UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
PROGRAM PLANNING AND INTEGRATION
Silver Spring, Maryland 20910

JUN 14 2010

To All Interested Government Agencies and Public Groups:

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

TITLE: Hawaii Island Hawksbill Turtle Education and Conservation

LOCATION: Island of Hawaii

SUMMARY: The World Turtle Trust will conduct the project action described in the Hawaii Island Hawksbill Turtle Education and Conservation proposal for sea turtle monitoring and management activities. The project proposal for 2010 is identical to the project that was conducted under a similar name (Hawaii Island Hawksbill Turtle Recovery Project) in 2007, 2008, and 2009. The primary objectives for the project entitled Hawaii Island Hawksbill Turtle Education and Conservation are: 1) To manage and protect hawksbill sea turtle nesting habitat on the island of Hawaii; 2) To collect baseline data on Hawaii's nesting hawksbill population to facilitate information management decisions; and 3) To contribute to a well informed pubic that acts as stewards of coastal and marine ecosystems through outreach and interpretation efforts.

The proposed action is for the National Marine Fisheries Service (NMFS) Pacific Islands Regional Office (PIRO) to provide funding to support the educational and conservation activities of the Hawaii Island Hawksbill Turtle Education and Conservation project based out of the Hawaii Volcanoes National Park. The Hawaii Island Hawksbill Turtle Education and Conservation project requires funding to fulfill its mission to implement several of the actions needed to achieve recovery for the hawksbill sea turtle as identified by the U.S. Fish and Wildlife Service and NMFS 1998 Recovery Plan.

RESPONSIBLE OFFICIAL: Michael D. Tosatto
Acting Regional Administrator
1601 Kapiolani Boulevard, Suite 1110
Honolulu, Hawaii 96814
Telephone Number: 808-944-2200
Facsimile Number: 808-944-2141

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) for the Hawaii Island Hawksbill Turtle Education and Conservation project including the supporting environmental assessment is enclosed for your information.

Although NMFS is not soliciting comments on this 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 on the first page. Also, please send one copy of your comments to my staff at NOAA Program Planning and Integration (PPI), SSMC3, Room 15603, 1315 East-West Highway, Silver Spring, MD 20910.

Sincerely,

for

Paul Doremus, Ph.D.
NOAA NEPA Coordinator

Summary of consideration of PEA/Hawaii Hawaii Islands Hawksbill

Purpose of PEA – Consider the potential environmental impacts of marine turtle research activities (conducted by)

1.2 Need for Action
- includes hawksbill
- Addresses nesting in small numbers in the main Hawaiian Islands/presence in nearshore waters
- Years of protective efforts
- NOAA and FWS share responsibility for conservation and recovery of sea turtles under ESA
- MTR has expanded to include hawksbill and MTRP collaborates and shares

1.3 Scope
- Detailed framework for continuing the long-term MTRP, including analysis of environmental impact associate with the implementation of MTRP initiatives. "As long as individual research projects are conducted as described...with possible additions....and the actual impacts associated with implementation remain within the range of impacts" document is current and applicable
- Individual projects implemented within the described program and documented as consistent with the PEA and its associated decision can be implemented

2.1.3 – All research techniques and methods conducted consistent with accepted standards within the sea turtle research community

2. Alternatives
- Capture on beaches considered
- Capture of hatchlings and collection of eggs (nest and beach)
- Inspection
- Sampling
- Tagging
- Transport
- Release back into the environment
- 2.1.4.1 – Assist federal (USFWS and National Park Service) and state (Hawaii Department of Land and Natural Resources, Division of Aquatic Resources personnel with collection of data from ... hawksbill turtles and nests at Volcano National park and other locations...

3.4 – Cumulative Effects
- Includes treatment of hawksbill since 1981
- MTRP serving as a model for other research programs
- Index site focus – scope and magnitude of field research not likely to be on a scale to affect – Other know (small scale hawksbill nesting beach surveys on the islands of Hawaii and Maui) not sufficient to magnify consequences
- Applicable permit requirements provide checks and balances safeguards

Programmatic Environmental Assessment of the Marine Turtle Research Program at the Pacific Islands Fisheries Science Center

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June 30, 2006

Lead Agency: National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Pacific Islands Fisheries Science Center

Responsible Official: Samuel Pooley, PhD.
Director, Pacific Islands Fisheries Science Center

For Further Information Contact: George Balazs
Marine Turtle Research Program
Protected Species Division
National Marine Fisheries Service
Pacific Islands Fisheries Science Center
2570 Dole Street
Honolulu, Hawaii 96822
(808) 983-5733

Executive Summary

The purpose of this Programmatic Environmental Assessment (PEA) is for the National Marine Fisheries Service (NMFS) to consider the potential environmental impacts of marine turtle research activities conducted by the Pacific Islands Fisheries Science Center's (PIFSC) Marine Turtle Research Program (MTRP). This PEA fulfills the requirements of the National Environmental Policy Act (NEPA) and the National Oceanic and Atmospheric Administration's (NOAA) Administrative Order 216-6 to analyze the environmental impacts of a proposed federal action.

The focus of the proposed actions involves: (1) undertaking research activities and obtaining scientific information in support of achieving the biological recovery and sustained management of sea turtle populations in Hawaii and other U.S.-affiliated islands in the Pacific Ocean; (2) making these data, analyses, and experience available to other sea turtle research programs worldwide in support of the biological recovery and sound long-term management of international sea turtle populations; and (3) assisting Pacific Island and Pacific Rim nations to recover sea turtle populations to the degree possible.

It is important to note that none of the research activities under the proposed action fall within the realm of public controversy. This is evidenced by the fact that: (1) researchers would be using common and professionally accepted research techniques and protocols; and (2) none of the reviewers submitted comments of concern during the review periods.

The National Environmental Policy Act of 1969 (NEPA; 42 U.S.C. 4321 *et seq.*), the Council on Environmental Quality's (CEQ) regulations at 40 C.F.R. Section 1508.27 and the NOAA Administrative Order 216-6 (NAO 216-6) require that NMFS make an initial determination as to whether the proposed activities are categorically excluded from further environmental impact review or whether the preparation of an EA or Environmental Impact Statement (EIS) is necessary. When a proposed action that would otherwise be categorically excluded 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 ESA-listed species or their habitats, preparation of an EA or EIS is required. In this case, an EA has been prepared as the proposed research activities focus on ESA-listed species, and NMFS must fully examine potential adverse effects on all ESA-listed species and target non-listed species in the proposed action.

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1 Purpose and Need

1.1 Introduction

Green, hawksbill, loggerhead, leatherback, and olive ridley sea turtles are protected under the U.S. Endangered Species Act (ESA) throughout all areas under U.S. jurisdiction. In the western Pacific, this applies to Hawaii, Guam, the Commonwealth of the Northern Mariana Islands (CNMI), American Samoa, and the eight unincorporated U.S. territories (Howland, Baker, Wake, Jarvis, and Midway Islands, Johnston Atoll, Palmyra Atoll, and Kingman Reef) (NMFS and USFWS 1998a, 1998b, 1998c, 1998d, 1998e). Inclusion of these species into the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) has made it illegal to trade any products made from these species among the U.S. and 169 other countries. Recovery plans for all U.S. Pacific populations of sea turtles were finalized in 1998 and serve as guidance in actions to recover these stocks.

1.2 Need for Action

The green turtle is listed as threatened under the ESA throughout its Pacific Range, except for the endangered population nesting on the Pacific coast of Mexico. In the Hawaiian Islands, green turtles are demonstrating encouraging signs of population recovery after years of protective efforts (Balazs and Chaloupka 2004). However, outside of Hawaii, green turtle populations have seriously declined throughout most of the Pacific. The harvest of green turtles by humans for meat and eggs is the most serious threat. Other threats include habitat loss, capture in fishing nets, boat collisions, and the tumorous disease, fibropapillomatosis (FP) (NMFS and USFWS 1998b).

The hawksbill turtle is listed as endangered throughout its range. Hawksbill populations have declined dramatically in the Pacific, and the species is rapidly approaching extinction because of a number of factors. The intentional harvest of this species for meat, eggs, and tortoiseshell and the illegal international trade of items made from this species are the greatest threats to its survival. Other threats to the continued existence of this species include beach erosion, coastal construction, habitat loss, capture in fishing nets, and boat collisions (NMFS and USFWS 1998d). Hawksbill turtles nest in small numbers in the main Hawaiian Islands and are present in the nearshore waters. The Hawaiian population has not demonstrated signs of recovery despite years of protective efforts (G. Balazs, NMFS Zoologist and MTRP Leader, pers. comm. May 2006).

The loggerhead turtle is listed as a threatened species throughout its range. Loggerhead in the insular Pacific, including those in states and territories under U.S. jurisdiction, probably derive from nesting beaches in Japan, Indonesia, or eastern Australia and many of these stocks are declining. These stocks are threatened primarily by incidental catch in commercial fisheries and habitat degradation (NMFS and USFWS 1998a).

The leatherback turtle is listed as endangered throughout its range. Leatherback populations in the Pacific are in severe decline and, in some cases, on the verge of extinction. The decline is primarily attributed to incidental take in coastal and high seas fisheries, the killing of nesting females by humans for meat, and the collecting of eggs at nesting beaches. Leatherbacks encountered in Hawaii represent individuals in transit

between nesting beaches and foraging grounds. Some of the largest nesting populations of leatherback turtles in the world border the Pacific Ocean, but no nesting occurs on beaches under U.S. jurisdiction (NMFS and USFWS 1998c).

The olive ridley turtle is listed as threatened in the Pacific, except for the Mexican nesting population, which is classified as endangered. The olive ridley is widely regarded as the most abundant sea turtle in the world; however, it is rare in the central Pacific since there are no nesting beaches in the Pacific Islands. The primary threats to this species are incidental take in fisheries and harvest of eggs and adults on Mexican and Central American nesting beaches (NMFS and USFWS 1998c).

