



NOAA Technical Memorandum NMFS-SEFSC-592

REPORT ON THE ALTERNATIVE PLATFORM
OBSERVER PROGRAM IN NORTH CAROLINA:
JANUARY 2007 TO MAY 2009



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ABSTRACT

In February 2006, an Alternative Platform Observer Program (APOP) was implemented in North Carolina (NC) to observe commercial gillnet trips by small vessels (<7.3 m) in nearshore waters out to 5.6 km. The primary focus of the APOP was to document any marine mammal bycatch in the fishery. This report summarizes APOP effort in 2007 and 2008, corrects fishing effort information in the 2006 report, and provides APOP trip information from January through May 2009. During 2007, the APOP observed 35 small vessel and 11 large vessel ocean gillnet trips targeting six species: kingfish (*Menticirrhus* spp.), Spanish mackerel (*Scomberomorus maculatus*), spiny dogfish (*Squalus acanthias*), spot (*Leiostomus xanthurus*), striped bass (*Morone saxatilis*), and striped mullet (*Mugil cephalus*); two small vessel inshore gillnet trips were also observed targeting southern flounder (*Paralichthys lethostigma*). The small vessel ocean trips represented 3.0% (monthly range, 0.0% to 8.0%) of gillnet trips in state ocean waters reported by North Carolina Division of Marine Fisheries (NCDMF) for small vessels not landing striped bass and 0.7% of striped bass trips. Of the 48 total trips, 23 (47.9%) were with vessels that had not previously carried a federal observer. The APOP observed 46 ocean trips compared to 218 ocean trips observed by the Northeast Fishery Observer Program (NEFOP) in NC, resulting in an overall increase of 21.1% in the number of observed gillnet trips. In 2008, the APOP observed 29 small vessel and 20 large vessel ocean gillnet trips targeting five species: king mackerel (*Scomberomorus cavalla*), kingfish, Spanish mackerel, spot, and striped bass. Two additional trips were observed in state inshore waters targeting southern flounder. The small vessel ocean trips represented 3.6% (monthly range, 0.0% to 11.1%) of gillnet trips in state ocean waters reported by NCDMF for small vessels not landing striped bass and 0.9% of striped bass trips. The APOP also observed 20 striped bass beach-seine trips. Of the 51 gillnet trips, 22 (43.1%) were with vessels new to the program. In 2008, the APOP observed 49 ocean trips compared to 124 ocean trips observed by the NEFOP, providing an overall increase of 39.5% in the number of observed gillnet trips. In 2009, the APOP observed 8 trips during its five months of activity. The Database of Fishermen (DOF) increased by 67 in 2007 and 29 in 2008; the total number of entries in the DOF at the end of 2008 was 214. There were no new contacts added in 2009. No incidental takes of marine mammals or sea turtles were observed during APOP observations. However, 16 sea birds were observed entangled during 2008 and four were documented in 2009, including the Brown Pelican (*Pelecanus occidentalis*), Common Loon (*Gavia immer*), Double-crested Cormorant (*Phalacrocorax auritus*), Northern Gannet (*Morus bassanus*), and Red-throated Loon (*Gavia stellata*). Marine mammals and sea turtles were seen in the vicinity of gear and there was evidence of depredation of fish in gillnets by bottlenose dolphins (*Tursiops truncatus*) and a loggerhead sea turtle (*Caretta caretta*). Overall, the APOP successfully increased observer coverage in North Carolina, and maybe more importantly, added coverage of a sector of the fishery previously underrepresented by the traditional observer coverage.

INTRODUCTION

The western North Atlantic coastal bottlenose dolphin, *Tursiops truncatus*, is a strategic stock under the Marine Mammal Protection Act (MMPA) and interacts with nine Category I and

II commercial fisheries, thereby requiring a take reduction plan under section 118 of the MMPA (NOAA 2006). The Bottlenose Dolphin Take Reduction Plan (BDTRP) was developed by consensus recommendations from the Bottlenose Dolphin Take Reduction Team (BDTRT) and was finalized on 26 April 2006 (NOAA 2006). Among other mitigation provisions, the BDTRP requires monitoring of commercial fisheries to determine the effectiveness of take reduction measures implemented from New Jersey through the east coast of Florida. Specific recommendations were made by the BDTRT to increase observer coverage of ocean gillnets, especially in North Carolina (NC), to enhance the overall precision and accuracy of bottlenose dolphin mortality estimates, and to ensure that observer data are representative of the entire fishing fleet.

The Northeast Fisheries Observer Program (NEFOP) administered by the National Marine Fisheries Service (NMFS) has been observing commercial ocean gillnet fisheries in NC (and the mid-Atlantic region) since 1993 (Blaylock *et al.* 1995) using traditional, onboard observers. Between 1996 and 2000, 60% of bottlenose dolphin mortality incidental to gillnet fishing activity in NC occurred in state ocean waters (0 – 5.6 km), where annual observer coverage was generally less than 2.5% of landings (Palka and Rossman 2001). Observer coverage was somewhat higher in 2003–2005, but was generally less than 3% off NC (Rossman pers. comm.¹). Additionally, most observer coverage off NC has been on larger vessels (≥ 7.3 m) that typically fish in federal waters (Palka and Rossman 2001) while approximately half of gillnet effort occurs in NC state ocean waters vessels [North Carolina Division of Marine Fisheries (NCDMF) unpub. data²]. The disparity between gillnet effort in NC and observer coverage is due to the uniqueness of the NC ocean gillnet fishery in state waters, which uses a wide range of gillnet configurations (Steve *et al.* 2001).

Unlike commercial gillnet fisheries operating in the northeast, approximately half of the gillnetters in NC operate small vessels (< 7.3 m). In 2008, for example, 277 small vessels fished in the ocean, compared to 301 large vessels (NCDMF unpub. data²). The prevalence of small vessels creates unique challenges to observing with traditional observers. One challenge is that small vessels are often kept on boat trailers and launched from public and private ramps rather than being docked at major ports where observers select vessels for observation; thus, these small vessels are difficult for observers to find. The second challenge is the inherent danger involved in placing an observer onboard a small vessel where space is limited. These challenges result in traditional observer coverage being unfeasible for many small vessels, and, thus, not representative of the entire commercial fishing fleet in NC.

An Alternative Platform Observer Program (APOP) was implemented in 2006 (Kolkmeier *et al.* 2007) to help accomplish the BDTRT's recommendations for increased observer coverage in NC while mitigating the challenges of observing ocean gillnet fisheries

¹ Rossman, M. 2006. Preliminary coastal bottlenose dolphin bycatch estimates for 2003-2005. Report prepared for the Atlantic Scientific Review Group meeting 9-11 January 2009 in St. Petersburg, FL. 166 Water Street Woods Hole, MA 02543.

² NCDMF License and Statistics Section, 3441 Arendell Street, Morehead City, NC 28557.

prosecuted from small vessels. The program incorporates a separate vessel, the alternative platform, with a NEFOP-certified fisheries observer onboard that is able to approach fishing vessels on the water to conduct observations, regardless of vessel size. The NMFS Southeast Regional Office (SERO) and the National Observer Program (NOP) provided funding through May 2009, after which the program was terminated due to lack of funding.

