



JUN 3 1993

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 Issuance of two scientific research permits for sea turtle research in Florida

LOCATION: File No. 14508- Lake Worth Lagoon in Palm Beach County, Florida

File No. 14655- Mosquito Lagoon in Volusia and Brevard Counties, Florida

SUMMARY: The National Marine Fisheries Service (NMFS) proposes to issue two scientific research permits for takes under the authority of the Endangered Species Act. The purpose of File No. 14508 (Inwater Research Group, Inc., Principal Investigator-Michael Bresette) is to continue to collect long-term data on species comparison, size frequencies, disease rates, seasonal abundance, genetic origin and feeding ecology of sea turtles using Lake Worth Lagoon in Palm Beach County, Florida. The purpose of File No. 14655 (Principal Investigator- Jane Provancha) is to continue to monitor the abundance and distribution of sea turtles in the waters of Mosquito Lagoon in Volusia and Brevard Counties, Florida. The preferred alternative is not expected to have more than short-term effects on sea turtles and will not significantly impact the quality of the human environment.

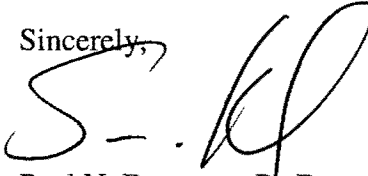
RESPONSIBLE OFFICIAL: James H. Lecky
Director, Office of Protected Resources
National Marine Fisheries Service
National Oceanic and Atmospheric Administration
1315 East-West Highway, Room 13821
Silver Spring, MD 20910
(301) 713-2332



The environmental review process led us to conclude that 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 environmental assessment (EA) is enclosed for your information.

Although NOAA is not soliciting comments on this completed EA/FONSI we will consider any comments submitted that would assist us in preparing 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



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

Environmental Assessment
ISSUANCE OF TWO SCIENTIFIC RESEARCH PERMITS FOR SEA TURTLE
RESEARCH IN FLORIDA

May 2010

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

Responsible Official: James H. Lecky, Director, Office of Protected Resources

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Location: File No. 14508- Lake Worth Lagoon in Palm Beach
County, Florida

File No. 14655- Mosquito Lagoon in Volusia and Brevard
Counties, Florida

Abstract: The National Marine Fisheries Service (NMFS) proposes to issue two scientific research permits. The purpose of File No. 14508 (Inwater Research Group, Inc., Principal Investigator: Michael Bresette) is to continue to collect long-term data on species comparison, size frequencies, disease rates, seasonal abundance, genetic origin and feeding ecology of sea turtles using Lake Worth Lagoon in Palm Beach County, Florida. The purpose of File No. 14655 (Principal Investigator: Jane Provancha) is to continue to monitor the abundance and distribution of sea turtles in the waters of Mosquito Lagoon in Volusia and Brevard Counties, Florida. Under NOAA Administrative Order 216-6, NMFS issuance of scientific research permits is generally categorically excluded from the National Environmental Policy Act of 1969 (NEPA; 42 U.S.C. 4321 *et seq.*) requirements to prepare an environmental assessment (EA) or environmental impact statement (EIS). However, for these two permits 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 permits.



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CHAPTER 1 PURPOSE OF AND NEED FOR ACTION

1.1 DESCRIPTION OF ACTION

NMFS proposes to issue scientific research permits that authorize “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:

- Michael Bresette, Inwater Research Group, Inc, Jensen Beach, FL, 34957 (File No. 14508)
- Jane Provancha, NASA, Ecological Program, Kennedy Space Center, FL, 32899 (File No. 14655)

1.1.1 Purpose and Need

The primary purpose of the permits is to provide an exemption from the take prohibitions under the ESA to allow “takes”. The need for issuance of the permits is related to NMFS’s 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

File No. 14508

Study objectives include collecting long-term data on species comparison, size frequencies, disease rates, seasonal abundance, genetic origin and feeding ecology of sea turtles using Lake Worth Lagoon in Palm Beach County, Florida. The proposed research would collect baseline data to help determine the decline or recovery of this population. The researchers would document the prevalence of fibropapilloma which is thought to be highly prevalent in the Lake Worth Lagoon.

File No. 14655

Study objectives include continuing to monitor the abundance and distribution of sea turtles within the waters of Mosquito Lagoon in Volusia and Brevard Counties, Florida. The primary purpose of this monitoring project is to compare current sea turtle population structure and distribution to baseline data.

1.2 OTHER EA/EIS THAT INFLUENCE SCOPE OF THIS EA

NMFS is conducting a Programmatic Environmental Assessment (PEA) for sea turtle research in the Atlantic Ocean, Gulf of Mexico and Caribbean Sea. The PEA was released for public

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.”

comment on January 14, 2008 and one comment was received and addressed. As NMFS analyzes the effectiveness of the PEA as a mechanism for issuing sea turtle research permits, individual permits would be issued. The PEA is analyzing issuance of permits over the next 5 years, and Permit Nos. 14508 and 14655 would become part of the baseline in the PEA.

1.3 SCOPING SUMMARY

The purpose of scoping is to:

- identify the issues to be addressed
- identify the significant issues related to the proposed action
- identify and eliminate from detailed study the non-significant issues
- identify and eliminate issues that have been covered by prior environmental review
- 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 that a draft EA be made available for public comment as part of the scoping process.

1.3.1 Comments on application

A Notice of Receipt of the application was published in the *Federal Register*, announcing the availability of File No. 14508 (74 FR 38169, July 31, 2009) and File No. 14655 (74 FR 49851, September 29, 2009) for public comment. No substantive comments were received.

1.4 APPLICABLE LAWS AND NECESSARY FEDERAL PERMITS, LICENSES, AND ENTITLEMENTS

This section summarizes Federal, state, and local permits, licenses, approvals, and consultation required to implement the proposed action. When it is the applicant's responsibility to obtain such permissions, NMFS is still obligated under The National Environmental Policy Act (NEPA) to ascertain whether the applicant is seeking other Federal, state, or local approvals for their action.

1.4.1 National Environmental Policy Act

NEPA was enacted in 1969 and is applicable to "major" Federal actions significantly affecting the quality of the human environment. A Federal action is considered "major" if a Federal agency fully or partially funds, regulates, conducts, or approves this action. NMFS issuance of research permits is considered a major Federal action. NEPA requires consideration of environmental issues in Federal agency planning and decision making. CEQ's implementing regulations (40 CFR Parts 1500-1508) outline Federal agency responsibilities under NEPA.

Through NOAA Administrative Order (NAO) 216-6, NMFS established agency procedures for complying with NEPA and the implementing regulations issued by CEQ. NAO 216-6 specifies that issuance of scientific research permits under the MMPA and ESA are categorically excluded from further environmental review, except under extraordinary circumstances.

NMFS must prepare an EA or EIS when a proposed action:

- is the subject of public controversy based on potential environmental consequences,
- has uncertain environmental impacts or unknown risks,
- establishes a precedent or decision in principle about future proposals,
- may result in cumulatively significant impacts, or
- may have an adverse effect upon endangered or threatened species or their habitats.

While issuance of scientific research permits is typically subject to a categorical exclusion, as described in NAO 216-6, NMFS is preparing an EA for this action to provide a more detailed analysis of effects to ESA-listed species. This EA is prepared in accordance with NEPA, its implementing regulations, and NAO 216-6.

1.4.2 Endangered Species Act

Section 9 of the ESA, as amended, and Federal regulations pursuant to section 4(d) of the ESA prohibit the take of endangered and threatened species, without special exemption. Permits to take ESA-listed species for scientific purposes, or for the purpose of enhancing the propagation or survival of the species, may be granted pursuant to Section 10(a)(1)(A) of the ESA.

NMFS has promulgated regulations to implement the permit provisions of the ESA (50 CFR Part 222) and has produced OMB-approved permit application instructions. All applicants must comply with these regulations and application instructions in addition to the provisions of the ESA.

Section 10(d) of the ESA stipulates that, for NMFS to issue permits the Agency must find that the permit: was applied for in good faith; if granted and exercised will not operate to the disadvantage of the species; and will be consistent with the purposes and policy set forth in Section 2 of the ESA.

Section 2 of the ESA sets forth the purposes and policy of the Act. The purposes of the ESA are to provide a means whereby the ecosystems upon which endangered and threatened species depend may be conserved, to provide a program for the conservation of such endangered species and threatened species, and to take such steps as may be appropriate to achieve the purposes of the treaties and conventions set forth in section 2(a) of the ESA. It is the policy of the ESA that Federal departments and agencies shall seek to conserve endangered species and threatened species and shall utilize their authorities in furtherance of the purposes of the ESA. In consideration of the ESA's definition of conserve, which indicates an ultimate goal of recovering a species so that listing is no longer necessary, exemption permits issued pursuant to section 10 of the ESA are for activities that are likely to further the conservation of the affected species.

