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

Environmental Assessment On the Issuance of Permit No. 16556 for Ecological Research on Protected Sea Turtles in the Western North Atlantic Ocean

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Lead Agency: USDC National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Office of Protected Resources

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Location: Western North Atlantic Ocean and associated bays, estuaries, and high seas from Maine to Florida

Abstract: The National Marine Fisheries Service (NMFS) proposes to issue scientific research Permit No. 16556 to NMFS Northeast Fisheries Science Center (Responsible Party: Dr. William Karp) to continue ecological research on protected sea turtles. The purpose of this research is to provide data on sea turtle abundance, distribution, ecology, behavior, genetics, population dynamics, and interactions with fisheries. The information would be used to develop, implement, and evaluate conservation recovery efforts for sea turtles in the North Atlantic Ocean and its estuaries and embayments. Sea turtles would be directly captured by one of several methods or come from other legal sources authorized to incidentally take sea turtles such as federally-managed fisheries. Live sea turtles would have a suite of procedures performed: marking, morphometrics, biological sampling, transmitter attachments, transport, and imaging before release. Sea turtles could be tracked by vessel and observed using a remotely operated vehicle. One sea turtle per species could be accidentally killed annually. Researchers would salvage tissues and parts from dead sea turtles encountered. Under NOAA Administrative Order 216-6, NMFS' issuance of scientific research permits is generally categorically excluded from the National Environmental Policy Act of 1969 requirements to prepare an environmental assessment (EA) or environmental impact statement. However, for this permit NMFS prepared an EA to facilitate a more thorough assessment of potential impacts on endangered and threatened sea turtles. This EA evaluates the potential impacts to the human environment from issuance of the proposed permit.

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CHAPTER 1 PURPOSE OF AND NEED FOR ACTION

1.1 DESCRIPTION OF ACTION

NMFS proposes to issue a scientific research permit (File No. 16556) that authorizes "takes"[1] under the Endangered Species Act of 1973 (ESA; 16 U.S.C. 1531 *et seq.*), and the regulations governing the taking, importing, and exporting of endangered and threatened species (50 CFR Parts 222-226) to the NMFS Northeast Fisheries Science Center (NEFSC; Responsible Party: Dr. William Karp).

1.1.1 Purpose and Need

The primary purpose of the permit is to provide an exemption from the take prohibitions under the ESA to allow "takes". The need for issuance of the permit is related to NMFS' mandates under the ESA. NMFS has a responsibility to implement the ESA to protect, conserve, and recover threatened and endangered species under its jurisdiction. The ESA prohibits takes of threatened and endangered species, with only a few specific exceptions, including for scientific research and enhancement purposes. Permit issuance criteria require that research activities are consistent with the purposes and policies of the ESA and will not have a significant adverse impact on the species.

1.1.2 Research Objectives

The purpose of this research is to provide data on sea turtle abundance, distribution, ecology, behavior, genetics, population dynamics, and interactions with fisheries. The information would be used to develop, implement, and evaluate conservation recovery efforts for sea turtles in the North Atlantic Ocean and its estuaries and embayments.

1.2 OTHER EA/EIS THAT INFLUENCE SCOPE OF THIS EA

An Environmental Assessment (EA; NMFS 2006) was completed in 2006 resulting in a Finding of No Significant Impact (FONSI) for issuance of the NEFSC's previous permit, No. 1576, (expired October 31, 2012) to conduct this research. A Supplemental EA (SEA; NMFS 2008a) was prepared in 2008 also resulting in a FONSI for a modification to the permit (No. 1576-01) to authorize additional sea turtle research procedures during surveys. The proposed activities for Permit No. 16556 would occur in the same area as authorized under the previous permit. Many of the proposed research activities are authorized under the current permit and would be conducted in the same manner as previously described and analyzed. Permit No. 16556 also would authorize a suite of activities that were not previously considered for Permit No. 1576. See Ch. 2 for more details. Copies of the EAs prepared and cited for the above permitted research are available from the NMFS Office of Protected Resources in Silver Spring, Maryland.

1.3 SCOPING SUMMARY

The purpose of scoping is to:

- identify the issues to be addressed,

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1 The ESA defines "take" as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." The term "harm" is further defined by regulations (50 CFR §222.102) as "an act which actually kills or injures fish or wildlife. Such an act may include significant habitat modification or degradation which actually kills or injures fish or wildlife by significantly impairing essential behavioral patterns including breeding, spawning, rearing, migrating, feeding, or sheltering."

- identify the significant issues related to the proposed action,
- identify and eliminate from detailed study the non-significant issues,
- identify and eliminate issues covered by prior environmental review, and
- identify the concerns of the affected public and Federal agencies, states, and Indian tribes.

The Council on Environmental Quality's (CEQ) regulations implementing the National Environmental Policy Act of 1969 (NEPA; 42 U.S.C. 4321 et seq.) do not require a public scoping process for an EA.

CHAPTER 2 ALTERNATIVES INCLUDING THE PROPOSED ACTION

2.1 ALTERNATIVE 1 – NO ACTION

Under Alternative 1, no permit would be issued and the applicant would not receive an exemption from the ESA prohibitions against take.

2.2 ALTERNATIVE 2 – (ISSUANCE OF PERMIT WITH STANDARD CONDITIONS)

Under Alternative 2, a permit would be issued to exempt the applicant from ESA take prohibitions while conducting research that is consistent with the purposes and policies of the ESA and applicable permit issuance criteria. The purpose of the proposed research is to provide data on sea turtle abundance, distribution, ecology, behavior, genetics, population dynamics, and interactions with fisheries. The information would be used to develop, implement, and evaluate conservation recovery efforts for sea turtles in the Western North Atlantic. NMFS' Science Centers are obligated under the ESA to conduct this work. This research addresses the conservation requirements and recommendations from a variety of sources including NMFS-issued biological opinions for commercial fisheries, Turtle Expert Working Groups, the National Research Council, and the multi-agency Atlantic Marine Assessment Program for Protected Species (AMAPPS).

The permit would be valid for five years and would contain terms and conditions standard to such permits as issued by NMFS.

