Annual Sea Turtle Interaction Monitoring of the Gill-Net Fisheries in North Carolina for Incidental Take Permit Year 2014

Annual Completion Report for Activities under Endangered Species Act
Section 10 Incidental Take Permit No. 1630

Jacob Boyd

North Carolina Department of Environment and Natural Resources
North Carolina Division of Marine Fisheries
Fisheries Management Section
3441 Arendell Street
Morehead City, NC 28557

January 2015

TABLE OF CONTENTS

List of Tables 3
List of Figures 4
Background 5
Methods 7
Observer Activity 7
Seasons 8
Authorized Takes 9
Compliance 9
Results 10
Observer Activity 10
Fall 2013 10
Spring 2014 10
Summer 2014 11
Authorized Takes 11
Compliance 12
Discussion 13
Management History 13
Observer Activity 15
Compliance 15
Estuarine Gill Net Permit 16
Literature Cited 17
TABLES 20
FIGURES 29

LIST OF TABLES

Table 1. Authorized annual estimated takes in large mesh (≥4 inch stretched mesh-ISM) gill nets by management unit for ITP year 2014 (September 1, 2013 - August 31, 2014). 20

Table 2. Authorized annual observed takes (live and dead combined) in large mesh (≥4 inch stretched mesh-ISM) gill nets by management unit for ITP year 2014 (September 1, 2013 - August 31, 2014). 21

Table 3. Authorized annual observed takes in small mesh (<4 inch stretched mesh-ISM) gill nets by management unit for ITP year 2014 (September 1, 2013 - August 31, 2014). 21

Table 4. Authorized annual observed takes (live and dead combined) in large mesh (≥4 inch stretched mesh-ISM) and small mesh (<4 inch stretched mesh-ISM) gill nets for management units A and C combined for ITP year 2014 (September 1, 2013 - August 31, 2014). 22

Table 5. Total annual authorized takes (estimated and observed) by species and condition for ITP year 2014 (September 1, 2013 - August 31, 2014).....22

Table 6. Categories and descriptions for the Observer Program's call logs used for analysis. .23

Table 7. Summary of observed sea turtle interactions (n = 17) in large and small mesh gill nets for the 2014 ITP year (September 1, 2013 – August 31, 2014). 24

Table 8 Observer coverage calculated from the previous year's trip ticket data and observer data from each season (spring, summer, and fall) for ITP year 2014 (September 1, 2013 - August 31, 2014) by management unit for large mesh gill nets. 25

Table 9. Observer coverage calculated from the previous year's trip ticket data and observer data from each season (spring, summer, and fall) for ITP year 2014 (September 1, 2013 - August 31, 2014) by management unit for small mesh gill nets. 25

Table 10. Summary of cumulative estimated sea turtle interactions through August 2014 by management unit and disposition for large mesh gill nets during ITP year 2014 (September 1, 2013 - August 31, 2014). 26

Table 11. Summary of cumulative sea turtle interactions by management unit and disposition for small mesh gill nets during ITP year 2014 (September 1, 2013 - August 31, 2014). 26

Table 12. Estimated confidence intervals (95%) for estimated takes using a bootstrap method based on observer data for coverage and sea turtle interaction levels by management unit and season for ITP year 2014 (September 1, 2013 - August 31, 2014).....27

Table 13. Number of gill-net checks made and citations issued by Marine Patrol for large and small mesh gill nets by season during ITP year 2014 (September 1, 2013 - August 31, 2014). 27

Table 14. The percentage of calls made (n = 2,408) by the observers trying to set up trips by season categorized by call type (0-9) as defined in Table 6 for ITP year 2014 (September 1, 2013 - August 31, 2014). 28

LIST OF 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 2014 (September 1, 2013 – August 31, 2014.....29
Figure 2. Sea turtle interaction locations (n = 17) by species, disposition, and gear for ITP year 2014 (September 1, 2013 – August 31, 2014).....30
Figure 3. Starting and ending locations of observer trips (n = 900) conducted by the Observer Program for ITP year 2014 (September 1, 2013 – August 31, 2014).....31
Figure 4. Length-frequency (curved carapace length) from notch to tip of observed incidental captures of green sea turtles (n = 14) from the North Carolina Division of Marine Fisheries (NCDMF) Observer Program from onboard and alternative platform observations for ITP year 2014 (September 1, 2013 – August 31, 2014). 32

BACKGROUND

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 of 1973 (Public Law 93-205) (ESA) on June 14, 2010 to address sea turtle interactions with set gill nets in NC internal coastal waters. 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 gill-net fisheries. A revised ITP application was submitted on August 17, 2011 based on feedback received from NMFS on May 12, 2011. Feedback on the revised application from NMFS was provided again on May 2, 2012 after public and peer review comments had been compiled. In response to requested changes from NMFS, and considering the public and peer review comments, including the comments made by the NC Sea Turtle Advisory Committee (STAC), NCDMF made extensive revisions to its application and resubmitted it on September 6, 2012. After another round of public and peer review comments 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 NMFS and NCDMF and provided to them beforehand. NMFS recommended that NCDMF update the current ITP application with an appendix containing all the updated information requested.

During the November 14, 2012 teleconference, NMFS suggested breaking down the annual requested takes for Kemp's ridley and loggerhead sea turtles cumulatively similar to the previous ITPs for the Pamlico Sound Gill Net Restricted Area (PSGNRA). 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 NMFS set up a teleconference with NCDMF to go over the revised ITP application that was submitted on January 18, 2013. Information was provided to NMFS to clarify issues they had with the application. On April 22, 2013 NMFS again asked for further clarification on different aspects of the ITP application which NCDMF promptly responded to. At that time NCDMF was informed by NMFS that they hoped to have a draft permit within a month to discuss with NCDMF. On April 30, 2013 staff was called by NMFS for further explanation on the methodologies of the Observer Program. Explanations were provided and NMFS did not have any more questions at the time.

After the last phone call between staff of NCDMF and NMFS, it was decided that another teleconference was in order. On May 20, 2013, the NCDMF had a teleconference with NMFS concerning the ITP application status and to review the Biological Opinion and Environmental Assessment protocols. At this time NMFS raised concerns on the number of observed takes requested in the ITP application. During the last teleconference, NCDMF and NMFS agreed to base allowable takes by area on an annual basis instead of a seasonal basis. As such, the number of requested observed takes was reduced by taking the seasonal component out of the equation. NMFS brought up the idea of having an Implementing Agreement for the Sea Turtle ITP, much like the Implementing Agreement NMFS has suggested for the Atlantic Sturgeon ITP. NCDMF asked NMFS to provide a copy of a draft Implementing Agreement for consideration.

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. NMFS explained that any new information could be provided in another appendix to the existing application.

