

Regional Management of Nesting Sea Turtles in the Palm Beach County BMA Area Year 3



Don Hughes, 2012



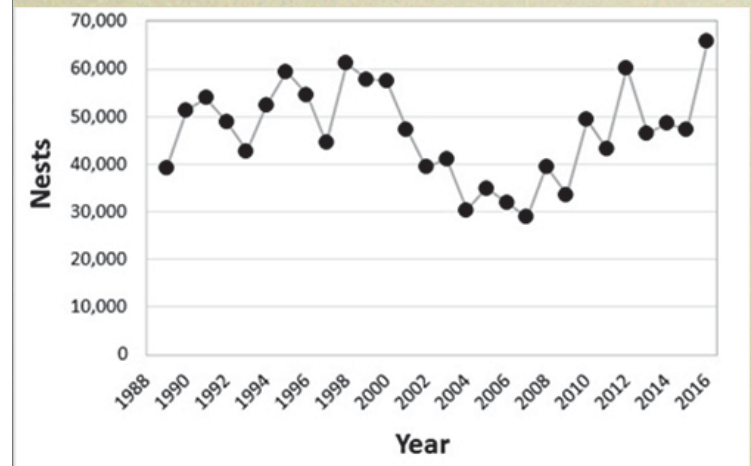
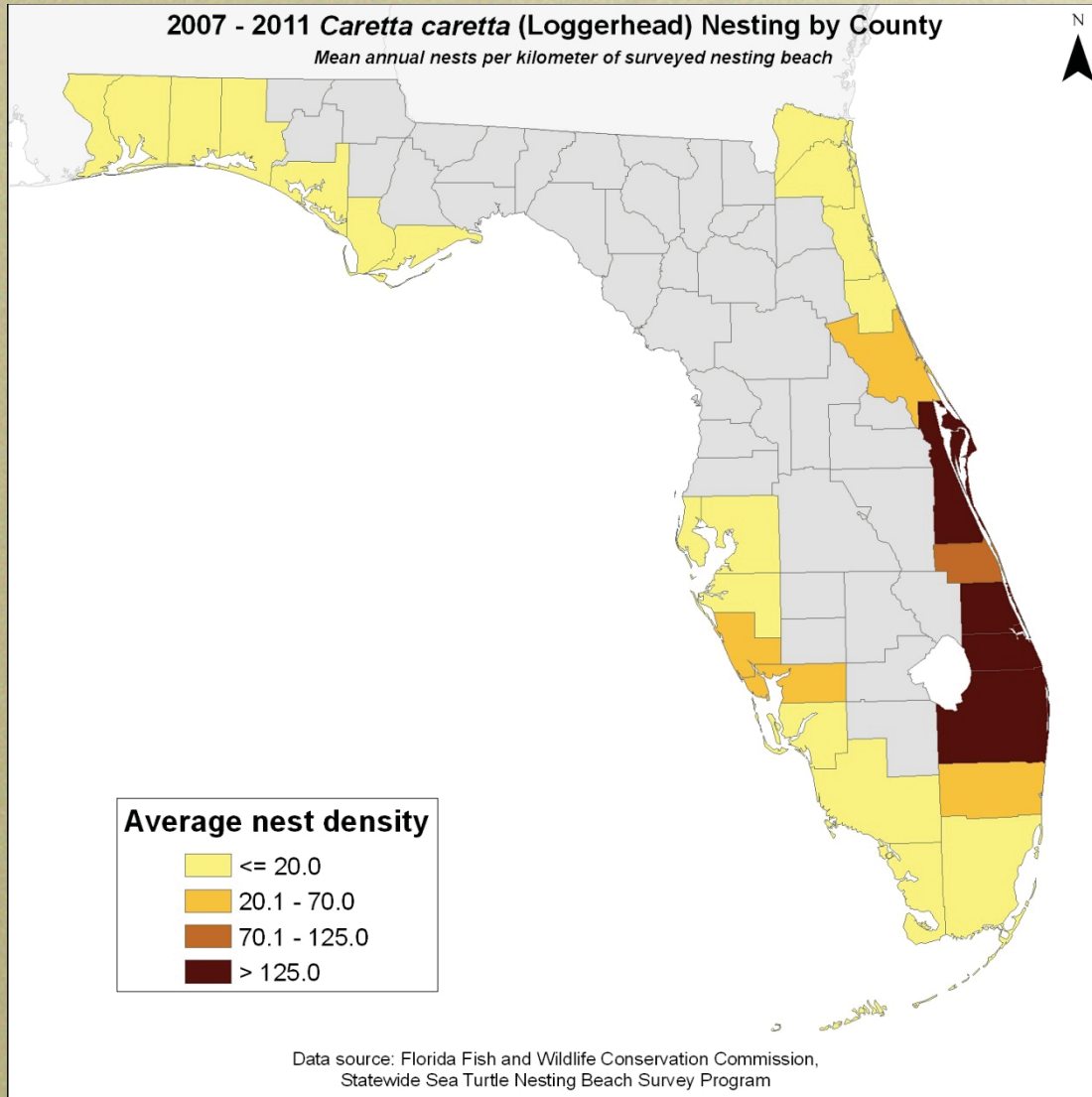
Robbin N. Trindell and Erin Leone
Florida Fish and Wildlife Conservation Commission

