

FLORIDA GULF OF MEXICO RESTORATION PROJECT SUBMITTAL



CLEARWATER MARINE
AQUARIUM™

1.0 Project Name

Monitoring Rehabilitated Sea Turtles Post Release via Satellite Tracking

2.0 Contact Information

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3.0 Project Location

Clearwater Marine Aquarium (CMA) responds to cetacean (i.e. dolphin and whale) and sea turtle stranding events in the Gulf of Mexico and greater Florida region. CMA's designated response areas include Pinellas, Hillsborough, Pasco, Hernando, Citrus, and Levy County. Thus, CMA's response area ranges from approximately 27.57737 N, 82.700615 W to 29.29192 N, 83.16295 W (Figure 1). The aquarium is located in Clearwater, Florida in Pinellas County.

4.0 Project Description

4.1 Summary

Apart from the rescue and rehabilitation of sea turtles, CMA is also committed to conducting sea turtle research while promoting public awareness necessary for successful conservation. The satellite tracking of rehabilitated sea turtles will significantly contribute to our current conservation efforts. Moreover, strategies will be focused on working as a collaborative effort with current Gulf restoration research being conducted by the University of South Florida, College of Marine Science and Dr. Steven Murawski.

Since 1979, a total of 251 sea turtles were rehabilitated and released by CMA after receiving state-of-the-art critical and chronic care (Figure 2). Sea turtles around the world are listed as endangered and Florida is home to five species of sea turtles (i.e. loggerhead, green, Kemps Ridley, leatherback, and hawksbill). CMA's mission is to preserve marine life and environment while inspiring the human spirit through leadership in education, research, rescue, rehabilitation, and release of marine life. CMA seeks to expand on the knowledge of care and treatment of these species and to better understand the threats and illnesses they face in the wild. The proposed project will assist with data collection concerning their spatial ranges and if they show high fidelity to local feeding grounds along the coast. Furthermore, it will aid in evaluating the success of the release and thus rehabilitation efforts, as well as enhance our understanding on vital migratory routes, feeding, and winter congregation sites.

4.2 Background

CMA is a working marine hospital dedicated to the preservation and protection of the marine environment and the rescue, rehabilitation, and release of marine organisms. CMA is one of the largest wildlife rehabilitation hospitals in Florida, and also one of only four marine hospitals in Florida which cares for sea turtles inflicted with the fibropapilloma virus (Figure 3). Fibropapillomatosis is the disease marked by the proliferation of debilitating tumors which occur internally, as well as externally, on these animals. Research has shown that some turtles can recuperate from this disease, with recovery chances increasing with age and size.

Our project will outfit five rehabilitated sea turtles with satellite transmitters each year, over a period of five years, to allow us to follow their movements remotely. The satellite transmitter attached to each sea turtle functions by transmitting signals to orbiting satellites each time the animal surfaces to breathe. Data acquired via these transmitters can then be inputted to an online software program, to display a map of the animal's movement. Ultimately, this kind of

tracking will provide critical information about the migratory behavior, foraging grounds, and data necessary to assess the success of rehabilitated turtles once released.

4.3 Objectives

The following are the objectives of this project:

- Establish a satellite tracking program for sea turtles rehabilitated and released by CMA.
- Collect data pertaining to the satellite tagged sea turtles to determine life history after being released.
- Collect data pertaining to the satellite tagged sea turtles to determine life history of those turtles inflicted with Fibropapillomatosis and determine if data supports current hypotheses concerning this disease.
- Assess the life history patterns of the tagged sea turtles over a five year period.
- Provide an outlet to educate the general public about sea turtles and Gulf restoration initiatives.
- Publish data to be shared with the scientific community to contribute to Gulf restoration and identify additional areas of protection and restoration activities.

4.4 Methodology

This project will use the ARGOS tracking system (Figure 3). Argos tracks any moving station fitted with an Argos transmitter. Several positions collected over a fixed period of time can be used to monitor the route of sea turtles using the long life KiwiSat K2G models of the ARGOS transmitters. Trajectories are made available via a specially designed online software program, where tracking data is displayed on maps, tables, or charts.

Once a rehabilitated sea turtle has been deemed ready for release he/she will be fitted with the satellite tracking system. In this application, CMA is proposing attaching the satellite with glue (Figure 4). This is usually done by two-part epoxy, fiberglass resin, or a combination of the two. The carapace of the turtle will be cleaned and dried in advance of attachment, with any barnacles or other epibionts being removed with a scraper or pliers. Finally, the entire carapace will be cleaned with a soapy solution and lightly sanded with medium grade sandpaper before attaching the transmitter.