The purpose of this report is to summarize the accomplishments of the APOP based at the NOAA Laboratory in Beaufort, NC, for the 2007 and 2008 calendar years. This report will also update data from a previous report (Kolkmeier *et al.* 2007) based on the recent discovery that effort data used in that report were incomplete and provide preliminary data from January through May 2009.

As noted in the earlier APOP report (Kolkmeier *et al.* 2007), the objectives of the APOP in Beaufort, NC, were:

1. Create a Database of Fishermen (DOF). The purposes of the DOF are to:
 - a. Improve characterization of fisheries in NC, with an emphasis on use of small vessels and beach-based fisheries that require use of the alternative platform observation effort.
 - b. Determine the spatial and temporal distributions of fishing effort by small-vessel gillnetters over the course of an entire year.
 - c. Provide contact information of fishermen to allow observers to schedule trips and identify small vessels for which an alternative platform is necessary to obtain observer coverage.
2. Update the DOF continually as fishermen move, leave or enter fisheries, or alter fishing practices.
3. Assist SERO Fishery Liaison in providing information to fishermen and seafood dealers regarding the use of an alternative platform and the necessity to increase observer coverage using these methods.
4. Conduct alternative platform observations using the protocols and datasheets from NEFOP to ensure observer data are consistent with traditionally observed trips.
5. Allocate alternative platform trips using information in the DOF and landings data from DMF to ensure representative (*i.e.*, unbiased) coverage of small gillnet vessels.
6. Provide data to NEFSC for inclusion in the mortality bycatch analyses to more effectively monitor the success of the BDTRP.

METHODS

Two full-time field coordinators (FCs) were based out of the NOAA Laboratory in Beaufort, NC. Beaufort was an ideal site because of its central location (Fig. 1) along the state's coast relative to fishing effort from small vessels. The FCs were responsible for allocating and scheduling alternative platform observer trips using a sea-day schedule, arranging logistics for

travel based on real-time fishing effort, serving as observer and vessel operator for each trip, and recording and submitting data to the NEFOP to be included in the calculation of mortality estimates for bottlenose dolphins.

The alternative platform (*i.e.*, the vessel) was a 7-m rigid hull inflatable boat. One FC served as the vessel operator while the other conducted observations and recorded data. The vessel operator maintained the alternative platform in a position that allowed the observer to maintain sight of the net and record interactions with marine mammals, sea turtles, and sea birds for each net hauled during a trip. During a haul, sightings of marine mammals and sea turtles were recorded, including a description of the animal, its behavior, and proximity to the fishing gear. At the conclusion of each haul, a list of kept species and their estimated weights were obtained from the captain. Discarded catch data were not officially recorded unless catch included marine mammals, sea turtles, sea birds, sharks, tunas, and billfish. Data were recorded in accordance to protocols established by the NEFOP for alternative platform sampling trips (NEFOP 2006) and described in Kolkmeyer *et al.* (2007). This ensured consistency between the APOP and NEFOP programs to allow data to be combined, thereby enhancing the precision and accuracy of bottlenose dolphin mortality estimates. Upon completion of APOP trips, all data sheets were provided to the NEFOP for incorporation into their database.

To help schedule trips, the FCs used the Database of Fishermen (DOF) developed in 2006 (Kolkmeyer *et al.* 2007) to determine who might be fishing and where. The DOF contained captains' names and contact numbers, vessels' names and hull numbers, home port and other ports used, types of gear fished (*e.g.*, ocean gillnet, crab pot, beach seine, etc.), seasons and areas fished, and target species. The DOF was intended to be a "living document"; thus, it was continually updated, according to methods described in Kolkmeyer *et al.* (2007), as fishermen altered their practices, moved, or entered or left fisheries.

A sea-day schedule also was used to guide the APOP's efforts for 2007 and 2008. Schedules for each year were developed using the average number of gillnet trips by small vessels (<7.3 m) over the previous three years by month and county. For 2007, effort data for years 2004 through 2006 were provided by the NCDMF (collected via their Trip Ticket Program²) for the number of gillnet trips prosecuted by small vessels in state ocean waters and stratified by month and county. Alternative platform observer coverage for 2007 was allocated at 10% of the average number of trips. For counties whose average number of trips was less than five, no coverage was assigned. If the average was from five to nine, one sea day was allocated. Furthermore, because NCDMF trip-ticket data were recorded according to where the catch was sold rather than landed or caught, some counties that were not adjacent to the ocean reported commercial gillnet landings. Ocean trips reported as being landed in these counties were not assigned APOP coverage nor included in the calculation to allocate sea days.

To calculate the 2008 sea-day schedule, effort data for 2007 were requested and combined with the 2005 and 2006 data. Upon initial examination of the 2007 data, it was apparent that reported landings had decreased dramatically from the previous year. The NCDMF was contacted to confirm the substantial decrease. The NCDMF examined their query language

and the resulting data; they found the data were biased negatively because the two most common gillnet configurations [small mesh (< 12.7 cm stretch) anchored and large mesh ($\geq$ 12.7 cm stretch) anchored] were inadvertently omitted from the 2007 query. The corrected 2007 data, including all gillnet configurations, were nearly ten times the number of trips reported for 2006. Further examination by the NCDMF showed that this same omission also occurred in the 2005 and 2006 data queries. Consequently, NCDMF provided a revised data set to the APOP for 2005 through 2007 commercial gillnet fishing effort.

During the process of developing the 2008 sea-day schedule, the revised 2007 data indicated a large increase in the number of reported trips in January ($n = 645$) from the revised data for the previous year ($n = 13$), presumably due to the opening by the NCDMF of the striped bass (*Morone saxatilis*) gillnet fishery that same month. The striped bass gillnet fishery is unique in that the NCDMF opens and closes the fishery on the basis of quotas and the fishery has a tremendous amount of effort over relatively few days (*e.g.*, it was open for only 2 days in December 2006). As a result of the large number of trips attributed to the striped bass fishery, the NCDMF was requested to also provide data for 2005-2007 identifying gillnet trips that targeted striped bass. Those data confirmed that 615 out of 645 reported trips in January 2007 targeted striped bass. Therefore, and in contrast to prior years, the 2008 sea-day schedule was allocated trips separately for the striped bass fishery because the derby-style striped bass fishery would inflate the number of assigned APOP days beyond a reasonable level, preventing needed APOP coverage in other fisheries. Observer coverage was allocated at 10% of the average for non-striped bass, and 3% for striped bass using the same procedure as in 2007. The coverage for striped bass trips was lower because one APOP vessel could not cover 10% of the striped bass fishery.

In 2008, the APOP also coordinated with NEFOP to ensure that alternative platform observations were conducted concurrent with traditional observer coverage for the fall Spanish mackerel (*Scomberomorus maculatus*) fishery off Cape Hatteras, NC. This intensive coverage was recommended by the Scientific Review Group (SRG, advisory group to NMFS formed under a requirement of the MMPA) during their meeting on January 2008³.

To determine the percent observer coverage attained for 2007 and 2008, the number of observed ocean gillnet trips with small vessels was compared to the number of ocean fishing trips reported to NCDMF for small vessels by month and by year and by trips landing striped bass and non-striped bass. This method is different than how NEFOP calculates percent coverage, which is by using tons landed. Due to the previously reported data omissions, percent coverage data of nearshore gillnet trips reported in Kolkmeier *et al.* (2007) for March through December of 2006 were incorrect. Corrected fishing effort data for 2006 were used to recalculate percent coverage of nearshore gillnet trips by the APOP, and they are updated in this report.

