



Annual Atlantic Sturgeon Interaction Monitoring of the Gill-Net Fisheries in North Carolina for
Incidental Take Permit Year 2017

Annual Completion Report for Activities under Endangered Species Act
Section 10 Incidental Take Permit No. 18102

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TABLE OF CONTENTS

Table of Contents	ii
List of Tables	iii
List of Figures	iv
Introduction.....	5
Methods.....	7
Observer Activity	7
Seasons	9
Authorized Takes	9
Compliance.....	10
Results.....	11
Observer activity	11
Fall 2016.....	11
Winter 2016-2017.....	12
Spring 2017.....	13
Summer 2017.....	14
Authorized Takes	15
Compliance.....	16
Marine Mammals	16
Discussion	17
Management history	17
Outreach	19
Observer Activity	20
Compliance.....	21
Estuarine Gill Net Permit	22
Literature Cited	23
Tables	27
Figures.....	42
Appendix A.....	51
Appendix B.....	52
Appendix C	60
Appendix D.....	62
Appendix E	64
Appendix F.....	65
Appendix G.....	67

LIST OF TABLES

Table 1. Authorized and actual annual estimated incidental takes per fishing year (for a total of 10 years; the life of the permit) with confidence intervals (95%) using a bootstrap method based on observer data for coverage and Atlantic sturgeon interaction levels in North Carolina’s anchored large mesh (>5.0 ISM) inshore gill net fishery for ITP Year 2017 (September 1, 2016 - August 31, 2017).	27
Table 2. Authorized and actual annual estimated incidental takes per fishing year (for a total of 10 years; the life of the permit) with confidence intervals (95%) using a bootstrap method based on observer data for coverage and Atlantic sturgeon interaction levels in North Carolina’s anchored small mesh (<5.0 ISM) inshore gill net fishery for ITP Year 2017 (September 1, 2016 - August 31, 2017).	28
Table 3. Categories and descriptions of fisherman responses for the Observer Program's contact logs used for analysis.	29
Table 4. Regulations for management units by date and regulation change for anchored large and small mesh gill nets for ITP Year 2017 (September 1, 2016 - August 31, 2017). 30	
Table 5. Observer coverage calculated from previous years’ 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).	32
Table 6. Observer coverage calculated from previous years’ 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).	33
Table 7. Summary of observed Atlantic sturgeon interactions in anchored large and small mesh gill nets through the NCDMF Observer Program for ITP Year 2017 (September 1, 2016 - August 31, 2017).	34
Table 8. Summary of reported Atlantic sturgeon interactions in anchored large mesh gill nets through the NCDMF Observer Program for ITP Year 2017 (September 1, 2016 - August 31, 2017).	37
Table 9. Number of gill-net checks made and citations issued by Marine Patrol for large and small mesh gill nets by season during ITP Year 2017 (September 1, 2016 - August 31, 2017).	37
Table 10. Citations written by Marine Patrol for large and small mesh gill nets by season and violation code during ITP Year 2017 (September 1, 2015 - August 31, 2016).	38
Table 11. Contacts attempted (n = 9,132) 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 2017 for ITP Year 2017 (September 1, 2016 - August 31, 2017).	41
Table 12. Notice of Violations issued by season, date and violation code for the Estuarine Gill Net Permit for ITP Year 2017 (September 1, 2016 - August 31, 2017).	42

LIST OF FIGURES

Figure 1. Management units (A1, A2, A3, B, C, D, and E) as outlined in the Conservation Plan and utilized by the Observer Program for ITP Year 2017 (September 1, 2016 – August 31, 2017).	43
Figure 2. Atlantic sturgeon interaction locations by species, disposition, and gear and observer trips (hauls) by gear throughout all management units for ITP Year 2017 (September 1, 2016 – August 31, 2017).	44
Figure 3. Atlantic sturgeon interaction locations by species, disposition, and gear and observer trips (hauls) by gear in management unit A for ITP Year 2017 (September 1, 2016 – August 31, 2017).	45
Figure 4. Atlantic sturgeon interaction locations by species, disposition, and gear and observer trips (hauls) by gear in management unit B for ITP Year 2017 (September 1, 2016 – August 31, 2017).	46
Figure 5. Atlantic sturgeon interaction locations by species, disposition, and gear and observer trips (hauls) by gear in management unit C for ITP Year 2017 (September 1, 2016 – August 31, 2017).	47
Figure 6. Atlantic sturgeon interaction locations by species, disposition, and gear and observer trips (hauls) by gear in management unit D for ITP Year 2017 (September 1, 2016 – August 31, 2017).	48
Figure 7. Atlantic sturgeon interaction locations by species, disposition, and gear and observer trips (hauls) by gear in management unit E for ITP Year 2017 (September 1, 2016 – August 31, 2017).	49
Figure 8. Length-frequency (total length) of observed incidental captures of Atlantic sturgeon where measurements were obtained (n = 98) by the Observer Program from onboard and alternative platform observations for ITP Year 2017 (September 1, 2016 – August 31, 2017).	50
Figure 9. Length-frequency (fork length) of observed incidental captures of Atlantic sturgeon where measurements were obtained (n = 86) by the Observer Program from onboard and alternative platform observations for ITP Year 2017 (September 1, 2016 – August 31, 2017).	50

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, ESA) on April 5, 2012 for Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*) interactions with the anchored gill-net fisheries in North Carolina's internal coastal (estuarine) waters. This request was prompted by notification from the National Marine Fisheries Service (NMFS) in February 2012 indicating the intent to list the Carolina Distinct Population Segment (DPS) of Atlantic sturgeon as endangered under the ESA. The NCDMF requested an ITP to implement a proposed conservation plan that ensured only a reasonable level of authorized Atlantic sturgeon incidental takes will occur, while allowing North Carolina's estuarine gill-net fisheries to operate. The NCDMF requested the NMFS to authorize such takes that are incidental to normal fishing activity with increased public outreach by the NCDMF to help fishermen avoid, minimize, and mitigate incidental takes of Atlantic sturgeon.

Feedback on the ITP application was received from the NMFS on May 29, 2012 via a teleconference with the NCDMF and the NMFS staff. After further review, on July 20, 2012 the NMFS requested the NCDMF to submit a revised permit application and Conservation Plan that addressed issues that were provided. In response to requested changes from the NMFS, the NCDMF made extensive revisions and resubmitted the application on December 20, 2012. Upon further review the NMFS provided the NCDMF with a list of questions they had regarding the application. On February 4, 2013, the NMFS and the NCDMF went over questions regarding the ITP application and Conservation Plan. Another revised ITP application was resubmitted to the NMFS on June 28, 2013 encompassing all comments and concerns raised by the NMFS. On July 9, 2013, the NMFS published a notice of receipt of the NCDMF application (File No. 18102) in the Federal Register (78 FR 41034). The comment period ended August 8, 2013. After further deliberation with the NMFS another revision of the Atlantic Sturgeon ITP was resubmitted on January 2, 2014.

The NCDMF received the Atlantic Sturgeon ITP (No. 18102) on July 22, 2014. The Atlantic Sturgeon 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 endangered Atlantic sturgeon and other ESA listed species, while allowing anchored gill-net fisheries to be prosecuted in the estuarine waters of North Carolina. The ITPs Conservation Plan specifies further measures, which the NMFS determined will minimize, monitor, and mitigate the impacts of incidental takes of ESA-listed Atlantic sturgeon from the Gulf of Maine, New York Bight, Chesapeake, Carolina, and South Atlantic DPSs, 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 future annual report deadlines for the Atlantic Sturgeon and Sea Turtle (No. 16230) 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 concurring with NCDMF's request for the minor modification 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 2016 Trip Ticket Program (TTP) data in May 2017 (Appendix B). The Annual Completion Report for the Atlantic Sturgeon ITP was completed for ITP Year 2016 and submitted in February 2017. Using the finalized 2016 data, Tables 1, 2, 5, and 6 from the Completion Report were updated to reflect the final estimates of observer coverage and Atlantic sturgeon takes. The fall 2015 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).

On July 13, 2017, the NCDMF requested a minor modification to the Atlantic Sturgeon ITP to modify the allocation of allowed Atlantic sturgeon takes in management units A and C as annual takes rather than seasonal takes. Discussions with NMFS staff noted the number of allowed seasonal takes is very low in some cases, and the seasonal takes have been reached on a few occasions (resulting in seasonal closures). Further discussions with NMFS staff concluded that a minor modification would be feasible. However, there was a concern noted on the issue of warmer water temperatures (20°C – 30°C) being correlated with more mortalities. The NCDMF addressed this concern describing how by using adaptive management, the NCDMF has more flexibility in managing the fishery with annual allocated takes to ensure the allowed takes are not exceeded for any management unit during the ITP Year. Lower fishing effort in the summer season (compared to the fall season) due to increasing water temperatures and fish availability should not create an issue for Atlantic sturgeon mortalities going over the allowed mortalities levels for takes. The NCDMF further explained that by actively monitoring the fisheries and take levels daily, it better ensures take levels (including limiting mortality levels) are not exceeded. On July 19, 2017, the NMFS sent a letter to the NCDMF concurring with NCDMF's request for the minor modification encouraging staff to incorporate any further anticipated minor modifications into the application process for an updated ITP (Appendix C).

METHODS

Observer Activity

The conservation plan includes managing inshore gill-net fisheries by dividing estuarine waters into seven management units (A1, A2, A3, B, C, D, 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. Also, real time TTP data are 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' TTP data, but also on current effort changes. 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 a four-year average was used for estimating anchored small mesh gill-net fishing trips for ITP Year 2017. This method of estimating trips proves to more accurately reflect the current fishing effort. Once TTP data are finalized in May of 2018, the final observer coverage will be recalculated and the finalized estimates of 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 (2012-2016) for anchored large mesh gill nets and the average of the previous four years' (2013-2016) TTP data for anchored 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 of obtaining observer data and is used most frequently. 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, in stock assessments, in the development of fishery management plans, and for identifying bycatch (finfish, protected species) problem areas. For alternative platform trips, observers and Marine Patrol follow similar protocols using NCDMF vessels to observe the fishing trip. 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 4-5 years' TTP data by week, 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 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. The contact information for these fishermen is then given to the observers assigned to that area and the observers contact the fishermen to set up trips from the list of names given. 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 the 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 Atlantic sturgeon 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 the same methodology as the Observer Program. Coordination of onboard, alternative platform, and Marine Patrol alternative platform trips is done regularly to maximize efficiency and to achieve the maximum amount of observer coverage possible for each management unit. Changes in effort, Atlantic sturgeon 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 (≥ 5 inches stretched mesh-ISM) fishing trips and 1% coverage with a goal of 2% of the total anchored small mesh gill-net (< 5 ISM) fishing trips per management unit for the spring, summer, fall, and winter seasons.

Observers are trained to identify, measure, evaluate condition, and tag Atlantic sturgeon by the 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, total length (TL mm), and fork length (FL mm) are recorded for each sturgeon observed. Photographs and environmental parameters (i.e., salinity, water temperature) are also collected when feasible. Dead Atlantic sturgeon are retained by the observer when possible. Observers

also collect data on location, gear parameters, catch, and bycatch 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 on the 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 Atlantic sturgeon interactions to provide estimates of Atlantic sturgeon bycatch.

The total bycatch of Atlantic sturgeon for each management unit was estimated using the stratified ratio method (SAS 2004). The bycatch rate (Atlantic sturgeon caught per fishing trip) estimated from observer data was multiplied by the total fishing trips. To estimate confidence intervals (95%), the bootstrap method was used to sample estimates. Strata consisted of five management units (A, B, C, D, and E) where management unit A1-A3 (A) and D1-D2 (D) were combined for analysis (Figure 1). Estimates were calculated by date of capture, management unit, and disposition. Estimates were accumulated each week to implement necessary management measures if authorized take thresholds were approached.

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

Seasons

The Observer Program's activities are reported on a monthly and annual basis. Seasons are defined as spring (March – May), summer (June – August), fall (September – November), and winter (December – February). Monthly progress reports include information such as take estimates, cumulative totals, number of observed trips, and observed takes with all associated. 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 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 takes are specified in Tables 1 and 2. The amount of incidental takes is expressed as either estimated or observed takes depending on the amount of data available for modeling predicted takes. Management unit A has estimated allowable takes per season for both anchored large and small mesh gill nets due to having robust data sets for the area. All other management units (i.e., B, C, D, E) have observed allowable takes which are actual takes and not estimated due to the lack of data for modeling estimated takes. Extrapolated Atlantic sturgeon takes were computed by dividing observed interactions by observer coverage.

Nonparametric confidence intervals (95%) were calculated using standard bootstrapping techniques (Efron and Tibshirani 1993) using the ‘boot’ package in R (Canty and Ripley 2015; Davison and Hinkley 1997; 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 and 2). Takes must be incidental to otherwise lawful activities associated with the anchored large and small mesh gill-net fisheries, and as conditioned herein. The permit covers incidental takes from the date of issuance through July 17, 2024. The NCDMF uses preliminary data to monitor the total number of live and dead takes per unit and season to determine if the NCDMF is approaching or has reached the allowable Atlantic sturgeon takes. However, there is no “real time” method to determine the actual DPS taken. The genetic sampling required by the ITP will provide the actual take numbers per DPS, but this will not be determined until after genetic samples are processed and if funding allows. Once TTP data are finalized in May of 2018, the final authorized estimated Atlantic sturgeon takes will be recalculated and the finalized estimates will be provided to the NMFS.

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 their residence, and 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 3). The contact log was analyzed by month and category to determine what percentage of phone calls resulted in observer trips.

RESULTS

Observer activity

Fall 2016

The fall 2016 season for anchored large and small mesh gill nets in North Carolina is September 2016 through November 2016 for ITP Year 2017 (September 1, 2016 – August 31, 2017) as defined in ITP No. 18102. Portions of management unit A (western Albemarle Sound, Currituck Sound, and the rivers) opened to anchored large and small mesh gill nets for the new ITP Year 2017 via proclamation M-15-2016 on September 5, 2016 while maintaining the closure of all anchored gill nets in the eastern portions of the management unit (eastern/southern Albemarle Sound and Croatan and Roanoke sounds) to avoid interactions with sea turtles (Table 4; Boyd 2016b). Further portions of management unit A (western/central Albemarle Sound) opened to anchored large and small mesh gill nets for the new ITP Year 2017 via proclamation M-21-2016 on October 15, 2016 while maintaining the closure of all anchored gill nets in the eastern portions of the management unit (eastern/southern Albemarle Sound and Croatan and Roanoke sounds) to avoid interactions with sea turtles. As the fall 2016 season progressed, further portions of management unit A (central/eastern Albemarle Sound) opened to anchored large and small mesh gill nets for the new ITP Year 2017 via proclamation M-23-2016 on October 31, 2016 while maintaining the closure of all anchored gill nets in the eastern portions of the management unit (eastern/southern Albemarle Sound and Croatan and Roanoke sounds) to avoid interactions with sea turtles (Table 4; Boyd 2016b).

Portions of management unit B (subunits SGNRA2-4, MGNRA) opened to anchored large mesh gill nets for the new ITP Year 2017 via proclamation M-16-2016 on September 5, 2016 while maintaining the closure of subunits SGNRA1 and CGNRA to minimize interactions with sea turtles (Table 4; Boyd 2016b). Remaining portions of management unit B (subunits SGNRA2-4, MGNRA) opened to anchored large mesh gill nets for the new ITP Year 2017 via proclamation M-19-2016 on October 3, 2016. Management unit B closed to anchored large mesh gill nets via proclamation M-24-2016 on November 2, 2016 due to sea turtle interactions and the lack of fishermen compliance (Table 4; Boyd 2016b).

Management unit C closed to anchored large and small mesh gill nets via proclamation M-20-2016 on October 1, 2016 for the remainder of the fall 2016 season due to sea turtle interactions. Management unit D1 opened to anchored large mesh gill nets for the new ITP Year 2017 via proclamation M-22-2016 on October 17, 2016 (Table 4; Boyd 2016b).

Management unit E opened to anchored small mesh gill nets for the new ITP Year 2017 via proclamation M-16-2016 on September 5, 2016 while maintaining the closure of upper Cape Fear and Northeast Cape Fear rivers to anchored large mesh gill nets to minimize sturgeon interactions (Table 4; Boyd 2016b).

The Observer Program achieved an estimated 11.2% overall anchored large mesh gill-net coverage for the fall 2016 season meeting the minimum requirement (7.0%) in all management units based on finalized data (Table 5; Figures 2 - 7; Boyd 2016b).

The Observer Program achieved an estimated 3.3% overall anchored small mesh gill-net coverage for the fall 2016 season meeting the minimum requirement (1.0%) in all management units except management unit A (0.0%) based on finalized data (Table 6; Figures 2 – 7; Boyd 2016b).