4.5 Dissemination

Data obtained via this project will be disseminated to fellow researchers and organizations through publications, as well as through CMA's collaboration with University of South Florida (i.e. Dr. Steven Murawski). This data will also be made readily available to the public through the online software tracking program. By sharing this data with the general public, CMA will be able to further promote conservation awareness of sea turtles locally and worldwide.

5.0 Estimated Project Costs

The 5-year budget for this project is \$484,752.00 (review attached budgets). In the first year, CMA will acquire the necessary personnel, satellite transmitters, software, and training. These activities will be completed by the end of the calendar year. This project will continue from 2013-2018, monitoring five rehabilitated and released sea turtles each year, during this five year period, for a total of seventeen sea turtles which will be tracked. The largest portion of this funding is allocated towards the satellite tracking devices and software, while the remainder is allocated to personnel, supplies, and the usual overhead to the aquarium to support this project.

6.0 Other Funding

This project currently does not have other funding.

7.0 Technical Feasibility

The technologies used for this project are standard practice for sea turtle tracking and monitoring around the globe. Satellite transmitters yield data that could not otherwise be obtained, nevertheless there are some disadvantages associated with them. Satellite tags might increase hydrodynamic drag of the sea turtle, which could affect its migration speed and route. CMA intends to use satellite tags on those sea turtles that are larger so the satellite tags are <1% of the bodyweight, to reduce the hydrodynamic impact.

8.0 Environmental Benefits

The data produced by this project will be used to fill in the gap in the literature regarding sea turtle life history and more importantly, the success of rehabilitated sea turtles once released from managed care. The data collected provides vital information on how endangered sea turtles have been impacted by the Deep Water Horizon oil spill and what additional restoration efforts need to be initiated. Further areas impacted by this study include:

- How areas of oil and gas exploration, transportation, and processing often overlap with important sea turtle habitats.
- Vulnerability of sea turtles to the effects of oil.
- Several behavioral patterns place sea turtles at particular risk, including a lack of avoidance behavior, indiscriminate feeding in convergence zones, and large, pre-dive inhalations.

9.0 Economic and Social Benefits

Florida's tourism industry is frequently thought of in terms of amusement parks and beaches, but increasingly, the state has seen a growth in ecotourism. The importance and value of sea turtles as tourist attractions and as a component of the tourism product is increased, as the industry seeks to enrich the traditional "sun, sea, and sand" experience.

The diversity of the State's wildlife attracts tourists and creates jobs. They attracted 9.2 million visitors in 2010 and produced a \$552.8 million economic benefit in 2009. (*Working with Florida*", National Park Service, National Park Service - Florida, No Date). In addition, the total spent on wildlife viewing in Florida in 2006 was \$1.23 billion, with a total economic effect of \$5.2 billion. Also, wildlife viewing creates over 51,000 jobs, almost as many as Walt Disney World. "*The 2006 Economic Benefits of Wildlife-Viewing Recreation in Florida*", Florida Fish and Wildlife Conservation Commission, February 27, 2008.

10.0 Community Resilience

Sea turtles are a federally protected species. The detailed information that can be gathered concerning their life history and habitat is of great importance for their protection. Data from this project can be used by all levels (i.e. city, county, state, and federal) for planning and conservation initiatives.

11.0 Conflicts or Complements to Existing Efforts

CMA is not aware of any conflicts between the proposed project and any other activities in the area. Although sea turtles are tagged in other areas, we do not anticipate any impact on those studies with this proposed project.

12.0 Complies with Federal, State, Local, and Tribal Laws/Regulations

CMA does not identify any concerns or potential conflicts with Federal, State, Local, or Tribal Laws/Regulations.

13.0 Readiness for Implementation

CMA is currently permitted to tag sea turtles using traditional methods. Upon approval for funding for this project, CMA will submit a request to Florida Fish and Wildlife Conservation Commission to include research to the current permit.

14.0 Public Acceptance

Sea turtles are charismatic animals that promote interest amongst the general public. It is for this reason, that many individuals support Clearwater Marine Aquarium's mission to rescue, rehabilitate, and release marine life in distress. In 29 years of responding to strandings and promoting education, CMA has been able to develop a strong relationship with the Gulf of Mexico community. Moreover, through the blockbuster film "Dolphin Tale", CMA has been able to raise public acceptance worldwide. This project aims to expand upon CMA's current sea turtle stranding capacities and therefore, it is likely that the public's acceptance of our mission will persist, if not increase. Fisheries and tourist stake holders may also support this project, as it will contribute to the conservation of animals (i.e. key stone species) that are critical for maintaining the health of the very ecosystem these industries rely on. Furthermore, the public

will have the opportunity to be involved in this project by having the ability to track sea turtles via the online program.

15.0 Appendices

Please review attached appendices