Section 7 of the ESA requires consultation with the appropriate Federal agency (either NMFS or the U.S. Fish and Wildlife Service) for Federal actions that "may affect" a listed species or adversely modify critical habitat. NMFS issuance of a permit affecting ESA-listed species or designated critical habitat, directly or indirectly, is a Federal action subject to these Section 7 consultation requirements. Section 7 requires Federal agencies to use their authorities in furtherance of the purposes of the ESA by carrying out programs for the conservation of endangered and threatened species. NMFS is further required to ensure that any action it

authorizes, funds, or carries out is not likely to jeopardize the continued existence of any threatened or endangered species or result in destruction or adverse modification of habitat for such species. Regulations specify the procedural requirements for these consultations (50 Part CFR 402).

1.4.3 Marine Mammal Protection Act

The Marine Mammal Protection Act (MMPA) prohibits takes of all marine mammals in the U.S. (including territorial seas) with a few exceptions. Section 101(a)(5)(D) of the MMPA (16 U.S.C. 1361 et seq.) directs the Secretary of Commerce to allow, upon request, the incidental, but not intentional taking, by harassment, of small numbers of marine mammals by U.S. citizens who engage in a specified activity (other than commercial fishing) within a specified geographical region if certain findings are made.

An Incidental Harassment Authorization (IHA) shall be granted if the Secretary finds that the taking will have a negligible impact on the species or stock(s); will not have an unmitigable adverse impact on the availability of the species or stock(s) for subsistence uses. The IHA must set forth the permissible methods of taking by harassment, other means of effecting the least practicable impact on the species or stock and their habitat, and requirements pertaining to the monitoring and reporting of such taking are set forth. NMFS has defined "negligible impact" in 50 CFR 216.103 as "...an impact resulting from the specified activity that cannot be reasonably expected to, and is not reasonably likely to, adversely affect the species or stock through effects on annual rates of recruitment or survival."

Except with respect to certain activities not relevant here, the MMPA defines "harassment" as

"...any act of pursuit, torment, or annoyance which (a) has the potential to injure a marine mammal or marine mammal stock in the wild [Level A harassment]; or (b) has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering [Level B harassment]."

The applicant of File No. 14655 applied for an IHA but it was determined via a Letter of Concurrence (May 3, 2010) that harassment of marine mammals during her sea turtle research was unlikely so no IHA was issued.

CHAPTER 2 ALTERNATIVES INCLUDING THE PROPOSED ACTION

This chapter describes the range of potential alternatives determined reasonable with respect to achieving the stated objective. This chapter also summarizes the expected outputs and any related mitigation of each alternative. One alternative is the “No Action” alternative where the proposed permits would not be issued. The No Action alternative is the baseline for rest of the analyses. The Proposed Action alternative represents the research proposed in the submitted applications for a permit, with standard permit terms and conditions specified by NMFS.

2.1 ALTERNATIVE 1 – NO ACTION

An alternative to the proposed action is no action, i.e., denial of the permit requests. This alternative would eliminate any potential risk to the environment from the proposed research activities. However, it would not allow the research to be conducted, and the opportunity would be lost to collect information that would contribute to better understanding sea turtle populations and provide basic information that is necessary for NMFS to make important management decisions concerning these species and their habitat.

2.2 ALTERNATIVE 2 – PROPOSED ACTION (ISSUANCE OF PERMITS WITH STANDARD CONDITIONS)

Under the Proposed Action alternative, permits would be issued for activities as proposed by the applicants, with the permit terms and conditions standard to such permits as issued by NMFS. Both permits would be valid for five years from the date of issuance. Alternative 2 is the preferred alternative.

File No. 14508

Action area

Lake Worth Lagoon is a 20 mile long body of water along the coast of Palm Beach County, Florida. The research would take place from Little Munyon Island south to Lake Worth Inlet. The action area is about 3 miles long. The lagoon was historically freshwater but two man-made inlets now exist in the lagoon creating an estuarine waterway.

See Appendix B for a table outlining the proposed numbers of animals, research activities, etc. Table 1 outlines the number of protected species, by species, that would be authorized to be taken, and the locations and manner in which they would be taken.

The following sections describe the proposed research activities:

Capture

Researchers would capture turtles by setting a large mesh tangle net. The net would be 100 meters long by 5 meters deep and consist of 40 cm stretch (knot to knot) multi-filament mesh. The mesh would be suspended from a foam core braided polyethylene top line with fixed buoys spaced 3.5 meters apart. The bottom line would consist of a small diameter lead core line. Anchors attached to both ends of the net keep it in position and prevent drifting of the lead line. The net would be deployed by boat, continuously tended, and carefully monitored by pulling the lead line hand over hand every 30 minutes. When turtles encounter the net and become

entangled, they would be quickly removed from the net and placed on the deck of the boat. This method of capturing sea turtles has been safely employed by other researchers throughout Florida (Bresette et.al 2000, Ehrhart 1983, Ehrhart 1985, Ehrhart and Redfoot 1992, Provancha 1998, Wilcox et. al 1998).

Before deployment of the net a careful visual inspection of the area would be made to ensure there are no marine mammals present near the study site. In the case where marine mammals are sighted near the netting site, nets would either not be deployed or would be pulled in and netting activity would cease until the area is clear.

Measure, weigh, and photograph

Morphometric data would be collected for each turtle captured using forestry calipers and a flexible tape. Measurements would include straight standard carapace length, straight minimum carapace length, straight maximum carapace width, straight midline plastron length, curved standard carapace length, curved maximum carapace width and head width as described by Pritchard et al. (1983). Turtles would be weighed using a netting sling and digital scale hung from a weighing pole. Turtles would also be photographed.

Flipper and PIT tag

Inconel # 681 tags would be applied to the trailing edge of each front flippers and a passive integrated transponder (PIT) tag would be subcutaneously applied to the right front flipper. Before insertion of any tags all flippers would be scanned for the presence of any pre-existing PIT tags and the tagging area would be disinfected with a Betadine solution.

Blood or tissue sample

Blood samples from all turtles would be taken for genetic analysis, and sex ratios. They would be collected within the first five minutes of capture so as not to bias the samples. Researchers would draw blood from the cervical sinus using a sterile vacutainer with no additive (Owens and Ruiz, 1980). The area would be thoroughly disinfected with betadine before needle insertion. A 22 gauge 1" needle would be used on small juveniles, while a 1 ½" would be used on subadults. Researchers would collect approximately 4 ml from each turtle and add a few drops to a lysis buffer (100 mM Tris-HCL, pH 8; 100 mM EDTA, pH 8, 10 mM NaCl; 1.0% SDS) in a 1:10 ratio, gently shake the mixture and store it in a cool dark place. This blood would be used for later mtDNA haplotype analysis to determine the turtles origin (Encalada et al. 1996). The remaining blood would be placed in a sterile vacutainer with lithium heparin and spun for ten minutes in an Adams Physician centrifuge. Plasma would then be pipetted into a 1.8 ml vial and be held for future testosterone radioimmunoassays to determine sex.

With small green turtles it is sometimes difficult to obtain a blood sample; therefore, when a blood sample is not obtained researchers would use a 4 mm biopsy punch to extract a tissue sample from the trailing edge of the right rear flipper. The biopsy area would be thoroughly treated with Betadine prior to and after the sample is taken. The sample would then be placed in tissue buffer (ethanol) and stored for future genetic analysis. Date, location and tag numbers of the turtles would be recorded on the collection tube.

Lavage

Researchers would extract dietary samples from 20 green turtles annually to provide insight into feeding habits, consumption levels, and diet selection. These samples would be compared between other aggregations of green turtles whose diets are also being currently investigated. Dietary samples would be carefully extracted from the captured green turtles using a technique commonly called "lavage". The lavage process flushes food items that are in the esophagus and mouth areas (Legler, 1977; Balazs, 1980; Forbes and Limpus, 1993). Turtles would be held on their back with their posterior end slightly elevated. A soft plastic veterinarian's stomach tube would be lubricated with vegetable oil and cautiously inserted into the mouth and throat area. Seawater would be pumped through the tube using a veterinarian's double action pump. The tube would then be gently moved back and forth along the length of the esophagus. The lavage process would be restricted to no more than one minute. Tubes would be selected according to the turtles size and Fibropapilloma (FP) condition. Researchers would use 4 different tubes; one for smaller size-class green turtles (20-35cm SCL) with FP, another small tube for green turtles that are clean (FP-free) and two tubes for larger turtles (>35cm SCL) identified as FP and FP free. Generally, the lavage process itself lasts under 30 seconds. Food items flushed out of the esophagus and mouth would be collected in a five-gallon plastic bucket. The extracted diet sample would then be strained through a fine mesh net (mesh ~1mm) and placed into a collection jar. A 4% formalin-seawater solution would preserve the sample for future analysis.

Release

Turtles would be released close to the original capture site after all sampling is complete (25 minutes).

File No. 14655

Action area

Mosquito Lagoon is part of the northern Indian River Lagoon complex flowing through Volusia and Brevard Counties, Florida. Three water bodies comprise the Indian River Lagoon complex, the Indian River Lagoon, Banana River Lagoon, and Mosquito Lagoon. Research would occur within 3 zones in the Mosquito Lagoon between 28° 49.7 N and 28° 42.5 N. The study area is part of a pristine estuarine system including the Merritt Island National Wildlife Refuge.

See Appendix B for a table outlining the proposed numbers of animals, research activities, etc. Table 2 outlines the number of protected species, by species, that would be authorized to be taken, and the location and manner in which they would be taken.