There were 53 observed Atlantic sturgeon interactions from anchored large mesh gill nets for the fall 2016 season (Table 7; Figures 2 – 7; Boyd 2016b). Of the 53 interactions, 96.2% were alive. The majority of the interactions (98.1%) occurred in management unit A. Management unit E had one alive interaction during this period (Table 7; Figures 2 - 7). A shortnose sturgeon was also observed alive in management unit A during this period. There were two fisherman self-reported reported Atlantic sturgeon interactions during this period (Table 8; Boyd 2016b).

Winter 2016-2017

The winter 2016-2017 season for anchored large and small mesh gill nets in North Carolina is December 2016 through February 2017 for ITP Year 2017 (September 1, 2016 – August 31, 2017) as defined in ITP No. 18102. Management unit A implemented restrictions on anchored small mesh gill nets requiring nets to be set so as to fish on the bottom and not exceed a vertical height of 48 inches on December 1, 2016 via proclamation M-25-2016 (Table 4). Management unit A closed to anchored large mesh gill nets on December 13, 2016 via proclamation M-32-2016 due to reaching allowable Atlantic sturgeon takes. Portions of management unit A (northern rivers) reopened to anchored large mesh gill nets via proclamation M-1-2017 on January 29, 2017 to allow fishermen to participate in the catfish fishery while maintaining a closure of all anchored gill nets in the eastern portions to avoid interactions with Atlantic sturgeon. Further portions of management unit A (Alligator River/Currituck Sound) reopened to anchored large mesh gill nets via proclamation M-2-2017 on February 6, 2017 (Table 4).

Management unit C opened to anchored large and small mesh gill nets on December 5, 2016 via proclamation M-27-2016 (Table 4).

Gear exemptions implemented on February 15, 2017 via proclamation M-4-2017 for portions of the Internal Coastal Waters south of management unit A to allow large mesh gill nets for the shad fishery. All other management units remained open to anchored large and small mesh gill nets for the duration of the winter 2016-2017 season (Table 4).

The flounder commercial harvest season in internal coastal waters closed on December 1, 2016 via proclamation FF-53-2016 as per Amendment 1 to the Southern Flounder Fishery Management Plan (Table 4).

The Observer Program achieved an estimated 8.6% overall anchored large mesh gill-net coverage for the winter 2016-2017 season meeting the minimum requirement (7.0%) in all management units except for management unit B based on preliminary data. Observer coverage for management unit B was 1.1% for the winter 2016-2017 season (Table 5; Figures 2 – 7).

The Observer Program achieved an estimated 5.6% overall anchored small mesh gill-net coverage for the winter 2016-2017 season meeting the minimum requirement (1.0%) in each management unit based on preliminary data (Table 6; Figures 2 - 7).

There were 10 observed Atlantic sturgeon interactions from anchored large mesh gill nets and one from anchored small mesh gill nets during the winter 2016-2017 season. All 11 Atlantic sturgeon interactions were alive with 10 observed in management unit A and one in management unit C during this period (Table 7; Figures 2 - 7). There was one reported Atlantic sturgeon interaction from illegally set gill net during this period (Table 8).

Spring 2017

The spring 2017 season for anchored large and small mesh gill nets in North Carolina is March 2017 through May 2017 for ITP Year 2017 (September 1, 2016 – August 31, 2017) as defined in ITP No. 18102. 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-5-2017 on March 3, 2017 while implementing the closure of all anchored gill nets in the eastern portions of the management unit (eastern/southern Albemarle Sound and Croatan and Roanoke sounds) to avoid interactions with sea turtles. Gill-net configurations for harvesting American shad were removed in management unit A following the end of the shad season via proclamation M-7-2017 on March 25, 2017 while maintaining the closure of all anchored gill nets in the eastern portions of the management unit (eastern/southern Albemarle Sound and Croatan and Roanoke sounds) to avoid interactions with sea turtles (Table 4; Boyd 2017b).

Management unit B remained closed to anchored large mesh gill nets through the spring 2017 season to allow for the recalculation of allowable sea turtle takes once finalized 2016 Trip Ticket data were completed (Table 4; Boyd 2017b).

Management unit D1 closed to anchored large mesh gill nets as part of the annual closure outlined in the ITP via proclamation M-10-2017 on May 8, 2017 (Table 4; Boyd 2017b).

The Observer Program achieved an estimated 9.7% overall anchored large mesh gill-net coverage for the spring 2017 season meeting the minimum requirement (7.0%) in all management units based on preliminary data (Table 5; Figures 2 - 7; Boyd 2017b).

The Observer Program achieved an estimated 2.2% overall anchored small mesh gill-net coverage for the spring 2017 season meeting the minimum requirement (1.0%) in all management units except management unit A (0.8%) based on preliminary data (Table 6; Figures 2 – 7; Boyd 2017b).

There were 37 observed Atlantic sturgeon interactions from anchored large mesh gill nets and two from anchored small mesh gill nets for the spring 2017 season. All 39 Atlantic sturgeon interactions were alive during this period (Table 7; Figures 2 – 7). There was one fisherman self-reported Atlantic sturgeon interaction during this period (Table 8; Boyd 2017b).

Summer 2017

The summer 2017 season for anchored large and small mesh gill nets in North Carolina is June 2017 through August 2017 for ITP Year 2017 (September 1, 2016 – August 31, 2017) as defined in ITP No. 18102. Management unit B opened to anchored large mesh gill nets except for the Inlet Corridors via proclamation M-11-2017 on June 19, 2017 (Table 4; Boyd 2017c).

Management unit C closed to anchored large and small mesh gill nets for the remainder of the summer 2017 season on July 28, 2017 due to sea turtle interactions via proclamation M-12-2017 (Table 4; Boyd 2017c).

Management unit D1 remained closed through the summer 2017 season to anchored large mesh gill nets as part of the annual closure outlined in the Sea Turtle ITP (Table 4; Boyd 2017c).

The Observer Program achieved an estimated 11.3% 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 A (4.9%) and C (6.9%) based on preliminary data (Table 5; Figures 2 – 7; Boyd 2017c).

The Observer Program achieved an estimated 1.6% overall anchored small mesh gill-net coverage for the summer 2017 season meeting the minimum requirement (1.0%) in all management units based on preliminary data (Table 6; Figures 2 – 7; Boyd 2017c).

There was one alive observed Atlantic sturgeon interaction from anchored large mesh gill nets for the summer 2017 season (Table 7; Figures 2 - 7). There were no reported Atlantic sturgeon interactions during this period (Table 8; Boyd 2017c).

Authorized Takes

There was a total of 101 observed Atlantic sturgeon interactions in anchored large mesh gill nets and three in anchored small mesh gill nets for ITP Year 2017 (Table 7; Figures 2 – 8; Boyd 2016b, 2017b, 2017c). Of the 104 interactions, 98.1% were alive. Observed interactions mostly occurred in management unit A (93.3%), with interactions in management unit B (1.0%), management unit C (3.9%), and management unit E (1.9%; Table 7; Figures 2 - 7). Of the four reported Atlantic sturgeon interactions for ITP Year 2017, three were fisherman self-reported and one was reported by Marine Patrol from illegally set gill nets (Table 8; Boyd 2016b, 2017b, 2017c).

The size distribution of Atlantic sturgeon ($n = 98$) ranged from a TL ($n = 98$) of 406 mm to 1,580 mm and a FL ($n = 86$) of 376 mm to 1,420 mm (Table 7; Figures 8 and 9; Boyd 2016b, 2017b, 2017c).

The cumulative total estimated and observed takes for anchored large and small mesh gill nets did not reach the threshold of allowed takes for any management unit for ITP Year 2017 except for alive takes in management unit A for the winter 2016-2017 season based on preliminary data (Table 1 and 2; Boyd 2016b, 2017b, 2017c). However, once finalized data were used to estimate takes, the total estimated takes for the winter 2016-2017 season in management unit A were below the allowed take level (Table 1).

The percentage of authorized takes that were used in ITP Year 2017 for anchored large mesh gill nets were calculated for estimated takes by season and disposition for management unit A (fall 27.3% alive, 32.8% dead; winter 45.9% alive, 0.0% dead; spring 68.1% alive, 0.0% dead; summer 7.2% alive, 0.0% dead). The percentage of authorized takes that were used in ITP Year 2017 for anchored small mesh gill nets were calculated for estimated takes by season and disposition for management unit A (fall 0.0% alive/dead; winter 5.3% alive, 0.0% dead; spring 0.0% alive/dead; summer 0.0% alive/dead (Boyd 2016b, 2017b, 2017c).

The percentage of authorized takes that were used in ITP Year 2017 were also calculated for anchored large mesh gill nets for observed takes by management unit, season, and disposition (management unit C fall 0.0% alive/dead; winter 33.3% alive, 0.0% dead; spring 60.0% alive, 0.0% dead; summer 0.0% alive/dead; Boyd 2016b, 2017b, 2017c). Management unit E, which are under annual allowed take allocations, had 10.0% alive, 0.0% dead. Management units B and D did not have any observed takes for ITP Year 2017 in anchored large mesh gill nets. The percentage of authorized takes that were used in ITP Year 2017 were also calculated for anchored small mesh gill nets for observed takes by management unit, season, and disposition (management unit B fall 0.0% alive/dead; winter 0.0% alive/dead; spring 11.1% alive, 0.0% dead; summer 0.0% alive/dead). Management unit E, which are under annual allowed take

allocations, had 10.0% alive, 0.0% dead. Management units C and D did not have any observed takes for ITP Year 2017 in anchored small mesh gill nets (Boyd 2016b, 2017b, 2017c).

Compliance

Marine Patrol made 366 gill-net checks during the fall 2016 season resulting in 44 citations being issued (Tables 9 and 10; Boyd 2016b, 2017b, 2017c). Marine Patrol made 274 gill-net checks during the winter 2016-2017 season resulting in 144 citations being issued. Marine Patrol made 395 gill-net checks for the spring 2017 season resulting in 10 citations being issued. Marine Patrol made 960 gill-net checks for the summer 2017 season with no citations being issued (Tables 9 and 10; Boyd 2016b, 2017b, 2017c).

For ITP Year 2017, phone calls (n = 9,132) were made with 56.3% (n = 5,144) being 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 (Table 11; Boyd 2016b, 2017b, 2017c). In the fall 2016 season (n = 2,660), phone calls were made with 49.4% (n = 1,313) being categorized as 1, 8, 11, 12, 13, and 14. In the winter 2016-2017 season (n = 1,356), phone calls were made with 52.7% (n = 714) being categorized as 1, 8, 11, 12, 13, and 14. In the spring 2017 season (n = 2,425), phone calls were made with 61.4% (n = 1,490) being categorized as 1, 8, 11, 12, 13, and 14. In the summer 2017 season (n = 2,691), phone calls were made with 60.5% (n = 1,627) being categorized as 1, 8, 11, 12, 13, and 14 (Table 11; Boyd 2016b, 2017b, 2017c).

Notices of Violations (NOV) were issued when fishermen were found to be out of compliance with the EGNP with eight NOVs issued during the fall 2016 season, 18 NOVs issued during the winter 2016-2017 season, six NOVs issued during the spring 2017 season, and three NOVs issued during the summer 2017 season (Table 12; Boyd 2016b, 2017b, 2017c).

Marine Mammals

There were no observed takes of marine mammals during ITP Year 2017.

DISCUSSION

Management history

Initial reviews of the Atlantic sturgeon status began in 1977, when the Research Management Division of the NMFS sponsored the preparation of a report on the biology and status of Atlantic sturgeon (Murawski and Pacheco 1977). In 1980 at the request of the NMFS, another document was prepared by Hoff (1980) to assist in making future Atlantic sturgeon fisheries decisions and to determine what action was required, if any, to conserve the species under the ESA. In 1988, the NMFS requested information regarding the status of Atlantic sturgeon. The NMFS added Atlantic sturgeon to its candidate species list published in the Federal Register (FR) in 1997 (62 FR 37560, 14 July 1997, NMFS 1997a). Prior to the federal listing, North Carolina had taken steps to protect Atlantic sturgeon. The NCDMF implemented a statewide moratorium on the possession of Atlantic sturgeon in 1991 (15A NCAC 03M.0508).

In April 2004, the NMFS published a subsequent notice announcing that the NMFS “candidate species list” was being changed to the “Species of Concern (SOC) list” to better reflect the ESA definition of candidate species while maintaining a separate list of species potentially at risk (69 FR 19975 -15 April 2004, NMFS 2004a; ASSRT 2007).

On June 2, 1997, a petition dated May 29, 1997 was received by the NMFS from the Biodiversity Legal Foundation. The petitioner requested that the NMFS list Atlantic sturgeon, where it continues to exist in the United States, as threatened or endangered and designate critical habitat. The NMFS reviewed the request and determined that the petition presented substantial information indicating that the petitioned action may be warranted and announced the initiation of a status review (62 FR 54018, 12 October 1997, NMFS 1997b; ASSRT 2007).

The NMFS and United States Fish and Wildlife Service (USFWS) completed their status review in 1998 and concluded at that time Atlantic sturgeon were not threatened or endangered based on any of the five factors (NMFS and USFWS 1998). Concurrently, the Atlantic States Marine Fisheries Commission (ASMFC) completed Amendment 1 to the 1990 Atlantic Sturgeon FMP in 1998 that imposed a 20–40-year moratorium on all Atlantic sturgeon fisheries until the Atlantic Coast spawning stocks could be restored to a level where 20 subsequent year-classes of adult females were protected (ASMFC 1998). The NMFS followed this action by closing the Exclusive Economic Zone (EEZ) to Atlantic sturgeon harvest in 1999. In 2003, a workshop on the “Status and Management of Atlantic Sturgeon” was held to discuss the current status of Atlantic sturgeon along the Atlantic Coast and determine what obstacles, if any, were impeding the recovery of Atlantic sturgeon (Kahnle et al. 2005; ASSRT 2007).

Based on the information gathered from the 2003 workshop on Atlantic sturgeon, the NMFS decided that a second review of Atlantic sturgeon status was needed to determine if listing as threatened or endangered under the ESA was warranted. The 2007 analysis from the Atlantic

Sturgeon Status Review Team (ASSRT) determined that at least three (New York Bight, Chesapeake Bay, and Carolina) of the five DPSs should be considered threatened under the ESA, as it was determined that they had a moderately high risk of becoming threatened in the foreseeable future (next 20 years). The ASSRT determined that the remaining two DPSs (Gulf of Maine, South Atlantic) had a moderate risk of becoming extinct, though there were insufficient data to allow for a full assessment of these subpopulations; thus, a listing recommendation was not provided (ASSRT 2007).

On October 6, 2009, the NMFS received a petition from the Natural Resources Defense Council to list Atlantic sturgeon throughout its range as endangered under the ESA. As an alternative, the petitioner requested that the species be listed as the five DPSs described in the 2007 Atlantic sturgeon status review (ASSRT 2007), with the Gulf of Maine and South Atlantic DPSs listed as threatened and the remaining three DPSs listed as endangered. The petitioner also requested that critical habitat be designated for Atlantic sturgeon under the ESA. The NMFS published a Notice of 90-Day Finding on January 6, 2010 (75 FR 838, 6 January 2010, NMFS 2010) stating that the petition presented substantial scientific or commercial information indicating that the petitioned actions may be warranted. The NMFS considered the information provided in the status review report, the petition, other new information available since completion of the status review report, and information submitted in response to the Federal Register announcement of the 90-day finding (75 FR 838, 6 January 2010, NMFS 2010). On October 6, 2010, the NMFS published a proposed rule to list the Carolina DPS of Atlantic sturgeon as endangered under the ESA (75 FR 61871, 6 January 2010, NMFS 2010). On February 6, 2012, the NMFS issued a final determination to list the Carolina DPS of Atlantic sturgeon as an endangered species under the ESA (77 FR 5914, 6 February 2012, NMFS 2012).

Prior to the listing of Atlantic sturgeon, NCDMF has addressed protected species issues in the coastal waters of North Carolina since the 1970s. The NCDMF applied for and received four ITPs for the Pamlico Sound Gill Net Restricted Area (PSGNRA) from 2000 to 2005 to address sea turtle takes in the anchored large and small mesh gill-net fisheries for the Pamlico Sound portion of the state during the fall months (Gearhart 2001, 2002, 2003; Price 2004, 2005, 2006, 2007, 2008, 2009, 2010; Murphey 2011; Boyd 2012, 2013). The NCDMF applied for and received a 10-year ITP addressing sea turtle takes in the anchored large and small mesh gill-net fisheries statewide 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 the anchored gill-net fisheries prosecuted by license holders to occur in the estuarine waters of North Carolina. The Sea Turtle ITP No. 16230 defined an ITP Year as beginning on September 1 and running through August 31 of the following year.