The NCDMF received the Sea Turtle ITP on September 11, 2013. This ITP authorized the implementation of adaptive management measures to protect threatened and endangered sea turtles and other ESA listed species, while allowing estuarine gill-net fisheries prosecuted by commercial license holders to fish in the internal coastal (estuarine) waters of North Carolina.

METHODS

OBSERVER ACTIVITY

The conservation plan includes managing inshore gill-net fisheries by dividing estuarine waters into 6 management units (A, B, C, D1, D2, and E; Figure 1). Existing observer data from previous years is used when estimating the amount of trips needed for the current year in each management unit and season. Also, real time trip ticket data is used for areas where effort may be increasing. Each year effort can potentially shift from one management unit to another making it important for NCDMF to not base the observer effort solely on previous years' trip ticket data, but also on current effort changes.

Traditional, onboard trips are the preferred method of obtaining observer data and are used most frequently where observers ride aboard fishermen's vessels. For alternative platform trips, observers and Marine Patrol follow the same protocols using NCDMF vessels to observe the fishing trip. Each observer attempts to obtain a minimum of three to four trips per working week. Observers are assigned a management unit to work weekly and the amount of observers assigned to a management unit depends upon the season and fishing effort. Fishing effort is estimated from the previous year's trip ticket data by week and by month and management unit to determine where and how much observer coverage is needed each week and for each management unit by month/season. Reports from observers and other staff are used to determine if effort is fluctuating between management units. Trends from the previous year's trip ticket data are also analyzed to determine if fishing effort is shifting from one management unit to another. Fishermen holding a Standard Commercial Fishing License (SCFL) and landing fish in North Carolina using gill nets in the previous years are pooled by management unit. The contact information is then given to the observer assigned to that area and the observer contacts the fishermen randomly to set up trips from the list of names given. Preliminary trip ticket information is also used when pooling fishermen to contact along with contacting fishermen at fish houses. Observers hand out business cards with their contact information and brochures explaining the Observer Program and giving the fishermen another outlet to allow observers on their vessels. Additionally, the Observer Program utilizes a website (http://portal.ncdenr.org/web/mf/observers-program) to provide outreach to fishermen to obtain trips.

Alternative platform trips are utilized for areas that may be hard to get onboard trips (i.e., fishermen in remote locations that leave from their residence by boat). Alternative platform trips are also utilized in areas where fishing effort may increase quickly or sea turtle abundance is high. Marine Patrol also conducts alternative platform trips weekly in all management units based on the same methodology as the Observer Program. Coordination of onboard, alternative platform, and Marine Patrol alternative platform trips is done daily, monthly, and yearly to avoid sampling bias and to achieve the maximum amount of observer coverage possible for each management unit. Changes in effort, sea turtle abundance, 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 large mesh gill-net (≥4 inches stretched mesh-ISM)

fishing trips and 1% coverage with a goal of 2% of the total small mesh gill-net (<4 ISM) fishing trips per management unit for the spring, summer, and fall seasons.

Each observer is trained to identify, measure, resuscitate, and tag sea turtles by NMFS – Beaufort Lab and NCDMF. 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 (mm) and width (mm) are recorded for each turtle observed. Dead sea turtles are brought to shore when feasible. All live, debilitated sea turtles are brought to shore for examination and treatment. Observers collect data on location, gear parameters, catch, and bycatch for each haul. The landed catch is sampled throughout each trip and total flounder weights (kg) are obtained. Data are coded on NCDMF data sheets and uploaded to NCDMF Biological Database for analysis. All observers are debriefed within 24 hours of each trip to obtain data on flounder 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 (SAS 1989). The bycatch rate (sea turtles caught per fishing trip) estimated from observer data was multiplied by the total fishing trips. 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.

$$\text{Estimated Interactions} = \frac{\text{\# sea turtle interactions observed}}{\text{total gill-net trips observed}} \times \text{total gill-net trips}$$

Seasons

The Observer Program's activities are reported on a weekly, seasonal, and annual basis. Weekly progress reports are required following a week in which a sea turtle interaction occurred and includes information such as take estimates, cumulative totals, and all information on observed takes. The seasonal progress reports include a summary of the weekly reports, any additional management measures taken, compliance, any 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 large and small mesh gill-net hauls and the locations of all interactions, and a description of the mitigation activities, adaptive management actions, and enforcement activities conducted during the ITP year.

AUTHORIZED TAKES

Authorized levels of annual incidental take are specified in Tables 1 - 5. The amount of incidental take is expressed as either estimated or observed takes depending on the amount of data available for modeling predicted takes. Because reaching the estimated or observed level for any category of take 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 large and small mesh gill-net fisheries, and as conditioned herein. The permit covers incidental takes from the date of issuance through August 31, 2023.

COMPLIANCE

NCDMF observers and NCDMF Marine Patrol conduct weekly fish house visits, boat patrols, fisherman spot checks, gear checks, aerial surveys, and continued outreach to the industry for the purpose of ensuring industry compliance and communicating efforts throughout the state.

The Observer Program has various ways to contact fishermen to set up trips. The most common method is by phone due to limited resources, fishermen leaving from their residence, and efficiency. The Observer Program has a call log which is filled out for every phone call that is made when attempting to obtain a trip. Beginning in the spring of 2014 each call was put into a specific category and other information was gathered (Table 6). The phone log was analyzed by month and category to determine what percentage of phone calls resulted in positive observer trips.

RESULTS

OBSERVER ACTIVITY

Fall 2013

The fall season for large and small mesh gill nets in North Carolina is September through November as defined in Incidental Take Permit (ITP) No. 16230. Management unit E closed on July 14, 2013 via proclamation M-20-2-13 and management unit B closed on July 24, 2013 via proclamation M-21-2013 due to sea turtle interactions. Management unit D1 has an annual closure from May 8 through October 14. On September 1, 2013 the federal closure of the Pamlico Sound went into effect and NCDMF released a proclamation (M-23-2013) keeping management units B and E closed until the ITP application was approved. The ITP was approved on September 11, 2013 and NCDMF opened management units B and E to large mesh gill nets on September 30, 2013 via proclamations M-30-2013 and M-31-2013. Proclamation M-33-2013 opened management unit D1 on October 15, 2013 to large mesh gill nets. The flounder commercial harvest season in internal coastal waters closed on December 1, 2013 via proclamation FF-60-2013 (Boyd 2013b).

There were sea turtle interactions observed in large mesh gill nets (n = 16) and in small mesh gill nets (n = 1) for the fall season (Table 7; Figure 2). The species composition was made up of primarily green sea turtles (73.5%; n = 11 alive; n = 4 dead; Table 7; Figure 2). The remaining species consisted of a Kemp's ridley sea turtle (n = 1) and an unknown sea turtle (n = 1) all of which were alive (Table 6; Figure 2). The majority of the interactions (82.3%) occurred in management unit B (Table 7; Figure 2). There was a reported sea turtle interaction (n = 1) during this time period. (Boyd 2013b).