The following sections describe the proposed research activities:

Capture

Turtles would be captured using two large mesh tangle nets as described by Provancha et al. (1998). Each net would be 240 m in length by 3.6 m deep and made of no.18 nylon twine and a mesh size of 22 cm. An extensive bullet and buoy system would be attached to the top line to enhance the visual detectability of animals entangled in the net. Two boats would be used to set, tend and process. Boat availability dictates which vessels would be used, but includes a 25 ft Carolina Skiff, a 19 ft Boston Whaler (open fisherman style) and an additional 22 ft trawl style vessel. Net deployment would be conducted by boat during daylight hours (typically 0900-

1500h). The net set would be tended throughout operations with a maximum of 20 minutes between complete checks to ensure the safety of captured animals.

Measure, weigh and photograph

Researchers would conduct standard morphometrics, evaluation of condition and photograph the animals after capture. Measurements follow standards for reptile measures are made with large calipers (straight lengths) and flexible tape (over the curves). Turtles would be weighed using a netting sling and digital scale hung from a weighing pole.

Epibiont removal

Epibionts (barnacles) would be removed from turtles that are excessively burdened with them or if the barnacles inhibit proper measurements of tag application, etc. This removal is accomplished by gently pressing a "butter-knife" against and wedging under the barnacle, essentially popping them off. This is typically effective and leaves no damage to the turtle or handler.

Flipper and PIT tag

External tagging involves a monel tag, attached to the right front flipper. The tag is generally attached two scales distal to the flipper origin. In addition, a sterile passive integrated transponder (PIT tag) would be injected subdermally in the dorsal right front flipper in the region of the radius using a single use, 12 gauge, and sterile needle. All general equipment coming in contact with the turtles would be cleaned with anti-microbial soap and a 10% Clorox solution prior to processing subsequent animals. The tag site located on the front flipper would be cleaned with alcohol or betadine depending on our supplies and the insertion point of the tag is coated with an antibiotic. Based on NASA IACUC recommendation, researchers ice the tag site prior to insertion also.

Blood or tissue sample

Blood would be collected (ca. approximately 10 cc) from the animals for sex determination and genetic analyses. Samples would be drawn from the dorsal side at the vertebral sinus using standard hematological methods (via vacutainer with 20 gauge, 1.5 inch needles). If blood is not attainable then a small 5 mm biopsy punch taking a 2 mm thick section of posterior flipper tissue can serve to provide genetic samples. The dorsal side of the neck would be cleaned and sanitized prior to blood sampling, generally with alcohol. Betadine may be used when alcohol is unavailable.

Lavage

The applicant has performed esophageal flushing (lavage) on a subsample of turtles in Mosquito Lagoon over the years as an indication of forage utilization. Lavage may be conducted again on a subset of turtles within certain years in relation to ongoing seagrass monitoring within these waters. The proposed method follows the current "standard" and is a modification of that described by Forbes and Limpus (1993). Water transfer tube sizes would vary with the size of the individual turtle to avoid esophageal damage. Samples would be preserved in buffered formalin. Karen Holloway-Adkins provides analyses of the esophageal samples by determining relative composition of subsamples that covered the dimensions of a 4 x 4 cm grid (Holloway-Adkins and Ehrhart, 2000). Researchers would use separate tubes and gags for FP turtles.

Researchers would also clean all tubes, etc., after each use, with detergent and mild chlorox. Two sizes of surgical tubes, a set for FP turtles and a set for non-FP turtles: 1) 9mm outside diameter (OD), 6mm inside diameter (ID) tube would be used on smaller turtles (35cm SCL or smaller), 2) 13mm OD tube is used for turtles larger than 35cm SCL.

Sonic tag

Sonic tag application takes place on the boat which is open air, i.e. well ventilated. The sonic tags operate at the 69 kHz frequency (discussion with Mr. Ken Hollingshead/ NMFS indicated that this acoustic tag is unlikely to cause impacts to surrounding animals: July 2003). The tags are approximately four cm long and one cm in diameter and present a weight of less than 1% of the turtle's body mass. Tags would be adhered to the animal's carapace using standard application procedures. The adherence materials chosen are low heat products to avoid pain or burning to the carapace. Researchers would use West Marine epoxy putty sticks as the primary adhering material. This is the same material they previously used to make the transmitter cradles in 2004 and part of 2005 but had followed up with bonders and fiberglass. Prior to application, the turtle's carapace near the mid-dorsal line would be cleaned with a small, soft brush and lightly sanded with fine sandpaper to improve the surface for the putty adherence.

The precise location is dependant on each turtle's carapace shape and condition. The chosen location (a 20x 20 cm section of the carapace) would be further cleaned using alcohol applied to a clean cloth. The marine putty would be activated and then shaped into a thick, rectangular "brick" (1 cm x 2cm x 10 cm) that would allow for contact between the carapace as well as envelope most of the tag. The tag would be lightly roughened with sand paper and is pressed along the top of the putty brick while it is still soft. Then this pairing would be set on the prepared carapace site where the tag is pressed deeper into the putty/brick and the base of the brick is further pressed onto the carapace. The putty fills any gaps resulting from the shape of the carapace and simultaneously adheres around the tag in all areas except the sonic end. The total surface area under the tag system is approximately 4 x 13 cm. The application takes about 5 minutes and is fully dried in one hour.

Release

Turtles would be released at the point of capture after all sampling and tag attachment is complete (about one hour).

CHAPTER 3 AFFECTED ENVIRONMENT

This chapter presents baseline information necessary for consideration of the alternatives, and describes the resources that would be affected by the alternatives, as well as environmental components that would affect the alternatives if they were to be implemented. The effects of the alternatives on the environment are discussed in Chapter 4.

3.1 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 and therefore are not considered significant. There are no significant social or economic impacts of the proposed action interrelated with significant natural or physical environmental effects. Thus, the EA does not include any further analysis of social or economic effects of the proposed action.

3.2 PHYSICAL ENVIRONMENT

Activities under File No. 14508 would occur in the waters of Lake Worth Lagoon, Florida from Little Munyon Island to South Lake Worth Inlet. Habitats at these sites consist primarily of sea grass beds interspersed with hard bottom habitat. The applicant would stay out of designated Johnson's sea grass areas and select anchoring sites on sand/mud substrates. The study area is south of John D. MacArthur Beach State Park and the Grassy Waters Preserve so research would not occur in protected areas.

Activities under File No. 14655 would occur in the waters of Mosquito Lagoon, Florida in the northern portion of the Indian River Lagoon System. The habitat at the study site is mainly shallow water with seagrass flats. The study area would occur just to the north of the Canaveral National Seashore but within the boundaries of the **Merritt Island National Wildlife Refuge** and the **Mosquito Lagoon Aquatic Preserve**.

3.2.1 Sanctuaries, Parks, Historic Sites, etc.

Mosquito Lagoon Aquatic Preserve consists of 4,740 acres of mangrove, marsh, oyster bar, and tidal flat habitat. The preserve is home to a resident population of bottlenose dolphins as well as numerous other species including the blue crab. Two-thirds of the preserve is part of the Canaveral National Seashore or Merritt Island National Wildlife Refuge.

Merritt Island National Wildlife Refuge was established in 1963 and consists of 140,000 acres of saltwater estuaries and marshes and freshwater impoundments and shares a boundary with the NASA Kennedy Space Center. The refuge is an important sea turtle nesting habitat as well as being home to the largest population of Florida's manatees on the East coast.

The proposed activities under File No. 14655 would not occur over Johnson’s seagrass habitat and the applicant has secured the appropriate permits to work within these protected areas.

3.2.2 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 <http://www.nmfs.noaa.gov/habitat/habitatprotection/profile/southatlanticcouncil.htm>.

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.

None of the proposed activities are expected to have an effect on designated EFH.

3.2.3 Designated Critical Habitat

Critical habitat for the Florida manatee (*Trichechus manatus latirostri*) was designated in the early 1970’s (50 CFR 17.95(a)). The designation did not include primary or secondary constituent elements. On September 29, 2009 the USFWS announced the current designation was under review initiating a public comment period. USFWS is in the process of compiling the public’s comments and making a final decision.

Activities proposed under File No. 14655 fall within the designated manatee critical habitat. NMFS expects minimal effects to critical habitat. As mentioned above the applicant would not set on sea grass and nets would remain in the water column so there would be little substrate disturbance.

3.3 BIOLOGICAL ENVIRONMENT

3.3.1 ESA Target Species Under NMFS Jurisdiction

ESA Endangered

Green sea turtle	<i>Chelonia mydas</i> *
Kemp's ridley sea turtle	<i>Lepidochelys kempii</i>
Hawksbill sea turtle	<i>Eretmochelys imbricata</i>
Leatherback sea turtle	<i>Dermochelys coriacea</i>

ESA Threatened**

Loggerhead sea turtle	<i>Caretta caretta</i>
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*Green turtles in U.S. waters are listed as threatened except for the Florida breeding population which is listed as endangered. Due to the inability to distinguish between these populations away from the nesting beach, green turtles are considered endangered wherever they occur in U.S. waters.