Implementation of management actions such as gear restrictions, fishing seasons, soak times, area closures, mesh size restrictions, FMPs, and ITPs (Sea Turtle ITP No. 16230) for other

species have likely had a positive effect on reducing takes and minimizing the mortality associated with the incidental bycatch of Atlantic sturgeon. The North Carolina management system has shown the ability to effectively manage fisheries throughout the state and reduce incidental bycatch of finfish and protected species. Anchored gill-net restrictions implemented by the proclamations for the Sea Turtle ITP include: 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 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 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 was submitted January 30, 2015 (Boyd 2015). During review of the 2014 Atlantic Sturgeon 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 and sea turtle interactions and tables which have all of the estimated/observed takes exactly as portrayed in the permit with 95% confidence intervals included (Boyd 2016a).

Outreach

Staff from the NCDMF met with commercial industry leaders on July 11, 2016 to discuss the current ITPs and options for moving forward with amendments. The North Carolina Fisheries Association (NCFA) requested the meeting in response to NCDMF staff asking industry for their thoughts on potential ITP amendments and ways to further minimize sea turtle takes (in order to keep management units open longer under the current ITPs). During the meeting, the NCFA discussed their interest in exploring gear modifications that are proven to reduce sea turtle interactions and would ultimately like to see the estuarine gill-net fishery managed under gear modifications (similar to the shrimp trawl fishery) without the constraints of the current ITPs. Staff from the NCDMF explained that while staff would be able to assist regarding the ITP permit process, the NCFA should work with researchers with expertise in gear development and apply for a research Section 10 permit. In order to reach their ultimate goal, the NCFA would like to work on minimizing takes and amending the current ITPs by soliciting feedback from commercial gill netters throughout the state.

The NCFA scheduled two meetings on August 30 and 31, 2016 that focused on potential ITP amendments and ways to further minimize sea turtle and sturgeon takes in the anchored gill-net fisheries. NCFA invited NCDMF staff to attend their meetings to hear the fishermen's feedback and to provide input on the feasibility of the fishermen's ideas. While discussing these meetings with the commercial industry leads, NCDMF staff raised the issue of the lack of fisherman compliance with the ITPs. NCFA fully agreed that it is a problem, and they plan on stressing the need for compliance at their meetings in order for the Observer Program to be successful. Another comment made by the NCFA was they felt that the onboard observations by the NCDMF are very important. They also mentioned that the onboard observations are needed to collect biological information from the catch as opposed to just monitoring protected species interactions.

Staff from the NCDMF attended both meetings NCFA held in Wanchese, NC on August 30, 2016 and in Morehead City, NC on August 31, 2016. While most of the meetings were discussions amongst fishermen or directed at NCFA members, NCDMF staff answered and/or clarified questions as needed. The questions and/or concerns from fishermen included: confusion that self-reporting sea turtle and sturgeon takes was a requirement of the ITPs, that the definition of a take includes live interactions, that the amount of restrictions already in place on the anchored gill-net fisheries were too great, and the belief that any further restrictions would lead to their inability to make a livelihood in the industry.

The North Carolina Watermen United (NCWU), which were in attendance at the August 30, 2016 meeting, sent NCDMF a letter on September 2, 2016 listing many modifications that were already in place in the gill-net fisheries, but suggests another "more-inclusive" meeting for further discussion (Appendix D). The NCFA sent NCDMF a follow-up email on September 19, 2016 with questions and concerns following the meetings (Appendix E). On November 30, 2016, the NCFA sent the NCDMF a commitment letter concerning their collaboration with Gettysburg College on a project titled, "Development of sensory-based bycatch reduction technologies to reduce sea turtle bycatch in North Carolina coastal gillnet and pound net fisheries" (Appendix F). The work on the project began in September 2017.

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 G).

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 2017 (Table 4). Fishermen are more elusive to attempts by observers contacting them to schedule trips after proclamations enacting stricter regulations are implemented. Therefore, making it harder to obtain observer trips. When a management unit closes for a portion of time, the observers are shifted to the open management units. The contact log, which includes different categories to place each contact that was made to a fisherman, is beneficial for analyzing the type of contact that was being made and to see the number of observer trips that were obtained through the calling system.

During the fall 2016 season, attendance was required for anchored small mesh gill nets for the duration of the fall 2016 season in management unit A making it difficult to obtain observed trips (Boyd 2016b). 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 (Boyd 2016b).

During the winter 2016-2017 season, observer coverage for anchored large mesh gill nets in management unit B was 1.1% due to minimal fishing effort (n = 90 fishing trips) during the winter months.

During the spring 2017 season, observer coverage for anchored small mesh gill-nets in management unit A was 0.8% due to minimal fishing effort (n = 42 fishing trips; Boyd 2017b).

During the summer 2017 season, observer coverage for anchored large mesh gill-nets in management unit A was 4.9% and C was 6.9% (Boyd 2017c).

Compliance

Although ITP Year 2017 is the fourth 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 2017 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 discussed the situation with industry leaders in an attempt 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 (2015-2017) had >50% of contacts made by observers not being able to get in touch with fishermen or fishermen refusing trips with a 7.6% increase in non-compliance over the last three years (Boyd 2016a, 2017a).

There were no fisherman self-reported Atlantic sturgeon takes during the winter 2016-2017 and summer 2017 seasons with only two fisherman self-reported takes during the fall 2016 season and one in the spring 2017 season (Table 8; Boyd 2016b, 2017b, 2017c). NCDMF has discussed this situation with industry leads numerous and has provided outreach to fishermen explaining the requirement in the ITP of self-reporting and further details on the subject to try and increase self-reporting throughout the industry as a whole with limited success.

Estuarine Gill Net Permit

As per the ITP, the NCDMF established an 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 2,670 EGNPs issued for Fiscal Year 2017 (July 1, 2016 – June 30, 2017).

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TABLES

Table 1. Authorized and actual annual estimated incidental takes per fishing year (for a total of 10 years; the life of the permit) with confidence intervals (95%) using a bootstrap method based on observer data for coverage and Atlantic sturgeon interaction levels in North Carolina's anchored large mesh (≥ 5.0 ISM) inshore gill net fishery for ITP Year 2017 (September 1, 2016 - August 31, 2017).

Management Unit	Season	Total Interactions			
		Authorized (Mortality)		Actual All DPS ²	
		Carolina DPS	Other DPS	Alive	Dead
A	Winter	149 (6)	50 (2)	91 [25,254]	0
	Spring	460 (19)	154 (6)	418 [221,790]	0
	Summer	157 (6)	52 (2)	15 [0,45]	0
	Fall	838 (34)	279 (11)	305 [174,538]	15 [0,45]
B	Winter	2 (1) ¹	n/a	0	0
	Spring	1 (1) ¹	1 (0)	0	0
	Summer	4 (2) ¹	2 (0)	0	0
	Fall	17 (2) ¹	6 (0)	0	0
C	Winter	2 (1) ¹	n/a	1	0
	Spring	3 (1) ¹	1 (0)	3	0
	Summer	2 (1) ¹	1 (0)	0	0
	Fall	4 (2) ¹	2 (0)	0	0
D	Annual	8 (2) ¹	n/a	0	0
E	Annual	8 (2) ¹	n/a	1	0
Total		1,655 (80)	548 (21)	834	15

¹ Total interaction number represents actual observed and not estimated based on observer coverage. Mortality estimates could not be completed for management units B-E due to low take; thus, if observed interactions were ≤ 5 mortality was one; if observed interactions were >5 mortality was two.

² Fin clip samples have been sent to the lab for genetic analysis

Table 2. Authorized and actual annual estimated incidental takes per fishing year (for a total of 10 years; the life of the permit) with confidence intervals (95%) using a bootstrap method based on observer data for coverage and Atlantic sturgeon interaction levels in North Carolina’s anchored small mesh (<5.0 ISM) inshore gill net fishery for ITP Year 2017 (September 1, 2016 - August 31, 2017).

Management Unit	Season	Total Interactions			
		Authorized (Mortality)		Actual All DPS ²	
		Carolina DPS	Other DPS	Alive	Dead
A	Winter	175 (14)	35 (3)	11 [0,33]	0
	Spring	219 (17)	44 (4)	0	0
	Summer	72 (6)	14 (1)	0	0
	Fall	103 (8)	21 (2)	0	0
B	Winter	2 (1) ¹	n/a	0	0
	Spring	6 (2) ¹	1 (0)	1	0
	Summer	3 (1) ¹	1 (0)	0	0
	Fall	3 (1) ¹	1 (0)	0	0
C	Winter	2 (1) ¹	n/a	0	0
	Spring	2 (1) ¹	n/a	0	0
	Summer	2 (1) ¹	n/a	0	0
	Fall	2 (1) ¹	n/a	0	0
D	Annual	8 (2) ¹	n/a	0	0
E	Annual	8 (2) ¹	n/a	1	0
Total		607 (58)	117 (10)	13	0

¹ Total interaction number represents actual observed and not estimated based on observer coverage. Mortality estimates could not be completed for management units B-E due to low take; thus, if observed interactions were ≤ 5 mortality was one; if observed interactions were >5 mortality was two.

² Fin clip samples have been sent to the lab for genetic analysis

Table 3. 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 4. Regulations for management units by date and regulation change for anchored large and small mesh gill nets for ITP Year 2017 (September 1, 2016 - August 31, 2017).

Year	Date(s)	Regulation change
2016	Sept 5	Management unit A open to large and small mesh gill nets for the new ITP Year 2017 for the western part of the sound, Currituck Sound, and the rivers. All the eastern/southern areas (Croatan and Roanoke Sounds) will remain closed until sea turtle abundance decreases to minimize interactions with sea turtles (M-15-2016).
2016	Sept 5	Portions of management unit B (subunits SGNRA2-4, MGNRA) open to large mesh gill nets for the new ITP Year 2017. Subunits SGNRA1 and CGNRA will remain closed until sea turtle abundance decreases to minimize interactions with sea turtles (M-16-2016).
2016	Sept 5	Management unit E open to small mesh gill nets (large mesh gill nets continually open through summer for the new ITP Year 2017. Portions of upper Cape Fear River and Northeast Cape Fear River remain closed to large mesh gill nets due to sturgeon interactions (M-16-2016).
2016	Oct 3	Remaining portions of management unit B (subunits SGNRA1 and CGNRA) open to large mesh gill nets for the new ITP Year 2017 (M-19-2016).
2016	Oct 1	Closed management unit C to large and small mesh gill nets due to sea turtle interactions (M-20-2016).
2016	Oct 15	Further portions of management unit A open to large and small mesh gill nets for the new ITP Year 2017 for the central part of the sound. All the eastern/southern areas (Croatan and Roanoke Sounds) will remain closed until sea turtle abundance decreases to minimize interactions with sea turtles (M-21-2016).
2016	Oct 17	Management unit D1 open to anchored large mesh gill nets (M-22-2016).
2016	Oct 31	Further portions of management unit A open to anchored large and small mesh gill nets for the new ITP Year 2017 for the central and eastern part of the sound. Croatan and Roanoke sounds will remain closed until sea turtle abundance decreases to minimize interactions with sea turtles (M-23-2016).
2016	Nov 2	Management unit B closed to anchored large mesh gill nets due to sea turtle interactions and the lack of fishermen compliance (M-24-2016).
2016	Dec 1	Management unit A small mesh anchored gill nets 3 though 3 3/4 ISM restrictions while removing attendance requirements for those small mesh anchored gill nets, and requiring small mesh anchored gill nets to be set so as to fish on the bottom and not exceed a vertical height of 48 inches (M-25-2016).
2016	Dec 5	Management unit C open to anchored large and small mesh gill nets (M-27-2016).
2016	Dec 13	Management unit A closed to anchored large mesh gill nets due to reaching allowable Atlantic sturgeon takes (M-32-2016).

Table 4. (cont.).

Year	Date(s)	Regulation change
2017	Jan 29	Portions of management unit A open to anchored large mesh gill nets (northern rivers) while maintaining closure of anchored large mesh gill nets in all other portions to allow directed gill net fisheries for catfish while minimizing interactions with Atlantic sturgeon (M-1-2017).
2017	Feb 6	Further portions of management unit A open to anchored large mesh gill nets (Alligator River/Currituck Sound) while maintaining closure of anchored large mesh gill nets in all other portions to allow directed gill net fisheries for catfish while minimizing interactions with Atlantic sturgeon (M-2-2017).
2017	Feb 15	Management units C, D1, D2, and E implements gear restrictions for the shad fishery (M-4-2017).
2017	Mar 3	Management Unit A open 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 while implementing 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-5-2017).
2017	Mar 25	Removes management Unit A gill net configurations for harvesting American shad and maintains 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-7-2017).
2017	Apr 3	Gill nets with mesh length greater than 5 inches must be equipped with tie downs 10 yards apart and cannot be within 50 yards of the shore in the Neuse, Pamlico, and Pungo Rivers through December 31, 2017. Use of gill nets 5 inches or greater is prohibited within 10 feet of any point on the shoreline while set or deployed unless the net is attended from June to October (proclamation M-8-2017)
2017	May 1	Management unit A small mesh anchored gill net attendance requirement (through November 30, 2017) and closes portions of management unit A (Subunit A-South of US-64-BYP/US-64) to the use of anchored large and small mesh gill nets (M-9-2017).
2017	May 8	Management unit D1 closed to large mesh gill nets and implements attendance requirements for gill nets with a stretched mesh length less than 4 inches in Management Subunit B. 1. (proclamation M-10-2017). **Annual ITP closure***
2017	Jun 19	Management unit B open to large mesh gill nets with a stretched mesh length of 4 inches through 6 1/2 inches. Portions of management unit B (Inlet Corridors) remain closed to the use of gill nets with a stretched mesh length of 4 inches through 6 1/2 inches to minimize interactions with threatened and/or endangered species (M-11-2017).
2017	Jul 28	Closed management unit C to large and small mesh gill nets due to sea turtle interactions for remainder of ITP Year 2017 (M-12-2017).

Table 5. Observer coverage calculated from previous years' 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).

Season ¹	Management Unit ²	Large Mesh		
		Fishing Trips	Observed Trips	Coverage ³
Fall 2016	A	2,234	175	7.8
	B	950	131	13.8
	C	266	37	13.9
	D	344	48	14.0
	E	461	85	18.5
Winter 2016-2017	A	1,066	81	7.6
	B	90	1	1.1
	C	188	29	15.4
	D	5	1	20.0
	E	29	6	20.7
Spring 2017	A	2,277	181	7.9
	B	n/a	n/a	n/a
	C	878	96	10.9
	D	93	10	10.8
	E	279	55	19.7
Summer 2017	A	1,338	66	4.9
	B	812	128	15.8
	C	403	28	6.9
	D	123	24	19.6
	E	505	112	22.2
Total		12,340	1,294	10.5

¹ Final trip ticket data for 2016 (September - December) and preliminary trip ticket data for 2017 (January - August)

² Table 4 contains all the openings and closings for each management unit

³ Based on final trips for 2016 (September - December) and estimated trips for 2017 (January - August) compared to observer large mesh trips

Table 6. Observer coverage calculated from previous years' 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 ¹	Management Unit ²	Small Mesh		
		Fishing Trips	Observed Trips	Coverage ³
Fall 2016	A	380	0	0.0
	B	1,058	18	1.7
	C	79	7	8.9
	D	300	25	8.3
	E	483	27	5.6
Winter 2016-2017	A	1,028	49	4.8
	B	406	9	2.2
	C	124	22	17.7
	D	63	8	12.7
	E	49	6	12.2
Spring 2017	A	1,311	10	0.8
	B	1,295	21	1.6
	C	263	16	6.1
	D	82	8	9.8
	E	201	14	7.0
Summer 2017	A	280	4	1.4
	B	1,048	10	1.0
	C	312	10	3.2
	D	64	4	6.3
	E	253	4	1.6
Total		9,077	272	3.0

¹ Final trip ticket data for 2016 (September - December) and preliminary trip ticket data for 2017 (January - August)

² Table 4 contains all the openings and closings for each management unit

³ Based on final trips for 2016 (September - December) and estimated trips for 2017 (January - August) compared to observer small mesh trips

Table 7. Summary of observed Atlantic sturgeon interactions in anchored large and small mesh gill nets through the NCDMF Observer Program for ITP Year 2017 (September 1, 2016 - August 31, 2017).