The Observer Program exceeded the 7.0% requirement for coverage within each of the management units for large mesh gill-nets with 358 total trips except in management unit A where coverage averaged 3.5% (Table 8; Figure 3). The Observer Program exceeded the 1.0% requirement for coverage in all management units for small mesh gill-nets with 40 total trips except management unit D2 where no observer trips occurred (Table 9; Figure 3; Boyd 2013b).

Spring 2014

The spring season for large and small mesh gill nets in North Carolina is March through May as defined in Incidental Take Permit (ITP) No. 16230. In April, the NCDMF received a letter from the North Carolina Fisheries Association (NCFA) asking to the NCDMF to close anchored large mesh gill nets statewide May 1, 2014 due to red drum bycatch with some areas exempted starting June 1, 2014. The NCDMF closed large mesh gill nets via proclamation M-16-2014 from May 5, 2014 through May 31, 2014 statewide to give the Marine Fisheries Commission (MFC) time to assess the situation at their May meeting (Boyd 2014a). At the May MFC meeting it was decided to keep large mesh gill-net fishing closed in areas except major

portions in management units A and C and a portion of management unit E in the New River (Proclamation M-21-2014; Figure 1).

There were no observed or reported sea turtle interactions in the spring 2014 season (Boyd 2014a).

The Observer Program averaged 4.0% large mesh gill-net coverage throughout all management units with 133 total trips (Table 8; Figure 3). The coverage was not met for all management units except management unit E due to many factors including a statewide closure in May when fishing effort is typically at its peak for the spring, weather, and compliance. The American shad season was shortened in management unit A in 2014 compared to effort levels from 2013 due to the adoption of the Shad Sustainability Plan. The Observer Program exceeded the 1.0% requirement for coverage in all management units for small mesh gill-nets with 45 total trips (Table 9; Figure 3; Boyd 2014a).

Summer 2014

The summer season for large and small mesh gill nets in North Carolina is June through August as defined in Incidental Take Permit (ITP) No. 16230. The large mesh gill-net closure enacted in the spring season remained in effect throughout the entire summer season (Boyd 2014b).

There were no observed or reported sea turtle interactions in the summer 2014 season (Boyd 2014b).

The Observer Program exceeded the 7.0% requirement for coverage within each of the management units for large mesh gill-nets with 281 total trips except in management unit A where coverage averaged 4.8% (Table 8; Figure 3). Coverage was not met in management unit A due to several factors most prominently being the lack of fishermen compliance. The Observer Program exceeded the 1.0% requirement for coverage in all management units for small mesh gill-nets with 43 total trips except management unit D2 where no observer trips occurred (Table 9; Figure 3; Boyd 2014b).

AUTHORIZED TAKES

There were sea turtle interactions observed in large mesh gill nets (n = 16) and in small mesh gill nets (n = 1) for the fall season (Table 7; Figure 2). The species composition was made up of primarily green sea turtles (73.5%; n = 11 alive; n = 4 dead; Table 7; Figure 2). The remaining species consisted of a Kemp's ridley sea turtle (n = 1) and an unknown sea turtle (n = 1) all of which were alive (Table 6; Figure 2). The majority of the interactions (82.3%) occurred in management unit B (Table 7; Figure 2). There was a reported sea turtle interaction (n = 1) during this time period. (Boyd 2013b).

The size distribution of green sea turtles ranged from a curved carapace length of 230 mm to 342 mm and a curved carapace width of 200 mm to 297 mm (Figure 4).

There were no sea turtle interactions in the spring or summer 2014 seasons. The cumulative total estimated and observed takes for large and small mesh gill nets did not reach the threshold of allowed takes for any management unit for ITP year 2014 (Tables 10 and 11). Confidence intervals (95%) were estimated for management units and species where estimated takes are used using a bootstrap method (Table 12). Estimated confidence-intervals (95%) for live green sea turtles in management unit B (estimated n = 108) were (48 - 214) and for deceased in management unit B (estimated n = 52) were (14 - 139). Estimated confidence-intervals (95%) for deceased green turtles in management unit E (estimated n = 4) were (0 – 12) and for live Kemp's ridley sea turtles in management unit B (estimated n = 15) were (0 – 45; Table 12).

COMPLIANCE

Marine Patrol made 445 gill-net checks for the fall 2013 season (Table 13). Of these 445 gill-net checks, there were eight citations (Table 13). Marine Patrol made 59 gill-net checks for the spring 2014 season (Table 13). Of these 59 gill-net checks, there were no violations (Table 13). Marine Patrol made 194 gill-net checks for the summer 2014 season (Table 13). Of these 194 gill-net checks, there were seven citations issued (Table 13).

In the spring 2014 season phone calls (n = 972) were made with 65.2% being categorized as 1, 2, 3, and 8 which inclusively represents not being able to get in touch with fishermen or fishermen refusing trips (Table 14). In the summer 2014 season phone calls (n = 1,436) were made with 50.0% being categorized as 1, 2, 3, and 8 which inclusively represents not being able to get in touch with fishermen or fishermen refusing trips (Table 14).

DISCUSSION

MANAGEMENT HISTORY

The NCDMF has addressed protected sea turtle issues in the coastal waters since the 1970s. This 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 NCDMF, additional queries on recreational surveys, management of the PSGNRA, formation of the NC STAC, implementation of a large and small mesh gill-net observer program, commercial bycatch reduction gear testing projects, outreach to the fishing industries, and collaboration with the NMFS.

The NCDMF applied and received four ITPs for the PSGNRA from 2000 – 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, 2013a). Between 2000 and 2012, a number of changes were made in the PSGNRA such as: adjustments to allowable fishing areas, modified restrictions (e.g., state closure, net length restriction), and allowable take levels reduced (Gearhart 2003; Price 2010a; Murphey 2011; Boyd 2012a). These adaptations were made feasible as a result 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 2004-2010 (Boyd 2012b; Brown and Price 2005; Price 2007b, Price 2009b, Price 2010b). The information gathered from these direct observations allowed 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 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 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 on the basis of the economic devastation 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 allowed 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 large mesh gill nets would be allowed, 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 particular 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 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 large mesh gill nets; soak times limited to overnight soaks an hour before sunset to an hour after sunrise, Monday evenings through Friday mornings; 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 large mesh gill nets allowed to be used per vessel; and maximum individual net (shot) length of 100 yards with a 25-yard break between shots. Fishermen in the southern portion of the state were allowed to use floats on nets but were restricted to the use of a maximum of 1,000 yards of large mesh gill-net per fishing operation.

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.