*** NMFS is currently accepting comments on changing the listing of the loggerhead sea turtle to endangered (75 FR 12598).*

Green sea turtle

Green sea turtles are distributed around the world, mainly in waters between the northern and southern 20° C isotherms (Hirth 1971). The complete nesting range of the green sea turtle within the southeastern U.S. includes sandy beaches of mainland shores, barrier islands, coral islands, and volcanic islands between Texas and North Carolina and at the U.S. Virgin Islands (USVI) and Puerto Rico (NMFS and USFWS 1991). Principal U.S. nesting areas for green turtles are in eastern Florida, predominantly Brevard through Broward counties. Regular green sea turtle nesting also occurs on the U.S. Virgin Islands and Puerto Rico.

Green sea turtle mating occurs in the waters off the nesting beaches. Each female deposits 1-7 clutches (usually 2-3) during the breeding season at 12 to 14 day intervals. Mean clutch size is highly variable among populations, but averages 110-115 eggs. After hatching, green sea turtles go through a post-hatchling pelagic stage where they are associated with drift lines of algae and other debris.

The green sea turtle was listed as threatened in 1978, except for the Florida and Pacific coast of Mexico breeding populations that were listed as endangered. Critical habitat for the green sea turtle has been designated for the waters surrounding Isla Culebra, Puerto Rico and its associated keys from the mean high water line seaward to 3 nautical miles (5.6 km). These waters include Culebra's outlying Keys including Cayo Norte, Cayo Ballena, Cayos Geniqui, Isla Culebrita, Arrecife Culebrita, Cayo de Luis Pena, Las Hermanas, El Mono, Cayo Lobo, Cayo Lobito, Cayo Botijuela, Alcarraza, Los Gemelos, and Piedra Steven. Key physical or biological features essential for the conservation of the green sea turtle found in this designated critical habitat include important food resources and developmental habitat, water quality, and shelter.

Kemp's ridley sea turtle

Of the seven extant species of sea turtles of the world, the Kemp's ridley has declined to the lowest population level. This species has a very restricted range relative to other sea turtle species. Kemp's ridleys nest in daytime aggregations known as arribadas, primarily at Rancho Nuevo, a stretch of beach in Mexico. Most of the population of adult females nests in this single locality (Pritchard 1969). When nesting aggregations at Rancho Nuevo were discovered in 1947, adult female populations were estimated to be in excess of 40,000 individuals (Hildebrand 1963). By the early 1970s, the world population estimate of mature female Kemp's ridleys had been reduced to 2,500-5,000 individuals. The growing trend in total number of nests suggests that the adult nesting female population is about 7,400 individuals.

Table 3: Total number of nests at Rancho Nuevo

Year	# of Nests
1985	702
1995	1,940
2000	5,800
2003	8,300
2005	10,300
2006	12,000

It appears that adult Kemp's ridley sea turtles are restricted somewhat to the Gulf of Mexico in shallow near shore waters, although adult-sized individuals sometimes are found on the eastern seaboard of the United States. Juvenile/subadult Kemp's ridleys have been found along the eastern seaboard of the United States and in the Gulf of Mexico. Atlantic juveniles/subadults travel northward with vernal warming to feed in the productive, coastal waters of Georgia through New England, returning southward with the onset of winter to escape the cold (Lutcavage and Musick 1985; Henwood and Ogren 1987; Ogren 1989).

In the Gulf, juvenile/subadult ridleys occupy shallow, coastal regions. The near shore waters of the Gulf of Mexico are believed to provide important developmental habitat for juvenile Kemp's ridley sea turtles. Ogren (1988) suggests that the Gulf coast, from Port Aransas, Texas, through Cedar Key, Florida, represents the primary habitat for subadult ridleys in the northern Gulf of Mexico.

Ogren (1989) suggested that in the northern Gulf this species moves offshore to deeper, warmer water during winter. Studies suggest that subadult Kemp's ridleys stay in shallow, warm, nearshore waters in the northern Gulf of Mexico until cooling waters force them offshore or south along the Florida coast (Renaud 1995). Little is known of the movements of the post-hatching, planktonic stage within the Gulf. Studies have shown the post-hatchling pelagic stage varies from 1-4 or more years, and the benthic immature stage lasts 7-9 years (Schmid and Witzell 1997).

The Kemp's ridley was listed as endangered on December 2, 1970. There is no designated critical habitat for the Kemp's ridley sea turtle.

Hawksbill sea turtle

The hawksbill sea turtle occurs in tropical and subtropical seas of the Atlantic, Pacific, and Indian Oceans. The species is widely distributed in the Caribbean Sea and western Atlantic Ocean, with representatives of at least some life history stages regularly occurring in southern Florida and the northern Gulf of Mexico (especially Texas); in the Greater and Lesser Antilles; and along the Central American mainland south to Brazil.

Within the United States, hawksbills are most common in Puerto Rico and its associated islands, and in the USVI. In the continental U.S., hawksbill sea turtles have been recorded from all the Gulf States and from along the eastern seaboard as far north as Massachusetts, with the exception of Connecticut, but sightings north of Florida are rare (Meylan and Donnelly 1999). They are

closely associated with coral reefs and other hard-bottom habitats, but they are also found in other habitats including inlets, bays, and coastal lagoons. At least some life history stages regularly occur in southern Florida and the northern Gulf of Mexico (especially Texas); in the Greater and Lesser Antilles; and along the Central American mainland south to Brazil.

In Florida, hawksbills are observed with some regularity on the reefs off Palm Beach County, where the warm Gulf Stream current passes close to shore, and in the Florida Keys. Texas is the only other state where hawksbills are sighted with any regularity. Most sightings involve post-hatchlings and juveniles. These small turtles are believed to originate from nesting beaches in Mexico.

The life history of hawksbills consists of a pelagic stage that lasts from the time they leave the nesting beach as hatchlings until they are approximately 22-25 cm in straight carapace length (Meylan 1988), followed by residency in developmental habitats (foraging areas where immatures reside and grow) in coastal waters. Adult foraging habitat, which may or may not overlap with developmental habitat, is typically coral reefs, although other hard-bottom communities and occasionally mangrove-fringed bays may be occupied. Hawksbills show fidelity to their foraging areas over periods of time as great as several years (van Dam and Diez 1998).

Critical habitat for the hawksbill sea turtle includes the waters surrounding the islands of Mona and Monito, Puerto Rico from the mean high water line seaward to 3 nautical miles (5.6 km).

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 U.S. and throughout the Caribbean Sea. Non-nesting, adult female loggerheads are reported throughout the U.S. 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 (TEWG 1998) suggest that loggerheads (benthic immatures and adults) in U.S. waters are distributed in the following proportions:

- 54% in the southeast U.S. Atlantic
- 29% in the northeast U.S. Atlantic
- 12% in the eastern Gulf of Mexico
- 5% in the western Gulf of Mexico

Five nesting subpopulations exist in northwestern Atlantic. Low gene flow and strong nesting site fidelity may make these subpopulations vulnerable.

Annual nesting trends of Northwest Atlantic Recovery Units
(TEWG 2009)

Name	Location	Percent Decrease	Year
Northern	FL/GA Border to S. VA	1.6	1983-2006
Peninsular Florida	FL/GA Border through Pinellas County	43-44	1998-2007
Dry Tortugas	islands of the Dry Tortugas, near Key West	High likelihood of decline	--
Northern Gulf of Mexico	Franklin County, FL through TX	Appears to be declining	--
Greater Caribbean	Mexico, French Guiana, Bahamas, Lesser and Greater Antilles	Appears to be declining	--

It is important to note that these trend analyses numbers are not compared to larger historical numbers, and only reflect one segment of the population (just nesting females). Nesting females are the only segment of the population for which we have reasonably good data and are cautiously used as one measure of the possible trend of populations.

The loggerheads in the major different geographic areas represent differing proportions of the western Atlantic subpopulations. The northern nesting subpopulation produces about 9 percent of the loggerhead nests; however, they comprise more loggerheads found in foraging areas.

The recent loggerhead status review (Conant *et al.* 2009) concluded that there are 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. While NMFS has not yet officially recognized these DPSs, the information provided in the status review represents the most recent and available information relative to the status of this species. On March 16, 2010 NMFS published a Notice of a Proposed Rule (75 FR 12598) to formally designate the loggerhead with these nine DPS' worldwide. The notice also stated that NMFS plans to reclassify both DPS' within the United States as endangered (N. Pacific DPS and Northwest Atlantic Ocean DPS). The public has until June 14, 2010 to comment on the proposed rule.

The loggerhead was listed as a threatened species in 1978. Critical habitat has not been designated for the loggerhead.

Leatherback sea turtle

Leatherbacks utilize both coastal and pelagic waters. In the western Atlantic, adults routinely migrate between boreal, temperate and tropical waters, presumably to optimize both foraging and nesting opportunities (Bleakney 1965; Lazell 1980). Leatherbacks are deep divers, with recorded dives to depths in excess of 1000 m (Eckert *et al.* 1989), but they may come into shallow waters if there is an abundance of jellyfish nearshore.