Date	Management Unit	Latitude	Longitude	Species	Disposition	Tag	Length	
						PIT	Total	Fork
9/8/2016	A	36.03066	76.67515	Atlantic	alive	n/a	n/a	n/a
9/10/2016	A	36.41691	75.96635	Atlantic	alive	989.001001951870	880	810
9/13/2016	A	36.08490	76.35124	Atlantic	alive	982.000364295072	670	610
9/13/2016	A	35.99855	76.67548	Atlantic	alive	989.001001951959	860	755
9/13/2016	A	36.00041	76.67593	Atlantic	alive	989.001001951905	889	801
9/13/2016	A	36.00366	76.57590	Atlantic	alive	989.001001951876	1,580	1,420
9/13/2016	A	36.00841	76.67751	Atlantic	alive	989.001001951968	775	607
9/16/2016	A	36.05366	76.41378	Atlantic	alive	989.001001951957	524	450
9/16/2016	A	36.05366	76.41378	Atlantic	alive	989.001001951942	445	385
9/16/2016	A	36.04910	76.42170	Atlantic	alive	989.001001951899	750	670
9/16/2016	A	36.05366	76.41378	Atlantic	dead	n/a	431	376
9/19/2016	A	36.08719	76.31416	Atlantic	alive	982.000364296879	543	470
9/19/2016	A	36.00366	76.31114	Atlantic	alive	989.001001951960	439	395
9/22/2016	A	36.06849	76.38303	Atlantic	alive	989.001001951932	741	659
9/22/2016	A	36.06849	76.38303	Atlantic	alive	989.001001951903	494	439
9/22/2016	A	36.01826	76.68929	Atlantic	alive	n/a	n/a	n/a
9/22/2016	A	36.01826	76.68929	Atlantic	alive	989.001001951933	831	770
9/22/2016	A	36.01952	76.69128	Atlantic	alive	982.000362056039	1,160	1,025
9/22/2016	A	36.02375	76.69531	Atlantic	alive	384M 187	973	872
9/22/2016	A	36.02974	76.69764	Atlantic	alive	982.000364306544	700	655
9/22/2016	A	36.03482	76.69846	Atlantic	alive	982.000362056100	775	690
9/22/2016	A	36.03425	76.69804	Atlantic	dead	989.001001951964	1,020	910
9/29/2016	A	35.99757	76.39628	Atlantic	alive	n/a	812	n/a
9/29/2016	A	36.00136	76.39521	Atlantic	alive	n/a	406	n/a
9/29/2016	A	36.00226	76.39524	Atlantic	alive	n/a	1,016	n/a
10/4/2016	A	36.00159	76.68110	Atlantic	alive	982.000364296196	467	400
10/4/2016	A	36.00411	76.68220	Atlantic	alive	982.000364298284	445	382
10/4/2016	A	36.00430	76.68220	Atlantic	alive	982.000364306468	540	470
10/4/2016	A	36.00873	76.68284	Atlantic	alive	982.000364297640	482	405
10/4/2016	A	36.02487	76.70173	Atlantic	alive	982.000364297239	450	385
10/4/2016	A	36.02487	76.70173	Atlantic	alive	982.000364358743	455	388
10/4/2016	A	36.02487	76.70173	Atlantic	alive	982.0003364296489	420	380
10/14/2016	E	34.53754	77.37932	Atlantic	alive	982.000364301750	991	855
10/19/2016	A	35.99030	76.39303	Atlantic	alive	n/a	n/a	n/a
10/19/2016	A	35.99042	76.39438	Atlantic	alive	n/a	n/a	n/a
10/19/2016	A	35.99067	76.39503	Atlantic	alive	982.000362198455	496	438
10/19/2016	A	35.99036	76.39541	Atlantic	alive	982.000362056063	546	451

Table 7. (cont.).

Date	Management Unit	Latitude	Longitude	Species	Disposition	Tag	Length	
						PIT	Total	Fork
10/19/2016	A	35.99073	76.39649	Atlantic	alive	982.000362199051	495	451
10/19/2016	A	35.99127	76.39980	Atlantic	alive	982.000362190435	493	448
10/19/2016	A	35.99134	76.40063	Atlantic	alive	982.000362056540	415	394
10/20/2016	A	36.00214	76.23837	Atlantic	alive	n/a	1,219	n/a
10/20/2016	A	36.00292	76.23818	Atlantic	alive	n/a	914	n/a
11/1/2016	A	35.98326	76.65352	Atlantic	alive	982.000362199115	589	509
11/2/2016	A	35.98329	76.65231	Atlantic	alive	982.000362199115	589	506
11/3/2016	A	36.09223	76.27110	Atlantic	alive	982.000362191076	576	481
11/3/2016	A	36.09223	76.27110	Atlantic	alive	982.000362056370	827	730
11/3/2016	A	36.09223	76.27110	Atlantic	alive	982.000362056329	624	521
11/3/2016	A	36.09223	76.27110	Atlantic	alive	982.000362058462	618	521
11/3/2016	A	36.09223	76.27110	Atlantic	alive	982.000362049181	571	490
11/3/2016	A	35.98676	76.26745	Atlantic	alive	n/a	508	n/a
11/3/2016	A	36.00460	76.23548	Atlantic	alive	n/a	406	n/a
11/9/2016	A	35.98683	76.26207	Atlantic	alive	n/a	508	n/a
11/9/2016	A	35.98683	76.26207	Atlantic	alive	n/a	584	n/a
12/3/2016	A	36.06278	76.30528	Atlantic	alive	982.000362048651	620	525
12/3/2016	A	36.06278	76.30528	Atlantic	alive	982.000362055613	599	515
12/13/2016	A	35.99166	76.68108	Atlantic ¹	alive	982.000362055869	459	403
12/13/2016	A	36.02978	76.06973	Atlantic	alive	982.000362197191	472	413
12/13/2016	A	36.06193	76.17842	Atlantic	alive	982.000364358833	570	530
12/13/2016	A	36.06031	76.17773	Atlantic	alive	982.000364297501	705	630
12/13/2016	A	36.05937	76.17694	Atlantic	alive	982.000364298501	650	560
12/13/2016	A	36.05937	76.17694	Atlantic	alive	982.000364197049	700	620
12/13/2016	A	36.09528	76.12910	Atlantic	alive	982.000364301096	640	560
12/13/2016	A	35.99252	76.23865	Atlantic	alive	n/a	457	n/a
2/21/2017	C	35.00206	76.96243	Atlantic	alive	982.000364297051	530	n/a
3/6/2017	A	36.03043	76.42896	Atlantic	alive	n/a	623	530
3/6/2017	A	36.03043	76.42896	Atlantic	alive	n/a	453	431
3/6/2017	A	36.02819	76.42939	Atlantic	alive	n/a	654	573
3/7/2017	A	35.99262	76.50180	Atlantic	alive	982.000362196348	703	605
3/7/2017	A	35.99607	76.50367	Atlantic	alive	982.000362056085	704	604
3/7/2017	A	35.99667	76.50459	Atlantic	alive	982.000362319707	609	600
3/7/2017	A	35.99780	76.50442	Atlantic	alive	989.001000716254	605	506
3/7/2017	A	36.00143	76.50641	Atlantic	alive	982.000362191902	503	501
3/7/2017	A	36.00148	76.50633	Atlantic	alive	982.000362319737	607	599
3/7/2017	C	35.09871	77.01007	Atlantic	alive	n/a	n/a	n/a
3/11/2017	A	35.99684	76.50465	Atlantic	alive	982.000362320105	485	469

Table 7. (cont.).

Date	Management Unit	Latitude	Longitude	Species	Disposition	Tag	Length	
						PIT	Total	Fork
3/13/2017	A	36.08794	76.70763	Atlantic	alive	982.000362055657	624	526
3/17/2017	A	36.06431	76.38897	Atlantic	alive	982.000364297455	705	609
3/17/2017	A	36.03877	76.43262	Atlantic	alive	989.001001951888	560	480
3/17/2017	A	36.05758	76.40439	Atlantic	alive	982.000364296885	721	660
3/17/2017	A	36.05844	76.41477	Atlantic	alive	982.000362198352	546	471
3/17/2017	A	35.99195	76.50192	Atlantic	alive	982.000364298224	660	565
3/17/2017	A	35.99359	76.50179	Atlantic	alive	989.001003731500	610	530
3/17/2017	A	35.99652	76.50444	Atlantic	alive	982.000364216095	790	680
3/17/2017	A	35.99652	76.50444	Atlantic	alive	982.000364297516	690	590
3/17/2017	A	35.99773	76.50467	Atlantic	alive	982.000364300940	644	570
3/17/2017	A	35.99956	76.50495	Atlantic	alive	982.000364301817	676	562
3/20/2017	A	36.07744	76.72431	Atlantic	alive	982.000364295757	510	420
3/20/2017	A	36.05984	76.69924	Atlantic	alive	989.001001952757	640	560
3/21/2017	A	36.03965	76.43526	Atlantic	alive	982.000362055546	607	491
3/21/2017	A	36.03967	76.43527	Atlantic	alive	982.000362048379	608	501
3/21/2017	A	36.03968	76.43536	Atlantic	alive	982.000362320322	609	508
3/21/2017	A	35.91083	75.75950	Atlantic	alive	982.000364358515	665	578
3/21/2017	A	35.94988	75.75931	Atlantic	alive	982.000364297487	636	545
3/21/2017	A	35.91362	75.75830	Atlantic	alive	982.000364296912	649	562
3/22/2017	A	36.03951	76.43639	Atlantic	alive	982.000362055546	607	491
3/23/2017	C	35.00940	76.97876	Atlantic	alive	982.000364298492	895	785
3/24/2017	C	35.42296	76.84188	Atlantic	alive	982.000364296308	681	590
3/28/2017	A	35.97484	76.63765	Atlantic	alive	982.000362191535	608	509
3/29/2017	A	35.96500	76.56702	Atlantic ²	alive	989.001006519318	674	582
3/29/2017	A	35.96684	76.56679	Atlantic	alive	982.000362048010	740	661
4/3/2017	E	33.99874	77.92047	Atlantic ¹	alive	982.000362191717	625	535
4/5/2017	B	35.16601	75.89088	Atlantic ¹	alive	n/a	n/a	n/a
4/21/2017	A	36.02403	75.72512	Atlantic	alive	982.000364297026	740	667
8/31/2017	A	36.00890	76.24223	Atlantic	alive	n/a	647	n/a

¹ Indicates small mesh gear² Recaptured Atlantic sturgeon

Table 8. Summary of reported Atlantic sturgeon interactions in anchored large mesh gill nets through the NCDMF Observer Program for ITP Year 2017 (September 1, 2016 - August 31, 2017).

Date	Management Unit	Latitude	Longitude	Species	Disposition	Length	
						Total	Fork
9/7/2016	A	n/a	n/a	Atlantic	alive	n/a	n/a
9/7/2016	A	n/a	n/a	Atlantic	alive	n/a	n/a
1/26/2017	A	36.03523	76.69909	Atlantic ¹	alive	635	438
4/18/2017	A	n/a	n/a	Atlantic	alive	n/a	n/a

¹ Sturgeon was encountered while Marine Patrol officers were retrieving illegally set gill net

Table 9. Number of gill-net checks made and citations issued by Marine Patrol for large and small mesh gill nets by season during ITP Year 2017 (September 1, 2016 - August 31, 2017).

Season	# Gill Net Checks	# Citations
Fall 2016	366	44
Winter 2016-17	274	144
Spring 2017	395	10
Summer 2017	960	0
Total	1,995	198

Table 10. Citations written by Marine Patrol for large and small mesh gill nets by season and violation code during ITP Year 2017 (September 1, 2015 - August 31, 2016).

Season ¹	Violation		
	Date	Code	Description
Fall 2016	9/1/2016	NETG04	Leave gill net in waters when could not be legally fished
	9/8/2016	NETG03	Using gill net with improper buoys or identification
	9/13/2016	NETG01	Leave gill net in coastal waters unattended
	9/14/2016	NETG03	Using gill net with improper buoys or identification
	9/15/2016	NETG03	Using gill net with improper buoys or identification
	9/15/2016	NETG03	Using gill net with improper buoys or identification
	9/17/2016	NETG04	Leave gill net in waters when could not be legally fished
	9/20/2016	NETG03	Using gill net with improper buoys or identification
	9/20/2016	NETG53	Use large mesh gill net with corks or floats on top line
	9/22/2016	NETG03	Using gill net with improper buoys or identification
	9/22/2016	NETG08	Gill net within 200 yards of pound net
	9/25/2016	NETG03	Using gill net with improper buoys or identification
	9/29/2016	NETG03	Using gill net with improper buoys or identification
	10/2/2016	NETG04	Leave gill net in waters when could not be legally fished
	10/3/2016	NETG04	Leave gill net in waters when could not be legally fished
	10/17/2016	NETG01	Leave gill net in coastal waters unattended
	10/17/2016	NETG03	Using gill net with improper buoys or identification
	10/18/2016	NETG03	Using gill net with improper buoys or identification
	10/20/2016	NETG03	Using gill net with improper buoys or identification
	10/20/2016	NETG33	Violate provisions of Proc M-19-09 setting gill net more than 15 meshes deep in Core Sound
	10/20/2016	NETG53	Use large mesh gill net with corks or floats on top line
	10/22/2016	NETG03	Using gill net with improper buoys or identification
	10/23/2016	NETG03	Using gill net with improper buoys or identification
	10/29/2016	NETG17	Sink net in Neuse River during closed season
	10/30/2016	NETG34	Use unattended gill net w/mesh less than 5" in commercial operation from May 1 through Nov 30

¹ There were no citations written during the Summer 2017 season

Table 10. (cont.).

Season ¹	Violation		
	Date	Code	Description
Fall 2016	10/31/2016	NETG04	Leave gill net in waters when could not be legally fished
	11/3/2016	NETG03	Using gill net with improper buoys or identification
	11/3/2016	NETG03	Using gill net with improper buoys or identification
	11/3/2016	NETG30	Leave RCGL gill net unattended
	11/5/2016	NETG03	Using gill net with improper buoys or identification
	11/5/2016	NETG16	Use an unattended gill net in a restricted area
	11/5/2016	NETG30	Leave RCGL gill net unattended
	11/6/2016	NETG01	Leave gill net in coastal waters unattended
	11/6/2016	NETG04	Leave gill net in waters when could not be legally fished
	11/17/2016	NETG37	Leave small mesh gill nets unattended
	11/17/2016	NETG37	Leave small mesh gill nets unattended
	11/17/2016	NETG37	Leave small mesh gill nets unattended
	11/19/2016	NETG02	Using gill net without buoys or identification
	11/19/2016	NETG03	Using gill net with improper buoys or identification
	11/22/2016	NETG01	Leave gill net in coastal waters unattended
	11/22/2016	NETG02	Using gill net without buoys or identification
	11/22/2016	NETG03	Using gill net with improper buoys or identification
	11/22/2016	NETG37	Leave small mesh gill nets unattended
	11/22/2016	NETG37	Leave small mesh gill nets unattended
	Winter 2016-2017	12/2/2016	NETG02
12/2/2016		NETG02	Using gill net without buoys or identification
1/1/2017		NETG01	Leave gill net in coastal waters unattended
1/13/2017		NETG03	Using gill net with improper buoys or identification
1/13/2017		NETG01	Leave gill net in coastal waters unattended
1/20/2017		NETG10	Gill net with illegal mesh size

¹ There were no citations written during the Summer 2017 season

Table 10. (cont.).

Season ¹	Violation			
	Date	Code	Description	
Winter 2016-2017	1/20/2017	NETG10	Gill net with illegal mesh size	
	1/20/2017	NETG10	Gill net with illegal mesh size	
	1/20/2017	NETG10	Gill net with illegal mesh size	
	1/20/2017	NETG10	Gill net with illegal mesh size	
	1/20/2017	NETG10	Gill net with illegal mesh size	
	1/20/2017	NETG61	Gill net tie down violation	
	1/20/2017	NETG10	Gill net with illegal mesh size	
	1/24/2017	NETG10	Gill net with illegal mesh size	
	1/25/2017	NETG10	Gill net with illegal mesh size	
	1/25/2017	NETG10	Gill net with illegal mesh size	
	2/3/2017	NETG02	Using gill net without buoys or identification	
	2/15/2017	NETG04	Leave gill net in waters when could not be legally fished	
	2/21/2017	NETG29	RCGL gear without proper buoys	
	Spring 2017	3/28/2017	NETG46	Set or retrieve large mesh gill nets later than one hour after sunrise on Tuesday through Friday
		3/28/2017	NETG53	Use large mesh gill net with corks or floats on top line
4/10/2017		NETG22	Improperly set gill net	
4/15/2017		NETG03	Using gill net with improper buoys or identification	
4/15/2017		NETG60	Use gill nets with a mesh size of more than 6.5 inches (stretched mesh) in violation of proclamation	
4/20/2017		NETG03	Using gill net with improper buoys or identification	
4/20/2017		NETG29	RCGL gear without proper buoys	
4/21/2017		NETG22	Improperly set gill net	
5/7/2017	NETG29	RCGL gear without proper buoys		
5/17/2017	NETG45	Set or retrieve large mesh gill nets no sooner than one hour before sunset on Monday through Friday		

¹ There were no citations written during the Summer 2017 season

Table 11. Contacts attempted (n = 9,132) 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 2017 for ITP Year 2017 (September 1, 2016 - August 31, 2017).

