



APR - 8 2010

To All Interested Government Agencies and Public Groups:

Under the National Environmental Policy Act (NEPA), an environmental review has been performed on the following action.

TITLE: Environmental Assessment on the Effects of the Issuance of a Protected Species Cooperative Conservation Grant to the South Carolina Department of Natural Resources (Award No. NA10NMF4720035) to Conduct Research on Threatened Loggerhead Sea Turtles

LOCATION: Research would take place on the loggerhead nesting beaches of Georgia, North Carolina, and South Carolina. Research would also take place on board vessels operating within the estuarine waters of North Carolina and Georgia, as well as state and Federal waters off the Georgia coast (from the beach to approximately 7 miles offshore).

SUMMARY: The current EA analyzed the effects of the proposed sea turtle research, which will be conducted in South Carolina, North Carolina, and Georgia. Specifically, the proposed work includes six components: 1) conducting a genetic mark-recapture study to evaluate the annual nesting population size, clutch frequency, site fidelity, remigrations rates and population structure for the Northern Recovery unit of loggerheads; 2) sequencing loggerhead mitochondrial DNA to further define and characterize the genetic structure of nesting and foraging populations; 3) monitoring sea turtle mortality through maintenance of the Sea Turtle Stranding and Salvage Network (STSSN); 4) monitoring bycatch of marine turtles in North Carolina and Georgia state waters; 5) characterizing pivotal temperatures to estimate sex ratios of loggerhead hatchlings; and 6) continuing a study to characterize and minimize the impacts of boat strikes on sea turtles. Results of this work would be used to assess population status, characterize threats, and develop management strategies to recover the Northern Recovery Unit of loggerhead sea turtles.

The proposed action analyzed in the EA would not have significant environmental effects on the target or non-target species; public health and safety would not be affected; no unique geographic area would be affected; and the effects of this study would not be highly uncertain, nor would they involve unique or unknown risks. Issuance of this permit would not set a precedent for future actions with significant effects, nor would it represent a decision in principle about a future consideration. There would not be individually insignificant but cumulatively significant impacts associated with the proposed action, and there would not be adverse effects on historic resources. The permit would contain mitigating measures to avoid unnecessary stress to the subject animals.


RESPONSIBLE
OFFICIAL:

James H. Lecky
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The environmental review process led us to conclude this action will not have a significant effect on the human environment. Therefore, an environmental impact statement will not be prepared. A copy of the finding of no significant impact (FONSI) including the supporting EA is enclosed for your information.

Although NOAA is not soliciting comments on this completed EA/FONSI, we will consider any comments submitted assisting us to prepare future NEPA documents. Please submit any written comments to the responsible official named above.

Sincerely,



for Paul N. Doremus, Ph.D.
NOAA NEPA Coordinator

Enclosure

Environmental Assessment

Issuance of a Protected Species Cooperative Conservation Grant to the South Carolina Department of Natural Resources (Award No. NA10NMF4720035) to Conduct Research on Threatened Loggerhead Sea Turtles

I. Background

The National Marine Fisheries Service, Office of Protected Resources (NMFS PR) proposes to provide financial assistance in the form of a grant to the South Carolina Department of Natural Resources (SCDNR). This award would be issued through the Protected Species Cooperative Conservation Grant Program (CFDA no. 11.472, Unallied Science Programs) authorized under section 6 of the Endangered Species Act (ESA) of 1973 as amended (16 U.S.C. 1535). The Georgia Department of Natural Resources (GADNR) and the North Carolina Wildlife Resources Commission (NCWRC) are named in the grant proposal and would collaborate in conducting the proposed research. In accordance with section 6(d)(2) of the ESA, the Federal Government would provide 90 percent of the cost of the project, and the states would provide the remaining 10 percent. This financial assistance award is planned to extend for three years (three annual payments) and is subject to semi-annual review by NMFS. The grant would support conservation activities for threatened loggerhead sea turtles in South Carolina, North Carolina, and Georgia.

II. Purpose and Need

Under section 6 the ESA, NMFS is authorized to cooperate with states to the maximum extent practicable in carrying out programs for the conservation of threatened and endangered species. Scientific research is an important means of gathering valuable information, such as population estimates, reproductive status, and species health, about protected species to inform conservation and management measures and, ultimately, to recover listed species. The purpose and need of this proposed action is to support research that will fill previously-identified data gaps in loggerhead sea turtle (*Caretta caretta*) life history, biology and ecology.

III. Description of the Action Area

The proposed research under Award No. NA10NMF4720035 to SCDNR would take place on the loggerhead nesting beaches of Georgia (n=13), North Carolina (n=22), South Carolina (n=32), during the 2010-2012 nesting seasons (spring - summer). Proposed activities would also take place on board vessels operating within the estuarine waters of North Carolina and Georgia, as well as state and Federal waters off the Georgia coast (from the beach to approx. 7 miles offshore) during years 2 and 3 of the project.