Action Area

The proposed research would take place in the Western North Atlantic Ocean from the Florida Keys through Maine, including estuaries, embayments and the high seas.

Proposed Activities

The permit would authorize two research projects to accomplish the stated objectives. For Project 1, researchers would directly capture juvenile and adult loggerhead (*Caretta caretta*), Kemp's ridley (*Lepidochelys kempii*), leatherback (*Dermochelys coriacea*), and green (*Chelonia mydas*) sea turtles at sea, attach satellite tags, and collect biological samples and information. Turtles would be captured by hand, dip net, encircle net, or hoopnet as described in the application; all of these methods were authorized by Permit No. 1576. A subset of hardshell sea turtles would receive laparoscopy, and biopsies of fat, muscle, and/or organ tissues. Researchers

also would investigate sea turtle behavior and foraging ecology using a remotely operated vehicle (ROV) to follow and observe sea turtles.

Project 2 would involve opportunistic biological sampling and tagging of sea turtles that are legally captured by other authorities (i.e., the capture would not be covered by this permit). The sampling goals of Project 2 are to collect as much useful information as possible from loggerhead, Kemp's ridley, leatherback, and green sea turtles. Captured sea turtles would come from legal sources such as another ESA Section 10 permit holder or a commercial fishery operating under a Fishery Management Plan that has an ESA Section 7 biological opinion authorizing sea turtle capture via an Incidental Take Statement (ITS) or another legal authority such as by ESA regulation.

The proposed permit would authorize the following types of procedures on sea turtles:

Table 1. Summary of procedures authorized under the proposed permit.

Research Category	Procedures
Handling, Data collection, Assessment and Imaging	Weigh; Measure; Transport; Ultrasound; Photograph/video; Imaging (e.g., MRI, CT, CAT, X-Ray)*; Laparoscopy*; Gear removal upon recapture, release
Marking	Paint carapace (temporary); Flipper tag; passive integrated transponder (PIT) tag
Monitoring and Observation	Monitor heart beat; Cloacal temperature, Count/survey; Tracking by vessel; Observation and follow with ROV
Sampling	Sample: blood, feces, tissue, fat*, muscle*, scute*, tumors*, and organ*; Nasal*, oral*, lesion and cloacal swab; Cloacal* and gastric* lavage; Epibiota removal; Salvage carcass, tissues, and parts of dead animals
Tagging	Insert stomach telemeter pill*; Instrument attachment by epoxy, drilling the carapace*, or suction-cup*
Unintentional mortality	Necropsy

* Procedures not authorized in the NEFSC's current permit.

None of the requested procedures are novel or new to the sea turtle research community. Transmitters may be removed if a tagged sea turtle is opportunistically recaptured. Animals may be observed and followed with the ROV up to five times annually. One unintentional mortality of any sea turtle species would be authorized annually in the event a sea turtle accidentally dies during research. Not all sea turtles would receive all procedures. See Appendix A for details on proposed take numbers and procedures for each species.

Most of the sampling and tagging would be conducted in accordance with NOAA Technical Memorandum NMFS-SEFSC-579, the Sea Turtle Research Techniques Manual (NMFS SEFSC 2008), hereby incorporated by reference. The manual covers careful handling, sampling and tagging techniques to ensure the well-being and safety of sea turtles during research. Cloacal lavage and suction-cup tag attachment are common procedures performed during the care and study of sea turtles but are not described in the manual. These activities would be performed as

described in the application for Permit No. 16556 (available on request in NMFS Office of Protected Resources, Silver Spring, MD). All of the NEFSC's activities described in the application, including the SEFSC manual, have been reviewed and approved by an Institutional Animal Care and Use Committee under the Animal Welfare Act.

Mitigation Measures
To minimize effects to target animals:

- Flipper and PIT tags would not be applied if the turtle is already tagged.
- Turtles would be protected from temperature extremes and kept moist.
- Equipment that comes into contact with body fluids, cuts or lesions would be disinfected between turtles.
- A separate set of sampling equipment would be maintained for turtles displaying fibropapilloma tumors. These animals would not be sampled if equipment is not available.
- Biopsy and tagging sites would be disinfected using isopropyl alcohol and 10% povidone-iodine.
- Procedures would not be performed on compromised animals if the activity would further compromise their health.
- Resuscitation guidelines would be followed if a comatose turtle is recovered.

CHAPTER 3 AFFECTED ENVIRONMENT

3.1 BIODIVERSITY AND ECOSYSTEM FUNCTION

The Proposed Action is directed at the target sea turtles and does not interfere with benthic productivity, predator-prey interactions or other biodiversity or ecosystem functions. Sea turtles would not be removed from the ecosystem or displaced from habitat, nor would the permitted research affect their diet or foraging patterns. (See Chapter 4 for a more detailed discussion on the effects of research activities). Further, the Proposed Action does not involve activities known or likely to result in the introduction or spread of aquatic nuisance species, such as ballast water exchange. Thus, effects on biodiversity and ecosystem function will not be considered further.

3.2 SOCIAL AND ECONOMIC ENVIRONMENT

A variety of human activities may occur in the action area such as commercial fishing, shipping, military activities, recreational uses (such as fishing and boating), and ecotourism. The social and economic effects of the proposed action mainly involve the effects on the people involved in the research, as well as any industries that support the research, such as charter vessels and suppliers of equipment needed to accomplish the research. Permitting the proposed research could result in a low level of economic benefit to local economies in the action area. However, such impacts would be negligible on a national or regional (state) level.

The action also would not involve the use of toxic or harmful substances. Nor would the action be directed at humans or conducted in close proximity to human populations. Rather, the action would be conducted at sea in the presence of the vessel's crew, a relatively minor number of people. Thus the proposed research would not pose a risk to public health and safety. There are no social or economic impacts of the proposed action interrelated with natural or physical environmental effects. Thus, the EA does not include any further analysis of social or economic effects of the Proposed Action.

