11.0 Incidental Take Statement (including RPMs, T&C) [AMENDED MARCH 10, 2016]

[NOTE: We have prepared this amended Incidental Take Statement (ITS) in response to the decision of the D.C. District Court in Oceana, Inc., v. Pritzker, *et al.*, No. 1:12-cv-00041-PLF, 2015 WL 5138389 (D.D.C., August 31, 2015), and the particular circumstances of that Court's remand order.]

Section 9 of the ESA and Federal regulations pursuant to section 4(d) of the ESA prohibit the take of endangered and threatened species, respectively, unless a special exemption has been granted. Take is defined as "to harass, harm, pursue, hunt, shoot, capture, or collect, or to attempt to engage in any such conduct." Harm is further defined by NMFS to include any act which actually kills or injures fish or wildlife. Such an act may include significant habitat modification or degradation that actually kills or injures fish or wildlife by significantly impairing essential behavioral patterns including breeding, spawning, rearing, migrating, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. "Otherwise lawful activities" are those actions that meet all State and Federal legal requirements except for the prohibition against taking in ESA section 9 (51 FR 19936, June 3, 1986), which would include any state endangered species laws or regulations. Section 9(g) makes it unlawful for any person "to attempt to commit, solicit another to commit, or cause to be committed, any offense defined [in the ESA]" (16 U.S.C. 1538(g)). A "person" is defined in part as any entity subject to the jurisdiction of the U.S., including an individual, corporation, officer, employee, department or instrument of the Federal government (see 16 U.S.C. 1532(13)). Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not the purpose of carrying out an otherwise lawful activity is not considered to be prohibited under the ESA provided that such taking is in compliance with the terms and conditions of this ITS. In issuing ITSs, NMFS takes no position on whether an action is an "otherwise lawful activity."

The prohibitions against incidental take are currently in effect for endangered large whales, sea turtles, the GOM DPS of Atlantic salmon, and all DPSs of Atlantic sturgeon that are listed as endangered. Prior to the release of the December 16, 2013, Opinion, an interim final section 4(d) rule for the threatened GOM DPS of Atlantic sturgeon was published in the *Federal Register* (78 FR 69310; November 19, 2013). As a result, prohibitions on take of GOM DPS Atlantic sturgeon are now in effect and so are the exemptions provided by this ITS.

When a proposed NMFS action is found to be consistent with section 7(a)(2) of the ESA, section 7(b)(4) of the ESA requires NMFS to issue a statement specifying the impact of incidental taking, if any. It also states that reasonable and prudent measures (RPMs) necessary to minimize impacts of any incidental take be provided along with implementing terms and conditions. The measures described below are non-discretionary and must therefore be undertaken in order for the exemption in section 7(o)(2) to apply. Failure to implement the terms and conditions through enforceable measures may result in a lapse of the protective coverage section of 7(o)(2).

NMFS is not including an incidental take authorization for right, humpback, fin, and sei whales at this time because the incidental take of ESA-listed whales has not been authorized under section 101(a)(5) of the MMPA. Following the issuance of such authorizations, NMFS may

amend this Opinion to include an incidental take allowance for these species, as appropriate. NMFS recognizes that further efforts among stakeholders are necessary to reduce interactions between authorized Federal fisheries and right, humpback, fin, and sei whales in order to achieve the MMPA's goal of insignificant levels of incidental mortality and serious injury of marine mammals approaching a zero mortality and serious injury rate, taking into consideration the economics of the fishing industry, the availability of existing technology, and existing State or regional fishery management plans. NMFS continues to work toward this zero mortality goal of the MMPA through the means identified in the pertinent subsections of section 5.4, including continued development and implementation of the ALWTRP with the collaboration of the ALWTRT. Although NMFS has concluded that the seven fisheries are not likely to jeopardize the continued survival or recovery of right, humpback, fin, and sei whales for purposes of ESA section 7 consultation, the need for further efforts among stakeholders to reduce large whale/fishery interactions and achieve the zero mortality goal of the MMPA is not diminished by this no-jeopardy conclusion.

11.1 Anticipated Amount or Extent of Incidental Take of Sea Turtles

Based on the Murray (2009a) and Warden (2011a) reports, incidental capture data from NEFOP and ASM observer reports for the fisheries assessed in this Opinion, entanglement records from the STDN, and the distribution and abundance of sea turtles in the action area, NMFS anticipates that the continued operation of the seven fisheries may result in the incidental take of sea turtles as follows:

- for loggerhead sea turtles from the NWA DPS, NMFS anticipates: (a) the take of no more than 1,345 individuals over any consecutive five-year period in gillnet gear, of which up to 835 may be lethal, (b) the take of no more than 1,020 individuals over any consecutive five-year period in trawl gear, of which up to 335 may be lethal; and (c) the annual take of up to one individual in trap/pot gear, which may be lethal or non-lethal[1,2];

[1] The multi-year loggerhead take levels exempted in this ITS equate to annual average takes of up to 269 individuals in gillnet gear, 167 of which may be lethal, and annual average takes of up to 204 individuals in trawl gear, 67 of which may be lethal. These loggerhead take levels equate to the sums of the upper ends of the 95% confidence intervals for anticipated annual takes in the gillnet and trawl components of the seven fisheries as calculated by Murray (2009a) and Warden (2011a) to ensure consistency across gear types and to be conservative for the species. In order to most effectively monitor impacts of the seven fisheries on loggerhead sea turtles, the takes exempted for gillnet and trawl gear are over a five-year period. These take levels were quantified in the *Effects of the Action* section and then analyzed in the *Integration and Synthesis of Effects* section of the Opinion in terms of the number of lethal removals from the loggerhead population each year.

