

CAPTIVA EROSION PREVENTION DISTRICT

RESOLUTION 2021-03

GRANT FOR TURTLE RESEARCH

A RESOLUTION OF THE CAPTIVA EROSION PREVENTION DISTRICT APPROVING GRANT FOR TURTLE RESEARCH AND PROVIDING AN EFFECTIVE DATE.

WHEREAS, the CEPD Board has published on a duly noticed agenda, reviewed, discussed and taken public comment on the attached Grant For Turtle Research;

WHEREAS, the CEPD Board desires to approve or approve with conditions the following attachments and course of action

NOW THEREFORE, BE IT RESOLVED by the CAPTIVA EROSION PREVENTION DISTRICT:

Section 1. The CEPD Board resolves and approves the following Grant for Turtle Research (Not to exceed \$45,000) as proposed and set forth in the documents attached to this Resolution, Exhibit A.

Section 2. This Resolution shall take effect immediately upon adoption.

DULY INTRODUCED, PASSED AND ENACTED by the CEPD Board of Commissioners of the CAPTIVA EROSION PREVENTION DISTRICT, on Captiva Island, in Lee County, Florida on February 19th, 2021.

DocuSigned by:
Rene Miville
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CEPD Chair Rene Miville

ATTEST: DocuSigned by:
Jennifer Nelson
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CEPD Administrator Jennifer Nelson

Approved as to legal sufficiency:

Ralf G. Brookes
CEPD Attorney, Ralf Brookes Attorney



Proposed Sea Turtle Research during CEPD Beach Nourishment Project 2021

While the addition of sand to an erosional beach can benefit sea turtles by creating nesting habitat, questions have been raised concerning the direct and indirect effects of beach renourishment on nesting turtles. Changes in the physical properties of non-native sand may alter critical characteristics of the nest microclimate, such as sand temperature, moisture, gas exchange, and porosity. These shifts in incubation environments raise real concerns about incubation time, clutch viability, hatchling fitness, and hatchling sex ratios.

The hatch success documented on Captiva has averaged 53% (range 40.2% – 73.5%) over the last ten years (when nests subjected to predation and other losses are removed). Nests laid on non-nourished stretches of Sanibel had an average hatch success of 69% using the same criteria, suggesting Captiva provides less suitable nesting habitat.

We are proposing a project to characterize the changes and effects of sand type resulting from beach renourishment on the incubation environment of sea turtle nests.

The four specific objectives are:

- 1) Characterize the physical properties of sand (color, size, bulk density, and compaction) on renourished and natural stretches of beach on Sanibel and Captiva
- 2) Evaluate how these variables influence groundwater flow, temperature, and moisture inside the nest cavity.
- 3) Characterize the effects of elevation, beach slope, and width on nesting success on Sanibel and Captiva Islands
- 4) Evaluate how these covariates impact embryonic development, nest fate, and hatching/emergence success.

A fine-scale characterization of the biotic and abiotic factors that are affecting reproductive success will enable us to enhance beach quality for nesting sea turtles and increase hatchling output. The applicability of the results is high, particularly in a state that is often referenced as ground zero for sea level rise. Sand placement projects will undoubtedly continue, and having a full understanding of the environmental influences that result will be critical in maintaining a resilient sea turtle population.

The Recovery Plan for the Northwest Atlantic Population of the Loggerhead Sea Turtle (*Caretta caretta*) lays out a detailed outline with objectives and strategies. Actions necessary to achieve recovery goals are included in the following objectives:

- (2.21) *Ensure beach sand placement projects are conducted in a manner that accommodates loggerhead needs and does not degrade or eliminate nesting habitat.*
- (2.215) *Ensure sediment grain size, composition, sorting, and color are compatible with native beaches.*

Renourishment projects will persist in Florida and the information generated by this research will directly fill the data gap outlined in these Recovery Objectives. Understanding how these threats could be affecting an already stressed population is essential in evaluating population recovery and informing decisions concerning beach projects. All results will be published in peer-reviewed sources and made public. CEPD will receive acknowledgment for its efforts and funding in all public use of this data or results.

Equipment and laboratory analysis services will amount to a cost of about \$65,000 for an 18-week renourishment project. SCCF is requesting \$45,000 from CEPD with a cost share of \$20,000 from SCCF in both in-kind and material costs.