Outline

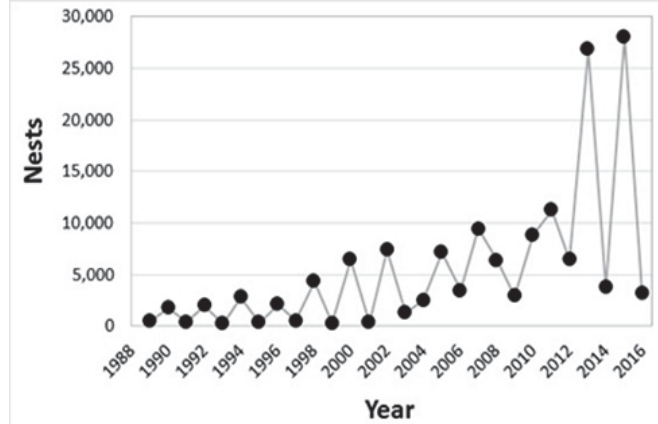
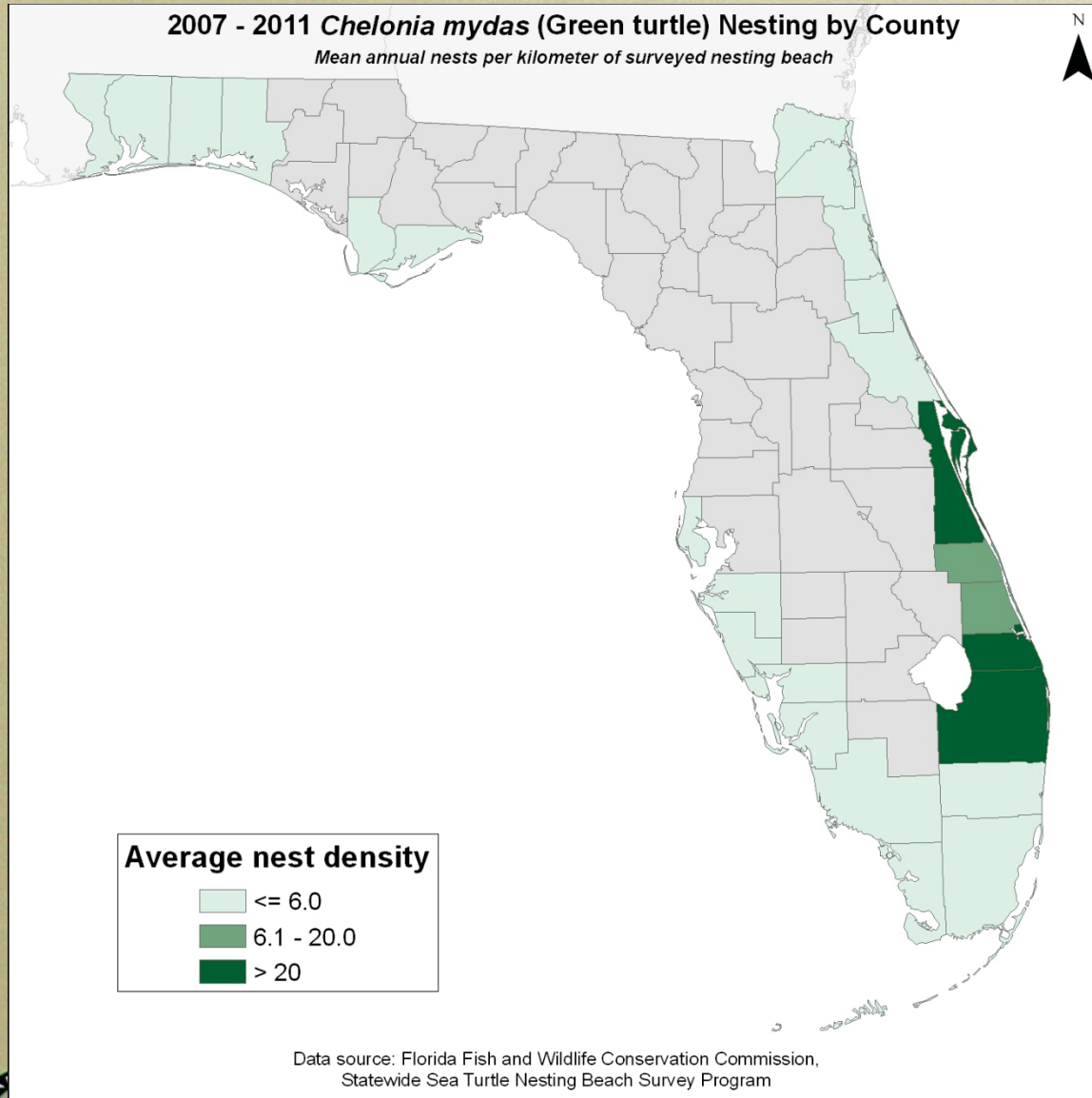
- Marine turtle species and distribution
- Monitoring goal
- Sand placement types and analysis
- Nesting and hatch success by species



Loggerhead (*Caretta caretta*)

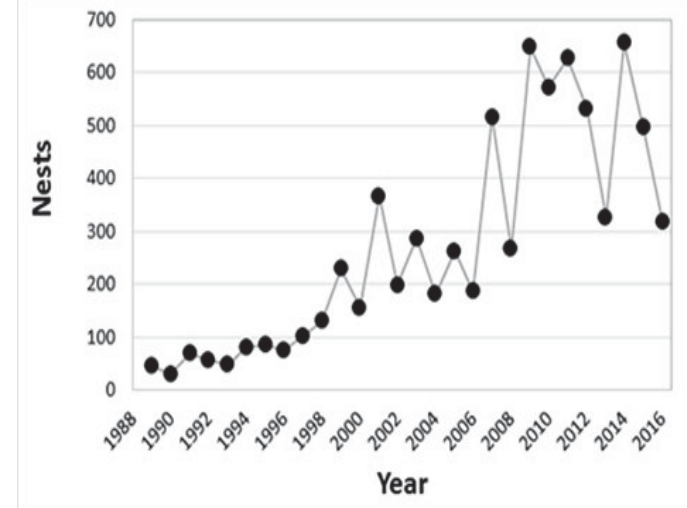
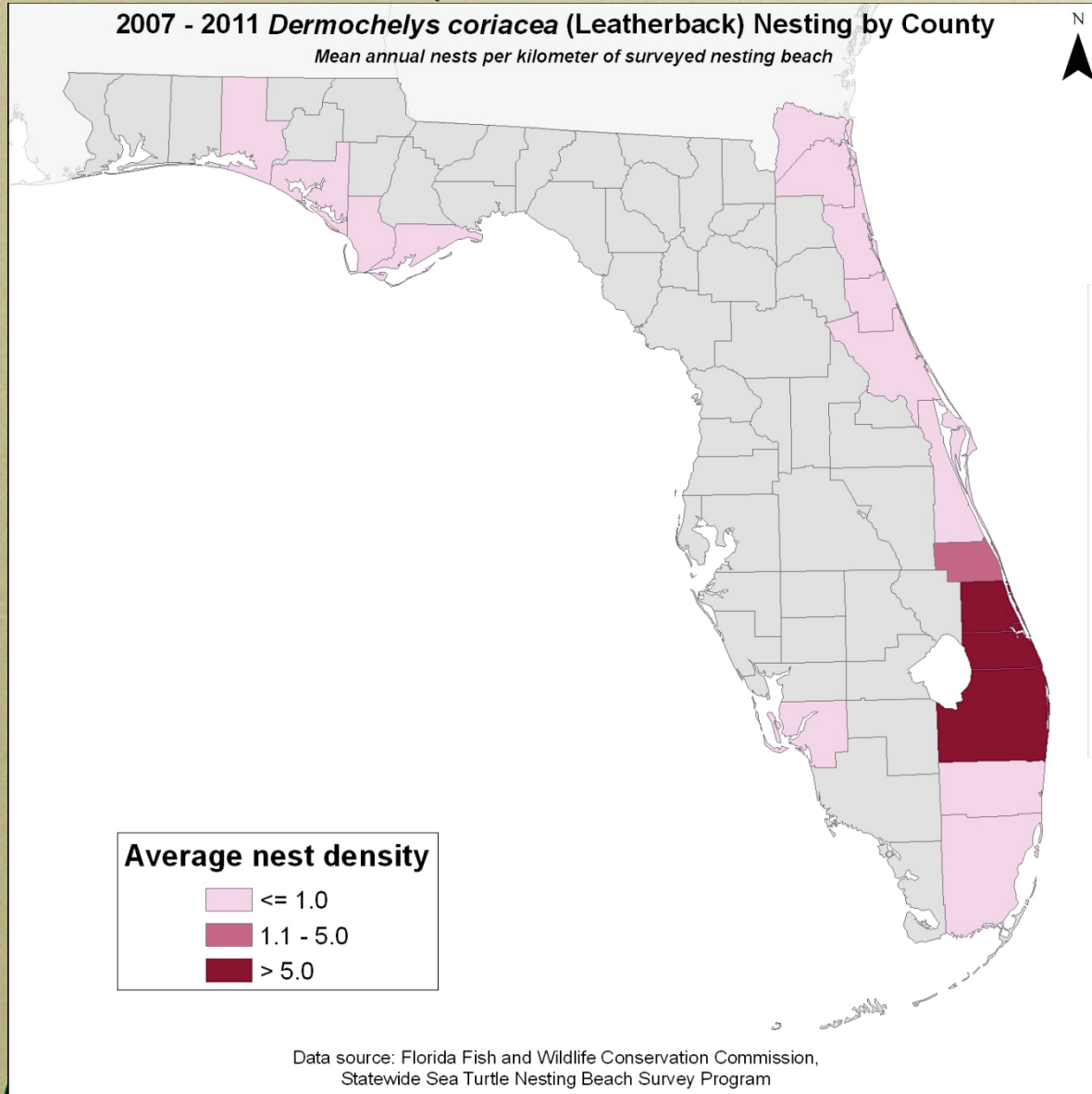