[2] The loggerhead trawl take estimates reported here for the seven fisheries (both total and lethal) differ from what were reported and assessed in the 2013 Opinion. In the 2013 Opinion, the annual take estimate for trawls was calculated to be 213 (with 71 takes being lethal). The reason for this discrepancy is that the nine annual bycatch events attributable to the multispecies fishery were mistakenly double-counted (see Table 27 on page 217 of the 2013 Opinion). As a result, we have corrected the total number of annual takes to 204 and the lethal number of annual takes to 67, and will use those numbers multiplied by five as the five-year ITS trigger for loggerhead takes in trawl gear from this point forward. Because the adjusted take estimates (204 total, 67 lethal) are less than the annual take estimates used in the 2013 Opinion (213 total and 71 lethal), the impacts of these updated numbers of takes have already been assessed in the 2013 Opinion.

- for leatherback sea turtles, NMFS anticipates (a) the annual observed take of up to four individuals in gillnet gear, of which up to three per year may be lethal; (b) the annual observed take of up to four individuals in bottom trawl gear, of which up to two per year may be lethal; and (c) the annual observed take of up to four individuals in trap/pot gear, which may be lethal or non-lethal;

- for Kemp's ridley sea turtles, NMFS anticipates the annual observed take of up to four individuals in gillnet gear, of which up to three per year may be lethal, and the annual observed take of up to three individuals in bottom trawl gear, of which up to two per year may be lethal; and

- for green sea turtles, NMFS anticipates the annual observed take of up to four individuals in gillnet gear, of which up to three per year may be lethal, and the annual observed take of up to three individuals in bottom trawl gear, of which up to two per year may be lethal.

The anticipated level of incidental take of sea turtles for the recreational components of the bluefish, multispecies, and FSB fisheries cannot be estimated at this time.

11.2 Anticipated Amount or Extent of Incidental Take of Atlantic Sturgeon

Based on the NEFSC (2011) and ASMFC (2007) reports, incidental capture data from observer reports for the fisheries assessed in this Opinion, and the distribution and abundance of Atlantic sturgeon in the action area, NMFS anticipates that the continued operation of the seven fisheries may result in the incidental take of Atlantic sturgeon as follows:

- for Atlantic sturgeon from the GOM DPS, NMFS anticipates (a) the annual take of up to 137 individuals over a five-year average in gillnet gear, of which up to 17 adult equivalents per year may be lethal; (b) the annual take of up to 148 individuals over a five-year average in bottom trawl gear, of which up to 5 adult equivalents per year may be lethal;

- for Atlantic sturgeon from the NYB DPS, NMFS anticipates (a) the annual take of up to 632 individuals over a five-year average in gillnet gear, of which up to 79 adult equivalents per year may be lethal; (b) the annual take of up to 685 individuals over a five-year average in bottom trawl gear, of which up to 21 adult equivalents per year may be lethal;

- for Atlantic sturgeon from the CB DPS, NMFS anticipates (a) the annual take of up to 162 individuals over a five-year average in gillnet gear, of which up to 21 adult equivalents per year may be lethal; (b) the annual take of up to 175 individuals over a five-year average in bottom trawl gear, of which up to 6 adult equivalents per year may be lethal;

- for Atlantic sturgeon from the Carolina DPS, NMFS anticipates (a) the annual take of up to 25 individuals over a five-year average in gillnet gear, of which up to four adult equivalents per year may be lethal; (b) the annual take of up to 27 individuals over a five-

year average in bottom trawl gear, of which up to one adult equivalent per year may be lethal; and

- for Atlantic sturgeon from the SA DPS, NMFS anticipates (a) the annual take of up to 273 individuals over a five-year average in gillnet gear, of which up to 34 adult equivalents per year may be lethal; (b) the annual take of up to 296 individuals over a five-year average in bottom trawl gear, of which up to 9 adult equivalents per year may be lethal.

The anticipated level of incidental take of Atlantic sturgeon for the recreational components of the seven fisheries cannot be estimated at this time.

11.3 Anticipated Amount or Extent of Incidental Take of GOM DPS Atlantic Salmon

Based on incidental capture data from observer reports for the fisheries assessed in this Opinion and the distribution and abundance of GOM DPS Atlantic salmon in the action area, NMFS anticipates that the continued operation of the seven batched fisheries may result in the incidental take of GOM DPS Atlantic salmon as follows:

- The observed take of up to five individuals over a five-year average in gillnet gear, of which up two to takes may be lethal; and,

- The observed take of up to five individuals over a five-year average in bottom trawl gear, of which up to three takes may be lethal.

The anticipated level of incidental take of Atlantic salmon for the recreational components of the seven fisheries cannot be estimated at this time.

12.0 Reasonable and Prudent Measures [AMENDED MARCH 10, 2016]

NMFS has determined that the following RPMs are necessary or appropriate to minimize impacts of the incidental take of sea turtles, the five DPSs of Atlantic sturgeon, and the GOM DPS of Atlantic salmon in the seven fisheries assessed in this Opinion:

1. NMFS must ensure that any sea turtles, Atlantic sturgeon, and Atlantic salmon incidentally taken in gears used in these fisheries (*e.g.*, gillnet, bottom trawl, trap/pot, and hook and line gear) are handled in a way as to minimize stress to the animal and increase its survival rate.

2. NMFS must continue to investigate and implement, within a reasonable time frame following the completion of ongoing and future research, modifications to gears used in these fisheries to reduce incidental takes of sea turtles, Atlantic sturgeon, and Atlantic salmon and the severity of the interactions that occur.