³ Stacey Carlson. Pers. comm. NMFS, SERO, St. Petersburg, FL.

To assess the increase in overall observer coverage provided by the APOP in NC, the total number of ocean APOP trips (small and large vessel) was compared to the total number of ocean gillnet trips observed in NC by the NEFOP (small and large vessel). The NEFOP data were obtained from their website (NMFS 2009).

In addition to observing state ocean gillnet trips, the APOP also observed inshore (*i.e.*, inside the COLREGs line) gillnet trips during 2007 and 2008 and ocean beach-seine trips targeting striped bass in 2008. Inshore gillnet trips were observed during the summer when ocean gillnetters were less active. Data from the inshore trips were provided to the NEFOP and the NCDMF observer coordinator who oversees inshore gillnet observations (Price 2009). The beach-seine fishery for striped bass was observed due to a request by the SERO for increased observer coverage because the fishery had a history of interactions with bottlenose dolphins. Because the fishery and the observations occurred from the beach, only one FC was needed to observe this fishery. Data from the beach-seine fishery were provided to NEFOP in the same manner as ocean gillnet trips.

APOP observations were also conducted from January through May 2009, but landings data are generally available about six months after the end of the calendar. Thus in this report, we provide the APOP trip information without the percentage coverage calculations or contributions to increasing the total number of trips as compared to NEFOP trips.

RESULTS

Allocated and Completed Trips

Fishing effort, for the purposes of this study defined as the total number of gillnet trips in state ocean waters reported by small vessels, fluctuated between 2005 and 2008 (Fig. 2). The striped bass fishery accounted for an average of 31.1% (SD = 216.3; range 17.2% to 42.0%) of total gillnet trips. The greatest number of striped bass trips ($n = 615$) occurred in 2007 over a total of eight non-continuous days (NCDMF 2006a, 2007a, 2007b). Of non-striped bass trips, an average of 831 trips (SD = 145.0; range 690 to 1,030) occurred each year. The greatest number of non-striped bass trips ($n = 1,030$) occurred in 2007.

In 2007, 48 observer trips were completed (Table 1). Of those, 35 were in the ocean with small vessels (<7.3 m) (Table 2) compared to the 86 trips planned in the sea-day schedule. Eleven additional trips were observed in the ocean with large vessels (9 trips = 7.3 m; 2 trips > 7.3 m) because there were no small vessels fishing in the area (Table 2). Two inshore trips with small vessels were also completed when ocean gillnetters were inactive (Table 2). Target species for ocean gillnets included: kingfish (*Menticirrhus* spp.), Spanish mackerel, spiny dogfish (*Squalus acanthias*), spot (*Leiostomus xanthurus*), striped bass, and striped mullet (*Mugil cephalus*) (Table 1). The target species for inshore gillnets was the southern flounder (*Paralichthys lethostigma*) (Table 1). Four different gillnet configurations were observed: drift

sink, anchored sink, drift floating, and anchored floating. Of the 48 total trips, 23 (47.9%) were with vessels new to the NEFOP, meaning they had not previously carried a federal observer.

In 2008, 51 gillnet trips and 20 beach seine trips were observed (Table 3). Of the gillnet trips, 29 were in the ocean with small vessels (Table 2) compared to the 93 trips planned in the sea-day schedule. Twenty additional trips were observed in the ocean with large vessels (7 trips = 7.3 m; 13 trips > 7.3 m) because there were no small vessels fishing in the area (Table 2). Two inshore trips with small vessels were also completed when ocean gillnetters were inactive (Table 2). Target species for ocean gillnets included: king mackerel (*Scomberomorus cavalla*), kingfish, Spanish mackerel, spot, and striped bass (Table 3). Target species for inshore gillnets was southern flounder; target species for beach seines was striped bass (Table 3). Two different types of gillnet configurations were observed: drift sink and anchored sink. Of the 51 ocean and inshore gillnet trips, 22 (43.1%) were with vessels new to the NEFOP.

From January through May 2009, 8 ocean trips were completed (Table 4). Of these, two were with small vessels (compared to 27 allocated), and six were with large vessels (5 trips = 7.3 m; 1 trip > 7.3 m). Kingfish was the target species on all trips.

Observer Coverage

During 2007, the APOP observed 3.0% (monthly range, 0.0% to 8.0%) of gillnet trips in state ocean waters reported by NCDMF for small vessels outside of the striped bass fishery (Table 5). Peak fishing effort (excluding striped bass) occurred in September, October, and November, with 5.4%, 2.6%, and 3.7% coverage achieved, respectively. The APOP observed 0.7% (four trips) of gillnet trips in the striped bass gillnet fishery prosecuted by small vessels (Table 6).

During 2008, the APOP observed 3.6% (monthly range, 0.0% to 11.1%) of gillnet trips in state ocean waters reported by NCDMF for small vessels not landing striped bass (Table 5). During the months of greatest fishing effort (excluding striped bass), April, October, and November, the APOP was able to achieve 3.8%, 5.8%, and 4.5% coverage, respectively. The striped bass gillnet season was open in January 2008 for six days (NCDMF 2008a, 2008b) and in February for two days (NCDMF 2008c). During this time, 212 striped bass trips were reported for January and no days were reported for February (Table 6); the APOP observed one trip in January for 0.9% coverage.

For the revised percent coverage for 2006, the APOP observed 2.2% (monthly range, 0.0% to 8.3%) of gillnet trips in state ocean waters, excluding the striped bass fishery (Table 5). The striped bass season was opened for two days in December (NCDMF 2006b) during which 173 trips were reported (Table 6); the percent coverage was zero as the one observed trip was with a 7.3-m vessel. Originally in 2006, it appeared that there were months in which the APOP had observed more trips than were reported by the NCDMF because a large portion of trips were not in the original data query (Kolkmeier *et al.* 2007). The revision above corrects that information.

Relative observer coverage by the APOP increased each year of the program. The number of fishing trips on small vessels that fished in state ocean waters of NC was 781 in 2006, 1,003 in 2007, and 771 in 2008. Coverage in 2006 (effort began in April 2006) was 2.2%. In 2007 and 2008, coverage was year-round. In 2007, the APOP attained 3.0% coverage, and in 2008 coverage increased to 3.6%.

Comparison to NEFOP Observed Trips

In 2007 the APOP observed 46 ocean gillnet trips compared to 218 ocean trips observed by the NEFOP in NC (Table 7), resulting in an overall 21.1% increase in the number of observed gillnet trips. Specifically, during the peak fishing months (*i.e.*, September, October, November), the APOP increased the total number of observed gillnet trips by 83.3%, 31.8%, and 91.7%, respectively.

In 2008 the APOP observed 49 ocean gillnet trips compared to 124 trips observed by the NEFOP (Table 7), providing an overall 39.5% increase in the number of observed gillnet trips. Of the 49 observed trips, five trips occurred during the Spanish mackerel fishery in September and October off of Cape Hatteras, NC, in coordination with the intense observer coverage initiated by the NEFOP. During peak fishing months of October and November, the APOP increased observer coverage by 56.5% and 142.9%, respectively.

