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

Environmental Assessment
on the Effects of Issuing Permit No. 16598 for Scientific Research on Protected Sea Turtles in Florida Waters

July 2012

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

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Location: Florida Keys and the Big Bend region of Florida

Abstract: The National Marine Fisheries Service (NMFS) proposes to issue Scientific Research Permit No. 16598 pursuant to the Endangered Species Act of 1973 (ESA; 16 U.S.C. 1531 *et seq.*). The action would exempt the permit holder from takes of protected sea turtles under the ESA, by capture, harassment, wounding and harm. The purpose of the research for Permit No. 16598 is to characterize movement patterns, track prevalence of fibropapilomatosis, examine genetic origin and feeding habits, and gather key life history information for green, loggerhead, hawksbill, and Kemp's ridley sea turtles in the coastal waters of Florida, off of Key West National Wildlife Refuge and Big Bend Sea Grasses Aquatic Preserve. The permit would be valid for five years from the date of issuance.

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1.0 PURPOSE OF AND NEED FOR ACTION

Proposed Action: NMFS proposes to issue Scientific Research Permit No. 16598 pursuant to the Endangered Species Act of 1973 as amended (ESA; 16 U.S.C. 1531 et seq.) for "takes"[1] of protected sea turtles in response to a request Inwater Research Group, Inc. (Responsible Party and Principal Investigator: Michael Bresette), 4160 NE Hyline Drive, Jensen Beach, Florida 34957.

Purpose and Need for Action: The ESA prohibits "takes" of threatened and endangered species with only a few specific exceptions. The applicable exceptions in this case are an exemption for scientific purposes related to species recovery under Section 10(a)(1)(A) of the ESA.

The purpose of the permit is to provide the applicant with an exemption from the take prohibitions under the ESA for harassment of threatened or endangered species, during conduct of research that is consistent with the ESA issuance criteria.

The need for issuance of the permit is related to the purposes and policies of the ESA. NMFS has a responsibility to implement the ESA to protect, conserve, and recover threatened and endangered species under its jurisdiction. Facilitating research about species' basic biology and ecology or that identifies, evaluates, or resolves specific conservation problems informs NMFS management of protected species.

Scope of Environmental Assessment (EA): This assessment is an analysis serving as an EA for File No. 16598. This document focuses primarily on effects on protected sea turtles, including green (*Chelonia mydas*), loggerhead (*Caretta caretta*), Kemp's ridley (*Lepidochelys kempii*), and hawksbill (*Eretmochelys imbricata*), listed as endangered under the ESA. These are the target species of the applicant's research.

The National Oceanic and Atmospheric Administration (NOAA) has, in NOAA Administrative Order 216-6 (NAO 216-6; 1999), listed issuance of permits for research on protected species as categories of actions that "do not individually or cumulatively have a significant effect on the human environment..." and which therefore do not require preparation of an EA or environmental impact statement (EIS). Nevertheless, NMFS has prepared this EA, with a more detailed analysis of the potential for adverse impacts on threatened or endangered species resulting from takes of a specified number of the target sea turtles, to assist in making the decision about permit issuance under the ESA.

The Florida Keys portion of the proposed permit action is a continuation of the applicant's ongoing sea turtle research conducted in the Key West National Wildlife Refuge, with take exemptions currently authorized by Permit No. 1599. The Florida Keys portion of the proposed action, including the location, manner of take (research procedures) and magnitude of take of sea turtles would not substantially change from that currently authorized by Permit No. 1599.

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[1] The ESA defines "take" as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct."

In addition to Permit No. 1599, Inwater Research Group also holds a permit, No. 14508, for sea turtle research in Lake Worth Lagoon on the East Coast of Florida. The applicant would be conducting many of the same procedures (marking, morphometrics, lavage, and tissue sampling) analyzed in the EA (NMFS 2010) that also resulted in a FONSI prepared for No. 14508. However, this work is an independent project collecting long-term data on species comparison, size frequencies, disease rates, seasonal abundance, genetic origin and feeding ecology of sea turtles in the area and is unrelated to the proposed action.

2.0 ALTERNATIVES INCLUDING THE PROPOSED ACTION

Alternative 1 - No Action: Under the No Action alternative, the requested permit would not be issued and the applicant would not receive an exemption from the ESA prohibition against take. The applicant's existing two permits would remain valid and in effect.

Alternative 2 - Proposed Permit: Under the Proposed Permit alternative, a permit would be issued to exempt the applicant from the ESA take prohibition during conduct of research that is consistent with the purposes and policies of the ESA and applicable permit issuance criteria.

