Annual Sea Turtle Interaction Monitoring of the Anchored Gill-Net Fisheries in North Carolina for Incidental Take Permit Year 2018

Annual Completion Report for Activities under Endangered Species Act
Section 10 Incidental Take Permit No. 16230

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1 INTRODUCTION

The North Carolina Division of Marine Fisheries (NCDMF) applied for an Incidental Take Permit (ITP) under Section 10(a)(1)(B) of the Endangered Species Act (ESA) of 1973 (Public Law 93-205) on June 14, 2010 to address sea turtle interactions with anchored gill nets in North Carolina's internal coastal (estuarine) waters. Species of sea turtles found in the estuarine waters of North Carolina include green sea turtle (*Chelonia mydas*), Kemp's ridley sea turtle (*Lepidochelys kempii*), loggerhead sea turtle (*Caretta caretta*), hawksbill sea turtle (*Eretmochelys imbricate*), and leatherback sea turtle (*Dermochelys coriacea*). This request was prompted by notification from the National Marine Fisheries Service (NMFS) Southeast Regional Office (SERO) in July and November 2009 indicating the need for the state of North Carolina to address unauthorized takes of sea turtles occurring in inshore anchored gill-net fisheries. A revised ITP application was submitted on August 17, 2011 based on feedback received from the NMFS on May 12, 2011. Feedback on the revised application from the NMFS was provided again on May 2, 2012 after public and peer review comments had been compiled. In response to requested changes from the NMFS, and considering the public and peer review comments, including the comments made by the North Carolina Sea Turtle Advisory Committee (NCSTAC), the NCDMF made extensive revisions to its application and resubmitted it on September 6, 2012. After another round of public and peer review comments, the NMFS requested more information and clarification on certain portions of the application. On November 14, 2012, the response to the information request was discussed via teleconference between the NMFS and the NCDMF and provided to them beforehand. The NMFS recommended that the NCDMF update the current ITP application with an appendix containing all the updated information requested.

During the November 14, 2012 teleconference, the NMFS suggested breaking down the annual requested takes for Kemp's ridley and loggerhead sea turtles cumulatively, similar to previous ITPs for the Pamlico Sound Gill Net Restricted Area (PSGNRA). The NCDMF also suggested annual cumulative requested takes for all species of sea turtles for the exempt areas. A revised application was resubmitted on January 18, 2013.

On April 17, 2013, the NMFS set up a teleconference with the NCDMF to go over the revised ITP application that was submitted on January 18, 2013. Information was provided to the NMFS to clarify issues they had with the application. On April 22, 2013, the NMFS again asked for further clarification on various aspects of the ITP application which the NCDMF promptly responded to. At that time, the NCDMF was informed by the NMFS that they hoped to have a draft permit within a month to discuss with the NCDMF. On April 30, 2013, the NCDMF staff were contacted by the NMFS for further explanation on the methodologies of the Observer Program. Explanations were provided, and the NMFS did not have any more questions at the time.

On May 20, 2013, the NCDMF had another teleconference with the NMFS concerning the ITP application status and to review the Biological Opinion and Environmental Assessment protocols. At this time, the NMFS raised concerns on the number of observed takes requested in the ITP application. During the May teleconference, the NCDMF and the NMFS agreed to base authorized takes by area on an annual basis instead of a seasonal basis. The number of requested observed takes was reduced by taking the seasonal component out of the equation. The NMFS brought up the idea of having an Implementing Agreement for the Sea Turtle ITP, much like the Implementing Agreement the NMFS had suggested for the Atlantic Sturgeon ITP. The NMFS explained that an Implementing Agreement would provide more flexibility and could reduce the risk of the permit

being suspended due to excessive takes, but it will not allow for additional takes. The NMFS explained that any new information could be provided in another appendix to the existing application. The NCDMF asked the NMFS to provide a copy of a draft Implementing Agreement for consideration.

The NCDMF received the Sea Turtle ITP (No. 16230) on September 11, 2013. The Sea Turtle ITP defined an ITP Year as beginning on September 1 and running through August 31 of the following year. This ITP authorized the implementation of adaptive management measures to protect threatened and endangered sea turtles and other ESA listed species, while allowing anchored gill-net fisheries to operate in the estuarine waters of North Carolina. The ITP's Conservation Plan specifies further measures, which the NMFS determined will minimize, monitor, and mitigate the impacts of incidental takes of ESA-listed sea turtle species associated with the otherwise lawful anchored gill-net fisheries operating in estuarine North Carolina waters. Anchored gill nets are passive sets deployed with an anchor, stake, or boat at one or both ends of the net shots or operation. Anchored gill nets do not include the following types of gill nets: run-around, strike, drop or drift gill nets.

On November 21, 2016, the NCDMF requested a minor modification to extend the annual report deadlines for the Sea Turtle and Atlantic Sturgeon (No. 18102) ITPs from January 31 to the last day in February. This extension was to benefit staff due to a lag time in data being uploaded and verified, the time of year, the deadline for the fall seasonal report, and staff availability. On January 4, 2017, the NMFS sent a letter to the NCDMF agreeing with NCDMF's request for the minor modification and encouraging staff to incorporate any further anticipated minor modifications into the application process for an updated ITP (Appendix A).

The NCDMF Observer Program data were updated using the finalized 2017 Trip Ticket Program (TTP) data in May 2018 (Appendix B). The Annual Completion Report for the Sea Turtle ITP No. 16230 was completed for ITP Year 2017 and submitted in February 2018. Using the finalized 2017 data, Tables 1, 5, 10, and 11 from the Completion Report were updated to reflect the final estimates of observer coverage and sea turtle takes. The fall 2016 season was based on finalized 2016 TTP data and did not deviate from the previous report for both anchored large and small mesh gill nets (Appendix B).

2 METHODS

2.1 Observer Activity

The conservation plan includes managing the estuarine anchored gill-net fisheries by dividing North Carolina's estuarine waters into six Management Units (A, B, C, D1, D2, and E; Figure 1). Trip Ticket Program data along with Observer Program data from previous years are used when estimating the number of trips needed for the current year in each Management Unit and season. Real time TTP data are also used for areas where effort may be increasing. Each year effort can potentially shift from one Management Unit to another making it important for the NCDMF to not base the observer effort solely on previous years' data, but also on current effort. To account for fluctuations in TTP data caused by Management Unit closings, a five-year average was used for estimating anchored large mesh gill-net fishing trips and anchored small mesh gill-net fishing trips for ITP Year 2018. This method of estimating trips proved to more accurately reflect the current fishing effort. Once TTP data are finalized in May of 2019, the final observer coverage will be re-calculated, and finalized estimates for observer coverage will be provided to the NMFS.

Observer coverage was calculated for each season in each Management Unit by estimating fishing trips using an average of the previous five years' TTP data (2013–2017) for anchored large and small mesh gill nets, while taking reduced season dates in each Management Unit into account by calculating the proportion of actual, to possible fishing days. This calculated estimated fishing effort was compared to the observer trips completed throughout the ITP Year. The average, normalized effort was used when estimating fishing trips to account for the fluctuation of fishing effort throughout the years due to closures and other regulations put in place throughout the time series.

The onboard Observer Program, where observers ride onboard fishermen's vessels, is the preferred method for obtaining observer data. Protected species interactions, gear parameters, as well as detailed gill-net catch, bycatch, and discard information for all species caught are recorded. The alternative platform Observer Program requires two observers in a state-owned vessel to monitor commercial fishermen as they fish their gill nets. The alternative platform observers document protected species interactions and provide catch and discard estimates for other species that are observed. The amount of biological data that are collected on alternative platform observer trips is notably less than onboard observer trips. Therefore, onboard observer trips are highly preferred due to the amount of biological data collected which are used when making management decisions, developing stock assessments, developing fishery management plans, and identifying bycatch (finfish, protected species) problem areas. NCDMF vessels are used to perform alternative platform trips by observers and Marine Patrol Officers and follow similar data collection protocols. Each observer attempts to obtain a minimum of three to four trips per working week when fishing activity is occurring.

Observers are assigned a Management Unit to work weekly and the number of observers assigned to a Management Unit depends upon the season and fishing effort. Fishing effort is estimated from the previous 5 years' TTP data by week, month, and Management Unit to determine how much observer coverage is needed in each Management Unit by week, month, and season. Reports from observers, fishermen, and other NCDMF staff are used to determine if effort is fluctuating between Management Units. Trends from the previous years' TTP data are also analyzed to determine if fishing effort is shifting from one Management Unit to another. Fishermen holding an Estuarine Gill Net Permit (EGNP) in North Carolina are pooled by Management Unit and further split into lists by geographic area within Units. Contact information for these fishermen is then given to observers assigned to specific Management Units so that they may contact the participants to schedule an onboard trip. Preliminary TTP information is also used to refine the list to represent individuals who are actively participating in fishing activities. Observers also visit fish houses and dealers where they hand out business cards with their contact information and brochures explaining the Observer Program, giving the fishermen another outlet to allow observers on their vessels. Additionally, the Observer Program uses a website (http://portal.ncdenr.org/web/mf/observers-program) to provide outreach to fishermen to facilitate obtaining trips.

Alternative platform trips are used for areas that may be hard to get onboard trips (i.e., fishermen in remote locations that leave from their residence by boat) or when a fisherman's vessel is too small to safely accommodate an onboard observer. Alternative platform trips are also used in areas where fishing effort may increase quickly, where sea turtle abundance is high, and when observers are unable to set-up onboard trips due to fisherman non-compliance. Marine Patrol also conducts alternative platform trips weekly in all Management Units based on similar methodologies as the Observer Program. Coordination of onboard, alternative platform, and Marine Patrol alternative

platform trips is done regularly to maximize efficiency, avoid multiple observations of a single trip, and to achieve the maximum amount of observer coverage possible for each Management Unit. Changes in effort, sea turtle abundance (i.e., observed and reported interactions), and other protected species interactions are monitored on a daily, weekly, and monthly basis to ensure proper observer coverage is being maintained. The ITP requires a minimum of 7% observer coverage, with a goal of 10% of the total anchored large mesh gill-net (≥4 inches stretched mesh-ISM) fishing trips, and a minimum of 1% coverage, with a goal of 2% of the total anchored small mesh gill-net (<4 ISM) fishing trips per Management Unit for the spring, summer, and fall seasons.

Observers are trained to identify, measure, evaluate condition, resuscitate, and tag sea turtles by the NMFS – Beaufort Lab and the NCDMF. Data collected on observed sea turtles includes: date, time, tag numbers, location (latitude and longitude, when possible), condition (i.e., no apparent harm, injury including a description of the nature of the injury, or mortality), species, sex (if determinable), and curved carapace length (CCL) in mm and curved carapace width (CCW) in mm. Photographs and environmental parameters (i.e., salinity, water temperature) are also collected when feasible. Dead sea turtles are retained by the observer when possible. All live, debilitated sea turtles are retained by the observer and delivered to the North Carolina Sea Turtle Stranding Network for examination and treatment. Observers also collect data on location, gear parameters, catch, bycatch, and discards for each haul depending on the observed trip type (onboard/alternative platform). The catch is sampled throughout each onboard trip including species, quantities, weights, lengths, and disposition (alive/dead). Data are coded onto NCDMF data sheets and uploaded to the NCDMF Biological Database for analysis. All observers are debriefed within 24 hours of each trip to obtain data on catch, set locations, gear parameters, and sea turtle interactions to provide estimates of sea turtle bycatch.

The total bycatch of sea turtles for each Management Unit was estimated using the stratified ratio method via SAS (SAS 2004). The bycatch rate (sea turtles caught per fishing trip) estimated from observer data was multiplied by the total fishing trips (average of the previous 4–5 years' TTP data). To estimate confidence intervals (95%), the bootstrap method was used to sample estimates. Strata consisted of the six Management Units (A, B, C, D1, D2, and E; Figure 1). Estimates were calculated by date of capture, Management Unit, species, and disposition. Estimates were accumulated each week to implement necessary management measures if authorized take thresholds were approached.

$$\text{Estimated Interactions} = \left(\frac{\#\text{ of sea turtle interactions observed}}{\text{total gill-net trips observed}}\right) \text{total gill-net trips}$$

2.1.1 Seasons

The Observer Program's activities are reported on a weekly, seasonal, and annual basis. Seasons are defined as spring (March–May), summer (June–August), and fall (September–November). Weekly progress reports are required following a week in which a sea turtle interaction occurred and includes information such as take estimates, cumulative totals, number of observed trips, and observed takes with all associated information. The seasonal progress reports include a summary of the weekly reports, additional management measures if taken, compliance, violations that occurred, and any adaptive management actions taken during the season. Annual reports include actual and estimated takes including mortality and the level of uncertainty of the estimates (i.e., 95% confidence intervals) by Management Unit, size composition along with all other interaction

information, one or more maps illustrating the geographic distribution of all observed anchored large and small mesh gill-net trips, locations of all interactions, descriptions of mitigation activities, adaptive management actions, and enforcement activities conducted during the ITP year.

2.2 Authorized Takes

Authorized levels of annual incidental takes are specified in Tables 1–5. The amount of incidental takes is expressed as either estimated or observed takes depending on the amount of data available for modeling predicted takes. Extrapolated sea turtle takes were computed by dividing the number of sea turtle interactions observed by the total anchored gill-net trips observed and then multiplying by the total anchored gill-net trips. Nonparametric confidence intervals (95%) were calculated using standard bootstrapping techniques (Efron and Tibshirani 1993) using the 'boot' package in R (Davison and Hinkley 1997; Canty and Ripley 2015; R Core Team 2015). Bootstrap replicates were generated by sampling observer trips with replacement 5,000 times within strata (mesh/season/Management Unit; Tables 1–5). Because reaching the estimated or observed level for any category of authorized takes for any species would end the incidental take authorization for all species; it is highly unlikely that all five species would be impacted at these full levels. Takes must be incidental to otherwise lawful activities associated with the anchored large and small mesh gill-net fisheries, and as conditioned herein. The ITP covers incidental takes from the date of issuance through August 31, 2023. The NCDMF uses preliminary data to monitor the total number of live and dead takes by species per Unit to determine if the fishery is approaching or has reached the authorized takes for any sea turtle species. Once TTP data are finalized in May of 2019, the final authorized estimated sea turtle takes will be recalculated and finalized estimates will be provided to the NMFS.

2.3 Compliance

The NCDMF observers and Marine Patrol conduct weekly fish house visits, boat patrols, fisherman spot checks, gear checks, aerial surveys, and continual outreach to the industry attempting to ensure industry compliance and to determine anchored large and small mesh gill-net fishing effort throughout the state.

The Observer Program has various ways to contact fishermen to schedule trips. The most common method is by phone, due to limited program resources, fishermen leaving from private launches, and overall efficiency. The Observer Program has a contact log which is filled out for every phone call or contact that is made when attempting to obtain a trip. Each contact was put into a specific category and other information was gathered (Table 6). The contact log was analyzed by month and category to determine what percentage of phone calls resulted in observer trips.

3 RESULTS

3.1 Observer Activity

3.1.1 Fall 2017

The fall 2017 season for anchored large and small mesh gill nets in North Carolina is September 2017 through November 2017 for ITP Year 2018 (September 1, 2017–August 31, 2018) as defined in ITP No. 16230. Portions of Management Unit A (eastern Albemarle Sound) closed to anchored large and small mesh gill nets via proclamation M-18-2017 on October 29, 2017 while maintaining the closure of all anchored gill nets in the Management Unit (eastern/southern Albemarle Sound

and Croatan and Roanoke sounds) to avoid interactions with sea turtles (Boyd 2017b; Table 7). Specific sections of Management Unit B (sub-Units CGNRA, SGNRA1-3) closed to anchored large mesh gill nets for the new ITP Year 2018 to avoid sea turtle interactions via proclamation M-13-2017 on September 1, 2017. These areas of Management Unit B reopened to anchored large mesh gill nets via proclamation M-14-2017 on September 25, 2017. Management Unit C opened to anchored large and small mesh gill nets for the new ITP Year 2018 on September 1, 2017 via proclamation M-13-2017. Management Unit D1 opened to anchored large mesh gill nets for the new ITP Year 2018 via proclamation M-17-2017 on October 16, 2017. On November 9, 2017 proclamation M-19-2017 closed all of Management Unit D1 to anchored large mesh gill nets due to reaching allowable sea turtle take thresholds.

The Observer Program achieved an estimated 8.2% overall anchored large mesh gill-net coverage for the fall 2017 season meeting the minimum requirement (7.0%) in all Management Units except Management Unit D2 based on finalized data (Boyd 2017b; Table 8; Figures 2–8).

The Observer Program achieved an estimated 2.3% overall anchored small mesh gill-net coverage for the fall 2017 season meeting the minimum requirement (1.0%) in all Management Units except Management Unit B (0.9%) based on finalized data (Boyd 2017b; Table 9; Figures 2–8).

There were 37 observed sea turtle interactions from anchored large mesh gill nets during the fall 2017 season (Boyd 2017b; Table 10; Figures 2–8). There were no observed sea turtle interactions from anchored small mesh gill nets during the fall 2017 season. The species composition was made up of green sea turtles (n = 26 alive; n = 9 dead) and Kemp's ridley sea turtles (n = 1 alive; n = 1 dead).

The percent breakdown of each Management Units observed contribution to incidental sea turtle interactions for the fall 2017 anchored gill-net fishery are as follows; Unit A = 5.4%, Unit B = 64.9%, Unit C = 0.0%, Unit D1 = 18.9%, Unit D2 = 2.7%, Unit E = 8.1% (Table 10; Figures 2–8). There were eight fisherman self-reported sea turtle interactions that occurred in anchored large mesh gill nets and zero reported in anchored small mesh gill nets during this period (Boyd 2017b; Table 11).

