#39

Project Name: Abundance and habitat use of sea turtles nesting on the St. Joseph Peninsula, Florida.

Submitting entity: United States Geological Survey, Southeast Ecological Science Center, 7920 Nw 71st Street, Gainesville, FL 32653

I. Please select one or more eligible activity the project is classified under:

Restoration and protection of natural resources, ecosystems, fisheries, marine and wildlife habitats, beaches, and coastal wetlands of the Gulf Coast region.

Mitigation of damage to fish, wildlife and natural resources

Implementation of a federally approved marine, coastal or comprehensive conservation management plan, including fisheries monitoring

Workforce development and job creation

Improvements to or on state parks located in coastal areas affected by by Deepwater Horizon oil spill

Infrastructure projects benfitting the economy or ecological resources, including port infrastructure

Coastal flood protection and related infrastucture

Planning assistance

Promotion of tourism and seafood in the Gulf Coast region

II. Please provide an executive summary of the project. Describe/quantify the economic (jobs, infrastructure, tourism, etc) and environmental benefits (habitat, quality, knowledge, long-term sustainability, etc).

Loggerheads in the NW Atlantic population have been divided into 10 genetically distinct nesting groups including one group that nests along the beaches of NW FL. Turtles in this region nest primarily from Franklin County, FL to the beaches of Alabama. Recent studies suggest loggerhead nest abundance throughout Florida has declined however these results are even more alarming for this small nesting group in NW FL where declines of more than 50% have been reported since 1994. These declines have been attributed to a variety of threats. Increases in construction and artificial lighting, and installation ofcoastal armoring structures

contribute to changes in beach habitat and have been suggested to affect turtle nesting. However many of these changes are necessary and inevitable due to population growth and the desirability of coastal living therefore understanding the detailed relationship between turtle abundance, nesting patterns, nearshore dynamics and habitat changes is impertive in order to make the best decisions both economically and environmentally.

Analyses of long-term tagging data for this nesting group have shown that the St. Joseph Peninsula in Gulf County, Florida supports a significant proportion of nests deposited by turtles in this subpopulation. Nest counts show these beaches support approximately 30% of all nesting that occurs in NW Florida each year however because loggerheads can lay up to 8 nests in one season nest counts don't necessarily reflect the actual number of individual turtles using a beach. It has been generally believed that loggerheads exhibit fidelity to their nesting beaches. When reproductively active, loggerheads return to nest at the region of their birth. Within each season, loggerheads deposit up to 8 nests that are separated by an inter-nesting period of approximately 14 days each. During this inter-nesting period loggerheads typically re-nest within 5-km of their previous nesting site. However recent studies have shown that loggerheads nesting in NW FL make much larger movements during the inter-nesting period than previously believed. A loggerhead could deposit a nest on the St. Joseph Peninsula, then swim to Alabama and lay a clutch of eggs there. Because of the distance (~250km straight-line) between those two nests it would be assumed that they were laid by two different females which would result in abundance estimates that were too high. These high estimates would not accurately reflect the true risk of further population decline or even extinction for this sub-population.

In addition to knowing how many turtles are using the beaches of the St. Joseph Peninsula, we must understand the threats that turtles using these beaches are facing. As the popularity of the Peninsula increases for both permanent residents and tourists, affects of alterations to the coastal habitat on threatened and endangered species, including sea turtles, must be understood so these species can be protected. Recent studies suggest loggerhead nest distribution is greatly influenced by nearshore dynamics including waves, currents and sand movement. Coastal construction that affects the nearshore environment, particularly armoring structures such as revetments, can change nest distribution however more studies are needed to better understand details of this relationship. Additional data will also provide necessary information on how to best manage these situations so necessary protection of homes, businesses and infrastructure (including roadways) can occur without harming coastal wildlife.

Understanding the true abundance of turtles nesting on the St. Joseph Peninsula will help identify how much money and time are required for proper management and conservation of this species. It has recently been suggested that 19% to 45% of all turtles nesting in the NW FL subpopulation nest on the St. Joseph Peninsula each year however because of the low fidelity expressed by this group these numbers may actually be lower, or higher. Population estimates, such as abundance, require marking individuals to allow for individual identification and proper counts. However, true abundance estimates also require an understanding of movement patterns so parameters such as fidelity can be incorporated into the estimation. The objective of this study is to continue long-term mark-capture studies and to enhance these studies through deployment of satellite tags on loggerheads nesting along the St. Joseph Peninsula. However, because of the large movements we believe these turtles are making during the inter-nesting period, many turtles that are originally marked on the Peninsula must be recaptured at other beaches in NW FL. This will allow for accurate estimates of the number of turtles nesting on the St. Joseph Peninsula.