Observed Takes and Marine Mammal Observations

No incidental takes of marine mammals or sea turtles were observed during APOP observations in 2007, 2008, or 2009; however, 16 sea birds were observed entangled during 2008 (Table 8) and four were observed entangled during 2009 (Table 9). The species entangled were the Brown Pelican (*Pelecanus occidentalis*), Common Loon (*Gavia immer*), Double-crested Cormorant (*Phalacrocorax aritus*), Northern Gannet (*Morus bassanus*), Red-throated Loon (*Gavia stellata*), and an unknown species of loon. In 2008, the Brown Pelican was briefly entangled while attempting to depredate a gillnet, but was released alive. All other entangled birds were found dead.

Marine mammals and sea turtles were observed in the vicinity of fishing activity in 2007 (Table 1). Bottlenose dolphins were seen at varying distances from fishing vessels and gear during 22 (45.8%) of the observed trips. On four of the trips in which dolphins were seen (8.3% of total trips), there was evidence of depredation on nets targeting Spanish mackerel and spot off Carteret and Brunswick Counties. Dolphins were also observed to patrol [*e.g.*, swim along at close range (Read *et al.* 2003)] nets on two trips without signs of depredation. On one trip, the captain fed fish to a dolphin at the stern of his vessel. A pair of right whales (*Eubalaena glacialis*) was also sighted during a trip off of Cape Lookout in December 2007. The pair approached within 200 meters of the fishing vessel and its gear before turning offshore. Loggerhead turtles (*Caretta caretta*) were sighted on five trips. One sighting involved a loggerhead depredating a net targeting spot.

In 2008, marine mammals and sea turtles were also sighted within the vicinity of fishing activity (Table 3). Bottlenose dolphins were sighted on 23 (45.1%) of the observed gillnet trips and two (10%) of the 20 beach-seine hauls. During six gillnet trips there was evidence of depredation on nets targeting kingfish and Spanish mackerel. One dolphin was observed patrolling a net targeting kingfish. A pair of right whales was also sighted in 2008, this time off of Carolina Beach, NC. The pair passed approximately 150 m offshore of the fishing vessel and its gear and continued on a southerly course toward Cape Fear. Loggerhead turtles were sighted during two trips.

In 2009, bottlenose dolphins were sighted on three of the eight (37.5%) observed trips. One dolphin was observed patrolling a net targeting kingfish. In addition, a partially-eaten fish was removed from one net suggesting depredation.

Database of Fishermen (DOF)

The DOF was a useful tool for the FCs in tracking and updating fishermen's activities. Entries included gillnet fishermen with both small and large vessels, as well as those who used beach seines. Some fishermen participated in multiple fisheries with multiple vessels, yet were registered only once in the DOF. New entries were added to the DOF each year. In 2006 the database began with 88 entries, mostly provided by the SERO fisheries liaison. By the end of 2006, there were 118 entries. The FCs were able to increase the number of entries to 185 during 2007. By the end of 2008 there were 214 entries, of which 30% were exclusively small-vessel fishermen.

DISCUSSION

The APOP has directly responded to a recommendation of the BDTRP to increase observer coverage, which improves the accuracy and precision of bottlenose dolphin mortality estimates from observer data (NOAA 2006). The APOP provided an increase in the total number of trips observed each year: 20.3% in 2007 and 42.9% in 2008. One notable difference is that the APOP coverage was only within state waters, while the NEFOP coverage included both state and federal waters. Thus, the potential increase in observer coverage in nearshore waters, where bottlenose dolphin densities are the greatest (Garrison 2001), was likely greater than the 20.3-42.9% noted above. The APOP is particularly important for areas such as Brunswick County where up to 99% of the fishing effort has been prosecuted by small vessels². The inherent difficulties finding and observing small vessels have prohibited the traditional observer program from obtaining coverage of many of these vessels, resulting in non-representative observer coverage in NC. With the addition of the APOP, observer coverage was more representative of the entire NC ocean gillnet fleet.

Nearly half of all APOP trips in 2007 were observed with vessels that had not previously been observed by NEFOP or by the APOP in 2006. In fact, four out of the last seven trips of the

year were with vessels that had not previously been observed by either the NEFOP or APOP. In 2008, approximately one quarter of the APOP gillnet trips were with new vessels. Even after nearly three years of APOP effort, the FCs continued to find and observe new vessels, as well as add new contacts to the DOF. No new contacts were added during 2009.

Although the 2007 and 2008 sea-day schedules were developed using historical fisheries data to predict timing and location of effort, actual allocation remained flexible to allow the FCs to make decisions in real time on the basis of where the highest levels of activity were actually occurring. This flexibility was important because fish availability can vary from year to year or within a particular season depending on water temperatures, fish migrations, and local weather. The FCs stayed informed of fishing effort by regular phone calls and visits to seafood dealers and fishermen, whose information is stored in the DOF. The need for this flexibility and quick response highlights the importance of having the FCs on location when these fisheries are being prosecuted.

Although the sea-day schedule and communication with the commercial fishing industry helped accomplish APOP trips, the number of observed trips was less than the allocated days for 2007 and 2008. Several factors contributed to completing fewer than the expected number of observed trips. Fishing activity often was aggregated in fishing “hot spots”, which occurred at various locations along the coast at the same time. For example, the fall Spanish mackerel fishery can peak off Hyde and Dare Counties while the spot fishery is peaking off Brunswick County, more than 300 km away. In addition, fishing effort was often short-lived because fish migrate or disperse quickly, or seasons close when quotas are filled (*e.g.*, striped bass fishery). Because the alternative platform operated with a single vessel, it could only be in one “hot spot” at a time, observing one vessel at a time. To compensate for the nature of fishing aggregations, the FCs sequentially observed multiple trips on a single day whenever possible. Certain fisheries lend themselves better to this practice, especially the spot fishery where there is a large number of vessels fishing in a relatively small area, using varying amounts of gear at different times during the day. Nonetheless, observing multiple trips per day does not compensate for the number of trips allocated but not completed due to the nature of the fisheries in coastal waters of North Carolina.

A second prohibitive factor is weather, which can be persistently poor, especially in winter when fishing effort is high. During March of 2007, for example, only one APOP trip was made due to persistent poor weather. Although during such conditions fishing was primarily from larger vessels, landings data indicated that limited gillnet activity by small vessels occurred. Nonetheless, as the weather deteriorates it becomes increasingly difficult to maintain the alternative platform in position to perform observations, as seas and distance can obscure sight of the net and its contents. A larger APOP vessel could allow the team to be on the water during worse weather conditions than the current vessel allows, but the limited fishing is likely to be sporadic and hard to find and so the resulting increase in observer coverage is not likely to be substantial. The desired 10% percent coverage of the state ocean small-vessel gillnet fishery by

APOP may be set too high to reasonably be accomplished with one vessel/team; attaining higher percent coverage may be possible only by employing another vessel/team.

Despite the fact that 10% coverage had not been achieved, the APOP has been able to increase its observer coverage of small vessels throughout the period of implementation. After the first year of implementation, the FCs were better able to assess fishing effort and made strides to increase observer coverage where it was previously lacking, especially in the fall fishery for spot when the majority of effort occurs. The FCs have noted that at times there appear to be discrepancies between reported landings and the number of small vessels they have seen on the ocean. It is possible that the FCs did not find the small vessels reportedly on the ocean side despite the use of binoculars to locate vessels and communication with the industry regarding fishing locations. It is also possible that some of the inshore trips, landing some of the same species that are caught in the ocean fishery, may have been recorded as ocean trips. This is conceivable if the dealer filling out trip tickets for NCDMF incorrectly assigns trips of several fishermen offloading at once. If trips were incorrectly assigned to ocean state waters instead of inshore, then the percent coverage attained would be greater than current calculations.