3.1.2 Spring 2018

The spring 2018 season for anchored large and small mesh gill nets in North Carolina is March 2018 through May 2018 for ITP Year 2018 (September 1, 2017–August 31, 2018) as defined in ITP No. 16230. Management Unit A opened to the use of anchored large mesh gill nets with gill-net configurations for harvesting American shad by removing vertical height restrictions for up to 1,000 yards of gill net with stretched mesh lengths of 5 ¼ through 6 ½ inches via proclamation M-2-2018 on March 3, 2018. In accordance with the Sea Turtle and Atlantic Sturgeon ITPs, Proclamation M-2-2018 also implemented additional gill-net restrictions for Management SubUnit A-South of US-64-BYP/US-64 (McConnaughey 2018a; Table 7). Gill-net configurations for harvesting American shad were removed in Management Unit A following the end of the shad season via proclamation M-3-2018 on March 25, 2018. Proclamation M-3-2018 also upheld additional gill net restrictions that maintained congruity with Sea Turtle and Atlantic sturgeon ITPs. Small mesh gill-net attendance requirements and additional gill-net restrictions were implemented for Management Unit A, in accordance with the Sea Turtle ITP on May 3, 2018 via proclamation M-5-2018. This proclamation also maintained the closure for portions of western Albemarle Sound to all gill nets with a stretched mesh of 5 ½ through 6 ½ inches.

On May 4, 2018 proclamation M-6-2018 initiated attendance requirements for gill nets with a stretched mesh length less than 4 inches for Management SubUnit B.1(McConnaughey 2018a; Table 7). Management Unit B was closed by proclamation M-7-2018 to gill nets with a stretched mesh of 4 inches through 6 ½ inches on May 18, 2018 due to approaching allowable take limits of Kemp's ridley sea turtles. M-7-2018 also reduced the maximum stretched mesh length for run-around, strike, drift, drop, and trammel gill nets to 5 inches.

Proclamation M-4-2018 implemented tie-down and distance from shore restrictions for gill nets with a stretched mesh length of five inches or greater in western Pamlico Sound and rivers on May 1, 2018 (McConnaughey 2018a; Table 7).

Management Unit D1 remained closed to anchored large mesh gill nets for the entire Spring 2018 season due to exceeding allowable take limits of sea turtles in the Fall 2017 season.

The Observer Program achieved an estimated coverage of 10.0% overall for anchored large mesh gill-net during the spring 2018 season, based on preliminary data, meeting the minimum requirement (7.0%) in Management Units A, D2, and E. Coverage goals were not met in Management Units B (3.4%) and C (6.7%). Management Unit D1 remained closed due to exceeding turtle takes during fall 2017 (McConnaughey 2018a; Table 8; Figures 2–8).

The Observer Program achieved an estimated 2.3% overall anchored small mesh gill-net coverage for the spring 2018 season meeting the minimum requirement (1.0%) in all Management Units except Management Unit D2 (0.0%) based on preliminary data (McConnaughey 2018a; Table 9; Figures 2–8).

There were six observed sea turtle interactions from anchored large mesh gill nets during the spring 2018 season (McConnaughey 2018a; Table 10; Figures 2–8). There were no observed sea turtle interactions from anchored small mesh gill nets during the spring 2018 season. The species composition was made up of green sea turtles (n = 3 alive) and Kemp's ridley sea turtles (n = 2 alive; n = 1 dead). Management Unit B accounted for 67% of the interactions and Management Unit E saw 33% of the spring seasons interactions (McConnaughey 2018a; Table 10; Figures 2, 4, and 8). There were no fisherman self-reported sea turtle interactions in anchored large mesh gill nets in the spring 2018 season

3.1.3 Summer 2018

The summer 2018 season for anchored large and small mesh gill nets in North Carolina is June 2018 through August 2018 for ITP Year 2018 (September 1, 2017–August 31, 2018) as defined in ITP No. 16230. There were no proclamations issued for anchored large or small mesh gill nets during the summer 2018 season (McConnaughey 2018b; Table 7). Management Unit B remained closed to anchored large mesh gill nets for the entire summer 2018 season due to approaching allowable take limits for Kemp's ridley sea turtles in May 2018. Unit D1 is closed from early May until mid-October annually, in accordance with the sea turtle ITP.

The Observer Program achieved an estimated 10.2% overall anchored large mesh gill-net coverage for the summer 2017 season meeting the minimum requirement (7.0%) in all Management Units except Management Unit D2 (5.1%) based on preliminary data (McConnaughey 2018b; Table 8; Figures 2–8). Management Units B and D1 were closed to anchored large mesh gill net for the summer 2018 season.

The Observer Program achieved an estimated 0.4% overall anchored small mesh gill-net coverage for the summer 2018 season not meeting the minimum requirement (n = 1.0%) in all Management

Units except Management Unit D2 based on preliminary data (McConnaughey 2018b; Table 9; Figures 2–8). Observer coverage in Management Unit D2 was 2.9%. Significant program staff changes, limited fishing effort, net attendance regulations, marginal weather conditions and issues with observers procuring trips are causes for the lack of coverage during the 2018 summer season.

There were two observed sea turtle interactions from anchored large mesh gill nets during the summer 2018 season (McConnaughey 2018b; Table 10; Figures 2–8). The species composition consisted of Kemp's ridley sea turtles (n = 2 alive). Both interactions occurred in Management Unit E. There were no observed sea turtle interactions from anchored small mesh gill nets during the summer 2018 season. There were no fisherman self-reported sea turtle interactions in anchored large mesh gill nets in the summer 2018 season.

3.2 Authorized Takes

There were 45 observed sea turtle interactions in anchored large mesh gill nets and zero in anchored small mesh gill nets for ITP Year 2018 (Boyd 2017b; McConnaughey 2018a, 2018b; Table 10; Figures 2–8). The species composition consisted of primarily green sea turtles (84.4%; n = 29 alive; n = 9 dead; Table 10; Figures 2–8). Kemp's ridley sea turtles made up the remainder of sea turtle interactions (15.6%; n = 5 alive; n = 2 dead; Table 10). Observed interactions occurred in Management Unit A (4.4%), Management Unit B (62.2%), Management Unit D1 (15.6%), Management Unit D2 (2.2%), and Management Unit E (15.6%; Table 9; Figures 2–8). There was a total of eight fisherman self-reported sea turtle interactions for ITP Year 2018 (Boyd 2017b; McConnaughey 2018a, 2018b; Table 11).

The size distribution of green sea turtles (n = 38) ranged from a CCL of 228 mm to 467 mm and a CCW of 220 mm to 376 mm (Figures 9 and 10). The size distribution of Kemp's ridley sea turtles (n = 7) ranged from a CCL of 242 mm to 602 mm and a CCW of 245 mm to 540 mm (Boyd 2017b, McConnaughey 2018a, 2018b; Table 10; Figures 11 and 12).

The cumulative total estimated takes for anchored large mesh gill nets exceeded authorized take threshold's set for Management Unit D1 during the fall 2017 season. As a result, Management Unit D1 was closed to anchored large mesh gill net for the remainder of the 2018 ITP year. The cumulative total estimated and observed takes for anchored large mesh gill nets did not reach the threshold of authorized takes for any other Management Unit for ITP Year 2018 based on preliminary data. The cumulative total observed takes for anchored small mesh gill nets did not reach the threshold of authorized takes for any Management Unit for ITP Year 2018 based on preliminary data (Boyd 2017b; McConnaughey 2018a, 2018b; Tables 1–5).

The percentage of authorized takes that were used in ITP Year 2018 for anchored large mesh gill nets were calculated for estimated takes by species and disposition (green 69.4% alive, 34.5% dead; Kemp's ridley 61.6% alive, 38.1% dead; Boyd 2017b, McConnaughey 2018a, 2018b). The percentage of authorized takes that were used in ITP Year 2018 were also calculated for observed takes (green 14.3% alive/dead; Kemp's ridley 12.5% alive/dead). Overall, for both anchored large and small mesh gill nets, the percentage of estimated (67.6% alive, 35.2% dead) and observed (6% alive/dead) takes was below the authorized takes provided by the Sea Turtle ITP.

3.3 Compliance

Marine Patrol made 423 gill-net checks during the fall 2017 season resulting in 50 citations issued (Boyd 2017b, McConnaughey 2018a, 2018b; Tables 12 and 13). Marine Patrol made 476 gill-net

checks for the spring 2018 season resulting in 19 citations issued. Marine Patrol made 533 gill-net checks for the summer 2018 season with 16 citations being issued.

For ITP Year 2018, phone calls (n = 1,638) were made with 58.5% (n = 959) categorized as 1, 8, 11, 12, 13, and 14 which inclusively represents not being able to get in touch with fishermen or fishermen refusing trips (Boyd 2017b; Table 14). In the fall 2017 season (n = 207), phone calls were made with 62.8% (n = 130) categorized as 1, 8, 11, 12, 13, and 14. In the spring 2018 season (n = 214), phone calls were made with 64.0% (n = 137) categorized as 1, 8, 11, 12, 13, and 14. In the summer 2018 season (n = 1,217), phone calls were made with 56.9% (n = 692) categorized as 1, 8, 11, 12, 13, and 14.

Notice of Violations (NOV) were issued when fishermen were found to be out of compliance with the EGNP. Seven NOVs were issued during the fall 2017 season, eight NOVs were issued during the spring 2018 season, and zero NOVs were issued during the summer 2018 season (Boyd 2017b; McConnaughey 2018a, 2018b; Table 15).

3.4 Marine Mammals

There was one observed take of a dead bottlenose dolphin in Management Unit D1 that occurred in the fall 2017 season during ITP Year 2018. The marine mammal interaction occurred in small mesh gill net. When the animal was untangled from the gill-net, it quickly sank out of sight, which prevented the observers from collecting biological data (Appendix C).

4 DISCUSSION

4.1 Management history

The NCDMF has addressed protected sea turtle issues in the coastal waters since the 1970s. Sea turtle protection has been accomplished by cooperative agreements with the North Carolina Wildlife Resources Commission (NCWRC), establishment of a sea turtle sanctuary, proclamation authority delegated to the Director of the NCDMF, additional queries on recreational surveys, management of the PSGNRA, formation of the NCSTAC, implementation of an Observer Program, commercial bycatch reduction gear testing projects, outreach to the commercial and recreational fishing industries, and collaboration with the NMFS.

The NCDMF applied for and received four ITPs for the PSGNRA from 2000 to 2005 managing the area for sea turtle takes in the fall of each year through 2012 under these permits (Gearhart 2001, 2002, 2003; Price 2004, 2005, 2006, 2007a, 2008, 2009a, 2010a; Murphey 2011; Boyd 2012a, 2013). Between 2000 and 2012, a number of changes were made in the PSGNRA such as: adjustments to authorized fishing areas, modified restrictions (e.g., state closure and net length restriction), and authorized take levels reduced (Gearhart 2003; Price 2010a; Murphey 2011; Boyd 2012a). These adaptations were made feasible because of the extensive monitoring program conducted by the NCDMF in the PSGNRA. The NCDMF also observed limited trips in the large and small mesh gill-net fisheries outside of the PSGNRA from 2004 to 2010 (Brown and Price 2005; Price 2007b, Price 2009b, Price 2010b; Boyd 2012b). The information gathered from these direct observations authorized the NCDMF to generate requested estimated take numbers for observed fisheries and draft a functional Conservation Plan.

In June 2009, the NMFS began an Alternative Platform Observer Program in Core Sound, NC. The NMFS observers documented sea turtle interactions in anchored large mesh gill nets in this area beginning in late June and notified the NCDMF of their concern for these unauthorized takes.

The NCDMF consulted with the NMFS-SERO via conference calls and correspondence to discuss short and long-term actions to address sea turtle takes in gill nets in Core Sound and throughout the state. In the short term, the agencies agreed for the NCDMF to implement gear restrictions (yardage limits, mesh depth reduction, and net shot reductions) and increased observer coverage in Core Sound and adjacent water bodies (NCDMF Proclamation M-16-2009). For the long-term, the NCDMF continued consultations with the NMFS-SERO concerning the preparation of an ITP application for all internal coastal waters while compiling sea turtle interaction data from gill-net surveys, research projects, and direct observations.

On October 20, 2009, the day that authorized sea turtle takes were reached in the 2009 PSGNRA, a 60-day Notice of Intent (NOI) to sue the NCDMF and the North Carolina Marine Fisheries Commission (NCMFC) was received from the Duke Environmental Law and Policy Clinic on behalf of the Karen Beasley Sea Turtle Rescue and Rehabilitation Center Foundation (Beasley Center). The NOI stated that the NCDMF and the NCMFC violated Section 9 of the ESA by allowing gear in state waters that had unauthorized takes of threatened or endangered sea turtles.

The NCDMF consulted with the NMFS-SERO concerning this NOI while continuing to work toward the preparation of an application for a statewide ITP for gill-net fisheries in internal coastal waters. In November 2009, the NCDMF received further correspondence from the NMFS-SERO reiterating the need to "satisfy the requirements of the ESA" relative to Core Sound sea turtle interactions. The NCDMF continued to collect sea turtle interaction data while developing an interim plan to address sea turtle interactions in gill-net gear. As a result of discussions and correspondence with the NMFS-SERO, the NCDMF submitted an interim plan in January 2010 to address sea turtle interactions in gill-net fisheries prosecuted in internal coastal waters. The plan proposed to close large mesh gill-net fisheries throughout the majority of the estuarine waters of North Carolina from May to December 2010.

On February 18, 2010, the NCDMF presented the interim proposal to the NCMFC and the public at an emergency NCMFC meeting in New Bern, NC. During the meeting, numerous commercial fishery representatives expressed concern with the proposed closure based on their feelings that a negative economic impact that would result from such a closure. Representatives from the Coastal Conservation Association (CCA-NC) did not support the interim closure stating the plan was too limited in scope. After thoroughly debating the issue, the NCMFC voted to direct the NCDMF to implement alternative measures that included reductions in the number of days per week that large mesh gill nets were authorized to be fished, restricted soak times, reductions in the length of individual nets (shots), and reductions in total yardage.

On February 23, 2010, the Duke Environmental Law and Policy Clinic filed suit against the NCDMF and the NCMFC on behalf of the Beasley Center. Negotiations between the parties occurred between late February and March 23, 2010, when the NCMFC met again. During the meeting, the NCMFC directed the fisheries director to issue a gill-net proclamation effective May 15, 2010 restricting the number of days during the week that anchored large mesh gill nets would be authorized, limiting soak time, establishing a maximum yardage limit, mandating maximum mesh depth, requiring maximum individual gill-net (shot) lengths, establishing spacing between net shots, and eliminating the use of tie-downs and floats or corks along float lines. The NCDMF Director did not issue the proclamation because, as detailed below, ongoing negotiations with the Beasley Center and the Duke Environmental Law and Policy Clinic produced a settlement agreement which preempted this action.

The NCMFC met May 12 through 14, 2010 and discussed the parameters of the final Settlement Agreement between the Beasley Center (plaintiff) and the NCDMF and the NCMFC. At that meeting, the NCMFC reached an agreement concerning restrictions that would be implemented in the anchored large mesh gill-net fishery in NC estuarine waters. As a result of the NCMFC action, the NCDMF issued Proclamation M-8-2010 effective May 15, 2010 implementing the provisions of the Settlement Agreement. Gill-net restrictions implemented by the proclamation included: a range of 4 ISM to, and including, 6 ½ ISM for anchored large mesh gill nets; soak times limited to overnight soaks an hour before sunset to an hour after sunrise, Monday evenings through Friday mornings; anchored large mesh gill nets were restricted to a height of no more than 15 meshes, constructed with a lead core or leaded bottom line and without corks or floats other than needed for identification; a maximum of 2,000 yards of anchored large mesh gill nets authorized to be used per vessel; and maximum individual net (shot) length of 100 yards with a 25-yard break between shots (except for exempted areas including Management Unit C and portions of Management Unit A).

The Settlement Agreement included gill nets from 4 ISM to less than 5 ISM in the large mesh category because of observed sea turtle takes in 4 ISM and 4 ½ ISM gill nets in the NCDMF Independent Gill-Net Survey. The measures were modified slightly several times, with the concurrence of the Beasley Center, to improve gear efficiency or adjust fishing area boundaries without compromising the sea turtle conservation provisions of the Settlement Agreement with fishermen in the southern portion of the state authorized to set anchored large mesh gill nets an extra day (Sunday evenings through Friday mornings) and use floats on nets, but were restricted to the use of a maximum of 1,000 yards of anchored large mesh gill net per fishing operation.

The Annual Completion Report for ITP Year 2014 (September 1, 2013–August 31, 2014) was submitted January 30, 2015 (Boyd 2015). During review of the 2014 Sea Turtle ITP Annual Completion Report, the NMFS requested modifications to certain tables and figures in the annual report. These modifications were addressed in the Annual Completion report for ITP Year 2015 (September 1, 2014–August 31, 2015) which was submitted January 30, 2016 and included: maps for each Management Unit to include number of gill-net hauls, sea turtle interactions, and tables which list all estimated/observed takes exactly as portrayed in the permit with 95% confidence intervals included (Boyd 2016a).

During the summer 2015 season a minor modification was enacted through the NMFS combining authorized takes for Management Units A (n = 4) and C (n = 4) for total authorized take limit of eight sea turtles from anchored large or small mesh gill nets and any species or disposition (Boyd 2016a).

At the August 2016 NCMFC meeting, Chairman Sammy Corbett announced that he was disbanding the Sea Turtle Advisory Committee (STAC) because it is not statutorily required and the NCMFC committee system already has a multitude of committees which are statutorily mandated. Chairman Corbett sent a letter explaining his decision to the committee members on August 25, 2016 (Appendix D).

4.2 Observer Activity

There was turnover within the Observer Program with positions being filled as quickly as possible to maintain coverage. The Observer Program proportionally placed observers in areas with higher fishing effort. There were multiple closures of various Management Units throughout the state during ITP Year 2018 (Table 7). When a Management Unit closes for a portion of time, observer

efforts are shifted to open Management Units. The contact log, which includes different response categories for contact made to a fisherman, is beneficial for analyzing the type of response from fishermen to observer contact and to document the number of observer trips that were obtained through the calling system.

During the fall 2017 season, observer coverage for anchored large mesh gill net in Management Unit D2 was 5.5% (Boyd 2017b). Observer coverage for anchored small mesh gill net was 0.9% in Management Unit B. In recent years, attendance requirements were lifted during the month of November allowing for observer trips to be obtained. Fishing practices for attended gill nets can be very different than other fishing practices, with fishing activity occurring throughout the night creating safety hazards for observers. Furthermore, fishing effort tends to be lower when attendance is required.