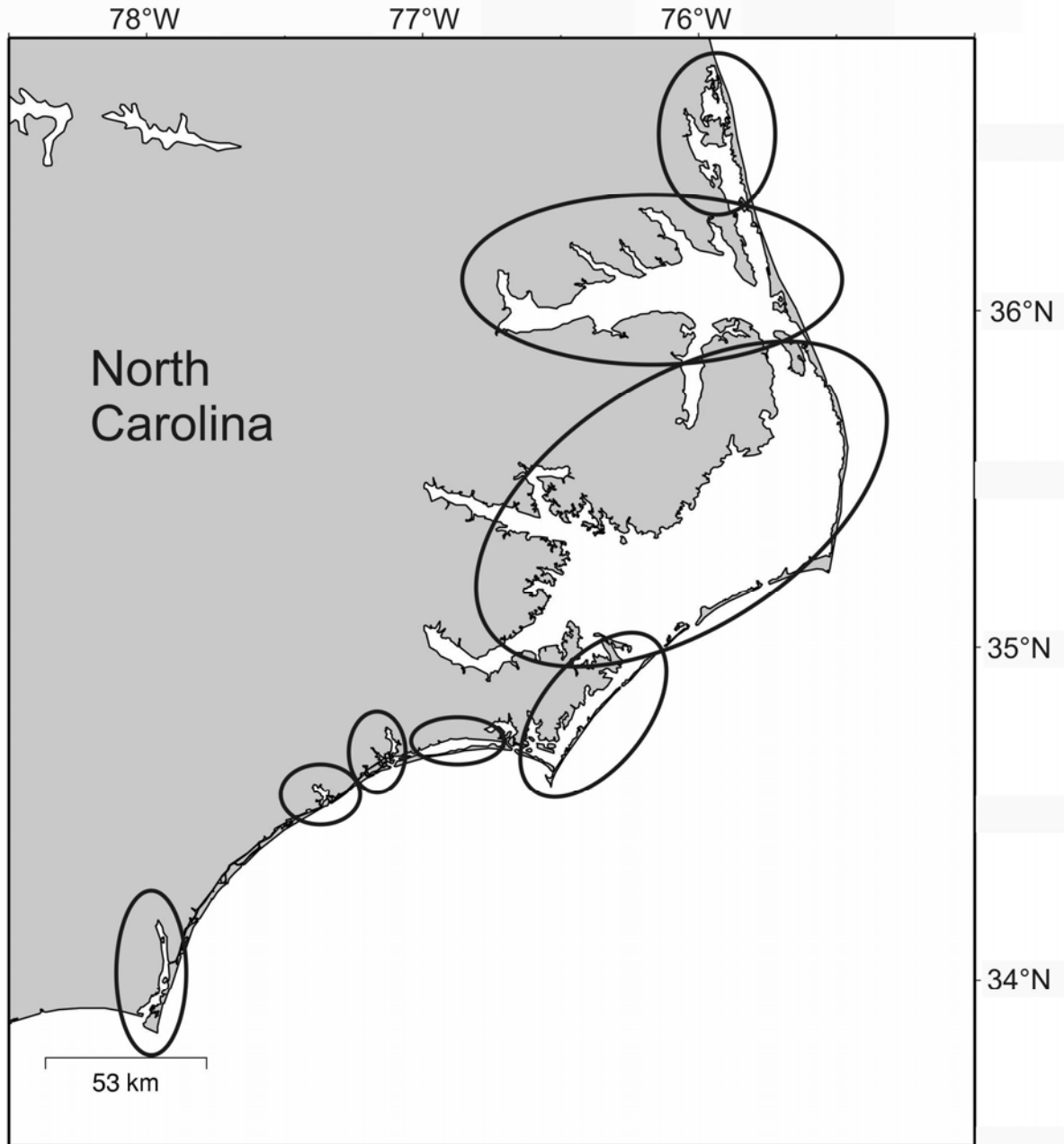


Figure 1. Estuarine areas (circled) in North Carolina where bycatch monitoring efforts would occur.

IV. Alternatives Under Consideration

Two alternatives have been considered: (1) approving Award NA10NMF4720035, i.e. the proposed action; (2) not approving Award NA10NMF4720035, i.e. the no action alternative.

No Action Alternative

The no action alternative would not issue any funding to the SCDNR, thus not initiating any

research on loggerhead sea turtle (*Caretta caretta*) life history, biology and ecology since NOAA is providing 90 percent of the funding. Therefore, no activities would be conducted in the natural environment.

Proposed Action

The proposed action is issuance of a grant to SCDNR (DuBose Griffin, P.I.; Mark Dodd, Co-P.I., GADNR; Matthew Godfrey, Co-P.I., NCWRC) through the fiscal year 2010 Protected Species Cooperative Conservation Grant Program (CFDA no. 11.472, Unallied Science Programs) authorized under section 6 of the ESA (16 U.S.C. 1535). The applicants propose to conduct six study components:

Egg Collection

As part of the genetic mark-recapture and genetic sequencing studies, a single viable egg would be collected from each nest in each state during each year of the project (2010-2012). Eggs would be collected the morning following oviposition during standardized dawn surveys. During these surveys, routine clutch validation is performed by carefully digging down to the top of the egg chamber and visually confirming the presence of eggs. Approximately 4,725 (1,000 in GA, 725 in NC, and 3,000 in SC) eggs would be collected each nesting season. Collection of viable eggs for use in DNA analysis was analyzed in a previous Supplemental Environmental Assessment (EA), which was completed on April 14, 2008; however, in the proposed action, the action area is expanded from nesting beaches in Georgia to nesting beaches in Georgia, North Carolina and South Carolina. Eggs would be processed in the laboratory, and each sample would be genotyped across 17 microsatellite loci isolated from loggerhead turtles (Shamblin et al. 2007, Shamblin et al. 2009). Complete mitochondrial genomes (mitogenome) of several individual loggerheads would also be sequenced, and mitogenome point mutations would be evaluated for polymorphisms that may be used to more precisely define population structure and facilitate the characterization of population genetic structure on foraging grounds.

As part of the pivotal temperature study to estimate hatchling sex-ratios, up to a maximum of six egg clutches total per year (2010-2012) would be collected from North Carolina, South Carolina and Georgia nesting beaches. Due to limitations on incubator space, investigators anticipate the number of clutches collected per year would more likely be only 2 to 4 per year (M. Godfrey, pers. comm., 2/24/10). Clutches that were likely to have been unsuccessful had they been left in place, due to expected beach erosion (e.g., are laid below the high tide line), predation, or late season storms, would be targeted for collection. The eggs would be collected as soon as possible after deposition, and transported by car to North Carolina for incubation. Standard methods of incubation as described by Mrosovsky (1988) would be followed. A range of incubation temperatures would be used, and eggs would be incubated separately in moist vermiculite. For each incubation run, researchers would attempt to quantify the amount of evaporative cooling experienced by each egg, and apply this to the final calculation of pivotal temperatures (Godfrey et al. 1999). Hatchling sex would be determined using histology of the gonads (Yntema and Mrosovsky 1980), and pivotal temperatures would be calculated using standard methods (Godfrey and Mrosovsky 2006). All hatchlings will be sacrificed, and material from hatchlings will be made available to researchers and veterinarians for further investigation into contaminant loads, anatomical development, etc. All remaining material will be deposited at the Museum of Natural History for possible later use by researchers.

Handling of Sea Turtles

Live sea turtles would be handled during the course of the by-catch monitoring component of the proposed project. While loggerheads are the most abundant within the action area, researchers also anticipate possible by-catch of leatherback (*Dermochelys coriacea*), green (*Chelonia mydas*), and Kemp's ridley (*Lepidochelys kempii*) sea turtles. The proportion of species caught during standardized trawl surveys and fishery-dependent sampling conducted in June and July off the coast of Georgia from 2000-2003 was 93% loggerhead, 6.2% Kemp's ridley, and 0.8 % green turtle. In the case of estuarine waters in North Carolina, chances of encountering a leatherback are extremely low, while interactions with green and Kemp's ridley turtles are likely, given recent records of abundance (Epperly et al. 2007). By-catch of loggerhead and other sea turtles would be monitored in the large mesh gill-net, haul seine, and channel net fisheries in North Carolina and in the shrimp, welk and cannonball jellyfish trawl fisheries in Georgia. Observers will be deployed in large mesh gillnet fisheries year round aboard commercial vessels throughout the estuarine (inshore) waters of North Carolina (200 trips per year). For haul seines and channel nets, observers would use an alternative platform consisting of a state vessel (Jones Brother's 23' flat bottom skiff); this would be necessary for safety due to the relative large size of haul seine crews (6-8 fishermen) or the small size of the boats used for channel net fishing, as well as the space limitation for on board observers. A minimum goal of 30 trips per year would be established for haul seines and a minimum of 30 trips per year for channel nets. Observers will collect weekly data in the large mesh gillnet (spring, summer, fall, winter), haul seine (summer, fall) and channel net fisheries (summer, fall). In Georgia, observers would be placed on trawl vessels in years two and three of the project (2011-2012). An observer would be placed on shrimp (64 trips annually, 8 trips/ month, April-Nov), whelk (10 trips annually, 5 trips/month, Jan.-Feb.), and cannonball jellyfish (5 trips annually, when available) trawl vessels.

Live turtles that are caught incidentally in these fisheries would be measured, weighed, identified, and tagged with a passive integrated transponder tag (PIT tag). Turtles would be handled according to the Sea Turtle Research Techniques Manual (NMFS 2005). Observers would receive training from NMFS Southeast Fishery Science Center staff (NMFS – Beaufort Lab, NC; coordinated by Joanne Braun-McNeill, Research Fishery Biologist) on protected species identification, handling, and tagging protocols. Observers would thus be NMFS-certified and therefore trained to comply with standard handling protocols.