3.3 PHYSICAL ENVIRONMENT

Under the Proposed Action, research would occur in the Western North Atlantic from Maine to Florida including coastal and estuarine environments and on the high seas. Activities would not occur in North Atlantic right whale critical habitat, elkhorn and staghorn coral critical habitat, smalltooth sawfish critical habitat, or National Marine Sanctuaries within the area.

3.3.1 Essential Fish Habitat

Congress defined Essential Fish Habitat (EFH) as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity" (16 U.S.C. 1802(10)). The EFH provisions of the Magnuson-Stevens Fishery Conservation and Management Act offer resource managers means to accomplish the goal of giving heightened consideration to fish habitat in resource management. EFH has been designated for federally managed fisheries. Details of the designations and descriptions of the habitats within the action area can be found at www.habitat.noaa.gov/protection/efh/habitatmapper.html.

Activities that have been shown to adversely affect EFH include disturbance or destruction of habitat from stationary fishing gear, dredging and filling, agricultural and urban runoff, direct discharge, and the introduction of exotic species. The Proposed Action would not involve any of these activities. The applicant's proposed nets would not be set or suspended in the water; rather they would be deployed to instantaneously catch a sea turtle upon sight, involving little to no contact with bottom habitat. Although EFH is found in the action area, it is not expected to be significantly impacted. For cases when researchers would work with sea turtles obtained from other legal sources, physical habitat would not be impacted by the proposed action. Habitat impacts of the activities, such as commercial fisheries, resulting in those captures have been analyzed during the authorization of those activities. Simple handling and performing procedures on sea turtles once onboard the vessel would not result in additional impacts to habitat.

3.4 BIOLOGICAL ENVIRONMENT

3.4.1 ESA Target Species

ESA Endangered	
Green sea turtle	*Chelonia mydas**
Kemp's ridley sea turtle	*Lepidochelys kempii*
Leatherback sea turtle	*Dermochelys coriacea*
Loggerhead sea turtle	*Caretta caretta***

**Green turtles in U.S. waters are listed as threatened except for the Florida breeding population which is listed as endangered. ** Some populations of loggerhead sea turtles are listed as threatened.*
Due to the inability to distinguish between these species' populations away from the nesting beach, these species are considered endangered wherever they occur in U.S. waters.

With the exception of loggerhead sea turtles, the status of these species remains unchanged from their description in the 2006 EA and 2008 SEA. Information on the status of these species also can be found in a recent Biological Opinion (NMFS 2012, available from the NMFS Office of Protected Resources in Silver Spring, MD) prepared for research on these species throughout the action area and is incorporated by reference with a brief summary of the species provided here. All of the sea turtle species remain listed under the ESA. These sea turtles are found in temperate and tropical waters in the Atlantic, Indian and/or Pacific Oceans. Key data gaps exist for each species' biology, ecology, and life histories. Given the species' broad use of ocean basins, extensive migrations, and no known marine aggregations, population estimates are difficult to quantify, are based on trends of adult nesting females, and hence likely represent minimum population sizes. Threats to these species include harvest or poaching in other countries, entanglements in fishing gear, habitat degradation, and beach development/renourishment. An update for loggerhead sea turtles follows to address recent changes in its ESA listing.

Loggerhead sea turtle
Loggerheads occur throughout the temperate and tropical regions of the Atlantic, Pacific, and Indian Oceans and inhabit continental shelves and estuarine environments. Developmental habitat for small juveniles includes the pelagic waters of the North Atlantic Ocean and the Mediterranean Sea.

Adults have been reported throughout the range of this species in the United States and throughout the Caribbean Sea. Non-nesting, adult female loggerheads are reported throughout the United States and Caribbean Sea; however, little is known about the distribution of adult males who are seasonally abundant near nesting beaches during the nesting season. Aerial surveys suggest that loggerheads (benthic immatures and adults) in U.S. waters are distributed in the following proportions: 54 percent in the southeast U.S. Atlantic, 29 percent in the northeast U.S. Atlantic, 12 percent in the eastern Gulf of Mexico, and five percent in the western Gulf of Mexico (TEWG 1998).

The loggerhead was listed as a threatened species in 1978. Critical habitat has not been designated for the loggerhead. A recent loggerhead status review (Conant et al. 2009) concluded

that the species consists of nine loggerhead distinct population segments (DPSs). These include the North Pacific Ocean DPS; the South Pacific DPS; the North Indian Ocean DPS; the Southeast Indo-Pacific Ocean DPS; the Southwest Indian Ocean DPS; the Northwest Atlantic Ocean DPS; the Northeast Atlantic Ocean DPS; the Mediterranean Sea DPS; and the South Atlantic Ocean DPS. The information provided in the status review represents the most recent and available information relative to the status of this species. On September 16, 2011 NMFS formally designated the loggerhead with these nine DPS' worldwide. Of these DPS', five are listed as endangered: Northeast Atlantic Ocean DPS, Mediterranean Sea DPS, North Indian Ocean DPS, North Pacific Ocean DPS and South Pacific Ocean DPS. Turtles in the action area are most likely to come from the threatened Northwest Atlantic DPS.

3.4.2 Non-Target Species

Due to the broad range of the applicant's study area, endangered North Atlantic right (*Eubalaena glacialis*), humpback (*Megaptera novaeangliae*), fin (*Balaenoptera physalus*), sei (*B. borealis*), blue (*B. musculus*), and sperm (*Physeter macrocephalus*) whales and a variety of fish and marine invertebrates are found throughout the action area. Though rare, the endangered Florida manatee (*Trichechus manatus latirostris*) also could be found in some of the action area. The applicant has no intent to interact with any non-target species. The applicant's proposed nets would only be in the water momentarily to capture a sea turtle upon sighting; no nets would be set or left in the water column that could entangle non-target species. Thus, beyond the mere presence of the research vessel, the proposed activities have no potential to impact non-target species. In addition, the permit would include a condition requiring researchers to maintain 500 yards from right whales in accordance with the ESA right whale approach regulation to minimize the potential for a vessel interaction. Further, the NEFSC has no past history of interacting with these species. Given the nature of the research, the applicant's past history, and the right whale permit condition, NMFS does not expect marine mammals or other non-target species to be affected by this action. Therefore, non-target species are not considered further in this EA.