The leatherback ranges farther than any other sea turtle species, exhibiting broad thermal tolerances (NMFS and USFWS 1995). The most significant nesting beaches in the Atlantic, and perhaps in the world, are in French Guiana and Suriname (NMFS SEFSC 2001). Leatherbacks are predominantly distributed pelagically, however can be found in nearshore waters

Recent analysis suggests that 7 stocks exist in the Atlantic including Florida, Northern Caribbean, Western Caribbean, Southern Caribbean-Guyana Shield-Trinidad, West Africa, South Africa, and Brazil (Turtle Expert Working Group, 2007). The primary western Atlantic leatherback nesting beaches occur in French Guiana, Suriname, Trinidad, and Costa Rica.

The Turtle Expert Working Group (2007) estimated the adult leatherback sea turtle population of the North Atlantic to be approximately 34,000-94,000 animals. The range of the estimate is large, reflecting the Working Group's uncertainty in nest numbers and their extrapolation to adults. The Working Group believes that as estimates improve the range will likely decrease. However, this is the most current estimate available. It is important to note that while the analysis provides an estimate of adult abundance for all populations in the greater North Atlantic, it does not provide estimates for the number or origin of leatherbacks in specific foraging areas, nor does it provide an estimate of subadult abundance. Trends in the adult population size estimate were not possible since trends in sex ratio and remigration rates were not available (Turtle Expert Working Group, 2007).

The leatherback was listed as endangered on June 2, 1970. Critical habitat for the leatherback includes the waters adjacent to Sandy Point, St. Croix, U.S. Virgin Islands, up to and inclusive of the waters from the hundred fathom curve shoreward to the level of the mean high tide with boundaries at 17° 42' 12" North and 65° 50' 00" West. Key physical or biological features essential for the conservation of the leatherback sea turtle found in this designated critical habitat include elements important for reproduction.

3.3.2 *Non-Target Species*

ESA or Marine Mammal Protection Act Protected Species Potentially Affected by the Proposed Action

Bottlenose dolphins

Three bottlenose dolphin (*Tursiops truncatus*) stocks are found throughout both action areas (Northern Gulf of Mexico Continental Shelf, Northern Gulf of Mexico Coastal and the Western North Atlantic Coastal). All these stocks are protected under the MMPA but not listed as threatened or endangered under the ESA. The activities proposed under File No. 14508 are not expected to affect bottlenose dolphins. On May 3, 2010 NMFS issued a Letter of Concurrence to the applicant of File No. 14655. The LOC states that harassment as defined by the MMPA is unlikely to occur and preventable if certain mitigation measures are in place (see Appendix D). The applicant understands that she must abide by these mitigation measures to avoid harassment of dolphins.

Florida Manatee

Manatees are listed as endangered under the ESA and protected under the MMPA. They inhabit both marine and fresh water of sufficient depth (1.5 meters to usually less than 6 meters)

throughout their range of the southeastern U.S. The West Indian manatee stock is divided into two subspecies, the Antillean manatee (*Trichechus manatus manatus*) and the Florida manatee (*Trichechus manatus latirostris*). Florida manatees may be encountered in canals, rivers, estuarine habitats, saltwater bays, and on occasion have been observed as much as 3.7 miles off the Florida Gulf coast. Researchers do not expect to interact with the Florida manatee. The U.S. Fish and Wildlife Service (Ms. Nicole Adimey, USFWS, Jacksonville FL) was contacted regarding the potential impacts of the proposed activity on the endangered Florida manatee to ask for concurrence with the finding of NMFS that the activity was not likely to adversely affect this species. The USFWS asked that precautionary measures be implemented to ensure that interactions are avoided. The permit would contain conditions designed to prevent interactions with endangered Florida manatees, and this species would not be considered further in this analysis.

3.3.3 Other

Sea grasses

Sea grasses could be disturbed by the research activities (netting and anchoring). However, the permit would be strictly conditioned such that no research activities would be conducted over, on, or immediately adjacent to Johnson's sea grass or in Johnson's sea grass critical habitat. Additionally, researchers would be required to avoid conducting research over, on, or immediately adjacent to any non-listed sea grass species. If these non-listed species cannot be avoided, then the avoidance/minimization measures would be implemented (please refer to Mitigation Section). No gear would be set, anchored on, or pulled across coral or hard/live bottom habitats. Given the precautionary conditions the permit would contain to minimize the impact of the research, the low level of impact to sea grasses, and that there would be no expected population effects, these species are not considered further in this analysis.

Rays and Sharks

Both proposed studies would result in the capture of several species of rays (cownose rays, spotted eagle rays, bluntnose stingrays, southern stingrays, and smooth butterfly rays). Based on their past experiences the applicants estimate 15 to 80 rays could be captured per year. The rays would be measured and released unharmed. None of these species are protected or imperiled. Researchers may also capture and release small bull shark and nurse shark.

Given the precautionary conditions the permit would contain to minimize the impact of the research and that there would be no expected population effects, these species are not considered further in this analysis.

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

An alternative to the proposed action is no action, i.e., denial of the permit requests. This alternative would eliminate any potential risk to all aspects of the environment from the proposed research activities. It would prohibit researchers from gathering information that could help endangered and protected sea turtles.

4.2 EFFECTS OF ALTERNATIVE 2: Issue permit with standard conditions

Any impacts of the proposed action would be limited primarily to the biological environment, specifically the animals that would be studied or affected by the research. The type of action proposed in the permit requests would minimally affect the physical environment and would be unlikely to affect the socioeconomic environment or pose a risk to public health and safety.

4.2.1 Effects on Biological Environment

Effects of the action on the target species (sea turtles) are discussed below.

Capture

Based on the past experience of the applicants the effects of capture on sea turtles by tangle netting are fatigue and mild stress. These effects are short term and do not affect the long-term viability of the animal. Hoopes et al. (2000) found that entanglement netting produced notable changes in blood chemistry in wild Kemp's ridley sea turtles, with plasma lactate concentrations at capture elevated up to 6-fold above those measured 6 to 10 hours post capture. However, they note that the lactate response resulting from the stress of capture in entanglement netting was relatively slight compared with that reported from trawl capture of sea turtles. Although it appears that entanglement netting can result in temporary changes in blood chemistry of sea turtles, it appears that animals that are immediately placed back into a marine environment after removal from the gear can recover from the short-term stress of capture (Hoopes et al. 2000). Animals captured during the proposed research analyzed in this analysis would typically be removed immediately from the nets, and any blood acidosis could be ameliorated by animal hyperventilation after removal from the net. Hoopes et al. (2000) conclude that entanglement netting is an appropriate "low-stress" method for researchers working on turtles in shallow, coastal areas. Capturing sea turtles in nets is stressful to the turtle, however this stress does not appear to be life threatening.

The potential for an animal to drown in a tangle net is virtually eliminated by constant tending of the net and checking the lead line by hand every 20 to 30 minutes. One applicant (J. Provancha) did have one mortality in the 15 years she has been tangle netting for turtles. This mortality occurred before the condition to constantly tend the net and check the lead line every 20 to 30 minutes was put in place, instead the net was checked every 45 minutes. Since the new

condition has been in place (2001) no other mortalities have occurred under the applicant's permit.

Measure, weigh and photograph

NMFS does not expect that individual turtles would experience more than short-term stresses during the handling, measuring, and weighing. No injury would be expected from these activities. Turtles would be worked up as quickly as possible to minimize stresses resulting from their capture. The permit holders would also be required to follow procedures designed to minimize the risk of either introducing a new pathogen into a population or amplifying the rate of transmission from animal to animal of an endemic pathogen when handling animals. The potential for dehydration is reduced by spraying the animals while on board. They are held for as short a period as possible.

Epibiont removal

Removal of epibionts would not be expected to significantly affect the animal, as epibionts can be removed in a relatively non-invasive manner. While the turtle may experience short-term stress or discomfort, this stress would not be significant.

Flipper and PIT tag

The NMFS Southeast Fisheries Science Center Galveston Laboratory has flipper and PIT tagged up to 56 loggerheads per year from 1999 to present holding the animals for approximately 3 years after tagging. Turtles were held in a laboratory setting, did fine, and were later released. It suggests that if a turtle is tagged using proper techniques and protocol and released back into a suitable environment, the chances for problems associated with the tagging are negligible. Additionally, in the 17 years that the NMFS Southeast Fisheries Science Center has been using Inconel (metal) flipper tagging turtles, all turtles exhibited normal behavior shortly after being tagged and swam normally once released. Of the close to 1,000 tagged turtle recaptures the NMFS Southeast Fisheries Science Center Beaufort Laboratory has encountered, no turtles show any adverse effects of being tagged in this manner (NMFS 2006).

Blood or tissue sample

The permits would contain conditions to mitigate adverse impacts to turtles. The applicants would be required to follow procedures designed to minimize the risk of either introducing a new pathogen into a population or amplifying the rate of transmission from animal to animal of an endemic pathogen when handling and sampling animals. It is not expected that individual turtles would experience more than short-term stresses during tissue or blood sampling. Researchers who examined turtles caught two to three weeks after sample collection noted the sample collection site was almost completely healed. During the more than five years of tissue biopsying using sterile techniques, NMFS Southeast Fisheries Science Center researchers have encountered no infections or mortality resulting from this procedure (NMFS 2006).

NMFS expects that the collection of a tissue or blood sample would cause minimal additional stress or discomfort to the turtle beyond what was experienced during capture, collection of measurements, tagging, etc. The potential for infection resulting from a blood or tissue sample would be minimized by the applicant's use of antiseptic techniques before sampling.