3. NMFS must continue to review available data to determine whether there are areas or conditions within the action area where sea turtle, Atlantic sturgeon, and Atlantic salmon interactions with fishing gears used in these fisheries are more likely to occur.

4. NMFS must ensure that monitoring and reporting of any sea turtles, Atlantic sturgeon, and Atlantic salmon encountered in fishing gear utilized in the seven fisheries: (1) detects any adverse effects such as serious injury or mortality; (2) detects whether the anticipated level of take has occurred or been exceeded; and (3) collects necessary data from individual encounters (e.g., photos, species identification, date, and geographic location).

12.1 Terms and Conditions

In order to be exempt from the prohibitions of section 9 of the ESA and regulations issued pursuant to section 4(d), NMFS must comply with the following terms and conditions, which implement the reasonable and prudent measures described above. These terms and conditions are non-discretionary.

1. To comply with RPM #1 above, NMFS must distribute, periodically and upon request, handling and resuscitation guidelines for sea turtles, Atlantic sturgeon, and Atlantic salmon to all Federal permit holders in these fisheries. For sea turtles, all Federally-permitted fishing vessels should have the handling and resuscitation requirements listed in 50 CFR 223.206(d)(1) and as reproduced in both Appendix C and at http://www.greateratlantic.fisheries.noaa.gov/protected/seaturtles/docs/h_r.pdf. NMFS must also distribute Greater Atlantic Region STDN Disentanglement Guidelines to all Federal permit holders that use fixed gear, such as gillnet and trap/pot gear. Those guidelines are summarized at http://www.greateratlantic.fisheries.noaa.gov/protected/stranding/disentanglements/turtle/stdn.html. Fishermen within these seven fisheries are authorized through this Opinion to disentangle sea turtles according to the STDN Disentanglement Guidelines. This authorization extends to sea turtles captured in the individual fishermen's gear as well as gear used in the Federal fishery for which the vessel holds a permit as long as that fishery is covered in this Opinion. For Atlantic sturgeon and Atlantic salmon, NMFS will make available guidance for fishermen and observers to resuscitate any individuals that may appear to be dead or unresponsive which includes providing a source of running water over the gills.

2. To also comply with RPM #1 above, NMFS must continue to develop and/or distribute training materials for commercial fishermen (especially new permit holders) in the use of any release equipment and/or handling protocols and guidelines for sea turtles, Atlantic sturgeon, and Atlantic salmon. Such training materials would be able to be brought onboard fishing vessels and accessed upon incidental capture (*e.g.*, a placard, videos, internet instructions for download, etc.).

3. To comply with RPM #2 above, NMFS must continue to investigate modifications of gillnet and bottom trawl gear and its effects on sea turtles, Atlantic sturgeon, and Atlantic salmon through research and development, as resources allow. Within a reasonable amount of time following completion of an experimental gear trial from or by any source,

NMFS will review all data collected from the experimental gear trials, determine the next appropriate course of action (*e.g.*, expanded gear testing, further gear modification, rulemaking to require the gear modification), and initiate action based on the determination.

4. To comply with RPM #3 above, NMFS must continue to review all data available on the observed/documented take of sea turtles, Atlantic sturgeon, and Atlantic salmon in Atlantic gillnet, bottom trawl, trap/pot, and hook and line fisheries and other suitable information (*i.e.*, data on observed interactions for other fisheries, vertical line density information, distribution information, or fishery surveys in the area where the seven fisheries operate) to assess whether there is sufficient information to undertake any additional analysis to attempt to identify correlations with environmental conditions or other drivers of incidental take within some or all of the action area. If such additional analysis is deemed appropriate, within a reasonable amount of time after completing the review, NMFS will take appropriate action to reduce sea turtle, Atlantic sturgeon, and Atlantic salmon interactions and/or their impacts.

5. To comply with RPM #4 above, NMFS must continue to monitor the seven fisheries in order to document and report incidental bycatch of sea turtles, Atlantic sturgeon, and Atlantic salmon. Monthly summaries and an annual omnibus report of observed sea turtle, Atlantic sturgeon, and Atlantic salmon takes in New England and Mid-Atlantic fisheries, including trips where species from these seven FMPs are landed, should continue to be provided to the GARFO Protected Resources Division by the NEFSC. In addition, the NEFSC must continue to produce updated bycatch estimates for both sea turtles and Atlantic sturgeon in gillnet and bottom trawl gear within the action area when sufficient information and an adequate sample size of data is available (this has typically been done on a five-year cycle).

6. To also comply with RPM #4 above, NMFS must continue to require that disentanglement responders collect detailed information on the gear involved in entanglements, and submit all information on the gear to NMFS. Information on entanglements must be collected and recorded in a consistent manner to make future comparisons possible. NMFS must evaluate the gear information regarding entanglements, and summarize entanglement information from the previous year.

7. To also comply with RPM #4 above, NEFOP must continue to tag and take tissue samples from incidentally captured sea turtles as stipulated under their ESA section 10 permit. The current NEFOP protocols are to tag any sea turtles caught that are larger than 26 centimeters in notch-to-tip carapace length and to collect tissue samples for genetic analysis from any sea turtles caught that are larger than 25 centimeters in notch-to-tip carapace length. The NEFSC shall be the clearinghouse for any genetic samples of sea turtles taken by observers. Observers must also take fin clips from all incidentally captured Atlantic sturgeon and Atlantic salmon and send them to NMFS for genetic analysis. Observers must ensure that fin clips are taken according to the procedures outlined in Appendices D and E, and that they are taken prior to preservation of other fish parts or whole bodies.

