



HOW THE POST-CONSTRUCTION SHAPE OF NOURISHED BEACHES IN SOUTHEAST FLORIDA AFFECTS SEA TURTLE NESTING BEHAVIOR:

RECOMMENDATIONS FOR FUTURE CONSTRUCTION TEMPLATES

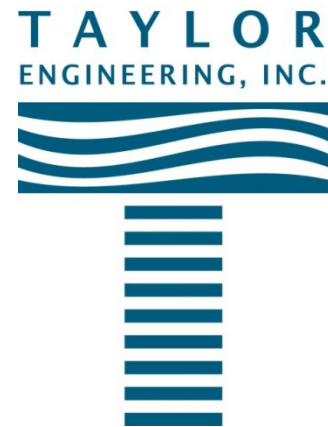
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PARTNERS



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of Engineers** ®
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ATKINS

OUTLINE

1. How nourishment impacts sea turtles
2. The Martin County Study
3. Results
4. Recommendations



1. HOW NOURISHMENT AFFECTS SEA TURTLES

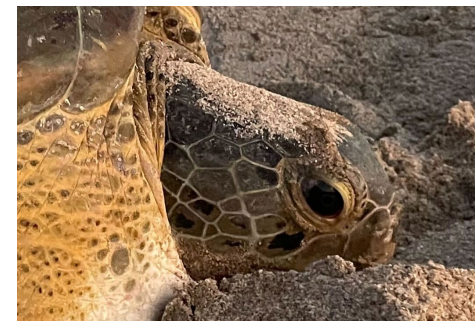
- Three species of sea turtles commonly use Florida beaches as nesting habitat
- Sea turtles are protected under the U.S. Endangered Species Act and the Marine Turtle Protection Act (FL)
- Many Florida beaches are designated or proposed as critical habitat for the NW Atlantic population of loggerheads and the Atlantic green turtle



Loggerhead
Caretta caretta



Leatherback
Dermochelys coriacea



Green Turtle
Chelonia mydas

1. HOW NOURISHMENT AFFECTS SEA TURTLES

- Beach nourishment is an effective means of mitigating shoreline erosion
- Impacts to sea turtles have been documented
 - Reduced nesting success
 - Increased nest wash outs