Summary
The goals of the research would be to continue to gather information on the demographics and movements of sea turtles in the Key West National Wildlife Refuge and extend this work to an additional study area: the Big Bend of Florida. The proposed research project would focus on green, loggerhead, hawksbill, and Kemp's ridley sea turtles. The objectives of the research are to: 1) obtain information on sea turtle abundance, size frequencies, and sex ratios; 2) determine the genetic origin of sea turtle populations in the region; 3) continue to monitor turtle foraging habits; 4) track prevalence of fibropapilomatosis in sea turtles; 5) track green sea turtle movements west of the Marquesas Keys; and 6) identify habitat preferences of hawksbill sea turtles in the Key West National Wildlife Refuge. The permit would contain terms and conditions standard to such permits as issued by NMFS.

Action Area: The proposed research would take place in the coastal waters off of Florida, particularly the Key West National Wildlife Refuge (KWNWR) and the Big Bend Sea Grasses Aquatic Preserve (see Appendix 1 for maps). The Key West action area would not change from that previously described in the 2007 EA for Permit No. 1599. The 2007 EA is incorporated by reference. The Key West study area encompasses waters in the Florida Keys National Marine Sanctuary, the KWNWR and waters 30 kilometers to the north, south and west of the Marquesas Keys.

Methods: The research protocols are described in detail in the application on file for this action and are briefly summarized here. The application is on file with NMFS PR and is available on request. The same methodologies would be employed and the same mitigation measures would be in place across both study areas (the Key West National Wildlife Refuge and the Big Bend Sea Grasses Aquatic Preserve). Adult, subadult, and juvenile sea turtles would be collected by

hand or by using dip nets. Captured sea turtles would be measured, weighed, passive integrated transponder (PIT) tagged, flipper tagged, tissue sampled, blood sampled, carapace marked, photographed, and released. Green and Kemp's ridley sea turtles would also undergo gastric lavage. In the Key West National Wildlife Refuge, a subset of green, loggerhead, and hawksbill sea turtles would be fitted with a telemetry tag; in the Big Bend Sea Grasses Aquatic Preserve, green, loggerhead, and Kemp's ridley sea turtles would be fitted with telemetry tags. Researchers would also conduct vessel transect surveys, called HUNTS, to observe and count sea turtles. These methods are described in the applicant's application (File No. 16598) and would occur in the same manner as they were described and analyzed in the 2007 EA. Details on the number and procedures to be performed would vary by location and species; please see Table 1 for details.

Duration: The applicant intends to conduct the research year-round, sampling to occur quarterly, for five years from the date of issuance.

Target species or stocks: The applicant proposes to take threatened and endangered sea turtles. The proposed annual take for each species is summarized in Table 1.

Table 1. Proposed annual takes of sea turtles under Permit No. 16598.

Annual Take Number	Species	Collection Method	Take Activity
The following takes would occur in the Key West National Wildlife Refuge			
90	Green	Hand/Dip Net	Measure, weigh, photograph, carapace mark, PIT tag, flipper tag, tissue sample, blood sample, gastric lavage
10	Green	Hand/Dip Net	Measure, weigh, photograph, carapace mark, PIT tag, flipper tag, tissue sample, blood sample, gastric lavage, satellite tag
90	Loggerhead	Hand/Dip Net	Measure, weigh, photograph, carapace mark, PIT tag, flipper tag, tissue sample, blood sample
10	Loggerhead	Hand/Dip Net	Measure, weigh, photograph, carapace mark, PIT tag, flipper tag, tissue sample, blood sample, satellite tag
50	Hawksbill	Hand/Dip Net	Measure, weigh, photograph, carapace mark, PIT tag, flipper tag, tissue sample, blood sample, gastric lavage
10	Hawksbill	Hand/Dip Net	Measure, weigh, photograph, carapace mark, PIT tag, flipper tag, tissue sample, blood sample, gastric lavage, satellite tag
6	Kemp's ridley	Hand/Dip Net	Measure, weigh, photograph, carapace mark, PIT tag, flipper tag, tissue sample, blood sample
3000	Green	Vessel Survey	Count/Survey

