caranx crysos</i>	Blue runner	223	100.0	0.0	0.0
<i>Rhinoptera bonasus</i>	Cownose ray	216	1.4	78.7	19.9
<i>Rachycentron canadum</i>	Cobia	61	60.6	6.6	32.8
<i>Echeneididae</i>	Remora	35	0.0	57.1	42.9
<i>Selene setapinnis</i>	Atlantic moonfish	24	0.0	0.0	100.0
<i>Caranx hippos</i>	Crevalle jack	23	60.9	0.0	39.1
<i>Istiophorus platypterus</i>	Atlantic sailfish	13	0.0	0.0	100.0
<i>Selene vomer</i>	Lookdown	12	0.0	0.0	100.0
<i>Lutjanidae</i>	Snapper	6	100.0	0.0	0.0
<i>Thunnus atlanticus</i>	Blackfin tuna	6	100.0	0.0	0.0
<i>Aetobatus narinari</i>	Spotted eagle ray	5	0.0	100.0	0.0
<i>Manta birostris</i>	Manta ray	5	20.0	40.0	40.0
<i>Acanthocybium solanderi</i>	Wahoo	4	100.0	0.0	0.0
<i>Alectis ciliaris</i>	African pompano	4	100.0	0.0	0.0
<i>Rajiformes</i>	Rays	4	50.0	50.0	0.0
<i>Megalops atlanticus</i>	Tarpon	3	0.0	100.0	0.0
<i>Chaetodipterus faber</i>	Spadefish	2	50.0	0.0	50.0
<i>Cynoscion regalis</i>	Weakfish	2	0.0	0.0	100.0
<i>Lobotes surinamensis</i>	Tripletail	2	100.0	0.0	0.0
<i>Scomberomorus maculatus</i>	Spanish mackerel	2	100.0	0.0	0.0
<i>Caretta caretta</i>	Loggerhead turtle	1	0.0	100.0	0.0
<i>Pomatomus saltatrix</i>	Bluefish	1	100.0	0.0	0.0
<i>Seriola rivoliana</i>	Almaco jack	1	0.0	0.0	100.0
<i>Thunnus obsesus</i>	Bigeye tuna	1	100.0	0.0	0.0
<i>Trachinotus carolinus</i>	Florida pompano	1	100.0	0.0	0.0

Table 3. Total driftnet teleost and ray bycatch caught by species in order of decreasing abundance and species disposition during all observer trips.

Protected resource interactions

Interactions with protected resources (1 individual) occurred with 1 loggerhead sea turtle, *Caretta caretta*. No mortalities were reported.

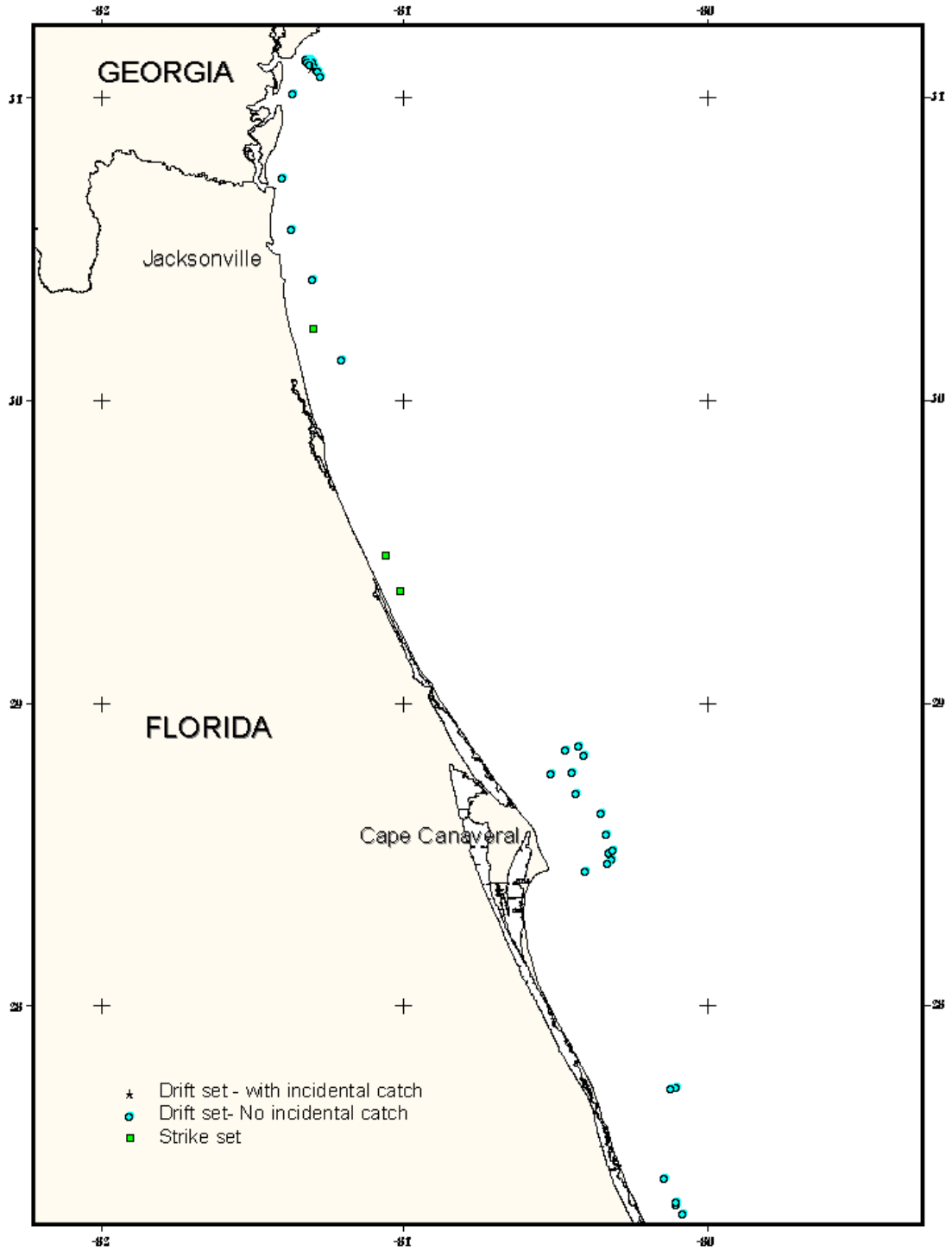


Figure 1. Distribution of observed strike and drift gillnet sets during 2000 and 2001.

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