Sick and injured sea turtles would be transported to rehabilitation facilities. Rescued turtles would be handled in accordance with 50 CFR 223.206 (d), which includes requirements for handling turtles with due care to prevent further injury. All turtles would be kept cool and damp during transport except in colder months of the year, and the transport vehicles would be well ventilated. Sick or injured turtles will be transported to the closest rehabilitation facility. Georgia DNR observer program records indicate that the capture of sick or injured sea turtles while observing trawl fisheries is a rare event (< 1 event/year). In North Carolina, up to 20 sick or injured turtles recovered during fishery observer programs have been sent to rehabilitation facilities for successful treatment and eventual release.

Reasonable attempts will be made to recover all dead turtles observed during the research project. These animals will be turned over to the state STSSN for evaluation, including necropsy,

and these data will be submitted to the national STSSN coordinator each year (Wendy Teas, NMFS Southeast Fisheries Science Center).

Take of listed sea turtles for conservation purposes by state agents that are a party to an ESA section 6 agreement is authorized under 50 CFR 223.203 (c), and rescue of sick and injured sea turtles is authorized under 50 CFR 222.310 (b) for endangered turtles and under 50 CFR 223.206 (b) for threatened species. Since these actions have been previously analyzed under NEPA with specific reference to the criteria in NOAA NEPA Administrative Order (NAO) 216-6 and were determined to have no significant impact on the quality of the human environment, they are not evaluated further in this EA.

Necropsies

The STSSN component of the proposed project would include conducting necropsies on dead stranded sea turtles collected in North Carolina, South Carolina and Georgia. While loggerhead sea turtles are expected to comprise the greatest percentage of stranded turtles (e.g. SC = ~86%, NC = ~50%), green, leatherback and Kemp's ridley turtles may also strand along these states' coasts. Based on previous stranding records in each of these states, researchers anticipate conducting approximately 215 (45 in GA, 20 in SC, and 150 in NC) gross necropsies per year during the course of the three-year project. Gross necropsies would include collection of tissues and data on morphometrics, food habits, sex, and cause of mortality. Salvage and use of dead sea turtles for scientific purposes is authorized under 50 CFR 223.206 (b) and (c) for threatened sea turtles and 50 CFR 222.310 for endangered sea turtles. In addition, take of listed sea turtles for conservation purposes by state agents that are a party to an ESA section 6 agreement is authorized under 50 CFR 223.203 (c). These regulations have been previously analyzed under NEPA with specific reference to the criteria in NAO 216-6 and were determined to have no significant impact on the quality of the human environment. Thus, these activities are not considered further in this EA.

Boat Strike Study

This proposed study is a continuation of work by the Georgia Department of Natural Resources (Mark Dodd, P.I.) to develop and analyze the effectiveness of outboard motor propeller modifications designed to minimize the occurrence of fatal propeller wounds to sea turtles. The proposed study would involve the use of specially engineered experimental turtle carapaces and would not involve the use of any live or dead sea turtles. Results from field trials conducted during the summer of 2009 revealed that all sea turtle shell injuries produced during controlled boat/sea turtle interactions were caused by the non-rotating (foot, skeg) and rotating (propeller) components of the outboard motor. A flat-bottomed skiff was used in all previous field tests to reduce variability due to hull configuration. Other common hull configurations used by recreational and commercial boaters with deeper draft could result in blunt-force injuries seen in stranded sea turtles. The proposed study would involve additional testing to rule out hull/sea turtle interactions as a source of mortality.

In the first year of the proposed study, researchers would investigate and further refine the mechanical characteristics and production methodology of the synthetic carapace. In particular, the shell and frame design would be integrated to better simulate the response of the actual turtle (as opposed to focusing primarily on the characteristics of the shell alone). After completing

modifications to the frame and shell design, researchers also propose to conduct controlled experiments in year 1 to determine the influence of hull configuration and vessel propulsion system on sea turtle shell injuries. Field tests would be conducted in an abandoned sand quarry near Savannah, Georgia, which provides a safe environment without wave or tidal action. Boat/sea turtle collisions will be simulated by tethering a synthetic shell in the water column and striking them in test runs using three commonly used hull configurations (deep-vee, cathedral, and tunnel hulls) and four propulsion systems (small inboard-fixed prop and rudder, large inboard fixed prop and rudder, inboard/outboard drive, and jet boat). The multi-factorial experimental design would also incorporate two depths of the sea turtle carapace within the water column (surface, and propeller depth).

While loggerheads are the target species for the proposed research, other sea turtle species will also benefit from some of the proposed work (i.e., leatherback (*Dermochelys coriacea*), green (*Chelonia mydas*), and Kemp's ridley (*Lepidochelys kempii*) sea turtles).

Section 6(d) of the ESA allows NMFS to provide financial assistance to any State, through its respective State agency that has entered into a section 6 agreement with NMFS, to support conservation activities for threatened and endangered species, candidate species, and recently de-listed species. Most of the activities funded through this proposed action are authorized by U.S. Fish and Wildlife Service (USFWS) regulation (50 CFR 17.21) and do not require issuance of a scientific research permit under section 10(a)(1)(A) of the ESA. The remaining activities, which involve handling sea turtles during the course of monitoring bycatch in several fisheries and conducting necropsies are authorized under NMFS regulations (50 CFR 223.206(c) and 222.310 and thus also do not require issuance of a separate permit under section 10(a)(1)(A) of the ESA.

V. Description of the Affected Environment

Social and Economic Environment

Although economic and social factors are listed in the definition of effects in the NEPA regulations, the definition of human environment states that “economic and social effects are not intended by themselves to require preparation of an EIS.” However, an EIS or EA must include a discussion of a proposed action’s economic and social effects when these effects are related to effects on the natural or physical environment. There are no significant social or economic impacts of the proposed action interrelated with significant natural or physical environmental effects. Based on proposed budgets associated with the financial assistance application, we estimate that approximately eight (4 staff in SC – 3 hourly employees and one full-time biologist, 2 in GA, 2 in NC) resource biologists would be supported with the funding made available through the proposed grant.

Physical Environment

Egg collection would occur on barrier island beaches in Georgia (160 km), South Carolina (300 km) and North Carolina (330 km). These areas are characterized by oceanic beaches and sand dune habitat. Dune habitat includes sand dunes and swales, flats and pools between dunes and between dunes and other features. Seaward of the dune system, sandy flats may occur in areas where dunes have been eroded. Beaches and associated habitats are influenced by windblown salt spray and sand. Vegetated components of the beach system include maritime grasslands,

interdune ponds, and maritime shrub thicket. Characteristic plants and animals in these systems include include sea oats, bitter panicgrass, seabeach evening-primrose, dune waterpennywort, wax myrtle, red bay, groundsel tree, saw greenbrier, poison ivy, Common Ground-dove, Wilson's Plover, Gull-billed Tern, Painted Bunting, Island Glass Lizard, Least Tern, Piping Plover, Loggerhead Turtle, Eastern Woodrat, Atlantic Ghost Crab, and Sheepshead Minnow.

Designated Essential Fish Habitat (EFH) exists for coastal migratory species, coral, snapper, grouper, and spiny lobster throughout the coastal areas of the three states where field work will occur. Field activities that would occur in the areas of designated EFH involve boating through coastal waters of North Carolina (Figure 1) to conduct observations of fishing activities. NMFS has determined this portion of the researcher's activity would not adversely impact the physical environment, including any portion considered EFH. Surveys for nests would be conducted during high tide so impacts to dunes and grasses would be minimal (see <http://www.dnr.sc.gov/seaturtle/volres/MT%20Guidelines%20Section%202.pdf> for more information) Remaining field work (e.g. collection of eggs), would occur only on barrier island beaches and thus would not affect EFH.