The striped bass gillnet fishery poses unique challenges in attaining observer coverage. For example, in January 2007, there were 615 gillnet trips by small vessels over the eight-day period the fishery was open with only 30 other gillnet trips for the entire month. Furthermore, more than 35% of gillnet fishing trips for the year was conducted during these eight days. Aside from the massive striped bass fishing effort, the fishery itself is a challenge to observe. In some years, striped bass have not migrated much further south than the NC/Virginia (VA) border. The remoteness of this area is beyond the range of the alternative platform where the closest NC inlet into the ocean, Oregon Inlet, is 64 km away. The ability for traditional observers to board these small vessels is an additional challenge because fishermen launch a small, specialized dory or skiff through the surf to deploy and retrieve the gillnet. It would be nearly impossible to attain any amount of significant observer coverage during such a brief, intense fishery without increasing the number of alternative platform vessels/teams when the fishery is operating closer to the inlet and without having a vessel better equipped for long-range distances or one that is similar to the beach-based crews (*i.e.*, dory) that could be launched off the beach when the fishery is near the NC/VA border. As a result of the uniqueness of the striped bass fishery, it was reviewed separately and given its own sea-day schedule for 2008 with the understanding that only a small portion of the fishery could be observed. It is recommended that this approach be replicated for future allocation of observer trips (traditional or alternative platform) in this fishery.

Another issue with the striped bass fishery was accounting for actual fishing effort. Vessels were only allowed to land a maximum of 20 fish per trip, provided there were two licenses on the vessel (10 fish per person) (*e.g.*, NCDMF 2008a). In the past, however, the regulation has been written such that extra fish could be given to other licensed fishermen, provided that they were on the water, even if that fisherman never set a net. When the transferred fish were sold, another trip was registered in the NCDMF Trip Ticket Program. This

would negatively bias APOP's percent coverage of true fishing effort (*i.e.*, nets in the water). Conversely, the APOP has observed striped bass trips for which no fish were landed so no trips were reported to the Trip Ticket Program. If this situation is prevalent, effort data collected by NCDMF is negatively biased and observer coverage is lower than calculated by some unknown amount.

The lack of observed takes during APOP observations (current report and Kolkmeyer *et al.* 2007) supports findings by Rossman and Palka (2004) of a relatively low rate of bottlenose dolphin bycatch in ocean gillnets along the mid-Atlantic. Although a low bycatch rate might suggest that bycatch is of little concern, the large amount of fishing effort in NC has at times resulting in bycatch that exceeded sustainable levels (NOAA 2006). The fact that no observed takes have been documented with almost 4% observer coverage of small vessels, in addition to the NEFOP trips on larger vessels, provides more evidence that a much higher coverage rate is necessary to document an interaction and produce a precise bycatch estimate. The relatively low observer coverage may explain the discrepancies between the number of observed takes and the occurrence of strandings with lesions consistent with monofilament webbing. For example, during the fall Spanish mackerel fishery in 2008, there was intensive coverage by the NEFOP with assistance from APOP off Dare County. Despite no observed takes, a bottlenose dolphin with lesions consistent with monofilament webbing was found stranded concurrent with gillnetting for Spanish mackerel and spot in Carteret County during the same period of intense observer coverage in Dare County. The disparity between observed bycatch and strandings emphasizes the importance of using strandings data as an additional monitoring program (Byrd *et al.* 2008, Byrd and Hohn in press).

Although there were no incidental takes of marine mammals or turtles, there were takes of sea birds. Half of the takes occurred in the striped bass beach-seine fishery; the fishing method appeared to have contributed to the bycatch. Often the crew waited until a large flock of gannets was spotted diving on prey, then set the seine under or around the area where birds were diving, capturing both fish and birds.

Sightings of bottlenose dolphins, loggerhead sea turtles, and right whales were documented in both 2007 and 2008. Bottlenose dolphin behaviors ranged from swimming well offshore of nets to behaviors consistent with depredation events such as rapidly approaching the net, splashing alongside it, and then reappearing some distance away (Read *et al.* 2004). Depredation was directly evident through physical damage to fish, consisting of crushed or ripped heads, fish with no heads, and fish heads with no bodies (Read *et al.* 2004) in nets. There were also sightings of dolphins displaying patrolling behavior (Read *et al.* 2003) without depredating. In these events, dolphins were noted to be repeatedly swimming along a net, but no other evidence of depredation was observed, such as rapid approach or damaged fish. There was one captain who fed fish to a begging dolphin at the stern of his vessel; the dolphin took the fish out of his hand. The captain acknowledged it was "wrong" (*i.e.*, illegal), but said he enjoyed it too much to stop.

Depredation by a sea turtle was also observed in 2007. A loggerhead turtle surfaced above the net as it was being hauled, dove, and re-surfaced with a fish in its mouth. The captain said he could feel the turtle pulling on the net. The captain also said there were spots in the net that were only heads and gills. The captain saw the depredation by the turtle and there were no dolphins in the area to suggest that they were responsible.

During one trip each year, two right whales were sighted and photographed. In 2007, the pair approached within approximately 150 m of the fishing vessel and gear being observed. They managed to navigate through the fishing grounds where approximately six vessels had gear deployed, without becoming entangled. In 2008, another pair of right whales was observed approximately 200m offshore of the fishing vessel and its gear. Because the alternative platform was an independent vessel, opportunities were available to follow up on these sightings. Valuable photographs of the whales were taken and submitted to the Right Whale Project/Florida Fish and Wildlife Conservation Commission, resulting in a positive identification of the individual whales. During each of these instances, an FC was able to radio the Coast Guard and provide detailed information as to the location and heading of the endangered species. The Coast Guard was then able to make a broadcast to mariners to be on the lookout.

The APOP was successful in 2007 and 2008 in increasing overall observer coverage of gillnets in NC, particularly for the small vessels which represent a significant part of the gillnet fisheries in nearshore waters. The APOP continued to observe new fishermen and add new entries to the DOF. In addition, the APOP was able to help respond to suggestions by the SRG by coordinating with the NEFOP to accomplish intense observer coverage in 2008 of the Spanish mackerel fishery. There are limitations to both the traditional observer program and the APOP, yet they complement each other to allow for more fully representative observer effort.

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Table 1. Observed gillnet trips (n = 48) and hauls (n = 166) in North Carolina in 2007 via the Alternative Platform Observer Program. Trips targeting southern flounder were inshore (n = 2). For Gear Code, 100 = gillnet, anchored-sink; 105 = gillnet, anchored-floating; 116 = gillnet, drift-floating; 117 = gillnet, drift-sink. For Sightings, Dolphin = bottlenose dolphin and Turtle = loggerhead sea turtle.