The National Oceanic and Atmospheric Administration's (NOAA) National Marine Fisheries Service (NMFS) and the U.S. Fish and Wildlife Service (USFWS) share responsibility for the conservation and recovery of sea turtles pursuant to ESA mandates. At NMFS's Pacific Islands Fisheries Science Center (PIFSC), the Marine Turtle Research Program (MTRP) plays a key role in supporting this mandate by:

- Undertaking research activities and obtaining scientific information in support of achieving the biological recovery and sustained management of sea turtle populations in Hawaii and other U.S.-affiliated islands in the Pacific Ocean;
- Making these data, analyses, and experience available to other sea turtle research programs worldwide in support of the biological recovery and sound long-term management of international sea turtle populations; and
- Assisting Pacific Island and Pacific Rim nations to recover sea turtle populations to the degree possible.

The MTRP has its roots in research initiated at the University of Hawaii, Hawaii Institute of Marine Biology in 1972 and continued through 1980. In 1981, NMFS continued and expanded the research on the Hawaiian population of green turtles, creating the MTRP at its Honolulu Laboratory (now the PIFSC) in Honolulu, Hawaii. Since then, the MTRP has further expanded to include hawksbill, olive ridley, loggerhead, and leatherback sea turtles. The MTRP collaborates with researchers worldwide, focusing efforts on Pacific Island and Pacific Rim nations and serves as a model for other sea turtle research programs worldwide. With over 30 years of continuous data, the MTRP provides understanding, insight, advice, and shares its experiences with other U.S. and international sea turtle research programs.

1.3 Scope of Analysis

This programmatic Environmental Assessment (PEA) provides the detailed framework for continuing the long-term MTRP at the PIFSC, including analysis of environmental impacts associated with the implementation of MTRP initiatives.

This PEA has no termination date; it is intended to provide the basis for long-term continuation of the MTRP. As long as individual research projects are conducted as described in Chapter 2 in Alternative 1 (the No Action alternative, which includes the past, present, and continuing the reasonably foreseeable future program components) and/or Alternative 1 with possible additions to the program (whichever alternative(s)

is/are selected), and the actual impacts associated with implementation remain within the range of impacts as identified in Chapter 3, this document will remain current.

Any individual projects implemented within the described program and documented as consistent with this PEA and its associated decision can be implemented.

However, any site-specific and/or project-specific actions that would be added to the program long-term, not specifically covered under this PEA, and that would potentially have environmental considerations (issues or adverse impacts) not evaluated in this PEA will need additional appropriate NEPA analysis in a supplement to this PEA (40 CFR 1502.9). Any supplement to this PEA shall not affect the analysis or decisions in this original PEA nor any other proposed research project consistent with this PEA unless specifically stated in the supplement.

Any site-specific or project-specific actions that are not covered in this PEA that would not have any additional environmental considerations can be addressed in the research project implementation plan and protocol for the specific research project.

For any short-term project not consistent with this PEA, a categorical exclusion memorandum can be prepared, if appropriate. To determine if a categorical exclusion is appropriate for the proposed action, the following factors will be considered per NAO216-6 5.05(b)):

1) "a prior NEPA analysis for the same action demonstrated that the action will not have significant impacts on the quality of the human environment (considerations in determining whether the proposed action is the "same" as a prior action may include, among other things, the nature of the action, the geographic area of the action, the species affected, the season, the size of the area, etc.). In this case, a categorical exclusion may be appropriate." Or:

2) "the proposed action is likely to result in significant impacts as defined in 40 CFR 1508.27." In this case, a categorical exclusion would not be appropriate.

The appropriate categorical exclusion would either be:

- **"NAO216-6. 6.03.3(a): Research Programs**. Programs or projects of limited size and magnitude or with only short-term effects on the environment and for which any cumulative effects are negligible. Examples include natural resource inventories and environmental monitoring programs conducted with a variety of gear (satellite and ground-based sensors, fish nets, etc.) in water, air, or land environs. Such projects may be conducted in a wide geographic area without need for an environmental document provided related environmental consequences are limited or short term." Or:
- **"NAO216-6. 6.03.3(d): Administrative or Routine Program Functions**. The following NOAA functions that hold no potential for significant environmental impacts qualify for a categorical exclusion:
    - Basic and applied research grants, except as provided by Section 6.03b of this Order [trustee restoration actions per CERCLA and other laws];
    - Environmental data and information services;

- Administrative services;
- Basic environmental services and monitoring, such as weather observations, communications, analyses, and predictions..."

A categorical exclusion memorandum for the proposed action cannot be prepared if the one or more of the following conditions or exceptions apply:

- "CEs may not be appropriate when the proposed action is either precedent-setting or controversial, although such a determination must be made on a case-by-case basis. (NAO216-6 4.01c).
- Exceptions for Categorical Exclusions: The preparation of an EA or EIS will be required for actions that would otherwise be excluded if they involve a geographic area with unique characteristics, are the subject of public controversy based on potential environmental consequences, have uncertain environmental impacts or unique or unknown risks, establish a precedent or decision in principle about future proposals, may result in cumulatively significant impacts, or may have any adverse effects upon endangered or threatened species or their habitats. (NAO216-6 5.05c)."

Per NOAA policy, the Finding of No Significant Impact (FONSI) for this PEA will be reviewed for consistency and appropriateness at least every 5 years.

This PEA does not include implementation of the NOAA Fisheries Hawaii Longline Observer Program, which is under the jurisdiction of the Pacific Islands Regional Office (PIRO), although the PEA does cover training the observers in appropriate research techniques in support of the MTRP objectives.

This PEA does not cover sea turtle stocks in the Atlantic Ocean or other oceans not associated with the Pacific Basin.

The MTRP's geographical scope of activities includes field research in the Hawaiian Islands, and cooperative research, assistance and capacity building in Pacific Rim and Pacific Island areas. The MTRP focuses on green turtle stocks because over 97% of the sea turtles encountered within the Hawaiian Archipelago are of that species; however, hawksbill sea turtles are also included, as this species is present within Hawaiian waters and may be caught incidental to coastal fishing activities. Loggerhead, leatherback, and olive ridley sea turtles are found uncommonly in the inshore and nearshore waters of the Hawaiian Archipelago because this area is generally outside their natural range. However, data have been and will continue to be collected from any individuals of these species encountered in Hawaiian waters during all activities of the MTRP. The MTRP includes coordination and collaboration with and assistance to other sea turtle researchers in countries of the Pacific Basin, as requested and/or appropriate, on any appropriate species of sea turtle.

1.4 Scope of Decisions to be Made

The Responsible Program Manager (RPM; the Director of the PIFSC) will use this PEA to make the following decisions:

1. Might the current and proposed MTRP as described have significant impacts requiring analysis in an Environmental Impact Statement?

2. Should the MTRP continue to conduct sea turtle research projects within the Hawaiian Islands Archipelago and elsewhere in the Pacific Ocean to support ESA mandates?

3. Should the MTRP expand its research program to include additional sea turtle research actions if funding, staff, and other requirements are available and, if so, which types of actions?

Because this PEA evaluates an ongoing research program, the No Action alternative describes the current research program and includes reasonably foreseeable research activities/actions to be implemented in the near future. It also includes the same actions conducted in support of international sea turtle research programs in other Pacific Ocean nations (Pacific Islands and the Pacific Rim), especially in the U.S. territories of American Samoa, Guam, and CNMI, when the impacts would be the same as those analyzed in this PEA. It also analyzes the same types of research actions and sampling when used for new applications for which the impacts would be the same as those analyzed in this PEA.

Alternatives 2 and 3 each describe new research actions that could be considered by the MTRP for incorporation into the current program in the future. These actions are analyzed independently. The RPM can, therefore, select the alternatives individually or in combination at this time. If either Alternative 2 or 3 is not selected at this time, one or both can be selected by the RPM in the future without further NEPA analysis, as long as alternative descriptions and associated impacts remain consistent with those predicted in this PEA.

This PEA does not consider reduction in the current program because: (1) this program is consistent with the recovery plans of all five species of marine turtles (NMFS and USFWS 1998a, 1998b, 1998c, 1998d, 1998e); (2) the populations considered have not recovered per the recovery plans; and (3) the causes, spread, and impacts of fibropapilloma disease are poorly understood and the disease remains a potential threat to sea turtle recovery.

2 Alternatives Description

This chapter describes three alternatives:

- Alternative 1 (the No Action Alternative) is a description of the current MTRP, including reasonably foreseeable research actions.
- Alternatives 2 and 3 include all the activities and actions in Alternative 1 (i.e., the current MTRP and reasonably foreseeable research actions) plus additional research actions that could be added to the current program if desired.

2.1 Alternative 1 (No Action Alternative): Current and Continuation of the Current Research Program

Green turtles in the Hawaiian Islands Archipelago have been studied since 1972. The research program was begun at the University of Hawaii, Hawaii Institute of Marine Biology and later became a program of NMFS. Today, the MTRP studies all five species of marine turtles occurring in and around the Hawaiian Islands: greens, hawksbills, loggerheads, leatherbacks, and olive ridleys. The MTRP is one of the few long-term sea turtle research programs with more than 30 years of continuous, quality data. The MTRP provides understanding, insight, advice, and shares its experiences with other U.S. and international sea turtle research programs. The MTRP collaborates with researchers throughout the world, focusing efforts on Pacific Island and Pacific Rim nations, and serves as a model for other sea turtle research programs worldwide.

The MTRP operates from within the PIFSC, a division of NMFS located in Honolulu, Hawaii. NMFS is the federal agency charged with developing and implementing conservation and recovery actions pursuant to the ESA in the marine environment. MTRP cooperates with the USFWS for research on nesting sea turtles, especially at nesting beaches in the Northwestern Hawaiian Islands, Hawaiian Islands National Wildlife Refuge, French Frigate Shoals. The MTRP is careful to ensure compliance with all state, Territorial, and Federal regulations and permit requirements regarding protected species research.