OBSERVER ACTIVITY

There was turnover within the Observer Program with positions being filled as quickly as possible to maintain coverage. The Observer Program actively placed observers in areas where fishing effort was high and where known sea turtle interactions occur. During the fall 2013 season during ITP year 2014 there were closures throughout the state due to sea turtle interactions. When a management unit closes for a portion of time the observers are shifted to the open management units to increase coverage in those management units. With ITP year 2014 being the first full statewide ITP year the Observer Program did run into some irregularities. Due to the number of phone calls the observers make and the different types of responses that are gathered from the fishermen, the Observer Program created a new call log for the spring 2014 season which included different categories to place each contact that was made to a fisherman in (Table 6). This was beneficial for analyzing the type of contact that was being made and to see the number of positive observer trips that were obtained through the calling system.

COMPLIANCE

The previous ITPs (PSGNRA) did not require observer coverage in the northern portion of North Carolina (management unit A). Because of this, fishermen were not as familiar with the Observer Program and requirements of the ITP, so more time was needed to educate the industry. Management unit A had compliance issues throughout ITP year 2014. NCDMF discussed the situation with industry leads to improve awareness and increase compliance. NCDMF followed up with NMFS to explain the situation and then NCDMF put in a mandatory overnight soak time on July7 25, 2014 via proclamation M-22-2014 for management unit A to increase observer coverage. While overall compliance improved with these measures, the minimum coverage was still not met.

An issue that was discovered during the summer season was fishermen using large mesh anchored gill nets as if they were strike or runaround nets in closed areas. Once discovered, this situation was dealt with via proclamation M-29-2014 closing the loopholes that allowed this fishery to continue.

Estuarine Gill Net Permit

As per the ITP the NCDMF established a permit to register all fishermen participating in the large and small mesh gill-net fisheries. The ITP's Implementing Agreement states that the NCDMF has two years to implement this permit to serve as a certificate of inclusion for fishermen. However, due to the compliance issues the NCDMF was facing during ITP year 2014, the permit was developed (Estuarine Gill Net Permit-EGNP) and became effective September 1, 2014 (1 year from ITP issuance). This multifaceted permit allows the NCDMF to closely monitor for compliance with the already successful permit system the NCDMF has in place. The EGNP is also used as a tool to improve fishermen compliance by requiring fishermen to allow NCDMF observers aboard their vessels to monitor catches. Failure to comply with this permit provision results in a permit suspension. This results in more effective regulation and better compliance. As of December 16, 2014 there have been 2,368 EGNPs issued.

LITERATURE CITED

Boyd, J.B. 2012a. North Carolina Division of Marine Fisheries Pamlico Sound Gill Net Restricted Area Report for 2011 Section 10 ITP # 1528 (September 19 – November 30, 2011). North Carolina Department of Environment and Natural Resources. North Carolina Division of Marine Fisheries Completion Report for Incidental Take Permit # 1528. 4pp.

Boyd, J.B. 2012b. North Carolina Fishery Observer Response Team. Final Report to the NOAA National Marine Fisheries Service and Atlantic Coastal Cooperative Statistics Program. Grant Award #NA10NMF4740073. North Carolina Department of Environment and Natural Resources. North Carolina Division of Marine Fisheries.

Boyd, J.B. 2013a. North Carolina Division of Marine Fisheries Pamlico Sound Gill Net Restricted Area Report for 2012 Section 10 ITP # 1528 (September 19 – November 30, 2011). North Carolina Department of Environment and Natural Resources. North Carolina Division of Marine Fisheries Completion Report for Incidental Take Permit # 1528. 4pp.

Boyd, J.B. 2013b. North Carolina Division of Marine Fisheries Incidental Take Permit Seasonal Report for Fall 2013 Section 10 ITP # 16230 (September 1 – November 30, 2013). North Carolina Department of Environment and Natural Resources. North Carolina Division of Marine Fisheries Seasonal Report for Incidental Take Permit # 16230. 5pp.

Boyd, J.B. 2014a. North Carolina Division of Marine Fisheries Incidental Take Permit Seasonal Report for Spring 2014 Section 10 ITP # 16230 (March 1 – May 31, 2014). North Carolina Department of Environment and Natural Resources. North Carolina Division of Marine Fisheries Seasonal Report for Incidental Take Permit # 16230. 4pp.

Boyd, J.B. 2014b. North Carolina Division of Marine Fisheries Incidental Take Permit Seasonal Report for Summer 2014 Section 10 ITP # 16230 (June 1 – August 31, 2014). North Carolina Department of Environment and Natural Resources. North Carolina Division of Marine Fisheries Seasonal Report for Incidental Take Permit # 16230. 8pp.

Brown, K.B., and B. Price. 2005. Evaluation of Low Profile Flounder Gill-net in Southeastern Pamlico Sound, North Carolina. Completion Report for NOAA Award No. NA 04 NMF 4740180 Segment 1. North Carolina Department of Environment and Natural Resources. North Carolina Division of Marine Fisheries. 24 p.

ESA 1973. Endangered Species Act, 1973.

Gearhart J. 2001. Sea turtle bycatch monitoring of the 2000 fall flounder gill-net fishery of southeastern Pamlico Sound, North Carolina. Completion Report for ITP 1259. North Carolina Department of Environment and Natural Resources. North Carolina Division of Marine Fisheries. 26pp

Gearhart J. 2002. Sea turtle bycatch monitoring of the 2001 fall flounder gill-net fishery of southeastern Pamlico Sound, North Carolina. Completion Report for ITP 1348. North Carolina Department of Environment and Natural Resources. North Carolina Division of Marine Fisheries. 44pp.

Gearhart J. 2003. Sea turtle bycatch monitoring of the 2002 fall flounder gill-net fishery of southeastern Pamlico Sound, North Carolina. Completion Report for ITP 1398. North Carolina Department of Environment and Natural Resources. North Carolina Division of Marine Fisheries. 39pp.

Murphey, T. 2011. Sea turtle bycatch monitoring of the 2010 fall flounder gill-net fishery of southeastern Pamlico Sound, North Carolina. Completion report for ITP 1528. North Carolina Department of Environment and Natural Resources. North Carolina Division of Marine Fisheries. 4pp.

Price B. 2004. Sea turtle bycatch monitoring of the 2003 fall flounder gill-net fishery of southeastern Pamlico Sound, North Carolina. Completion Report for ITP 1398. North Carolina Department of Environment and Natural Resources. North Carolina Division of Marine Fisheries. 26pp.

Price B. 2005. Sea turtle bycatch monitoring of the 2004 fall flounder gill-net fishery of southeastern Pamlico Sound, North Carolina. Completion report for ITP 1398. North Carolina Department of Environment and Natural Resources. North Carolina Division of Marine Fisheries. 33 pp.