Green Turtle (*Chelonia mydas*)



Leatherback (*Dermochelys coriacea*)

2007 - 2011 *Dermochelys coriacea* (Leatherback) Nesting by County
 Mean annual nests per kilometer of surveyed nesting beach



Monitoring Goal: Impact Assessment

- Separate natural spatial and temporal variability from variation caused by the activity of interest (= impact)



Sea Turtle Monitoring

- Daily surveys began island wide on March 1 and continued through October 31 in the Town of Palm Beach project areas.



Original Sea Turtle Monitoring

- Zones based on R-monuments were marked in the field across the island.
 - 152 zones total
 - 16 Treatment (17,382 feet or 3.292 miles)
 - Beach nourishment, sand placement has occurred in the past or is authorized to occur under the BMA
 - 16 Reference (17,616 feet or 3.336 miles)
 - No history of beach management or activities approved under BMA
 - ~~44~~ 41 Cell-wide (47, 490 feet or 8.99 miles)



Cell-wide Sea Turtle Monitoring All Zones

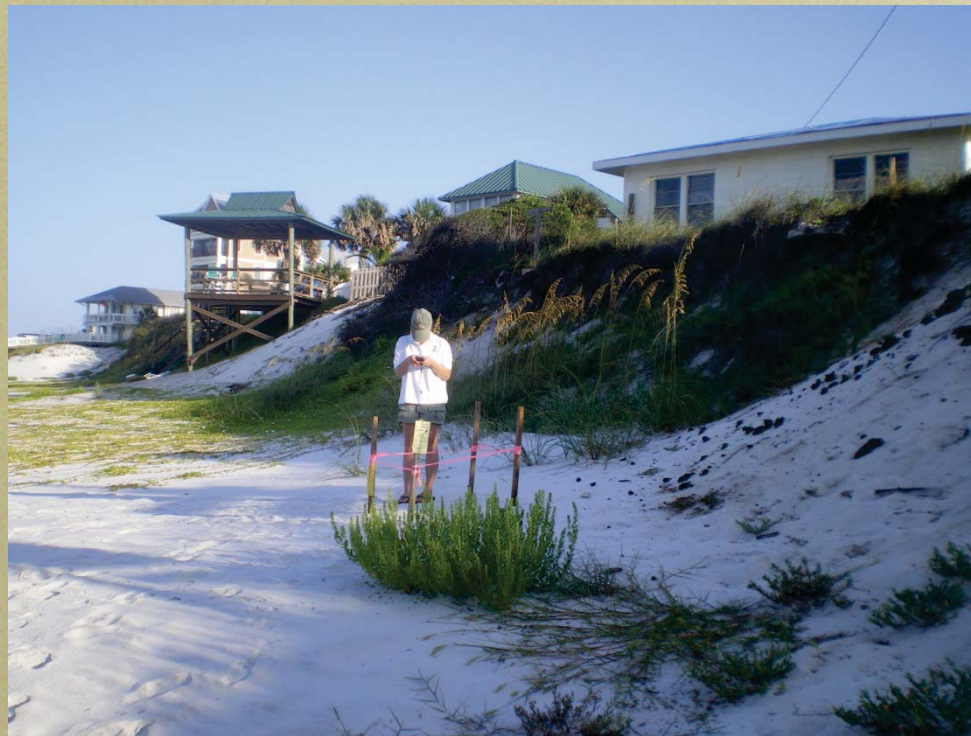
- Nesting decision (e.g., nest or non-nesting emergence or false crawl) per species;
- The number of nests and false crawls per species were counted for all zones;