Season	Categories (%) ¹														Total
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
Fall 2016	63	514	181	66	47	34	160	5	284	61	53	11	296	885	2,660
	2.4%	19.3%	6.8%	2.5%	1.8%	1.3%	6.0%	0.2%	10.7%	2.3%	2.0%	0.4%	11.1%	33.3%	100.0%
Winter 2016-2017	Categories (%) ¹														Total
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
Winter 2016-2017	34	356	52	24	7	22	54	12	114	13	35	10	159	464	1,356
	2.5%	26.3%	3.8%	1.8%	0.5%	1.6%	4.0%	0.9%	8.4%	1.0%	2.6%	0.7%	11.7%	34.2%	100.0%
Spring 2017	Categories (%) ¹														Total
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
Spring 2017	61	440	171	30	18	28	98	9	130	20	93	16	320	991	2,425
	2.5%	18.1%	7.1%	1.2%	0.7%	1.2%	4.0%	0.4%	5.4%	0.8%	3.8%	0.7%	13.2%	40.9%	100.0%
Summer 2017	Categories (%) ¹														Total
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
Summer 2017	64	482	161	24	26	37	104	4	177	53	107	17	385	1,050	2,691
	2.4%	17.9%	6.0%	0.9%	1.0%	1.4%	3.9%	0.1%	6.6%	2.0%	4.0%	0.6%	14.3%	39.0%	100.0%
Total	Categories (%) ¹														Total
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
Total	222	1,792	565	144	98	121	416	30	705	147	288	54	1,160	3,390	9,132
	2.4%	19.6%	6.2%	1.6%	1.1%	1.3%	4.6%	0.3%	7.7%	1.6%	3.2%	0.6%	12.7%	37.1%	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 12. Notice of Violations issued by season, date and violation code for the Estuarine Gill Net Permit for ITP Year 2017 (September 1, 2016 - August 31, 2017).

Season	Date	Code	Description
Fall 2016	11/3/2016	EGNP30	Failure to comply with gill net configurations outlined in proclamation
	11/3/2016	EGNP30	Failure to comply with gill net configurations outlined in proclamation
	11/3/2016	EGNP99	Failure to comply with statutes(s), rules(s), and/or proclamation(s)
	11/3/2016	EGNP99	Failure to comply with statutes(s), rules(s), and/or proclamation(s)
	11/29/2016	EGNP11	Failure to attend nets
	11/29/2016	EGNP11	Failure to attend nets
	11/29/2016	EGNP99	Failure to comply with statutes(s), rules(s), and/or proclamation(s)
	11/29/2016	EGNP99	Failure to comply with statutes(s), rules(s), and/or proclamation(s)
Winter 2016-2017	1/12/2017	EGNP11	Failure to attend nets
	1/12/2017	EGNP11	Failure to attend nets
	1/12/2017	EGNP99	Failure to comply with statutes(s), rules(s), and/or proclamation(s)
	1/12/2017	EGNP99	Failure to comply with statutes(s), rules(s), and/or proclamation(s)
	1/12/2017	EGNP99	Failure to comply with statutes(s), rules(s), and/or proclamation(s)
	1/13/2017	EGNP11	Failure to attend nets
	1/26/2017	EGNP30	Failure to comply with gill net configurations outlined in proclamation
	1/26/2017	EGNP30	Failure to comply with gill net configurations outlined in proclamation
	1/26/2017	EGNP30	Failure to comply with gill net configurations outlined in proclamation
	2/1/2017	EGNP14	Mislead observers to avoid fishing trip
	2/1/2017	EGNP25	Refuse to allow fisheries observers onboard or collect data
	2/1/2017	EGNP30	Failure to comply with gill net configurations outlined in proclamation
	2/1/2017	EGNP30	Failure to comply with gill net configurations outlined in proclamation
	2/1/2017	EGNP30	Failure to comply with gill net configurations outlined in proclamation
	2/1/2017	EGNP30	Failure to comply with gill net configurations outlined in proclamation
	2/1/2017	EGNP30	Failure to comply with gill net configurations outlined in proclamation
	2/1/2017	EGNP99	Failure to comply with statutes(s), rules(s), and/or proclamation(s)
	Spring 2017	3/6/2017	EGNP30
4/24/2017		EGNP30	Failure to comply with gill net configurations outlined in proclamation
4/24/2017		EGNP30	Failure to comply with gill net configurations outlined in proclamation
4/24/2017		EGNP99	Failure to comply with statutes(s), rules(s), and/or proclamation(s)
4/28/2017		EGNP10	Set more than the legal length of gill net
Summer 2017	4/28/2017	EGNP99	Failure to comply with statutes(s), rules(s), and/or proclamation(s)
	6/28/2017	EGNP10	Set more than the legal length of gill net
	6/28/2017	EGNP99	Failure to comply with statutes(s), rules(s), and/or proclamation(s)
	8/24/2017	EGNP30	Failure to comply with gill net configurations outlined in proclamation

FIGURES

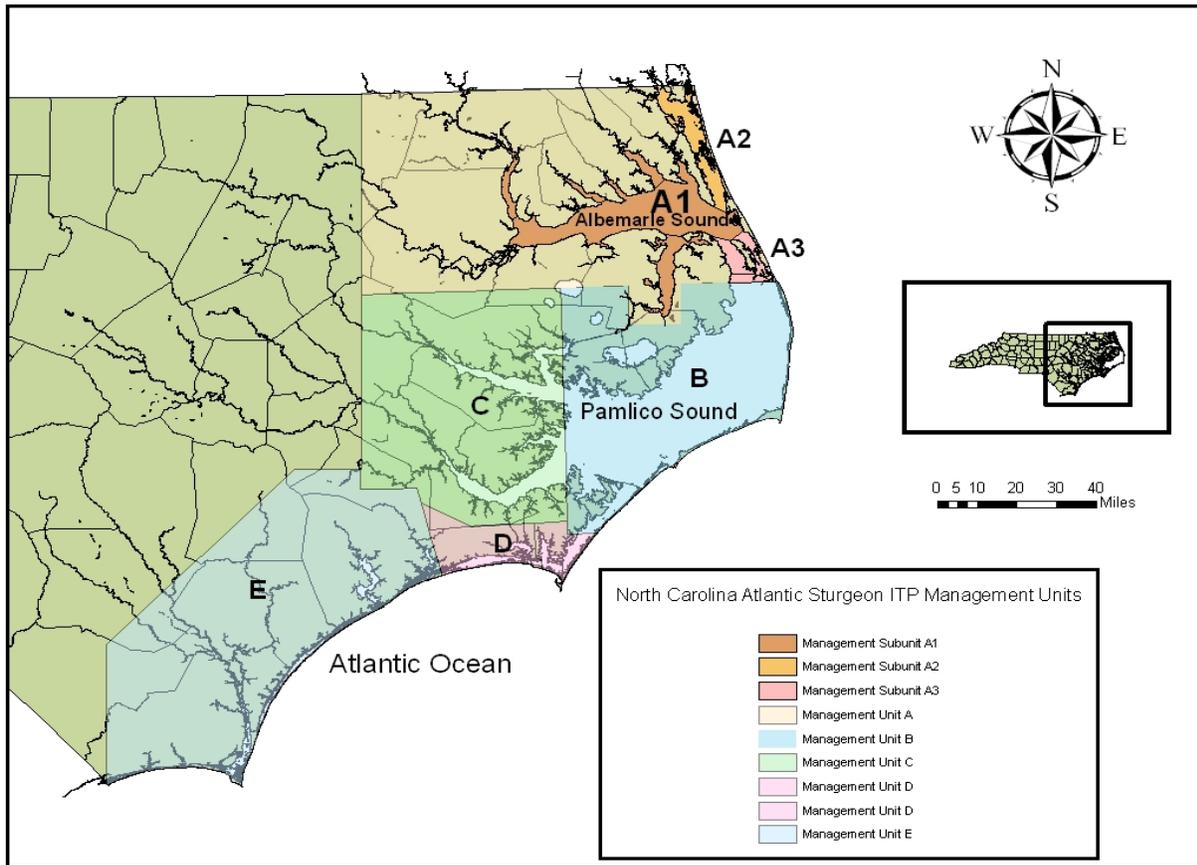


Figure 1. Management units (A1, A2, A3, B, C, D, and E) as outlined in the Conservation Plan and utilized by the Observer Program for ITP Year 2017 (September 1, 2016 – August 31, 2017).

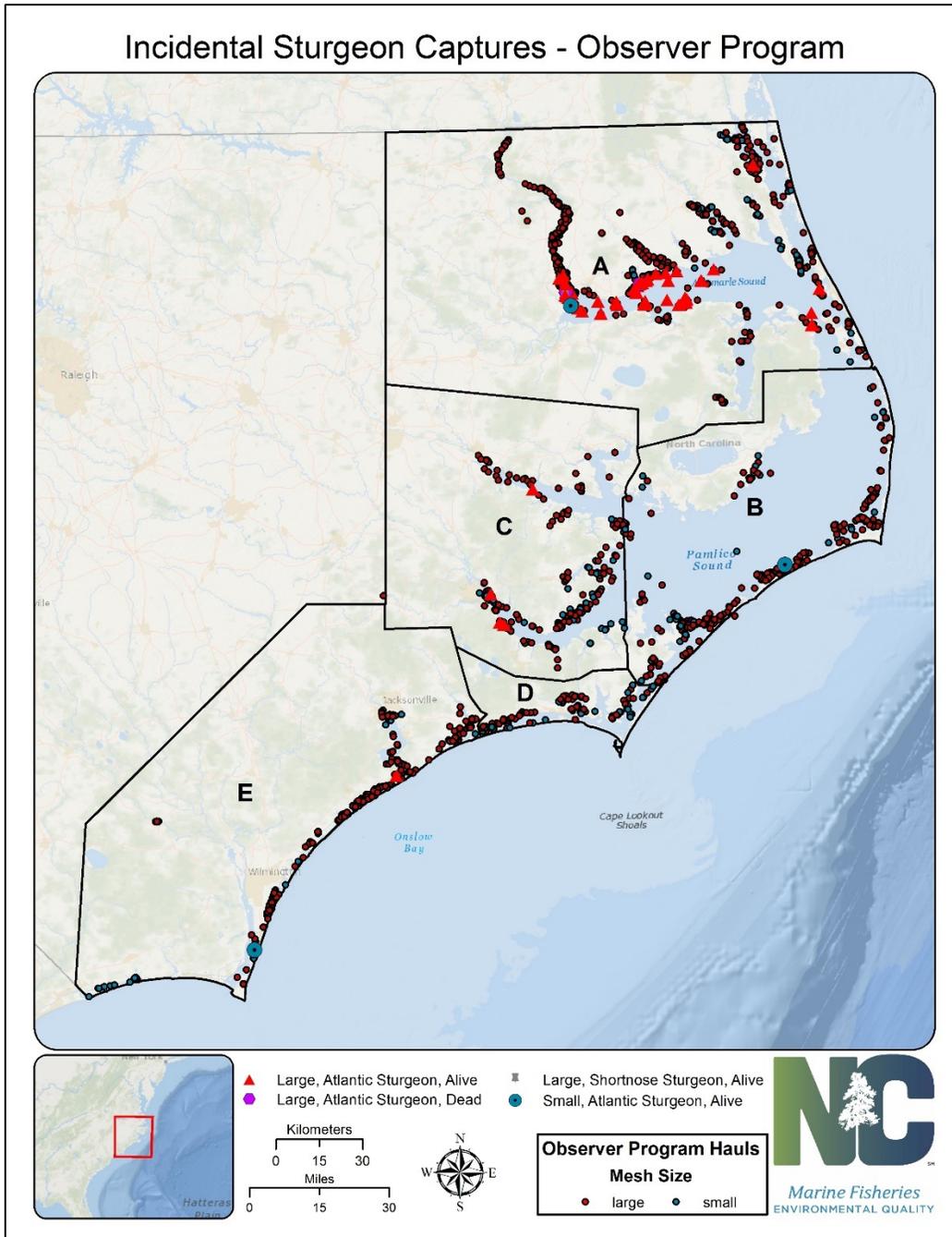


Figure 2. Atlantic sturgeon interaction locations by species, disposition, and gear and observer trips (hauls) by gear throughout all management units for ITP Year 2017 (September 1, 2016 – August 31, 2017).

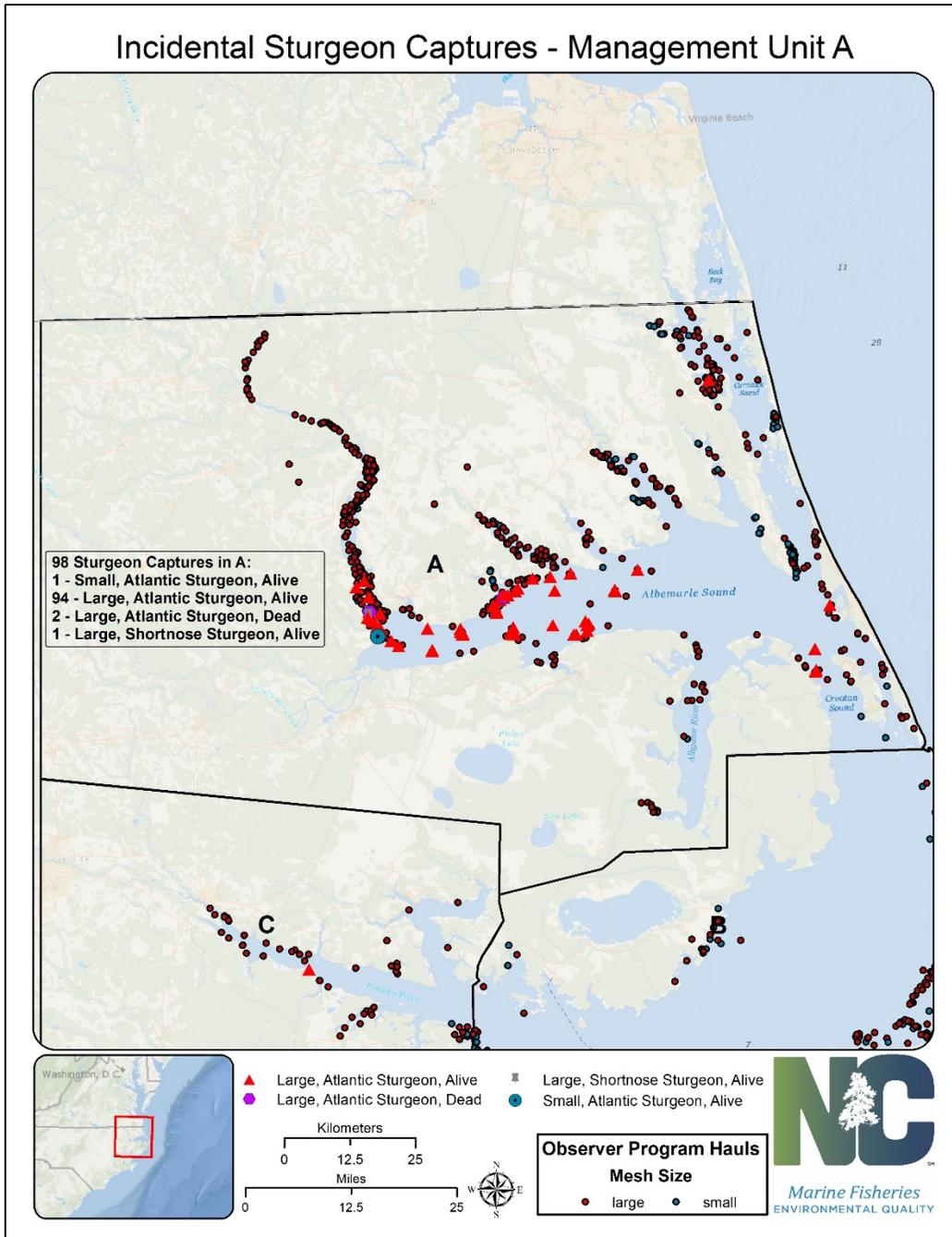


Figure 3. Atlantic sturgeon interaction locations by species, disposition, and gear and observer trips (hauls) by gear in management unit A for ITP Year 2017 (September 1, 2016 – August 31, 2017).