1000	Loggerhead	Vessel Survey	Count/Survey
100	Hawksbill	Vessel Survey	Count/Survey
15	Kemp's ridley	Vessel Survey	Count/Survey
The following takes would occur in the Big Bend Sea Grasses Aquatic Preserve			
50	Green	Hand/Dip Net	Measure, weigh, photograph, carapace mark, PIT tag, flipper tag, tissue sample, blood sample, gastric lavage
10	Green	Hand/Dip Net	Measure, weigh, photograph, carapace mark, PIT tag, flipper tag, tissue sample, blood sample, gastric lavage, satellite tag
50	Loggerhead	Hand/Dip Net	Measure, weigh, photograph, carapace mark, PIT tag, flipper tag, tissue sample, blood sample
10	Loggerhead	Hand/Dip Net	Measure, weigh, photograph, carapace mark, PIT tag, flipper tag, tissue sample, blood sample, satellite tag
15	Hawksbill	Hand/Dip Net	Measure, weigh, photograph, carapace mark, PIT tag, flipper tag, tissue sample, blood sample, gastric lavage
50	Kemp's ridley	Hand/Dip Net	Measure, weigh, photograph, carapace mark, PIT tag, flipper tag, tissue sample, blood sample
10	Kemp's ridley	Hand/Dip Net	Measure, weigh, photograph, carapace mark, PIT tag, flipper tag, tissue sample, blood sample, satellite tag
600	Green	Vessel Survey	Count/Survey
200	Loggerhead	Vessel Survey	Count/Survey
25	Hawksbill	Vessel Survey	Count/Survey
200	Kemp's ridley	Vessel Survey	Count/Survey

Mitigation Measures

In addition to the applicant's stated methods, the proposed permit would include language that would minimize impacts to the target animals, non-target species, and prevent impacts to bottom habitat. These include:

- Checking for existing flipper and PIT tags before applying new ones;
- Ensuring that equipment is cleaned and disinfected before use and between animals;
- Cleaning the sample site prior to collection;
- Using a separate set of equipment for infected animals;
- Limiting the volume of blood drawn and number of attempts to draw blood; and

Many of these conditions have been developed in consultation with qualified veterinarians to minimize impacts and ensure safety to the target animals. In addition, researchers would be required to coordinate their activities with those of other Permit Holders to avoid unnecessary repeated disturbance of individual animals.

3.0 AFFECTED ENVIRONMENT

Location
As identified in Chapter 2, research would occur in the waters off of Florida, specifically the Key West National Wildlife Refuge and the Big Bend Sea Grasses Aquatic Preserve. The Key West study site is a continuation of past research authorized under Permit No. 1599. The Big Bend area along the northwest coast of Florida contains two study areas, a northern and a southern site, which are new regions of study for the applicant. See Appendix 1 for maps of the action area. ESA critical habitat is designated for two coral species within the action area (see below for details).

Status of Target ESA Species
ESA Listed Species Under NMFS Jurisdiction

Endangered

Green sea turtle	*Chelonia mydas**
Hawksbill sea turtle	*Eretmochelys imbricata*
Kemp's ridley sea turtle	*Lepidochelys kempii*
Loggerhead sea turtle	*Caretta caretta***

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

The status, biology and trends of the target species have not changed from how they are described in the EA (NMFS 2011b) and ESA Section 7 Biological Opinion (BO; NMFS 2011a) prepared for sea turtle research within the Gulf of Mexico and North Atlantic Ocean by the NMFS Southeast Fisheries Science Center (File No. 16253). These descriptions of the species are hereby incorporated by reference. Found in multiple ocean basins, these species are highly migratory with adult females returning to their natal beaches to nest. Population abundances and trends for these species are difficult to quantify and are primarily based on data of nesting females. As noted in the BO, these data suggest that:

- green sea turtle populations are increasing or stable globally,
- hawksbill sea turtle populations are declining, depleted or remnants of larger aggregations,
- Kemp's ridley sea turtle populations are increasing, and
- the Northwest Atlantic Ocean distinct population segment of loggerhead sea turtles is either stable or slightly decreasing.

Non-Target Marine Animals
In addition to the sea turtles that are the subject of the permit, an assortment of sea birds, marine mammals, fish and invertebrates may be found in the action area. The permit would only authorize takes of the target sea turtles. Species listed as endangered or threatened present in the

action area include: Florida manatees (*Trichechus manatus*), elkhorn coral (*Acropora palmata*), staghorn coral (*A. servicornis*), and American crocodile (*Crocodylus acutus*). However, NMFS does not expect impacts to these species because:

- research is not directed at these species and researchers would not intentionally approach or target these species;
- no gear would be set or towed through the water column;
- capture methods would be directed specifically at the target sea turtles and do not result in bycatch;
- vessel operation would involve no more than routine vessel movements of a small boat at a slow speed at the water surface; and
- the permit would contain measures to avoid interactions with non-target species, including prohibiting the setting of anchor or gear on coral and live bottom.

Aquatic nuisance species also may be present within the action area. However, the research vessel would not transit between water bodies or take on ballast water. In addition, the permit would contain conditions to prevent the spread of these species. Thus, they are not considered further in this EA.

Further, the permit would be conditioned to require the Holder to notify the Chief, Permits, Conservation and Education Division if any ESA-listed species not authorized in the permit is killed, injured, or collected during the course of authorized research activities. Directed research activities would be suspended pending review of the circumstances surrounding the incident.