2.1.1 Objectives of the MTRP

1. Continue to conduct basic investigations of the biology, life history, and ecology of sea turtles in their benthic habitats and on nesting beaches to establish and to continue long-term datasets.
2. Continue to monitor population trends at nesting beaches and in foraging areas and identify new areas to monitor as appropriate.
3. Continue to conduct a sea turtle stranding and salvage network for research, rescue, rehabilitation, and return to the wild, involving the collection of long-term data sets.
4. Continue to conduct health assessments, with focus on fibropapilloma (FP) disease complex, to determine causes, evaluate impacts to individuals and populations, and develop and implement containment measures.

5. Continue to conduct training of NMFS and international observer personnel in research protocols on sea turtles captured incidental to Pacific Ocean fisheries as part of their duties aboard commercial longline fishing vessels.
6. Continue to conduct fishery bycatch reduction and/or mitigation research through international collaboration, leading to increased knowledge of the pelagic ecology and movements of sea turtles in the Pacific Ocean.
7. Continue the process of data storage, management, and retrieval of long-term datasets collected from stranded individuals and during research conducted on nesting beaches and nearshore sea turtle benthic habitats.
8. Continue the development and application of simulation modeling of sea turtle population dynamics using MTRP long-term datasets for the assessment of the status of the various stocks of sea turtles with emphasis on the green turtle in Hawaii.
9. Continue to train research personnel from various Pacific Islands and along the Pacific Rim in sea turtle research techniques, and continue to share data, analyses, experience, and information to increase international research capacity.
10. Continue to conduct "remote viewing" using digital imaging cameras and other experimental equipment for research and monitoring.
11. Continue conducting educational outreach to the public, focused on sea turtle research projects and results, and using captive sea turtles when appropriate, to build public support for sea turtle research.
12. Continue to publish research findings in a timely manner in peer-reviewed journals to increase the knowledge base of sea turtle biology and population dynamics worldwide.

2.1.2 Techniques and Methods Used by the MTRP for Sea Turtle Research Involving Varying Levels of Interaction with Dead and Living Sea Turtles

Each research technique may be used alone or in combination to meet specific research project objectives (Table 1). Each technique is listed in order of increasing level of human-turtle interaction, from observing from a distance to handling live turtles. Standard operating procedures designed to minimize the impacts of these research techniques on turtles and the marine environment are described in the next section.

A. Encounter. This involves observing turtles from a distance.

1. Observe behavior, either visually or with a camera.
2. Record presence, either visually or with a camera.
3. Count numbers, either visually or with a camera.
4. Observe feeding, either visually or with a camera.

B. Capture. This involves the actual handling of individual turtles.

1. Capture using gear in the water, such as a scoop net, a tangle net, or trapping in a pen.

2. Capture by hand, either on land or in the nearshore waters.
3. Capture on beaches, with open "box pen."
4. Capture of hatchlings and collection of eggs, either in the nest or on the beach.
5. Capture of dead or live stranded individuals, involving primarily capture by hand at the stranding site.
6. Incidental bycatch in commercial fisheries in the Pacific Ocean.

C. Inspect. This involves handling and manipulating the individual turtle after capture.

1. Measure for size and growth rate.
2. Weigh.
3. Attempt to determine sex.
4. Conduct external and oral exam for health status.
5. Search for presence of biota on skin/carapace, such as barnacles or leeches.
6. Conduct exam for external injuries, such as evidence of attempted predation, fishing line entanglement, or boat strike.
7. Record existence of and information from tag(s).
8. Count and describe fibropapilloma tumors.
9. Conduct laparoscopy for sex determination of juveniles and breeding condition of adults.

D. Sample. This involves handling and taking physical samples from individual turtles, alive and dead, after capture.

1. If animal is alive, in addition to the external inspections above, the following may be collected:

a. Blood samples for total protein, packed cell volume, serum chemistry, and/or parasites and other desired considerations.
b. Samples of biota living on skin or carapace, such as barnacles, leeches, and algae.
c. Fibropapilloma tumors (if recapture, measure for progression/regression of disease).
d. Skin or blood for DNA identification.
e. Food samples from crop and/or mouth, including esophageal lavage.
f. Feces.
g. Tissue for stable isotope study.

2. If the animal is dead, during external exam and/or necropsy, in addition to the above samples (other than blood), the following may be collected:

a. Humerus bones and other tissue samples.
b. Food from gastrointestinal tract.

c. Urine and/or feces.

d. Reproductive organs for sex identification and reproductive status and fertility.

e. Tumor samples (if a recapture, evaluate for progression/regression of disease).

f. Skeletal materials.

g. Skin or other tissue for DNA identification.

h. Tissue for stable isotope study.

i. Epibiota (plants and animals attached to the skin and shell of a turtle).

E. Tag. This involves placing a physical tag either into tissue of the flipper, under the skin surface, or affixed to the shell of the individual turtle.

1. Passive tags:
    - External flipper tag (metal or plastic);
    - Passive Integrated Transponder (PIT) tag injected under the skin that can then be electronically scanned;
    - External shell mark (alphanumeric identification etched into shell and painted white)
2. Active Tags:
    - Radio transmitter that either transmits globally using satellites or short-range using VHF frequencies attached to the shell;
    - Archival tag (collects and stores temperature, depth, time, and/or location data)

F. Veterinarian Care. This involves the handling and manipulation of individual turtles by licensed veterinary professionals.

1. Rehabilitate sick or injured turtles for release into the wild, including transport, holding, handling, diagnosis, observation of behavior, treatment (such as dosing with medicine and surgery), feeding and other necessary care.
2. Conduct humane euthanasia of a sick or injured sea turtle if two or more veterinarians decide it has no chance to recover or survive in the natural environment.
3. Conduct a comprehensive necropsy of all euthanized turtles by a licensed veterinary pathologist.

G. Transport of Captured Turtles. This involves handling, stabilizing, and transporting living turtles.

1. Using a certified animal carrier, with the turtle covered with a wet pad for cooling on a plane, in the back of a vehicle, or on a boat if the individual is captured at sea.
2. Transport of salvaged and frozen dead turtles or turtle tissues, boxed and shipped by ground or air transport.

H. Release of Wild Turtles Back into the Natural Environment. This involves tagging, transporting to the appropriate release point, and release of individuals into suitable habitat, as defined by sea turtle experts.

I. Collection of Environmental Samples. This involves collection of information and physical samples from the environment in support of sea turtle research.

1. Collect algae and sea grasses in known turtle foraging areas.
2. Collect reef fish observed to groom sea turtles, such as saddleback wrasse, surgeonfish, and tangs for presence of viruses and other pathogens.
3. Collect sediments for presence of viruses and other pathogens.
4. Record and archive seawater temperature data.
5. Record and archive sand temperature data.
6. Collect seawater for presence of viruses and other pathogens.
7. Record and archive weather data and associated oceanographic characteristics.
8. Collect beach sand for analysis of beach physiology (sand grain size, porosity, water content, etc.).
9. Collect invertebrates and non-cleaning fish from foraging habitats for presence of viruses and other pathogens.

J. Modeling, Data Analysis, Educational Outreach, and International Collaboration. This involves data storage and manipulation, developing and using population models, educational outreach, and collaborating with international sea turtle researchers from the Pacific Rim and Pacific Island nations to further research in support of the recovery of Pacific stocks of sea turtles

2.1.3 Standard Operating Procedures for Implementation of Methods and Techniques

2.1.3.1 Standard Operating Procedures Accepted Worldwide

The MTRP ensures the safety of research and technician personnel first and foremost in all Program activities, and conducts constant training of all personnel in the implementation of techniques and methods, both in the laboratory and in the field.

All research techniques and methods are conducted consistent with accepted standards within the sea turtle research community (Eckert *et al.* 1999) based on efficacy and the experience gained through 34 years of implementation.

Eckert *et al.* (1999) incorporates standards for:

- Capturing (L.M. Ehrhart and L.H. Ogren. *Studies in Foraging Habitats: Capturing and Handling Turtles*; see also: Balazs *et al.* 1987 and Balazs *et al.* 1998);
- Tagging (S.A. Eckert. *Data Acquisition Systems for Monitoring Sea Turtle Behavior and Physiology*; G.H. Balazs. *Factors to Consider in the Tagging of Sea Turtles*; see also: Balazs *et al.* 1996);

- Collecting physical measurements (A.B. Bolten. *Techniques for Measuring Sea Turtles*);
- Diet sampling and diet component analysis, including the use of esophageal lavage (G.A. Forbes. *Diet Sampling and Diet Component Analysis*, see also: G.H. Balazs 1992);
- Measuring growth and growth rates (R.P. Van Dam. *Measuring Sea Turtle Growth*);
- Genetic population sampling (N. FitzSimmons, C. Moritz, and B.W. Bowen. *Population Identification;* also see: Bowen *et al.* 1992);
- Determining clutch size and reproductive success (J.D. Miller. *Determining Clutch Size and Hatching Success*);
- Diagnosing sex of sea turtles in foraging habitats (T. Wibbels. *Diagnosing the Sex of Sea Turtles in Foraging Habitats*);
- Techniques for evaluating infectious diseases of sea turtles (L.H. Herbst. *Infectious Diseases of Sea Turtles*);
- Tissue sampling and biopsy techniques (E.R. Jacobsen. *Tissue Sampling and Necropsy Techniques;* see also Dutton and Balazs 1996);
- Techniques for sampling blood and conducting laparoscopy for determining reproductive cycles (D. Wm. Owens. *Reproductive Cycles and Endocrinology*);
- Conducting stranding and salvaging networks (D.J. Shaver and W.G. Teas. *Stranding and Salvage Networks*)

2.1.3.2 MTRP Standard Operating Procedures

The following standard operating procedures are incorporated into the protocols for implementing the techniques and methods described in Section 2.1.3. These standard operating procedures are designed to minimize the impact of MTRP's techniques and methods on the environment, and turtles in particular.