Price B. 2006. Sea turtle bycatch monitoring of the 2005 fall flounder gill-net fishery of southeastern Pamlico Sound, North Carolina. Completion report for ITP 1528. North Carolina Department of Environment and Natural Resources. North Carolina Division of Marine Fisheries. 31 pp.

Price, B. 2007a. Sea turtle bycatch monitoring of the 2006 fall flounder gill-net fishery of southeastern Pamlico Sound, North Carolina. Completion report for ITP 1528. North Carolina Department of Environment and Natural Resources. North Carolina Division of Marine Fisheries. 21 p.

Price, B. 2007b. Estuarine Observer Program in North Carolina. Report to the United States Fish and Wildlife Service. North Carolina Department of Environment and Natural Resources. North Carolina Division of Marine Fisheries.Grant No. F-83-R. 44 p.

Price B. 2008. Sea turtle bycatch monitoring of the 2007 fall flounder gill-net fishery of southeastern Pamlico Sound, North Carolina. Completion report for ITP 1528. North Carolina Department of Environment and Natural Resources. North Carolina Division of Marine Fisheries. 25 pp.

Price, B. 2009a. Sea turtle bycatch monitoring of the 2008 fall flounder gill-net fishery of southeastern Pamlico Sound, North Carolina. Completion report for ITP 1528. North Carolina Department of Environment and Natural Resources. North Carolina Division of Marine Fisheries. 22 p.

Price, B. 2009b. Estuarine Bycatch Assessment in NC Commercial Fisheries. NOAA Award Grant #NA07NMF4740061, under the Atlantic Coastal Cooperative Statistics Program. North Carolina Department of Environment and Natural Resources. North Carolina Division of Marine Fisheries. 19 p.

Price, B. 2010a. Sea turtle bycatch monitoring of the 2009 fall flounder gill-net fishery of southeastern Pamlico Sound, North Carolina. Completion report for ITP 1528. North Carolina Department of Environment and Natural Resources. North Carolina Division of Marine Fisheries. 27pp.

Price, B. 2010b. North Carolina Estuarine Gill-net Biological and Bycatch Assessment. Report to NOAA/NMFS and ACCSP under grant award NA05NMF4741032. North Carolina Department of Environment and Natural Resources. North Carolina Division of Marine Fisheries. 24 p.

SAS 1989. Institute. SAS version 9.1 Cary, NC.

TABLES

Table 1. Authorized annual estimated takes in large mesh (≥4 inch stretched mesh-ISM) gill nets by management unit for ITP year 2014 (September 1, 2013 - August 31, 2014).

	Management Unit									
	B		D1		D2		E		Total	
	Estimated Takes		Estimated Takes		Estimated Takes		Estimated Takes			
Species	Alive	Dead	Alive	Dead	Alive	Dead	Alive	Dead	Alive	Dead
Green	225	112	9	5	n/a[1]	n/a[1]	96	48	330	165
Kemp's ridley	53	26	15	7	6	3	24	13	98	49
Total	278	138	24	12	6	3	120	61	428	214

[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 annual observed takes (live and dead combined) in large mesh (≥4 inch stretched mesh-ISM) gill nets by management unit for ITP year 2014 (September 1, 2013 - August 31, 2014).

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

[1]Sufficient observer data exist to model an estimated annual take level for Kemp's ridley sea turtles in all management units and green sea turtles in all management units except D2. See Table 1 for the authorized annual estimated take level.

Table 3. Authorized annual observed takes in small mesh (<4 inch stretched mesh-ISM) gill nets by management unit for ITP year 2014 (September 1, 2013 - August 31, 2014).

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

Table 4. Authorized annual observed takes (live and dead combined) in large mesh (≥4 inch stretched mesh-ISM) and small mesh (<4 inch stretched mesh-ISM) gill nets for management units A and C combined for ITP year 2014 (September 1, 2013 - August 31, 2014).

	Management Unit		
	A	C	
Species	Observed (live/dead)	Observed (live/dead)	Total
Green, Hawksbill, Kemp's ridley, Leatherback, Loggerhead	4 turtles of any species	4 turtles of any species	8
Total	4	4	8

Table 5. Total annual authorized takes (estimated and observed) by species and condition for ITP year 2014 (September 1, 2013 - August 31, 2014).

		Estimated		
Species	Observed (live/dead)	live	dead	Total
Green	18	330	165	513
Hawksbill	8	n/a[1]	n/a[1]	8
Kemp's ridley	12	98	49	159
Leatherback	8	n/a[1]	n/a[1]	8
Loggerhead	24	n/a[1]	n/a[1]	24
Any Species	8	n/a[1]	n/a[1]	8
Total	78	428	214	720

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

Table 6. Categories and descriptions for the Observer Program's call logs used for analysis.

Categories	Category description
1	Disconnected/Wrong Number
2	No answer no voicemail/Voicemail full
3	No answer left voicemail/Left message
4	Not fishing/Fishing other fishery
5	Not fishing because weather/Environmental
6	Booked trip
7	Not fishing medical
8	Hung up
9	Call back later today/Next week/Next month etc.
0	Other

Table 7. Summary of observed sea turtle interactions (n = 17) in large and small mesh gill nets for the 2014 ITP year (September 1, 2013 – August 31, 2014).

Date	Management Unit	Mesh Size	Latitude	Longitude	Species	Disposition	Tag		Curved Carapace (mm)	
							PIT	Inconel	Length	Width
9/25/2013	C	Large	3505.231	7635.639	Green	Alive	n/a	n/a	290	270
10/2/2013	B	Large	3449.768	7625.274	Green	Alive	n/a	n/a	n/a	n/a
10/3/2013	B	Large	3508.706	7555.816	Green	Alive	4A0A701430	n/a	342	297
10/7/2013	D2	Large	3441.207	7658.277	Green	Alive	4A0A70402D	n/a	320	290
10/8/2013	B	Large	3452.35	7624.344	Unknown	Alive	n/a	n/a	n/a	n/a
10/8/2013	B	Large	3452.606	7624.428	Green	Alive	4A717A300C	n/a	284	247
10/8/2013	B	Large	3504.179	7604.672	Green	Alive	4A0A7C177C	n/a	322	256
10/11/2013	B	Large	3450.444	7624.751	Kemps	Alive	989.001001951698	n/a	240	250
10/16/2013	B	Large	3503.174	7605.06	Green	Dead	n/a	n/a	275	240
10/17/2013	B	Large	3510.205	7549.584	Green	Alive	4A0C033B3A	n/a	309	276
10/18/2013	B	Large	3452.23	7622.275	Green	Dead	n/a	n/a	230	200
10/22/2013	B	Large	3452.477	7623.505	Green	Dead	n/a	n/a	280	242
10/22/2013	B	Large	3515.713	7542.198	Green	Alive	4A630E750B	UUE021	250	230
10/22/2013	B	Small	3451.441	7623.008	Green	Alive	989.001001951762	n/a	265	221
10/24/2013	E	Large	3410.619	7750.615	Green	Dead	n/a	n/a	273	230
10/29/2013	B	Large	3522.583	7532.78	Green	Alive	n/a	n/a	275	225
11/12/2013	B	Large	3509.884	7552.715	Green	Alive	4B0309136A	n/a	297	245

Table 8 Observer coverage calculated from the previous year's trip ticket data and observer data from each season (spring, summer, and fall) for ITP year 2014 (September 1, 2013 - August 31, 2014) by management unit for large mesh gill nets.