Trip ID	Date	County Sailed	Target Species	Gear Code	Number of Hauls	Sightings	Vessel New to Program
001	3-Jan	Carteret	Striped bass	117	2	No	No
002	4-Jan	Carteret	Striped bass	117	3	No	No
003	4-Jan	Carteret	Striped bass	117	2	No	No
004	23-Jan	Carteret	Striped bass	117	7	No	No
005	24-Jan	Carteret	Striped bass	117	2	No	Yes
006	30-Jan	Carteret	Kingfish	100	2	No	Yes
007	12-Feb	Dare	Kingfish	100	7	Dolphin	No
008	16-Feb	Dare	Spiny dogfish	117	14	Dolphin	Yes
009	27-Feb	Carteret	Kingfish	117	3	Dolphin, Turtle	Yes
010	13-Mar	Dare	Kingfish	100	15	Dolphin	Yes
011	10-Apr	Carteret	Kingfish	100	1	Turtle	Yes
012	18-Apr	Brunswick	Kingfish	100	4	No	No
013	18-May	Carteret	Spanish mackerel	105	2	Dolphin	Yes
014	22-May	Carteret	Spanish mackerel	116	1	No	No
015	12-Jun	Carteret	Spanish mackerel	100	3	No	No
016	12-Jun	Carteret	Spanish mackerel	100	1	Dolphin	No
017	26-Jun	Dare	Spanish mackerel	100	7	Dolphin	No
018	24-Jul	Carteret	Spanish mackerel	100	1	No	No
019	10-Aug	Carteret	Striped Mullet	100	1	No	Yes
020	14-Aug	Carteret	Striped Mullet	100	1	No	Yes
021	31-Aug	Carteret	Southern flounder	100	1	No	Yes
022	6-Sep	Carteret	Southern flounder	100	1	No	Yes
023	17-Sep	Carteret	Spot	100	4	Dolphin	No
024	19-Sep	Carteret	Spot	100	6	Dolphin	No
025	25-Sep	Brunswick	Striped Mullet	100	1	Dolphin	Yes
026	25-Sep	Brunswick	Striped Mullet	100	2	No	No
027	25-Sep	Brunswick	Spot	100	1	No	Yes
028	1-Oct	Carteret	Spot	100	3	Dolphin	No
029	10-Oct	Carteret	Spot	100	2	No	Yes
030	10-Oct	Carteret	Spot	100	2	Dolphin, Turtle	Yes
031	12-Oct	Carteret	Spot	100	6	Dolphin	No
032	16-Oct	Carteret	Spot	100	6	Dolphin	Yes
033	23-Oct	Brunswick	Spot	100	2	Dolphin	No
034	29-Oct	Carteret	Spot	100	5	Dolphin, Turtle	No
035	5-Nov	Carteret	Spot	100	3	No	Yes
036	9-Nov	Carteret	Spot	100	8	No	Yes
037	9-Nov	Carteret	Spot	100	5	Dolphin	No
038	12-Nov	Onslow	Kingfish	100	3	Dolphin	No
039	13-Nov	Onslow	Kingfish	100	2	Dolphin	Yes
040	20-Nov	Carteret	Kingfish	100	2	No	No
041	28-Nov	Brunswick	Spot	100	3	No	No
042	28-Nov	Brunswick	Spot	100	3	No	Yes
043	29-Nov	Brunswick	Spot	100	4	Dolphin	Yes
044	29-Nov	Brunswick	Spot	100	1	No	Yes
045	30-Nov	Brunswick	Spot	100	3	No	No
046	10-Dec	Carteret	Kingfish	100	1	No	Yes
047	11-Dec	Carteret	Kingfish	100	5	Dolphin, Right whale	No
048	20-Dec	Brunswick	Kingfish	100	2	No	No

Table 2. The number of observed trips in North Carolina by the Alternative Observer Platform Program by water body (ocean or inshore), gear type (gill net or beach seine), and vessel size (small = <7.3 m, large = $\geq$ 7.3 m) from 2006 to 2008. The program began in April 2006, therefore, 2006 is a partial year.

Year	Target Species	Number of Observed Trips					Total Trips
		Ocean Gillnet Small	Inshore Gillnet Small	Ocean Gillnet Large	Inshore Gillnet Large	Ocean Beach Seine	
2006	non striped bass	17	0	8	0	--	25
	striped bass	0	0	1	0	0	1
	Total	17	0	9	0	0	26
2007	non striped bass	31	2	10	0	--	--
	striped bass	4	0	1	0	0	5
	Total	35	2	11	0	0	48
2008	non striped bass	28	2	19	0	--	49
	striped bass	1	0	1	0	20	22
	Total	29	2	20	0	20	71

Table 3. Observed gillnet trips ($n = 51$) and hauls ($n = 240$) and beach seine trips ($n = 20$, hauls = 20) in North Carolina in 2008 via the Alternative Platform Observer Program. Trips targeting southern flounder were inshore ($n = 2$). For Gear Code: 070 = haul seine, beach-common; 100 = gillnet, anchored-sink; 117 = gillnet, drift-sink. For Sightings: Dolphin = bottlenose dolphin and Turtle = loggerhead sea turtle.

Trip ID	Date	County Sailed	Target Species	Gear Code	Number of Hauls	Sightings	Vessel New to Program
001	15-Jan	Hyde	Striped Bass	117	1	No	Yes
002	16-Jan	Dare	Kingfish	117	21	Dolphin	Yes
003	23-Jan	Carteret	Striped Bass	117	7	Dolphin	Yes
004	30-Jan	Currituck	Striped Bass	070	1	No	Yes
005	30-Jan	Currituck	Striped Bass	070	1	No	No
006	30-Jan	Currituck	Striped Bass	070	1	No	Yes
007	30-Jan	Currituck	Striped Bass	070	1	No	No
008	5-Feb	Currituck	Striped Bass	070	1	No	No
009	5-Feb	Currituck	Striped Bass	070	1	No	Yes
010	5-Feb	Currituck	Striped Bass	070	1	No	No
011	5-Feb	Currituck	Striped Bass	070	1	No	Yes
012	6-Feb	Currituck	Striped Bass	070	1	Dolphin	No
013	6-Feb	Currituck	Striped Bass	070	1	No	Yes
014	6-Feb	Currituck	Striped Bass	070	1	No	Yes
015	6-Feb	Currituck	Striped Bass	070	1	No	Yes
016	7-Feb	Currituck	Striped Bass	070	1	Dolphin	Yes
017	7-Feb	Currituck	Striped Bass	070	1	Dolphin	Yes
018	25-Feb	Brunswick	Kingfish	100	1	No	No
019	25-Feb	Brunswick	Kingfish	100	3	Dolphin	No
020	13-Mar	New Hanover	Kingfish	100	4	No	No
021	14-Mar	New Hanover	Kingfish	100	5	Dolphin	No
022	25-Mar	Onslow	Kingfish	100	3	Dolphin	No
023	11-Apr	Onslow	Kingfish	100	6	Dolphin	Yes
024	14-Apr	Onslow	Kingfish	100	2	Dolphin	Yes
025	14-Apr	Onslow	Kingfish	100	2	No	No
026	15-Apr	Brunswick	Kingfish	100	2	No	Yes
027	16-Apr	Brunswick	Kingfish	100	3	Dolphin	No
028	30-Apr	Carteret	Kingfish	100	2	No	No
029	30-Apr	Carteret	Kingfish	100	4	No	No
030	14-May	Carteret	Bluefish	100	4	Dolphin	No
031	24-Jun	Dare	Spanish mackerel	100	6	Dolphin	No
032	25-Jun	Dare	Spanish mackerel	117	3	Dolphin	No
033	7-Aug	Carteret	Southern flounder	100	4	No	Yes
034	12-Aug	Carteret	Southern flounder	100	6	No	Yes
035	17-Sep	Carteret	Spanish mackerel	100	2	No	No
036	22-Sep	Carteret	Spanish mackerel, spot	100	1	No	No
037	22-Sep	Carteret	Spanish mackerel, spot	100	2	No	No
038	29-Sep	Dare	Spanish mackerel	117	1	No	No
039	30-Sep	Dare	Spanish mackerel, king mackerel	117	17	No	No
040	1-Oct	Dare	Kingfish	117	1	No	No