- Nesting females can become skittish or disturbed if a light is shined on their face during egg deposition, or if they see the researcher or the researcher's shadow. To reduce the likelihood of disturbance, flashlight use is minimized and the light is covered with the hand with the first two fingers spread slightly to focus the beam. Researchers always approach a nesting turtle slowly from the rear. Before contact is made with the turtle, her activity is noted, and an attempt to identify her by shell etching or tag is made. Based on her activity, the researcher decides if it is the appropriate time to safely tag and sample (if necessary) the turtle without disrupting the nesting process. The best time for the researcher to interact with the turtle is after egg laying is complete.
- PIT tags are best injected into the hind flipper after the female has completed egg laying, when she typically goes into a trance-like state, or, secondarily, when the turtle is crawling, making a body pit, covering the eggs, or backfilling, but never

while excavating the egg chamber or depositing eggs to avoid any potential for nest abandonment. Every needle is used only once and disposed of properly.

- Skin sites for all activities that require puncturing the skin, such as tag application activities that require attachment to skin (physical tags or PIT tags), and collecting biopsies and blood samples, and use of tools for carapace marking and measuring, are cleaned with an antiseptic.
- Skin biopsies are taken from turtles incidentally caught in commercial fisheries, confiscated by law enforcement, captured during fieldwork, encountered on a nesting beach, and stranded turtles. The biopsy (a small plug of skin and tissue) is quickly taken from the edge of a hind flipper or from the soft skin near the hind flippers using a sharp punch tool.
- When possible, satellite and VHF radio transmitters are attached, removed, and/or replaced on nesting females only when the turtle has finished nesting to avoid nest abandonment.
- All wild turtles are typically held for field research activities for approximately 1 to 2 hours, unless a satellite or radio transmitter is being attached, at which point holding could extend to 3 hours.
- All drugs, including topical medications, vitamins and dietary supplements, and antibiotics are administered to turtles only by trained staff under the supervision of licensed veterinarians.
- Release of wild turtles from anywhere in the Hawaiian Islands back into the natural environment either during research activities or after rehabilitation at the NMFS Kewalo Research Facility (KRF) in Honolulu, Hawaii includes:
    - Any potentially diseased individual (known to be or potentially exposed) will not be released into areas having no known evidence of disease. When necessary, the animal is placed in quarantine for an appropriate duration, and the animal is observed for abnormal physical, physiological, or behavioral conditions; blood samples are collected to ensure absence of or an acceptable level of medical problems, as determined by a veterinary pathologist, prior to release.
    - Turtles stranded in areas not known to have the FP disease (i.e., leeward coast of Hawaii) are never released back into the original stranding site because the seawater used at KRF is recycled from the Oahu coast and the turtles could have been infected during their rehabilitation. All such turtles are released at sites on Oahu.
    - Turtles with or without FP tumors stranded from waters known to have the disease are released into calm waters close to the capture site, or in Kaneohe or Kailua Bays. Kaneohe Bay has the highest prevalence of fibropapilloma disease in Hawaii and has calm waters; therefore, it is an appropriate release site for animals that have previously been exposed to the disease.

- Turtles with one flipper amputated because of severe entanglement or physical damage are released into calm waters of Kailua Bay or Maunalua Bay on Oahu to facilitate swimming.
- Turtles are transported to the release site in an approved container, covered with a wet absorbent pad, and released near the water's edge or gently from a boat.
- After release, observers watch for the turtle to surface several times to breathe to ensure that the turtle is behaving normally and moving away from shore.

2.1.3.3 Standard Operating Procedures for Minimizing Disturbance to Other Species, Especially Monk Seals on Nesting Beaches, Including at East Island, French Frigate Shoals

- On East Island, since monk seals typically rest facing inland, researchers always scan with the flashlight from the shoreline berm towards the center of the island to avoid shining the light in the eyes of monk seals.
- If a monk seal happens to be facing the researcher, the light is turned off and the researcher slowly moves away.
- Researchers encountering monk seals remain at an appropriate distance at all times.
- Nesting research surveys at East Island are conducted no more than once per hour to minimize disturbance to nesting turtles, seabirds, and monk seals unless a particular turtle needs to be identified or observed.
- Researchers maintain a low profile during daylight when encountering a monk seal, and whenever possible, pass it from downwind.
- Researchers attempt to keep noise or sudden sounds to a minimum.
- If a monk seal notices the researcher, the person crouches down and slowly moves away.
- Although sea turtle nesting at French Frigate Shoals spans several months, sea turtle researchers are typically on East Island for only 45 days at the height of the nesting season, which minimizes disturbance to monk seals and other sensitive wildlife.

2.1.4 Components of the MTRP

Using the techniques and methods described above, which were implemented using the associated standard operating procedures, the MTRP currently undertakes a number of sea turtle research investigations that can be grouped into three broad categories: those associated with beach/shoreline habitat; those associated with pelagic habitat; and those associated with training, international collaboration, and analytic actions (Table 1). Table 1 correlates the specific techniques and methods identified in Section 2.1.2 using its corresponding alphanumeric label with its associated research component identified in Section 2.1.4.

As noted above, most of the research is conducted on green turtle stocks endemic to the Hawaiian Islands Archipelago; however, hawksbill sea turtles residing in coastal waters are included opportunistically. Additionally, the MTRP studies loggerhead, olive ridley, and leatherback sea turtles incidentally caught in commercial fisheries on the high seas in the Pacific Ocean and/or those animals associated with Pacific Rim and Pacific Island nation research programs. Occasionally, these species strand within the main islands of the Hawaiian Islands Archipelago and are studied via the stranding program.

2.1.4.1 Research on Sea Turtle Stocks in the Hawaiian Islands, Pacific Islands, and the Pacific Rim on Beach/Shoreline Habitats

a. **Nest-Based Egg and Reproductive Success.** Evaluation of egg incubation, hatchling production, and examination of nest contents post-hatching, including evaluation of sex ratios based on temperatures measured in the nest and determining the sex of salvaged, dead hatchlings found in the nest or on the beach.

b. **Nesting Beach Characteristics and Productivity. Collection of data from the nesting beach.** Assisting federal (USFWS and National Park Service) and state (Hawaii Department of Land and Natural Resources, Division of Aquatic Resources) personnel with collection of data from green turtles and nests at French Frigate Shoals and hawksbill turtles and nests at Volcano National Park and other locations, such as the south shore of Maui. Data collected include date of nest deposition and hatching, nest density, degree of egg fertility, and hatchling production. This may involve affixing passive or active tags to nesting females.

c. **Stranding.** As part of a widespread stranding network, collection of data from live and dead stranded sea turtles, care and rehabilitation of live animals, and necropsy of dead animals.

d. **Food Habits.** Collection of data from live and dead turtles and reef habitat, including evaluation of food found in the mouth, stomach, crop, gastrointestinal tract and/or feces, and stable isotope studies using tissues.

e. **Basking Sea Turtles.** Collection of data from basking green turtles (not at French Frigate Shoals) regarding, when appropriate, life stage, sex, health status, tags, and DNA.

f. **Fibropapilloma.** Collection of data related to the existence, causes, extent, and progression/regression of the fibropapilloma disease complex.

g. **Localized Overcropping of Algal Forage by Increasing Numbers of Green Turtles.** Evaluation of potential for overcropping of algae by increasing numbers of sea turtles in the recovering Hawaiian population and other assessments of forage characteristics.

h. **Identification and Biology of Epibiota (animals and plants that live on the skin and shell of sea turtles).** Collection of barnacles, leeches, algae, and other flora and fauna attached to skin and shell for determining life cycle biology and taxonomy.

i. **DNA Analysis.** Collection of skin, blood, and/or tissue from live or dead turtles for stock identification.

j. **Internal Parasites.** Collection of blood from live turtles and tissues from dead turtles to analyze for presence of parasites and determine life cycle biology and taxonomy.

2.1.4.2 Research on Sea Turtle Stocks in the Hawaiian Islands, Pacific Islands, and the Pacific Rim In Ocean Habitats

a. **Post-Pelagic Juvenile and Adult Nearshore Foraging and Resting Habitat.** Identification of location, characteristics, and daily and seasonal use of foraging and resting habitat and local movements of post-pelagic juveniles and adults using marked animals with active transmitters.

b. **Breeding Males and Gravid Females Inter-nesting Habitat and Movements.** Identification of location, characteristics, and daily and seasonal use of foraging and resting habitat and localized movements of breeding males and gravid females between nesting at breeding sites and associated basking sites.

c. **Post-Hatchling Juvenile Pelagic Habitat Location and Use.** Tracking juvenile turtles marked with an active transmitter to determine use of ocean habitats over time, potentially including juveniles less than 25 cm in length as technology improves to create smaller telemetry equipment.

d. **Adult Migratory Movements.** Tracking adult sea turtles marked with an active transmitter to determine use of ocean habitats over time and migration between breeding and foraging grounds.

e. **Bycatch Data.** Management and evaluation of data collected from live and dead sea turtles incidentally caught during coastal fishing or in commercial fisheries. Also may involve attaching telemetry equipment to the shell, when appropriate, to evaluate survival and movements.

f. **Release of Captive-Reared Turtles into the Environment.** Providing scientific advice and assistance regarding the release of captive-reared green turtles of the Hawaiian genetic stock into suitable habitat offshore of the Hawaiian Islands; as well as release of other species, such as captive-reared loggerhead turtles, into suitable habitat in cooperation with Pacific Islands and Pacific Rim nation research programs.

g. **Selected Projects for Cooperative Research on Captive-Bred/Captive-Reared Turtles at Authorized Facilities.** Any research conducted on turtles located at Sea Life Park, Hawaii or other authorized facilities in which MTRP is a collaborator, including projects such as nest and hatchling research, training in research techniques, tissue and blood sampling, inspection and morphometrics, and educational outreach.