CHAPTER 4 ENVIRONMENTAL CONSEQUENCES

This chapter represents the scientific and analytic basis for comparison of the direct, indirect, and cumulative effects of the alternatives. Regulations for implementing the provisions of NEPA require consideration of both the context and intensity of a proposed action (40 CFR Parts 1500-1508).

4.1 EFFECTS OF ALTERNATIVE 1: No Action

There are no direct or indirect effects on the environment of not issuing the permit. The takes of listed sea turtles, resulting from the applicant's research, would not be exempted. It is unlikely the applicant would conduct the research in the absence of a permit, because to do so would risk sanctions and enforcement actions.

4.2 EFFECTS OF ALTERNATIVE 2: Issue permit with standard conditions

The applicant would acquire sea turtles from other sources legally authorized to incidentally capture sea turtles or directly capture them by hand, dip net, hoopnet, or encircle net. Turtles would have a suite of procedures performed as specified in Appendix A or may be harassed

during tracking and observations from a vessel or an ROV. Based on prior analyses and experience from previous work performed under Permit No. 1576-01, NMFS expects that the impacts of the Proposed Action would be limited to the biological environment, specifically the target sea turtles. The type of action proposed would be unlikely to affect the physical or socioeconomic environment or pose a risk to public health and safety as discussed in Ch. 3.

The effects of the research activities on sea turtles directly captured and when obtained from other legal sources of capture were previously analyzed for Permit No. 1576-01, which the proposed permit would replace, as discussed in Ch.1. See Ch. 2 for which procedures were previously authorized. The 2006 EA and 2008 SEA analyses determined that:

- The action was not expected to adversely affect other (non-turtle) portions of the environment, including the physical or socioeconomic environment, or result in any cumulatively significant effects on them.
- The short-term stresses (separately and cumulatively) to sea turtles resulting from the non-lethal research activities were expected to be minimal and dissipate within a day.
- Capture using a net can lead to elevated stressor hormones, stress from interaction with the gear, and some discomfort. Turtles caught by encirclement nets specifically are likely to experience less stress than when forcibly submerged in entanglement nets. Based on the methodology and permit conditions concerning animal handling, NMFS did not expect netting to result in more than short-lived effects on target individuals with effects dissipating within a day.
- Transmitter attachments would not result in serious injury or affect sea turtle reproduction. Acoustic signals emitted from transmitters would not impact target sea turtles because signals are beyond their hearing range.
- Collecting parts from dead sea turtles would have no impacts to individual sea turtles or populations.
- Activities were not expected to have more than short-term effects on target populations, either separately or cumulatively.
- The death of a limited number of sea turtles, while having an acute effect (death) on the individual animals, was not expected to appreciably reduce the likelihood of survival and recovery of the species by reducing the reproduction, numbers and distribution of the species.

These analyses are hereby incorporated by reference. Unlike Permit No. 1576-01 which authorized capture by scallop dredging and associated 130 sea turtle mortalities, none of the requested methods inherently pose a risk of mortality to sea turtles. Only one mortality of any sea turtle species per year would be authorized for the Proposed Action in the event that a sea turtle accidently and unexpectedly dies during research. Thus the Proposed Action would authorize substantially less sea turtle mortality than the NEFSC's current permit and the potential impacts (worst case scenario) of the Proposed Action to the populations and species would be substantially reduced. Should it occur, the accidental mortality of an animal would be a permanent loss to the target population; however, the loss of one sea turtle annually would not

result in population or species level impacts as determined in the Biological Opinion prepared for this action (NMFS 2013). In contrast to other activities, like commercial fisheries, that lethally take sea turtles, the Proposed Action has a finite period of performance, strict limits on the total level of take, and all takes would be known and reported, rather than being a continuous on-going activity with a limited ability to track and control sea turtle take and mortality as it occurs. Long-lived species with high reproductive output, such as sea turtles, have a greater ability to withstand periodic, limited reductions in numbers than they do to sustain a heavier, continuous elevation of total mortality. As proposed, the level of mortality is minimal and not expected to significantly impact the target sea turtle populations or species.

Effects of Activities not Previously Authorized for the Applicant
Although some of the proposed activities (as listed in Ch. 2) were not previously authorized for the NEFSC's current permit, none of the activities are new or novel in the field of sea turtle research. All procedures except cloacal lavage have been previously authorized and analyzed for other NMFS sea turtle research permits. Analysis of these procedures can be found in the following EAs incorporated by reference here:

- For imaging, laparoscopy, fat, muscle, scute, tumor and organ sampling; nasal swabs; stomach pills; gastric lavage; and transmitter attachments by suction cup and drilling through the carapace: Environmental Assessment on the Effects of the Issuance of a Scientific Research Permit to the National Marine Fisheries Service Southeast Fisheries Science Center (Permit No. 1551) (NMFS 2008b).

- For oral swabs: Environmental Assessment on the Effects of the Issuance of a Scientific Research Permits to Llewellyn Ehrhart (Permit No. 14506) and Blair Witherington (Permit No. 14726) (NMFS 2010).

These assessments determined that the activities would result in no more than minimal, short-lived impacts to the target sea turtles. None of the activities would result in serious injury or death. Further, impacts to the species would be minimized by standard conditions that would be included in the permit. These analyses are hereby incorporated by reference. Both of these EAs resulted in FONSIs. The majority of the requested activities have been requested by researchers and analyzed in EAs resulting in FONSIs repeatedly as they are standard practices in the research community. Cloacal lavage is the only procedure not previously authorized by NMFS Office of Protected Resources research permits and is analyzed here for further consideration.

<u>Cloacal Lavage</u>
This method is minimally invasive, involving the insertion of a fluid filled syringe to flush contents, much like an enema, from the animal's cloaca. The procedure would only take minutes to perform. It could result in temporary discomfort of the subject animal but would involve no piercing of the skin or injury. Thus the impacts of the activity are likely to be temporary with the animal recovering within minutes. When considered with the other activities that would be performed during an animal's workup, the activity would not be expected to result in cumulative impacts to the sea turtle or chronic, lasting effects. No serious injury, mortality, or reduced reproductive success would be expected from this activity.