This project will provide a great deal of support to Gulf County, both economically and environmentally. Gulf County has the opportunity to become the premier Sea Turtle Research Center on the Gulf Coast, bringing additional research scientists and industrial managers for offshore concerns to explore the findings based on work conducted in Gulf County. It will require employing 23 biologists (filling 20 new positions) and supporting the local economy through renting properties for employee housing, using local businesses for vehicle repairs and supply purchases, and contributing to local events such as the Scallop Festival. In addition, by providing data for better management of beaches and the sea turtles that use them, the County can continue to grow as a tourist and coastal resident destination while still protecting the natural resources that draw people to the area. Sea turtles are a high-profile species that attract a great deal of attention and draw tourists to the area. Maintaining healthy habitat and sea turtle nesting on the Peninsula will benefit the tourism economy. Environmentally, this project will provide critically important data on the abundance of turtles nesting in this small sub-population. Recent studies suggest current estimates are too high therefore putting recovery of this nesting group at risk. This project will also help us better understand the relationship between alterations to the coastal environement and sea turtle nest distribution. As more people come to Gulf County beaches, additional houses and business will be constructed, infrastructure will be necessary and roads will need to be built and improved. If these activities are undertaken in balance with the environment, increases in tourism can occur without reducing the natural resources that the tourists are coming to enjoy.

Methods

We propose a three-pronged methodlogy to address two primary objectives:

1. How do alterations to the coastal environment on the St. Joseph Peninsula affect loggerhead nest distribution and
2. What is the true abundance of turtles that nest on the St. Joseph Peninsula and across the Gulf Coast nesting region.

To address these objectives, we propose three primary methods: flipper tagging, satellite tracking, and oceanographic modeling. For objective #1, detailed information on the Peninsula is necessary to better understand the dynamnics of this habitat and its relationship to nest distribution. Tracking turtles and modeling the nearshore oceanographic dynamics immediately offshore of the Peninsula will provide data to help address this objective . For objective #2 since many turtles that nest on the Peninsula exhibit low site fidelity we will also survey turtles on nearby beaches in order to recapture turtles that were originally tagged nesting on the Peninsula so we can calculate a true abundance estimate. For this objective,we propose to also conduct surveys on four additional beaches in NW FL where most of the logistics necessary to conduct nightly surveys are already in place: St. Joseph State Park, St. Vincent Island NWR, Tyndall Air Force Base (AFB) and Eglin AFB-Santa Rosa County. Details for methods are described below.

Tagging surveys on the St. Joseph Peninsula

Nightly surveys for nesting turtles on Cape san Blas began in 1998 and expanded to include the St. Joseph Peninsula in 2008 . Surveys begin on May 15 and continue through August 15 and occur from 9 pm to 6 am every night. One team of two surveyors patrols the beach via ATV from the Stump Hole to the southern boundary of St. Joseph State Park. When a turtle is observed nesting, the surveyors wait until she begins depositing her eggs and then gathers

morphometric data and applies metal Inconel flipper tags to the trailing edge of each front flipper. A Passive Integrated Transponder tag is also applied subcutaneously into her shoulder muscle. When read with a PIT tag scanner, this tag provides a unique identifier similar to the chips used by veterinarians in domestic dogs and cats. Although flipper tags occasionally come loose and fall out, PIT tags have a long-retention time allowing individual identification for decades. The disadvantage of PIT tags however are that they can only be read with a specific device therefore if a turtle marked only with a PIT tag was observed by someone that did not have the PIT tag reader, the turtle would not be identified. Alternatively, flipper tags can be read by anyone. Therefore both methods are commonly used in mark-recapture studies.

In addition to marking turtles with flipper and PIT tags, 5 nesting females will carry a satellite transmitter. Satellite tags permit us to remotely document turtle movements which allows identification of additional nesting locations and estimates of site fidelity to contribute to the abundance estimates.

Tagging surveys throughout NW FL

To recapture turtles that were originally tagged on the St. Joseph Peninsula, nightly surveys will be conducted for one-month during peak nesting in St. Joseph State Park (SJSP), St. Vincent Island NWR, Tyndall AFB and Eglin AFB. Methodologies similar to those used on the St. Joseph Peninsula will occur at these locations except for timing of surveys which will take place from June 15 to July 15 each year. In addition to flipper and PIT tagging each turtle that is encountered on these beaches, 5 turtles nesting at each location (15 turtles total) will receive satellite transmitters. This tracking will allow us to document turtle movements back to the St. Joseph Peninsula and will support the flipper and PIT tag mark-recapture methods.

All tag numbers are submitted to the Archie Carr Center for Sea Turtle Research (ACCSTR) at the University of Florida where an international database of tag numbers is kept. Whenever a tagged turtle is observed, the information is sent to the ACCSTR and the re-capture information is sent to the group that tagged the turtle. Therefore, if one of our tagged turtles is located somewhere else, we will have access to that information through the ACCSTR.