The authorized annual estimated takes were exceeded in Management Unit D1 on November 9, 2017 resulting in the Unit being closed to anchored large mesh gill net for the remainder of the 2018 ITP. The Sea Turtle ITP authorized annual estimated takes for green sea turtles in Management Unit D1 are: 9 alive and 5 dead. D1 opened on October 16, 2017 for anchored large mesh gill net and as of October 25, one live green sea turtle had been observed with observer coverage of 23.4%. On November 9, 2017, four live and 2 dead green sea turtles were observed in Management Unit D1. Based on the trips observed and estimated trips to date, the program had achieved a coverage of 29.8%. This percentage was used to calculate the number of estimated turtles (n = 13.4 live, 6.7 dead green sea turtles) that the interaction event would extrapolate out to. Although observer coverage percentages far exceeded the goals set by the ITP, an anomalous interaction occurring in a small window of time resulted in the authorized number of both live and dead green sea turtle takes being exceeded for Management Unity D1. In response, the NCDMF closed Management Unit D1 for the remained of the 2018 ITP year (Table 7).

Observer coverage for anchored large mesh gill net was 3.4 % in Management Unit B and 6.7% in Management Unit C for the spring 2018 season. No anchored large mesh gill-net trips were obtained in Management Unit D1 due to it being closed for the remainder of the 2018 ITP year during the fall 2017 season. Observer coverage in the spring 2017 season for anchored small mesh gill-nets in Management Unit D2 was 0.0% due to minimal fishing effort (n = 20 fishing trips; McConnaughey 2018a). Five trips were observed in Management Unit D1 during the spring season, these trips are not recorded in the currently available trip ticket data. This may change with the trip ticket data finalization in May. Management Unit B was closed during the latter part of the spring season and did not reopen until the Fall 2018.

During the summer 2018 season, observer coverage for anchored large mesh gill-net in Management Unit D2 was 5.1% (McConnaughey 2018b). Management Units B and D1 were closed to anchored large mesh gill-net for the duration of the summer 2018 season. No anchored small mesh gill-net trips were obtained in Management Units C and D1 due to minimal fishing activity for the summer 2018 season. Observer coverage was low in all other Management Units for anchored small mesh gill-net, except D2, primarily due to a lack of fishing effort.

4.3 Compliance

Although ITP Year 2018 is the fifth year for the statewide ITP, fishermen in many portions of the state are not as familiar with the Observer Program and requirements of the ITP as desired, so more time is needed to educate the industry. Alternative platform trips were employed in all Management Units more frequently throughout ITP Year 2018 to maintain observer coverage due

to compliance issues with fishermen (i.e., not answering phone calls, not calling back). The required minimum 7% observer coverage for anchored large mesh gill nets is very difficult to achieve when observers must rely on alternative platform trips, as it requires two observers to obtain a trip. The NCDMF has discussed the situation with industry leaders in attempts to improve awareness and increase compliance. However, fisherman non-compliance continues to be a hurdle for ensuring the requirements for both ITPs are met. Each ITP Year (2015–2018) had >50% of contacts made by observers not being able to get in touch with fishermen or fishermen refusing trips (Boyd 2016a, 2017a, 2018a).

Eight fishermen self-reported sea turtle takes occurred during ITP Year 2018 (Boyd 2017b; McConnaughey 2018a, 2018b; Table 11). NCDMF has discussed the importance of self-reporting with industry leaders' numerous times. The NCDMF has conducted outreach and supplied detailed information to fishermen explaining the requirements in the ITP of self-reporting in attempts to improve self-reporting throughout the industry. These efforts have had limited success.

The data clearly illustrate that the Sea Turtle ITP has led to successful adaptive management and therefore fewer sea turtle takes in these fisheries. This can also be attributed to management related to the Atlantic Sturgeon ITP as any closure of anchored large or small mesh gill nets from sturgeon interactions lead to more infrequent sea turtle interactions with gear being out of the water for long periods of time. Also, as expected and discussed in the Sea Turtle ITP application, the requested authorized take numbers represent a worst-case scenario and it is highly unlikely. However, by not requesting the proper authorized amount for each species and disposition, the fisheries could close for long periods of time due to anomalous sea turtle events such as the one experienced this year in D1.

4.3.1 Estuarine Gill-Net Permit

Per the ITP the NCDMF established an Estuarine Gill-Net Permit (EGNP) to register all fishermen participating in the anchored large and small mesh gill-net fisheries via proclamation M-24-2014 on September 1, 2014. The ITP's Implementing Agreement states that the NCDMF has two years to implement the EGNP to serve as a certificate of inclusion for fishermen. However, due to the compliance issues the NCDMF was facing during ITP Year 2014, the EGNP was developed and became effective September 1, 2014 (one year from ITP issuance; Boyd 2015). The multifaceted EGNP was enacted to attempt to allow the NCDMF to closely monitor compliance. The EGNP is also used as a tool to improve fishermen compliance by including Specific Permit Conditions requiring fishermen to allow the NCDMF observers aboard their vessels to monitor catches. Failure to comply with this permit provision can result in a permit suspension. There were 2,676 EGNPs issued for Fiscal Year 2018 (July 1, 2017–June 30, 2018).

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6 TABLES

Table 1. Authorized and actual annual estimated takes with confidence intervals (95%) using a bootstrap method based on observer data for coverage and sea turtle interaction levels in large mesh (≥4 inch stretched mesh) gill nets for ITP Year 2018 (September 1, 2017–August 31, 2018).

	Management Unit											
	B				D1				Total			
	Estimated Takes				Estimated Takes							
	Authorized		Actual		Authorized		Actual		Authorized		Actual	
Species	Alive	Dead	Alive	Dead	Alive	Dead	Alive	Dead	Alive	Dead	Alive	Dead
Green	225	112	166.4 (79.6,284.8)	48.4 (8.9,96.7)	9	5	19.2 (0,53.4)	3(0,9)	234	117	185.6	51.4
Kemp's ridley	53	26	49.4 (0,135.2)	18.2 (0,54.6)	15	7	0	0	68	33	49.4	18.2
Total	278	138	215.8	66.6	24	12	19.2	3	302	150	235	69.6

	Management Unit											
	D2				E				Total			
	Estimated Takes				Estimated Takes							
	Authorized		Actual		Authorized		Actual		Authorized		Actual	
Species	Alive	Dead	Alive	Dead	Alive	Dead	Alive	Dead	Alive	Dead	Alive	Dead
Green	n/a [1]	n/a [1]	n/a [1]	n/a [1]	96	48	17.8 (0,45.6)	0	96	48	17.8	0
Kemp's ridley	6	3	0	0	24	13	10.9 (0,28.0)	0	30	16	10.9	0
Total	6	3	0	0	120	61	28.7	0	126	64	28.7	0

[1] Insufficient observer data exist to model an estimated annual take level; therefore, for Management Unit D2, an annual observed take number has been identified for green turtles, and is found in Table 2

Table 2 Authorized and actual annual observed (not estimated) takes in large mesh (≥4 inch stretched mesh) gill nets for ITP Year 2018 (September 1, 2017–August 31, 2018).

	Management Unit									
	B		D1		D2		E			
	Observed (live/dead)		Observed (live/dead)		Observed (live/dead)		Observed (live/dead)		Total	
Species	Authorized	Actual	Authorized	Actual	Authorized	Actual	Authorized	Actual	Authorized	Actual
Green	n/a [1]	n/a [1]	n/a [1]	n/a [1]	6	1	n/a [1]	n/a [1]	6	1
Kemp's ridley	n/a [1]	n/a [1]	n/a [1]	n/a [1]	n/a [1]	n/a [1]	n/a [1]	n/a [1]	n/a [1]	n/a [1]
Hawksbill	1	0	1	0	1	0	1	0	4	0
Leatherback	1	0	1	0	1	0	1	0	4	0
Loggerhead	3	0	3	0	3	0	3	0	12	0
Total	5	0	5	0	11	1	5	0	26	1

[1] Insufficient observer data exist to model an estimated annual take level for Kemp's ridley sea turtles in Management Units B, D1, D2 and E. See Table 1 for the authorized annual estimated take level

Table 3. Authorized and actual annual observed (not estimated) takes in anchored large mesh (≥4 inch stretched mesh) and anchored small mesh (<4 inch stretched mesh) gill nets combined for ITP Year 2018 (September 1, 2017–August 31, 2018).

	Management Unit					
	A		C		Total	
Species	Authorized (live/dead)	Actual (live/dead)	Authorized (live/dead)	Actual (live/dead)	Authorized (live/dead)	Actual (live/dead)
Green, Hawksbill, Kemp's ridley, Leatherback, Loggerhead	4 (any species)	0	4 (any species)	5	8 (any species)	5

Table 4. Authorized and actual annual observed (not estimated) takes in small mesh (<4 inch stretched mesh-ISM) gill nets for ITP Year 2018 (September 1, 2017–August 31, 2018).

	Management Unit									
	B		D1		D2		E			
	Observed (live/dead)		Observed (live/dead)		Observed (live/dead)		Observed (live/dead)		Total	
Species	Authorized	Actual	Authorized	Actual	Authorized	Actual	Authorized	Actual	Authorized	Actual
Green	3	0	3	0	3	0	3	0	12	0
Hawksbill	1	0	1	0	1	0	1	0	4	0
Kemp's ridley	3	0	3	0	3	0	3	0	12	0
Leatherback	1	0	1	0	1	0	1	0	4	0
Loggerhead	3	0	3	0	3	0	3	0	12	0
Total	11	0	11	0	11	0	11	0	44	0

Table 5. Total annual authorized and actual takes (estimated and observed) by species and condition for ITP Year 2018 (September 1, 2017–August 31, 2018).Table 5.

	Observed (live/dead)		Estimated			
			Authorized		Actual	
Species	Authorized	Actual	Alive	Dead	Alive	Dead
Green	18	2	330	165	229	57
Hawksbill	8	0	n/a[1]	n/a[1]	n/a[1]	n/a[1]
Kemp's ridley	12	1	98	49	61	18
Leatherback	8	0	n/a[1]	n/a[1]	n/a[1]	n/a[1]
Loggerhead	24	0	n/a[1]	n/a[1]	n/a[1]	n/a[1]
Any Species	8	0	n/a[1]	n/a[1]	n/a[1]	n/a[1]
Total	78	3	428	214	290	75

[1] Insufficient observer data exist to model an estimated annual take level; therefore, takes are expressed as observed

Table 6. Categories and descriptions of fisherman responses for the Observer Program's contact logs used for analysis.

Categories	Category description
1	Left message with someone else
2	Not fishing general
3	Fishing other gear
4	Not fishing because of weather
5	Not fishing because of boat issues
6	Not fishing because of medical issues
7	Booked trip
8	Hung up, got angry, trip refused
9	Call back later time/date
10	Saw in person
11	Disconnected
12	Wrong number
13	No answer
14	No answer, left voicemail

Table 7. Regulations for Management Units by date and regulation change for anchored large and small mesh gill nets for ITP Year 2018 (September 1, 2017–August 31, 2018).

Year	Date(s)	Regulation change
2017	September 1	Portions of Management Unit B (subUnits CGNRA, SGNRA1-3) closed to large mesh gill nets and Management Unit C opened to large and small mesh gill nets for the new ITP Year 2018. SubUnits SGNRA1-3 and CGNRA will remain closed until sea turtle abundance decreases to minimize interactions with sea turtles (M-13-2017).
2017	September 25	This proclamation opens portions of Management Unit B (SubUnits SGNRA1 - SGNRA3 and CGNRA) to the use of gill nets with a stretched mesh length of 4 inches through 6 ½ inches for the new ITP year (September 1, 2017 – August 31, 2018) in accordance with the Sea Turtle ITP. (M-14-2017)
2017	October 16	This proclamation opens Management Unit D1 to the use of gill nets with a stretched mesh length of 4 inches through 6 ½ inches in accordance with the Sea Turtle ITP. (M-17-2017)
2017	October 29	Closes further portions of eastern Albemarle Sound and maintains closures for the Croatan and Roanoke Sounds (except as described in Section IV.). This action is being taken in order to minimize interactions with threatened and/or endangered sea turtles. (M-18-2017)
2017	November 9	This proclamation closes Management Unit D1 (See map) to the use of gill nets with a stretched mesh length of 4 inches through 6 ½ inches (except as described in Section III.) in accordance with the Sea Turtle Incidental Take Permit. (M-19-2017)
20017	December 1	This proclamation implements the December closed commercial season provision identified in the N.C. Southern Flounder Fishery Management Plan Amendment 1. (FF-47-2017)
2017	December 1	In Management Unit A, it closes the Albemarle Sound proper to the use of gill nets with a stretched mesh length of 5 ½ inches through 6 ½ inches, and allows the use of unattended, anchored small mesh gill nets (legal gill nets with a stretched mesh of 4 inches and smaller). Both anchored small mesh gill nets and gill nets with a stretched mesh length of 5 ½ inches through 6 ½ inches must be set to fish the bottom of the water column and not to exceed a vertical height of 48 inches. (M-20-2017)
2018	January 1	In Management Unit A, it makes it unlawful to use gill nets with a stretched mesh length *other than 3 ¼ inches, or from 5 ½ inches through 6 ½ inches*, EXCEPT IN THE AREAS DESCRIBED IN SECTION IV. It also maintains large mesh gill net closures and vertical height restrictions for all anchored gill net sets. (M-24-2017)

Table 7 cont.

2018	February 15	This proclamation implements gear exemptions for portions of the Internal Coastal Waters south of Management Unit A to allow fishermen to set gill nets for the shad fishery (See Section III.). It also opens the remaining portions of Management Unit B to the use of gill nets with a stretched mesh length of 4 inches through 6 ½ inches (except as described in Section III.) in accordance with the Sea Turtle Incidental Take Permit. (M-1-2018)
2018	March 3	Opens all of Management Unit A to the use of gill nets and allows gill net configurations for harvesting American shad by removing vertical height restrictions for up to 1,000 yards of gill net with stretched mesh lengths of 5 ¼ through 6 ½ inches. This proclamation also implements additional gill net restrictions for Management SubUnit A-South of US-64-BYP/US-64, in accordance with the Sea Turtle and Atlantic Sturgeon ITPs. (M-2-2018)
2018	March 25	Removes the use of gill nets configured for harvesting American shad by implementing vertical height restrictions for all gill nets. This proclamation also closes a portion of the western Albemarle Sound to all gill nets with stretched mesh lengths of 5 ½ through 6 ½ inches,and maintains additional gill net restrictions in accordance with the Sea Turtle and Atlantic Sturgeon ITPs. (M-3-2018)
2018	May 1	Implements tie-down (vertical net height restrictions) and distance from shore restrictions for gill nets with a stretched mesh length five inches or greater in the western Pamlico Sound and rivers. (M-4-2018)
2018	May 3	Implements small mesh gill net attendance requirements in Management Unit A and implements additional gill net restrictions in accordance with the Sea Turtle ITP. This proclamation also maintains a closure in a portion of the western Albemarle Sound to all gill nets with stretched mesh lengths of 5 ½ through 6 ½ inches. (M-5-2018)
2018	May 4	This proclamation implements attendance requirements for gill nets with a stretched mesh length less than 4 inches in Management SubUnit B.1. (M-6-2018)
2018	May 18	This proclamation closes Management Unit B to gill nets with a stretched mesh length of 4 inches through 6 ½ inches and reduces the maximum stretched mesh length for run-around, strike, drift, drop and trammel gill nets to 5 inches. (M-7-2018)

Table 8. Observer coverage calculated from previous year's trip ticket data and observer data for anchored large mesh gill nets by season and Management Unit through the NCDMF Observer Program for ITP Year 2018 (September 1, 2017–August 31, 2018).

		Large Mesh		
Season [1]	Management Unit [2]	Fishing Trips	Observed Trips	Coverage [3]
Fall 2017	A	1,936	135	7.0
	B	1,496	126	8.4
	C	988	75	7.6
	D1	23	9	39.1
	D2	531	29	5.5
	E	828	103	12.4
Spring 2018	A	1,201	154	12.8
	B	327	11	3.4
	C	875	59	6.7
	D1	n/a	n/a	n/a
	D2	38	8	21.1
	E	314	44	14.0
Summer 2018	A	623	55	8.8
	B	n/a	n/a	n/a
	C	672	73	10.9
	D1	n/a	n/a	n/a
	D2	334	17	5.1
	E	915	115	12.6
Total		11,101	1,013	9.1

[1] Final trip ticket data for 2017 (Fall 2017) and preliminary trip ticket data for 2018 (Spring and Summer 2018)

[2] Table 7 contains all the openings and closings for each Management Unit

[3] Based on final trips for 2017 (Fall 2017) and estimated trips for 2018 (Spring and Summer 2018) compared to observer large mesh trips

Table 9. Observer coverage calculated from previous year's trip ticket data and observer data for anchored small mesh gill nets by season and Management Unit through the NCDMF Observer Program for ITP Year 2018 (September 1, 2017–August 31, 2018).

		Small Mesh		
Season [1]	Management Unit [2]	Fishing Trips	Observed Trips	Coverage [3]
Fall 2017	A	193	3	1.6
	B	810	7	0.9
	C	162	5	3.1
	D1	59	8	13.6
	D2	249	13	5.2
	E	561	10	1.8
Spring 2018	A	641	11	1.7
	B	1,250	29	2.3
	C	226	5	2.2
	D1	n/a	5	n/a
	D2	20	0	0.0
	E	89	2	2.2
Summer 2018	A	366	2	0.5
	B	679	1	0.1
	C	63	0	0.0
	D1	1	0	n/a
	D2	34	1	2.9
	E	283	1	0.4
Total		5,686	103	1.8

[1] Final trip ticket data for 2017 (Fall 2017) and preliminary trip ticket data for 2018 (Spring and Summer 2018)

[2] Table 7 contains all the openings and closings for each Management Unit

[3] Based on final trips for 2017 (Fall 2017) and estimated trips for 2018 (Spring and Summer 2018) compared to observer large mesh trips

Table 10. Summary of observed sea turtle interactions in anchored large (n = 45) and small (n = 0) mesh gill nets through the NCDMF Observer Program for ITP Year 2018 (September 1, 2017–August 31, 2018).