Given the nature of the proposed research and proposed permit conditions that would mitigate the potential for impacts to non-target species, NMFS does not expect non-target species to be adversely impacted by the proposed action. Further, the applicant has not reported any adverse affects to non-target species while conducting research under Permit Nos. 1599 and 14508. Therefore non-target species are not considered further in this EA.

The work proposed in the Florida Keys would be a continuation of research conducted by the applicant under Permit No. 1599. The impacts to non-target marine animals were analyzed in the EA completed for that permit (NMFS 2007). As was concluded in the 2007 EA for Permit No. 1599, and in the accompanying Biological Opinion for Permit No. 1599, the research proposed for Permit No. 16598 is not expected to significantly impact any non-target marine animals and therefore, non-target species are not considered further in this EA.

Biodiversity and Ecosystem Function

The proposed action is directed at the target sea turtles and does not interfere with benthic productivity, predator-prey interactions or other biodiversity or ecosystem functions. Sea turtles would not be removed from the ecosystem or displaced from habitat, nor would the permitted research affect their diet or foraging patterns. Further, the proposed action does not involve activities known or likely to result in the introduction or spread of non-indigenous species, such as ballast water exchange. Thus, effects on biodiversity and ecosystem function will not be considered further.

Ocean and Coastal Habitats
The proposed action is directed at the target sea turtles and would not affect habitat. The proposed hand capture and dip netting are not likely to impact substrate or benthic habitat. Based on the proposed research methods and mitigating conditions of the permits, the proposed action does not involve substantive alteration of substrate, movement of water or air masses, or other interactions with physical features of ocean and coastal habitat. Thus, effects on these habitats will not be considered further.

Unique Areas

Key West National Wildlife Refuge and Florida Keys National Marine Sanctuary
The action would take place within the Key West National Wildlife Refuge (managed by the U.S. Fish and Wildlife Service). The Key West study area also is within the Florida Keys National Marine Sanctuary. The Sanctuary comprises 2900 square miles, containing sea grass beds, coral reefs, mangrove-fringed islands, and over 6,000 marine species. The physical environment of these areas consists of coral reefs, hard bottom/sponge areas, and seagrass beds. These areas are protected by US Fish and Wildlife Service and the National Ocean Service as areas of importance to turtles for nesting and foraging. The applicant has secured a research permit from the Key West National Wildlife Refuge. According to Sanctuary staff, a Sanctuary permit is not required for the proposed work.

Big Bend Sea Grasses Aquatic Preserve
As an expansion of the Inwater Research Group's work, they would also work within the Big Bend Sea Grasses Aquatic Preserve (managed by the Florida Department of Environmental Protection), primarily within the North study area shown in Figure 2 of Appendix 1. The Preserve comprises 945,000 submerged acres that support seagrasses, sea birds, marine mammals, recreational activities, and commercial and recreational fisheries for a variety of shellfish. The Suwannee River within the Preserve is an important area for gulf sturgeon (*Acipenser oxyrinchus oxyrinchus*); however, the Suwannee River is outside of the applicant's Big Bend North study area. Therefore, NMFS does not expect interactions with gulf sturgeon.

The applicant has secured a permit for the Refuge and is in the processing of securing other necessary local permits. Note, it is the applicant's responsibility to obtain any additional required permits or authorizations to perform research activities in the action areas.

Staghorn and Elkhorn Coral Critical Habitat
Areas where listed staghorn and elkhorn coral are found within the Florida Keys are also designated as critical habitat (73 FR 72210). However, as discussed above, non-target corals and thus their habitat are not likely to be impacted by the proposed action because they are not a target of research and the permit would prohibit researchers from anchoring or setting gear on coral habitat. Therefore, NMFS does not expect impacts to designated critical habitat.

No other park lands, prime farmlands, wetlands, or wild and scenic rivers are found within the action area. The proposed action is directed at sea turtles collected by hand capture or dip net and would not alter or affect bottom habitat, benthic communities, unique areas, including any

components of essential fish habitat (EFH). A description of specific designated EFH for species within the action area can be found at:
http://www.nmfs.noaa.gov/habitat/habitatprotection/profile/gulfcouncil.htm,and
http://www.nmfs.noaa.gov/habitat/habitatprotection/profile/southatlanticcouncil.htm.
Therefore, protected areas, critical habitat and EFH around the action area are not likely to be significantly impacted by the proposed action. Thus, effects on such unique areas will not be considered further.

Historic Places, Scientific, Cultural, and Historical Resources
There are no districts, sites, highways or structures listed in or eligible for listing in the National Register of Historic Places in the action area. The proposed action represents the use of sea turtles for scientific research purposes and does not preclude their availability for other scientific, cultural, or historic uses. Thus, effects on such resources will not be considered further.