Oceanographic modeling

To document the relationship between nearshore dynamics (i.e. waves, currents, and sand movement) and turtle nest distribution, we will use four primary techniques which include a commercially available model MIKE21, Knox Index, Quadrat Analysis, and piece-wise linear regression with break-point.

Economic and Environmental Benefits

Economic

This project will require employing 20 biologists for 5 years.

These personnel will require housing which means at least two local residences will be rented for the five-year duration of the project.

This project will make use of vehicles and ATVs that require frequent maintenance and purchase of supplies such as gasoline, air filiters, tire tubes, WD40, etc.. We currently use local, Port St. Joe businesses for this work and would continue to use these businesses for this project.

The objectives of this project aim to allow for continued improvement of construction and installation of necessary infrastructure along the Peninsula without harming coastal wildlife. Many tourists visting the Peninsula do so to observe the abundant natural resources that inhabit

Gulf County, particularly coastal wildlife such as sea turtles. Being able to support a growing tourism economy without damaging the coastal wildilfe these tourists are coming to see would be a great benefit to Gulf County.

Environmental

This project would address serious gaps in our understanding of sea turtle ecology and the habitat that they rely on for survival. Currently, the total number of turtles that nest along the beaches of NW Florida is unknown which makes managing this nesting group extremely difficult. It is impossible to determine whether a population is declining or growing without having a baseline abundance. It is also difficult to manage and conserve a species when we do not know locations of important habitats such as foraging and inter-nesting habitat. Understanding movement patterns is critical to protecting these areas. Finally, we must understand the impacts our actions are having on marine turtles in order to limit these affects. By understanding how turtles respond to installation of erosion control devices such as seawalls and revetments, we can provide necessary protection to homes, businesses and roadways while minimizing harm to marine turtles.

In addition, this project would provide support for a long-term mark-recapture project that began on the St. Joseph Peninsula in 1998. This ongoing project provides the only data on this genetically distinct nesting group and is therefore critical to the conservation and management of marine turtles. The USGS is committed to this long-term and will provide the logisitic support necessary to ensure is continued success.

III. Please provide a cost summary/budget. Detail and matching/cooperative funds available for use, and any cooperative support from governmental or other agencies.

We are requesting $1,800,000 for this 5 year project. This includes:

Salary = $715,000 for a Principal Biologist, 3 assistant biologists (2 tagging, 1 modeling), 5 lead technicians, and 10 interns
Housing = $120,000 for two residences for all technicians and interns (16 people)
Equipment = $172,000 for ATVs, satellite tags, and a computer
Supplies = $150,000 for various field and office supplies including tracking fees, fuel, flipper and PIT tags, etc.
Travel = $50,000 for travel among sites and between Gainesville and Port St. Joe.
Overhead = 50% to USGS = $600,000

We have matching funds for parts of this project from the Department of Defense ($65,000), Florida Department of Transportation ($90,000), NRDA ($900,000)

We have requested funds from NRDA ($150,000), DEP Restore Act ($800,000), USGS ($50,000)

We have in-kind support from the USGS, St. Joseph State Park, University of Florida and Department of Defense in the form of personnel support, administrative support, equipment and supplies.

IV. Please provide a timeline for project completion. Explain the technical and environmental feasibility (including any permitting considerations) of the project.

Project duration: 5 years starting May 1 after release of funds (beginning of the nesting season).
Data gathering: years 1-4
Data analysis: year 5

Our research with marine turtles is permitted through the State of Florida Marine Turtle Permit #094 and the National Marine Fisheries Service #10022.

V. Please provide the qualifications of the submitting entity, the financial feasibilty/sustainability, and the economic feasibility and sustainability of the project (probability of success, etc).

This project would be overseen by Dr. Margaret Lamont at the USGS Southeast Ecological Science Center (SESC). Dr. Lamont has been conducting research and monitoring on marine turtles on the St. Joseph Peninsula since 1995. At the USGS-SESC she has the support of a full administrative team, a Center Director and Supervisory Biologist. The USGS-SESC can provide additional vehicles, personnel and financial support if necessary to fill in any gaps that may arise during the conduct of the project. Dr, Lamont currently oversees a team of 7 technicians and interns that conducts flipper tagging on the St. Joseph Peninsula each summer and she has deployed satellite tags on more than 30 nesting females throughout the northern Gulf of Mexico, so she is fully aware of the logistics necessary to undertake this proposed project.

The long-term research (18 years) she has conducted in this area demonstrates the feasibility and sustainability of this project. She has published multiple peer-reviewed journal articles summarizing the data she has collected and because her project on the St. Joseph Peninsula represents the only long-term dataset on nesting marine turtles in the northern Gulf, her data has provided all of the exisiting information regarding this nesting

group. This proposed project will provide valuable support to this already ongoing, long-term research that will continue once this proposed research is completed.