	Coverage (%)		
Management Unit	Fall 2013	Spring 2014 [1]	Summer 2014 [2]
A	3.5	2.5	4.8
B	7.3	0.4	0.0
C	7.2	4.8	8.0
D1	36.5	0.0	0.0
D2	8.3	0.0	0.0
E	8.9	30.9	15.1
Total	6.0	4.0	4.8

[1] Management unit D1 was closed during a portion of the spring 2014 season.

[2] Management unit's B, D1, and D2 were closed during the summer 2014 season.

Table 9. Observer coverage calculated from the previous year's trip ticket data and observer data from each season (spring, summer, and fall) for ITP year 2014 (September 1, 2013 - August 31, 2014) by management unit for small mesh gill nets.

	Coverage (%)		
Management Unit	Fall 2013	Spring 2014	Summer 2014
A	1.2	0.4	1.5
B	1.2	1.2	1.0
C	1.2	1.2	3.8
D1	23.5	21.2	37.5
D2	0.0	0.0	2.7
E	1.0	1.3	1.8
Total	1.5	1.1	1.8

Table 10. Summary of cumulative estimated sea turtle interactions through August 2014 by management unit and disposition for large mesh gill nets during ITP year 2014 (September 1, 2013 - August 31, 2014).

Management Unit	Green		Kemp's ridley	
	Alive	Dead	Alive	Dead
B	108	52	15	0
C	*1	0	0	0
D2	*1	0	0	0
E	0	4	0	0
Total	110	56	15	0

*Indicates observed takes

Table 11. Summary of cumulative sea turtle interactions by management unit and disposition for small mesh gill nets during ITP year 2014 (September 1, 2013 - August 31, 2014).

Management Unit	Green	
	Alive	Dead
B	*1	0
Total	*1	0

*Indicates observed takes

Table 12. Estimated confidence intervals (95%) for estimated takes using a bootstrap method based on observer data for coverage and sea turtle interaction levels by management unit and season for ITP year 2014 (September 1, 2013 - August 31, 2014).

	Green		Green		Kemp's	
Management Unit[1]	Alive	95% CI	Dead	95% CI	Alive	95% CI
A	0		0		0	
B	108	48 - 214	51	14 - 139	15	0 - 45
C	0		0		0	
D1	0		0		0	
D2	0		0		0	
E	0		4	0 - 12	0	

[1]Estimated confidence intervals were not applied for management units, gears, or species where observed takes are allowed and estimated takes are not used.

Table 13. Number of gill-net checks made and citations issued by Marine Patrol for large and small mesh gill nets by season during ITP year 2014 (September 1, 2013 - August 31, 2014).

Season	# Gill Net Checks	# Citations
Fall 2013	445	8
Spring 2014	59	0
Summer 2014	194	7

Table 14. The percentage of calls made (n = 2,408) by the observers trying to set up trips by season categorized by call type (0-9) as defined in Table 6 for ITP year 2014 (September 1, 2013 - August 31, 2014).

	Categories (%)										
Season	0	1	2	3	4	5	6	7	8	9	Total
Spring 2014	3.2	36.3	11.8	16.4	16.2	1.3	7.7	1.0	0.7	5.4	100
Summer 2014	6.2	13.1	10.9	25.4	15.2	1.6	12.3	1.7	0.6	13.0	100
Total	9.4	49.4	22.7	41.8	31.4	2.9	20.0	2.7	1.3	18.4	

[1]The categories for the contact log were developed prior to the spring 2014 season.