Trip ID	Date	County Sailed	Target Species	Gear Code	Number of Hauls	Sightings	Vessel New to Program
041	1-Oct	Dare	Spanish mackerel	117	6	Dolphin	No
042	2-Oct	Dare	Spanish mackerel	100	11	No	No
043	6-Oct	Carteret	Spot	100	6	Dolphin	No
044	9-Oct	Carteret	Spot	100	2	No	No
045	9-Oct	Carteret	Spot	100	2	No	No
046	15-Oct	Carteret	Spot	100	4	Dolphin,	No
047	20-Oct	Carteret	Spot	100	4	No	Yes
048	20-Oct	Carteret	Spot	100	2	No	Yes
049	27-Oct	Brunswick	Spot	100	5	No	No
050	28-Oct	Brunswick	Spot	100	1	No	No
051	29-Oct	Brunswick	Spot	100	1	No	No
052	31-Oct	Carteret	Spot	100	9	Dolphin	No
053	7-Nov	Onslow	Kingfish	100	5	Dolphin	No
054	10-Nov	Carteret	Kingfish	100	1	No	Yes
055	10-Nov	Carteret	Kingfish	100	1	Dolphin	No
056	12-Nov	Carteret	Kingfish	117	9	Dolphin	Yes
057	17-Nov	New Hanover	Kingfish	100	5	Dolphin, Right whale	No
058	18-Nov	Brunswick	Spot	100	6	No	No
059	18-Nov	Brunswick	Spot	100	5	No	No
060	19-Nov	Brunswick	Spot	100	4	Dolphin	No
061	19-Nov	Brunswick	Spot	100	5	No	No
062	20-Nov	Brunswick	Spot	100	4	No	No
063	3-Dec	Carteret	Kingfish	100	2	No	Yes
064	3-Dec	Carteret	Kingfish	117	3	Dolphin,	No
065	8-Dec	Currituck	Striped Bass	070	1	No	No
066	8-Dec	Currituck	Striped Bass	070	1	No	No
067	8-Dec	Currituck	Striped Bass	070	1	No	No
068	9-Dec	Currituck	Striped Bass	070	1	No	No
069	9-Dec	Currituck	Striped Bass	070	1	No	No
070	9-Dec	Currituck	Striped Bass	070	1	No	No
071	18-Dec	Carteret	Kingfish	117	4	No	No

Table 4. Observed gillnet trips ($n = 8$) and hauls ($n = 20$) in North Carolina in 2009 via the Alternative Platform Observer Program. For Gear Code: 100 = gillnet, anchored-sink. For Sightings: Dolphin = bottlenose dolphin.

Trip ID	Date	County Sailed	Target Species	Gear Code	Number of Hauls	Sightings	Vessel New to Program
001	24-Feb	Brunswick	Kingfish	100	3	No	No
002	25-Feb	Brunswick	Kingfish	100	2	No	No
003	18-Mar	Brunswick	Kingfish	100	3	Dolphin	No
004	19-Mar	Brunswick	Kingfish	100	3	Dolphin	No
005	31-Mar	Onslow	Kingfish	100	3	Dolphin	No
006	31-Mar	Onslow	Kingfish	100	2	No	Yes
007	2-Apr	Onslow	Kingfish	100	2	No	No
008	2-Apr	Onslow	Kingfish	100	2	No	No

Table 5. Percent of observed gillnet trips by vessels < 7.3 m in North Carolina state ocean waters not landing striped bass.

Month-Year	Gillnet Trips Reported	Observed Gillnet Trips	Percent Coverage
Apr-2006	59	3	5.1
May-2006	51	3	5.9
Jun-2006	24	2	8.3
Jul-2006	6	0	0.0
Aug-2006	23	0	0.0
Sep-2006	140	5	3.6
Oct-2006	220	3	1.4
Nov-2006	189	1	0.5
Dec-2006	44	0	0.0
SUBTOTAL	756	17	2.2
Jan-2007	30	1	3.3
Feb-2007	60	1	1.7
Mar-2007	73	0	0.0
Apr-2007	83	2	2.4
May-2007	46	1	2.2
Jun-2007	21	1	4.8
Jul-2007	26	1	3.8
Aug-2007	25	2	8.0
Sep-2007	93	5	5.4
Oct-2007	234	6	2.6
Nov-2007	271	10	3.7
Dec-2007	68	1	1.5
SUBTOTAL	1,030	31	3.0
Jan-2008	73	0	0.0
Feb-2008	39	2	5.1
Mar-2008	49	2	4.1
Apr-2008	104	4	3.8
May-2008	79	1	1.3
Jun-2008	34	0	0.0
Jul-2008	18	0	0.0
Aug-2008	18	0	0.0
Sep-2008	27	3	11.1
Oct-2008	139	8	5.8
Nov-2008	156	7	4.5
Dec-2008	35	1	2.9
SUBTOTAL	771	28	3.6
TOTAL	2,557	76	2.9

Table 6. Percent of observed gillnet trips by vessels < 7.3 m in North Carolina state ocean waters landing striped bass during the seasonal openings.

Month-Year	Gillnet Trips Reported	Observed Gillnet Trips	Percent Coverage
Dec-06	173	0	0.0
Jan-07	615	4	0.7
Jan-08	212	1	0.9
TOTAL	1,000	5	0.5

Table 7. Increased observer coverage in North Carolina ocean waters provided via the Alternative Platform Observer Program as compared to the Northeast Fisheries Observer Program.

Month-Year	APOP Trips	NEFOP Trips	Total Trips	% Increase in Trips
Jan-2007	6	66	72	9.1 %
Feb-2007	3	29	32	10.3 %
Mar-2007	1	34	35	2.9 %
Apr-2007	2	23	25	8.7 %
May-2007	2	8	10	25.0 %
Jun-2007	3	3	6	100.0 %
Jul-2007	1	4	5	25.0 %
Aug-2007	2	2	4	100.0 %
Sep-2007	5	6	11	83.3 %
Oct-2007	7	22	29	31.8 %
Nov-2007	11	12	23	91.7 %
Dec-2007	3	9	12	33.3 %
Subtotal	46	218	264	21.1 %
Jan-2008	3	17	20	17.6 %
Feb-2008	2	19	21	10.5 %
Mar-2008	3	18	21	16.7 %
Apr-2008	7	9	16	77.8 %
May-2008	1	5	6	20.0 %
Jun-2008	2	0	2	n/a %
Jul-2008	0	0	0	n/a %
Aug-2008	0	0	0	n/a %
Sep-2008	5	14	19	35.7 %
Oct-2008	13	23	36	56.5 %
Nov-2008	10	7	17	142.9 %
Dec-2008	3	12	15	25.0 %
Subtotal	49	124	173	39.5 %
TOTAL	95	342	437	27.8 %

Table 8. Incidental takes of sea birds observed via the Alternative Platform Observer Program in North Carolina during 2008.