VI. Please provide the anticipated results of the project, and whether it is included in the City of Port St. Joe, City of Wewahitchka, or Gulf County Comprehensive and Mitigation Plan.

This project directly addresses goals and objectives defined in Chapters 5 and 6 of the Gulf County Comprehensive Plan.

Chapter 5:

Goal 1: To guide development in such a manner that coastal resources will not be damaged or destroyed.

a. Objective 1.1: To allow low density or limited development while promoting the protection of the coastal resources of Gulf County, including wetlands, living marine resources, coastal barriers, and wildlife habitats, shall be managed through the implementation of land development regulations, and by implementing Policies 1.1.1 through 1.1.10.
b. Objective 1.4: Gulf County shall protect beach and dune systems by enforcing construction standards which minimize the impacts of development on these systems and promotes shoreline restoration
c. Objective 1.9: The following policies will only apply to critical erosion area from all of the Eglin AFB property to the end of the developed portion of T.S. Stone State Park.

Chapter 6

Goal 1: Protect, manage, and promote energy efficiency, greenhouse gas reduction and conserve the natural resources of Gulf County to ensure their continued best use for the current and future citizens of the County.

a. Objective 1.4: Gulf County will conserve, appropriately use, and protect it's natural resources, including fisheries, wildlife, wildlife habitat, marine habitat, minerals, soils, and native vegetative communities by implementing Policies 1.4.1 through 1.4.11.
b. Gulf County will seek to protect natural resources from the effects of hazardous waste by implementing Policies 1.5.1 through 1.5.5.

This project also supports the goals and objectives of Chapter 7 and Chapter 11 of the Comprehensive Plan by ensuring continued public use of coastal habitats and by creating multiple jobs and supporting local businesses.

Submitted by: Margaret Lamont

Signature  Date: 2/18/13

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BOARD OF COUNTY COMMISSIONERS
GULF COUNTY, FLORIDA
RESTORE ACT COMMITTEE (R.A.C.)
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PUBLIC RECORDS POLICY AND PUBLIC ACCESS ACKNOWLEDGMENT FOR GULF COUNTY RESTORE ACT APPLICANTS

I,____Margaret Lamont_____ the undersigned authority and/or representative of the entity ___USGS SE Ecological Science Center_ and or the individual who has submitted the Gulf County RESTORE Act Proposal/Pre-Proposal titled _ Abundance and habitat use of sea turtles nesting on the St. Joseph Peninsula, Florida. __hereby acknowledge, consent and accept the following representations that coincide with my/our submission for consideration, evaluation and possible recommendation and approval by the Gulf County Board of County Commissioners for funding from the RESTORE Act distribution that strictly complies with the guidelines and regulations set forth under the Restoration and Ecosystems Sustainability, Tourist Opportunities and Revived Economies of the Gulf Coast States Act of 2012:

1. I/We am the authorized representative of the application/pre-proposal referenced above.
2. I/We have thoroughly reviewed and familiarized myself and/or my entity on which I have submitted the application/pre-proposal on behalf of with the entirety of the Gulf County Public Records policy.
3. I/We have thoroughly reviewed and familiarized myself and/or my entity on which I have submitted the application/pre-proposal on behalf of with the entirety of the Florida Statute Chapter 119 which controls and permits public access to information.
4. I/We hereby acknowledge, consent and agree to the controlling policies and statutes above as well as the free and open exchange of any and all submissions provided hereunder this application/pre-proposal and all information exchanged hereafter including but not limited to further amendments to these proposals as well as surveys, studies, research, data production, books, drawings, property records, work papers, county owner lists, files, forms, reports, accounts, documents, manuals, handbooks, instructions, printouts relating in any manner for the production of the application. In addition, all papers, notes, data, reference material, documentation, programs, printouts, and all other media and forms of expression that in any way include, incorporate or reflect any confidential information of what ultimately shall become the Gulf County plans for use and application of the RESTORE Act funding.
5. I/We acknowledge, agree and fully consent to cooperate with the appointed Gulf County RESTORE ACT committee, county officials and staff as a continuing obligation and condition of final review for this RESTORE Act application/pre-proposal.
6. I/We have submitted this acknowledgment to Gulf County RESTORE Act Committee and the Gulf County Board of County Commissioners for the purpose and intent of receiving an evaluation, review and possible recommendations for anticipated funding from the Restoration and Ecosystems Sustainability, Tourist Opportunities and Revived Economies of the Gulf Coast States Act of 2012.

Signature of RESTORE Act Applicant Date: 2/27/13

Margaret Lamont
Printed Name