Summary of Effects
The effects of the Proposed Action to the target sea turtles are not expected to substantially differ from those analyzed in the 2006 EA, 2008 SEA, and observed during actions taken under Permit No. 1576-01. The number of unintentional mortalities in the Proposed Action would be substantially less than what was previously analyzed and authorized under Permit No. 1576-01. Beyond the one mortality that would be allowed, the greatest source of stress from the activities would likely be from the capture event which could temporarily elevate stress hormones in the sea turtle's blood. The effects of the proposed activities would primarily be limited to short-term harassment of individual sea turtles, with effects dissipating within a day. Activities are not expected to appreciably reduce the reproductive success of females or result in significant impacts at the population or species level. Further, conditions in the proposed permit would minimize effects to individual sea turtles and non-target species. Further, conditions in the proposed permit would minimize effects to individual sea turtles and non-target species. In addition, a Biological Opinion prepared for the Proposed Action concluded that the effects are not likely to jeopardize ESA listed species or destroy or adversely modify critical habitat (NMFS 2013).

4.3 COMPARISON OF ALTERNATIVES

While the No Action alternative would have no environmental effects, the opportunity would be lost to collect information that would contribute to better understanding sea turtles and that would provide information needed to implement NMFS' management activities to help conserve and manage sea turtles, as required by the ESA and NMFS' implementing regulations. The Proposed Action would affect individual sea turtles and, potentially, non-target species. However, the effects would be minimal and the alternative would allow the collection of valuable information that could help NMFS' efforts to recover sea turtles. Neither the No Action nor the Proposed Action alternatives are anticipated to have adverse population or stock-level effects on sea turtles.

4.4 MITIGATION MEASURES

There are no additional mitigation measures beyond those described in the applicant's methods (described in Ch. 2.2) or conditions that would be required by permit. The applicant's methods include the SEFSC's Sea Turtle Research Techniques Manual (NMFS SEFSC 2008) protocols which are designed for the care and safety of the target sea turtles and would minimize potential impacts of research procedures.

In summary, the permit conditions limit the level of take, minimize the effects of sampling and tagging activities on target sea turtles, minimize impacts to non-target species, and require notification, coordination, monitoring, and reporting. Review of monitoring reports of previous permits for the same or similar research protocols indicate that these types of mitigation measures are effective at minimizing stress, pain, injury, and mortality associated with takes.

4.5 UNAVOIDABLE ADVERSE EFFECTS

Under the Proposed Action, the measures required by permit conditions are intended to reduce, to the maximum extent practical, the potential for adverse effects of the research. Should it occur, the accidental mortality of one sea turtle annually would be a permanent loss to the target population. However, the loss would not rise to the level of population or species level impacts.

The proposed activities are not expected to result in death but more likely to result in short-term stress and discomfort of the target animals. Overall, these activities are not expected to have more than a minimal effect on individuals, and negligible effects on populations and species.

4.6 CONTROVERSY

Federal agencies are required to consider "the degree to which effects on the quality of the human environment are likely to be highly controversial" when evaluating potential impacts of a proposed action. [40 CFR §1508.27] A Notice of Receipt was published in the *Federal Register*, announcing the availability of the application for public review and comment for 30 days. The notice summarizes the purpose of the requested permit and invites interested parties to submit written comments concerning the application. No substantive comments were received. Given the proposed research methodologies are well known and standard procedures conducted by the community of sea turtle researchers, NMFS believes the action is not likely to be controversial.

4.7 CUMULATIVE EFFECTS

Cumulative effects are defined as those that result from incremental impacts of a proposed action when added to other past, present, and reasonably foreseeable future actions, regardless of which agency (Federal or nonfederal) or person undertakes such actions.

Research under the Proposed Action is not expected to result in more than temporary disturbance of the animals in the action area. It is likely the effects of the disturbance would be short-term and that the affected sea turtles would recover between captures or disturbances and following conclusion of the permitted research. A limited number of accidental sea turtle mortalities would be authorized but are not expected. If they occur, these takes would kill the individual animal, but are not expected to have a detectable effect on the numbers of the affected populations.

4.7.1 Research Permits

As summarized in Appendix B, 19 active permits allow research on a combination of the target species in areas that overlap with the proposed action area. The effects of many individual research activities (e.g., a survey, a field trip to capture animals) are short-term, lasting hours to days following the research event. Given the large proposed action area, it is unlikely that the exact location and timing of research under the various permits would overlap in time and space with the permitted research. Moreover, cumulative impacts to sea turtle populations are not expected as a result of mortality because all takes (lethal and non-lethal) occurring under scientific research permits must be reported and are monitored and tracked by the Permits Division. Should more than one sea turtle die within a year during the NEFSC's proposed research (i.e., exceeding the permit's take limit), as a standard condition of the permit, the NEFSC would be required to suspend work and notify the Permits Division. Permitted work would remain suspended until NMFS has evaluated the case and determined whether Section 7 must be reinitiated and the permit modified.

Further, a standard condition of NMFS research permits requires that researchers coordinate their activities with those of other Permit Holders to avoid unnecessary disturbance of animals. In an effort to mitigate the risk of negative cumulative effects the researchers would scan the turtles for PIT tags before tagging. Turtles that have existing, functional flipper and PIT tags would not be

tagged again. Permitted researchers are also required to notify the local NMFS Regional Office at least two weeks in advance of any planned field work so that the Regional Office can facilitate this coordination and take other steps appropriate to minimize disturbance from multiple Permit Holders.

4.7.2 Other Human Activities

Historically, one of the major contributors to declines in sea turtle populations was the commercial harvest of eggs and turtles. Today, target sea turtles may be adversely affected by human activities including commercial and recreational fishing (as bycatch via entrapment and entanglement in fishing gear), habitat degradation, and tourism and recreation (via harassment from human approach and presence) within the action area.