8. To also comply with RPM #4 above, NMFS must continue to utilize and implement sea turtle serious injury guidelines for fisheries in the Greater Atlantic Region in order to better assess and evaluate injuries sustained by sea turtles in fishing gear, and their potential impact on sea turtle populations. New data should be reviewed on an annual basis.

Justification for Proposed Reasonable and Prudent Measures and Terms and Conditions
The RPMs, with their implementing terms and conditions, are designed to minimize and monitor the impact of incidental take that might otherwise result from the proposed actions. Specifically, these RPMs and Terms and Conditions will ensure that NMFS monitors the impacts of the proposed actions in a way that allows for the detection, identification, and reporting of interactions with ESA-listed species. The discussion below explains why each of these RPMs and Terms and Conditions are necessary or appropriate to minimize or monitor the level of incidental take associated with the proposed action. The RPMs and Terms and Conditions involve no more than a minor change to the proposed actions.

RPM #1 and Terms and Conditions #1 and #2 are necessary and appropriate to ensure that any sea turtles, Atlantic sturgeon, or Atlantic salmon that survive capture or entanglement in gear are given the maximum probability of remaining alive and not suffering additional injury or subsequent mortality through inappropriate handling. This is only a minor change as following these procedures is not expected to result in an increase in cost or a decrease in the efficiency of the operation of these fisheries.

RPM #2 and Term and Condition #3 are necessary and appropriate because they allow NMFS to design, research, and implement the most advanced gear modifications believed to have the lowest potential of interactions with sea turtles, Atlantic sturgeon, and Atlantic salmon. If gear modifications are implemented, rulemaking will be completed in a timely manner and the effects of any increases in costs or decreases in efficiency of the fisheries will be analyzed.

RPM #3 and Term and Condition #4 are necessary and appropriate because they allow NMFS to ensure avoidable sea turtle, Atlantic sturgeon, and Atlantic salmon takes are not occurring due to currently unknown environmental conditions or other parameters present in the action area. If regulations are implemented, rulemaking will be done in a manner in which to minimize any increase in costs or any decrease in efficiency of the fisheries, representing only a minor change to the actions.

RPM #4 and Terms and Conditions #5, #6, #7, and #8 are necessary and appropriate to ensure the proper documentation of any interactions with sea turtles, Atlantic sturgeon, and Atlantic salmon as well as requiring that these interactions are reported to NMFS in a timely manner with all the necessary information. This is essential for monitoring the level of incidental take associated with these seven fisheries. Compliance with these terms and conditions will allow NMFS to determine if reinitiation of consultation is necessary either at the time that take occurs or at the end of a five-year bycatch estimation cycle. The data and information collected can be used to refine our current management measures and is not just a numerical count of dead or injured individuals. This RPM and its four Terms and Conditions represent only a minor change

as compliance is not expected to result in an increase in cost or a decrease in the efficiency of the fishery operations.

The taking of genetic samples (e.g., biopsies, fin clips) allows NMFS to run genetic analysis to determine the DPS or river of origin or nesting/spawning stock for sea turtles, Atlantic sturgeon, and Atlantic salmon. This allows us to better evaluate the impacts of incidental takes on different population units. These procedures do not harm sea turtles, Atlantic sturgeon, or Atlantic salmon and are common practices in fisheries science. Tissue sampling does not appear to impair an individual's ability to swim and is not thought to have any long-term adverse impact. This represents only a minor change as following these procedures will have an insignificant impact on the proposed actions.

Sea Turtle Monitoring

NMFS must continue to monitor levels of sea turtle bycatch in the seven fisheries. Fisheries observer data, and their incorporation into statistical models (specifically, generalized additive models as described in Murray (2009a, 2009b) and Warden (2011a, 2011b)), have been used as the principal means to estimate sea turtle bycatch rates in the seven fisheries and to monitor incidental take levels. At present, and due to reasons explained below, the NEFSC produces statistically robust sea turtle bycatch estimates for gillnet and bottom trawl gear on five-year rotational cycles. During those individual cycles, observer data by gear type is analyzed over 1-2 years and monitored over the following 3-4 years. NMFS must continue to use fisheries observer data and the NEFSC-produced bycatch estimates to monitor sea turtle bycatch in gillnet and bottom trawl gear that is authorized by the seven FMPs, though the role of observers and use of fishery dependent data will differ for each gear type. Entanglement reports have been used as the principal means to estimate sea turtle bycatch in the pot/trap fisheries and to monitor incidental take levels. NMFS must continue to use entanglement reports as well as available observer data to monitor sea turtle bycatch in pot/trap gear authorized by the scup and black sea bass FMPs.

Gillnet and bottom trawl gear

For the purposes of monitoring this ITS for the gillnet and bottom trawl components of the seven fisheries, we will continue to use records from the fisheries observer program as the primary means of collecting incidental take information. For loggerhead sea turtles, the take estimates described in this Opinion were generated using a statistical model that is not feasible to conduct on an annual basis due to the data needs; length of time to develop, review, and finalize the estimates; and methodology, as explained in the paragraph and numbered points below.