2.1.4.3 Research on Sea Turtle Stocks in the Hawaiian Islands, Pacific Islands, and the Pacific Rim through Training, Collaboration, and Analytic Actions

a. **International Collaboration.** Working collaboratively with sea turtle researchers from other Pacific Rim and Pacific Island nations and providing assistance to research programs to build research capacity, including training in research techniques, sharing information and data exchange, and providing scientific advice.

b. **Training Fishery Observers in Research Techniques.** Training fishery observers aboard commercial fishing vessels in collection of sea turtle data from sea turtles caught incidentally by commercial fishery.

c. **Education and Outreach.** Developing and distributing written educational materials, in conjunction with on-site field activities, making presentations at adult- and children-oriented venues, publishing in periodicals and peer-reviewed journals, and providing specimens to museums on-loan and other public and educational institutions.

d. **Modeling Population Dynamics.** Storing and manipulating data and using the data to develop models of sea turtle population dynamics and population recovery.

e. **Age and Growth Rates.** Analysis of data based on measurements collected from live and dead turtles and bone structure data collected from dead turtles to evaluate population age structure and individual growth rates.

Table 1. Sea turtle research techniques and methods potentially associated with each research project in the MTRP.

	A. Encounter	B. Capture	C. Inspect	D. Sample	E. Tag	F. Vet Care	G. Transport	H. Release	I. Environmental Sampling	J. Modeling / Collaboration
1. Research conducted on the beach or in the nearshore ocean										
a. Reproductive Success	1-4	2-5	1-3,6	1d 2a,d,f-h					4,5,7,8	
b. Nesting Beach Research	1-4	2,3,4	1-8	1a-d,g	1-2		1		5,7,8	
c. Strandings	1-4	1- 3,5,6	1-8	1a-g 2a-h	1-2	1-3	1-2	H		
d. Food Habits	1-4	1- 3,5,6	1-8	1a,e-g 2b,c,h	1-2		1		1,9	
e. Basking	1-4	3	1-9	1a-e,g	1-2		1		4-7	
f. Fibropapilloma Disease Complex	1-4	1,2,3, 5,6	1-8	1a-c 2e,i	1-2	1-3	1-2	H	1-4,6,9	
g. Overcropping	1-4	1-3,5	1-8	1e,g	1-2		1		1,9	
h. Epibiota	1-4	1- 3,5,6	1-8	1b 2i		1,3	1-2			
i. DNA		1-6		1d,2g			1-2			
j. Internal Parasites		1-3,5		1a 2a		3	1-2		9	
2. Research conducted in the ocean										
a. Nearshore Foraging and Resting Habitat	1-4	1-3,5	1-9	1a-g	1-2	1-3	1		1,2,3,4, 6,9	
b. Breeding Adult Inter-nesting Habitat	1-4	1-3,5[1]			1- 2[1]				4-8	
c. Pelagic Juvenile Habitat	1-4	1- 3,5,6	1-9	1a-g	1-2		1		4,7	
d. Adult Migration		1- 3,5,6	1-9	1a-d,g	1-2		1		4,7	
e. Bycatch	1-4	1,5,6	1-8	1a-g, 2a-i	1-2	3	1-2	H	7	
f. Captive Release	1-4		1-9	1a-d,g	1-2		1	H		
g. Captive-Bred / Reared Research at Facility	1-4		1-9	1a,d,g	1	3	1		5,8	
3. Analytic, training, modeling, and educational outreach										
a. Collaboration			1-8	1a-g 2a-i	1-2		2			J
b. Education / Outreach	1-4			2f			1			J
c. Observer Training	1-4		1,6,7	2a,g	1-2					J
d. Modeling										J
e. Age / Growth Analysis										J

[1] at locations other than French Frigate Shoals

2.2 *Alternative 2: Current Program (Alternative 1) Plus the Study of Predation Levels on Hatchlings Entering the Sea*

This alternative would include the current program as described in Alternative 1 (Section 2.1) plus include a study at French Frigate Shoals to determine the causes and levels of green turtle hatchling predation on land and in the nearshore area. This alternative could include capturing wild live predatory birds (frigatebirds) and inducing them to regurgitate their crops, evaluating population levels and food habits of large predatory fish and ghost crabs, collecting tissue samples from predators and dead hatchlings for conducting a stable isotope food habit study and/or using on-land remote cameras and underwater videography. This study would also require capture of potential predators of hatchlings, including live birds, fish, and ghost crabs. This could possibly include lethal collection of fish and ghost crabs for stomach content and/or DNA analyses to determine if hatchlings have been consumed. Methods could include tethering hatchlings to feel the predation event (Gyuris 1994) or by visual tracking (Stewart and Wyneken 2004). Techniques and methods used will be consistent with those described earlier (Tables 1 and 2).

Table 2. Sea turtle research techniques and methods potentially associated with the study of predation levels on hatchlings entering the sea.

	A. Encounter	B. Capture	C. Inspect	D. Sample	E. Tag	F. Vet Care	G. Transport	H. Release	I. Environ.mental Sampling	J. Modeling / Collaboration
Green Turtle Hatchling Predation	1-4	1,4 - hatchlings 1 predators	1-4,6 hatchlings 1-3,6 predators	1e, 2b,h predators			2		4,5,7	

2.3 *Alternative 3: Current Program (Alternative 1) Plus the Study of Site Fidelity to Foraging Grounds*

This alternative would include the current program as described in Alternative 1 (Section 2.1). Alternative 3 would also include a study involving (1) capturing and relocating post-pelagic juvenile and subadult green turtles that exhibit slow growth rates in potentially overcropped foraging areas and other suitable areas with more abundant forage and (2) tracking and monitoring their movements and subsequent rate of shell growth. This study would evaluate if slow turtle growth rates may be caused by decreased food in overcropped foraging grounds from an increasing green turtle population in the area. All turtles selected for the study would be resident to the area and have at least 5 years of evidence of slow carapace growth as indicated from recapture data. A trial study with one turtle would be conducted to test the relocation technique and, if successful, the study would be expanded to include the minimum sufficient number of turtles for statistical analyses. All of the coastal areas of the main Hawaiian Islands, except the leeward coast

of Hawaii, are known to have some level of fibropapilloma disease. To avoid spreading the disease, either studies would be conducted outside of the leeward coast of Hawaii, or turtles moved from sites along the leeward coast of Hawaii would only be relocated to other areas along this coast. Techniques and methods used will be consistent with those described earlier (Tables 1 and 3).

Table 3. Sea turtle research techniques and methods potentially associated with the study of site fidelity to foraging grounds.

	A. Encounter	B. Capture	C. Inspect	D. Sample	E. Tag	F. Vet Care	G. Transport	H. Release	I. Environmental Sampling	J. Modeling / Collaboration
Green Turtle Foraging Site Fidelity	1-4	1,2	1-9	1a-g	1-2	1	1	H	1,3,4,6,7,9	

2.4 Alternative Not Considered in Detail

At this time, the MTRP does not have the need to collect viable eggs from nests during incubation for sex ratio determination via lethal examination, as other more indirect methods are sufficient. Although this alternative is not considered in detail in this PEA, it could be evaluated in a supplement if desired in the future.

3 Environmental Consequences

This chapter provides details on the potential environmental impacts that could result from implementation of the MTRP on sea turtles, other species, and the environment. Methods, techniques, and/or components of the MTRP (Table 1) not addressed in this section would not have adverse impacts on the environment.

3.1 Sea Turtles

3.1.1 Conducting laparoscopy on live sea turtles to determine sex and maturity of reproductive organs

The sex of immature turtles cannot be determined through external examination. Three techniques used by sea turtle researchers to determine the sex or maturity status of an individual include hormone radioimmunoassay (RIA), laparoscopy, and ultrasonography. The RIA and ultrasonography have limitations regarding sex determination and maturity status.

The RIA measures the serum testosterone level in a blood sample (Owens et al. 1978, Morris 1982, Wibbels et al. 1987, Wibbels 1988). Testosterone levels can vary between sea turtle species, and possibly between populations. Furthermore, results may differ between laboratories. As with any sexing technique, an RIA should be well validated. The best method to validate an RIA is to use serum samples from turtles of known sex (via laparoscopy) from the species and population to be analyzed. A major limitation of this technique is that in green turtles, testosterone levels for males and females can overlap. Results such as these yield inaccurate sex determination or the inability to assign a sex to an individual (Wibbels 1988). Since the RIA is not accurate for green turtles, and the MTRP primarily studies green turtles, we do not intend to pursue its use, unless it is used in conjunction with laparoscopy.

Ultrasonography, a noninvasive technique which involves capturing the turtle and conducting an external ultrasound, is useful in determining the maturity status/breeding condition of adult females (Plotkin *et al.* 1995); however, it is not useful in distinguishing between immature ovaries and immature testes (Owens 1999). Since this technique is not accurate in determining the sex of immature animals, the MTRP does not intend to pursue its use for sex determination; however, it may provide useful in assessing the breeding condition of mature females.

Laparoscopy is a form of surgery using a miniature telescope to directly view internal organs. It has been documented as a successful field technique to determine the sex of immature sea turtles and the reproductive status of adult sea turtles (Wood *et al.* 1983, Limpus and Reed 1985, Limpus 1985). The procedure is invasive and potentially dangerous, and should not be attempted without proper veterinary training. Despite the inherent risks of using laparascopy, it has been successfully used by a number of researchers and thousands of sea turtles have been accurately sexed (Owens 1999). The benefits of knowing the sex of every individual sampled far outweigh the risks of using the technique. A complete description of this technique is provided by Wood *et al.* (1983) and a technical overview by Owens (1999).

The MTRP does not currently use laparoscopy during field research; however, it is sometimes used during examinations by a licensed contract veterinarian. The MTRP may choose to incorporate this technique in our field studies to determine the sex and/or maturity status of selected individuals, since it is the most appropriate choice for studies aimed at both sex determination and maturity status/breeding condition.