						Tag		Curved Carapace (mm)	
Date	Management Unit	Latitude	Longitude	Species	Disposition	PIT	Inconel	Length	Width
9/5/2017	D2	34.69403	76.98666	green	dead	n/a	n/a	292	265
9/22/2017	B	35.5413	75.5002	green	alive	n/a	n/a	310	260
9/25/2017	E	34.33700	77.69572	green	alive	3DD.003BB895E5 989.001001952741	n/a	285	249
9/28/2017	B	34.88698	76.40146	green	dead	n/a	n/a	277	246
10/3/2017	B	35.13806	76.00096	kemps	alive	n/a	n/a	n/a	n/a
10/3/2017	B	35.33126	75.58521	green	dead	n/a	n/a	312	265
10/3/2017	B	35.28458	75.67623	green	alive	3D6.0015B2EFE3 982.000364048355	MMG032 MMG034	385	320
10/3/2017	B	35.28458	75.67623	green	alive	3D6.0015B16319 982.000363946777	MMG033 MMG036	270	220
10/3/2017	B	35.28471	75.61467	green	alive	3D6.001596B477 982.000362198135	MMG031 MMG038	275	235
10/3/2017	B	35.32699	75.59083	green	alive	3D6.0015B6BE76 982.000364297846	n/a	310	270
10/5/2017	B	35.29480	75.62629	green	alive	3D6.0015B2F01E 982.000364048414	MMG035 MMG037	325	290
10/5/2017	E	34.12317	77.86370	green	alive	n/a	n/a	228	n/a
10/6/2017	B	34.87991	76.39376	green	alive	3D6.0015B2F2EF 982.000364049135	n/a	259	236
10/6/2017	B	35.30213	75.58322	green	alive	3D6.00159487CB 982.000362055627	MMG081 MMG087	355	310
10/10/2017	B	35.29731	75.56985	green	dead	n/a	n/a	276	239
10/11/2017	B	34.86459	76.41225	green	dead	n/a	n/a	290	245
10/11/2017	B	34.86493	76.41080	green	alive	3D6.0015B2F00B 982.000364048395	EET868 EET869	305	245
10/11/2017	B	34.86493	76.41080	green	alive	3D6.0015B2F139 982.000364048697	n/a	285	245
10/11/2017	B	35.30755	75.60565	green	alive	3D6.00159487B3 982.000362055603	MMG096 MMG099	398	350
10/12/2017	E	34.670763	77.15273	green	alive	n/a	n/a	n/a	n/a
10/12/2017	B	34.89904	76.31782	green	alive	3D6.0015948B43 982.000362056515	n/a	285	253
10/13/2017	B	35.06244	76.07562	green	alive	3D6.00159487E7 982.000362055655	n/a	380	305
10/13/2017	B	35.06881	76.07886	green	dead	N/A	n/a	310	270
10/25/2017	D1	34.80302	76.60910	green	alive	3D6.0015B2F1B8 982.000364048824	n/a	355	325
10/25/2017	A	35.94238	75.6272	green	dead	N/A	n/a	n/a	n/a
10/26/2017	B	35.15327	75.90292	green	alive	3D6.0015B6BACC 982.000364296908	n/a	318	271
10/26/2017	A	35.92031	75.75736	kemps	dead	N/A	n/a	602	540
11/2/2017	B	35.29960	75.58564	green	alive	3D6.001596B7D3 982.000362198995	n/a	295	282
11/2/2017	B	35.29960	75.58564	green	alive	3D6.0015B2F0D4 982.000364048596	UUE043 UUE048	370	302

Table 10. (cont.).

Date	Management Unit	Latitude	Longitude	Species	Disposition	Tag		Curved Carapace (mm)	
						PIT	Inconel	Length	Width
11/2/2017	B	35.18612	75.84564	green	alive	N/A	n/a	n/a	n/a
11/9/2017	D1	34.73576	76.44508	green	alive	3DD.003BB8920B 989.001001951755	EET877 EET879	348	302
11/9/2017	D1	34.73636	76.44485	green	alive	3DD.003BB89217 989.001001951767	EET878 EET880	392	333
11/9/2017	D1	34.73636	76.44485	green	alive	3DD.003BB891F2 989.001001951730	EET884 EET885	328	280
11/9/2017	D1	34.73636	76.44485	green	alive	3DD.003BB891BB 989.001001951675	EET882 EET883	342	290
11/9/2017	D1	34.73546	76.44518	green	dead	N/A	n/a	310	281
11/9/2017	D1	34.73515	76.44749	green	dead	3DD.003BB891C3 989.001001951683	n/a	328	294
11/30/2017	B	35.64701	75.50181	green	alive	N/A	n/a	273	228
5/2/2018	E	33.97221	77.92273	green	alive	3D6.0015B16FBA 982.000363950010	MMG040 MMG045	391	342
5/2/2018	E	33.97114	77.92397	green	alive	3D6.0015B17E6E 982.000363953774	n/a	279	231
5/15/2018	B	34.87711	76.40444	kemps	alive	985.111000930602	n/a	399	362
5/15/2018	B	34.87685	76.40440	kemps	dead	N/A	n/a	329	304
5/15/2018	B	34.87605	76.40460	kemps	alive	985.111000930599	MMG051 MMG052	466	421
5/15/2018	B	34.87447	76.40569	green	alive	985.111000930603	MMG053 MMG057	467	376
7/13/2018	E	34.16181	77.83865	kemps	alive	N/A	MMG039 MMG043	242	245
7/20/2018	E	34.70942	77.08304	kemps	alive	3DD.003BB89285 989.001001951877	n/a	280	290

Table 11. Summary of reported sea turtle interactions in anchored large and small mesh gill nets through the NCDMF Observer Program for ITP Year 2018 (September 1, 2017–August 31, 2018).

						Curved Carapace (mm)	
Date [2]	Management Unit	Latitude	Longitude	Species	Disposition	Length	Width
9/8/2017	E	n/a	n/a	unknown	alive	n/a	n/a
9/28/2017	E	n/a	n/a	green	alive	n/a	n/a
9/29/2017	C	n/a	n/a	green	alive	n/a	n/a
10/12/2017	E	n/a	n/a	unknown	alive	n/a	n/a
10/13/2017	D1	n/a	n/a	unknown[1]	alive	n/a	n/a
10/18/2017	D1	n/a	n/a	green	alive	n/a	n/a
10/18/2017	D1	n/a	n/a	green	alive	n/a	n/a
10/24/2017	D1	n/a	n/a	green	alive	n/a	n/a

[1] Indicates small mesh gear

[2] No sea turtle interactions reported for spring and summer 2018

Table 12. Number of gill-net checks made, and citations issued by Marine Patrol for large and small mesh gill nets by season during ITP Year 2018 (September 1, 2017–August 31, 2018).

Season	# Gill Net Checks	# Citations
Fall 2017	423	50
Spring 2018	476	19
Summer 2018	533	16
Total	1,432	85

Table 13. Citations written by Marine Patrol for large and small mesh gill nets by season and violation code during ITP Year 2018 (September 1, 2017–August 31, 2018).

		Violation	
Season	Date	Code	Description
Fall 2017	9/4/2017	NETG45	Set or retrieve large mesh gill nets no sooner than one hour before sunset on Monday through Thursday
	9/14/2017	NETG27	Gill Net set within 50 yards from shore
	9/15/2017	NETG44	Use large mesh gill nets w/out leaving a space of at least 25 yard between separate lengths of net
	9/16/2017	NETG29	RCGL gear without proper buoys
	9/20/2017	NETG27	Gill Net set within 50 yards from shore
	9/23/2017	NETG32	Set gill net w/stretched mesh of 5 inches or greater without proper tie downs
	9/23/2017	NETG51	Set gill net in violation of proclamation M-18-2011
	9/30/2017	NETG30	Leave RCGL gill net unattended
	10/9/2017	NETG07	Use metal net stakes on gill nets
	10/11/2017	NETG03	Using gill net with improper buoys or identification
	10/21/2017	NETG03	Using gill net with improper buoys or identification
	10/21/2017	NETG22	Improperly set gill net
	10/22/2017	NETG30	Leave RCGL gill net unattended
	10/23/2017	NETG10	Gill net with illegal mesh size
	10/23/2017	NETG54	Violate provisions of Proclamation M-30-2011 to wit failed to have 25 yard space between nets
	10/27/2017	NETG03	Using gill net with improper buoys or identification
	10/28/2017	NETG01	Leave gill net in coastal waters unattended
	10/28/2017	NETG02	Using gill net without buoys or identification
	10/28/2017	NETG03	Using gill net with improper buoys or identification
	10/28/2017	NETG03	Using gill net with improper buoys or identification
	10/31/2017	NETG04	Leave gill net in waters when could not be legally fished
	10/31/2017	NETG22	Improperly set gill net
	11/3/2017	NETG03	Using gill net with improper buoys or identification
	11/3/2017	NETG06	Gill net causing hazard to navigation
	11/3/2017	NETG30	Leave RCGL gill net unattended
	11/5/2017	NETG04	Leave gill net in waters when could not be legally fished
	11/9/2017	NETG04	Leave gill net in waters when could not be legally fished

Table 13. (cont.).

	Violation		
Season	Date	Code	Description
Fall 2017	11/9/2017	NETG45	Set or retrieve large mesh gill nets no sooner than one hour before sunset on Monday through Thursday
	11/9/2017	NETG46	Set or retrieve large mesh gill nets later than one hour after sunrise on Tuesday through Friday
	11/10/2017	NETG04	Leave gill net in waters when could not be legally fished
	11/12/2017	NETG02	Using gill net without buoys or identification
	11/12/2017	NETG03	Using gill net with improper buoys or identification
	11/12/2017	NETG22	Improperly set gill net
	11/13/2017	NETG03	Using gill net with improper buoys or identification
	11/13/2017	NETG34	Use unattended gill net w/mesh less than 5" in commercial operation from May 1 through November 30 in coastal waters of the State
	11/13/2017	NETG34	Use unattended gill net w/mesh less than 5" in commercial operation from May 1 through November 30 in coastal waters of the State
	11/14/2017	NETG03	Using gill net with improper buoys or identification
	11/14/2017	NETG34	Use unattended gill net w/mesh less than 5" in commercial operation from May 1 through November 30 in coastal waters of the State
	11/16/2017	NETG02	Using gill net without buoys or identification
	11/17/2017	NETG04	Leave gill net in waters when could not be legally fished
	11/18/2017	NETG03	Using gill net with improper buoys or identification
	11/22/2017	NETG01	Leave gill net in coastal waters unattended
	11/26/2017	NETG03	Using gill net with improper buoys or identification
	11/26/2017	NETG16	Use an unattended gill net in a restricted area
	11/26/2017	NETG29	RCGL gear without proper buoys
	11/26/2017	NETG30	Leave RCGL gill net unattended
	11/29/2017	NETG22	Improperly set gill net
	11/29/2017	NETG29	RCGL gear without proper buoys
	11/29/2017	NETG30	Leave RCGL gill net unattended
	11/30/2017	NETG06	Gill net causing hazard to navigation
Spring 2018	4/1/2018	NETG22	Improperly set gill net
	4/6/2018	NETG22	Improperly set gill net
	4/6/2018	NETG22	Improperly set gill net
	4/12/2018	NETG22	Improperly set gill net

Table 13. (cont.).

Season	Violation		
	Date	Code	Description
Spring 2018	4/12/2018	NETG22	Improperly set gill net
	4/12/2018	NETG03	Using gill net with improper buoys or identification
	4/19/2018	NETG09	Gill net set too close to bridge
	4/22/2018	NETG01	Leave gill net in coastal waters unattended
	4/22/2018	NETG03	Using gill net with improper buoys or identification
	4/22/2018	NETG03	Using gill net with improper buoys or identification
	5/1/2018	NETG10	Gill net with illegal mesh size
	5/1/2018	NETG22	Improperly set gill net
	5/3/2018	NETG16	Use an unattended gill net in a restricted area
	5/6/2018	NETG29	RCGL gear without proper buoys
	5/11/2018	NETG03	Using gill net with improper buoys or identification
	5/16/2018	NETG03	Using gill net with improper buoys or identification
	5/16/2018	NETG04	Leave gill net in waters when could not be legally fished
	5/22/2018	NETG01	Leave gill net in coastal waters unattended
	5/25/2018	NETG29	RCGL gear without proper buoys
Summer 2018	6/6/2018	NETG45	Set or retrieve large mesh gill nets no sooner than one hour before sunset on Monday through Thursday
	6/8/2018	NETG01	Leave gill net in coastal waters unattended
	6/15/2018	NETG46	Set or retrieve large mesh gill nets later than one hour after sunrise on Tuesday through Friday
	6/22/2018	NETG34	Use unattended gill net w/mesh less than 5" in commercial operation from May 1 through November 30 in coastal waters of the State
	6/23/2018	NETG29	RCGL gear without proper buoys
	7/4/2018	NETG03	Using gill net with improper buoys or identification
	7/20/2018	NETG41	Use more than 2000 yards of large mesh gill net north of Highway 58 Bridge
	7/20/2018	NETG03	Using gill net with improper buoys or identification
	7/20/2018	NETG56	Violate the provisions of Proclamation M-30-2011 to wit set more than 2000 yards of large mesh gill net
	7/20/2018	NETG03	Using gill net with improper buoys or identification
	8/10/2018	NETG10	Gill net with illegal mesh size
	8/12/2018	NETG02	Using gill net without buoys or identification
	8/25/2018	NETG03	Using gill net with improper buoys or identification

Table 14. Contacts attempted (n = 1,638) by the observers trying to set up trips by season categorized by contact type (0-14) and by total number, percent for each season, and percent for the entire ITP Year 2018 (September 1, 2017–August 31, 2018).

	Categories (%) [1]														
Season	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Total
Fall 2017	3	46	7	1	3	0	4	0	12	4	17	3	42	65	207
	1.4%	22.2%	3.4%	0.5%	1.4%	0.0%	1.9%	0.0%	5.8%	1.9%	8.2%	1.4%	20.3%	31.4%	100.0%
	Categories (%) [1]														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Total
Spring 2018	4	51	5	3	0	2	6	2	10	0	15	0	30	86	214
	1.9%	23.8%	2.3%	1.4%	0.0%	0.9%	2.8%	0.9%	4.7%	0.0%	7.0%	0.0%	14.0%	40.2%	100.0%
	Categories (%) [1]														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Total
Summer 2018	43	243	75	12	15	12	63	6	93	12	52	13	194	384	1,217
	3.5%	20.0%	6.2%	1.0%	1.2%	1.0%	5.2%	0.5%	7.6%	1.0%	4.3%	1.1%	15.9%	31.6%	100.0%
	Categories (%) [1]														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Total
Total	50	340	87	16	18	14	73	8	115	16	84	16	266	535	1,638
	3.1%	20.8%	5.3%	1.0%	1.1%	0.9%	4.5%	0.5%	7.0%	1.0%	5.1%	1.0%	16.2%	32.7%	100.0%

[1] Contact type categories: 1) Left message with someone else 2) Not fishing general 3) Fishing other gear 4) Not fishing because of weather 5) Not fishing because of boat issues 6) Not fishing because of medical issues 7) Booked trip 8) Hung up, got angry, trip refused 9) Call back later time/date 10) Saw in person 11) Disconnected 12) Wrong number 13) No answer 14) No answer, left voicemail

Table 15.. Notice of Violations issued by season, date and violation code for the Estuarine Gill Net Permit for ITP Year 2018 (September 1, 2017–August 31, 2018).

Season [1]	Date	Code	Description
Fall 2017	9/20/2017	EGNP99	Failure to comply with statute(s), rule(s), and/or proclamation(s)
		EGNP30	Failure to comply with gill net configurations outlined in proclamation
	10/30/2017	EGNP30	Failure to comply with gill net configurations outlined in proclamation
		EGNP10	Set more than legal length of gill net
		EGNP09	Failure to set or retrieve nets in accordance with time restrictions
	10/30/2017	EGNP30	Failure to comply with gill net configurations outlined in proclamation
		EGNP09	Failure to set or retrieve nets in accordance with time restrictions
	11/1/2017	EGNP99	Failure to comply with statute(s), rule(s), and/or proclamation(s)
		EGNP09	Failure to set or retrieve nets in accordance with time restrictions
	11/6/2017	EGNP99	Failure to comply with statute(s), rule(s), and/or proclamation(s)
		EGNP30	Failure to comply with gill net configurations outlined in proclamation
	11/6/2017	EGNP99	Failure to comply with statute(s), rule(s), and/or proclamation(s)
		EGNP30	Failure to comply with gill net configurations outlined in proclamation
	11/6/2017	EGNP99	Failure to comply with statute(s), rule(s), and/or proclamation(s)
		EGNP30	Failure to comply with gill net configurations outlined in proclamation
Spring 2018	3/6/2018	EGNP99	Failure to comply with statute(s), rule(s), and/or proclamation(s)
		EGNP26	Observer harassment
	3/7/2018	EGNP99	Failure to comply with statute(s), rule(s), and/or proclamation(s)
		EGNP09	Failure to set or retrieve nets in accordance with time restrictions
	4/10/2018	EGNP99	Failure to comply with statute(s), rule(s), and/or proclamation(s)
		EGNP30	Failure to comply with gill net configurations outlined in proclamation
	4/12/2018	EGNP99	Failure to comply with statute(s), rule(s), and/or proclamation(s)
		EGNP10	Set more than legal length of gill net
	4/12/2018	EGNP99	Failure to comply with statute(s), rule(s), and/or proclamation(s)
		EGNP10	Set more than legal length of gill net
	4/16/2018	EGNP30	Failure to comply with gill net configurations outlined in proclamation
	5/9/2018	EGNP99	Failure to comply with statute(s), rule(s), and/or proclamation(s)
	5/11/2018	EGNP09	Failure to set or retrieve nets in accordance with time restrictions