In addition, the 2010 Deepwater Horizon oil well blowout has impacted green, leatherback, Kemp's ridley, loggerhead, and hawksbill sea turtles in the Gulf of Mexico. The event has resulted in the live or dead stranding of more than 1,100 sea turtles[2]. However, this is likely an underestimate of the number of sea turtles impacted by the spill because 1) it is unlikely that all oiled animals were documented and 2) additional sea turtles were observed within oiled waters but were unable to be captured during the response. The overall degree and extent to which the populations and species have been impacted is not known; however, researchers and managers are currently working to assess and quantify impacts.

The target species also benefit from human activities operated by Federal, state, and or local agencies and organizations including management, conservation, and recovery efforts, nest monitoring, education and outreach, and stranding response programs.

4.7.3 Summary of Cumulative Effects

It is likely that issuance of the proposed permit would result in a minor level of adverse effects on target species. These adverse effects likely would be additive to those resulting from disturbance under other permits, and to disturbances related to other human activities in the action area. Some animals may be acclimated to a certain level of human activity and may be able to tolerate disturbance associated with these activities with little adverse impacts on population or species vital rates. However, even animals acclimated to a certain level of disturbance may be adversely affected by additive effects that exceed their tolerance threshold. Based on the review of past, present and future actions that impact the target species, the incremental contribution of the short-lived impacts associated with the Proposed Action is not anticipated to result in significant cumulative impacts to the human environment.

Although a low number of mortalities could occur, the Proposed Action would not have more than minimal effects to the target species at the population or species level. Any increase in stress levels to individual turtles or non-target species resulting from capture or procedures would dissipate within approximately a day. Injuries caused by tagging and sampling would be expected to heal. NMFS does not expect the authorization of the proposed research activities to appreciably reduce the species' likelihood of survival and recovery in the wild because it would not likely adversely affect their birth rates, death rates, or recruitment rates. In particular, NMFS

2 www.nmfs.noaa.gov/pr/health/oilspill/turtles.htm

does not expect the proposed research activities to affect adult female turtles in a way that appreciably reduces the reproductive success of adults, the survival of young, or the number of young that annually recruit into the breeding populations of any of the target species. Likewise, NMFS does not expect significant impacts to non-target species as a result of the Proposed Action.

CHAPTER 5 LIST OF PREPARERS AND AGENCIES CONSULTED

This document was prepared by the Permits and Conservation Division of NMFS' Office of Protected Resources in Silver Spring, Maryland.

Agencies Consulted: Florida Fish and Wildlife Conservation Commission
South Carolina Department of Natural Resources
Georgia Department of Natural Resources

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APPENDIX A. Proposed Takes of Male and Female Sea Turtles under Permit No. 16556.

Table 1. Takes of adult, subadult and juvenile sea turtles in the Northwest Atlantic Ocean and its estuarine and coastal environments. Takes would be authorized annually except where noted in the Details.

Species	No. Turtles	Takes Per Animal	Take Action	Observe/ Collection Method	Procedures	Details
Turtle, unidentified sea	1*	1	Unintentional mortality	Hand and/or Dip Net	Unintentional mortality; necropsy	*One accidental death of any species: green, Kemp's, leatherback, loggerhead, or unidentified
Turtle, green sea	425	1	Harass	Other	Observation by ROV, tracking or vessel approach;	Project 1; no capture or sampling. Some animals may be taken more than once per year.
Turtle, Kemp's ridley sea	425	1	Harass	Other	Observation by ROV, tracking or vessel approach;	Project 1; no capture or sampling. Some animals may be taken more than once per year.
Turtle, leatherback sea	425	1	Harass	Other	Observation by ROV, tracking or vessel approach;	Project 1; no capture or sampling. Some animals may be taken more than once per year.
Turtle, loggerhead sea	425	1	Harass	Other	Observation by ROV, tracking or vessel approach	Project 1; no capture or sampling. Some animals may be taken more than once per year.

Species	No. Turtles	Takes Per Animal	Take Action	Observe/ Collection Method	Procedures	Details
Turtle, unidentified sea	425	1	Harass	Other	Observation by ROV, tracking or vessel approach	Project 1; no capture or sampling. Some animals may be taken more than once per year.
Turtle, green sea	33	5	Capture/Handle/ Release	Hand and/or Dip Net	Collect, tumors; Count/survey; Epibiota removal; Imaging (e.g., MRI, CT, CAT, X-Ray); Insert stomach telemeter pill*; Instrument, drill carapace attachment; Instrument, epoxy attachment (e.g., satellite tag, VHF tag); Instrument, suction-cup attachment (e.g., camera); Lavage; Mark, carapace (temporary); Mark, flipper tag; Mark, PIT tag; Measure; Observation, ROV; Other; Photograph/Video; Recapture (gear removal); Salvage (carcass, tissue, parts); Sample: blood, cloacal swab, fecal, nasal swab, oral swab, scute scraping, and tissue; Tracking; Transport; Ultrasound; Weigh	Project 1; Capture includes via hand, dip net, encircle net, hoopnet, and other authority; Other = monitoring heart beat, cloacal temperature, cloacal lavage, and lesion swab *Requires annual reauthorization

Species	No. Turtles	Takes Per Animal	Take Action	Observe/ Collection Method	Procedures	Details
Turtle, green sea	32	5	Capture/Handle/ Release	Hand and/or Dip Net	Collect, tumors; Count/survey; Epibiota removal; Imaging (e.g., MRI, CT, CAT, X-Ray); Insert stomach telemeter pill*; Instrument, drill carapace attachment; Instrument, epoxy attachment (e.g., satellite tag, VHF tag); Instrument, suction-cup attachment (e.g., camera); Laparoscopy; Lavage; Mark, carapace (temporary); Mark, flipper tag; Mark, PIT tag; Measure; Observation, ROV; Other; Photograph/Video; Recapture (gear removal); Salvage (carcass, tissue, parts); Sample: blood, cloacal swab, fat, fecal, muscle biopsy, nasal swab, oral swab, organ biopsy, scute scraping, and tissue; Tracking; Transport; Ultrasound; Weigh	Project 1; Capture includes via hand, dip net, encircle net, hoopnet, and other authority; Other = monitoring heart beat, cloacal temperature, cloacal lavage, and lesion swab *Requires annual reauthorization
Turtle, green sea	9	5	Handle/Release	Capture under other authority	Collect, tumors; Count/survey; Epibiota removal; Imaging (e.g., MRI, CT, CAT, X-Ray); Insert stomach telemeter pill*; Instrument, drill carapace attachment; Instrument, epoxy attachment (e.g., satellite tag, VHF tag); Instrument, suction-cup attachment (e.g., camera); Lavage; Mark, carapace (temporary); Mark, flipper tag; Mark, PIT tag; Measure; Observation, ROV; Other; Photograph/Video; Recapture (gear removal); Salvage (carcass, tissue, parts); Sample: blood, cloacal swab, fecal, nasal swab, oral swab, scute scraping, and tissue; Tracking; Transport; Ultrasound; Weigh	Project 2; Other = monitoring heart beat, cloacal temperature, cloacal lavage, and lesion swab *Requires annual reauthorization