When this technique is incorporated into the research protocol, an experienced sea turtle research biologist, along with a veterinarian experienced in laparoscopy would train MTRP staff using dead animals from our stranding program. Both the experienced sea turtle researcher and the veterinarian would accompany the MTRP on several field trials and assist with the examinations. The veterinarian would continue to collaborate with the MTRP until proficiency was developed. At such a time, the MTRP would continue to collaborate with the veterinarian so that he/she would be available on site or via phone during fieldwork, if needed for consultation.

As a result of these precautions, we anticipate fewer than 2% of the laparoscopies will result in lethal or sublethal injuries and therefore, we expect that the impact of this activity will not be significant (Owens 1999).

3.1.2 Impacts of handling, collecting samples from, and transporting live stranded sea turtles

Handling, collecting samples from, and transporting live stranded sea turtles are essential for diagnosis and treatment. All live stranded sea turtles, other than individuals that are lightly entangled (i.e., not injured) in fishing gear and can be disentangled and released on site, are captured by trained staff and collaborators and transported to a facility for diagnosis and treatment by a licensed veterinarian. Whenever possible, turtles are rehabilitated and ultimately released back into their natural environment. The MTRP does not perform unnecessary sampling on sick or injured animals unless a veterinarian determines the animal is sufficiently healthy for samples to be taken.

3.1.3 Potential for injury or mortality during capture or handling

As with any marine habitat capture program, there is a possibility that captured turtles could experience adverse impacts from capture, ranging from near-drowning to drowning by entanglement. To minimize the potential for adverse impacts, when nets are in the water to capture turtles, they are constantly monitored and turtles are immediately retrieved from the net (Ehrhart and Ogren 1999). Additionally, several field personnel are in the water during all capture activities (hand capture and tangle netting) to ensure that stress to the animal is minimized during capture by passive restraint during hand capture and immediate removal from the net. A veterinarian is on call during all capture activities in the event consultation is required. If a turtle is encountered during capture activities in a comatose state, resuscitation is attempted. Handling time is minimized to reduce the potential for additional stress. Turtles are only handled for the amount of time necessary to complete sampling, measuring, examination, and tagging. Therefore, no injury or mortality is predicted to occur from capturing, handling, tagging, or sampling.

From 1982 through February 2006, the MTRP collected information from 4,451 stranded turtles. Of these individuals, 135 (3 %) were previously tagged by the MTRP. The most

common cause of mortality among tagged turtles was FP (21%). No stranded tagged turtles were determined to have died from capture related activities (Balazs pers. comm.).

3.1.4 Impacts of invasive procedures such as tagging, blood sampling, esophageal lavage, and tissue biopsy

For a complete understanding of sea turtle population dynamics and life history, it is necessary to identify individuals and obtain biological samples for genetics, diet, disease, and habitat use. Turtles are flipper tagged with metal inconel tags and Passive Integrated Transponders (PIT) using standard techniques (Balazs 1999); blood samples are taken using a medical grade needle and syringe (Bolten 1999, Owens 1999); diet samples are safely obtained by esophageal lavage (Forbes and Limpus 1993); and tissue biopsies are taken using a biopsy punch (Dutton and Balazs 1996). All methods used are performed by trained personnel and have been peer-reviewed and used by sea turtle researchers worldwide. No mortality is expected from tagging, blood sampling, or tissue biopsy. Esophageal lavage, if done properly, is harmless. Many individual turtles have been lavaged multiple times without any known detrimental effect. Individuals have been recaptured from the day after the procedure up to many years later and appear to be healthy and feeding (Forbes 1999).

3.1.5 Stress from capturing turtles with fibropapillomatosis that are already immunosuppressed because of the disease

Capturing and collecting samples from sea turtles in their marine habitats is a nonselective process, since turtles with and without FP are sampled to document the prevalence of the disease and progression/regression of the disease at both the individual and population levels. Undoubtedly, turtles experience some level of stress related to capture (Jessop and Hamann 2005); however, any behavioral indications of stress are relatively short lived (T. Work, DVM, USGS, pers. comm. May 2006).

Green turtles severely afflicted with fibropapillomatosis were determined to be immunosupressed and chronically stressed prior to capture (Aguirre *et al.* 1995). Since capture methods are identical for diseased and non-diseased turtles, any observed differences in blood chemistry are likely related to disease and not attributed to stress from capture.

Turtles that are lightly or moderately afflicted with the disease appear to function at normal levels once returned to the ocean as documented through subsequent recapture of many of these individuals, indicating that the initial capture had no detrimental impact on their survival. In many instances, turtles initially captured with mild to moderate fibropapilloma tumors have been recaptured with reduced tumor load or no evidence of tumors at all, further indicating that capture stress was not detrimental to the animal's health and well-being. Additionally, both tumored and non-tumored turtles have been captured and held in captivity, and no behavioral differences were observed. (T. Work, DVM, USGS, pers. comm. May 2006).

3.1.6 Public perception of adverse impacts to sea turtles during research activities

To prevent public misconception of harm inflicted on sea turtles during research activities, the MTRP has an active public outreach and education program providing pamphlets and literature at all active field sites. Informal and formal presentations at public events, schools, and hospitals are an active and continuous part of the program. The MTRP also supports an extensive marine turtle stranding network and the stranding hotline phone number is made available to the public through magnets, mailings, newspaper advertisements, phonebook listing, television public service announcements, and through long-term cooperation with state agencies. All persons who call the stranding hotline or who are encountered in the field are offered a full explanation of research and conservation activities and their purpose, as well as educational sea turtle literature. As a result of directed outreach effort on turtle research activities, we anticipate minimal, if any, adverse public opinion associated with these activities.

3.1.7 Potential for a radio transmitter attached to the shell of a female sea turtle to interfere with mating or swimming behavior

The attachment of a radio transmitter (i.e., satellite tags) to the shell of a female sea turtle may appear to be obstructive to mating; however, this has been documented not to be the case. Females with satellite tags attached to their shell prior to the nesting season have been observed nesting, and examination of the nests after hatching indicated that successful mating/fertilization had occurred (S. Kubis, JIMAR Marine Turtle Research Biologist, pers comm., May 2006). Additionally, transmitters continue to decrease in size as technology advances. The transmitters available for use today weigh approximately 0.1 – 0.2 kg and measure 6.5 cm x 3.5 cm x 2.5 cm. The small size of the transmitters reduces the likelihood that the animals' ability to mate or swim will be adversely affected.

3.1.8 Euthanizing individuals of a protected species

Humane euthanasia is only performed by a licensed veterinarian if he/she determines that an individual cannot survive or function in the wild. These animals are typically in extremely poor health and/or in a condition beyond treatment. Examples of such cases include animals severely afflicted with fibropapillomatosis for which there is no cure, or animals with severe physical trauma beyond repair because of shark attack or boat strike. In such cases, euthanasia is performed for humane reasons and the animal is used for furthering scientific understanding of marine turtle disease and basic biology.

3.2 Other Species

3.2.1 Impacts on "cleaner" reef fish populations (Alternative 2 only)

Green turtles and some species of reef fish have a specialized relationship in Hawaii. The turtles congregate at sites known as "cleaning stations" to have their shells and skin picked clean of parasites and algae by various types of fish. Turtles lie on the reef or sea bottom or assume one of several cleaning postures to allow the fish to eat the algae or parasites on the skin, shell, and fibropapilloma tumors (Losey *et al.* 1994, Zamzow

1999). Fishes that may exhibit this cleaning behavior include saddleback wrasses, surgeonfish, and tangs. This relationship can be viewed as both beneficial and potentially harmful to green turtles. By having the algae and parasites cleaned from their skin and shell, the turtles appear to benefit by having to carry a reduced load caused by the epibiota. However, the fish also cause skin wounds that leave the turtles more vulnerable to infection. As the cleaner fish move from one turtle to the next they may potentially be carrying and transferring infectious agents between turtles (Losey *et al.* 1994, Lu *et al.* 2000), thus promoting the spread of the disease.

Green turtle herpesviral (GTHV) sequences were detected in tissues of the saddleback wrasse from Kaneohe Bay, Oahu, Hawaii, suggesting that cleaner fish may serve as vectors or carriers for the transmission of the agent (GTHV) causing fibropapillomatosis (Lu *et al.* 2000). Because the mode of transmission of fibropapillomatosis has yet to be determined, it may be necessary to conduct more studies on the relationships between the turtles, the fish, and the disease.

The cleaning behavior is not an innate behavior as not all fish of a given species at a turtle cleaning station exhibit this behavior. Therefore, individual fish that exhibit the cleaning behavior would be selectively sampled and fish that do not exhibit the behavior would not be sampled. Small numbers of fish (n = 15 and n = 6) were collected for the previous studies (Losey *et al.* 1994, Lu *et al.* 2000) and the need for larger samples is not evident at this time. At prior and projected sampling levels, the impacts to the overall population numbers of fish would be minimal if detectable at all because it represents only a minute fraction of the total population of the affected fish species.

3.2.2 Impacts of hatchling predation study at French Frigate Shoals on frigatebird, fish, and ghost crab populations (Alternative 3 Only)

The population of green turtles in the Hawaiian Islands has been increasing over the past 30 years (Balazs and Chaloupka 2004). In order to understand the population dynamics of this stock, it is essential to quantify life history parameters such as recruitment, fecundity, survival, mortality, etc. of all life stages. Those data are then incorporated into statistical models to estimate the population size and evaluate its recovery potential.