[1]There were no Notice of Violations issued during the summer 2018 season

7 FIGURES

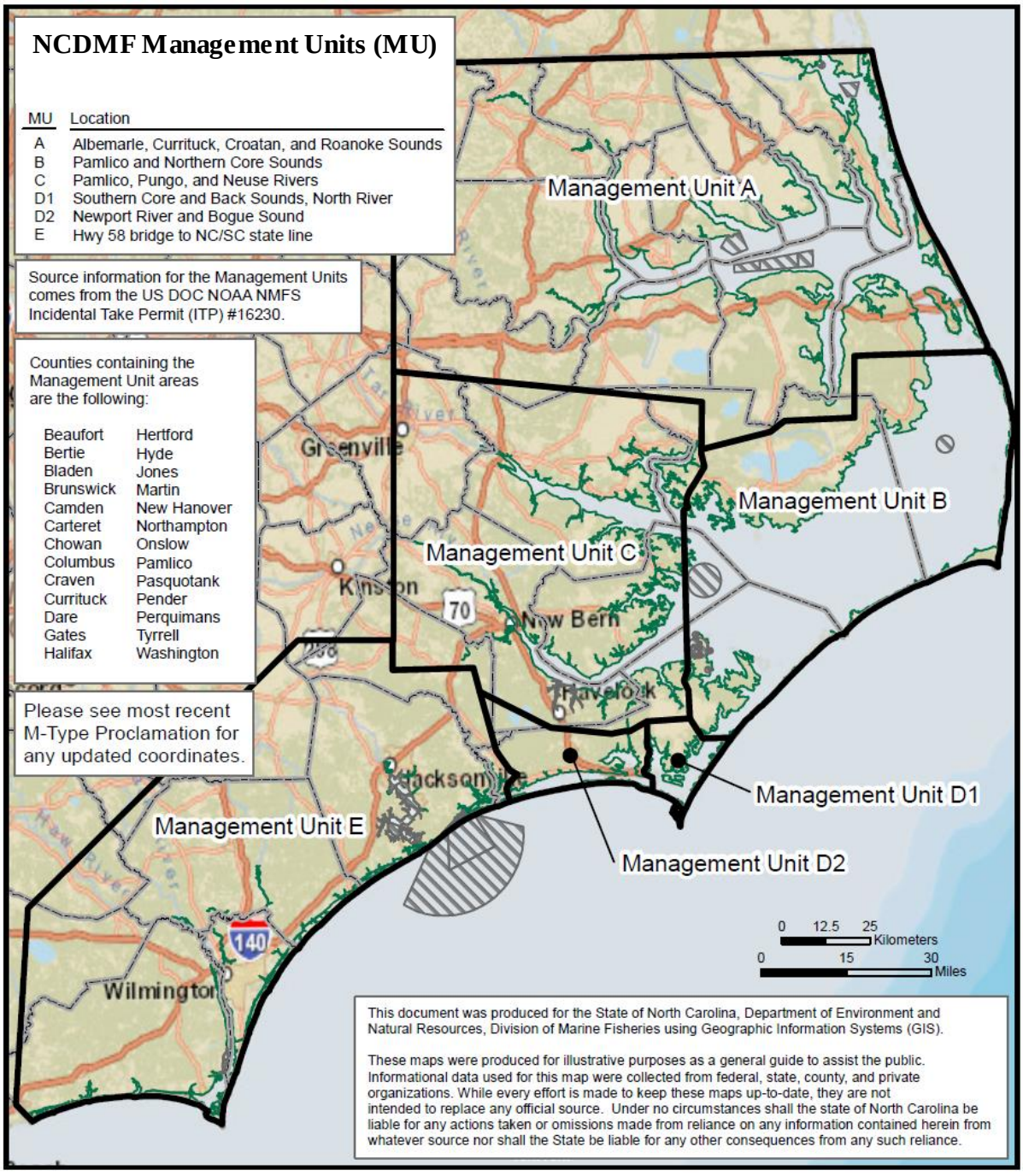


Figure 1. Management Units (A, B, C, D1, D2, and E) as outlined in the Conservation Plan and utilized by the Observer Program for ITP Year 2018 (September 1, 2017–August 31, 2018).

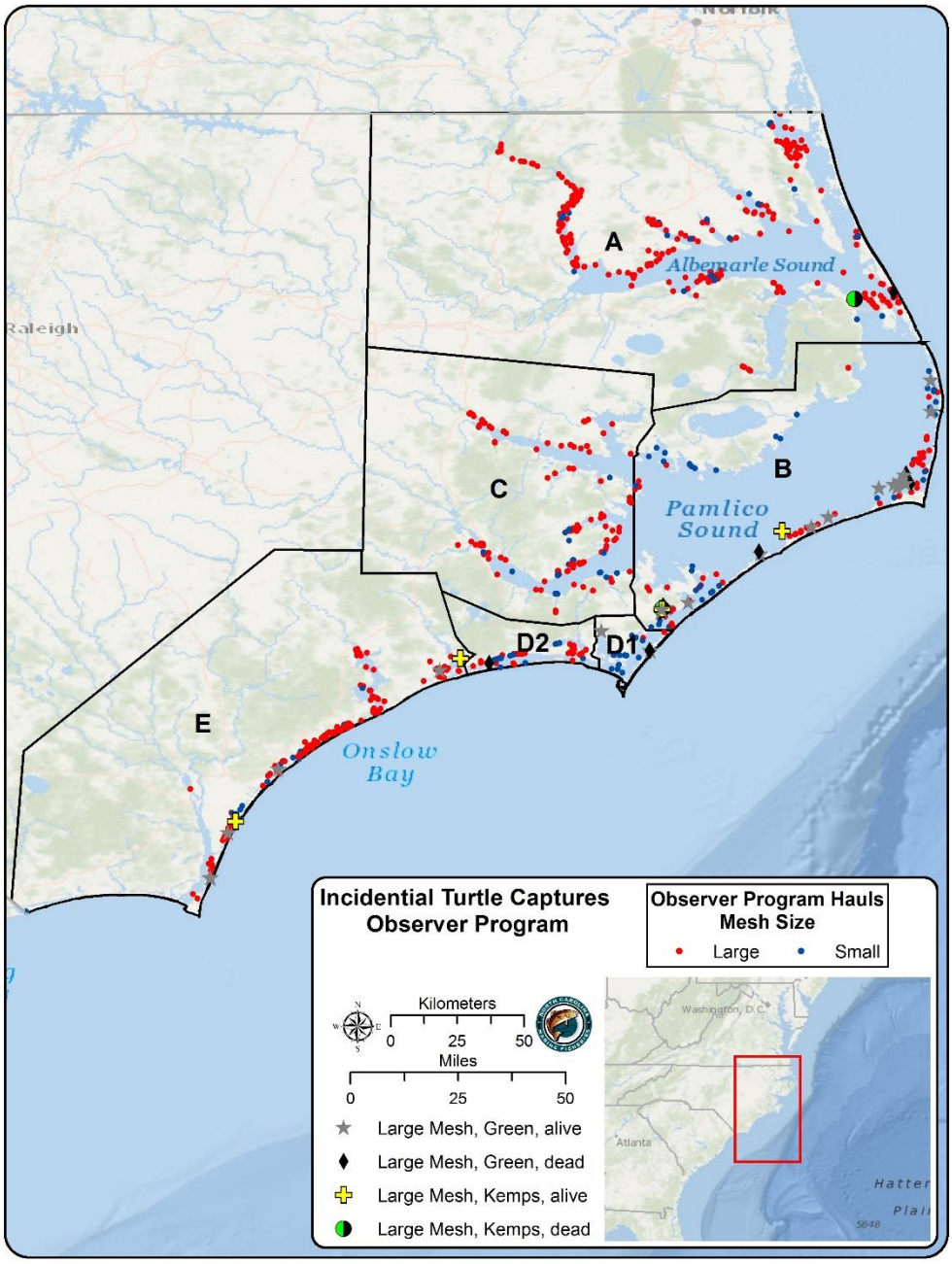


Figure 2. Sea turtle interaction locations by species, disposition, and gear and observer trips by gear throughout all Management Units for ITP Year 2018 (September 1, 2017–August 31, 2018).

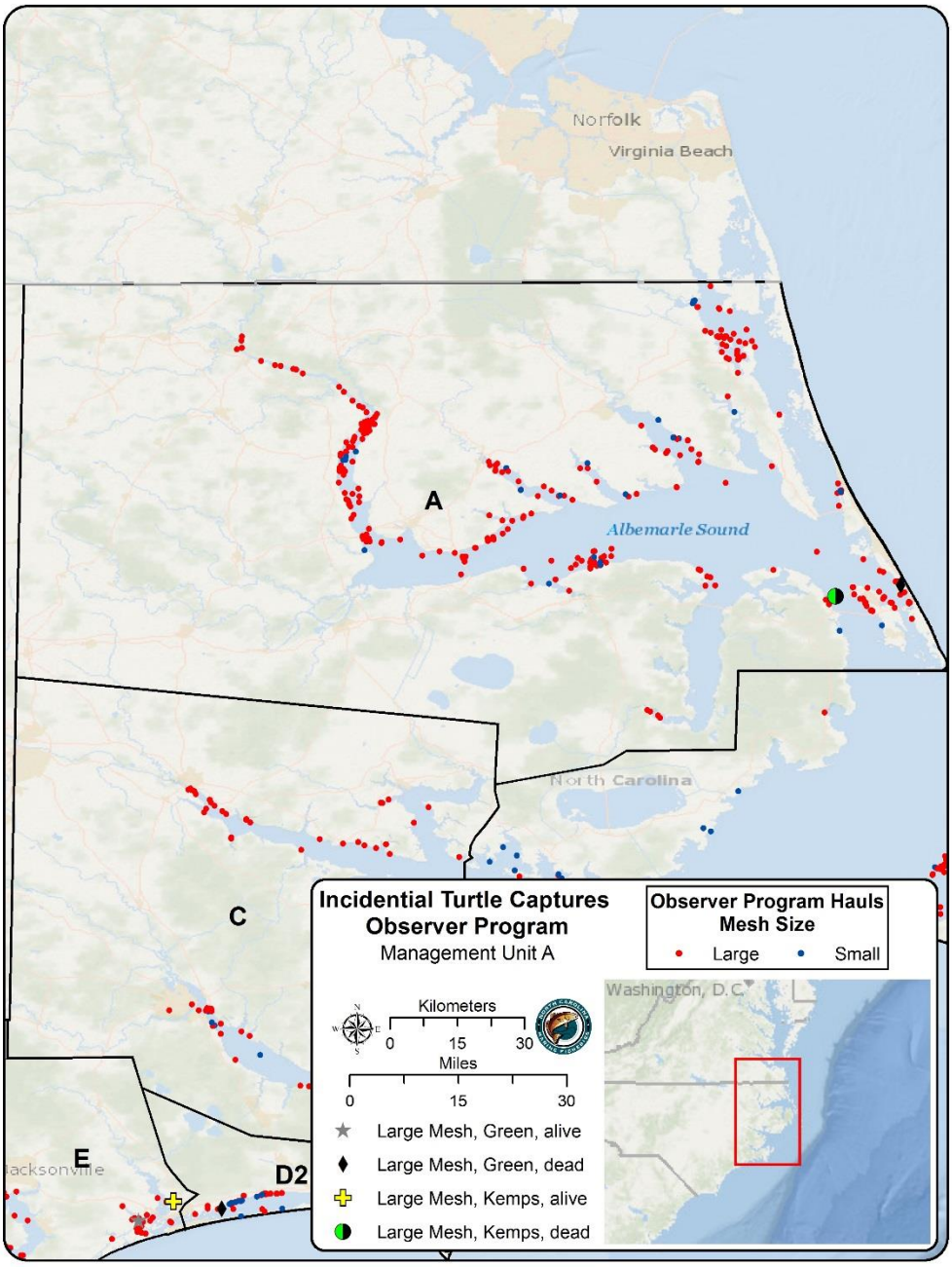


Figure 3. Sea turtle interaction locations by species, disposition, and gear and observer trips by gear in Management Unit A for ITP Year 2018 (September 1, 2017–August 31, 2018).

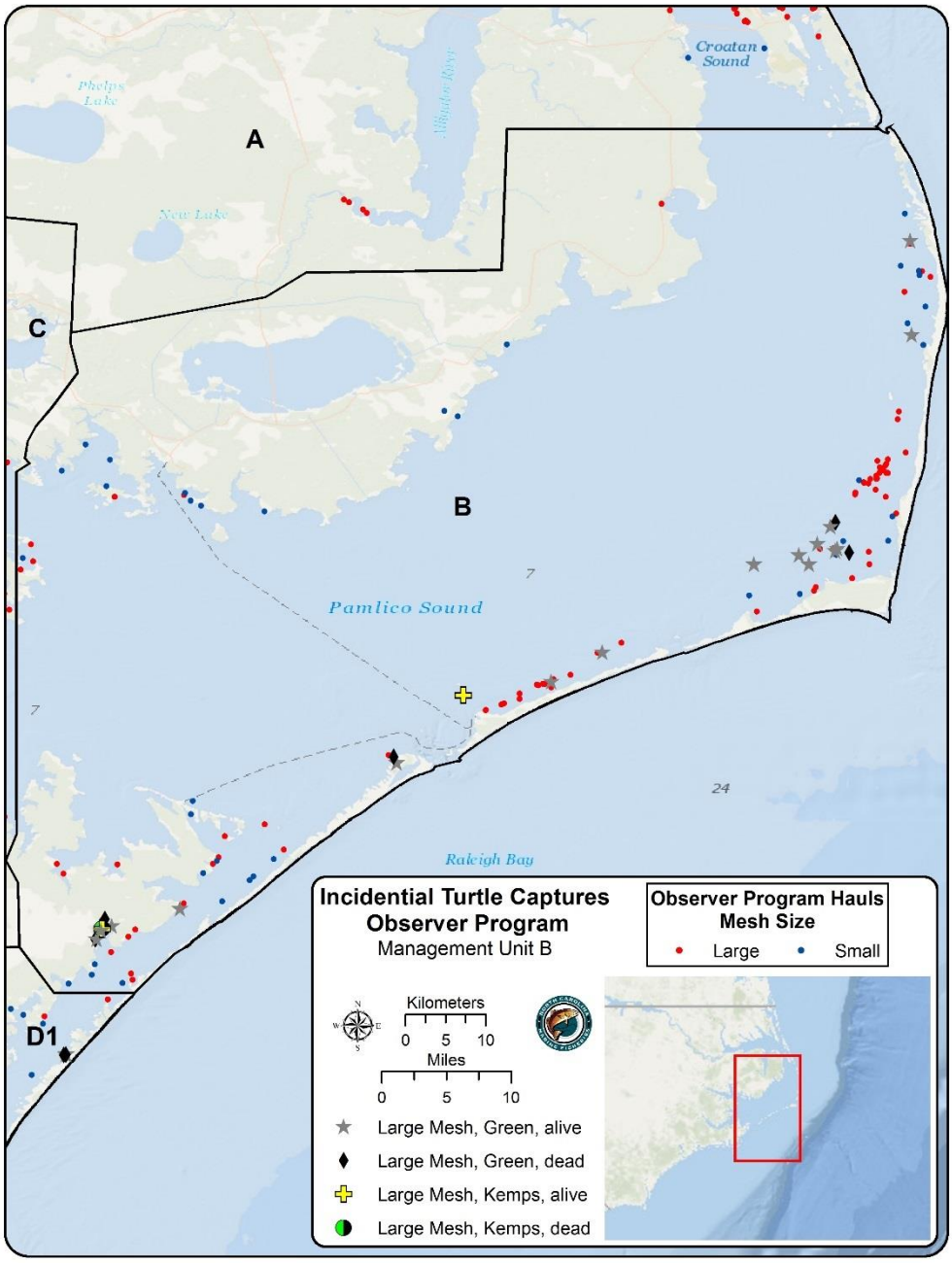


Figure 4. Sea turtle interaction locations by species, disposition, and gear and observer trips by gear in Management Unit B for ITP Year 2018 (September 1, 2017–August 31, 2018).

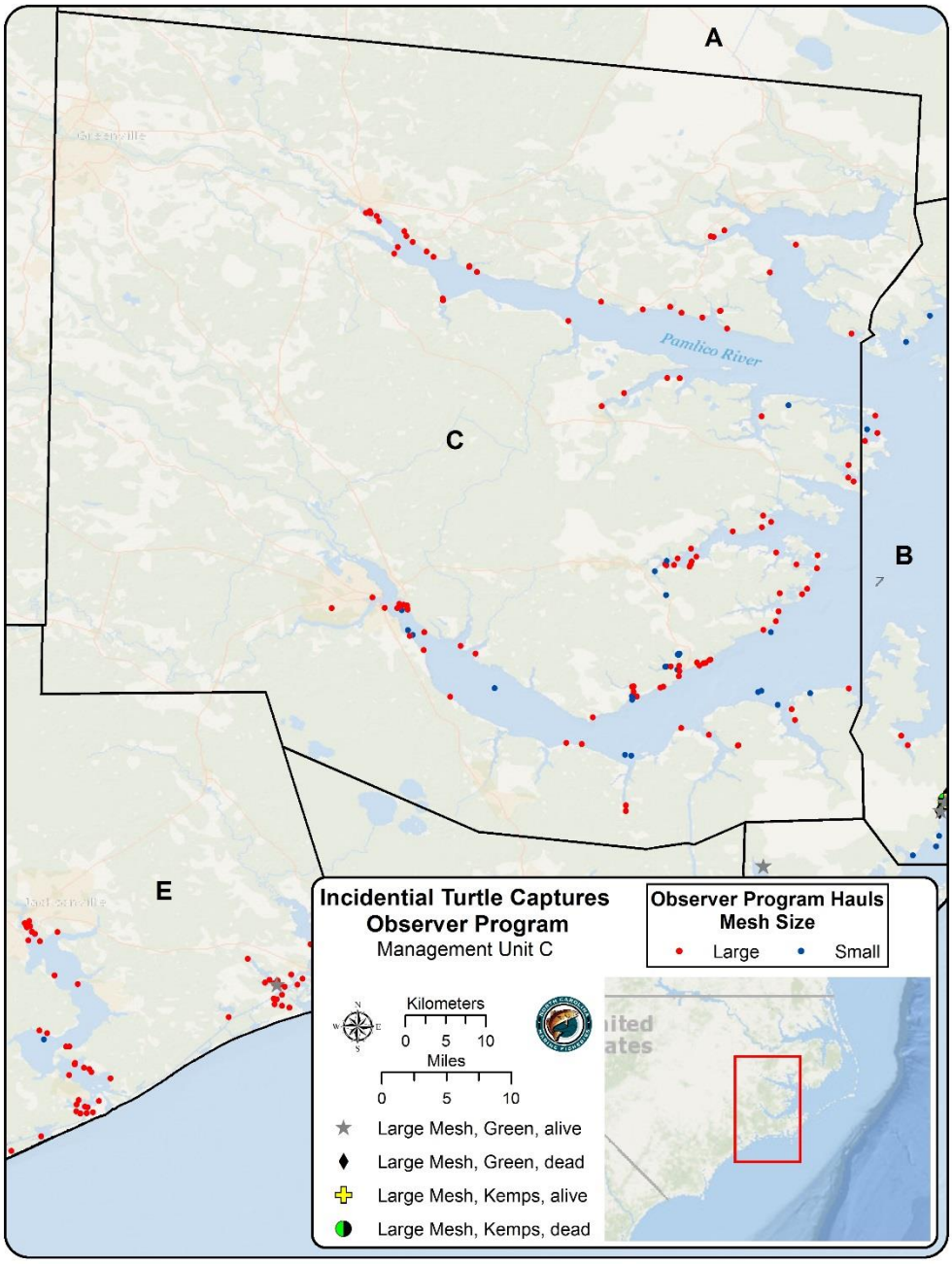


Figure 5. Sea turtle interaction locations by species, disposition, and gear and observer trips by gear in Management Unit C for ITP Year 2018 (September 1, 2017–August 31, 2018).