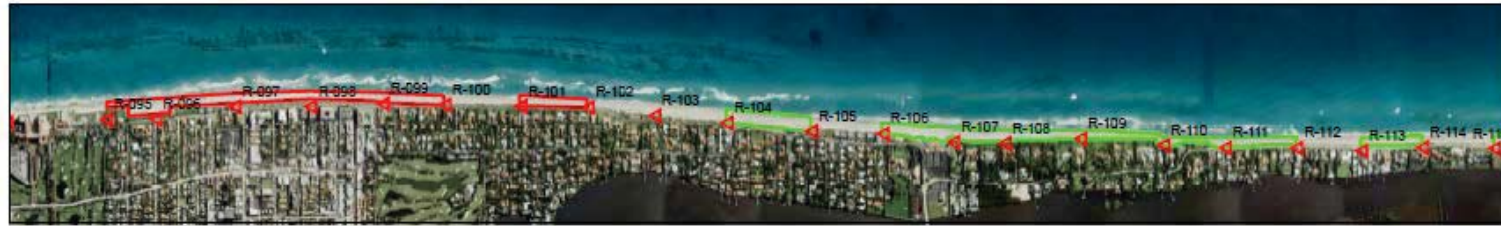
Cell-wide Sea Turtle Monitoring

All Zones

- GPS locations were collected for all nests across the island



Impact and Reference Zones



Coastal Range Monuments

▲ Range Monuments

Turtle Monitoring

▭ Reference Area

▭ Impact Area



1 inch = 2,000 feet

2011 Aerial Photography by FDOT

BMA TURTLE MONITORING SITES



Project Summary

Project	R-monuments	Sand type	Placement	Year
Mid-Town Nourishment	R-89 to R-102	Offshore Borrow Area	Berm	2015
	R-90 to 93	Offshore Borrow Area	Dune	2016
Interim Phipps Project	R-116.5 to R-121	Offshore Borrow Area	Dune	2015
	R-116.5 to R-127	Offshore Borrow Area	Berm	2016
Reach 8 Dune Restoration	R-130 t R-134	Offshore Borrow Area	Dune	2015
	R-130 t R-134	Offshore Borrow Area	Dune	2016



Project Specific Monitoring Reference and Treatment Zones

- Nest location
 - disorientation, inundation, wash out or erosion, predation
- Nest inventories for hatch and emergence

SUCCESS

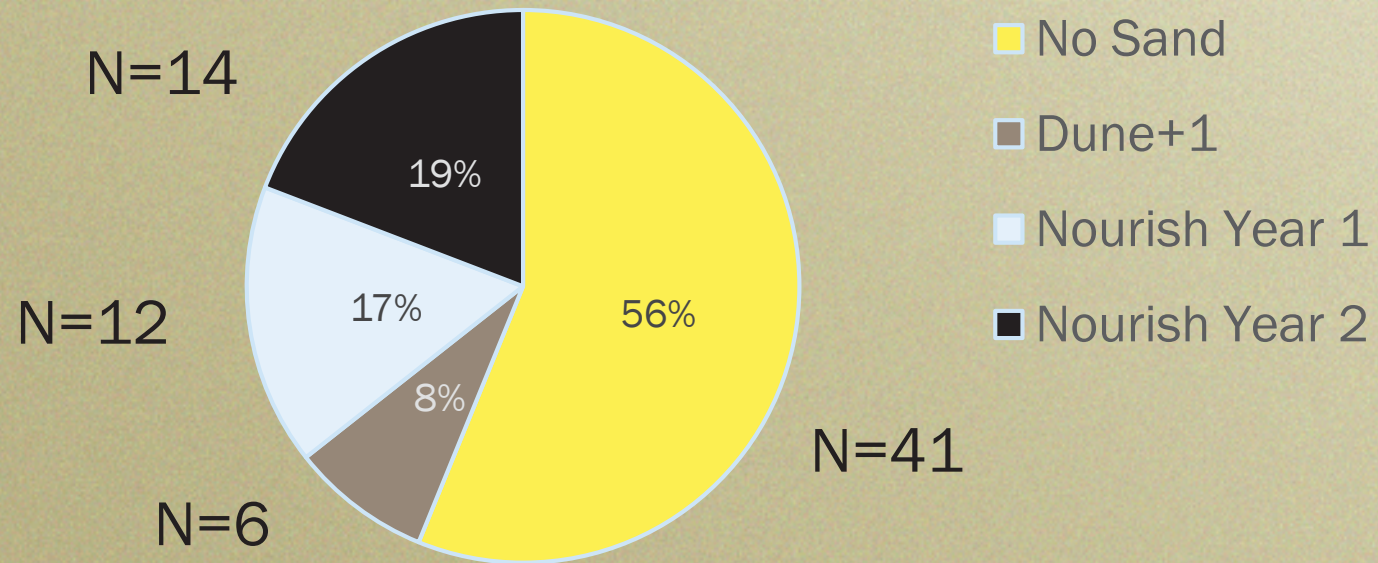
Placement Type	Time Since Sand Placement	N	# Nests
Nourishment	Y+1	12	156
Nourishment	Y+2	14	239
Dune	Y+1	6	52
No Sand		41	797
	Total	73	1244