Survival rates of hatchlings can be quantified through terrestrial and aquatic studies at nesting beaches in the Northwestern Hawaiian Islands (NWHI). Predators of hatchling green turtles at this rookery potentially include ghost crabs, carnivorous fishes, and sea birds. The last investigation of hatchling predators at French Frigate Shoals, Hawaii was in 1974 (Balazs 1980). At that time, the Hawaiian green turtle population was severely decimated and resulting hatchling production was low compared to current levels. Predation by two species of ghost crab was documented; it was estimated that 5% of the hatchlings to emerge from nests were taken by these predators. Predatory fish were also sampled. The stomachs of 101 jacks (*ulua*), 16 wrasses, and 13 gray reef sharks were sampled for presence of green turtle hatchlings. No evidence of hatchlings was found in any of the stomach samples. Although frigatebirds are present and have been observed to prey upon hatchlings at other locations, they were not observed to prey on hatchlings on land or in the inshore waters at French Frigate Shoals (Balazs 1980, Niethammer *et al.* 1992).

Since those observations in 1974, there have been a number of ecological changes at French Frigate Shoals. One important change is the increase in the green turtle population since 1978 (Balazs and Chaloupka 2004). With more nesting females at East Island and more hatchlings entering the water, the impact of predators on the survival of hatchlings may have changed over time. Another ecological change involves the fish stocks in the NWHI. A recent study showed the frequency of occurrence of jacks (*omilu* and *ulua*) to be three to fivefold higher at French Frigate Shoals compared to Midway Atoll, where there is still pressure from recreational fishing and a catch and release fishery (DeMartini *et al.* 1996). Recreational fishing has not been a factor at French Frigate Shoals since the departure of the U.S. Coast Guard in 1978. The elimination of fishing pressure may have lead to the higher occurrence of jacks at French Frigate Shoals and in turn higher predation on hatchling green turtles. A thorough investigation of **hatchling predators and their impact on hatchling survival rates is essential to understanding the population dynamics of the Hawaiian green turtle stock.**

Some methods previously used to quantify predation rates on hatchlings in the ocean include visual observation of hatchlings towing a small float (Stewart and Wyneken 2004), sampling predatory fishes using hook and line and/or fish traps (Vose and Shank 2003, Stewart and Wyneken 2004), and tethering hatchlings with monofilament line to a researcher to indicate when the hatchling is captured by a predator (Gyuris 1994). All hatchlings not captured by a predator are released unharmed. In previous studies, hatchlings towing a float or tethered with monofilament line exhibited reduced swim speed, but not outside the normal range of swim speeds (Stewart and Wyneken 2004, Gyuris 1994). A more direct method to determine the level of predation on hatchlings by jacks would be to catch the fish with hook and line and sample their stomach contents. Jack populations at French Frigate Shoals are healthy (DeMartini *et al.* 1996); therefore, direct sampling of a relatively small number of fish would not adversely impact the population.

Since 1980, the USFWS has conducted year-round monitoring on breeding populations for all sea bird species at French Frigate Shoals (USFWS 2005). The frigatebird population in Hawaii is estimated at 8,000–10,000 breeding pairs, with an estimated 350 –375 pairs at French Frigate Shoals (Harrison 1990). To determine if the behavior and diet of frigatebirds has changed since 1974, visual observations and remote cameras would be used to determine if predation on green turtle hatchlings is occurring. If predation is documented, we would collaborate with USFWS biologists during their routine bird banding/sampling sessions and ask them to capture and handle the birds to sample stomach contents. Stomach contents would be obtained by inducing the birds to regurgitate their crop (Niethammer *et al.* 1992). The greatest risk to the birds would be from possible injury during handling; however, since the USFWS routinely handles birds in the NWHI, we do not expect any birds to be injured or killed.

Ghost crabs are known predators of green turtle hatchlings at French Frigate Shoals (Balazs 1980). Since ghost crabs burrow in the sand to raid nests, direct sampling of crabs and their stomach contents would be necessary to evaluate the impact they have on green turtle eggs and hatchlings. Sampling would involve observations of crab/turtle interactions on the surface as well as digging up or hand capturing crabs, and then humanely euthanizing (i.e., freezing) them to evaluate their stomach contents. No data are

available on the population status of ghost crabs in the NWHI; however, they are common on beaches throughout the Hawaiian Archipelago.

French Frigate Shoals is part of the Northwestern Hawaiian Islands Coral Reef Ecosystem Reserve, which is being considered for designation as a marine sanctuary. Additionally, the reserve lies within Northwestern Hawaiian Islands National Wildlife Refuge, and the USFWS does not permit the taking of any species from the Refuge without a scientific research permit. In order to conduct this study, a permit would need to be acquired to sample the potential predators (birds, crabs, and fish) of green turtle hatchlings.

3.3 Environment

3.3.1 Impacts to algae and sea grass populations

Green turtles in Hawaii feed primarily on algae (e.g., seaweed or *limu*) and, to a lesser degree, sea grass. Sampling algae and sea grass from foraging grounds is useful for studies such as diet, growth rates, and fibropapilloma disease. Samples collected would amount to a maximum of 1 pound (2.2 kg) per day of study, for each transect. Samples are collected in accordance with guidelines set forth by the State of Hawaii, Department of Land and Natural Resources, Hawaii Fishing Regulations. Algae samples are hand-clipped as required by the regulations, not taken by the holdfast, causing no adverse impact to any algal population. Algae found in green turtle diets can grow at rates of 10-12% per day and possibly higher (i.e., doubling its mass every 10 days), replacing any loss from collecting activities (Russell and Balazs 1994).

3.4 Cumulative Effects

Protection afforded marine turtles by the ESA has had a direct positive effect on green turtles in the Hawaiian Islands. The Hawaiian green turtle population has increased significantly over the past 30 years (Balazs and Chaloupka 2004) and research and monitoring activities conducted by the MTRP since 1972 have documented the growth of the population over time. Assessment of cumulative effects of the MTRP, due to the lack of comprehensive ecosystem data, is, in most respects, speculative. Given available information, the following discusses the incremental impact of the effects of MTRP when added to other past, present, and reasonably foreseeable future actions.

The MTRP supports ESA mandates for the conservation and recovery of sea turtles. As detailed in section 1.2, MTRP research originally focused on the Hawaiian population of green turtles, expanding, since about 1981, to include hawksbill, olive ridley, loggerhead, and leatherback sea turtles. Although focused on Pacific Island and Pacific Rim nations, the MTRP collaborates with researchers worldwide. Often, it serves as a model for other U.S. and international sea turtle research programs, rather than participating in specific projects or other research. The role of the MTRP does not include making management decisions that may affect population recovery. Rather, the MTRP undertakes research and monitoring activities to obtain scientific information in support of achieving the

biological recovery and sound management of sea turtle populations in Hawaii and other U.S.-affiliated islands in the Pacific Ocean. The assessment of cumulative effects is clearly speculative with regard to the MTRP serving as a model for other research programs, but given increases in the Hawaiian green turtle population over the past 30 years, these cumulative effects are expected to be positive. The same is true for the cumulative effects of MTRP analytic, training, and educational outreach activities.

With respect to field research activities, as discussed in 2.1.2 – 2.1.3.3, MTRP research designs, research approaches, and standard operating research procedures are crafted to minimize the impact on the environment and turtles in particular. Chapter 3 provides details on potential environmental impacts that could result from implementation of the MTRP on sea turtles, other species, and the environment. Chief among these are risks of adverse impacts to sea turtles from invasive research procedures, potential for injury or mortality during capture or handling, and complications associated with fibropapillomatosis disease, including transmission. Impacts on other species are discussed in detail at 3.2, and include modification of natural behavior, impacts from sampling or other research activities (including humane euthanization), removal (algae and sea grass), as well as disturbance effects (monk seals, sea birds, and other). Other ongoing activities in the environment, including fish harvesting and natural predation, have some unquantifiable impact on the environment.

Although assessing the cumulative effects of field research projects undertaken is speculative, the past, present, and future research activities of the MTRP are not likely to have had or have any significant adverse cumulative effects on the environment. This is because: (1) the scope and magnitude of field research is focused on index sites in the MHI that by themselves represent reasonable coverage, however, the scale of the field research is small (< 5% of all potential habitats for green turtles in the Hawaiian Islands) in relation to the geographic area of the affected environment; (2) the MTRP is the only group conducting field research of marine turtles in the ocean habitat, therefore the few other known research programs (i.e.: small scale hawksbill nesting beach surveys on the islands of Hawaii and Maui) do not magnify consequences; (3) applicable permit requirements provide "checks-and-balances" safeguards; and (4) the continuing increase in green turtle populations demonstrates the success of mitigation and conservative practices applied. Overall, the research activities of the MTRP may affect, but are not likely to have a cumulative adverse effect on the Hawaiian population of green turtles, the other marine turtle species, or the environment.

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5 List of Preparers

Stacy Kubis, M.Sc.
Marine Turtle Research Program
JIMAR Marine Turtle Research Biologist
NOAA, PIFSC

George Balazs, M.Sc.
Marine Turtle Research Program
NOAA Biologist and Leader
NOAA, PIFSC

Cody Hooven, B.S.
Marine Turtle Research Program
JIMAR/PIFSC Marine Turtle Stranding Specialist
NOAA, PIFSC

Shawn Murakawa, B.S.
Marine Turtle Research Program
NOAA Program Coordinator
NOAA, PIFSC

Judith Lee, M.Sc.
Senior Analyst
Environmental Planning Strategies, Inc.