Murray (2009a) summarizes the use of the statistical methods for loggerhead bycatch estimation which are also used in Warden (2011a), explaining that "to directly compare future levels of loggerhead bycatch to the average annual estimates and [95%] confidence intervals [CIs] reported in this paper, these future estimates would also need to be 5-year averages." This necessity is reiterated in the Warden (2011a) trawl bycatch analysis, which states that "if these interaction estimates are updated approximately every five years, then future levels of loggerhead interactions can be evaluated by comparing the average annual estimates and CIs reported in this paper to the future average annual estimates and CIs." Therefore, for the following reasons, we will continue to implement a five-year monitoring framework rather than an annual one:

1. As we mentioned throughout the Opinion, observed loggerhead interactions are rare, and we often need to pool data across years to have enough data to produce a robust, model-based estimate of total interactions. We need at least ten observations per parameter in the model. Thus, even with a very simple model, we usually require 20-30 observed bycatch events. It is uncommon to have this many observed loggerhead interactions in a single year, as documented in publications including Murray (2008, 2009a) and Warden (2011a). Subsequently, when we pool data over five years to report an annual average, we need another five years to compare averages, as explained above.

2. It normally takes a year to process, clean, and analyze data for a valid bycatch estimate, for one gear type. With current resources, it is neither reasonable nor possible to estimate bycatch annually across multiple gear types.

3. Annual estimates are unlikely to change considerably such that they affect the population assessments. On page 35 of Warden *et al*. (2015), the authors indicate that "when the population is large compared to the incidental mortality, frequent (e.g., annual) monitoring is not likely to produce results that are substantially different from the previous assessment. Less frequent but more comprehensive assessments, which explicitly address uncertainty, may provide more reliable information."

Although we collect raw data on the number of observed loggerhead takes in gillnet and bottom trawl fisheries as they are documented and verified (usually on a time lag of at least three months per the NEFOP's data quality control and assurance procedures), we cannot produce reliable short-term take estimates using them because observed sea turtle takes are rare events dependent on a wide range of both human and natural factors that vary greatly over short time periods (i.e., less than a year). Examples of human factors include variation in the number of vessels fishing, time spent fishing, percent observer coverage, regulatory regimes, market forces, etc. Natural factors include changes in oceanographic conditions such as water temperature, distribution of prey, weather conditions, shifting distributions and abundance of loggerheads, etc. Typically, the number of takes observed in a short time period (i.e., one year), when considered with the factors identified above, means that the observed takes cannot be extrapolated to estimate the total number of takes with good precision. Nor do the raw data provide a large enough sample size to identify any exceedances of the incidental take level. For all of the foregoing reasons, we will rely on the statistical methods used in Murray (2009a) and Warden (2011a), which we have determined represent the best available scientific information for loggerhead bycatch estimation, to re-estimate loggerhead takes in the gillnet and bottom trawl fisheries assessed in this Opinion approximately every five years.

With respect to leatherback, Kemp's ridley, and green sea turtles, we do not have five-year bycatch estimates due to so few recorded interactions. Thus, the raw annual numbers of observed takes are the best available scientific information, and reviewing those numbers is the only available method for monitoring the incidental take levels in gillnet and bottom trawl gear. Thus, we will continue to rely on such data for monitoring incidental takes of these three species.

This two-pronged methodology for monitoring sea turtle takes in gillnet and bottom trawl gear is consistent with the conceptual framework described in Figure 2 of Haas (2010), in which a low level metric such as raw counts (simple to estimate, but less informative) could be used for monitoring the incidental take level for certain species (e.g., leatherback, Kemp's ridley, and green sea turtles) on the short term (i.e., annually) and a higher level metric such as a bycatch estimate (difficult to estimate, more informative) could be used for monitoring the incidental take level for others (e.g., loggerheads) over a longer (i.e., five year) time frame. For loggerheads, no other monitoring alternatives exist for gillnet and bottom trawl fisheries that are feasible on a shorter term than the five-year period required to produce an updated bycatch estimate.

Pot/trap gear

For the purposes of monitoring the ITS in regards to sea turtles that are known to be entangled in pot/trap gear, NMFS will continue to use STDN data as the primary means of collecting incidental take information. NMFS will assess takes annually in the scup and black sea bass fisheries using all available and up-to-date STDN entanglement data. Using these data, NMFS will determine if the annual incidental take level in this Opinion has been met or exceeded.

Observer coverage

The use of observer coverage to collect incidental take data, which can then be incorporated into statistical bycatch models, is an important monitoring tool that has been utilized in the ITSs of several fisheries opinions not only in the Greater Atlantic Region, but in other NMFS regions as well. However, as indicated in the previous section, there are a number of management concerns and caveats related to allocating sufficient observer coverage for a given fishery or fisheries, especially in this region where sea turtles generally occur on only a seasonal basis. In its August 31, 2015, ruling remanding our 2013 Opinion and ITS, the district court stated that:

> "Based on the evidence already in the record, it would seem that increasing observer coverage will lead to the collection of more data, addressing the "data needs" that NMFS claims are a source of delay in its development of take estimates. On the other hand, as this Court has acknowledged, it could be that external constraints limit NMFS' ability to add more observers to fishing vessels. See Oceana, Inc. v. Pritzker, 75 F. Supp. 3d at 498 (recognizing that "[t]he five-year timetable may reflect very real limitations on NMFS' data collection capabilities"). Still, by neglecting to directly address this commonsense solution to its data need problems, which could potentially reduce the delay in developing take estimates, NMFS cannot rely on a lack of data to justify the infrequency of its ability to generate take estimates that can be compared against the annual take limits set forth in the ITS" (2015 WL 5138389, at *16).