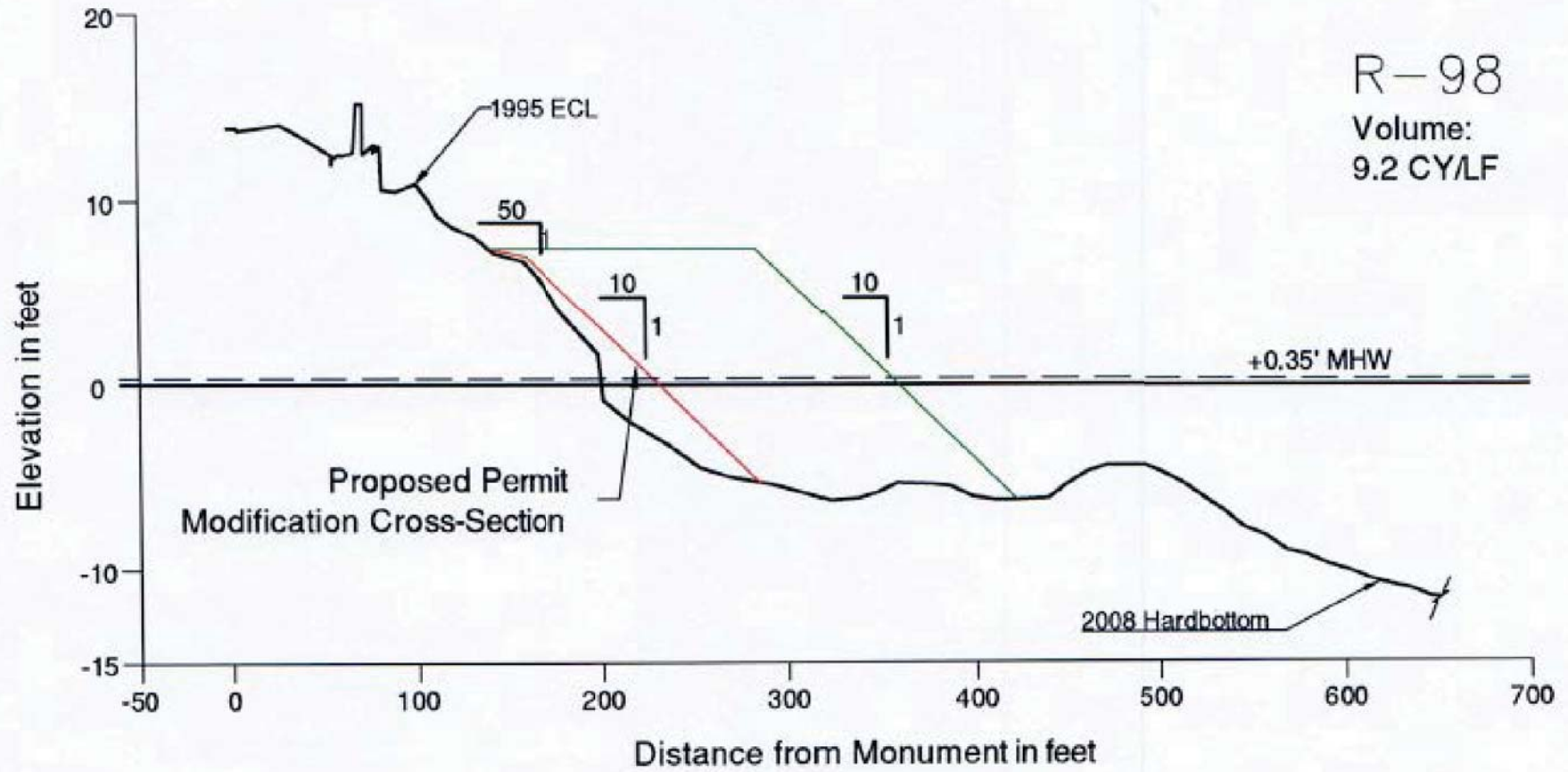
Year 3 Monitoring

- Reference/control – No sand placement
- Dune +1 – First nesting season after dune creation
- Treatment – Nourishment by Year Since Placement

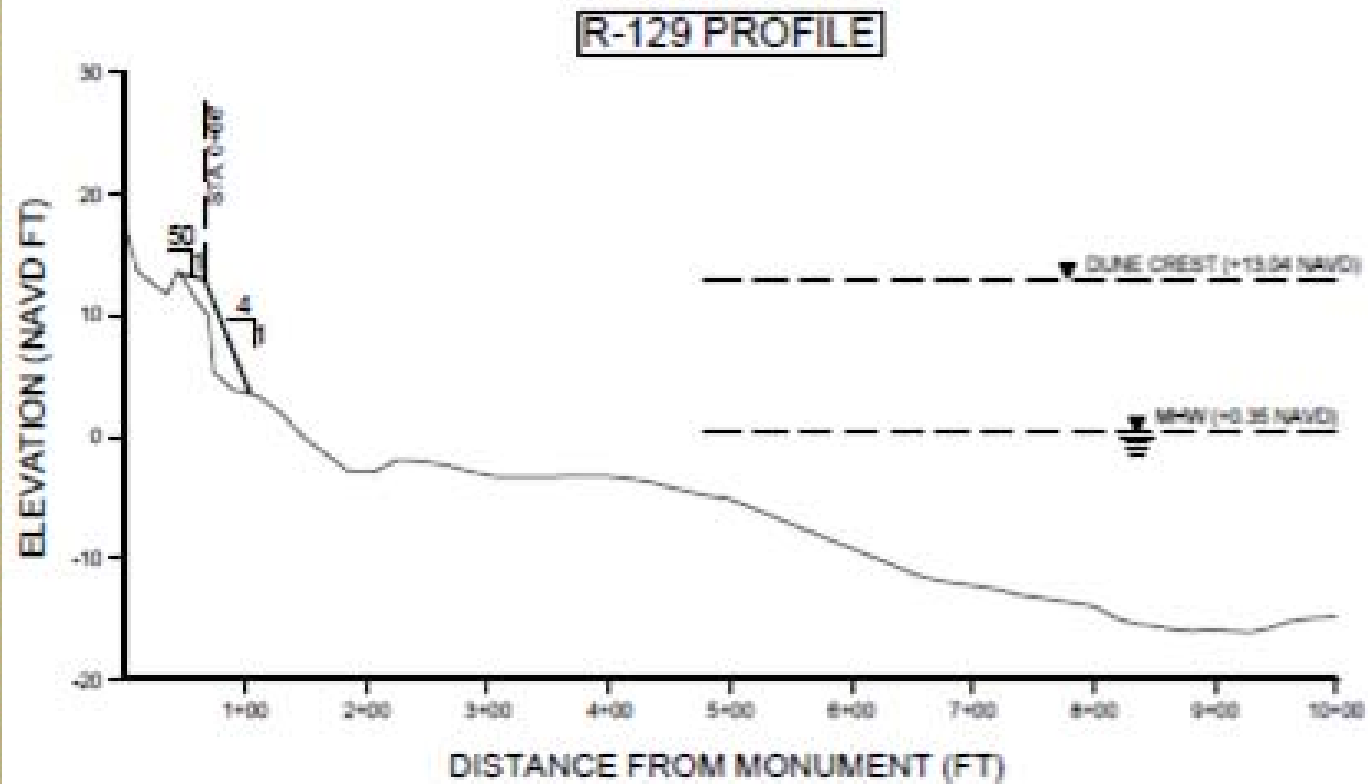
Survey Length



Distance from Monument in feet



Reach 8 Dune Project



Post-construction Monitoring

- Nesting, hatching
- Shorebird surveys
- Lighting
 - Two surveys, April 1 and April 15 (May 1 report)
 - June 15 and July 1 (July 15 report)
- Tilling (or compaction) (March 1 completed)
- Weekly scarp surveys



Year 3 Results

- Nesting decision per species per sand placement type
- Hatch success per species per sand placement type