Biological Environment

Loggerhead Sea Turtle Status and Trends

The target species of the proposed, directed research is the loggerhead sea turtle (*Caretta caretta*). The proposed action expands upon previously funded research through this grant program under Award NA06NMF4720030; this previous award was issued in 2006 and evaluated in an Environmental Assessment (EA), dated March 16, 2006. A description of the species and general life history is provided in the March 16, 2006, EA and is hereby incorporated by reference. Since completion of that assessment, a status review of the species has been completed (see Conant et al., 2009); background and information from that review is summarized here. In addition, on March 16, 2010, NMFS proposed to list loggerheads as 9 distinct population segments (DPSs); the DPS affected by the proposed action (Northwest Atlantic Ocean DPS) was proposed as endangered (75 FR 12598).

Loggerheads were listed as threatened under the ESA in 1978; critical habitat has not been designated for the loggerhead. On July 16, 2007, NMFS and USFWS received a petition from the Center for Biological Diversity and Turtle Island Restoration Network requesting that loggerhead turtles in the North Pacific be reclassified as a distinct population segment (DPS; see 61 FR 4722, February 7, 1996) with endangered status and that critical habitat be designated. NMFS and USFWS accepted this petition (73 FR 11849) and subsequently convened a team of state and Federal experts in February 2008 to review the best available scientific information, determine whether loggerhead DPSs exist, and assess the extinction risk for each potential DPS. After considering genetic and other data, the review team concluded that the species consists of nine population segments that are both discrete from other conspecific population segments and significant to the species to which they belong (*Caretta caretta*), therefore meeting the criteria established in the NMFS-USFWS DPS Policy (61 FR 4722, February 7, 1996). These nine globally distributed DPSs include the following: (1) North Pacific Ocean DPS, (2) South Pacific Ocean DPS, (3) North Indian Ocean DPS, (4) Southeast Indo-Pacific Ocean DPS, (5) Southwest

Indian Ocean DPS, (6) Northwest Atlantic Ocean DPS, (7) Northeast Atlantic Ocean DPS, (8) Mediterranean Sea DPS, and (9) South Atlantic Ocean DPS.

According to the analysis conducted in the status review, all loggerhead turtle DPSs have the potential to decline in the future. Although some DPSs show increasing trends at nesting beaches (Southwest Indian Ocean and South Atlantic Ocean), available information about anthropogenic threats to juveniles and adults in neritic and oceanic environments indicate possible unsustainable additional mortalities. According to the threat matrix analysis contained in the status review, the potential for future decline is greatest for the North Indian Ocean, Northwest Atlantic Ocean, Northeast Atlantic Ocean, Mediterranean Sea, and South Atlantic Ocean DPSs.

The review team used two approaches to compute extinction risk for the Northwest Atlantic Ocean DPS, which is the DPS affected by the proposed action: (1) computation of susceptibility to quasi-extinction (SQE), and (2) a stage-based deterministic model to determine negative effects of known threats to the DPS. The SQE approach suggested that, based on nest count data for the past two decades, the population is at risk and thus likely to decline in the foreseeable future. These results are based on nesting data for loggerheads at index/standardized nesting survey beaches in the USA and the Yucatan Peninsula, Mexico (NMFS and FWS 2008). The stage-based deterministic modeling approach used a hypothetical population that was at its maximum population growth rate and computed the population growth potential under known or suspected threats to different life stages of the Northwest Atlantic Ocean DPS. This approach indicated the Northwest Atlantic Ocean DPS is likely to decline in the foreseeable future, even under the scenario of the lowest anthropogenic mortality rates. These results are largely driven by mortality of juvenile and adult loggerheads from fishery bycatch that occurs throughout the North Atlantic Ocean. Although national and international governmental and non-governmental entities on both sides of the North Atlantic are currently working toward reducing loggerhead bycatch, and some positive actions have been implemented, it is unlikely that this source of mortality can be sufficiently reduced across the range of the DPS in the near future because of the diversity and magnitude of the fisheries operating in the North Atlantic, the lack of comprehensive information on fishing distribution and effort, limitations on implementing demonstrated effective conservation measures, geopolitical complexities, limitations on enforcement capacity, and availability of comprehensive bycatch reduction technologies. Therefore, the BRT concluded that the Northwest Atlantic Ocean DPS is currently at risk of extinction. On March 16, 2010, NMFS proposed to list this DPS as endangered (75 FR 12598).

Life History, Distribution and Habitats

The loggerhead occurs throughout the temperate and tropical regions of the Atlantic, Pacific, and Indian Oceans (Dodd 1988). However, the majority of loggerhead nesting is at the western rims of the Atlantic and Indian Oceans. The most recent reviews show that only two loggerhead nesting aggregations have greater than 10,000 females nesting per year: Peninsular Florida, United States and Masirah Island, Oman (Baldwin *et al.* 2003, Ehrhart *et al.* 2003, Kamezaki *et al.* 2003, Limpus and Limpus 2003, Margaritoulis *et al.* 2003). Nesting aggregations with 1,000 to 9,999 females nesting annually are Georgia through North Carolina (U.S.), Quintana Roo and Yucatán (Mexico), Brazil, Cape Verde Islands (Cape Verde), Western Australia

(Australia), and Japan. Smaller nesting aggregations with 100 to 999 nesting females annually occur in the Northern Gulf of Mexico (U.S.), Dry Tortugas (U.S.), Cay Sal Bank (The Bahamas), Tongaland (South Africa), Mozambique, Arabian Sea Coast (Oman), Halaniyat Islands (Oman), Cyprus, Peloponnesus (Greece), Zakynthos (Greece), Crete (Greece), Turkey, and Queensland (Australia). In contrast to determining population size on nesting beaches, determining population size in the marine environment has been very localized (Bjorndal and Bolten 2000). At present, there are no data on population size in the oceanic habitat.

In the Northwest Atlantic, the majority of loggerhead nesting is concentrated along the coasts of the United States from southern Virginia through Alabama. As post-hatchlings, Northwest Atlantic loggerheads hatched on U.S. beaches migrate offshore and become associated with *Sargassum* habitats, driftlines, and other convergence zones (Carr 1986, Witherington 2002). These Northwest Atlantic oceanic juveniles use the North Atlantic gyre and enter Northeast Atlantic waters (Carr 1987); they are also found in the Mediterranean Sea (Carreras *et al.* 2006, Eckert *et al.* 2008). In these areas, they overlap with animals originating from the Northeast Atlantic and the Mediterranean Sea (Laurent *et al.* 1993, 1998; Bolten *et al.* 1998; LaCasella *et al.* 2005; Carreras *et al.* 2006, Monzón-Argüello *et al.* 2006; Revelles *et al.* 2007; Eckert *et al.* 2008).

After departing the oceanic zone, neritic juvenile loggerheads in the Northwest Atlantic inhabit continental shelf waters from Cape Cod Bay, Massachusetts, south through Florida, the Bahamas, Cuba, and the Gulf of Mexico (neritic refers to the inshore marine environment from the surface to the sea floor where water depths do not exceed 200 meters). In the U.S., estuarine waters, including areas such as Long Island Sound, Chesapeake Bay, Pamlico and Core Sounds, Mosquito and Indian River Lagoons, Biscayne Bay, Florida Bay, and numerous embayments fringing the Gulf of Mexico, comprise important inshore habitat. Along the Atlantic and Gulf of Mexico shoreline, essentially all shelf waters are inhabited by loggerheads.