As explained below, simply increasing observer coverage throughout the seven fisheries would not address the limitations that prevent us from accurately estimating loggerhead bycatch and exceedances of the ITS over a shorter time scale. The "lack of data" discussed in this ITS, as well as the amended ITS of the 2012 Scallop FMP Opinion, relates to point #1 in the previous discussion of why we are implementing a five-year monitoring framework for gillnets and bottom trawls. The "lack of data" is a lack of observed sea turtle interactions, not a lack of observer data in general. We have an abundance of observer data that has been collected on New England and Mid-Atlantic fishing trips since 1989 (e.g., haul locations, times, and environmental

conditions), yet fishery observers in the Greater Atlantic region witness very few interactions because they are naturally rare events (Murray 2008, 2009b; Warden 2011a). As a result, we have to pool observer data on sea turtle interactions over several years to achieve desired levels of precision around estimated bycatch (NMFS 2004; K. Murray, NEFSC, pers. comm.). To lower the variance, and in turn produce a more robust estimate, we would need to pool additional years of observer data.

Even if more observers were placed on vessels, it most likely would not yield a sufficient number of observed interactions between sea turtles and fishing gear to permit us to estimate the number of takes on an annual basis. Estimated sea turtle interactions in most fisheries have decreased relative to past reports, and the utility of observers as a monitoring tool for turtle interactions in certain fisheries with bycatch reduction devices appears to be decreasing (Murray 2015a, 2015b). Decreases in observed interactions in gillnet and bottom trawl fisheries are likely due to management measures such as gear restrictions (e.g., prohibitions from using gillnets with mesh sizes ≥7 inches) and time/area closures in areas of high sea turtle abundance, as well as gear modifications (e.g., turtle excluder devices) to exclude turtles from being captured, and not necessarily to the absence of turtles from the area because many of them are sighted (NEFSC and SEFSC 2014) or observed in other gear types in the area (Murray 2013, 2015a).

Moreover, even if increasing observer coverage in the gillnet and bottom trawl fisheries could lead to more observed interactions, NMFS has to consider observer coverage globally rather than on a fishery-by-fishery basis. How observer coverage is allocated among fisheries is a very complex and resource-driven process. Uncertain funding levels and fluctuations in total sea days required to perform adequate bycatch analyses are recurring challenges that NMFS, its observer programs, and the fishery management councils must deal with from year to year. At present, fishing vessels are selected randomly for observer coverage, which is typically allocated by month and port in proportion to fishing effort (Warden 2011a). Increasing overall observer coverage in gillnet and bottom trawl fisheries to *potentially* obtain a larger sample size of loggerhead bycatch records may not achieve the desired results and would divert available resources from competing monitoring needs for other fisheries and bycatch species managed under the Magnuson-Stevens Fishery Conservation and Management Act of 2007 (MSFCMA) (Murray 2015a; NEFSC and GARFO 2015; Wigley *et al*. 2015).

NMFS recently considered observer coverage levels for the seven fisheries covered by this Opinion in a rulemaking that underwent public notice and comment. The Reauthorized MSFCMA requires all FMPs to "establish a standardized reporting methodology to assess the amount and type of bycatch occurring in the fishery." In 2007, the NEFMC and MAFMC, in coordination with NMFS, developed a standardized bycatch reporting methodology (SBRM) for all FMPs in the Greater Atlantic Region through an overarching amendment to these FMPs, known as the Standardized Bycatch Reporting Methodology (SBRM) Omnibus Amendment. Based on public comments from a range of stakeholders and the input of the NEFMC and MAFMC, NMFS has established standards of precision for bycatch estimation for all Greater Atlantic fisheries managed through the two Councils. A revised SBRM Amendment was adopted by both Councils in 2014 and approved by NMFS in March 2015, with a final rule published in June 2015 (80 FR 37182, June 30, 2015). Following the requirements in the revised SBRM Amendment, each year NMFS will post a report of estimated discards for the previous year and a

report of observer sea-day allocations for the coming year using the new formulaic prioritization process. The 2015 SBRM amendment requires an annual discard report utilizing information obtained from the NEFOP for fourteen Federally-managed species, including sea turtles. Beyond a certain point, increased observer coverage provides diminishing returns as far as improved precision of estimated sea turtle bycatch. Thus, as explained in the June 2015 SBRM rule, prioritizing observer coverage for one species could risk sacrificing the precision of bycatch estimates for other listed species to achieve a marginal improvement.

The SBRM Omnibus Amendment adequately considers adverse effects to protected species, including sea turtles. As discussed in the amendment, the SBRM applies the 30% coefficient of variation performance standard to species protected under the ESA, as it does for species managed under an FMP.[3] This has been the case since the original implementation of the 2007 SBRM Amendment. Since that time, we have continued to effectively use discard/bycatch estimates for these species for management purposes, including monitoring incidental take limits, and there is no information indicating these estimates are inadequate.

In summary, it is our opinion that increasing observer coverage in the gillnet and bottom trawl fisheries would not lead to an increase in the number of observed sea turtle interactions. Moreover, observer coverage levels for the seven fisheries covered by this Opinion should be established through the SBRM amendment, not through the ESA section 7 consultation process.

Atlantic Sturgeon Monitoring

NMFS must monitor levels of Atlantic sturgeon bycatch in the seven fisheries. Fisheries observer data, and their incorporation into statistical models (specifically, generalized linear models as described in the NEFSC (2011) and ASMFC (2007) reports), has been used as the principal means to estimate Atlantic sturgeon bycatch in gillnet and bottom trawl fisheries, and will be used to monitor incidental take levels in gear authorized by the FMPs for the seven fisheries.