Social and Economic Resources
The proposed action does not affect distribution of environmental burdens, access to natural or depletable resources or other social or economic concerns. It does not affect traffic and transportation patterns, risk of exposure to hazardous materials or wastes, risk of contracting disease, risk of damages from natural disasters, food safety, or other aspects of public health and safety. Thus, effects on such resources will not be considered further.

4.0 ENVIRONMENTAL CONSEQUENCES

Effects of the No Action Alternative
The No Action alternative would result in the loss of valuable information about the biology and ecology of this species. There are no direct or indirect effects on the environment of not issuing the permits. The take of sea turtles resulting from the applicant's research would not be exempted. Existing permits or pending permit requests would not be impacted by this alternative because the decision to issue or deny a request is based on its own merit and does not set precedent for decisions on other permit actions.

Effects of the Proposed Permit Alternative
Effects would occur at the time when the applicant's proposed research results in takes of the target sea turtles.

Environmental Consequences to the Biological Environment-Sea Turtles
The applicant has requested authorization to take sea turtles as described in the table included in Ch. 2. NMFS does not expect the proposed methods for Permit No. 16598 to result in serious injury or mortality of target sea turtles. AnEA prepared for the applicant's currently authorized sea turtle research (Permit No. 1599), which authorized similar research activities, resulted in a Finding of No Significant Impact (FONSI) and is hereby incorporated by reference (NMFS 2007). It determined that although individual animals may experience short-lived stress or minimal injury during procedures, the animals would recover overall from the proposed activities over a short time frame and that other portions of the human environment would not be

impacted by issuance of the permit (NMFS 2007). Specifically, the 2007 EA determined that:

- Capture by hand or dip net can lead to an increased level of stressor hormones in the turtles; this stress would be short-lived with animals recovering within the day. No injury or mortality would be expected.
- Measuring, weighing, photographing, and marking with paint can result in raised levels of stressor hormones in sea turtles. These procedures are simple and not invasive and NMFS does not expect that individual turtles would normally experience more than short-term stresses as a result of these activities. No injury is expected from these activities.
- The stresses of flipper and PIT tagging would be minimal and short-term and that the small wound-site resulting from a tag should heal completely in a short period of time. Similarly, turtles that must be re-tagged should also experience minimal short-term stress and heal completely in a short period of time.
- The collection of a blood or tissue sample would cause minimal additional stress or discomfort to the turtle beyond what was experienced during capture, collection of measurements, tagging, etc.
- For gastric lavage, although individual turtles are likely to experience discomfort during this procedure, NMFS does not expect individual turtles to experience more than short-term stress. Injuries and mortalities are not anticipated from lavage.
- Attachment of satellite, sonic, or radio tags with epoxy are unlikely to become entangled due to their streamlined profile, and will likely be shed after about one year, posing no long-term risks to the turtle. Further, the transmitters do not contain toxic components and NMFS does not expect them to pose a threat to the environment.

Note that the 2007 EA also analyzed other capture methods involving the setting of nets. However, those capture methods are not being requested by the applicant for File No. 16598 and therefore they are not discussed in this EA.

Summary of Effects

The proposed methods of capture are the least stressful forms available and are not likely to result in injury or death of sea turtles. They also do not result in bycatch. As demonstrated in the 2007 EA, capture and research procedures are likely to result in no more than short-term stress and discomfort to the target sea turtles, with small sampling wounds healing over time. Further, none of the proposed activities are known to result in reduced reproductive fitness of the target sea turtles. In addition, the permit would require researchers to follow protocols to minimize harassment, pain and the risk of infection and transmission of pathogens (e.g., cleaning and disinfecting sampling sites beforehand). Based on this information and the proposed permit mitigation, NMFS expects impacts from the proposed activities to be similar to those identified in the 2007 EA, resulting in no more than short-term harassment of target animals. NMFS does not expect the proposed activities to result in serious injury, mortality or reduced reproductive fitness.

Controversy
Federal agencies are required to consider "the degree to which effects on the quality of the human environment are likely to be highly controversial" when evaluating potential impacts of a proposed action. [40 CFR §1508.27] The application for the proposed permit was made available for public review and comment for 30 days. No substantive comments were received. Agencies' comments were received and addressed with the applicant. Given the proposed research methodologies are well known and are expected to have minimal effects, NMFS believes it is not likely to be controversial.

Cumulative Impacts
Summary of Effects from Total Number of Permits: In general, takes of sea turtles by harassment during permitted research using the proposed methodologies have not been shown to result in long-term or permanent adverse effects on individuals regardless of the number of times the harassment occurs. The frequency and duration of the disturbance under the proposed permit would allow adequate time for animals to recover from adverse effects such that additive or cumulative effects of the action on its own are not expected.