Mating takes place in late March-early June, and eggs are laid throughout the summer. Female loggerheads deposit an average of 4.1 nests within a nesting season (Murphy and Hopkins 1984) and have an average remigration interval of 2.5 years. Mean clutch size varies greatly between populations, but on average is approximately 100-130 eggs per clutch (Dodd 1988). Although specific characteristics vary between rookeries, loggerhead nesting beaches tend to be wide, sandy beaches backed by low dunes and fronted by a flat, sandy approach from the water (Miller *et al.* 2003). Nests are typically laid between the high tide line and the dune front (Routa 1968, Witherington 1986, Hailman and Elowson 1992).

Sea turtle eggs require a high-humidity substrate that allows for sufficient gas exchange and temperatures conducive to egg development (Miller 1997, Miller *et al.* 2003). Loggerhead nests incubate for variable periods of time. The length of the incubation period is inversely related to nest temperature, such that between 26°C and 32°C, a change of 1°C adds or subtracts approximately 5 days (Mrosovsky 1980). The warmer the sand surrounding the egg chamber, the faster the embryos develop (Mrosovsky and Yntema 1980). Sand temperatures prevailing during the middle third of the incubation period also determine the sex of hatchlings (Mrosovsky and Yntema 1980). Incubation temperatures near the upper end of the tolerable range produce only female hatchlings while incubation temperatures near the lower end of the tolerable range

produce only male hatchlings. The pivotal temperature (i.e., the incubation temperature that produces equal numbers of males and females) in loggerheads is approximately 29°C (Limpus *et al.* 1983, Mrosovsky 1988, Marcovaldi *et al.* 1997). Moisture conditions in the nest influence incubation period, hatching success, and hatchling size (McGehee 1990, Carthy *et al.* 2003).

Loggerhead hatchlings pip and escape from their eggs over a 1- to 3-day interval and move upward and out of the nest over a 2- to 4-day interval (Christens 1990). The time from pipping to emergence ranges from 4 to 7 days with an average of 4.1 days (Godfrey and Mrosovsky 1997). Hatchlings emerge from their nests en masse almost exclusively at night, and presumably using decreasing sand temperature as a cue (Hendrickson 1958, Mrosovsky 1968, Witherington *et al.* 1990). Moran *et al.* (1999) concluded that a lowering of sand temperatures below a critical threshold, which most typically occurs after nightfall, is the most probable trigger for hatchling emergence from a nest. After an initial emergence, there may be secondary emergences on subsequent nights (Carr and Ogren 1960, Witherington 1986, Ernest and Martin 1993, Houghton and Hays 2001).

The Recovery Plan for the Northwest Atlantic DPS of the Loggerhead Sea Turtle (NMFS and FWS 2008) recognizes five recovery units (subpopulations) of loggerhead turtles within the Northwest Atlantic:

1. Northern Recovery Unit (southern VA through FL/GA border)
2. Peninsular Florida Recovery Unit (FL/GA border through Pinellas County, FL)
3. Dry Tortugas Recovery Unit (islands located west of Key West, FL)
4. Northern Gulf of Mexico Recovery Unit (Franklin County, FL, through TX)
5. Greater Caribbean Recovery Unit (Mexico through French Guiana, The Bahamas, Lesser Antilles, and Greater Antilles)

The nesting aggregation that is the focus of the proposed action is the Northern Recovery Unit (NRU). As alluded to above, this recovery unit represents a nesting aggregation that is second in size only to the nesting aggregations in the Arabian Sea off Oman and represents about 35 and 40 percent of the nests of this species; thus, this nesting aggregation is very important to the recovery of the species.

Threats to the Northwest Atlantic Ocean DPS

Destruction and modification of loggerhead nesting habitat in the Northwest Atlantic results from coastal development and construction, placement of erosion control structures and other barriers to nesting, placement of nearshore shoreline stabilization structures, beachfront lighting, vehicular and pedestrian traffic, beach erosion, beach sand placement, removal of native vegetation, and planting of non-native vegetation (NMFS and FWS 2008). Numerous beaches in the southeastern U.S. are eroding due to both natural (e.g., storms, sea level changes, waves, shoreline geology) and anthropogenic (e.g., construction of armoring structures, groins, and jetties; coastal development; inlet dredging) factors, which leads to a loss of nesting habitat for sea turtles. As a result, beach nourishment is a frequent activity, and many beaches are on a periodic nourishment schedule. On severely eroded sections of beach, where little or no suitable nesting habitat previously existed, beach nourishment has been found to result in increased nesting (Ernest and Martin 1999). However, on most beaches in the southeastern U.S., nesting success typically declines for the first year or two following construction, even though more

nesting habitat is available for turtles (Trindell *et al.* 1998, Ernest and Martin 1999, Herren 1999). Reduced nesting success on constructed beaches has been attributed to increased sand compaction, escarpment formation, and changes in beach profile (Nelson *et al.* 1987, Crain *et al.* 1995, Lutcavage *et al.* 1997, Steinitz *et al.* 1998, Ernest and Martin 1999, Rumbold *et al.* 2001). Storm water run-off, subsequent erosion and input of contaminants (e.g., oils, grease, antifreeze, gasoline, metals, pesticides, chlorine, and nutrients) also impact the quality of the nesting habitats. Driving on the beach is allowed in several southeastern states and also contributes to degradation on nesting habitat through formation of ruts and compaction of sand. Light pollution from vehicles on the beach and from coastal development can lead to serious disorientation of hatchlings; the number of hatchlings disoriented by lighting in Florida is calculated in the range of hundreds of thousands per year (Florida Fish and Wildlife Conservation Commission, unpublished data). Threats to habitat in the loggerhead neritic and/or oceanic zones include fishing practices, channel dredging, sand extraction, oil exploration and development, marine pollution, and climate change. Fishing methods not only incidentally capture loggerheads, but may also deplete invertebrate and fish populations and thus alter ecosystem dynamics.

The potential effects of diseases and endoparasites also exist for loggerheads found in the Northwest Atlantic. Viral diseases have not been documented in free-ranging loggerheads, with the possible exception of sea turtle fibropapillomatosis, which may have a viral etiology (Herbst and Jacobson 1995, George 1997). Although fibropapillomatosis reaches epidemic proportions in some wild green turtle populations, the prevalence of this disease in most loggerhead populations is thought to be small. And although many health problems have been described in wild populations through the necropsy of stranded turtles, the significance of diseases on the ecology of wild loggerhead populations is not known (Herbst and Jacobson 1995).

Predation of eggs and hatchlings by native and introduced species occurs on almost all nesting beaches throughout the Northwest Atlantic. The most common predators at the primary nesting beaches in the southeastern United States are ghost crabs (*Ocypode quadrata*), raccoons (*Procyon lotor*), feral hogs (*Sus scrofa*), foxes (*Urocyon cinereoargenteus* and *Vulpes vulpes*), coyotes (*Canis latrans*), armadillos (*Dasypus novemcinctus*), and red fire ants (*Solenopsis invicta*) (Stancyk 1982, Dodd 1988).