Trip #	Gear Type	Species	No.	Disposition
007	Beach seine	Northern Gannet	1	dead
009	Beach seine	Common Loon	1	dead
018	Gillnet, anchored-sink	Double-crested Cormorant	2	dead
018	Gillnet, anchored-sink	Common Loon	1	dead
023	Gillnet, anchored-sink	Red-throated Loon	1	dead
049	Gillnet, anchored-sink	Brown Pelican	1	alive
061	Gillnet, anchored-sink	Double-crested Cormorant	1	dead
062	Gillnet, anchored-sink	Double-crested Cormorant	1	dead
065	Beach seine	Northern Gannet	2	dead
066	Beach seine	Northern Gannet	5	dead

Table 9. Incidental takes of sea birds observed via the Alternative Platform Observer Program in North Carolina during 2009.

Trip #	Gear Type	Species	No.	Disposition
002	Gillnet, anchored-sink	Double-crested Cormorant	1	dead
002	Gillnet, anchored-sink	Common Loon	1	dead
004	Gillnet, anchored-sink	Red-throated Loon	1	dead
007	Gillnet, anchored-sink	Loon, unknown species	1	dead

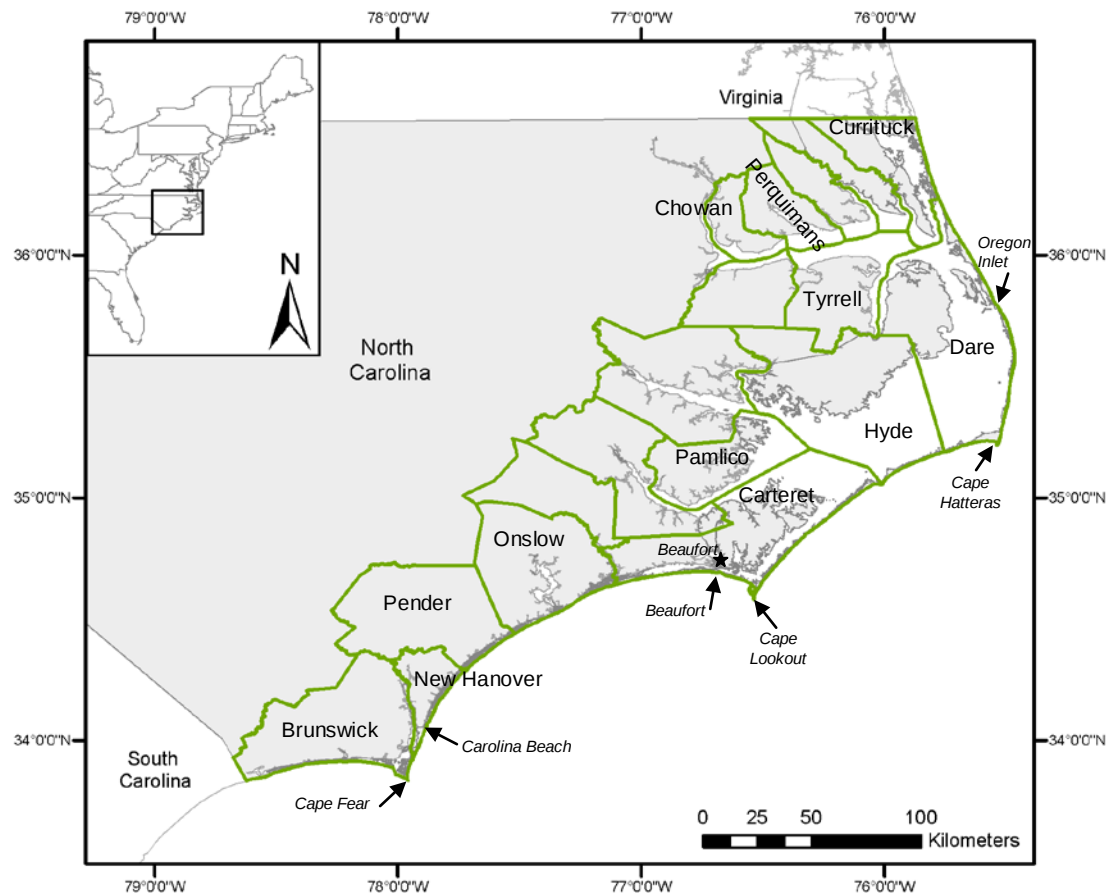


Figure 1. Counties and place names (*italics*) in coastal North Carolina.

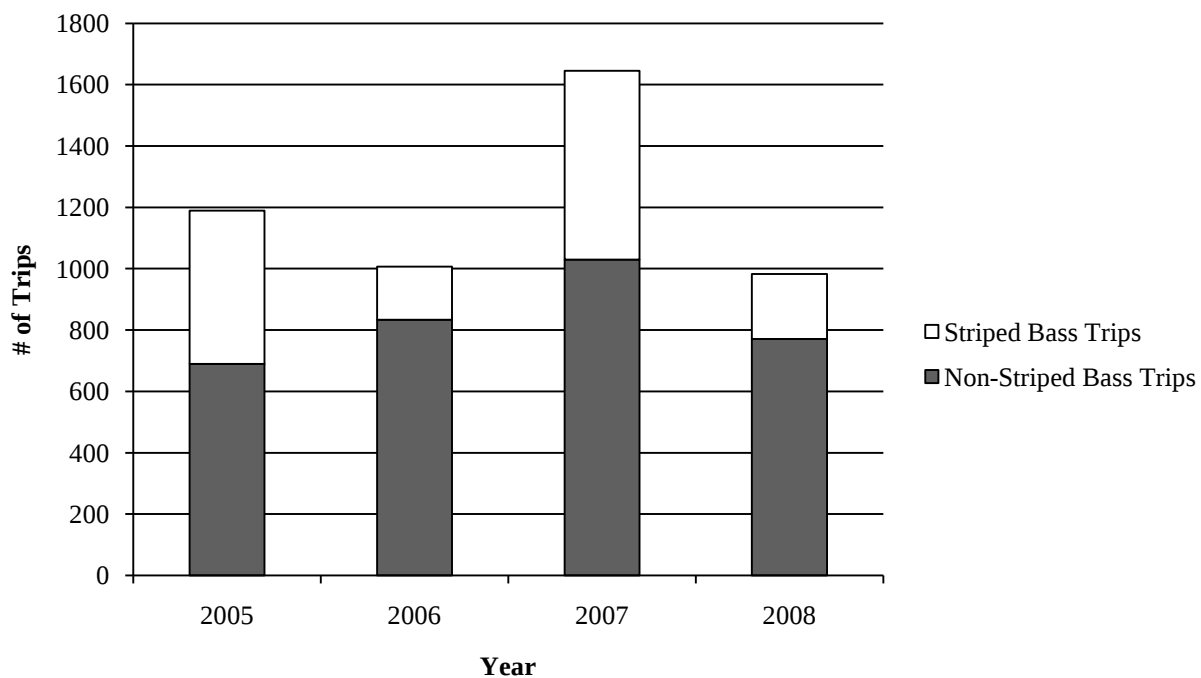


Figure 2. Comparison of the number of gillnet trips targeting striped bass and non-striped bass reported in North Carolina from 2005 through 2008.