Finding of No Significant Impact
Hawaii Island Hawksbill Turtle Recovery Project, 2010
NOAA Fisheries Pacific Islands Regional Office
Honolulu, Hawaii

The attached "Programmatic Environmental Assessment (PEA) of the Marine Turtle Research Program at the Pacific Islands Fisheries Science Center" issued June 30, 2006, was prepared by the NOAA Fisheries Pacific Islands Fisheries Science Center. The PEA analyzes a comprehensive suite of research activities on sea turtle stocks in the Hawaiian Islands. In particular, the PEA addresses project actions of sea turtle capture, measurement, tagging, observation, collection of eggs, and transportation of sea turtles for the Marine Turtle Research Program (MTRP). Although presented in the particularized context of the large-scale MTRP, the actions and alternatives analyzed have a generic component. That is, the methodologies, techniques, and activities analyzed are not particular to the MTRP and the PEA effectively assesses and analyzes non-MTRP sea turtle research activities within its scope. Specifically, the PEA provides analysis sufficient to determine whether significant environmental impacts could result from research activities proposed for the Hawaii Island Hawksbill Turtle Education and Conservation Project at Hawaii Volcanoes National Park. The PEA addresses the same types of research actions proposed in the more narrowly focused and geographically limited Hawaii Island Hawksbill Turtle Education and Conservation Project and provides sufficient evidence and analysis for this Finding of No Significant Impact. In determining this proposed project action is within the scope and of the same the nature as the actions listed in the PEA, the geographic area, species affected, size of the area, season, and methodology were considered.

The Pacific Islands Regional Office (PIRO) is processing a grant involving a Hawaii Island Hawksbill Turtle Education and Conservation Project. Aspects of the proposed grant activities not covered by a CE have been determined to have been addressed (methodologies for interacting with sea turtles, setting up predator barriers etc.) in the PEA. For the 2007, 2008, and 2009 grant cycles, a FONSI was prepared for the involved grants based on the MTRP PEA as it provided analysis sufficient to determine whether significant environmental impacts could result from research activities proposed for the Hawaii Islands Hawksbill turtle recovery project. After consulting with GCPI on this action for the 2010 grant cycle, PIRO is processing the 2010 grant following the approach applied in 2007, 2008 and 2009. PIRO has reviewed the grant and the PEA for major changed condition issues, and determined the PEA remains a valid assessment of methodologies, risks, and research activities proposed.

NOAA Administrative Order (NAO) 216-6 (May 20, 1999) contains criteria for determining the significance of the impacts of a proposed action. In addition, the Council on Environmental Quality 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." The significance of the actions funding the project entitled Hawaii Islands Hawksbill Turtle Education and Conservation Project is analyzed based on the NAO 216-6 criteria and White House Council on Environmental Quality's context and intensity criteria. The criteria listed

below are relevant to making a Finding of No Significant Impact, and have been considered individually, as well as in combination with the others. These include:

1) *Can the proposed action be expected to jeopardize the sustainability of any target species?*
Response: No. The intent of the research is to generate needed information in support of Hawksbill sea turtle recovery efforts in the Hawaiian Islands. The program at Hawaii Volcanoes National Park (HAVO) implements several of the actions needed to achieve recovery for the hawksbill sea turtle as identified by the US Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS) 1998 Recovery Plan. The standard operating procedures described in the PEA are included in the proposal and are expected not to jeopardize the Pacific Ocean stock of hawksbill sea turtles.

2) *Can the proposed action reasonably be expected to jeopardize the sustainability of any non-target species?*
Response: No. One of the major threats to Hawaiian hawksbills is predation by non-native mammalian predators. Observed nests will be closely guarded throughout the season by interns. Small mammal live traps will be baited, set, and checked several times daily at critical nesting beaches to control mongooses (*Herpestes auropunctatus*), rats (*Rattus* sp.), and feral cats (*Felis catus*). Captured animals will be euthanized humanely using carbon dioxide. In 2010, the proposed project will remove approximately 200-300 predators from nesting habitat. Wire mesh nest enclosures will be constructed over each nest at beaches with high predator populations to provide further protection from predators, vehicles, and people. After 45 days of incubation, nest enclosures will be cut open or removed to prevent trapping any hatchlings. At one site, a fence is maintained to protect the nesting habitat from feral pigs (*Sus scrofa*) and cattle (*Bos taurus*). If any bycatch occurs in these live traps or in the mesh enclosures non-target animals will be released alive. All work will take place on land and thus there will be no interactions with marine species. If Hawaiian monk seals are present in the survey area, they will be avoided to the extent that no interactions will take place.

3) *Can the proposed action reasonably be expected to cause substantial damage to the ocean and coastal habitats and /or essential fish habitat as defined under the Magnuson-Stevens Act and identified in Fishery Management Plans?*
Response: No. As the research activities are limited in scope and season they are not expected to cause any damage to the ocean and coastal habitats and/or Essential Fish Habitat.

4) *Can the proposed action reasonably be expected to have a substantial adverse impact on public health or safety?*
Response: No. No adverse impacts on public health and safety are expected. Most of the action sites are located on federal property and have limited public access. Any research efforts involving areas open to the public may allow those members the ability to watch from a distance but not participate in research activities. Education and outreach efforts are provided when the public is present for such activities.

5) *Can the proposed action reasonably be expected to adversely affect endangered or threatened species, their critical habitat, marine mammals, or other non-target species?*
Response: No. The research is intended to support recovery efforts of Hawksbill turtles in Hawaii. The Hawksbill turtle is listed as endangered and no critical habitat has been designated by either USFWS or NMFS for this species on the island of Hawaii. Marine mammals will not be adversely affected as all of the proposed work is based on land.

6) *Can the proposed action be expected to have a substantial impact on biodiversity and/or ecosystem function within the affected area (benthic productivity, predator-prey relationships, etc.)?*
Response: No. The research is conducted on individual animals rather that on an ecosystem level. See responses to 1, 2, and 3.

7) *Are significant social or economic impacts interrelated with natural or physical environmental effects?*
Response: No significant social or economic impacts are expected to occur to the local communities or their economies. Beneficial impacts would result because education efforts with local communities and beyond, especially sea turtle conservation, and would promote environmental understanding of living coastal and marine resources, stewardship, and sustainability of the resources.

8) *Are the effects on the quality of the human environment likely to be highly controversial?*
Response: No controversy or issues have been raised during more than ten years of the Hawksbill recovery activities. To avoid perception of controversy, the program has an active education and outreach program.

9) *Can the proposed action reasonably be expected to result in substantial impacts to unique areas, such as historic or cultural resources, park land, prime farmlands, wetlands, wild and scenic rivers, essential fish habitat, or ecologically critical areas?*
Response: No. Surveys take place on public and private lands which are not unique for cultural, historic, agriculture, wetland, essential fish habitat, wild and scenic river, or ecologically critical characteristics. Many of the survey areas are open to public access. The activities proposed under this grant will not substantially impact these areas.

10) *Are the effects on the human environment likely to be highly uncertain or involve unique or unknown risks?*
Response: No. The research techniques and methods are based on documented standards for the sea turtle research community worldwide and are designed to minimize impacts to the environment and increase recovery of the species. Therefore, it is concluded that there are no unknown or unique risks and no anticipated adverse impacts on endangered or threatened species or their habitat.

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

Response: No cumulative impacts on the Hawaii population of Hawksbill turtles are anticipated as the research is conducted on individual animals rather that on an ecosystem level.

12) *Is the proposed action likely to adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural or historical resources?*
Response: The project is not expected to result in significant adverse impacts to sites in or eligible for listing in the National Register of Historic Places. Nesting beach locations involve dynamic beach environments with any physical disturbances associated with the proposed action to that environment involving at the most minor, shallow, or transient effects. In the event special circumstances indicate a specific project has potential for adverse impacts to discovered or revealed historic or cultural resources, the archaeological staff at HAVO will conduct an evaluation of the effects and prepare a project-specific historical and cultural resource assessment to determine the impacts. Depending on the level of impact, HAVO will initiate consultation(s) on a project-level basis with either the State Historic Preservation Officer (SHPO) and/or Tribal Historic Preservation Officer (THPO), as appropriate. Consultations completed with the SHPO or THPO will ensure that the project is implemented in accordance with all applicable cultural and historic resource protection laws and regulations.

13) *Can the proposed action reasonably be expected to result in the introduction or spread of a nonindigenous species?*
Response: No. Implementation of the project should not cause or promote the introduction or spread of nonindigenous species.

14) *Is the proposed action likely to establish a precedent for future actions with significant effects or represent a decision in principle about a future consideration?*
Response: No. Implementation of the project is consistent with similar model projects that have been found to not have significant effects.

15) *Can the proposed action reasonably be expected to threaten a violation of Federal, State of local law or requirements imposed for the protection of the environment?*
Response: No. The project will comply with all Federal, state and local regulatory requirements, laws and will operate with all necessary and required permits. Due to the nature of the research locations, the agency responsible for the proposed sea turtle activities on land is the USFWS. The Hawaii Volcanoes National Park (HAVO) holds the USFWS Threatened and Endangered Species Permit No. TE-739923-4 issued on March 31, 2006 and later revised on August 16, 2007. This permit authorizes the take (capture, handle, mark, attach transmitters, excavate, screen and relocate nests) of Hawksbill sea turtles in conjunction with surveys and research on the island of Hawaii. Although Permit No. TE-739923-4 expired on March 30, 2010. The USFWS received HAVO's permit renewal paperwork and confirmed that Permit No. TE-739923-4 remains current until USFWS is able to process and issue a new permit[1].

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[1] See attached correspondence with Jay Nelson of the USFWS, confirming Permit No. TE-739923-4 remains effective until a new permit is issued.

16) *Can the proposed action reasonable be expected to result in cumulative adverse effects that could have a substantial effect on the target species or non-target species?* Response: No. The proposed action can reasonably be expected to result in cumulative beneficial effects on the Hawksbill turtles. The cumulative effect could have a positive impact on the target species.

DETERMINATION

In view of the information presented in this document and the analysis contained in the supporting Environmental Assessment prepared for the "Programmatic Environmental Assessment of the Marine Turtle Research Program at the Pacific Islands Fisheries Science Center" signed June 30, 2006, it is herby determined that the Hawksbill Turtle Education and Conservation Project at Hawaii Volcanoes National Park will not significantly impact the quality of the human environment as described above and in the supporting Environmental Assessment. 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.

	6/7/10
Michael D. Tosatto	Date
Acting Regional Administrator	