Bycatch of loggerheads in commercial and recreational fisheries in the Northwest Atlantic is a significant threat facing the species in this region. A variety of fishing gears that incidentally capture loggerhead turtles are employed including gillnets, trawls, hook and line, longlines, seines, dredges, pound nets, and various types of pots/traps. Among these, gillnets, longlines, and trawl gear contribute to the vast majority of bycatch mortality of loggerheads annually throughout their range in the Atlantic Ocean and Gulf of Mexico (Epperly *et al.* 1995; NMFS 2002, 2004, 2007, 2008; Lewison *et al.* 2003, 2004; Richards 2007; NMFS, unpublished data). Observer programs have been implemented in some fisheries to collect turtle bycatch data, and efforts to reduce bycatch and mortality of loggerheads in certain fishing operations have been undertaken and implemented or partially implemented. These efforts include developing gear solutions to prevent or reduce captures or to allow turtles to escape without harm (e.g., TEDs, circle hooks and bait combinations), implementing time and area closures to prevent interactions from occurring (e.g., prohibitions on gillnet fishing along the mid-Atlantic coast during the critical time of northward migration of loggerheads, implementation of careful release protocols

(e.g., requirements for careful release of turtles captured in longline fisheries), prohibitions of gillnetting in some U.S. state waters), and/or modifying gear (e.g., requirements to reduce mesh size in the leaders of pound nets in certain U.S. coastal waters to prevent entanglement). Significant mortality occurs in longline fisheries, bottom and mid-water trawl fisheries, dredge fisheries, gillnet fisheries, and pot/trap fisheries. Although total mortality from all fisheries has not been estimated, the combined mortalities are likely significant. Entanglement in marine debris is an additional threat. Further, boat strikes are another growing anthropogenic source of mortality in neritic waters (NMFS, unpublished data; Florida Fish and Wildlife Conservation Commission, unpublished data).

Propeller and collision injuries from boats and ships are becoming more common in sea turtles. In the U.S. Atlantic, from 1997 to 2005, 14.9% of all stranded loggerheads were documented as having sustained some type of propeller or collision injuries (NMFS, unpublished data). The incidence of propeller wounds observed in sea turtles stranded in the U.S. has risen from approximately 10% in the late 1980s to a record high of 20.5% in 2004 (NMFS, unpublished data). In the U.S., propeller wounds are greatest in southeast Florida; during some years, as many as 60% of the loggerhead strandings found in these areas had propeller wounds (Florida Fish and Wildlife Conservation Commission, unpublished data). As the number of vessels increases, in concert with increased coastal development, especially in nearshore waters, propeller and vessel collision injuries are also expected to rise.

Additional threats to this DPS include climate change and sea level rise, cold-stunning, disease, and activities associated with oil and gas exploration. These threats are detailed in the 2009 status review (Conant et al. 2009).

Non-Target ESA-Listed Species

Piping plovers (*Charadrius melodus*) and seabeach amaranth (*Amaranthus pumilus*) are federally listed threatened species that can occur on sea turtle nesting beaches in Georgia, South Carolina and North Carolina. Current management activities of sea turtles in all three states include restrictions to ensure that no take of either species occurs (e.g. sea turtle cooperators avoid sections of the beach that contain nesting shorebirds or seabeach amaranth). No take of these species is anticipated given adherence to South Carolinas sea turtle nesting beach survey guidelines and mitigation measures listed below (see guidelines at <http://www.dnr.sc.gov/seaturtle/volres/MT%20Guidelines%20Section%202.pdf>).

Potential Marine Mammal Interactions

Since fishing equipment will not be deployed in the water as part of the proposed action, interactions with these species will be minimal. However, interactions with these species during routine boating activities may occur and would be minimized by adhering to the NMFS Northeast Region Marine Mammal Approach and Viewing Guidelines located online at http://www.nero.noaa.gov/prot_res/mmv/. Following is a listing of marine mammals protected under the MMPA that have some potential to occur in the action of area of the proposed research.

Harbor porpoise, *Phocoena phocoena* (periodical occurrence)

Bottlenose dolphin *Tursiops truncatus* (relatively common occurrence)

Florida manatee, *Trichechus manatus latirostris* (extremely rare occurrence)

Bottlenose dolphins are the most abundant marine mammal species potentially affected by the proposed research. However, only occasionally are they reported in the in-water areas affected by the proposed boating activities (i.e., alternate platform fishery observations). If bottlenose dolphins or harbor porpoises are observed within 300 ft of the fishery activity being observed, operators will slow their boat to idle speed and monitor the heading of the animals; should the dolphins or porpoises continue to move towards the observer boat, the operators will cease all movement and wait until the animals have begun to move away from the boat on their own volition, and are at a distance of 300 ft before engaging the boat motor.

If a manatee is seen within 300 ft of the active vessel movement, all appropriate precautions will be implemented to ensure protection of the manatee. These precautions include no operation of all moving vessels closer than 50 ft of a manatee. If a manatee is observed that is closer than 50 ft, the motors will be placed in neutral or shut off immediately. Activities will not resume until the manatee has departed the fishing area on its own volition. Manatees will not be herded away or harassed into leaving.

All efforts will be made to instruct commercial fishery boat operators under observation to follow the same protocols. In addition, fishermen will monitor and tend nets to look for the presence of manatees and other marine mammals at the same time they do so for sea turtles. For help with an entangled, injured, or stranded marine mammal, the North Carolina Marine Mammal Stranding Network will be contacted as soon as possible.

VI. Environmental Consequences

A. Proposed Action

Any impacts of the proposed action would be limited to the biological environment since all activities would be directed only at the turtles and would occur on the turtle or turtle eggs. Sample collection, processing, packaging, and transport would be conducted by trained personnel according to standard scientific protocols. Protocols would include the use of protective gloves and clothing, and shipment of any samples in leak-proof containers according to United States Federal regulations for shipment of hazardous materials. Therefore, no negative impacts on human health or safety are anticipated during the collection, processing, packaging or transport of samples. The type of actions proposed in the grant application would be unlikely to affect the socioeconomic or physical environment or pose a risk to public health and safety.

Environmental Consequences to the Biological Environment

Effects of Individual Egg Collection

Authorization of Award NA10NMF4720035 would allow the applicant to collect up to 4,725 loggerhead sea turtle eggs annually for 3 years as discussed under the description of the proposed action above. Egg removal would be conducted by members of state-wide nest monitoring networks. Through this monitoring effort, nests are routinely examined by careful excavation to the top of the nest chamber to confirm the presence of eggs. The removal of a single egg during this nest validation process would not influence the incubation environment or hatching success; this activity would be conducted within the standard monitoring surveys

already in place for all nests in Georgia, North Carolina, and South Carolina. Per the egg collection protocols (B. Shamblin protocol, unpubl.), whenever possible, eggs that have already been damaged by predators (e.g. coyotes, raccoons, ghost crabs) or other sources of disturbance would be collected rather than sacrificing undamaged, viable eggs. This would further reduce any potential adverse effect of egg collection on the overall population.

Loggerhead turtles deposit an average of 1,000 nests per year on Georgia beaches, an average of 725 nests per year on North Carolina beaches, and an average of 3,000 nests per year on South Carolina beaches. The average clutch size is 115 eggs. Thus, the proposed egg collection for the genetic study (i.e., collection of one egg per nest) represents less than 1% of the total annual egg production and represents the equivalent of about 2 female's reproductive output annually out of the entire population. For example, in 2009 a total of 2,183 loggerhead nests were laid on South Carolina's beaches, and the estimated number of eggs laid was 237,081 (D. Griffin, SCDNR, pers. comm., 2/25/10). If the proposed egg collected had taken place in 2009, 2,183 eggs would have been collected. The number of eggs that would have been collected represents less than 1% (0.92%) of the total number of eggs laid. However, this is an overestimate of the percentage of eggs sacrificed, because not all of the 2,183 eggs collected would have been viable eggs. On South Carolina's nesting beaches in 2009, 512 nests were documented to have had at least one egg lost due to natural or human causes (D. Griffin, SCDNR, pers. comm., 2/25/10), so in these instances the damaged egg would have been collected rather than sacrificing a viable egg from the clutch. Factoring in these 512 cases, the number of viable eggs sacrificed would represent 0.70% of the total number of eggs laid. Because the proposed egg collection for all three states combined represents a very small proportion of the annual reproductive effort, the proposed egg collection is not expected to affect loggerhead population recovery in the Southeast.