2. THE MARTIN CO. STUDY

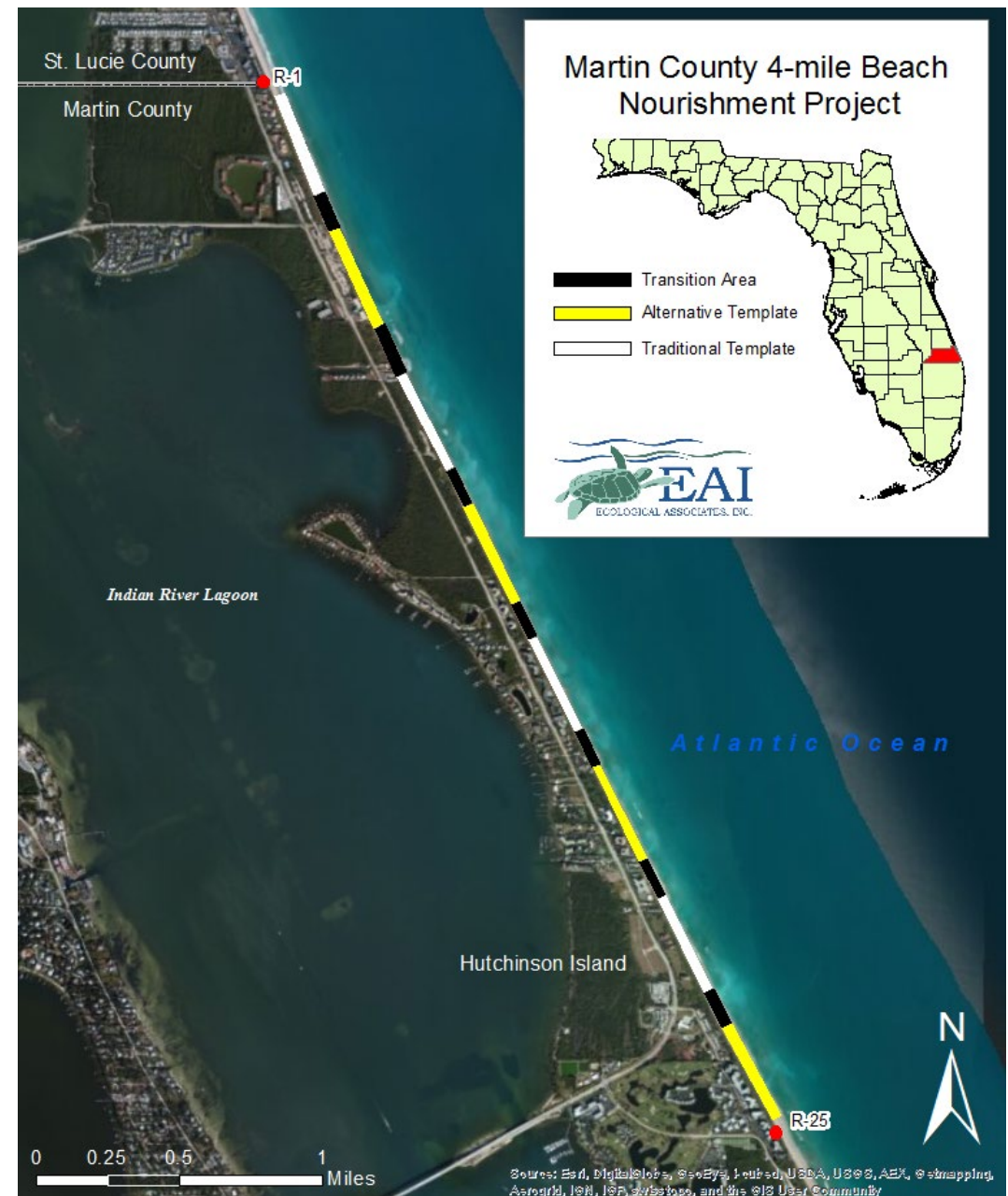
Objective:

To identify how beach profile impacts the placement of loggerhead nests on a nourished beach compared to a non-nourished beach

Methods:

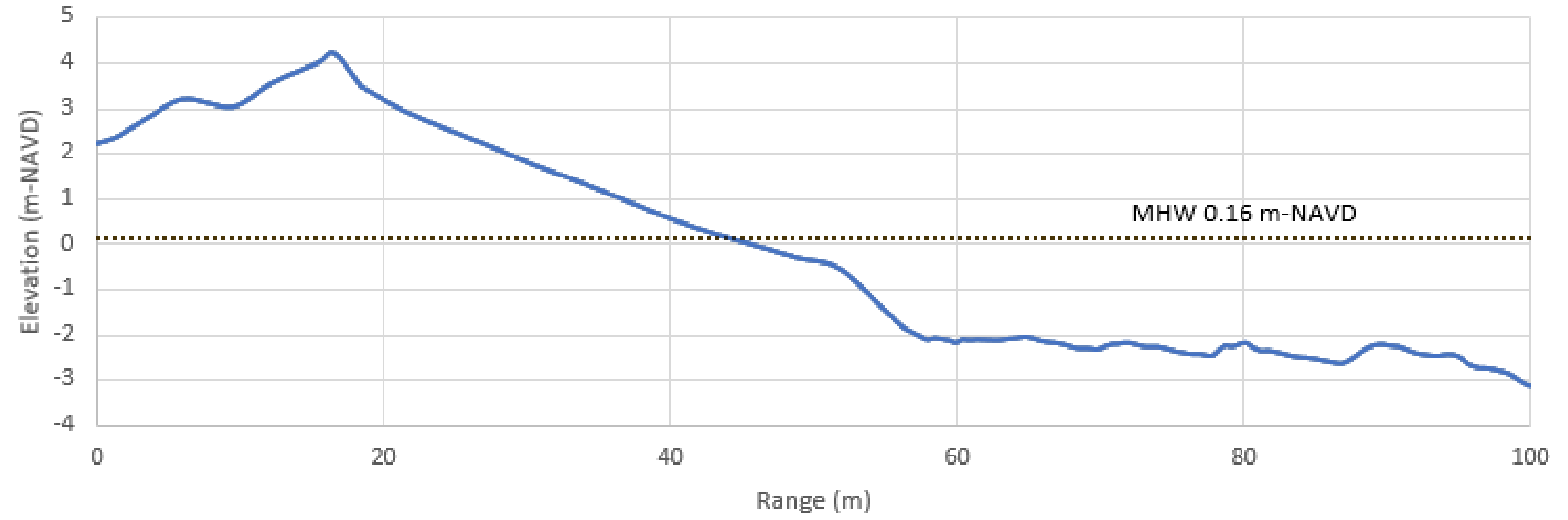
RTK GPS

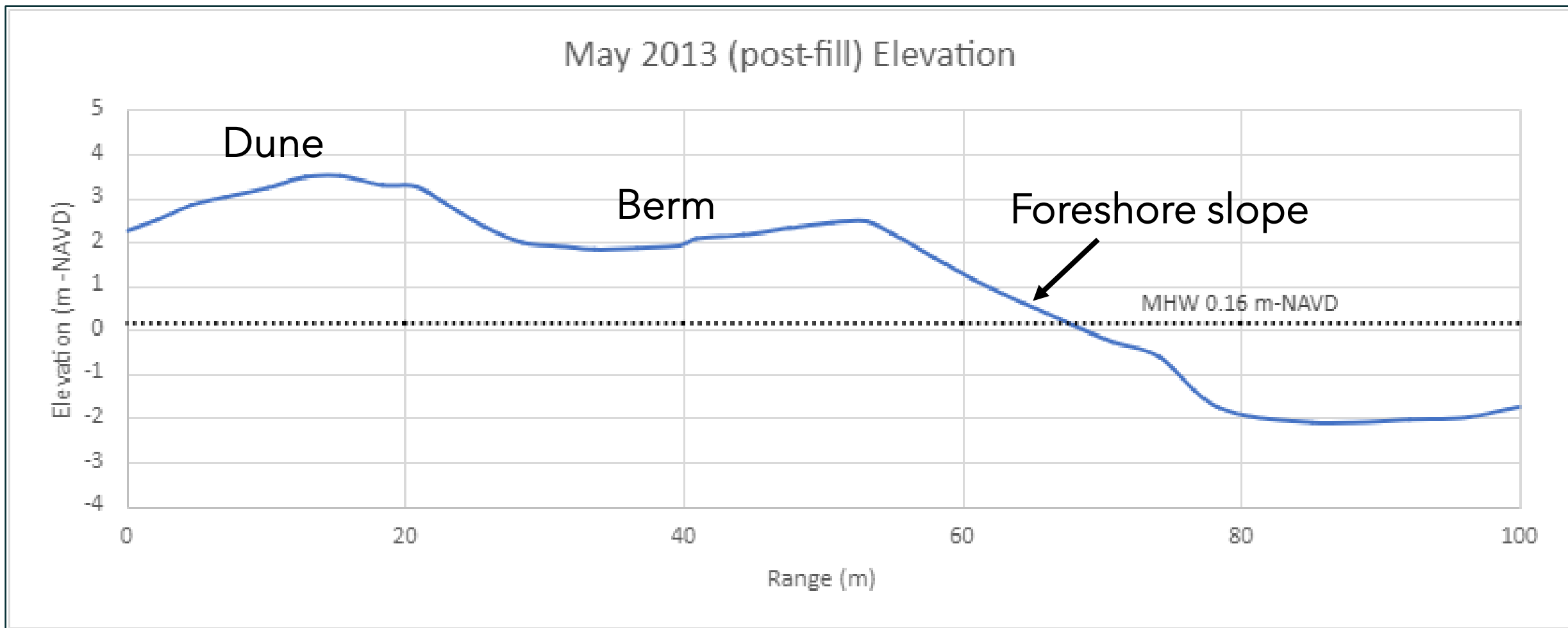
Binned logistic regression

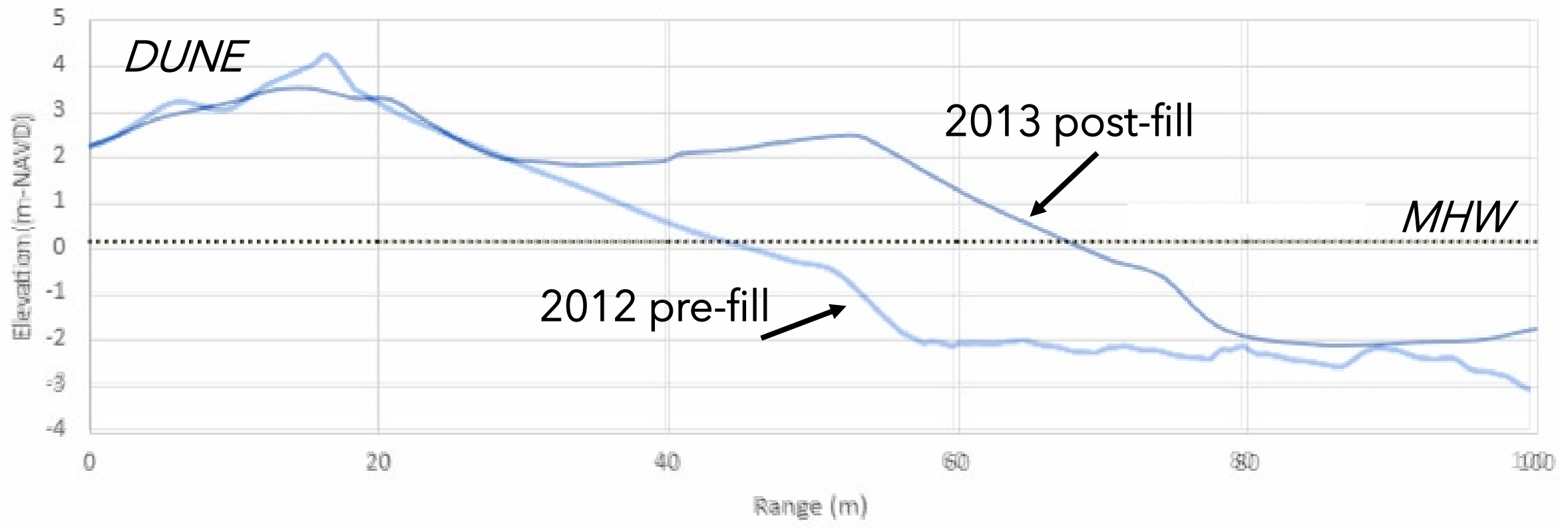




November 2012 (pre-fill) Elevation