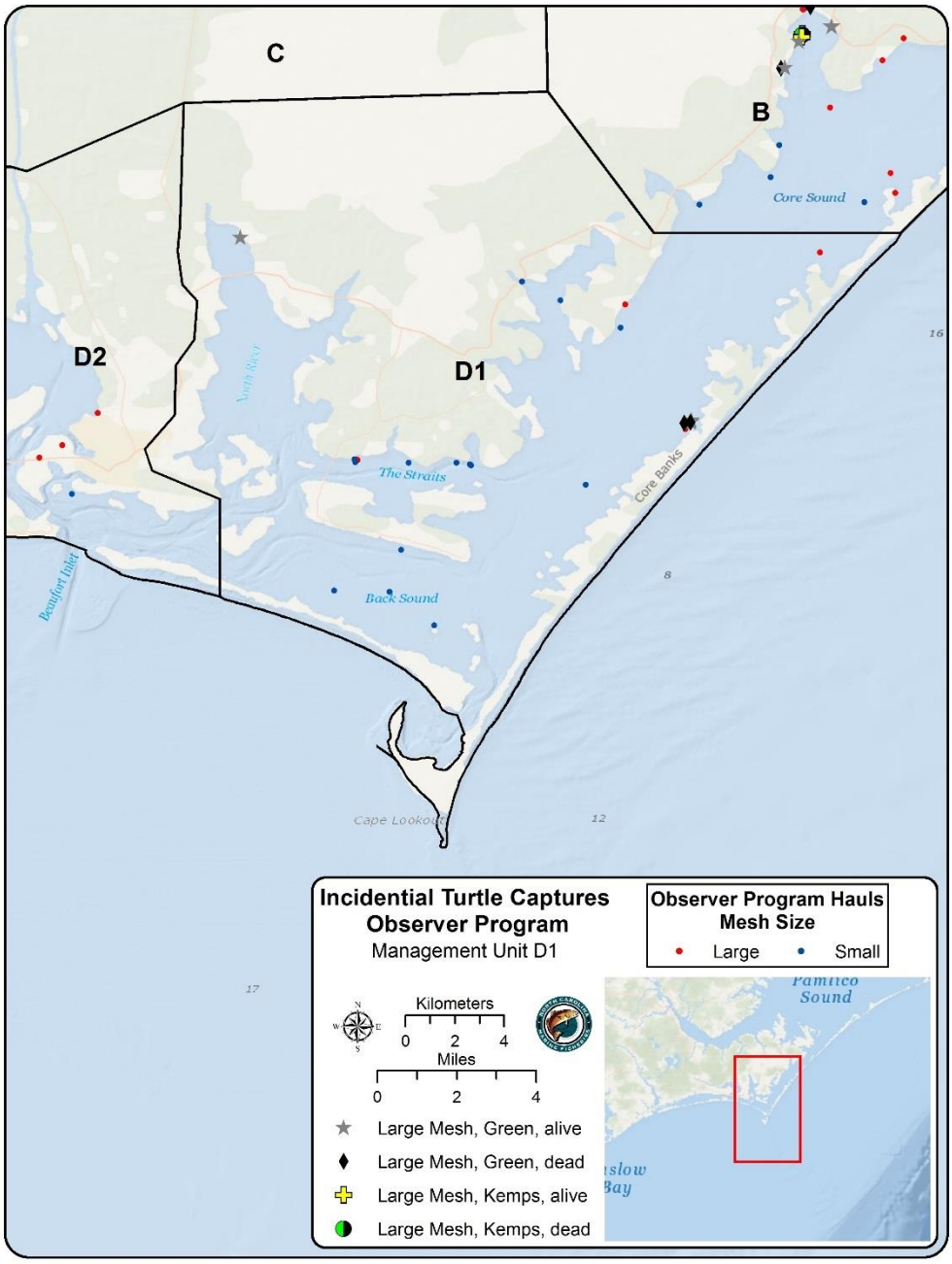


Figure 6. Sea turtle interaction locations by species, disposition, and gear and observer trips by gear in Management Unit D1 for ITP Year 2018 (September 1, 2017–August 31, 2018).

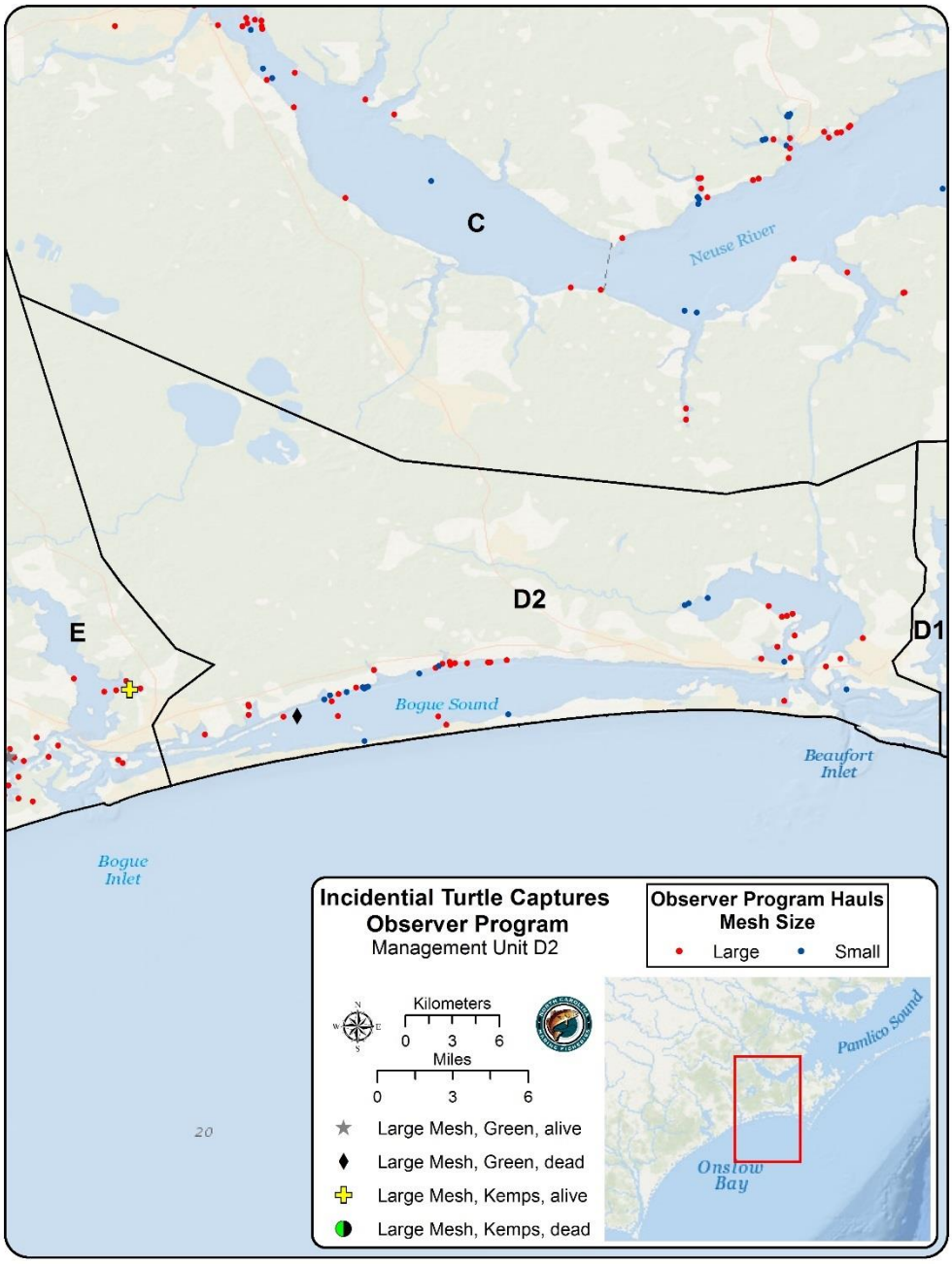


Figure 7. Sea turtle interaction locations by species, disposition, and gear and observer trips by gear in Management Unit D2 for ITP Year 2018 (September 1, 2017–August 31, 2018).

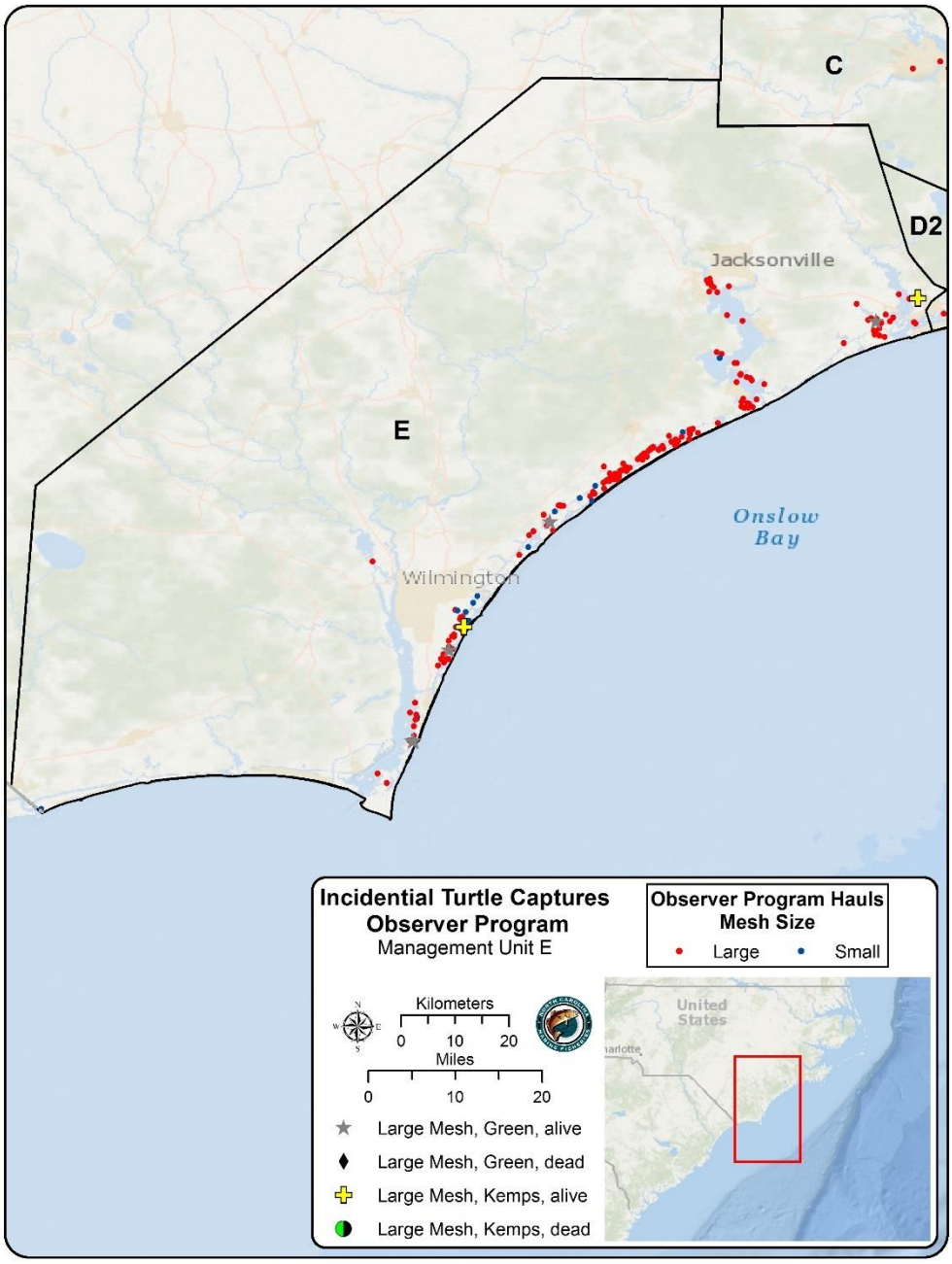


Figure 8. Sea turtle interaction locations by species, disposition, and gear and observer trips by gear in Management Unit E for ITP Year 2018 (September 1, 2017–August 31, 2018).

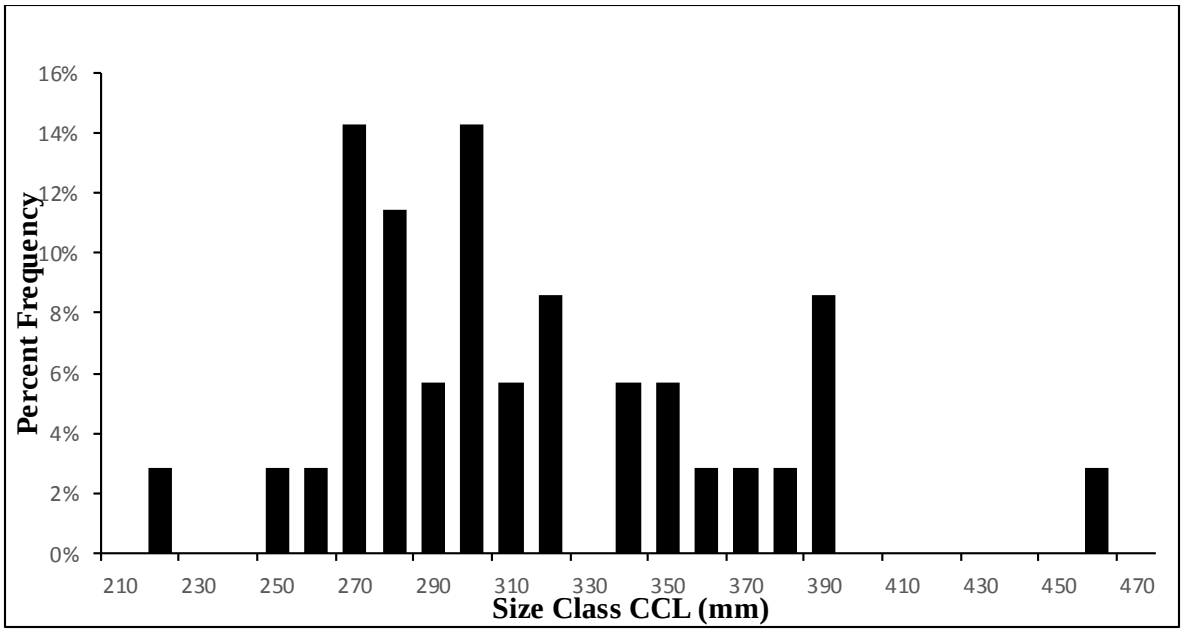


Figure 9. Length-frequency (curved carapace length) from notch to tip of observed incidental captures of green sea turtles where measurements were obtained (n = 35) collected by the Observer Program from onboard and alternative platform observations for ITP Year 2018 (September 1, 2017–August 31, 2018).

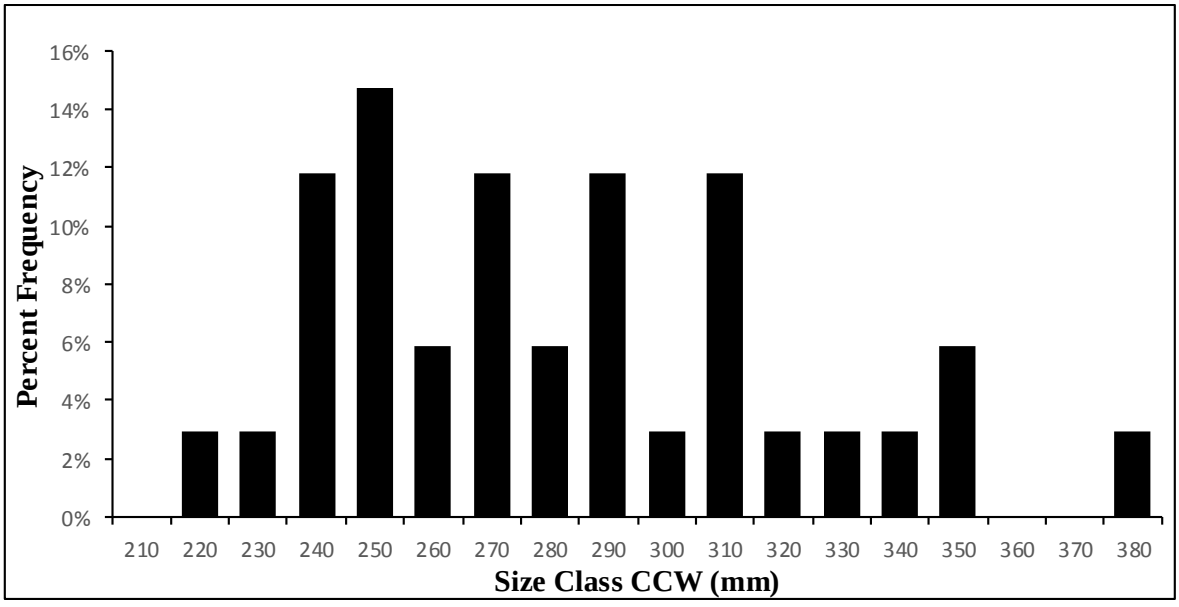


Figure 10. Length-frequency (curved carapace width) of observed incidental captures of green sea turtles where measurements were obtained (n = 34) collected by the Observer Program from onboard and alternative platform observations for ITP Year 2018 (September 1, 2017–August 31, 2018).