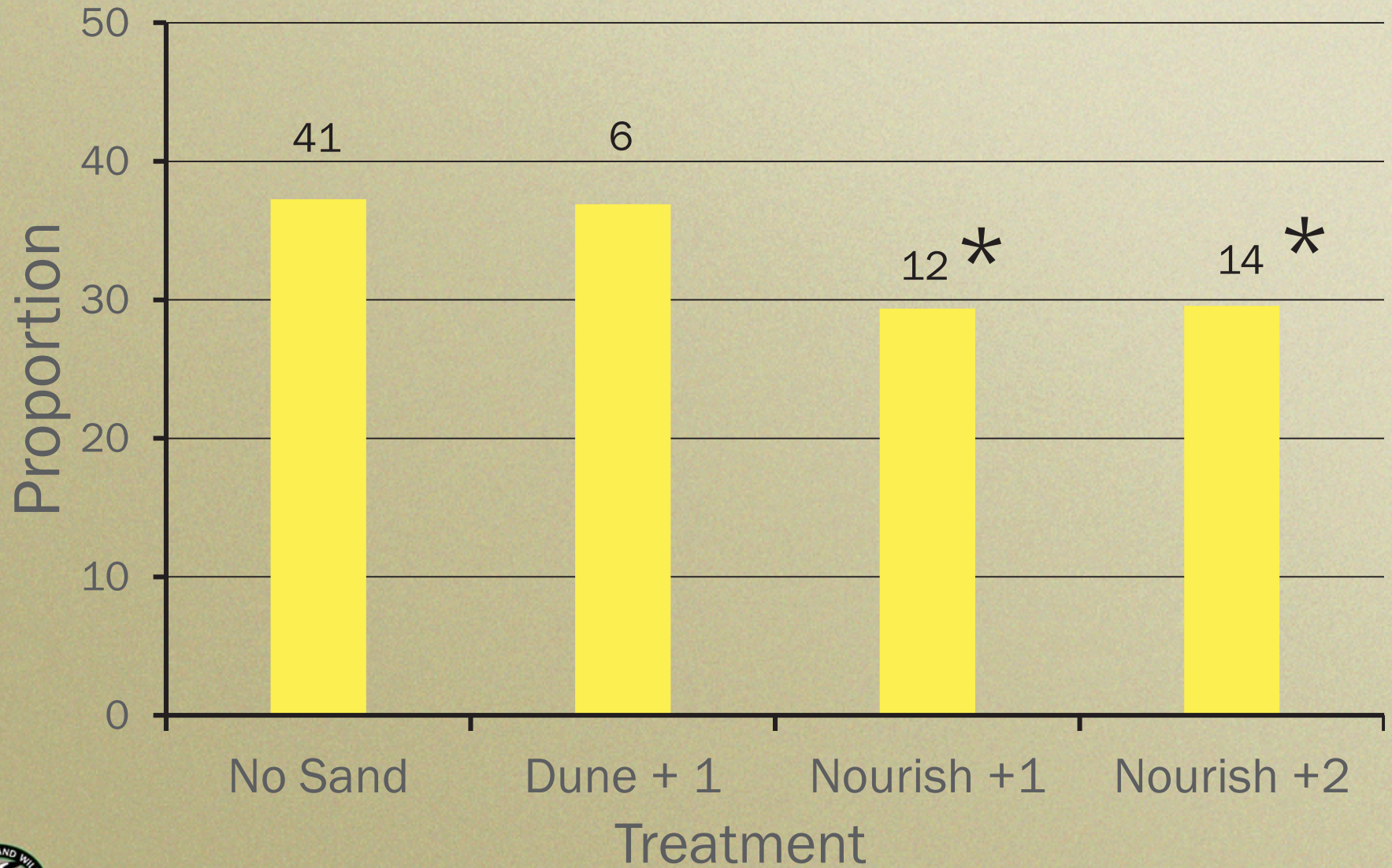


Impact Assessment

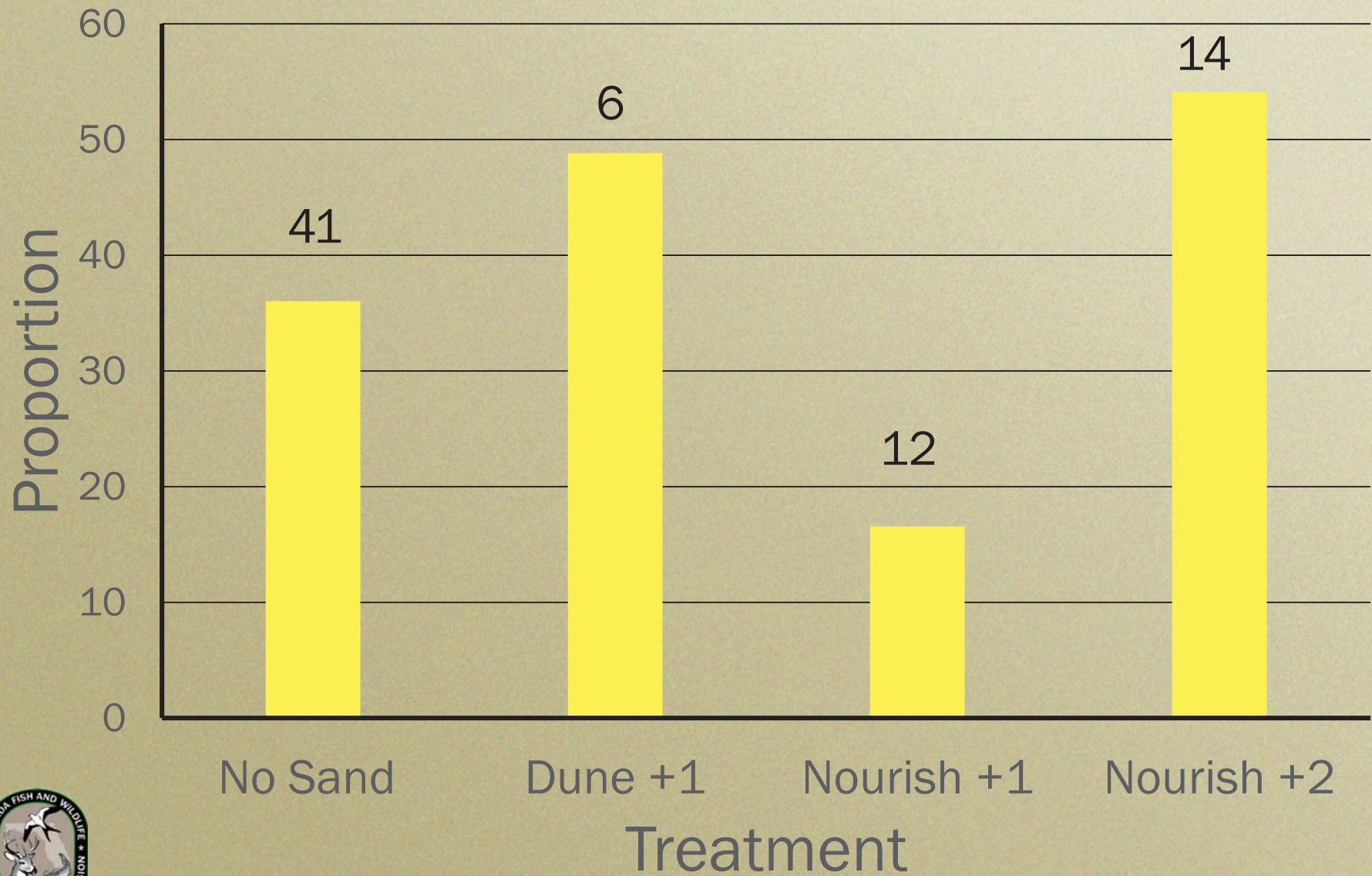
- Nesting decision



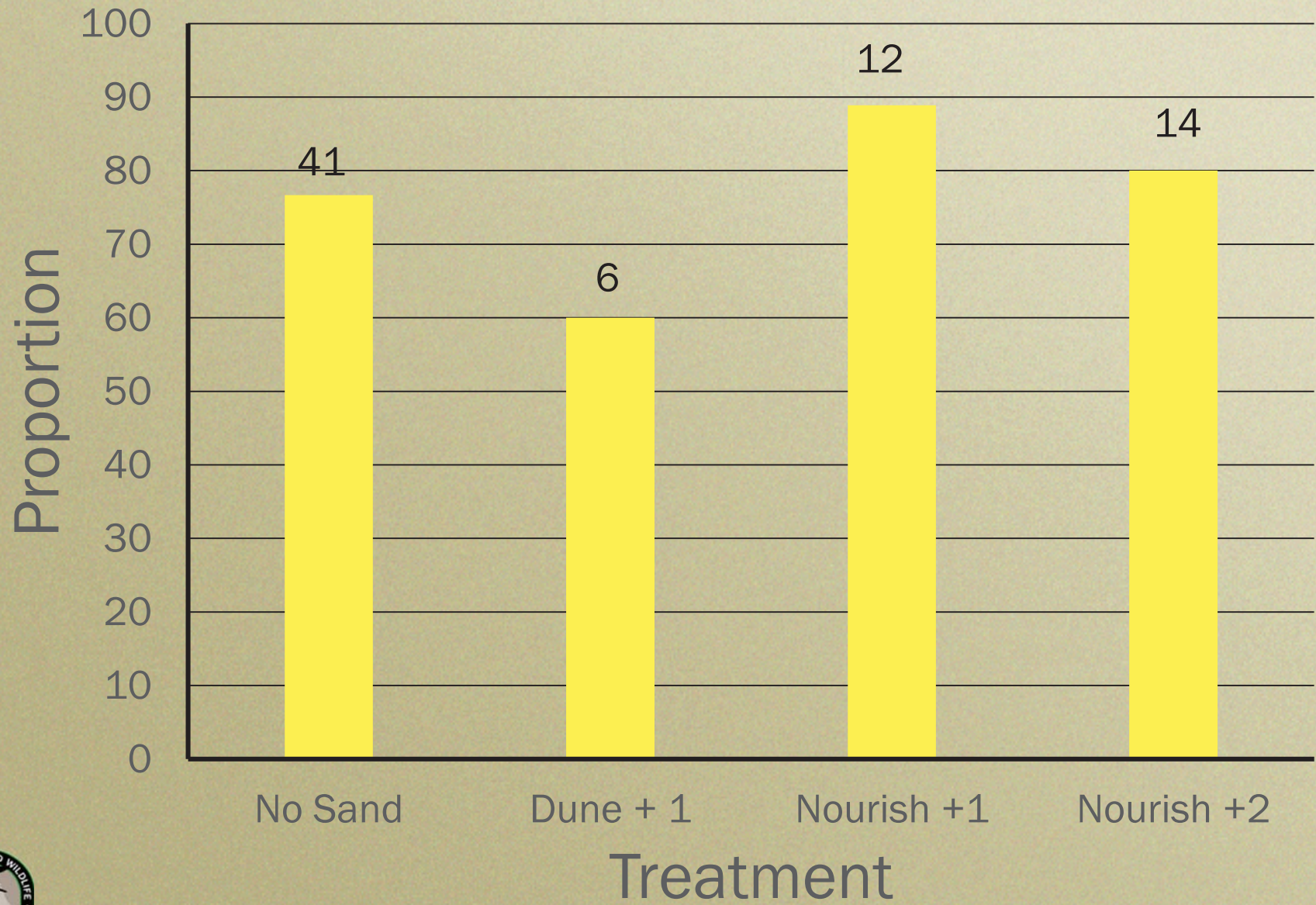