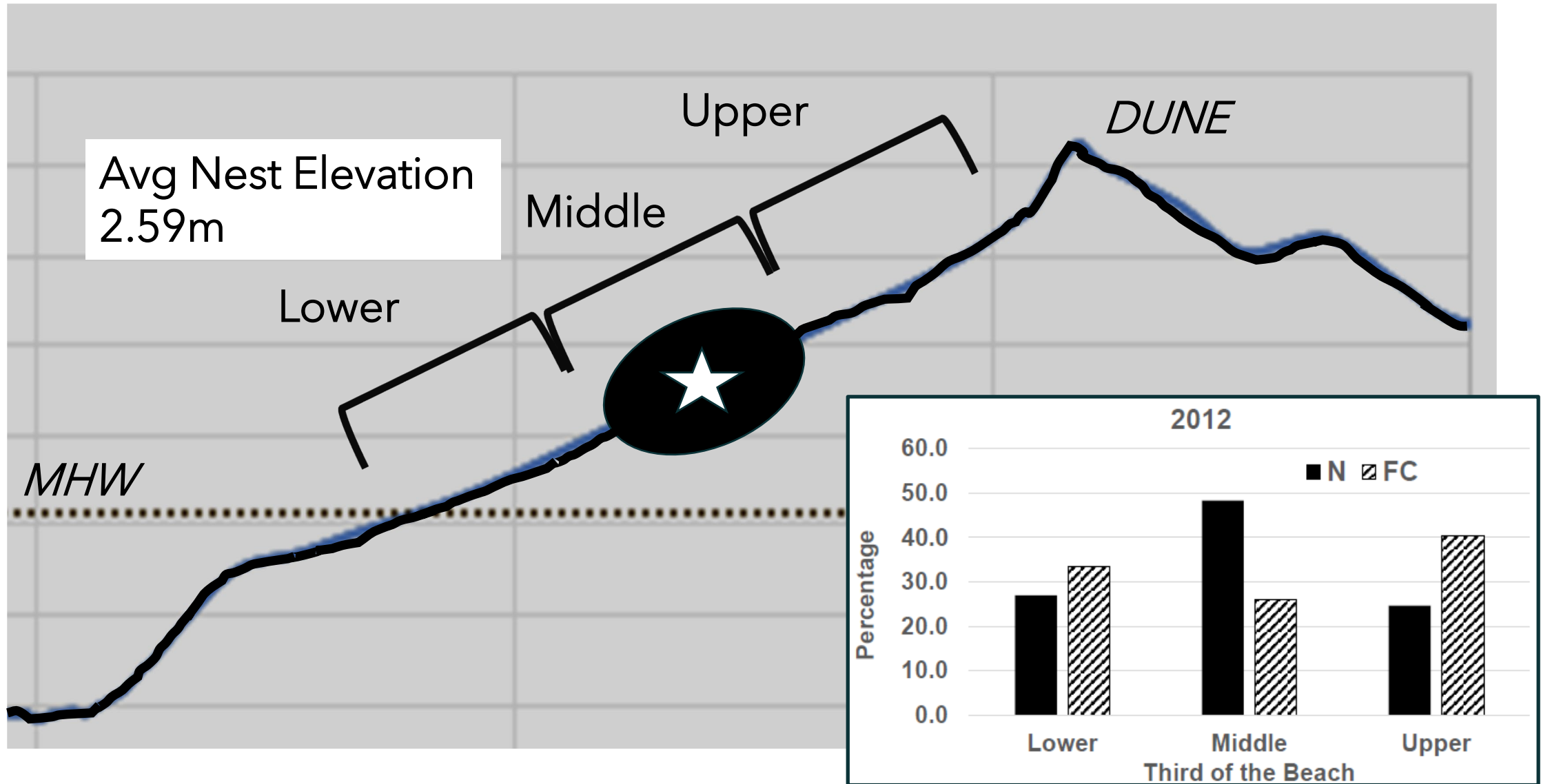


3. RESULTS

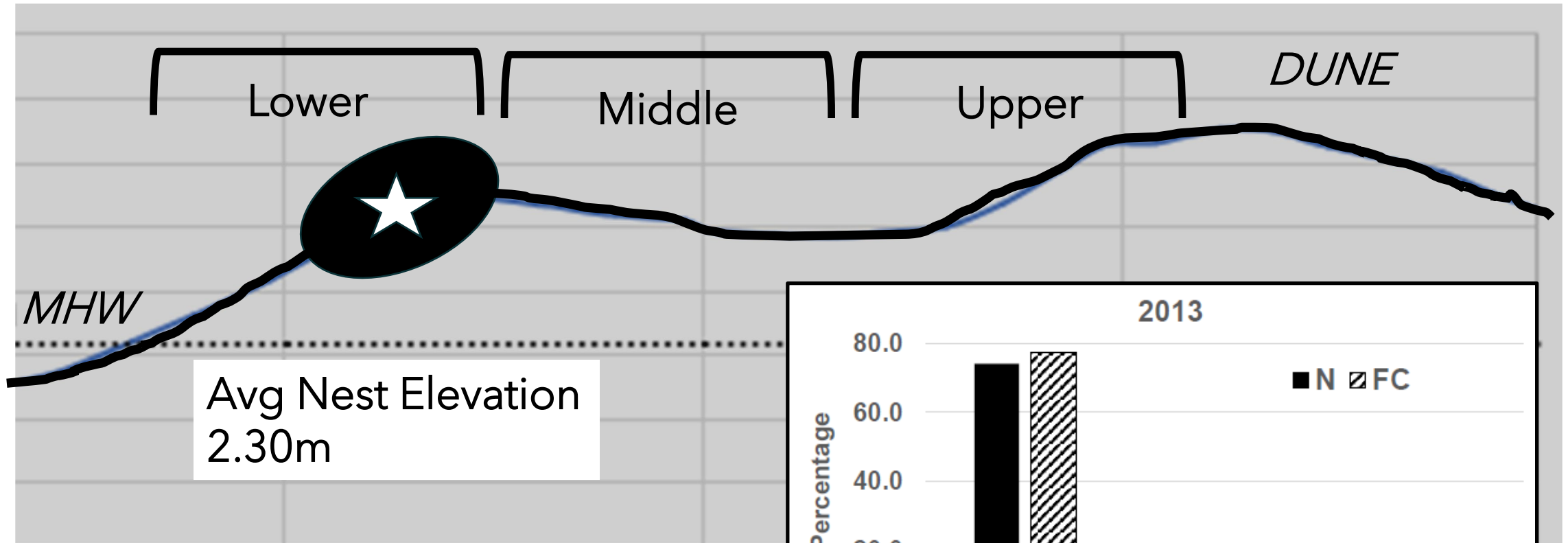
- The total number of crawls was similar between years, but nesting success decreased in 2013 (# of nests decreased and # of FC increased)
- 2013 post-construction beach was 85% wider but turtles did not use all the habitat available to them and nested primarily in the seaward third of the beach