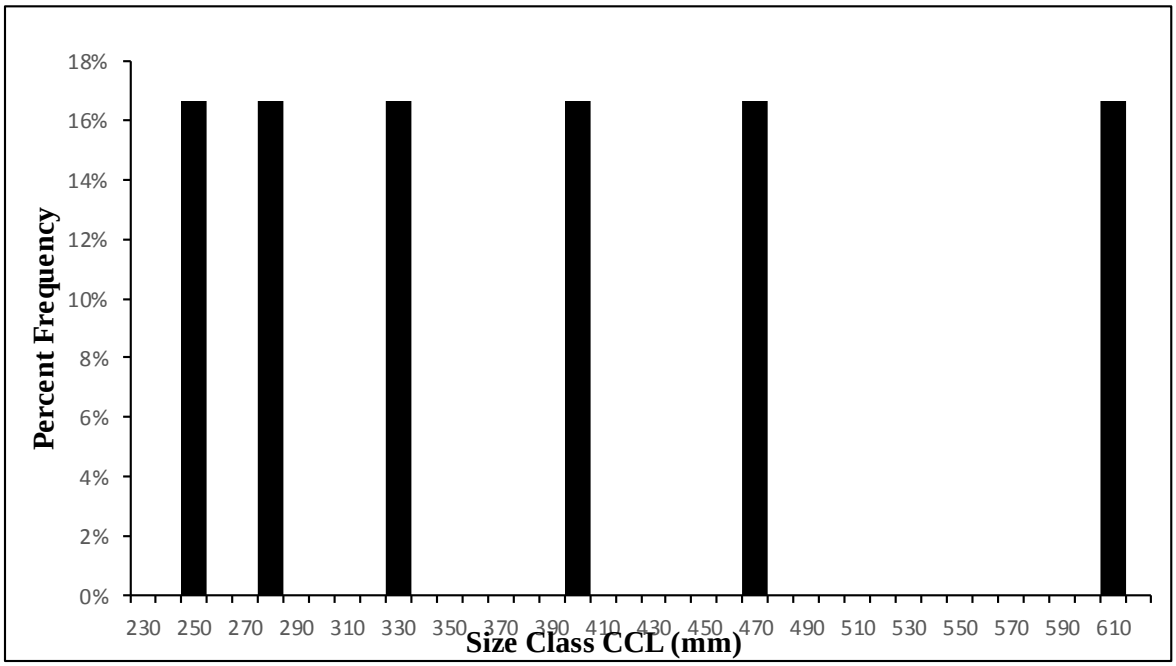


Figure 11. Length-frequency (curved carapace length) from notch to tip of observed incidental captures of Kemp's ridley sea turtles where measurements were obtained (n = 6) collected by the Observer Program from onboard and alternative platform observations for ITP Year 2018 (September 1, 2017–August 31, 2018).

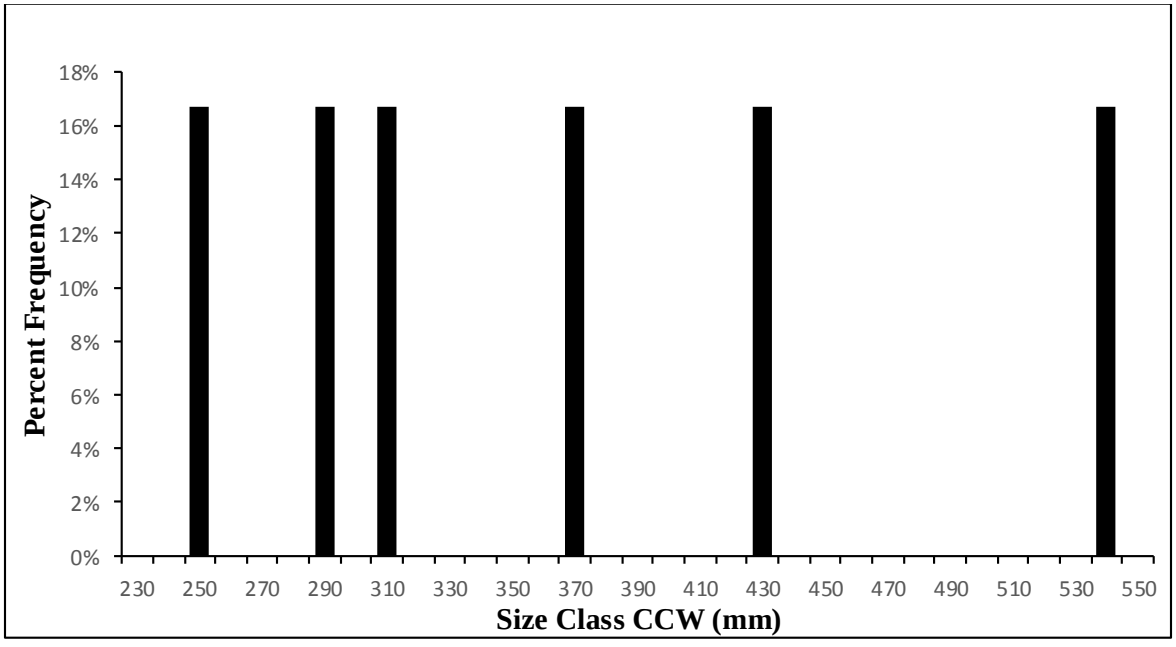
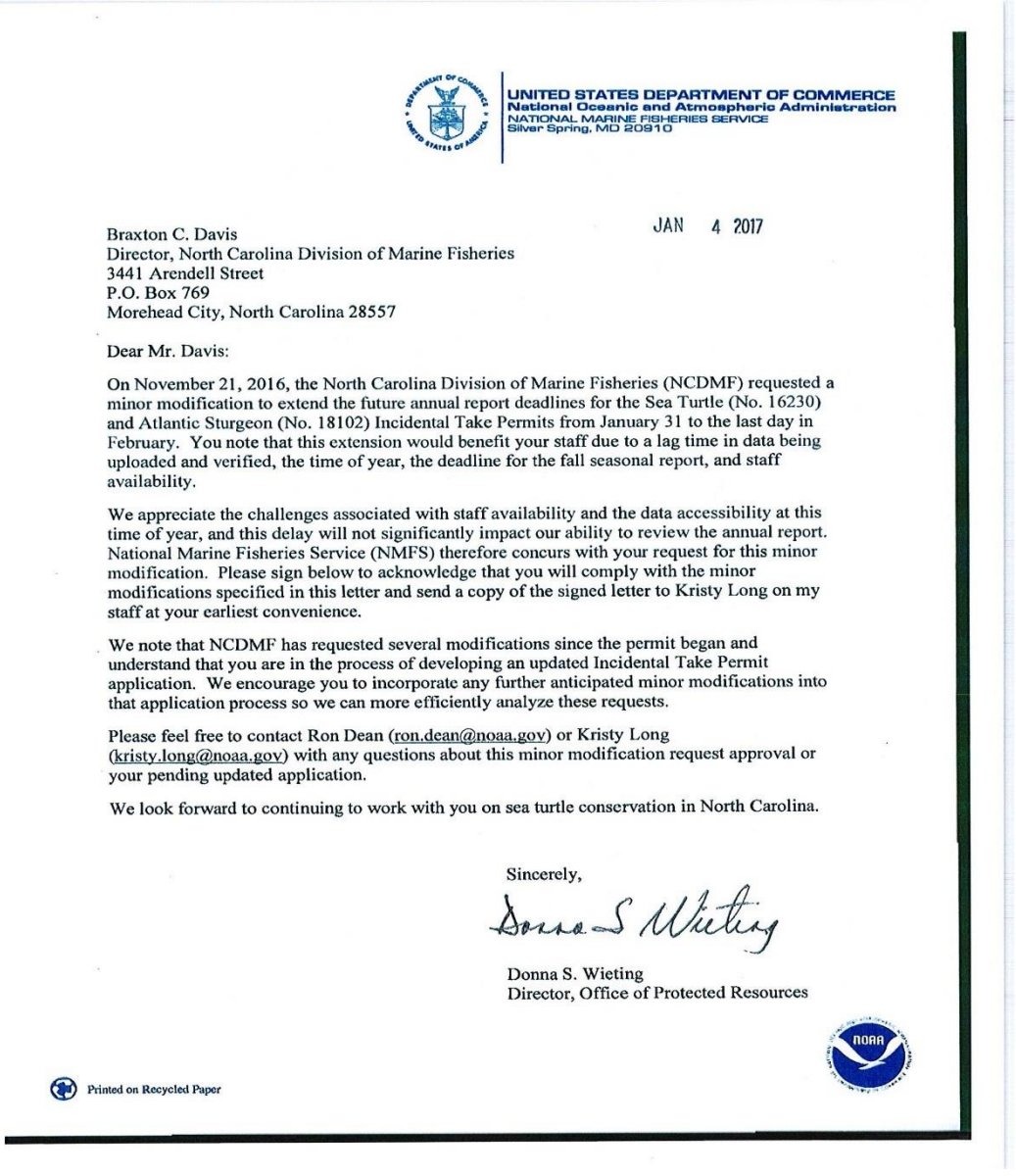


Figure 12. Length-frequency (curved carapace width) from notch to tip of observed incidental captures of Kemp's ridley sea turtles where measurements were obtained (n = 6) collected by the Observer Program from onboard and alternative platform observations for ITP Year 2018 (September 1, 2017–August 31, 2018).

8 APPENDIX A



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Silver Spring, MD 20910

JAN 4 2017

Braxton C. Davis
Director, North Carolina Division of Marine Fisheries
3441 Arendell Street
P.O. Box 769
Morehead City, North Carolina 28557

Dear Mr. Davis:

On November 21, 2016, the North Carolina Division of Marine Fisheries (NCDMF) requested a minor modification to extend the future annual report deadlines for the Sea Turtle (No. 16230) and Atlantic Sturgeon (No. 18102) Incidental Take Permits from January 31 to the last day in February. You note that this extension would benefit your staff due to a lag time in data being uploaded and verified, the time of year, the deadline for the fall seasonal report, and staff availability.

We appreciate the challenges associated with staff availability and the data accessibility at this time of year, and this delay will not significantly impact our ability to review the annual report. National Marine Fisheries Service (NMFS) therefore concurs with your request for this minor modification. Please sign below to acknowledge that you will comply with the minor modifications specified in this letter and send a copy of the signed letter to Kristy Long on my staff at your earliest convenience.

We note that NCDMF has requested several modifications since the permit began and understand that you are in the process of developing an updated Incidental Take Permit application. We encourage you to incorporate any further anticipated minor modifications into that application process so we can more efficiently analyze these requests.

Please feel free to contact Ron Dean (ron.dean@noaa.gov) or Kristy Long (kristy.long@noaa.gov) with any questions about this minor modification request approval or your pending updated application.

We look forward to continuing to work with you on sea turtle conservation in North Carolina.

Sincerely,

Donna S. Wieting

Donna S. Wieting
Director, Office of Protected Resources

Printed on Recycled Paper

I acknowledge the minor modification specified above to Permit No. 16230 issued under Section 10 (a)(l)(B) of the Endangered Species Act to incidentally take threatened and endangered sea turtles in gillnet fisheries operating in inshore waters of North Carolina.

Braxton C. Davis
Director
N.C. Division of Marine Fisheries

1-5-17
Date

9 APPENDIX B

ROY COOPER
Governor
MICHAEL S. REGAN
Secretary
STEPHEN W. MURPHEY
Director

Kristy Long
Office of Protected Resources (F/PR)
National Marine Fisheries Service
1315 East-West Highway
Silver Spring, MD 20910

Dear Kristy:

The North Carolina Division of Marine Fisheries (NCDMF) Observer Program data have been updated using the finalized 2017 Trip Ticket Program (TTP) data. The Annual Completion Report for the Sea Turtle Incidental Take Permit (ITP) No. 16230 was completed for ITP Year 2017 and submitted in February 2018. Using the finalized 2017 data, Tables 1, 5, 8, and 9 from the Completion Report were updated to reflect the final estimates of observer coverage and sea turtle takes (Tables 1 - 4). In past Annual Completion Reports the data used for the fall season was based on finalized TTP data that had been generated by the NCDMF before drafting the annual report. Due to a clerical error, the wrong information was transcribed to the tables that were supposed to contain finalized fall 2016 TTP data for both large and small mesh anchored gill net gear. Corrections have been made and are reflected in the update below. In addition, some of the observed trip numbers in Tables 1 and 2 changed due to data corrections since the Annual Completion Report was submitted.

Anchored Large Mesh

The Observer Program recorded an overall coverage of 11.1% for the fall 2016 season of the anchored large mesh gill net fishery, meeting minimum coverage requirements (7.0%) in all management units based on finalized 2016 TTP data (Table 1). Using the proper finalized data, anchored large mesh gill net trip numbers decreased in management units A and D1, and increased in management units B, C, D2, and E (Table 1). As stated above, minimum coverage requirements were met in all management units despite the annual report having incorrect data for the fall 2016 anchored large mesh gill net fishery. Coverage increased in management units A (12.1%) and D1 (68.2%) when the proper data was used to populate tables (Table 1). Coverage percentages dropped in management units B (11.3%), C (7.7%), D2 (8.0%), and E (11.1%) when the correct information was applied to data table (Table 1).

The spring 2017 season had a higher number of fishing trips for anchored large mesh gill nets than previously estimated in management units C and D2 (Table 1). Anchored large mesh gill net fishing trip numbers decreased from previous estimates in management units A, D1, and E (Table 1). Management unit B was closed to anchored large mesh gill nets and therefore experienced no change in trips. Observer coverage goals for anchored large mesh gill nets were met in all management units except management unit D1 for the spring 2017 season. No trips

were obtained in management unit D1 during the spring 2017 season due to the management unit being closed for the latter portion of the spring 2017 season and minimal fishing effort (n = 2 fishing trips) while open (Table 1).

The summer 2017 season saw an increase in fishing trips compared with previously estimated trip numbers for anchored large mesh gill nets in management units B, D2, and E (Table 1). Management units A and C experienced a decrease in trips compared to estimates, while management unit D1 was closed and therefore remained constant (management unit D1 is closed annually from May 8 through October 14 as described in the ITP) (Table 1). Observer coverage goals for anchored large mesh gill nets were met in all management units except management unit A for the summer 2017 season.

Anchored Small Mesh

The Observer Program recorded an overall coverage of 4.3% for the fall 2016 season of the anchored small mesh gill net fishery, meeting minimum coverage requirements (1.0%) in all management units except management unit A, based on finalized 2016 TTP data (Table 2). Using the proper finalized data, anchored small mesh gill net trip numbers decreased in management units A, B, D1, and E, while trip numbers increased in management units C and D2 (Table 2). As stated above, minimum coverage requirements were met in all management units except management unit A, despite the annual report having incorrect data for the fall 2016 anchored small mesh gill net fishery. Coverage increased in management units B (2.2%), D1 (22.5%), D2 (7.5%), and E (6.7%) when the proper data was used to populate tables (Table 1). Coverage percentages dropped in management unit C (3.6%) when the correct information was applied to data table (Table 2). Coverage percentage in management unit A remained unchanged (Table 2).

The spring 2017 season showed more fishing trips for anchored small mesh gill nets than previously estimated in management units B, C, and D2 (Table 2). Management units A, D1, and E all had less anchored small mesh gill net trips than originally estimated. Observer coverage goals for anchored small mesh gill nets were met in all management units except for management unit D2 for the spring 2017 season (Table 2).

The summer 2017 season showed more fishing trips for anchored small mesh gill nets than the annual reports estimate in management unit D1 (Table 2). Management units A, B, C, D2, and E all had less anchored small mesh gill net trips than originally estimated (Table 2). Observer coverage goals for anchored small mesh gill nets were met in all management units except management unit D1. While observer coverage goals were not met in management unit D1, they were far exceeded in management units A (4.0%), C (7.7%), and D2 (8.5%), for anchored small mesh gill nets (Table 2).

Sea Turtle Takes

Annual estimated allowable sea turtle takes were recalculated using the finalized 2017 TTP data (Tables 3 and 4). The estimates of sea turtle takes increased for alive and dead green sea turtles and increased for alive Kemp's ridley sea turtles. The anchored large mesh gill net fishery remained below the annual estimated allowable sea turtle takes for all species and dispositions

for ITP Year 2017 (Tables 3 and 4). Confidence intervals for take estimates were not updated due to staffing limitations.

Table 1. Observer coverage calculated from finalized 2017 Trip Ticket data and observer data for anchored large mesh gill nets by season and management unit through the NCDMF Observer Program for ITP Year 2017 (September 1, 2016 - August 31, 2017).

			Large Mesh	
Season	Management Unit	Fishing Trips	Observed Trips	Coverage
Fall 2016	A	1,446	175	12.1
	B	1,156	131	11.3
	C	480	37	7.7
	D1	22	15	68.2
	D2	424	34	8.0
	E	769	85	11.1
Spring 2017	A	1,549	167	10.8
	B	n/a	n/a	n/a
	C	1,024	92	9.0
	D1	2	0	0.0
	D2	119	11	9.2
	E	259	56	21.6
Summer 2017	A	1,018	65	6.4
	B	1,464	129	8.8
	C	380	28	7.4
	D1	n/a	n/a	n/a
	D2	255	22	8.6
	E	643	113	17.6
Total		11,010	1,160	10.5

Table 2. Observer coverage calculated from finalized 2017 Trip Ticket data and observer data for anchored small mesh gill nets by season and management unit through the NCDMF Observer Program for ITP Year 2017 (September 1, 2016 - August 31, 2017).

Season	Management Unit	Fishing Trips	Small Mesh	
			Observed Trips	Coverage
Fall 2016	A	147	0	0.0
	B	819	18	2.2
	C	222	8	3.6
	D1	40	9	22.5
	D2	241	18	7.5
	E	420	28	6.7
Spring 2017	A	572	10	1.7
	B	1,517	21	1.4
	C	327	16	4.9
	D1	34	8	23.5
	D2	49	0	0.0
	E	141	14	9.9
Summer 2017	A	101	4	4.0
	B	674	10	1.5
	C	130	10	7.7
	D1	14	0	0.0
	D2	47	4	8.5
	E	203	4	2.0
Total		5,698	182	3.2

Table 3. Authorized and actual annual estimated takes with confidence intervals (95%) using a bootstrap method based on observer data for coverage and sea turtle interaction levels in large mesh (≥4 inch stretched mesh) gill nets for ITP Year 2017 (September 1, 2016 - August 31, 2017).