Lavage

Prey preferences of turtles can be determined by a variety of methods, but the preferred technique is gastric lavage or stomach flushing. This technique has been successfully used on green, hawksbill, olive ridley, and loggerhead turtles ranging in size from 25 to 115 inches curved carapace length. Forbes (1999) states that many individual turtles have been lavaged more than three times without any known detrimental effect. Individuals have been recaptured from the day after the procedure up to three years later and appear healthy and feeding normally. Laparoscopic examination following the procedure has not detected any swelling or damage to the intestines. While individual turtles are likely to experience discomfort during this procedure, NMFS does not expect individual turtles to experience more than short-term stress. Both applicants are experienced in this technique and have not reported any injuries or mortalities occurring as a result of this procedure.

Sonic tag

One of the applicants (J. Provancha) plans to attach sonic tracking devices to the sea turtle. The permit would require that the total weight of transmitter attachments for any one turtle not exceed 5% of the body mass of the animal. Each attachment would be made so that there is no risk of entanglement. Tags would have no gap between the transmitter and the turtle that could result in entanglement. The permits would also require that the applicants provide adequate ventilation around the turtle's head during the attachment of all transmitters. To prevent skin or eye injury due to the chemicals in the resin during the transmitter application process, the transmitter attachment procedures would not take place in the water.

Transmitters attached to the carapace of turtles have the potential to increase hydrodynamic drag and affect lift and pitch. For example, Watson and Granger (1998) performed wind tunnel tests on a full-scale juvenile green turtle and found that at small flow angles representative of straight-line swimming, a transmitter mounted on the carapace increased drag by 27-30%, reduced lift by less than 10% and increased pitch moment by 11-42%. It is likely that this type of transmitter attachment would negatively affect the swimming energetics of the turtle. However, based on the results of past tracking of hardshell sea turtles equipped with this tag set-up NMFS is unaware of the transmitters resulting in any serious injury to this species.

Based on past experience with these techniques used by turtle researchers and the documented effects of transmitter attachment, NMFS expects that the turtles would experience some small additional stress from attaching sonic tags to turtles taken during this research, but not significant increases in stress or discomfort to the turtle beyond what was experienced during capture and other research activities. NMFS does not expect the transmitters to significantly interfere with the turtle's normal activities after they are released.

The sonic tag would transmit at a 69 kHz frequency. This frequency level is not expected to adversely affect turtles. Sea turtles have low-frequency hearing sensitivity and are potentially affected by sound energy in the band below 1,000 Hz (Lenhardt 2003). Bartol et al. (1999) found the effective bandpass of the loggerhead sea turtle to be between at least 250 and 1,000 Hz. Ridgeway et al. (1969) found the maximum sensitivity of green sea turtle hearing to fall within 300-500 Hz with a sharp decline at 750 Hz. Since the sonic tags authorized for sea turtle

tracking research would be well above this hearing threshold, these tags would not be heard by the turtles.

Another important consideration is whether the sounds emitted by the sonic transmitters would attract potential predators, primarily sharks. Unfortunately, hearing data on sharks is limited. Casper et al. (2004) examined the hearing abilities of the nurse shark (*Ginglymostoma cirratum*), and results showed that this species detects low frequency sounds from 100-1,000 Hz with best sensitivity from 100-400 Hz. Hueter et al. (2004) explained that audiograms have been published on elasmobranchs. Hearing information for all the sharks that could potentially prey on sea turtles is unavailable; however, estimates for hearing sensitivity in available studies provided ranges of 25 Hz to 1,000 Hz. In general, these studies found that shark hearing is not as sensitive as in other tested fishes, and that sharks are most sensitive to low frequency sounds (Kritzler and Wood 1961; Banner 1967; Casper et al. 2003). Thus, it appears that the sonic transmitters would not attract potential shark predators to the turtles, given the frequency of the sonic tags is well above the 1,000 Hz threshold.

4.3 SUMMARY OF COMPLIANCE WITH APPLICABLE LAWS, NECESSARY FEDERAL PERMITS, LICENSES, AND ENTITLEMENTS

As summarized below, NMFS has determined that the proposed research is consistent with the purposes, policies, and applicable requirements of the MMPA, ESA, and NMFS regulations. NMFS issuance of the permit would be consistent with the MMPA and ESA. The applicant has secured or applied for necessary permits from the parks and if necessary has IACUC approval from their research institutions for their research protocols.

4.3.1 Endangered Species Act

To comply with section 7 of the regulations (50 CFR 402.14(c)), a section 7 consultation was initiated by NMFS PR under the ESA. . In accordance with Section 7 of the ESA of 1973, as amended (16 U.S.C. 1531 et seq.), a biological opinion was prepared for this proposed action and it concluded that after reviewing the current status of listed sea turtles, the environmental baseline for the action area, the effects of the take authorized in the permit, and probable cumulative effects, it is NMFS' biological opinion that issuance of Permit No. 14655, as proposed, is not likely to jeopardize the continued existence of any listed sea turtles, or any other NMFS ESA-listed species and is not likely to destroy or adversely modify designated critical habitat.

4.3.2 Marine Mammal Protection Act

Due to the potential for harassment of bottlenose dolphins during capture, the applicant of File No. 14655 submitted an application for an IHA. The requested research is consistent with applicable issuance criteria in the MMPA and NMFS implementing regulations. The applicant has agreed to abide by all mitigation measures as suggested by the issued LOC (Appendix D).

4.4 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 to NMFS that is needed to implement NMFS

management activities. This is important information that would help conserve and manage sea turtles as required by the ESA and NMFS's implementing regulations. The preferred alternative would affect the environment, primarily individual sea turtles and possibly bycaught fish. However, the effects would be minimal and the alternative would allow the collection of valuable information that could help NMFS' efforts to recovery sea turtles. Neither the no action nor the preferred alternatives are anticipated to have adverse population or stock-level effects on sea turtles or other non-target species.

4.5 MITIGATION MEASURES

There are no additional mitigation measures beyond those conditions that would be required by the permits. The conditions that would be required if the permits were issued are outlined in Appendix A. All of these conditions are intended to minimize unavoidable adverse effects of the various research activities. The permit conditions also require regular reports on the effectiveness of the research at achieving the applicant's stated objectives (and thus at achieving the purpose and need of the Federal action) and on the effectiveness of the mitigation measures required by the permit. By statute, regulation, and permit conditions, NMFS has authority to modify the permit or suspend the research if information suggests it is having a greater than anticipated adverse impact on target species or the environment.

4.6 UNAVOIDABLE ADVERSE EFFECTS

The research activities would cause disturbance and stress and injury to the captured sea turtles and non-target species (temporarily interrupting normal activities such as feeding) and could disturb sea grass species. The research is not expected to have more than a minimal effect on individuals, and no effect on populations. While individual sea turtles may experience short term stress and discomfort in response to the activities of researchers, the impact to individual animals is not expected to be significant. Also, while sea grasses could be disturbed, no population level effects would be expected.

The measures required by permit conditions are intended to reduce, to the maximum extent practical, the potential for adverse effects of the research on all species. Because the research involves wild animals that are not accustomed to being captured, the research activities would unavoidably result in harassment; however, the harassment would not rise to significant levels. Netting activities would also result in unavoidable disturbance of sea grasses and capture of non-target species.

4.7 CUMULATIVE EFFECTS

Cumulative effects are defined 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 action alternative is not expected to result in more than localized disturbance of animals in the action area. It is likely the effects of the disturbance would be short-term and that the affected areas would recover between disturbances and following conclusion of the permitted research.

The target and non-target species are also exposed to disturbance from other human activities in the action area including vessel traffic, fishing, and recreation/tourism. Under the preferred alternative, the research would not result in additional disturbance of non-target ESA-listed animals or non-target marine mammal species. Research under the action alternative would result in additional disturbance of other non-target animals in the action area. Whether this frequency of disturbance, by itself or in combination with disturbance from other human activities, would result in cumulative adverse effects depends on how long the effects of each disturbance last, whether the animals have sufficient time between disturbance events to resume or compensate for disrupted activities, and whether the effects of repeated disturbance are additive, synergistic or accumulate in some other way. However it is expected that the frequency of disturbance would be relatively low under the two permits compared other sources of disturbance.

4.7.1 Research permits

As summarized in Appendix B, 17 active permits in combination, allow research year-round on the five target species in areas that could overlap with the proposed action areas. 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. There is not enough information about the exact location and timing of the research under the various permits to specifically identify the extent of overlap in time and space of all of the permitted research, or to identify the frequency with which any given local population may be disturbed. However, it is a standard condition of NMFS permits for research on sea turtles (see Appendix A) 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 sampling. Turtles that have been PIT and flipper tagged would not be tagged again. Permitted researchers are also required to notify the appropriate 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 permits.

Under the proposed permits, animals in the action area would be disturbed by research activities one 3-day period four times a year for up to 5 years in the case of File No. 14508 and seasonally for up to five years (if logistics or funding issues arise, sampling may be limited to the summer season) in the case of File No. 14655. Whether this frequency of disturbance, by itself or in combination with disturbance from other permitted research, would result in cumulative adverse effects depends on how long the effects of each disturbance last, whether the animals have sufficient time between disturbance events to resume or compensate for disrupted activities, and whether the effects of repeated disturbance are additive, synergistic or accumulate in some other way.