Loggerhead Nesting Success



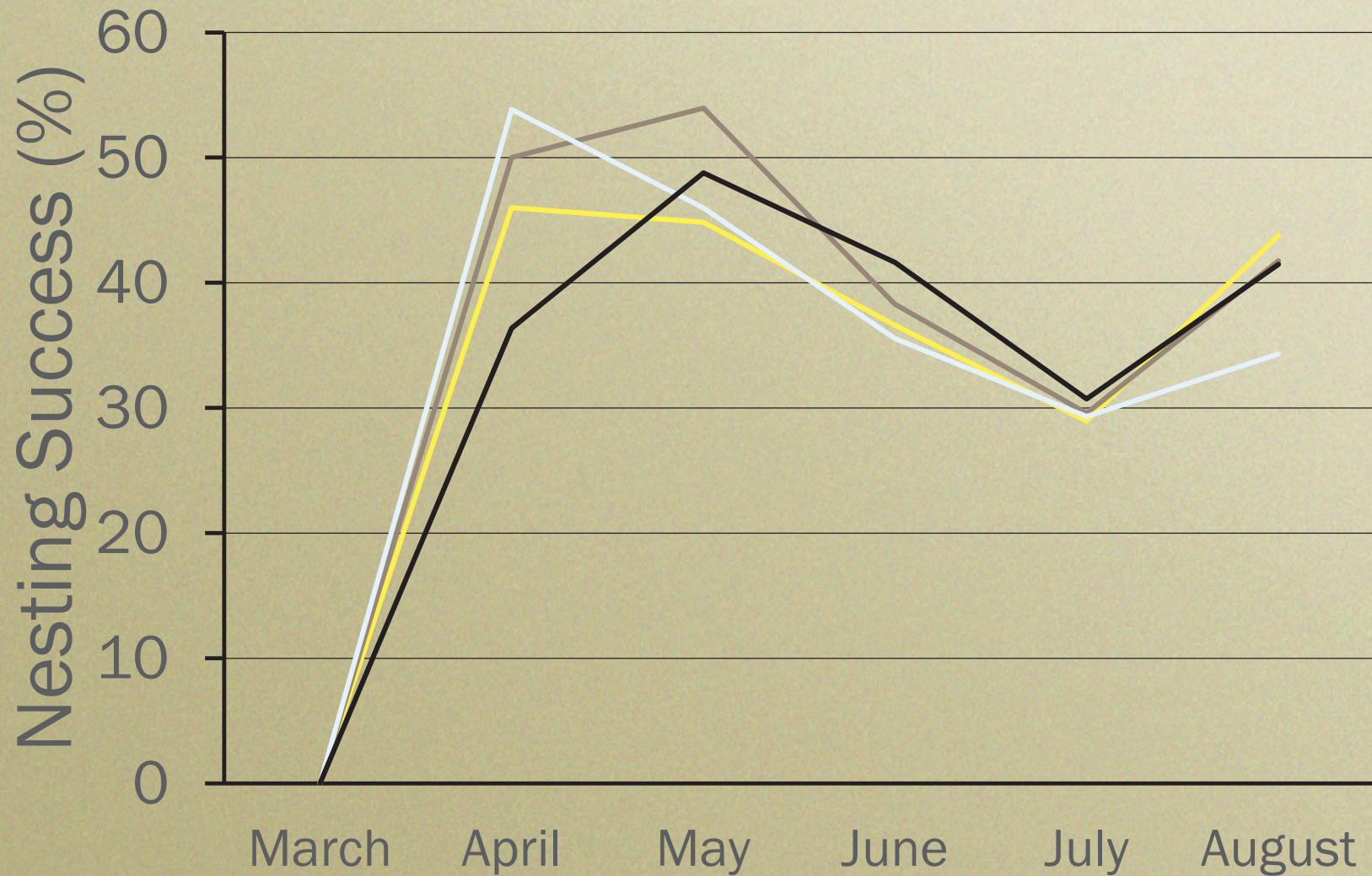
Green Turtle Nesting Success



Leatherback Nesting Success