Species	No. Turtles	Takes Per Animal	Take Action	Observe/ Collection Method	Procedures	Details
Turtle, Kemp's ridley sea	33	5	Capture/Handle/ Release	Hand and/or Dip Net	Collect, tumors; Count/survey; Epibiota removal; Imaging (e.g., MRI, CT, CAT, X-Ray); Insert stomach telemeter pill*; Instrument, drill carapace attachment; Instrument, epoxy attachment (e.g., satellite tag, VHF tag); Instrument, suction-cup attachment (e.g., camera); Lavage; Mark, carapace (temporary); Mark, flipper tag; Mark, PIT tag; Measure; Observation, ROV; Other; Photograph/Video; Recapture (gear removal); Salvage (carcass, tissue, parts); Sample: blood, cloacal swab, fecal, nasal swab, oral swab, scute scraping, and tissue; Tracking; Transport; Ultrasound; Weigh	Project 1; Capture includes via hand, dip net, encircle net, hoopnet, and other authority; Other = monitoring heart beat, cloacal temperature, cloacal lavage, and lesion swab *Requires annual reauthorization
Turtle, Kemp's ridley sea	32	5	Capture/Handle/ Release	Hand and/or Dip Net	Collect, tumors; Count/survey; Epibiota removal; Imaging (e.g., MRI, CT, CAT, X-Ray); Insert stomach telemeter pill*; Instrument, drill carapace attachment; Instrument, epoxy attachment (e.g., satellite tag, VHF tag); Instrument, suction-cup attachment (e.g., camera); Laparoscopy; Lavage; Mark, carapace (temporary); Mark, flipper tag; Mark, PIT tag; Measure; Observation, ROV; Other; Photograph/Video; Recapture (gear removal); Salvage (carcass, tissue, parts); Sample: blood, cloacal swab, fat, fecal, muscle biopsy, nasal swab, oral swab, organ biopsy, scute scraping, and tissue; Tracking; Transport; Ultrasound; Weigh	Project 1; Capture includes via hand, dip net, encircle net, hoopnet, and other authority; Other = monitoring heart beat, cloacal temperature, cloacal lavage, and lesion swab *Requires annual reauthorization

Species	No. Turtles	Takes Per Animal	Take Action	Observe/ Collection Method	Procedures	Details
Turtle, Kemp's ridley sea	25	5	Handle/Release	Capture under other authority	Collect, tumors; Count/survey; Epibiota removal; Imaging (e.g., MRI, CT, CAT, X-Ray); Insert stomach telemeter pill*; Instrument, drill carapace attachment; Instrument, epoxy attachment (e.g., satellite tag, VHF tag); Instrument, suction-cup attachment (e.g., camera); Lavage; Mark, carapace (temporary); Mark, flipper tag; Mark, PIT tag; Measure; Observation, ROV; Other; Photograph/Video; Recapture (gear removal); Salvage (carcass, tissue, parts); Sample: blood, cloacal swab, fecal, nasal swab, oral swab, scute scraping, and tissue; Tracking; Transport; Ultrasound; Weigh	Project 2; Other = monitoring heart beat, cloacal temperature, cloacal lavage, and lesion swab *Requires annual reauthorization
Turtle, leatherback sea	7	5	Handle/Release	Capture under other authority	Collect, tumors; Count/survey; Epibiota removal; Imaging (e.g., MRI, CT, CAT, X-Ray); Insert stomach telemeter pill*; Instrument, drill carapace attachment; Instrument, suction-cup attachment (e.g., camera); Lavage; Mark, flipper tag; Mark, PIT tag; Measure; Observation, ROV; Other; Photograph/Video; Recapture (gear removal); Salvage (carcass, tissue, parts); Sample: blood, cloacal swab, fecal, nasal swab, oral swab, and tissue; Tracking; Transport; Ultrasound; Weigh	Project 2; Other = monitoring heart beat, cloacal temperature, cloacal lavage, and lesion swab *Requires annual reauthorization

Species	No. Turtles	Takes Per Animal	Take Action	Observe/ Collection Method	Procedures	Details
Turtle, leatherback sea	65	5	Capture/Handle/ Release	Hand and/or Dip Net	Collect, tumors; Count/survey; Epibiota removal; Imaging (e.g., MRI, CT, CAT, X-Ray); Insert stomach telemeter pill*; Instrument, drill carapace attachment; Instrument, suction-cup attachment (e.g., camera); Lavage; Mark, flipper tag; Mark, PIT tag; Measure; Observation, ROV; Other; Photograph/Video; Recapture (gear removal); Salvage (carcass, tissue, parts); Sample: blood, cloacal swab, fecal, nasal swab, oral swab, and tissue; Tracking; Transport; Ultrasound; Weigh	Project 1; Capture includes via hand, dip net, encircle net, hoopnet, and other authority; Other = monitoring heart beat, cloacal temperature, cloacal lavage, and lesion swab *Requires annual reauthorization
Turtle, loggerhead sea	33	5	Capture/Handle/ Release	Hand and/or Dip Net	Collect, tumors; Count/survey; Epibiota removal; Imaging (e.g., MRI, CT, CAT, X-Ray); Insert stomach telemeter pill*; Instrument, drill carapace attachment; Instrument, epoxy attachment (e.g., satellite tag, VHF tag); Instrument, suction-cup attachment (e.g., camera); Lavage; Mark, carapace (temporary); Mark, flipper tag; Mark, PIT tag; Measure; Observation, ROV; Other; Photograph/Video; Recapture (gear removal); Salvage (carcass, tissue, parts); Sample: blood, cloacal swab, fecal, nasal swab, oral swab, scute scraping, and tissue; Tracking; Transport; Ultrasound; Weigh	Project 1; Capture includes via hand, dip net, encircle net, hoopnet, and other authority; Other = monitoring heart beat, cloacal temperature, cloacal lavage, and lesion swab *Requires annual reauthorization