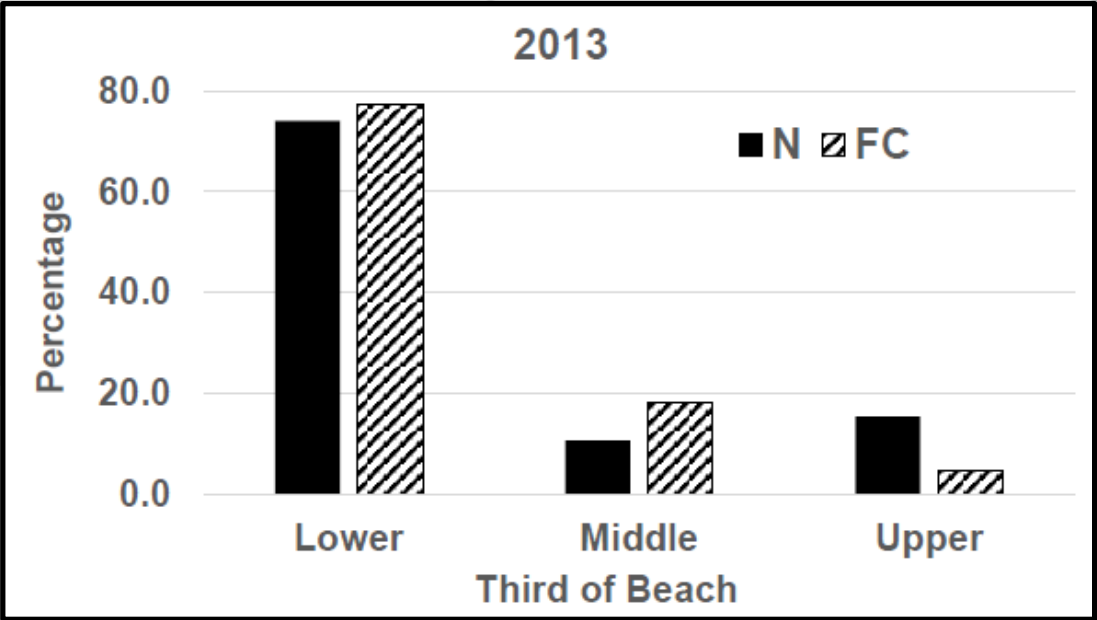
November 2012 (pre-fill) Elevation



May 2013 (post-fill) Elevation



Avg Nest Elevation
2.30m



3. RESULTS

- 9.8% of nests washed out in 2013 (compared to only 2.8% in 2012)
- Loggerheads were 4-5x more likely to nest in areas where the slope was between 2.4 and 14.3° (both before and after nourishment)
- Negative slopes (-0.6°) or very steep slopes (>20.2 °) were not associated with nesting



4. RECOMMENDATIONS



Include slope 6-9° (~1:8) as much as possible



Avoid wide flat berm and negative slopes/troughs



Additional research on other FL beaches using RTK GPS



DUNE TO LAGOON



5K

Earth Day Evening Race
Saturday, April 20, 2024 at 5:30PM



Sign up today!

Proceeds from the event will be donated to the Environmental Studies Center to be used as scholarships for summer camp!

THANK YOU!

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