4.7.2 Other human activities

Within the action area the target sea turtles are adversely affected by human activities including commercial and recreational fishing (via entrapment and entanglement in fishing gear), and tourism and recreation (via harassment from human approach and presence). Of these, disturbance that results in displacement of animals or abandonment of behaviors such as feeding or breeding by groups of animals are more likely to have cumulative effects on the species than entanglement of a few animals in fishing gear.

4.7.3 Summary of cumulative effects

It is likely that issuance of the proposed permit would have some cumulative adverse effects on the target animals due to the frequency of the disturbances associated with research activities. These adverse effects would likely 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.

Overall, the preferred alternative would not be expected to have more than short-term effects on endangered and threatened sea turtles species. The impacts of the non-lethal research activities are not expected to have more than short-term effects on individual sea turtles and any increase in stress levels from the research would dissipate within approximately a day and injuries caused by tagging and sampling are expected to heal. Even if an animal was exposed to additional research effort (e.g., a week later), no significant cumulative effects of research would be expected given the nature of the effects. NMFS does not expect the authorization of the proposed research activities of the preferred alternative 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 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.

The incremental impact of the action when added to other past, present, and reasonably foreseeable future actions discussed here would not be significant at a population level. The data generated by the tagging, measuring, and sampling activities associated with the proposed action would help determine the movement and habitat use of sea turtles found in the waters of the action area. The research would provide information that would help manage, conserve, and recover threatened and endangered species and would outweigh any adverse impacts that may occur.

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APPENDIX A: PERMIT CONDITIONS

In an effort to mitigate the effects of research the proposed permits would be conditioned with the following requirements:

- No mortality is expected and none is authorized; therefore, researchers must suspend activities in the event of a serious injury or mortality or if the level of authorized take is exceeded.
- Researchers must submit annual reports each year the permit is valid and a final report summarizing the research results.
- Researchers must notify the appropriate NMFS regional office at least two weeks before beginning the field season. This will help to coordinate the level of research occurring in the action area.

The following conditions are specific to sea turtle permits and would accompany the general conditions listed above:

- Tagging, measuring, and weighing instruments and equipment must be cleaned and disinfected between animals.
- Gastric Lavage: The actual lavaging of an individual turtle must not exceed three minutes. Once the samples have been collected, water must be turned off and water and food allowed to drain until all flow has stopped. The posterior of the turtles will be elevated slightly to assist in drainage.
 - Equipment (e.g., lavage tubes) that will come in contact with sea turtles must be disinfected between animals. Additionally, a separate set of equipment must be used for infected and non-infected animals. Disinfection can be compromised (incomplete) if items are contaminated with debris and/or have rough or porous surfaces. Researchers shall clean items prior to disinfection and increase the exposure time for rough and/or porous items.
 - Disinfectants shall be used according to directions, however researchers shall ensure-
 - Contact time with disinfectant is sufficient (according to label directions; a dip and rinse is not sufficient); and
 - Lavage tubes must be thoroughly physically cleaned prior to disinfection (viruses can remain protected in organic matter, the disinfectant can't get to them if they're protected in this matter).
 - Care shall be taken that disinfecting solutions are clean and active and that proper rinsing occurs after disinfection.

- Researchers must use care when handling live animals to minimize any possible injury, and appropriate resuscitation techniques must be used on any comatose turtle prior to returning it to the water.
- During transport and captivity the Florida Fish and Wildlife Conservation Commission Sea Turtle Conservation Guidelines must be followed at all times. http://www.myfwc.com/seaturtle/Guidelines/Seaturtle_Guidelines_Sect3.pdf
- Total weight of transmitter attachments would not exceed 5% of the body mass of the animal. Each attachment would be made so that there is no risk of entanglement.
- During hand capture researchers would be aware of the increased stress that accompanies hand captures and do their best to minimize stress levels.
- During strike netting nets must be checked at intervals of no more than 30 minutes, and more frequently whenever turtles or other organisms are observed in the net.
- Submerged Aquatic Vegetation, Coral Communities, Live or Hard Bottom Ecosystems. Researchers shall take all practicable steps to identify submerged aquatic vegetation (SAV), coral communities, and live/hard bottom habitats and avoid setting gear in such areas.
- No research activities would be conducted over, on, or immediately adjacent to Johnson's sea grass or in Johnson's sea grass critical habitat.
- All incidentally captured species (e.g., fishes) must be released alive as soon as possible.
- Vessel personnel must be informed that it is illegal to intentionally or unintentionally harm, harass, or otherwise "take" manatees, and to obey all posted manatee protection speed zones, Federal manatee sanctuary and refuge restrictions, and other similar state and local regulations while conducting in-water activities. Such information shall be provided in writing to all vessel personnel prior to beginning the permitted research.
- Netting activities must cease if a manatee is sighted within a 100-foot radius of the research vessel or the net, and may resume only when the animal is no longer within this safety zone, or 30 minutes has elapsed since the manatee was last observed within the safety zone.

APPENDIX B: ANNUAL TAKES AUTHORIZED UNDER PROPOSED PERMITS

Table 1: File No. 14508, Year-round capture by tangle net in Lake Worth Lagoon, Florida

SPECIES	LIFESTAGE	SEX	NUMBER OF ANIMALS	PROCEDURES
Turtle, green sea	Juvenile/ Subadult	Male and Female	30	Mark, flipper tag; Mark, PIT tag; Measure; Photograph/Video; Sample, blood ; Sample, tissue ; Weigh
Turtle, green sea	Juvenile/ Subadult	Male and Female	20	Lavage; Mark, flipper tag; Mark, PIT tag; Measure; Photograph/Video; Sample, blood ; Sample, tissue ; Weigh
Turtle, loggerhead sea	Adult/ Subadult/ Juvenile	Male and Female	5	Mark, flipper tag; Mark, PIT tag; Measure; Photograph/Video; Sample, blood ; Sample, tissue ; Weigh
Turtle, hawksbill sea	Adult/ Subadult/ Juvenile	Male and Female	2	Mark, flipper tag; Mark, PIT tag; Measure; Photograph/Video; Sample, blood ; Sample, tissue ; Weigh
Turtle, Kemp's ridley sea	Adult/ Subadult/ Juvenile	Male and Female	1	Mark, flipper tag; Mark, PIT tag; Measure; Photograph/Video; Sample, blood ; Sample, tissue ; Weigh

Table 2: File No. 14655. Year-round capture by tangle net in Mosquito Lagoon, Florida

SPECIES	LIFESTAGE	SEX	NUMBER OF ANIMALS	PROCEDURES
Turtle, green sea	Adult/ Subadult/ Juvenile	Male and Female	28	Epibiota removal; Lavage; Mark, flipper tag; Mark, PIT tag; Measure; Photograph/Video; Sample, blood ; Sample, tissue ; Tracking; Weigh
Turtle, green sea	Adult/ Subadult/ Juvenile	Male and Female	12	Epibiota removal; Instrument, epoxy attachment (e.g., satellite tag, VHF tag); Lavage; Mark, flipper tag; Mark, PIT tag; Measure; Photograph/Video; Sample, blood ; Sample, tissue ; Tracking; Weigh
Turtle, Kemp's ridley sea	Adult/ Subadult/ Juvenile	Male and Female	1	Epibiota removal; Instrument, epoxy attachment (e.g., satellite tag, VHF tag); Lavage; Mark, flipper tag; Mark, PIT tag; Measure; Photograph/Video; Sample, blood ; Sample, tissue ; Tracking; Weigh
Turtle, loggerhead sea	Adult/ Subadult/ Juvenile	Male and Female	30	Epibiota removal; Lavage; Mark, flipper tag; Mark, PIT tag; Measure; Photograph/Video; Sample, blood ; Sample, tissue ; Tracking; Weigh
Turtle, loggerhead sea	Adult/ Subadult/ Juvenile	Male and Female	10	Epibiota removal; Instrument, epoxy attachment (e.g., satellite tag, VHF tag); Lavage; Mark, flipper tag; Mark, PIT tag; Measure; Photograph/Video; Sample, blood ; Sample, tissue ; Tracking; Weigh
Turtle, hawksbill sea	Adult/ Subadult/ Juvenile	Male and Female	1	Epibiota removal; Instrument, epoxy attachment (e.g., satellite tag, VHF tag); Mark, flipper tag; Mark, PIT tag; Measure; Photograph/Video; Sample, blood ; Sample, tissue ; Tracking; Weigh
Turtle, leatherback sea	Adult/ Subadult/ Juvenile	Male and Female	1	Epibiota removal; Mark, flipper tag; Mark, PIT tag; Measure; Photograph/Video; Sample, tissue

APPENDIX C: ACTIVE PERMITS IN THE ACTION AREA

Existing Permits Authorizing Takes for the Target Sea Turtle Species In or Near the Action Area.