Species	No. Turtles	Takes Per Animal	Take Action	Observe/ Collection Method	Procedures	Details
Turtle, loggerhead sea	32	5	Capture/Handle/ Release	Hand and/or Dip Net	Collect, tumors; Count/survey; Epibiota removal; Imaging (e.g., MRI, CT, CAT, X-Ray); Insert stomach telemeter pill*; Instrument, drill carapace attachment; Instrument, epoxy attachment (e.g., satellite tag, VHF tag); Instrument, suction-cup attachment (e.g., camera); Laparoscopy; Lavage; Mark, carapace (temporary); Mark, flipper tag; Mark, PIT tag; Measure; Observation, ROV; Other; Photograph/Video; Recapture (gear removal); Salvage (carcass, tissue, parts); Sample: blood, cloacal swab, fat, fecal, muscle biopsy, nasal swab, oral swab, organ biopsy, scute scraping, and tissue; Tracking; Transport; Ultrasound; Weigh	Project 1; Capture includes via hand, dip net, encircle net, hoopnet, and other authority; Other = monitoring heart beat, cloacal temperature, cloacal lavage, and lesion swab *Requires annual reauthorization
Turtle, loggerhead sea	50	5	Handle/Release	Capture under other authority	Collect, tumors; Count/survey; Epibiota removal; Imaging (e.g., MRI, CT, CAT, X-Ray); Insert stomach telemeter pill*; Instrument, drill carapace attachment; Instrument, epoxy attachment (e.g., satellite tag, VHF tag); Instrument, suction-cup attachment (e.g., camera); Lavage; Mark, carapace (temporary); Mark, flipper tag; Mark, PIT tag; Measure; Observation, ROV; Other; Photograph/Video; Recapture (gear removal); Salvage (carcass, tissue, parts); Sample: blood, cloacal swab, fecal, nasal swab, oral swab, scute scraping, and tissue; Tracking; Transport; Ultrasound; Weigh	Project 2; Other = monitoring heart beat, cloacal temperature, cloacal lavage, and lesion swab *Requires annual reauthorization

Species	No. Turtles	Takes Per Animal	Take Action	Observe/ Collection Method	Procedures	Details
Turtle, unidentified sea	1	5	Capture/Handle/ Release	Hand and/or Dip Net	Collect, tumors; Count/survey; Epibiota removal; Imaging (e.g., MRI, CT, CAT, X-Ray); Insert stomach telemeter pill*; Instrument, drill carapace attachment; Instrument, epoxy attachment (e.g., satellite tag, VHF tag); Instrument, suction-cup attachment (e.g., camera); Lavage; Mark, carapace (temporary); Mark, flipper tag; Mark, PIT tag; Measure; Observation, ROV; Other; Photograph/Video; Recapture (gear removal); Salvage (carcass, tissue, parts); Sample: blood, cloacal swab, fecal, nasal swab, oral swab, scute scraping, and tissue; Tracking; Transport; Ultrasound; Weigh	Project 1 or 2; Capture includes via hand, dip net, encircle net, hoopnet, and other authority; Other = monitoring heart beat, cloacal temperature, cloacal lavage, and lesion swab *Requires annual reauthorization

APPENDIX B. ACTIVE PERMITS IN OR NEAR THE ACTION AREA

Table 1. Permits Authorizing Takes for the Target Sea Turtle Species in the Action Area.

File Number	Permit Holder	Expiration Date
13306	Karen Holloway-Adkins	June 30, 2013
13307-04	Kristen Hart	June 30, 2013
1551-03	NMFS SEFSC	July 1, 2013
13543	South Carolina Department of Natural Resources	April 30, 2014
13544-03	Jeffrey Schmid	April 30, 2014
14272	Lawrence Wood	June 30, 2014
14249	Ronald Smolowitz	October 31, 2014
14655	Jane Provancha	June 1, 2015
14508	Inwater Research Group	June 1, 2015
14506	Llewellyn Ehrhart	September 15, 2015
14726	Blair Witherington	September 15, 2015
15112	NMFS NEFSC	January 1, 2016
14622	Allen Foley	February 28, 2016
15566-01	South Carolina Department of Natural Resources	April 30, 2016
15552	NMFS SEFSC	July 25, 2016
16174	Mike Salmon	November 18, 2016
16194	NMFS SEFSC	December 31, 2016
16253	NMFS SEFSC	January 31, 2017
15672	Molly Lutcavage	March 9, 2017

Table 2. Research activities authorized by active permits. Sex and age class of animals affected varies by permit, as does the time of year and frequency of activity.

File No.	Capture	Blood sampling	Fecal sampling/ lavage	Laparoscopy	Tissue sampling	Attach instruments	Tags or marks	Mortality
15552					√		√	
15672	√	√			√	√	√	
13306	√	√			√	√	√	
13307-04	√	√	√		√	√	√	
1551-03	√	√	√	√	√	√	√	
13543							√	
13544-03	√		√		√	√	√	
14272	√	√			√	√	√	
14249	√	√			√	√	√	√
14655	√	√			√	√	√	
14508	√	√	√		√		√	
14506	√	√	√		√		√	
14726	√		√		√	√	√	
15112					√		√	
14622	√	√		√	√	√	√	
15566-01	√	√	√		√	√	√	√
16174	√		√			√	√	
16194					√		√	√
16253	√				√		√	√