No measurable effects on population demographics are anticipated because any sub-lethal (disturbance) effects are expected to be short-term and the proposed action is not expected to result in serious injury or unintentional mortality of any animals. There exists the possibility that adverse effects on a species could accrue from the cumulative effects of a large number of permitted takes by harassment relative to the size of the population. Including the applicant's current permit, No. 1599, which the proposed permit would replace, 18 permits authorize research on sea turtles within Florida waters (see Appendix 2 for details). Most of these permits (all but two) do not authorize mortality of sea turtles. Of the 17 other permits, only four permits overlap with the proposed study areas. These permits are held by the NMFS Southeast Fisheries Science Center (SEFSC) and all have extensive action areas, covering the Gulf of Mexico and most of the Northwest Atlantic Ocean. None of the SEFSC permits have dedicated ongoing projects within the Florida Keys or Big Bend region and thus are not expected to overlap in time and space with the proposed action.

Beyond overlapping study areas, NMFS also considers whether other permitted researchers could be targeting the same animals or populations within a short time period, such as within the same day and whether it could result in cumulative impacts. Two of the 18 Permit Holders work in areas near the Florida Keys (No. 13307 held by Dr. Kristen Hart working in the Dry Tortugas and No. 14622 held by Allen Foley working in Florida Bay); however, not enough information is known of these populations to determine whether these permits would target and therefore affect the same individual animals or populations as the proposed research. For instance, Dr. Hart's work suggests that the Dry Tortugas may host a large resident population of green sea turtles. But it is unclear at this time whether these animals reside only within the Tortugas or range beyond the Tortugas. Further research on the movements of these animals may shed light on whether these animals are in fact resident and if so, the extent or range of that residency. Even if the proposed permit is able to target the same animals as other Permit Holders in the region, NMFS would not expect cumulative impacts since effects of research activities would dissipate within a short period of time, most within a day. Further, there is no evidence that current or past levels of permitted takes have resulted in population or species level effects. Because most

permits do not authorize mortality and the majority of the take activities authorized by these permits are not known to result in serious injury, mortality, or reduced reproductive fitness, NMFS does not expect that animals taken by more than one researcher in a short time period (days) is likely to result in cumulative impacts to the target animals, population or species. Thus NMFS expects that impacts of the proposed research to sea turtles would be negligible at the individual, population and species level. Moreover, researchers working under NMFS permits are required to notify the appropriate NMFS Regional Office in advance of field work. The Southeast Regional Office is tasked with coordinating activities under multiple permits for the action area to ensure there is not unnecessary duplication of research.

Other Actions: The target sea turtle populations may be exposed to other human activities including fishery interactions, pollution, and habitat alteration or degradation. Effects of past and ongoing human and natural factors (fisheries, existing NMFS research permits and other activities) occurring in or near the action area that have contributed to the current status of the species are described in the baseline section of the attached biological opinion done for the ESA Section 7 Consultation for this permit. General threats facing sea turtles range-wide are also discussed in the opinion. These activities and threats are expected to continue into the future.

The conclusion of the biological opinion was that the proposed action would not likely jeopardize the continued existence of any of the species and would not likely destroy or adversely modify designated critical habitat. NMFS expects the proposed research activities not to appreciably reduce the species likelihood of survival and recovery in the wild by adversely affecting their birth, death, or recruitment rates. In particular, NMFS expects the proposed research activities not to affect adult female sea 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 species.

Summary: Overall, the proposed action would not be expected to have more than short-term effects on endangered and threatened sea turtles. The incremental impact of the action when added to other past, present, and reasonably foreseeable future actions discussed here would be minimal and not significant. The data generated by the research activities associated with the proposed action would help determine the movement, habitat use, and life history characteristics of sea turtles found in the waters of the action area. The research would provide information that would help manage and recover endangered species and would outweigh any adverse impacts that may occur. The proposed action would not be expected to have any more than short-term effects any marine life species or other portions of the environment and would not result in any cumulatively significant effects.

5.0 LIST OF PREPARERS

This EA was prepared by the National Marine Fisheries Service, Office of Protected Resources in Silver Spring, Maryland.

6.0 LIST OF AGENCIES CONSULTED

Florida Fish and Wildlife Conservation Commission,
National Ocean Service, National Marine Sanctuary Program

7.0 REFERENCES

NMFS. 2007. Environmental Assessment. Scientific Research Permit Issued to Inwater Research Group (Principal Investigator, Michael Bresette) (Permit File No. 1599) to Conduct Research on Endangered and Threatened Sea Turtles. Silver Spring, MD.

NMFS. 2010. Environmental Assessment. Issuance of Two Scientific Research Permits for Sea Turtle Research in Florida. Silver Spring, MD.