Effects of Clutch Collection

As described in Section III., the Proposed Action, up to a maximum of six egg clutches total per year (2010-2012) would be collected from North Carolina, South Carolina and Georgia nesting beaches as part of a pivotal temperature study. This is expected to be an overestimate; due to capacity limitations within the laboratory, it is more likely that only 2-4 clutches total would be collected during each nesting season. This collection represents about 0.1% of the nests laid annually. In addition, clutches targeted for collection would be those that are likely to have been unsuccessful had they been left in place (e.g., due to expected beach erosion, predation, or late season storms). Clutches collected would be ones that have < 5% expected chance of being successful if they were to remain in place (M. Godfrey, NCWRC, pers. comm. 2/24/10). For example, during the 2009 nesting season on North Carolina beaches, 120 nests had zero hatching success, due to overwash from high tides or mammalian beach predators (M. Godfrey, NCWRC, pers. comm. 2/25/10). Thus, the overall clutch collection included in the proposed action represents a small percentage of the reproductive output and is not expected to affect loggerhead population recovery in the Southeast.

Environmental Consequences to the Physical Environment

Due to the nature of the proposed grant, the physical environment would not be impacted since all actions would occur to the animals directly and no equipment (e.g. nets, boats, tags) would be deployed in order to obtain samples. Researchers would only obtain samples at high tide and

therefore would have little to no impact on dunes or associated grasses (see <http://www.dnr.sc.gov/seaturtle/volres/MT%20Guidelines%20Section%202.pdf>).

B. No Action

An alternative to the proposed action is no action, i.e., denial of the grant. This alternative would eliminate any potential risk to the environment from the proposed research activities. However, the no action alternative would not allow the research to be conducted and would deny the opportunity for collection of information that would advance our understanding of loggerhead populations and improve current management practices.

VII. Minimization and Mitigation Measures

The activities authorized under proposed Award NA10NMF4720035, if approved, would follow the procedures described in the grant proposal and in the protocols referenced therein in order to minimize and mitigate any effects of the proposed action. These measures include the following: 1) collection of damaged eggs rather than viable eggs whenever possible; 2) collection of clutches already in jeopardy of failure wherever possible; 3) adhering to NMFS Observer Program training requirements for all observers; and 4) compliance with the NMFS Northeast Region Marine Mammal Approach and Viewing Guidelines (http://www.nero.noaa.gov/prot_res/mmv/) during boating activities; and 5) compliance with the South Carolinas sea turtle sampling guidelines (<http://www.dnr.sc.gov/seaturtle/volres/MT%20Guidelines%20Section%202.pdf>).

VIII. Cumulative Impacts

Effects of past and ongoing human and natural factors occurring in or near the action area have contributed to the current status of the species. As discussed previously, these threats consist of fisheries, which are known to capture, injure, and kill marine turtles through interaction with fishing gear. Other non-fisheries related threats include activities related to oil and gas exploration, development and transportation, dredging, offshore artificial lighting, light pollution on beaches, beach nourishment, natural predation, marina and dock construction, and boat collisions. Loggerheads are also the focus of authorized research activities worldwide; however, a very small percentage of these activities result in injury or mortality.

These activities and threats are expected to continue into the future. Synthesis of the information about the status of the species, past and present activities affecting the species, possible future actions that might affect the species, and effects of the proposed action provide a basis for determining the additive effects of the activities supported by the proposed grant. Given the cumulative threats information and the known effects of the proposed action, NMFS concludes that the proposed action is unlikely to reduce the species' likelihood of survival and recovery in the wild by adversely affecting their birth rates, death rates, or recruitment rates. In particular, NMFS would not expect the proposed research activities to affect loggerhead turtles in a way that appreciably reduces the reproductive success of adult female turtles, the survival of young turtles, or the number of young turtles that annually recruit into breeding populations.

This EA considers the cumulative effect the research would have on loggerheads and the

reproductive output of loggerheads within the Northwest Atlantic Ocean DPS. The short-term stresses resulting from the proposed handling activities are expected to be minimal. Taking into account the effects and impacts resulting from all egg collection activities, NMFS expects that the proposed sampling would not significantly affect the turtles' reproduction. The award would contain conditions (see Section VII., Minimization and Mitigation Measures) to mitigate potential adverse impacts to the DPS. The proposed necropsies would not impact the loggerhead population since the sampling does not involve live animals. Overall, the proposed actions would be expected to have no more than short-term effects on this threatened sea turtle species. The incremental impact of the action when added to other past, present, and reasonably foreseeable future actions discussed here would be minimal and not significant. The data generated by the research activities associated with the proposed action would provide information that would greatly improve management and recovery of loggerheads, and would outweigh any adverse impacts that may occur. The proposed action would not be expected to have any effects on any other marine species or other portions of the environment and would not result in any significant cumulative effects to either.

IX. Compliance with Endangered Species Act

Section 6 of the Endangered Species Act (ESA) provides that states and territories maintaining an adequate and active program for the conservation of endangered and threatened species may receive federal funds for the purpose of conserving these species. To remain eligible for this funding, states must enter into a section 6 agreement with NMFS and undergo subsequent annual reviews of their program to reconfirm the finding that the state's program is adequate and active in accordance with section 6(c) of the ESA. Annual renewal of SCDNR's section 6 agreement with NMFS was successfully completed and the agreement has been renewed through October 1, 2010. Activities supported through this financial assistance are authorized by regulation (50 CFR 17.21, 223.206(c), 222.310) and have been determined to comply with the requirements therein.

To comply with section 7 of the ESA, a consultation on the effects to listed species and critical habitat is required. On March 17, 2010, a letter was sent to the USFWS Southeast Region requesting consultation on the conclusion by NMFS that the activities proposed will adversely affect, but are not likely to jeopardize listed species or designated critical habitat. Proposed directed take of loggerheads will occur when eggs and turtles are on the beach and under the jurisdiction of the USFWS. These activities are authorized under USFWS regulations (50 CFR 17.21) and do not require issuance of a scientific research permit under section 10(a)(1)(A) of the ESA.

X. Coordination with the National Ocean Service (NOS)

The actions supported by Award NA10NMF4720035 would not occur in a National Marine Sanctuary nor impact any National Marine Sanctuaries, so no consultation with NOS was conducted.

XI. Recommendation

It is recommended that the proposed action be determined to not have a significant impact on the quality of the human environment and that preparation of an environmental impact statement is not required.

XII. List of Preparers and agencies consulted

Preparers:

Office of Protected Resources
National Marine Fisheries Service
Endangered Species Division
Silver Spring, MD 20910

Agencies Consulted:

USFWS
Southeast Region
U.S. Fish and Wildlife Service
1875 Century Blvd., Suite 400
Atlanta, GA 30345

Consultation on issuance of the grant

XIII. References

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**Finding of No Significant Impact
for Issuance of Award No. NA10NMF4720035 to the South Carolina Department of
Natural Resources to Conduct Research on Threatened Loggerhead Sea Turtles**

National Marine Fisheries Service

National Oceanic and Atmospheric Administration Administrative Order 216-6 (May 20, 1999) contains criteria for determining the significance of the impacts of a proposed action. In addition, the Council on Environmental Quality (CEQ) regulations at 40 C.F.R. 1508.27 state that the significance of an action should be analyzed both in terms of "context" and "intensity." Each criterion listed below is relevant to making a finding of no significant impact and has been considered individually, as well as in combination with the others. The significance of this action is analyzed based on the NAO 216-6 criteria and CEQ's context and intensity criteria. These include:

1) Can the proposed action reasonably be expected to cause substantial damage to the ocean and coastal habitats and/or essential fish habitat as defined under the Magnuson-Stevens Act and identified in Fishery Management Plans?