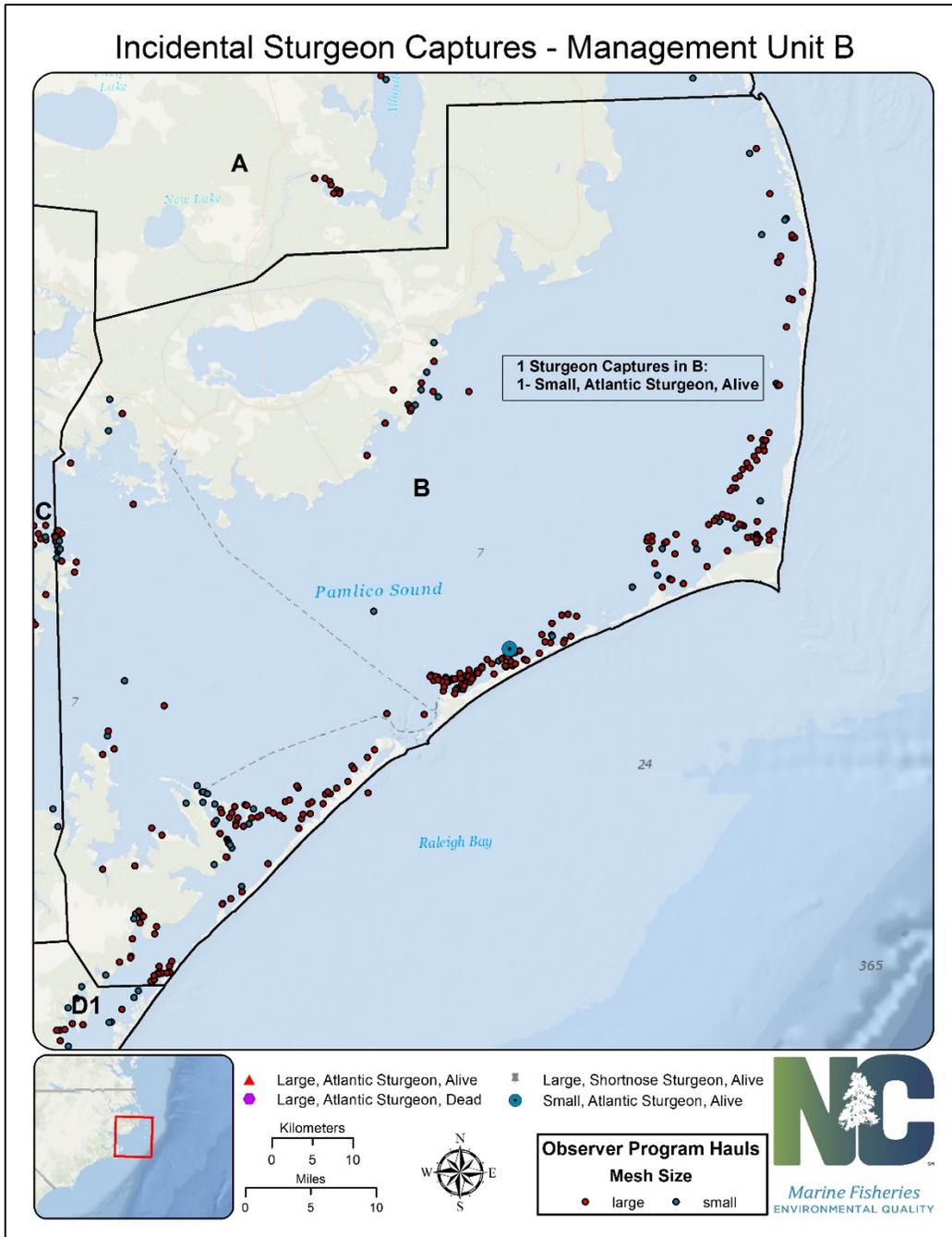


Figure 4. Atlantic sturgeon interaction locations by species, disposition, and gear and observer trips (hauls) by gear in management unit B for ITP Year 2017 (September 1, 2016 – August 31, 2017).

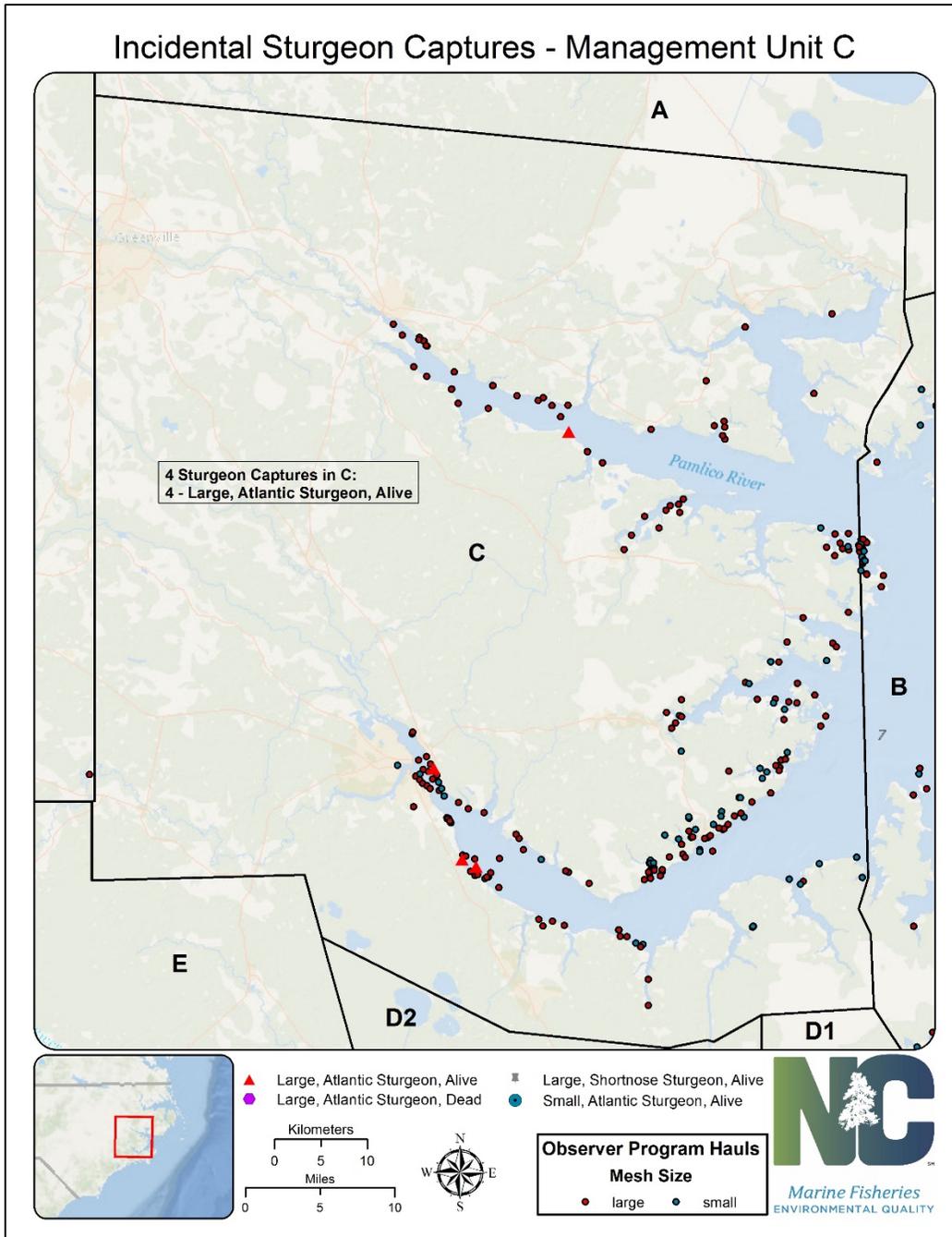


Figure 5. Atlantic sturgeon interaction locations by species, disposition, and gear and observer trips (hauls) by gear in management unit C for ITP Year 2017 (September 1, 2016 – August 31, 2017).

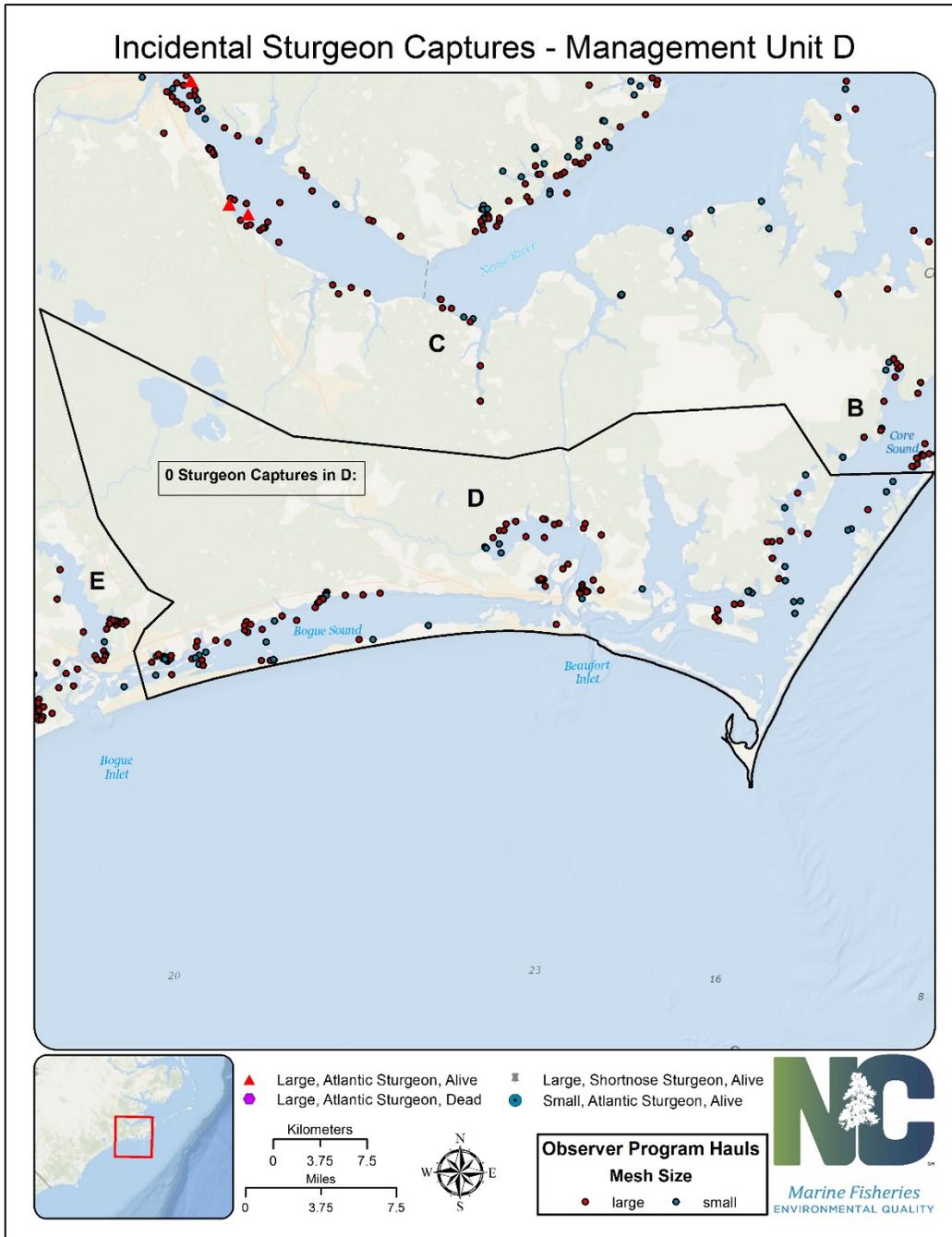


Figure 6. Atlantic sturgeon interaction locations by species, disposition, and gear and observer trips (hauls) by gear in management unit D for ITP Year 2017 (September 1, 2016 – August 31, 2017).

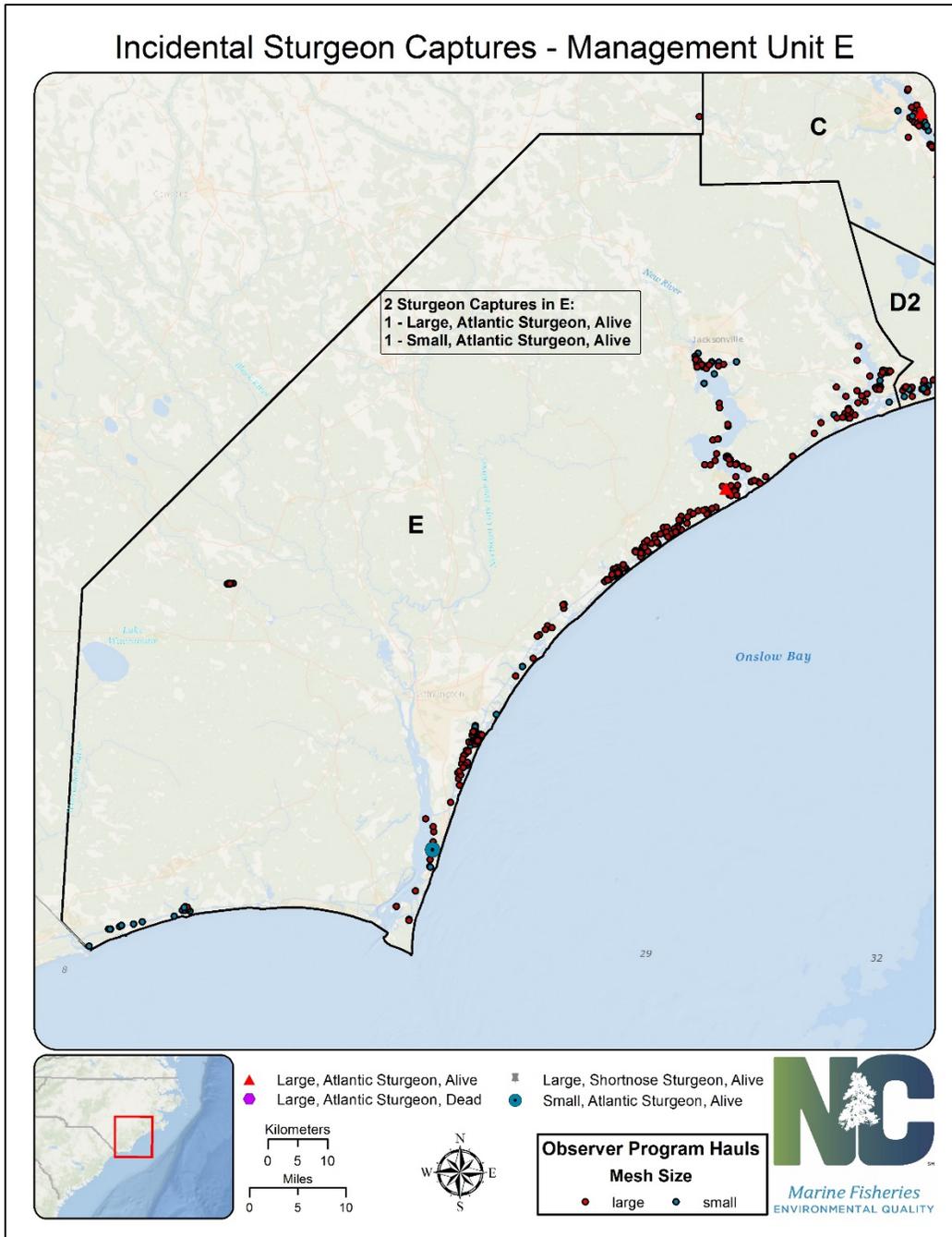


Figure 7. Atlantic sturgeon interaction locations by species, disposition, and gear and observer trips (hauls) by gear in management unit E for ITP Year 2017 (September 1, 2016 – August 31, 2017).