FIGURES

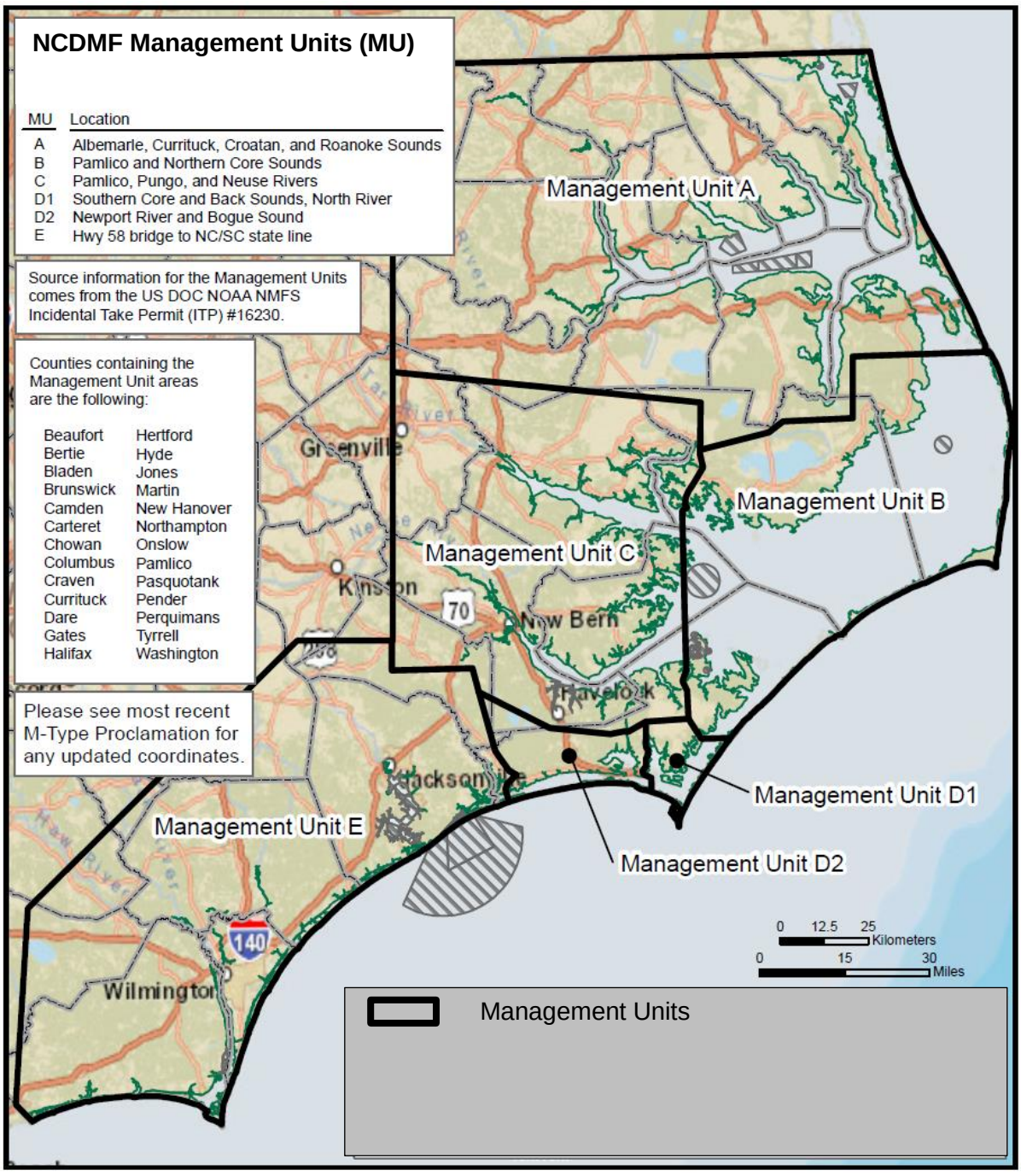

Figure 1. Management units (A, B, C, D1, D2, and E) as outlined in the Conservation Plan and utilized by the Observer Program for ITP year 2014 (September 1, 2013 – August 31, 2014).

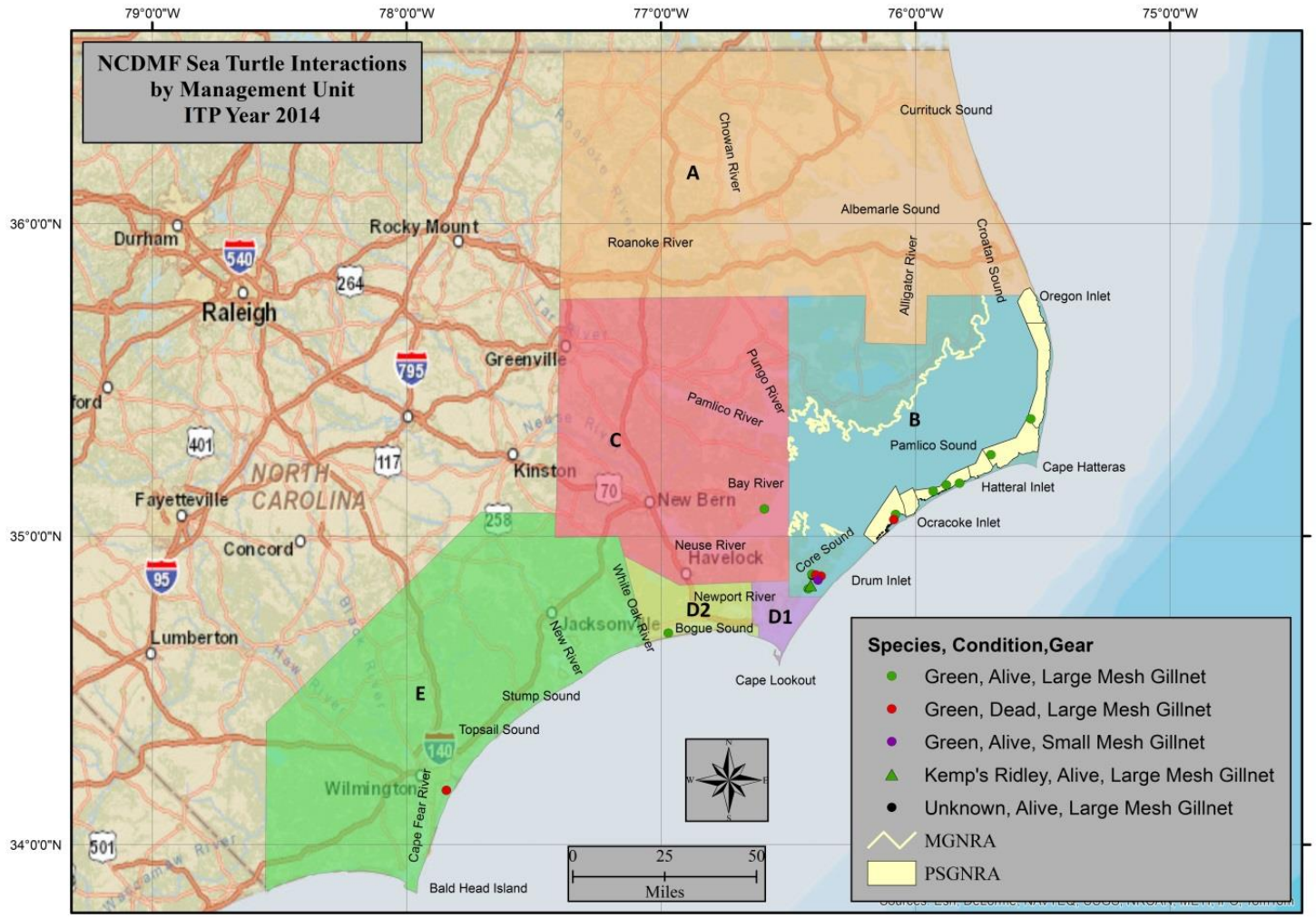

Figure 2. Sea turtle interaction locations (n = 17) by species, disposition, and gear for ITP year 2014 (September 1, 2013 – August 31, 2014).