	Management Unit											
	B				D1							
	Estimated Takes				Estimated Takes				Total			
	Authorized		Actual		Authorized		Actual		Authorized		Actual	
Species	Alive	Dead	Alive	Dead	Alive	Dead	Alive	Dead	Alive	Dead	Alive	Dead
Green	225	112	207	42	9	5	1	1	234	117	208	43
Kemp's ridley	53	26	36	0	15	7	0	0	68	33	36	0
Total	278	138	243	42	24	12	1	1	302	150	244	43

	Management Unit											
	D2				E							
	Estimated Takes				Estimated Takes				Total			
	Authorized		Actual		Authorized		Actual		Authorized		Actual	
Species	Alive	Dead	Alive	Dead	Alive	Dead	Alive	Dead	Alive	Dead	Alive	Dead
Green	n/a [1]	n/a [1]	n/a [1]	n/a [1]	96	48	6	18	96	48	6	18
Kemp's ridley	6	3	0	0	24	13	16	0	30	16	16	0
Total	6	3	0	0	120	61	22	18	126	64	22	18

[1] Insufficient observer data exist to model an estimated annual take level; therefore, for management unit D2, an annual observed take number has been identified for green turtles, and is found in Table 2

Table 4. Total annual authorized and actual takes (estimated and observed) by species and condition for ITP Year 2017 (September 1, 2016 - August 31, 2017).

	Observed (live/dead)		Estimated			
			Authorized		Actual	
Species	Authorized	Actual	Alive	Dead	Alive	Dead
Green	18	5	330	165	214	61
Hawksbill	8	0	n/a[1]	n/a[1]	n/a[1]	n/a[1]
Kemp's ridley	12	2	98	49	52	0
Leatherback	8	0	n/a[1]	n/a[1]	n/a[1]	n/a[1]
Loggerhead	24	1	n/a[1]	n/a[1]	n/a[1]	n/a[1]
Any Species	8	0	n/a[1]	n/a[1]	n/a[1]	n/a[1]
Total	78	8	428	214	266	61

[1] Insufficient observer data exist to model an estimated annual take level; therefore, takes are expressed as observed

Sincerely,

John McConnaughey, Conservation Biologist I
Division of Marine Fisheries, NCDEQ

cc: Chris Batsavage
Steve Murphey
Dee Lupton
Brooke Wheatley

Nothing Compares
State of North Carolina | Division of Marine Fisheries
3441 Arendell Street | P.O. Box 769 | Morehead City, North Carolina 28557
252-726-7021

10 APPENDIX C

Marine Mammal

INCIDENTAL CAPTURE REPORT

OBSERVER'S NAME (ID): Trent Kennedy/Josh Paylor DATE: yyyymmdd 2017 1108 TIME: hh:mm 08:00 AM

UNIQUE TRIP ID: HAUL #: 1 AFFILIATION: NCDMF PHONE NUMBER: (252) 808-8088

WATERBODY: Core Sound MANAGEMENT UNIT: D1 COUNTY: Carteret WATER TEMP (°C): 18.0 DEPTH (m): 1.0

SALINITY (PPT): 22 NEARBY LANDMARKS i.e. CHANNEL MARKERS, INLETS: Salters Lump

GEAR: Small NET LENGTH (yds): 100 TOTAL NETS: 7 TOTAL YARDS: 700 SOAK TIME (min): 1220 Mesh (ISM): 3.15

GEAR CODE: 245 MESH DEPTH: 25 TWINE SIZE: 0.52 FLOATS: Yes TIE DOWNS: No LOCATION IN NET: top/middle

LATITUDE (*DD.DDDD*): 34.82442 LONGITUDE(*DD.DDDD*): 76.41840 TAG PRESENT? n/a IF YES, TAG #:

TAG INSERTED? n/a IF YES, TAG #: PHOTOS? No SKIN SAMPLE? No

TOTAL # OF MARINE MAMMALS CAUGHT AT THIS INTERACTION LOCATION: 1 PROGRAM # (466/467): 467

*Marine Mammal #	SPECIES (use codes)	CONDITION (use codes)	**Trauma consistent with gear interaction (yes/no)	DISPOSITION (use codes)	TOTAL LENGTH (cm)	LENGTH ESTIMATE (E) ACTUAL (A)
1	BD	1	YES	2	152	E

EVIDENCE FOR MARINE MAMMAL DEPREDATION? No IF YES, describe in ADDITIONAL COMMENTS on PAGE 2

COMMENTS FOR LIVE RELEASE (describe in ADDITIONAL COMMENTS on PAGE 2 if needed):

(a) Was any gear left on the animal? IF YES, describe how much/where on the animal's body:

(b) Describe animal's behavior upon release: Describe:

(c) Describe nature of any injuries (i.e., blood in water, location of bleeding, how much bleeding, cuts/lacerations on body and where):

(d) Were there other marine mammals present when animal was released? IF YES, list species:

Table definitions and codes

GEAR CODE: 220 - anchored sink gill net; 245 - anchored float gill net
PROGRAM #: 466 - onboard observations; 467 - alternative platform observations

*Marine Mammal # - sequential number assigned to each marine mammal at this interaction location in the order they were encountered (1, 2, 3...). If more marine mammals are caught than boxes provided, use extra sheet as needed

**Trauma consistent with gear interaction - field should be recorded as blank, yes, or no. In-field determination of whether the trauma to the animal was caused by the gear interaction or was previously inflicted upon the animal prior to becoming entangled in net (i.e., boat strike). If no, please write in comments field the type and condition of the trauma present. Detailed comments will help biologists to determine nature of interaction

Species	Condition (condition of marine mammal)	Disposition (final disposition of marine mammal)
BD-Bottlenose Dolphin	0 - Alive	1 - Alive, released
UD-Unknown Dolphin***	1 - Fresh Dead	2 - Dead, released
HP-Harbor Porpoise	2 - Moderately Decomposed	3 - Dead, collected by:_____
S- Seal	3 - Severely Decomposed	
W-Whale	4 - Dried Carcass	
M-Manatee	5 - Skeleton, bones only	
O-Other*		

***Provide information above or on page 2 as to color, size, and other descriptives for animal that could not be identified. See PAGE 2 for dolphin diagram and space for additional marine mammal takes and comments.

Marine Mammal

INCIDENTAL CAPTURE REPORT

Additional takes in set

*Marine Mammal #	SPECIES (use codes)	CONDITION (use codes)	**Trauma consistent with gear interaction (yes/no)	DISPOSITION (use codes)	TOTAL LENGTH (cm)	LENGTH ESTIMATE (E) ACTUAL (A)

TAG PRESENT? | IF YES, TAG #: | TAG INSERTED? | IF YES, TAG #:

PHOTOS? | SKIN SAMPLE? | LATITUDE (*DD.DDDD*): | LONGITUDE (*DD.DDDD*):

*Marine Mammal #	SPECIES (use codes)	CONDITION (use codes)	**Trauma consistent with gear interaction (yes/no)	DISPOSITION (use codes)	TOTAL LENGTH (cm)	LENGTH ESTIMATE (E) ACTUAL (A)

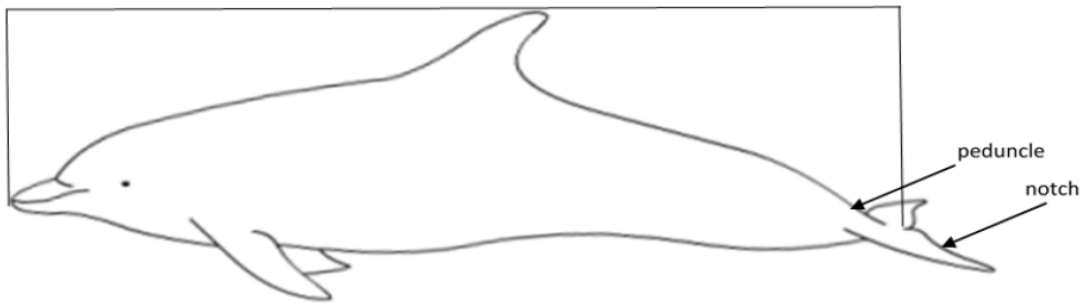
TAG PRESENT? | IF YES, TAG #: | TAG INSERTED? | IF YES, TAG #:

PHOTOS? | SKIN SAMPLE? | LATITUDE (*DD.DDDD*): | LONGITUDE (*DD.DDDD*):

ADDITIONAL COMMENTS **(please include any information not included in the above variables (i.e., injuries, wounds, weather conditions, etc.):**

Observing a fisherman in Core Sound by Salters Lump, we noticed a large object that we originally thought was a shark, 20 yards deep in the gill net. The net was set 20-30 yards from shore set perpendicularly. As the object came closer to the boat we observed features that made it clear it was a bottlenose dolphin. We were approximately 50 feet away in our own vessel. The fisherman used his net reel to get the animal to the front of the boat where it could plainly be seen that is was a bottlenose dolphin entangled around the head and had also been wrapped multiple times. The animal was fully wrapped in the net a few times (top to bottom). The fisherman took approximately two mins to untangle the dolphin from the net. While the fisherman was untangling the dolphin, we spoke loudly to the fisherman to let us get the animal but he did not hear us. We called our supervisor to seek advice and inform him of the situation. As soon as the dolphin was free it sank out of sight. We finished observing the fisherman then we came back to the location and looked for the dolphin in the shallow water around the area but were unable to recover it.

Figure 1: Total length measured from tip of the rostrum to the notch in the flukes (centimeters)



11 APPENDIX D

NORTH CAROLINA MARINE FISHERIES COMMISSION
DEPARTMENT OF ENVIRONMENTAL QUALITY

Aug. 25, 2016

Mr. Bob Lorenz
P.O. Box 10512
Wilmington, NC 28404

Dear Bob:

I wanted to let you know at last week's Marine Fisheries Commission meeting I announced the Sea Turtle Advisory Committee was being disbanded. I wanted to contact you directly and let you know I had taken this action and the reason why.

The commission has a multitude of committees, many of which are statutorily mandated, such as the Northern and Southern regional advisory committees and the Finfish, Shellfish/Crustacean and Habitat and Water Quality advisory committees. These committees require a great deal of attention, both in staff time and in resources. In looking for efficiencies in our committee system, I felt our regional and pertinent standing advisory committees could serve as venues to review and provide the needed input on sea turtle issues. So, after much consideration, I decided to disband the Sea Turtle Advisory Committee, because it is not statutorily required. This was a difficult decision, especially since I served on the Sea Turtle Advisory Committee prior to being appointed to the Marine Fisheries Commission.

Later this fall we will be doing our annual solicitation for advisers. If any of you are interested in serving on other committees, please let me know and I will make every effort to place you on one of these committees as openings become available.

In closing, please know how much I appreciate your dedication and service to the state. I encourage you to please stay involved in fisheries issues and I hope to see you or hear from you in the future.

Sincerely,

Sammy Corbett, Chairman
N.C. Marine Fisheries Commission

cc: Chris Batsavage, Division of Marine Fisheries

ROY COOPER
Governor
MICHAEL S. REGAN
Secretary
STEPHEN W. MURPHEY
Director

Kristy Long
Office of Protected Resources (F/PR)
National Marine Fisheries Service
1315 East-West Highway
Silver Spring, MD 20910

Dear Kristy:

The North Carolina Division of Marine Fisheries (NCDMF) Observer Program data have been updated using the finalized 2018 Trip Ticket Program (TTP) data. The Annual Completion Report for the Sea Turtle Incidental Take Permit (ITP) No. 16230 was completed for ITP Year 2018 and submitted in February 2019. Using the finalized 2018 data, Tables 1, 5, 8, and 9 from the Completion Report were updated to reflect the final estimates of observer coverage and sea turtle takes (Tables 1 - 4). The fall 2017 season was based on finalized 2017 TTP data and did not deviate from the previous report for both anchored large and small mesh gill nets (Tables 1 and 2).

Anchored Large Mesh

The spring 2018 season had a higher number of fishing trips for anchored large mesh gill nets than previously estimated in management units C and E (Table 1). Anchored large mesh gill net fishing trip numbers decreased from previous estimates in management unit A (Table 1). Management unit B was closed to anchored large mesh gill nets and therefore experienced no change in trips. Observer coverage goals for anchored large mesh gill nets were met in all management units except management units B and C for the spring 2018 season. No trips were obtained in management unit D1 during the spring 2018 season due to the management unit being closed for the spring 2018 season (Table 1).

The summer 2017 season saw an increase in fishing trips compared with previously estimated trip numbers for anchored large mesh gill nets in all management units (Table 1). All Management units experienced an increase in trips compared to annual report estimates. Management unit B was closed for the entire summer 2018 season but did have reported trips from trip ticket data. This could be attributed to reporting errors in the trip ticket data and is being investigated further. Management unit D1 was closed for the entire summer 2018 season but did have one recorded observation on an illegally set gill net. Management unit D1 is closed annually from May 8 through October 14 as described in the ITP (Table 1). Observer coverage goals for anchored large mesh gill nets were met in all open management units except management unit C for the summer 2018 season.

State of North Carolina | Division of Marine Fisheries
3441 Arendell Street | P.O. Box 769 | Morehead City, North Carolina 28557
252-726-7021

Anchored Small Mesh

The spring 2018 season showed more fishing trips for anchored small mesh gill nets than previously estimated in management units C and D1 (Table 2). Management unit B had less anchored small mesh gill net trips than originally estimated. Observer coverage goals for anchored small mesh gill nets were met in all management units except for management unit D2 for the spring 2018 season (Table 2).

The summer 2018 season showed more fishing trips for anchored small mesh gill nets than the annual reports estimate in management units A, C, and D1 (Table 2). Management units D, and E had less anchored small mesh gill net trips than originally estimated (Table 2). Observer coverage goals for anchored small mesh gill nets were not met in all management units except management unit D2 (Table 2).

Sea Turtle Takes

Annual estimated allowable sea turtle takes were recalculated using the finalized 2018 TTP data (Tables 3 and 4). The estimates of sea turtle take increased for alive and dead green sea turtles in management unit B. The estimates of seat turtle take decreased for alive and dead Kemp's ridley sea turtles in management unit B. Sea turtle take estimates decreased for live green sea turtles in management unit D1. Management unit E showed an increase in live green and Kemp's ridley sea turtles take estimates after data was update with finalized trip ticket data. The anchored large mesh gill net fishery remained below the annual estimated allowable sea turtle takes for all species and dispositions for ITP Year 2017 (Tables 3 and 4).

Table 1. Observer coverage calculated from finalized 2018 Trip Ticket data and observer data for anchored large mesh gill nets by season and management unit through the NCDMF Observer Program for ITP Year 2018 (September 1, 2017 - August 31, 2018).

Season	Management Unit	Large Mesh		
		Fishing Trips	Observed Trips	Coverage
Fall 2017	A	1,936	135	7.0
	B	1,496	126	8.4
	C	988	75	7.6
	D1	23	9	39.1
	D2	531	29	5.5
	E	828	103	12.4
Spring 2018	A	1,193	154	12.9
	B	327	11	3.4
	C	879	59	6.7
	D1	N/A	N/A	N/A
	D2	38	8	21.1
	E	319	44	13.8
Summer 2018	A	628	55	8.8
	B	57	1	1.8
	C	780	28	3.6
	D1	1	0	0.0
	D2	354	22	6.2
	E	940	113	12.0
Total		11,318	972	8.6

Table 2. Observer coverage calculated from finalized 2018 Trip Ticket data and observer data for anchored small mesh gill nets by season and management unit through the NCDMF Observer Program for ITP Year 2018 (September 1, 2017 - August 31, 2018).

		Small Mesh		
Season	Management Unit	Fishing Trips	Observed Trips	Coverage
Fall 2017	A	193	3	1.6
	B	810	7	0.9
	C	162	5	3.1
	D1	59	8	13.6
	D2	249	13	5.2
	E	561	10	1.8
Spring 2018	A	641	11	1.7
	B	1,204	29	2.4
	C	227	5	2.2
	D1	45	5	11.1
	D2	20	0	0.0
	E	89	2	2.2
Summer 2018	A	367	2	0.5
	B	679	1	0.1
	C	69	0	0.0
	D1	6	0	0.0
	D2	30	1	3.3
	E	265	1	0.4
Total		5,676	103	1.8

Table 3. Authorized and actual annual estimated takes with confidence intervals (95%) using a bootstrap method based on observer data for coverage and sea turtle interaction levels in anchored large mesh (≥4 inch stretched mesh) gill nets for ITP Year 2018 (September 1, 2017 - August 31, 2018).

	Management Unit											
	B				D1							
	Estimated Takes				Estimated Takes				Total			
	Authorized		Actual		Authorized		Actual		Authorized		Actual	
Species	Alive	Dead	Alive	Dead	Alive	Dead	Alive	Dead	Alive	Dead	Alive	Dead
Green	225	112	176 (0,132)	50 (33,62)	9	5	10 (0,4)	3	234	117	185	53
Kemp's ridley	53	26	39 (12,121)	13	15	7	0	0	68	33	38	0
Total	278	138	215	63	24	12	10	3	302	150	223	53

	Management Unit											
	D2				E							
	Estimated Takes				Estimated Takes				Total			
	Authorized		Actual		Authorized		Actual		Authorized		Actual	
Species	Alive	Dead	Alive	Dead	Alive	Dead	Alive	Dead	Alive	Dead	Alive	Dead
Green	n/a [1]	n/a [1]	n/a [1]	n/a [1]	96	48	38 (7,136)	0	96	48	38	0
Kemp's ridley	6	3	0	0	24	13	21 (0,26)	0	30	16	21	0
Total	6	3	0	0	120	61	59	0	126	64	59	0

[1] Insufficient observer data exist to model an estimated annual take level; therefore, for management unit D2, an annual observed take number has been identified for green turtles

Table 4. Total annual authorized and actual takes (estimated and observed) by species and condition for ITP Year 2018 (September 1, 2017 - August 31, 2018).

			Estimated			
	Observed (live/dead)		Authorized		Actual	
Species	Authorized	Actual	Alive	Dead	Alive	Dead
Green	18	2	330	165	224	53
Hawksbill	8	0	n/a[1]	n/a[1]	n/a[1]	n/a[1]
Kemp's ridley	12	1	98	49	60	13
Leatherback	8	0	n/a[1]	n/a[1]	n/a[1]	n/a[1]
Loggerhead	24	0	n/a[1]	n/a[1]	n/a[1]	n/a[1]
Any Species	8	0	n/a[1]	n/a[1]	n/a[1]	n/a[1]
Total	78	3	428	214	284	66

[1] Insufficient observer data exist to model an estimated annual take level; therefore, takes are expressed as observed

Sincerely,

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