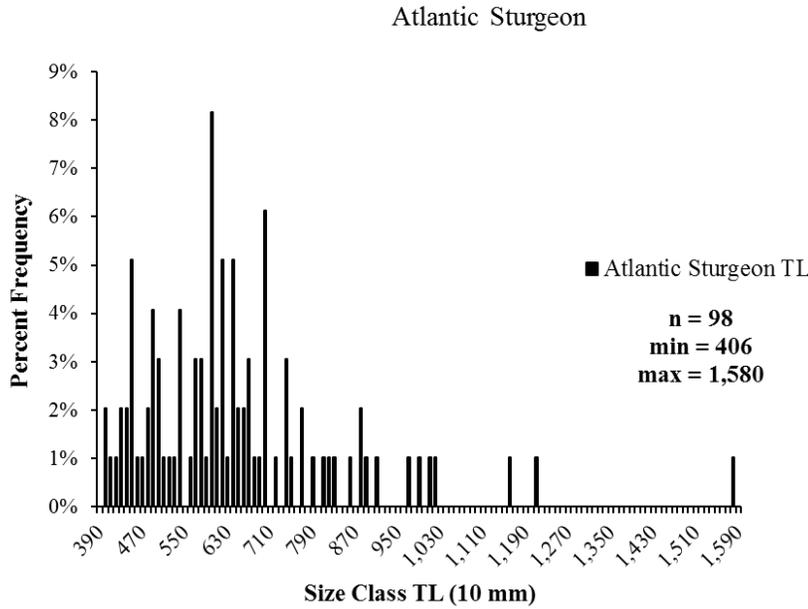


Figure 8. Length-frequency (total length) of observed incidental captures of Atlantic sturgeon where measurements were obtained (n = 98) by the Observer Program from onboard and alternative platform observations for ITP Year 2017 (September 1, 2016 – August 31, 2017).

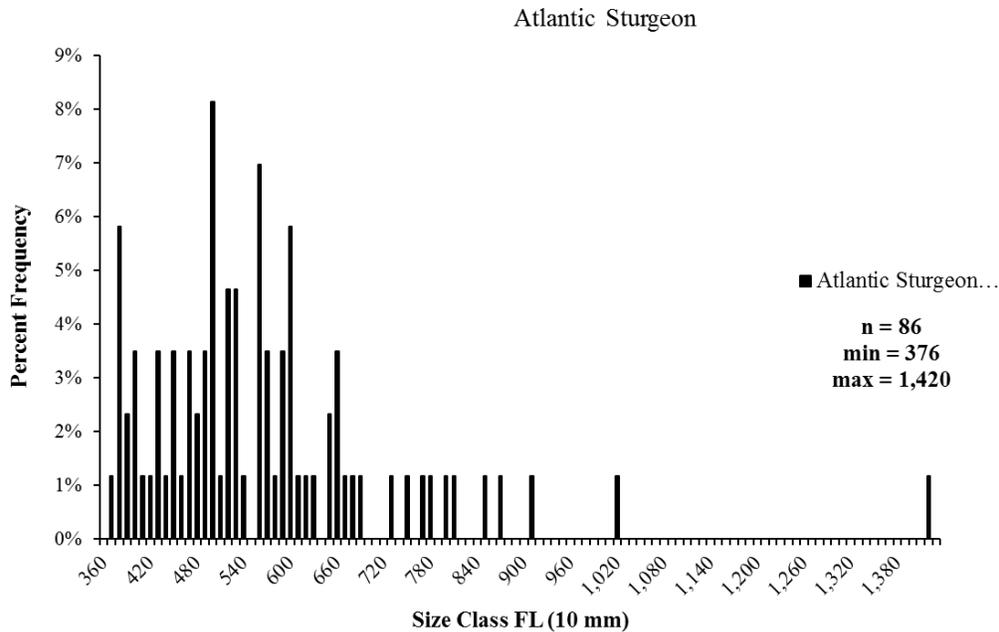


Figure 9. Length-frequency (fork length) of observed incidental captures of Atlantic sturgeon where measurements were obtained (n = 86) by the Observer Program from onboard and alternative platform observations for ITP Year 2017 (September 1, 2016 – August 31, 2017).

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
Director, Office of Protected Resources

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I acknowledge the minor modification specified above to Permit No. 16230 issued under Section 10 (a)(1)(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

APPENDIX B



ROY COOPER
Governor

MICHAEL S. REGAN
Secretary

BRAXTON C. DAVIS
Director

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

Dear Angela:

The North Carolina Division of Marine Fisheries (NCDMF) Observer Program data have been updated using the finalized 2016 Trip Ticket Program (TTP) data. The Annual Completion Report for the Atlantic Sturgeon Incidental Take Permit (ITP) No. 18102 was completed for ITP Year 2016 and submitted in February 2017. Using the finalized 2016 data, Tables 1, 2, 5, and 6 from the Completion Report were updated to reflect the final estimates of observer coverage and Atlantic sturgeon takes (Tables 1 - 4). The fall 2015 season was based on finalized 2015 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 winter 2015 – 2016 season had an increase in fishing trips for anchored large mesh gill nets than previously estimated in management unit A, a decrease in fishing trips in management units B, C, and E, and fishing trips remaining constant in management unit D (Table 1). Observer coverage goals for anchored large mesh gill nets were met in management units C and E for the winter 2015 – 2016 season. Fishing activity was sparse in management unit B (n = 35 fishing trips) and management unit D (n = 1 fishing trip) during the winter 2015 – 2016 season. Observer coverage for management unit A during the same period totaled 3.0% with 52 observed anchored large mesh gill-net trips completed (Table 1).

The spring 2016 season had an increase in fishing trips for anchored large mesh gill nets than previously estimated in management units A, C, and D with all other management units having a decrease in fishing trips (Table 1). Observer coverage goals for anchored large mesh gill nets were met in all management units except management unit D for the spring 2016 season. Minimal trips (n = 4) were obtained in management unit D during the spring 2016 season due to portions (management unit D1) of the management unit being closed for the latter portion of the spring 2016 season and minimal fishing effort (n = 97 fishing trips) while open. While observer coverage goals were not met in management unit D, they were far exceeded in management units B (15.8%) and E (30.2%) for anchored large mesh gill nets (Table 1).



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The summer 2016 season had an increase in fishing trips for anchored large mesh gill nets than previously estimated in all management unit except C (Table 1). Observer coverage goals for anchored large mesh gill nets were met in all management units except management units A and B for the summer 2016 season. Portions of management unit D (management unit D1) are closed annually from May 8 through October 14 as described in the ITP. Management unit A was open for only seven days before being closed to anchored large and small mesh gill nets for the remainder of the summer 2016 season allowing for only five trips to be obtained before the closure was implemented. Management unit B was open for only three days before being closed to anchored large mesh gill nets for the remainder of the summer 2016 season allowing for only three trips to be obtained before the closure was implemented. While observer coverage goals were not met in management units A and B, they were exceeded in management units C (11.0%), D (13.5%), and E (19.8%) for anchored large mesh gill nets (Table 1).

Anchored Small Mesh

The winter 2015 – 2016 season had an increase in fishing trips for anchored small mesh gill nets than previously estimated in management units A and E (Table 2). Observer coverage goals for anchored small mesh gill nets were met in all management units except management unit B for the winter 2015 – 2016 season. Observer coverage for management unit B during this period totaled 0.6% with three observed anchored small mesh gill-net trips completed (Table 2).

The spring 2016 season had an increase in fishing trips for anchored small mesh gill nets than previously estimated in management unit B (Table 2). Management unit E closed to anchored small mesh gill nets on May 4, 2016 for the remainder of ITP Year 2016 due to reaching allowable sea turtle takes. Observer coverage goals for anchored small mesh gill nets were met in all management units for the spring 2016 season. Furthermore, observer coverage goals were far exceeded in management units A (4.1%), C (7.4%), D (14.8%), and E (8.3%) for anchored small mesh gill nets (Table 2).

The summer 2016 season had an increase in fishing trips for anchored small mesh gill nets than previously estimated in management units A and B (Table 2). Management unit E remained closed to anchored small mesh gill nets for the duration of the summer 2016 season. Observer coverage goals for anchored small mesh gill nets were met in all management units except management units A and B. Management unit A was open for only seven days before being closed to anchored large and small mesh gill nets for the duration of the summer 2016 season. Therefore, no anchored small mesh gill-net trips were obtained during this short time frame. Attendance requirements for anchored small mesh gill nets during the summer season made it difficult to obtain trips in management unit B. While observer coverage goals were not met in management units A and B, they were far exceeded in management units C (4.5%) and D (20.0%) for anchored small mesh gill nets (Table 2).



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Atlantic Sturgeon Takes

Annual estimated allowable Atlantic sturgeon takes were recalculated for anchored large and small mesh gill nets using the finalized 2016 TTP data (Tables 3 and 4). The estimates of Atlantic sturgeon takes in anchored large mesh gill nets differed slightly from previous estimates for all seasons in management unit A (Table 3). For management unit A, estimates increased in anchored large mesh gill nets for the winter and fall seasons while decreasing in the spring and summer seasons. For each season and management unit for anchored large mesh gill nets, except for the winter 2015 – 2016 season in management unit A, the fishery remained below the annual estimated allowable Atlantic sturgeon takes for all dispositions for ITP Year 2016 (Table 3).

The estimates of Atlantic sturgeon takes in anchored small mesh gill nets increased slightly or remained constant from previous estimates for all seasons in management unit A (Table 4). For management unit A, estimates increased in anchored small mesh gill nets for the winter season. The anchored small mesh gill-net fishery remained below the annual estimated allowable Atlantic sturgeon takes for all dispositions for ITP Year 2016 for each season and management unit (Table 4).

A memo was sent in May 2016 explaining the overage of allowed Atlantic sturgeon takes ($n = 77$) in the anchored large mesh gill-net fishery from the winter 2015 – 2016 season based on finalized December 2015 data and preliminary January/February 2016 data. Using the finalized 2015 and 2016 data, the anchored large mesh gill-net fishery for the winter 2015 – 2016 season in management unit A went over ($n = 111$) the allowed takes for Atlantic sturgeon (Table 3).



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Table 1. Observer coverage calculated from finalized 2016 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 2016 (September 1, 2015 - August 31, 2016).

Season	Management Unit	Anchored Large Mesh		
		Fishing Trips	Observed Trips	Coverage
Fall 2015	A	2,258	205	9.1
	B	424	63	14.9
	C	366	58	15.8
	D	327	34	10.4
	E	518	36	6.9
Winter 2015-2016	A	1,724	52	3.0
	B	35	0	0.0
	C	30	13	43.3
	D	1	0	0.0
	E	41	12	29.3
Spring 2016	A	1,510	138	9.1
	B	273	43	15.8
	C	996	73	7.3
	D	97	4	4.1
	E	179	54	30.2
Summer 2016	A	148	5	3.4
	B	159	3	1.9
	C	528	58	11.0
	D	163	22	13.5
	E	500	99	19.8
Total		10,277	972	9.5



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Table 2. Observer coverage calculated from finalized 2016 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 2016 (September 1, 2015 - August 31, 2016).

Season	Management Unit	Anchored Small Mesh		
		Fishing Trips	Observed Trips	Coverage
Fall 2015	A	358	10	2.8
	B	706	9	1.3
	C	95	7	7.4
	D	221	23	10.4
	E	547	29	5.3
Winter 2015-2016	A	1,392	50	3.6
	B	470	3	0.6
	C	119	9	7.6
	D	24	1	4.2
	E	147	9	6.1
Spring 2016	A	675	28	4.1
	B	1,478	29	2.0
	C	95	7	7.4
	D	54	8	14.8
	E	133	11	8.3
Summer 2016	A	51	0	0.0
	B	1,084	7	0.6
	C	157	7	4.5
	D	20	4	20.0
	E ¹	n/a	n/a	n/a
Total		7,826	251	3.2

¹ Management unit E closed to anchored small mesh gill nets for the duration of the summer 2016 season



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Table 3. Authorized and actual annual estimated incidental takes per fishing year (for a total of 10 years; the life of the permit) with confidence intervals (95%) using a bootstrap method based on observer data for coverage and Atlantic sturgeon interaction levels in North Carolina's anchored large mesh (≥ 5.0 ISM) inshore gill-net fishery for ITP Year 2016 (September 1, 2015 - August 31, 2016).

Management Unit	Season	Total Interactions			
		Authorized (Mortality)		Actual All DPS ²	
		Carolina DPS	Other DPS	Alive	Dead
A	Winter	149 (6)	50 (2)	310 [115,566]	0
	Spring	460 (19)	154 (6)	37 [10,96]	19 [0,109]
	Summer	157 (6)	52 (2)	5 [0,34]	0
	Fall	838 (34)	279 (11)	285 [151,415]	13 [0,54]
B	Winter	2 (1) ¹	n/a	0	0
	Spring	1 (1) ¹	1 (0)	0	0
	Summer	4 (2) ¹	2 (0)	0	0
	Fall	17 (2) ¹	6 (0)	0	0
C	Winter	2 (1) ¹	n/a	0	0
	Spring	3 (1) ¹	1 (0)	0	0
	Summer	2 (1) ¹	1 (0)	0	0
	Fall	4 (2) ¹	2 (0)	4	1
D	Annual	8 (2) ¹	n/a	1	0
E	Annual	8 (2) ¹	n/a	2	1
Total		1,655 (80)	548 (21)	644	34

¹ Total interaction number represents actual observed and not estimated based on observer coverage. Mortality estimates could not be completed for management units B-E due to low take; thus, if observed interactions were ≤ 5 mortality was one; if observed interactions were >5 mortality was two.

² Fin clip samples have been sent to the lab for genetic analysis



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Table 4. Authorized and actual annual estimated incidental takes per fishing year (for a total of 10 years; the life of the permit) with confidence intervals (95%) using a bootstrap method based on observer data for coverage and Atlantic sturgeon interaction levels in North Carolina’s anchored small mesh (<5.0 ISM) inshore gill-net fishery for ITP Year 2016 (September 1, 2015 - August 31, 2016).

Management Unit	Season	Total Interactions			
		Authorized (Mortality)		Actual All DPS ²	
		Carolina DPS	Other DPS	Alive	Dead
A	Winter	175 (14)	35 (3)	119 [29,283]	0
	Spring	219 (17)	44 (4)	0	0
	Summer	72 (6)	14 (1)	0	0
	Fall	103 (8)	21 (2)	0	0
B	Winter	2 (1) ¹	n/a	0	0
	Spring	6 (2) ¹	1 (0)	1	0
	Summer	3 (1) ¹	1 (0)	0	0
	Fall	3 (1) ¹	1 (0)	0	0
C	Winter	2 (1) ¹	n/a	0	0
	Spring	2 (1) ¹	n/a	0	0
	Summer	2 (1) ¹	n/a	0	0
	Fall	2 (1) ¹	n/a	0	0
D	Annual	8 (2) ¹	n/a	0	0
E	Annual	8 (2) ¹	n/a	0	0
Total		607 (58)	117 (10)	120	0

¹ Total interaction number represents actual observed and not estimated based on observer coverage. Mortality estimates could not be completed for management units B-E due to low take; thus, if observed interactions were ≤ 5 mortality was one; if observed interactions were >5 mortality was two.

² Fin clip samples have been sent to the lab for genetic analysis



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

Sincerely,

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

cc: Chris Batsavage
Braxton Davis
Dee Lupton
John McConnaughey



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



APPENDIX C



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

JUL 19 2017

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

Dear Mr. Davis:

On July 13, 2017, the N.C. Division of Marine Fisheries (NCDMF) requested a minor modification to the Atlantic Sturgeon Incidental Take Permit (ITP) no. 18102 to allocate the takes in management units A – C as annual takes rather than seasonal takes. You note in your request that the number of allowed seasonal takes is very low in some cases, and the seasonal takes have been reached on a few occasions and have resulted in seasonal closures.

In your request, you also address the concern of takes occurring in warmer waters (20°C – 30°C) being correlated with more mortalities by noting that lower fishing effort in the summer season due to increasing water temperatures and fish availability should prevent sturgeon mortalities from exceeding the take limit. In our discussions, your staff also noted that the flexibility gained from this minor modification will allow you to adaptively manage fishing effort for times when the fishery is most productive from the fall through the spring, and that fishing effort in the summer decreases as productivity wanes. You also note that you actively monitor the fisheries and take levels daily to ensure take levels, including mortality levels, are not exceeded.

We have considered this minor modification request and determined it to be reasonable. NMFS therefore concurs with your request for this minor modification.

I appreciate you proactively requesting minor modifications to maximize permit implementation as you identify them. Also, as we have discussed with you previously, we understand that you are in the process of developing an updated ITP application and we look forward to analyzing all aspects of that updated application. I encourage you to incorporate any further anticipated minor modifications into that application process so my staff can more efficiently analyze these requests. 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 Ron Dean on my staff at your earliest convenience.



We look forward to continuing to work with you on Endangered Species conservation in North Carolina.

Sincerely,


Donna S. Wieting
Director, Office of Protected Resources

I acknowledge the minor modification specified above to Permit No. 18102 issued under Section 10 (a)(1)(B) of the Endangered Species Act to incidentally take endangered Atlantic Sturgeon in gillnet fisheries operating in inshore waters of North Carolina.



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

7/21/17

Date

APPENDIX D



September 2, 2016

David,

The North Carolina Watermen United (NCWU) would like to thank you setting up the meeting with gill- and pound- netters. We appreciate your efforts to help re-open closed areas and keep others from being closed.