NMFS 2011a. Biological and conference opinion on the issuance of a permit by the NMFS Permits Division to Bonnie Ponwith for directed research on sea turtles in the Gulf of Mexico and Atlantic Ocean. Silver Spring, MD.

NMFS. 2011b. Environmental Assessment Issuance of a Permit for Sea Turtle Research for Bycatch Reduction in Commercial Fisheries [File No. 16253]. Silver Spring, MD.

APPENDIX 1. STUDY AREAS

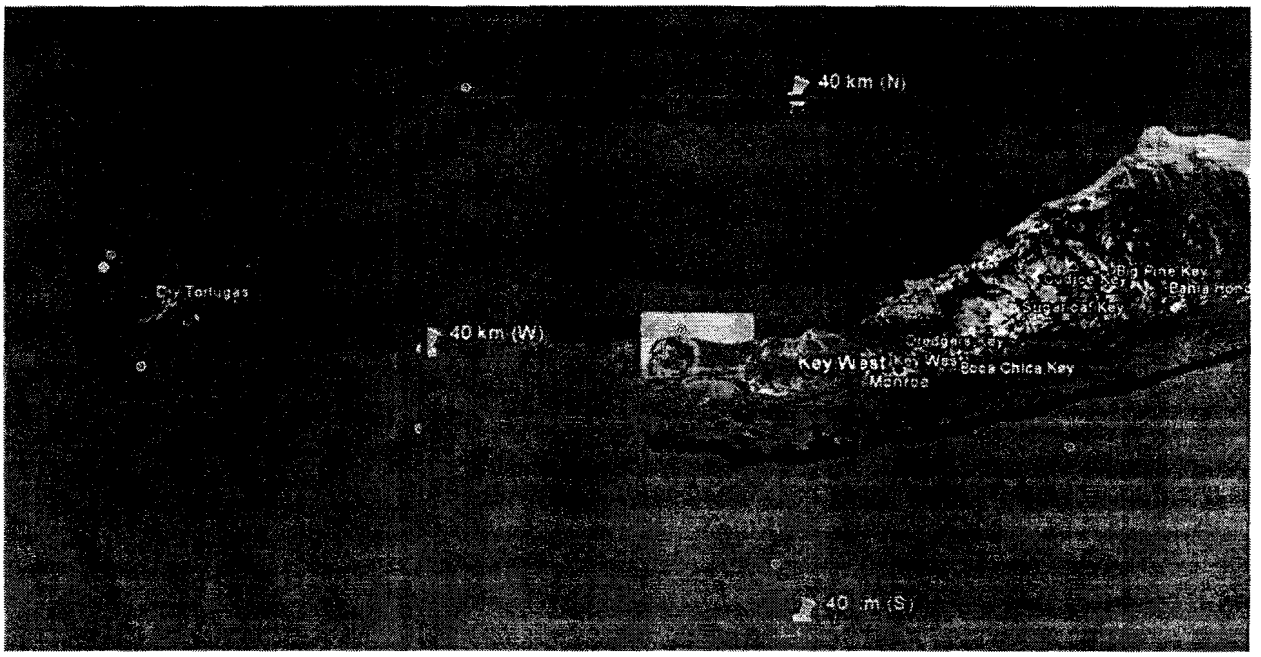

Figure 1: Key West study area.