Response: This action would not impact any ocean, coastal habitats, or essential fish habitat (EFH). The grant would fund the collection of viable and non-viable eggs on the beach, on-board fisheries observations, and alternative platform fisheries observations. This grant would not fund in-water sampling, deployment of in-water gear, or other in-water activities, therefore the research would not affect the ocean, coastal or essential fish habitat.

2) Can the proposed action be expected to have a substantial impact on biodiversity and/or ecosystem function within the affected area (e.g., benthic productivity, predator-prey relationships, etc.)?

Response: The effects of the action on ESA-listed species and their habitat, EFH, marine sanctuaries, and marine mammals were all considered. The research would not affect predator-prey relationships, other species, or any habitat. The research would cause short term effects to loggerheads; however, no long-term or population level effects are reasonably expected to occur. NOAA has concluded that activities proposed will adversely affect, but are not likely to jeopardize listed species or designated critical habitat and has requested concurrence by the USFWS. No substantial impact on biodiversity and ecosystem function within the effected areas would be expected.

3) Can the proposed action reasonably be expected to have a substantial adverse impact on public health or safety?

Response: The proposed action involves basic research and does not involve hazardous methods, toxic agents or pathogens, or other materials that would have a substantial adverse impact on public health and safety.

4) Can the proposed action reasonably be expected to adversely affect endangered or threatened species, their critical habitat, marine mammals, or other non-target species?

Response: As discussed in the attached environmental assessment the effects of the proposed action on the biological resources would not be severe and would be short-term in nature. The incremental impact of the action when added to other past, present, and reasonably foreseeable future actions discussed in the environmental assessment would be minimal and not significant. The proposed action is focused only on the target species. NOAA has concluded and the USFWS has concurred that the activities proposed will adversely affect, but are not likely to jeopardize listed species or designated critical habitat and has requested concurrence by the USFWS. The action would not have any adverse impact on any marine mammals or their critical habitat. No non-target species would be captured, handled, or affected by this research.

Additionally, Award No. NA10NMF4720035 would contain mitigation measures to minimize the adverse effects of the research and to avoid unnecessary take of loggerheads by requiring use of non-viable specimens whenever possible.

5) Are significant social or economic impacts interrelated with natural or physical environmental effects?

Response: The research is anticipated to have minor, short-term impacts to target species that do not result in significant environmental effects, therefore, no significant social or economic impacts interrelated with these effects are anticipated.

6) Are the effects on the quality of the human environment likely to be highly controversial?

Response: Funding provided under this grant process is for scientific research or conservation activities of limited size and magnitude and does not individually or cumulatively have a significant effect on the quality of the human environment. This program will not result in any significant changes to the human environment and will result in improved management and conservation of a threatened marine species. Section 6 cooperative agreements have been used for many years to fund states' protected species conservation programs and do not present any new or unusual issues for future consideration. Neither the financial assistance nor the activities supported are precedent-setting or controversial. Proposed conservation elements funded under this grant program are specifically intended to aid in the conservation and recovery of a listed species and present no conflict with existing environmental protection laws.

In addition, special awards conditions will dictate measures that will be taken to mitigate the effects of sampling. The loggerhead population is not expected to be adversely

affected by the proposed egg sampling, and no injuries or mortalities of adult loggerheads are expected as a result of the sampling.

7) Can the proposed action reasonably be expected to result in substantial impacts to unique areas, such as historic or cultural resources, park land, prime farmlands, wetlands, wild and scenic rivers, essential fish habitat, or ecologically critical areas?

Response: The action would not be conducted in any National Marine Sanctuaries or other unique areas, therefore, there is no potential to affect these types of areas either directly or indirectly, thus none would be impacted.

8) Are the effects on the human environment likely to be highly uncertain or involve unique or unknown risks?

Response: The proposed research activities are not new and involve standard, accepted protocols; therefore, the risks are known to be minimal.

9) Is the proposed action related to other actions with individually insignificant, but cumulatively significant impacts?

Response: Funding provided under this grant process is for scientific research or conservation activities of limited size and magnitude and does not individually or cumulatively have a significant impact. The proposed action is also not related to other actions with individually insignificant, but cumulatively significant impacts. The short-term effect (separately and cumulatively when added to other stresses the turtles face in the environment) resulting from the research activities would be expected to be minimal. The award would contain conditions to mitigate adverse impacts to turtles from these activities.

Overall, the proposed action would be expected to have no more than a short-term effect on any individual loggerhead. The incremental impact of the action when added to other past, present, and reasonably foreseeable future actions discussed in the environmental assessment would be minimal and not significant.

10) Is the proposed action likely to adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural or historical resources?

Response: The action would not take place in any of these areas nor affect them directly or indirectly, thus none would be impacted.

11) Can the proposed action reasonably be expected to result in the introduction or spread of a nonindigenous species?

Response: The action would not be removing nor introducing any species; therefore, it would not result in the introduction or spread of a nonindigenous species.

12) Is the proposed action likely to establish a precedent for future actions with significant effects or represent a decision in principle about a future consideration?

Response: The decision to issue this grant is based on the facts and circumstances associated with this proposal and would not be precedent setting and would not affect any future decisions to award funding.

13) Can the proposed action reasonably be expected to threaten a violation of Federal, State, or local law or requirements imposed for the protection of the environment?

Response: The action would not result in any violation of Federal, State or local laws for environmental protection. The proposed research activities are authorized under 50 CFR 17.21.

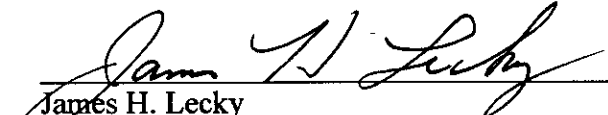
14) Can the proposed action reasonably be expected to result in cumulative adverse effects that could have a substantial effect on the target species or non-target species?

Response: The action is not expected to result in any cumulative adverse effects to the species that is the subject of the proposed research. The proposed action would not be expected to have more than short-term effects on the target species (loggerheads). No adverse effects on other non-target ESA listed species are expected. The effects on non-target non-ESA species were also considered and no substantial effects are expected as none would be affected. No cumulative adverse effects that could have a substantial effect on any species would be expected.

DETERMINATION

In view of the information presented in this document and the analysis contained in the supporting Environmental Assessment prepared for Issuance of a Protected Species Conservation and Recovery Grant to the South Carolina Department of Natural Resources (Award No. NA10NMF4720035) to Conduct Research on Threatened Loggerhead Sea Turtles, it is hereby determined that the issuance of Award NA10NMF4720035 to the South Carolina Department of Natural Resources will not significantly impact the quality of the human environment. In addition, all beneficial and adverse impacts of the proposed action have been fully evaluated to reach the conclusion of no significant impacts. Accordingly, preparation of an Environment Impact Statement for this action is not necessary.

MAR 30 2010


James H. Lecky
Director, Office of Protected Resources

Date