However, as many of the attendees at the meeting in Wanchese on Tuesday, August 30, 2016 mentioned, every possible action has been in effect for years to reduce interactions with endangered sea turtles under the regulations of the Sea Turtle ITPs since 2002. We already have many gear modifications, closures in high turtle interaction areas, a reduction in fishing times and a reduction in fishing efforts that include -

- 1. The state is divided into 6 Unit Areas and 4 of those 6 units have 4 days a week fishing only; night-time soaks only; 15-mesh deep nets and no floats. These are year-round restrictions in the 4 areas.
- 2. The southern portion of Unit A is also under these same restrictions. The entire deep-water area of Pamlico Sound is closed to the use of large mesh gillnet from September 1 until January of the next year.
- 3. All inlet corridors are closed to large mesh gillnets after September 1 each year.
- 4. Unit E is closed to the use of large mesh gillnets every May until October.
- 5. In all internal waters, the only areas that do not have gear modifications and further restrictions under the ITP are the northern parts of Unit A and Unit C – both of which have minimal interactions with sea turtles, and still only 4 interactions per unit per year are authorized.

At this time, NCWU would like to ask again that a meeting be set up with NCWU and NCFA fishermen, especially gill- and pound- netters, with representatives from the NC Division of Marine Fisheries and with Jean Beasley from the Karen Beasley Sea Turtle Foundation. Jean Beasley and NCWU asked the previous DMF Director for this meeting many times, but he never acted on our request. It is the perfect time to listen to her ideas and experiment with the devices that she has been advocating for years that she believes would help lessen the number of turtle interactions. I am a gillnetter and very willing to help test and monitor these devices.

We are hopeful that the cooperation between NCWU, NCFA and the NCDMF with Jean Beasley may help us all to solve some of the problems that our state's gillnet fishermen are experiencing.

Thank you.

Yours truly,

Andrew Berry

Andrew Berry
NCWU Board Member
252-722-4293
bowhunterab14@gmail.com

Board of Directors

Perry Wood Beasley	Billy Maxwell
Capt Sonny Davis	Greg Mayer
Ernie Doshier	Jamie Reibel
Ernie Foster	Britt Shackelford
Tom Harper	Bradley Styron
Glen Hopkins	Duke Spencer
Rom Whitaker	

AB: mm

cc: NCDMF Director Braxton Davis, Chris Batsavage; Jacob Berg
NCDEQ Secretary van der Vaart
NCFA Director Jerry Schill, Chairman Brent Fulcher

APPENDIX E

Chris,

I am following up on the Protected Species Workgroup meetings. As was discussed at both meetings, there have been more than substantial measures directly, and indirectly, reducing mitigation of turtle interactions, but those measures need quantified.

I am requesting per the direction of the fishermen, that NCDFM quantify the total sea turtle mitigation reduction that has taken place from prior to the sea turtle lawsuit to present. It should also include impacts by other regulations such as fishery effort/harvest reductions. For the information to be useful, it may be necessary to separate reductions based on ITP closures from other reductions, so that we can determine how effective all of the other measures have been without closures. You may even include one total with, and one without closures.

It is also requested that a biological opinion be completed relating to those measures, once quantified, addressing the successful mitigation of sea turtles. It should include any potential measures that might be necessary, and only if necessary, to reduce interactions sufficiently, without relying on a set number to base closures on. This opinion should address both large and small mesh fisheries that have substantial interaction with turtles.

These items are being requested to work towards an ITP that sufficiently protects the species, while preventing unnecessary closures to the fishery.

I was just directed to make this request and wanted to get it to you as soon as possible. If in my haste I was unclear and need to clarify anything, please contact me anytime.

Take care,

David Bush
Fisheries Biologist,
NC Fisheries Association
(910)777-1605



APPENDIX F



November 23, 2016

Laura Runyan, Director
Foundation, Government and Faculty Grants Gettysburg College
300 North Washington Street
Gettysburg, PA 17325

Subj: Saltonstall-Kennedy Competitive Research Program Grant Proposal

Title: Development of sensory-based bycatch reduction technologies to reduce sea turtle bycatch in North Carolina coastal gillnet and pound net fisheries.

North Carolina Fisheries Association (NCFA) is excited at the opportunity to collaborate with Gettysburg College on the above referenced project. As a primary goal of our organization, we attempt to support all possible efforts to solidify the future of one of the oldest and proudest of professions, the commercial fishing industry. NCFA understands that to accomplish this, sustainable fishing efforts to harvest public trust resources is an absolute requirement.

The goal of this research, sea turtle bycatch reduction, is an important yet very complicated issue. It is one that NC fishermen understand, supporting substantial research efforts and enduring the subsequent changes to their fisheries to accomplish. The Turtle Excluder Device, or TED, is a prime example of successful collaboration between fishermen, academia, government scientists and management. The positive results of these efforts compound the issue within our internal water fisheries where the ever-increasing numbers of these animals are now encountered. This research is vital in finding ways to coexist with these endangered species, and it is hopeful that technology derived from this research will also be applicable to other industries and projects that affect them.

NCFA is experienced and knowledgeable in supporting research to develop bycatch reduction methods for finfish and sea turtles, and is eager to contribute to this project's successful implementation. We are currently in our second of three years of research concerning finfish bycatch reduction in the shrimp trawl industry. In collaboration with our state management agency, our preliminary results surpass all state and federal requirements. We support this proposed research methodology, and will also support the project to completion if awarded the requested grant.

We (NCFA) agree to act as subcontractor with Gettysburg College to complete the work plan as outlined in the proposal. It is understood that general concept of this work will involve coordination of the appropriate industry and state management personnel, facilitate workshops

as required, train and supervise independent observer efforts, directly contribute to this research utilizing accepted scientific methodology, and travel as required in performance of these duties.

NCFA Fisheries Biologist David Bush will perform that work. He will coordinate with his Co-PI Wendy Piniak of Gettysburg College and report to his board of directors with work results and updates as outlined in the scope of work enclosed within the application.

It is our understanding that, in the event this proposal is awarded, a subcontract will be issued in the estimated amount of \$12,505 for the period covering 9/1/2017 through 8/31/2019. While this amount and dates appear in the application, the actual amount and project dates awarded to NCFA will be determined based on Gettysburg College's executed award.

The appropriate programmatic and administrative personnel of each institution involved in this grant application are aware of the sponsor's guidelines and pertinent regulations and policies and are prepared to establish the necessary inter-institutional agreement(s) consistent with all such policies. NCFA hereby certifies that neither it nor its principles nor those performing services under this application are presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded by any Federal department or agency from participation in this transaction.

Thank you for the opportunity to contribute to this project and we look forward to working with Dr. Piniak and Gettysburg College.

Respectfully,



Jerry Schill,
President,
NC Fisheries Association
2807 Neuse Blvd Suite 11
New Bern, NC 28562
252-633-6232 Ext. 100

cc: NCDMF - Director Braxton Davis, Biologists: Chris Batsavage, Jacob Boyd
NCFA - Board and Director

APPENDIX G



**NORTH CAROLINA MARINE FISHERIES
COMMISSION
DEPARTMENT OF ENVIRONMENTAL QUALITY**

COMMISSIONERS

PAT MCCRORY
Governor

DONALD VAN DER VAART
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MARK GORGES
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LAUGHRIDGE
Harkers Island
JANET ROSE
Moyock
JOE SHUTE
Morehead City

RICK SMITH
Greenville
MIKE WICKER
Raleigh
ALISON WILLIS
Harkers Island

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

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

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

Dear Angela:

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 Atlantic Sturgeon Incidental Take Permit (ITP) No. 18102 was completed for ITP Year 2017 and submitted in February 2018. Using the finalized 2017 data, Tables 1, 2, 5, and 6 from the Completion Report were updated to reflect the final estimates of observer coverage and Atlantic sturgeon 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 unit A and increased in management units B, C, D, and E. 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. During the fall 2016 season, Management unit A coverage increased from 7.8% to 12.1%. Coverage percentages dropped in management units B (11.3%), C (7.7%), D (11.0%), and E (11.1%) when the correct information was applied to the table.

The finalized TTP data for the winter 2016 – 2017 season showed fewer anchored large mesh gill nets fishing trips than previously estimated in management units A, B, C, and E. Management unit D had an increase in anchored large mesh gill net fishing trips over what had been estimated for the annual report (Table 1). Observer coverage goals for anchored large mesh gill nets were met in management units A, C, D, and E for the winter 2016 – 2017 season. Management unit B was closed to anchored large mesh gill net gear for the winter 2016 – 2017 season.



Finalized TTP data for spring 2017 had fewer anchored large mesh gill net fishing trips occurring in management units A and E than previously estimated (Table 1). The same data showed an increase in anchored large mesh gill net fishing trips in management units C and D compared to estimated trips for the annual report (Table 1). Management unit B was closed to anchored large mesh gill net gear for the spring 2017 season. Observer coverage goals for anchored large mesh gill nets were met in all open management units for the spring 2017 season (Table 1).

The summer 2017 season had more fishing trips for anchored large mesh gill nets than previously estimated in management units B, D, and E (Table 1). Management units A and C had fewer anchored large mesh gill net fishing trips occurring than estimated for the annual report (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 (Table 1). Portions of management unit D (management unit D1) are closed annually from May 8 through October 14 as described in the ITP. While observer coverage goals were not met in management unit A, they were exceeded in management units B (8.8%), C (7.4%), D (8.6%), and E (17.6%) for anchored large mesh gill nets (Table 1).

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 increased in management unit C and decreased in management units A, B, D, and E (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 percentage increased for management units B (2.2%), D (9.6%), and E (6.7%) and decreased to 3.6% in management unit C (Table 2). Coverage percentage was unchanged in management Unit A.

The winter 2016 – 2017 season had more fishing trips than previously estimated for anchored small mesh gill nets in management units B, C, and E, and less fishing trips for management units A and D than previously estimated (Table 2). Observer coverage goals for anchored small mesh gill nets were met in all management units for the winter 2016 – 2017 season (Table 2). Observer coverage goals were far exceeded in management units A (5.7%), C (5.3%), D (13.8%) and E (7.1%) for anchored small mesh gill nets (Table 2).

The spring 2017 season showed an increase in fishing trips for anchored small mesh gill nets compared to previous estimates for management units B, C, and D (Table 2). Management units A and E had fewer trips than estimated for the annual report. Observer coverage goals for anchored small mesh gill nets were met in all management units for the spring 2017 season (Table 2). Observer coverage goals were far exceeded in management units C (4.9%), D (9.6%), and E (9.9%) for anchored small mesh gill nets (Table 2).



The finalized TTP data for the summer 2017 season showed fewer fishing trips occurring for anchored small mesh gill nets than previously estimated in all management units (Table 2). Observer coverage goals for anchored small mesh gill nets were met in all management units for the summer 2017 season (Table 2). Observer coverage goals were far exceeded in management units A (4.0%), C (7.7%), and D (6.6%).

Atlantic Sturgeon Takes

Annual estimated allowable Atlantic sturgeon takes were recalculated for anchored large and small mesh gill nets using the finalized 2017 TTP data (Tables 3 and 4). The estimates of Atlantic sturgeon takes in anchored large mesh gill nets were less than previous estimates for the spring season in management unit A but remained relatively (increase of one estimated Atlantic sturgeon during summer season) constant for all other seasons for management unit A (Table 3). The fishery remained below the annual estimated allowable Atlantic sturgeon takes for all dispositions, in all management units, and for each season during ITP Year 2017 (Table 3). Confidence intervals for Management Unit A take estimates were not updated due to staffing limitations.

The estimates of Atlantic sturgeon takes in anchored small mesh gill nets remained constant from previous estimates for all seasons in management unit A (Table 4). The anchored small mesh gill net fishery remained below the annual estimated allowable Atlantic sturgeon takes for all dispositions for ITP Year 2017 for each season and management unit (Table 4). Confidence intervals for Management Unit A 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).

Season	Management Unit	Anchored Large Mesh		
		Fishing Trips	Observed Trips	Coverage
Fall 2016	A	1,446	175	12.1
	B	1,156	131	11.3
	C	480	37	7.7
	D	446	49	11.0
	E	769	85	11.1
Winter 2016-2017	A	638	79	12.4
	B	n/a	n/a	n/a
	C	84	23	27.4
	D	9	1	11.1
	E	19	6	31.6
Spring 2017	A	1,549	167	10.8
	B	n/a	n/a	n/a
	C	1,024	92	9.0
	D	121	11	9.1
	E	259	56	21.6
Summer 2017	A	1,018	65	6.4
	B	1,464	129	8.8
	C	380	28	7.4
	D	255	22	8.6
	E	643	113	17.6
Total		11,760	1,269	10.8



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	Anchored Small Mesh		
		Fishing Trips	Observed Trips	Coverage
Fall 2016	A	147	0	0.0
	B	819	18	2.2
	C	222	8	3.6
	D	281	27	9.6
	E	420	28	6.7
Winter 2016-2017	A	844	48	5.7
	B	767	9	1.2
	C	415	22	5.3
	D	58	8	13.8
	E	84	6	7.1
Spring 2017	A	572	10	1.7
	B	1,517	21	1.4
	C	327	16	4.9
	D	83	8	9.6
	E	141	14	9.9
Summer 2017	A	101	4	4.0
	B	674	10	1.5
	C	130	10	7.7
	D	61	4	6.6
	E	203	4	2.0
Total		7,866	275	3.5



Table 3 . Authorized and actual annual estimated incidental takes per fishing year (for a total of 10 years; the life of the permit) with confidence intervals (95%) using a bootstrap method based on observer data for coverage and Atlantic sturgeon interaction levels in North Carolina’s anchored large mesh (≥ 5.0 ISM) inshore gill net fishery for ITP Year 2017 (September 1, 2016 - August 31, 2017).

Management Unit	Season	Total Interactions			
		Authorized (Mortality)		Actual All DPS ²	
		Carolina DPS	Other DPS	Alive	Dead
A	Winter	149 (6)	50 (2)	91	0
	Spring	460 (19)	154 (6)	282	0
	Summer	157 (6)	52 (2)	16	0
	Fall	838 (34)	279 (11)	305	15
B	Winter	2 (1) ¹	n/a	0	0
	Spring	1 (1) ¹	1 (0)	0	0
	Summer	4 (2) ¹	2 (0)	0	0
	Fall	17 (2) ¹	6 (0)	0	0
C	Winter	2 (1) ¹	n/a	1	0
	Spring	3 (1) ¹	1 (0)	3	0
	Summer	2 (1) ¹	1 (0)	0	0
	Fall	4 (2) ¹	2 (0)	0	0
D	Annual	8 (2) ¹	n/a	0	0
E	Annual	8 (2) ¹	n/a	1	0
Total		1,655 (80)	548 (21)	698	15

¹ Total interaction number represents actual observed and not estimated based on observer coverage. Mortality estimates could not be completed for management units B-E due to low take; thus, if observed interactions were ≤ 5 mortality was one; if observed interactions were >5 mortality was two.

² Fin clip samples have been sent to the lab for genetic analysis



Table 4 . Authorized and actual annual estimated incidental takes per fishing year (for a total of 10 years; the life of the permit) with confidence intervals (95%) using a bootstrap method based on observer data for coverage and Atlantic sturgeon interaction levels in North Carolina’s anchored small mesh (<5.0 ISM) inshore gill net fishery for ITP Year 2017 (September 1, 2016 - August 31, 2017).

Management Unit	Season	Total Interactions			
		Authorized (Mortality)		Actual All DPS ²	
		Carolina DPS	Other DPS	Alive	Dead
A	Winter	175 (14)	35 (3)	11	0
	Spring	219 (17)	44 (4)	0	0
	Summer	72 (6)	14 (1)	0	0
	Fall	103 (8)	21 (2)	0	0
B	Winter	2 (1) ¹	n/a	0	0
	Spring	6 (2) ¹	1 (0)	1	0
	Summer	3 (1) ¹	1 (0)	0	0
	Fall	3 (1) ¹	1 (0)	0	0
C	Winter	2 (1) ¹	n/a	0	0
	Spring	2 (1) ¹	n/a	0	0
	Summer	2 (1) ¹	n/a	0	0
	Fall	2 (1) ¹	n/a	0	0
D	Annual	8 (2) ¹	n/a	0	0
E	Annual	8 (2) ¹	n/a	1	0
Total		607 (58)	117 (10)	13	0

¹ Total interaction number represents actual observed and not estimated based on observer coverage. Mortality estimates could not be completed for management units B-E due to low take; thus, if observed interactions were ≤ 5 mortality was one; if observed interactions were >5 mortality was two.

² Fin clip samples have been sent to the lab for genetic analysis



Sincerely,

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

cc: Chris Batsavage
Steven Murphey
Dee Lupton
Brooke Wheatley