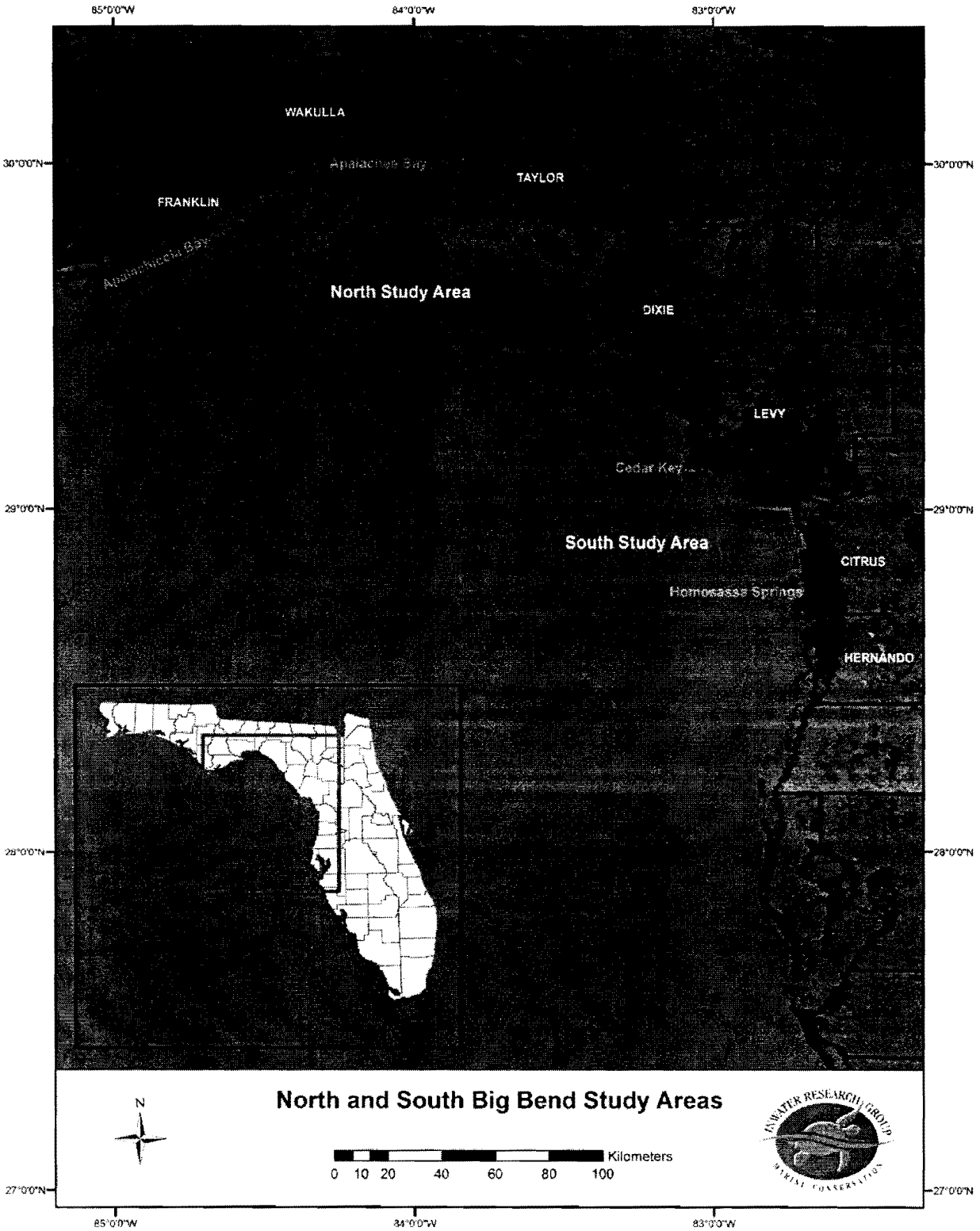

Figure 2: Big Bend study areas.

APPENDIX 2. ACTIVE PERMITS IN OR NEAR THE ACTION AREA

Table 2. Existing permits authorizing takes for the target sea turtle species in Florida. The Proposed Action would replace the permit in **bold.**

File Number	Permit Holder	Expiration Date
1599	**Inwater Research Group**	**June 30, 2012**
10022-02	Raymond Carthy	April 30, 2013
13306	Karen Holloway-Adkins	June 30, 2013
13307	Kristen Hart	June 30, 2013
1551-03*	NMFS SEFSC	July 1, 2013
13543	South Carolina Department of Natural Resources	April 30, 2014
13544	Jeffrey Schmid	April 30, 2014
14272	Lawrence Wood	June 30, 2014
14655	Jane Provancha	June 1, 2015
14508	Inwater Research Group	June 1, 2015
14506	Llewellyn Ehrhart	September 15, 2015
14726	Blair Witherington	September 15, 2015
14622	Allen Foley	February 28, 2016
15566	South Carolina Department of Natural Resources	April 30, 2016
15552*	NMFS SEFSC	July 25, 2016
16174	Mike Salmon	November 18, 2016
16194*	NMFS SEFSC	December 31, 2016
16253*	NMFS SEFSC	January 31, 2017

*Permits, except No. 1599, with action areas that overlap with the Proposed Action's study areas.

Table 3. Research activities authorized by active permits. Sex and age class of animals affected varies by permit, as does the time of year and frequency of activity. The Proposed Action appears in **bold** and would replace No. 1599.

File No.	Capture	Blood sampling	Fecal sampling or lavage	Laparoscopy	Tissue sampling	Attach instruments	Tags or marks	Mortality
15552					√		√	
10022-02	√				√	√	√	
13306	√	√			√	√	√	
13307	√	√	√		√	√	√	
1551-03	√	√	√	√	√	√	√	
1599	√	√	√		√	√	√	
13543							√	
13544	√		√		√	√	√	
14272	√	√			√	√	√	
14655	√	√			√	√	√	
14508	√	√	√		√		√	
14506	√	√	√		√		√	
14726	√		√		√	√	√	
14622	√	√		√	√	√	√	
15566	√	√	√		√	√	√	√
16174	√		√			√	√	
16253	√				√		√	√
16194					√		√	
16598	√	√	√		√	√	√	