Permit Number	Permit Holder	Expiration Date
1506	Blair Witherington, Florida Fish and Wildlife Conservation Commission	March 31, 2011
1522	Kenneth Lohmann	June 1, 2010
1501	Florida Marine Research Institute	March 31, 2011
1507	Ehrhart	March 31, 2011
1450	Jane Provancha	November 30, 2009
1462	Inwater Research Group Inc.	August 31, 2010
1526	Andre Landry	August 1, 2010
1540	State of South Carolina	April 1, 2011
1552	NMFS SEFSC	June 30, 2011
1557	Molly Lutcavage	June 30, 2011
1570	NMFS SEFSC	December 31, 2011
1571	NMFS SEFSC	December 31, 2011
1576	NMFS NEFSC	September 30, 2011
1599	Inwater Research Group Inc.	June 30, 2012
13306	Karen Holloway-Adkins	June 30, 2013
13307	Kristen Hart	June 30, 2013
13573	Mike Salmon	May 1, 2012
14272	Larry Wood	June 30, 2014

The proposed action would replace the permits in **bold**.

Total Number of Mortalities Authorized for the Target Sea Turtle Species in or Near the Action Area.

Species	Mortalities
Green Sea Turtle	42
Loggerhead Sea Turtle	118
Kemp's Ridley Sea Turtle	24
Hawksbill Sea Turtle	3

Types of research activities under active permits affecting sea turtles. A check mark in a given column indicates that activity is authorized by the permit in the corresponding row. The sex and age classes of animals affected varies by permit, as does the time of year and frequency of activity. The proposed actions appear in **red** and will replace the current **bolded** permits.

Permit No.	Capture	Blood sampling	Fecal sampling/lavage	laparoscopy	Tissue sampling	Attach instruments	Tags or marks	Captive lab experiments	Mortality
1506	√					√		√	
1522	√					√			
1494	√				√		√		
1501	√	√		√	√	√	√		
1507	√	√	√		√	√	√		
1450	√	√	√			√	√		√
1462	√	√	√				√		
1526	√	√	√			√	√		
1540	√	√		√	√	√	√		√
1552					√		√		
1557	√	√			√	√	√		
1570	√				√		√		√
1571					√		√		
1576	√				√		√		√
1599	√	√	√		√	√	√		
13306	√	√	√		√	√	√		
13307	√	√	√		√	√	√		
13573	√						√	√	
14272	√	√			√	√	√		
14508	√	√	√		√		√		
14655	√	√	√		√	√	√		

APPENDIX D: ADDITIONAL MITIGATION MEASURES FOR PERMIT NO. 14655

- As a result of the MMPA LOC, Permit No. 14655 would require the Permit Holder to follow the below conditions:
- Monitor boat speed and direction to avoid marine mammals in the research area. This includes maintaining posted speed limits within manatee zones in the navigational channels located in the study area.
- Establish a 500-foot safety zone around the research vessel to avoid Level B harassment of, or Level A harassment (injury) of, marine mammals during the proposed project.
- Visually monitor the safety zone at least 15 minutes before the start of the net setting activities. Continue to monitor throughout the marine turtle survey; and monitor for bottlenose dolphins at least 15 minutes after the last net has been retrieved from the research area.
- Do not deploy the net if marine mammals are sighted in the vicinity of the 500-foot safety zone or if the marine mammal appears as if it is going to enter the safety zone.
- Immediately retrieve the net if marine mammals are detected within the 500-foot safety zone after deploying the net. Netting operations will not resume until the marine mammal is confirmed to be outside of the 500-foot safety zone or 15 minutes after the last sighting of the marine mammal within the safety zone, whichever is later.
- Limit netting operations to daylight hours to allow for maximum visual visibility.



Finding of No Significant Impact Issuance of Scientific Research Permit Nos. 14508 and 14655

Background

In May 2009, and August 2009, the National Marine Fisheries Service (NMFS) received applications for two permits (File Nos. 14508 and 14655) from Inwater Research Group, Inc. (Principal Investigator: Michael Bresette) and Jane Provancha, to conduct research on sea turtles in Florida. In accordance with the National Environmental Policy Act, NMFS has prepared an Environmental Assessment (EA) analyzing the impacts on the human environment associated with permit issuance (EA for the Issuance of Two Scientific Research Permits for Research on Sea Turtles in Florida). In addition, a Biological Opinion was issued under the Endangered Species Act (date of BO) summarizing the results of an intra-agency consultation. The analyses in the EA, as informed by the Biological Opinion, support the below findings and determination.

Analysis

National Oceanic and Atmospheric Administration Administrative Order 216-6 (NAO; 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?

The action is not expected to damage the ocean/coastal habitat or EFH. The study sites consist of seagrass beds interspersed with hard bottom habitat. The applicants will select anchoring sites on the sand/mud substrates. The tangle nets will not disturb bottom 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.)?

The proposed action is not expected to have a substantial impact on biodiversity and/or ecosystem function. The sea turtles will be released alive, benthic productivity will not be affected, and no sediment will be disrupted as a result of the proposed activities. Any non-target species captured during the netting will be released alive.



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

The proposed action requires the researchers to store and transport biological samples. Researchers will handle and transport samples following safety protocols to ensure there is no impact to public health or 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?

There is no critical habitat designated in the action area. The proposed action will affect endangered and threatened sea turtles. However, the effects of the proposed action on individuals will not be severe and will be short-term in nature. No injuries to listed species are expected and individual animals will be released after they are sampled or handled. The research could affect other non-target species (e.g., skates, rays), but they will be released alive and are not expected to be appreciably affected by this research. The permits will contain conditions to minimize the potential effects and stress to target and non-target species resulting from the capture. Researchers will not set nets if marine mammals are present in the sampling area.

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

There will be no significant social or economic impacts as a result of the proposed action.

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

The action is not likely to be controversial. The applications were made available for public comment and no substantive comments were received. The research methods are commonly used and NMFS is not aware of any controversy surrounding these permit applications.

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?

Research proposed under File No. 14655 will occur in the waters of Merritt Island National Wildlife Refuge and the Mosquito Lagoon Aquatic Preserve. The permit holder, if Permit No. 14655 were issued, will consult with the Florida Department of Environmental Protection and the Florida Fish and Wildlife Conservation Commission to ensure their presence has the least amount of impact

to the area. Applicants will ensure that the nets will not drag along the bottom and will be watched constantly to minimize impacts to the target species, incidental species and the environment. Given the precautionary approach researchers will take, and the conditions that will be included in the permit, NMFS does not expect the research will adversely impact protected areas. Research proposed under File No. 14508 will not occur in protected areas. No research activities will affect historic or cultural resources, park land, prime farmlands, wetlands, wild and scenic rivers, essential fish habitat, or ecologically critical areas.

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

The research activities of the proposed permits are not new. Researchers have previously conducted the same type of research with no significant impacts to the environment. The effects on the human environment are not highly uncertain and the risks will be minimal and known.

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

The proposed action is not related to other actions with individually insignificant, but cumulatively significant impacts. If the proposed permits are issued, it is not expected that the additional effects of this research will result in cumulatively significant impacts. The short-term stresses (separately and cumulatively when added to other stresses the species face in the environment) resulting from the sampling and tagging activities will be expected to be minimal. Animals will be exposed to low level harassment and no serious injuries will be expected. The permits will contain conditions to mitigate adverse impacts to species from these activities.

Overall, the proposed action will be expected to have no more than short-term effects on endangered and threatened sea turtles and minimal to no effects on other aspects of the environment. The incremental impact of the action when added to other past, present, and reasonably foreseeable future actions discussed in the EA will 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?

The proposed research will not take place in areas listed or eligible for listing in the National Register of Historic Places. As stated above in Question 7, the researcher would not adversely affect scientific, cultural or historical resources.

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

The proposed research is not expected to result in the spread of non-indigenous species. Researchers will take precautions to ensure all equipment is cleaned before transiting to another capture site. The research vessels will not take on ballast water.

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

The decision to issue these permits will not be precedent setting and will not affect any future decisions. Issuing a permit to a specific individual or organization for a given activity does not in any way guarantee or imply that NMFS will authorize other individuals or organizations to conduct the same or similar activity, nor does it involve irreversible or irretrievable commitment of resources.

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?

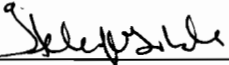
The action will not result in any violation of Federal, State, or local laws for environmental protection. In addition, the permits will not relieve the Permit Holder of the responsibility to obtain any other permits, or comply with any other Federal, State, local, or international laws or regulations necessary to carry out the action. Both researchers have applied for a State of Florida marine turtle research permit.

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?

The action is not expected to result in cumulative adverse effects to the species that are the subject of the proposed research. The proposed action is expected to have minimal effects on affected species' populations. No substantial adverse effects on non-target species are expected. No cumulative adverse effects that could have a substantial effect on any species will be expected.

DETERMINATION

In view of the information presented in this document, and the analyses contained in the EA and Biological Opinion prepared for issuance of Permit Nos. 14508 and 14655, it is hereby determined that permit issuance will not significantly impact the quality of the human environment. In addition, all beneficial and adverse impacts of the proposed action have been addressed to reach the conclusion of no significant impacts. Accordingly, preparation of an Environmental Impact Statement for this action is not necessary.



James H. Lecky
Director, Office of Protected Resources

June 2, 2010
Date