For the purposes of monitoring this ITS for the gillnet and bottom trawl components of the seven fisheries, we will continue to use fisheries observer data as the primary means of collecting incidental take information. As the estimates depend on take rate information over a several year period, re-examination after one year is not likely to produce any noticeable change in the take rate. For these reasons, approximately every five years, we will re-estimate takes in the seven fisheries using appropriate statistical methods. For the five Atlantic sturgeon DPSs, we will use all available information (e.g., observed takes, changes in fishing effort, etc.) to assess if the annual incidental take level in this Opinion has been exceeded.

GOM DPS Atlantic Salmon Monitoring

NMFS must monitor levels of Atlantic salmon bycatch in the seven fisheries. Observer coverage has been used as the principal means to estimate Atlantic salmon bycatch in gillnet and bottom trawl fisheries, and will be used to monitor incidental take levels in gear that is authorized by the FMPs for the seven fisheries.

[3] The SBRM is designed so that the data collected are sufficient to produce a coefficient of variation (CV) of the discard estimate of no more than 30%. 80 FR 37183. "This standard is designed to ensure that the effectiveness of the SBRM can be measured, tracked, and utilized to effectively allocate the appropriate number of observer sea days." Id.

For the purposes of monitoring this ITS for the gillnet and bottom trawl components of the seven fisheries, we will continue to use observer coverage as the primary means of collecting incidental take information. For the GOM DPS Atlantic salmon, we will use all available information (e.g., observed takes, changes in fishing effort, etc.) to assess if the annual incidental take level in this Opinion has been exceeded.

Large Whale Monitoring

NMFS will continue to monitor levels of large whale entanglement in the seven fisheries. Serious injury determinations and stock assessment reports have been used as the principal means to estimate the large whale entanglement rate in the seven fisheries and to monitor SI/M levels. NMFS has recently developed a monitoring strategy for the ALWTRP and will produce an annual report stating the most up-to-date SI/M five year rolling average. To provide the most up-to-date rolling average possible, the five-year average will consist of the most recently available year's data from the annual SI/M report averaged with the previous four years of data obtained from the U.S. Atlantic and Gulf of Mexico Marine Mammal SAR. Analyzing the data in this way will reduce the two-year lag associated with using SAR estimates alone by one year.

For the purposes of monitoring large whale SI/M, NMFS will use the serious injury determination reports, SARs, and the ALWTRP monitoring reports to collect entanglement information. NMFS will re-examine SI/M annually in the seven fisheries. Using these data, NMFS will determine if the annual SI/M is significantly different than what was evaluated in this Opinion.

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18.0 APPENDIX C: Sea Turtle Handling and Resuscitation Measures

Sea turtle handling and resuscitation measures as found at 50 CFR 223.206(d)(1).

(d) (1) (i) Any specimen taken incidentally during the course of fishing or scientific research activities must be handled with due care to prevent injury to live specimens, observed for activity, and returned to the water according to the following procedures.

(A) Sea turtles that are actively moving or determined to be dead as described in (d)(1)(i)(C) of this section must be released over the stern of the boat. In addition, they must be released only when fishing or scientific collection gear is not in use, when the engine gears are in neutral position, and in areas where they are unlikely to be recaptured or injured by vessels.

(B) Resuscitation must be attempted on sea turtles that are comatose, or inactive, as determined in paragraph (d)(1) of this section by:

(1) placing the turtle on its bottom shell (plastron) so that the turtle is right side up, and elevating its hindquarters at least 6 inches (15.2 cm) for a period of 4 up to 24 hours. The amount of the elevation depends on the size of the turtle; greater elevations are needed for larger turtles. Periodically, rock the turtle gently left to right and right to left by holding the outer edge of the shell (carapace) and lifting one side about 3 inches (7.6 cm) then alternate to the other side. Gently touch the eye and pinch the tail (reflex test) periodically to see if there is a response.

(2) sea turtles being resuscitated must be shaded and kept damp or moist but under no circumstance be placed into a container holding water. A water-soaked towel placed over the head, neck, and flippers is the most effective method in keeping a turtle moist.

(3) sea turtles that revive and become active must be released over the stern of the boat only when fishing or scientific collection gear is not in use, when the engine gears are in neutral position, and in areas where they are unlikely to be recaptured or injured by vessels. Sea turtles that fail to respond to the reflex test or fail to move within 4 hours (up to 24, if possible) must be returned to the water in the same manner as that for actively moving turtles.

(C) A turtle is determined to be dead if the muscles are stiff (rigor mortis) and/or the flesh has begun to rot; otherwise the turtle is determined to be comatose or inactive and resuscitation attempts are necessary.

19.0 APPENDIX D: Procedure for Biosampling Atlantic Sturgeon for Genetic Analyses

Two different samples must be collected from each observed captured Atlantic sturgeon. These are: a gill swab fixed on a Whatman FTA card and a fin clip fixed in 95% non-denatured ethanol within a vial with a ring-sealed, screw on lid. Due to the rate of ethanol evaporation, only vials with lids that are intended to prevent evaporation should be used. Protocols are provided below for the collection and fixing of each sample type.

Biosample Collection
Wash hands and use disposable gloves when collecting any tissues for genetic analyses to avoid contamination.

Gill Swabs

1. Remove one sterile Whatman Foam Tipped Applicator from the protective packaging according to the instructions. Gently swab around the gill area for inside of the gill (either side) for 30 seconds, soaking up as much mucus as possible. Repeat using the opposite side of the foam tip. Remove the Applicator from the gill area.

2. Carefully lift the paper cover of the FTA card to expose the sample area. Press the flat, circular foam Applicator tip within the sample circle area. Without lifting the foam tip from the card, roll the foam tip from edge-to-edge 3 times to completely saturate the sample area. Turn the Applicator over and repeat with the other side of the foam tip within the same circle.