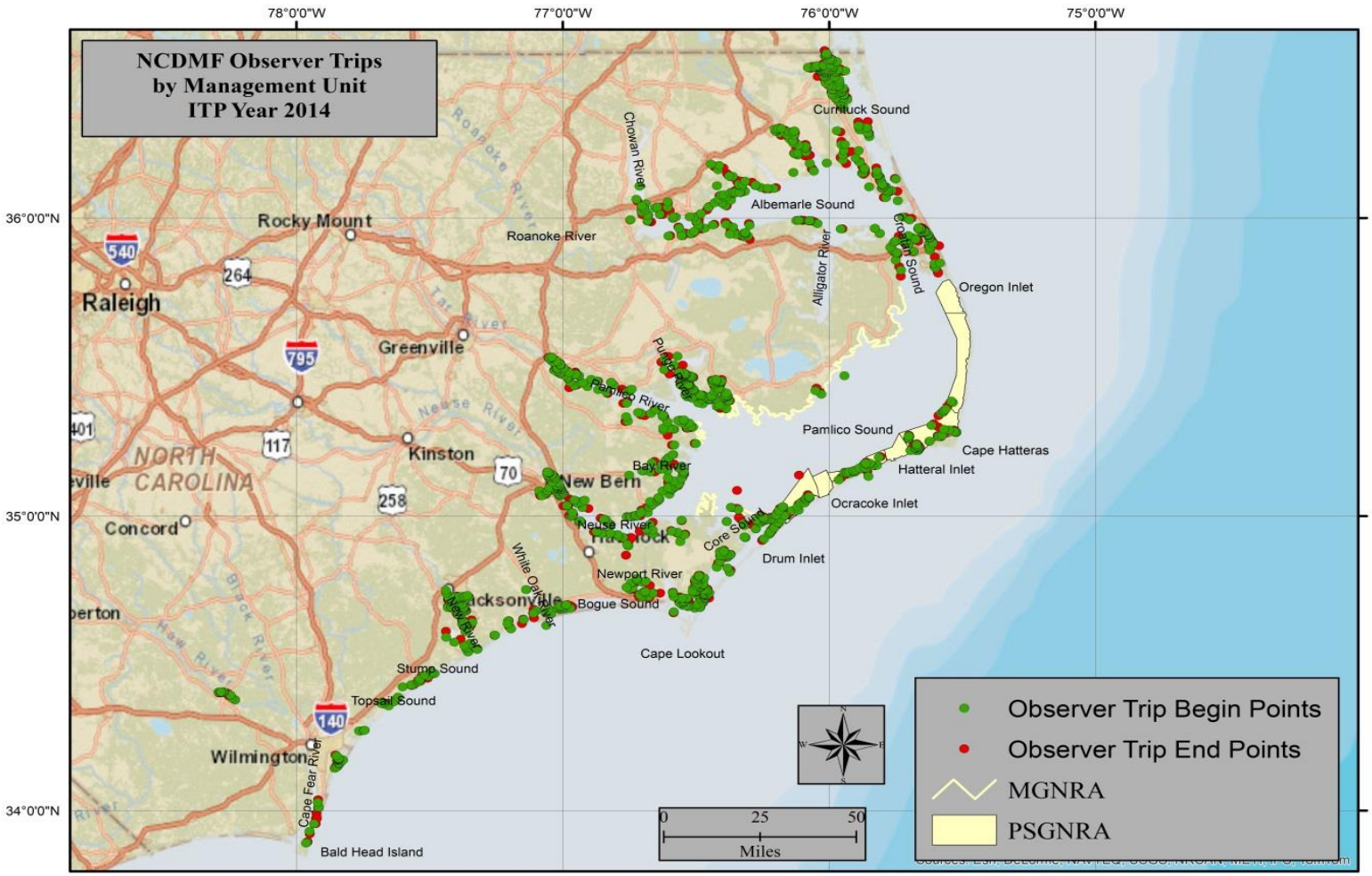

Figure 3. Starting and ending locations of observer trips (n = 900) conducted by the Observer Program for ITP year 2014 (September 1, 2013 – August 31, 2014).

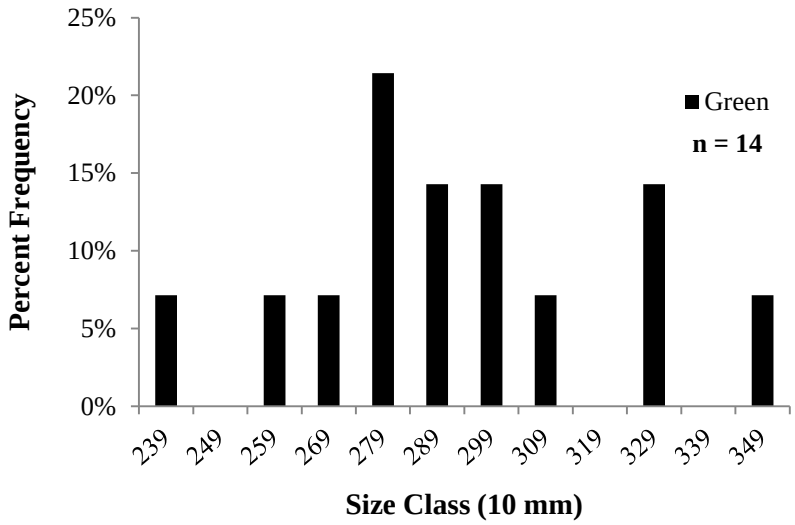

Figure 4. Length-frequency (curved carapace length) from notch to tip of observed incidental captures of green sea turtles (n = 14) collected by the Observer Program from onboard and alternative platform observations for ITP year 2014 (September 1, 2013 – August 31, 2014).

North Carolina Department of Environment and Natural Resources

Pat McCrory
Governor

Donald R. van der Vaart
Secretary

June 15, 2015

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

Dear Kristy:

As follow up to our conference call on June 11, 2015 concerning the observer data for 2014, the finalized Observer Program coverage for 2014 is calculated along with the original estimated Observer Program coverage as reported in the division's seasonal reports for large and small mesh gill nets (Tables 1 and 2). The finalized observer coverage estimates should be used for evaluating whether or not the seasonal threshold observer coverage levels were met.

Table 1. Estimated and finalized 2014 Observer Program coverage data for large mesh gill nets by management unit and season.

	Seasons					
	Spring [1]		Summer [2]		Fall [3]	
Management Unit	Estimated	Finalized	Estimated	Finalized	Estimated	Finalized
A	2.5	2.2	4.8	6.9	5.7	6.9
B	0.4	0.3	0.0	0.0	8.9	10.8
C	4.8	4.4	8.0	18.2	11.9	17.3
D1	0.0	0.0	0.0	0.0	39.0	66.7
D2	0.0	0.0	0.0	0.0	18.6	42.5
E	30.9	23.1	15.1	30.0	72.5	26.0
Total	4.0	4.2	4.8	9.9	9.4	11.7

[1] Management unit D1 was closed during a portion of the spring 2014 season.

[2] Management unit's B, D1, and D2 were closed during the summer 2014 season.

[3] Portions of management units B and E were closed during portions of the fall 2014 season

Table 2. Estimated and finalized 2014 Observer Program coverage data for small mesh gill nets by management unit and season.

	Seasons					
	Spring		Summer		Fall	
Management Unit	Estimated	Finalized	Estimated	Finalized	Estimated	Finalized
A	0.4	0.9	1.5	0.4	3.1	3.0
B	1.2	1.1	1.0	1.0	1.8	1.8
C	1.2	1.5	3.8	2.8	4.7	4.9
D1	21.2	15.5	37.5	9.1	9.5	12.0
D2	0.0	0.0	2.7	1.1	4.4	2.5
E	1.3	5.3	1.8	1.4	4.8	4.6
Total	1.1	1.8	1.8	1.4	3.3	2.9

Sincerely,

Jacob Boyd, Protected Species Biologist
Division of Marine Fisheries, NCDENR

cc: Chris Batsavage
Louis Daniel