3. Do not place the Applicator back into the sturgeon's gill area after it has touched the card. If the sample circle area appears dry (e.g., not enough mucus on the applicator to fill in one circle of the card), select a new applicator, swab the gill area again, and apply the second sample to the second sample circle area on the card.

4. After sampling is complete, circle around the outside of each sample circle area to which a sample has been applied with either a ballpoint pen or pencil to indicate the presence of a sample within the sample area. Allow the card to dry at room temperature. Refold the paper cover over the sample area and record the TRIPID, Haul number, and IAL sequence on the outside fold of the card in permanent marker.

5. Store cards so that they stay dry and covered. Do not refrigerate or freeze.

Fin Clips

1. Using a knife, scalpel, or scissors that has been thoroughly cleaned and wiped with alcohol, cut a one-cm square piece of tissue from the tip of the pelvic fin.

2. Using one vial per fish, place the fin clip into a vial that contains 95% non-denatured ethanol and closes with a screw on, ring-sealed cap. Put parafilm around each cap to minimize the chance of evaporation or leaking. Label the vial with the TRIPID, Haul number, and IAL sequence number.

3. If possible, the vial should be refrigerated or placed on ice so that it remains chilled for the first 24 to 48 hours. Otherwise, vials can be stored at room temperature.

Shipping Biosamples

FTA card samples should not be shipped with fin clips preserved in ethanol. Each sample type should be packaged and shipped appropriately as described below.

For FTA cards, cards should be packed for shipment in waterproof packaging to minimize the likelihood that the cards will become wet or absorb moisture. FTA cards do not contain hazardous materials and are not considered perishable materials but, the fixed sample can be damaged if the cards become wet.

For fin clips, vials should be packed for shipment in a manner that minimizes the chance of breakage and leakage and shipped in accordance with NMFS Guidelines for Air-Shipment of "Excepted Quantities" of Ethanol Solutions.

All samples should be sent to:

Dr. Tim King
U.S. Geological Survey
Leetown Science Center
Aquatic Ecology Branch
11649 Leetown Road
Kearneysville, West Virginia 25430
(Phone: 304.724.4450)

Prior to sending genetic samples, please email Dr. Tim King (tlking@usgs.gov), copying his technician (Barb Lubinski at blubinski@usgs.gov), and NOAA Fisheries, Protected Resources Division (Lynn Lankshear at lynn.lankshear@noaa.gov), providing the number of samples to be shipped, the fixative, the anticipated shipping date, and the shipping carrier. For example, "On (date), NOAA Fisheries, Fisheries Sampling Branch anticipates shipping to your lab via (carrier) a package containing (#) sturgeon genetic samples fixed (on FTA cards or in ethanol) that were collected by the Northeast Fisheries Observer Program."

20.0 APPENDIX E: Procedure for Obtaining Fin Clips from Atlantic Salmon for Genetic Analysis

This procedure has been amended from the "GENETIC SAMPLING PROCEDURE (Standard Operating Procedure R-07)" instructions documented by the Population Dynamics Branch of the Northeast Fisheries Science Center of NOAA Fisheries.

Equipment needed:

1. Cooler and cold ice packs or wet ice.
2. Pre labeled vials
3. Ethyl alcohol (ethanol)
4. Fin clippers, dermal punches and probe (i.e. section of wire, paper clip, cake tester, etc.) or scissors
5. Forceps

Sampling:

1. Flush the area to be clipped with sea water and rinse with distilled water if available. Carefully clip or dermal punch a small **(3mm x 3mm)** section of the anal, upper or lower caudal fin (depending on clipping schedule – see **Temporary Marking Procedures (Fin Clip and Punch; SOPs R-05 and R-06)**When clipping the fin remember to include rays along with the cartilage.
2. Place the section of fin into a labeled vial containing ethanol, and cap it. The amount of alcohol to use per sample should be at least 3:1 liquid/tissue ratio; less would greatly diminish the alcohol's ability to preserve the tissue.
3. Make sure you indicate the vial # on the datasheet.
4. Place sample on ice and out of sun and rain.
5. Clean the fin clippers/dermal punch between samples in sea water or distilled water.
6. Transfer sample vials to refrigerator when back at office/field station.
    i. Label individual vials with internal and external labels which contain a JoinID. Be sure to secure the label with a small piece of tape connecting the ends of the label so that the label stays on the vial.

Things to think about:

1. Minimize stress on the fish by holding it gently but in a manner such that it cannot move. This is best done by holding as much of the fish in your hands as possible (i.e., do not hold only the front or only the back of the fish – place your hands around the entire fish).
2. Minimize stress on the fish by performing this procedure as quickly as possible. It is important to ascertain how the clipper wants the fish presented (held) to them *before* the fish is taken from the water, and preferably, before the fish is taken from the holding area of the trap.

Storage and Sending of Sample:

1. If possible, place the vial on ice for the first 24 hours. If ice is not available, please refrigerate the vial. Send as soon as possible as instructed below.

2. Vials should be placed into Ziploc or similar resealable plastic bags. Vials should be then wrapped in bubble wrap or newspaper (to prevent breakage) and sent to:

Julie Carter
NOAA/NOS – Marine Forensics
219 Fort Johnson Road
Charleston, SC 29412-9110
Phone: 843-762-8547

Prior to sending the sample, contact Lynn Lankshear at NMFS Greater Atlantic Regional Office (978-282-8473) to report that a sample is being sent and to discuss proper shipping procedures.