Loggerhead Nesting Success



— No Sand — Dune+1 — Nourish +1 — Nourish +2

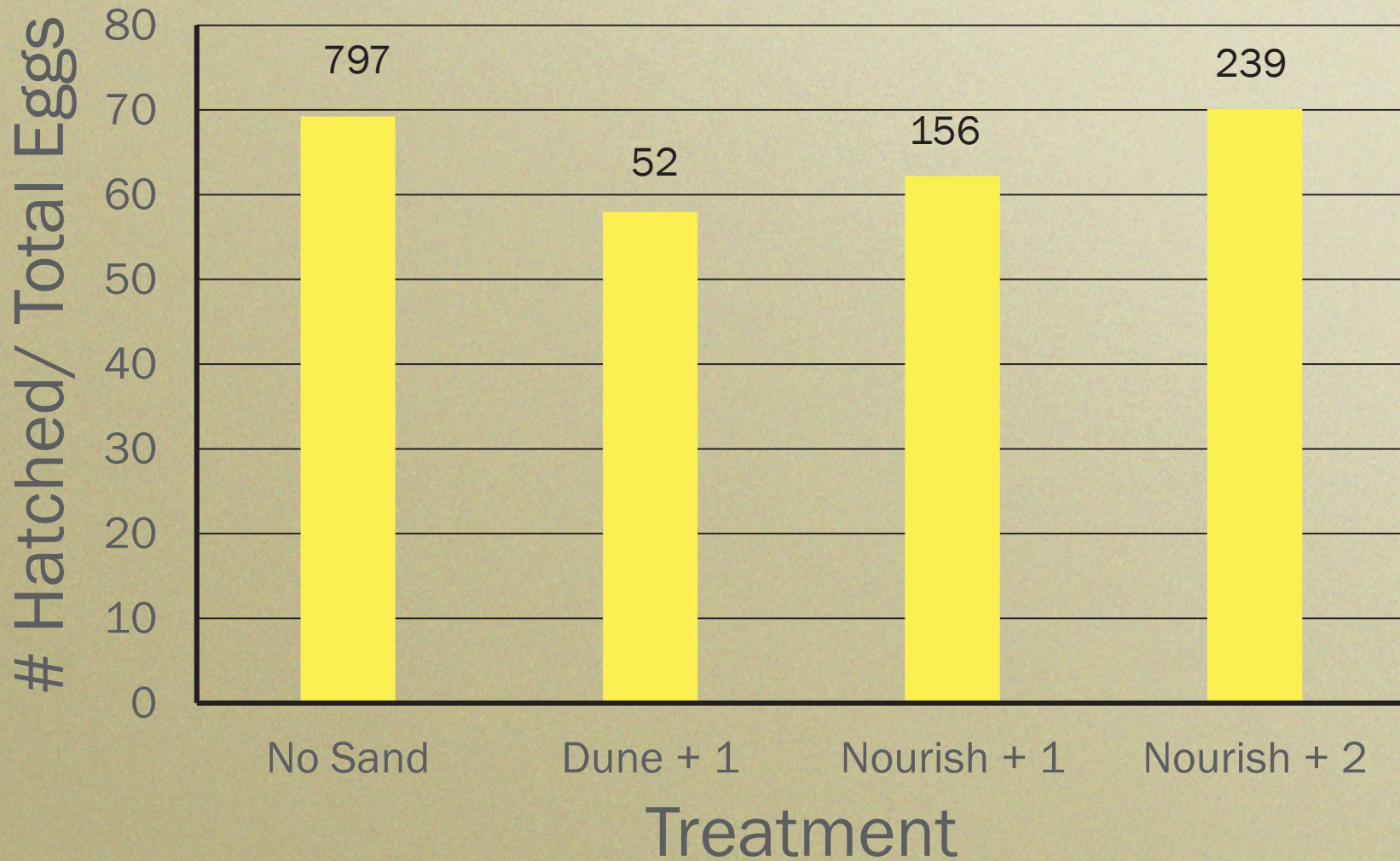


Impact Assessment

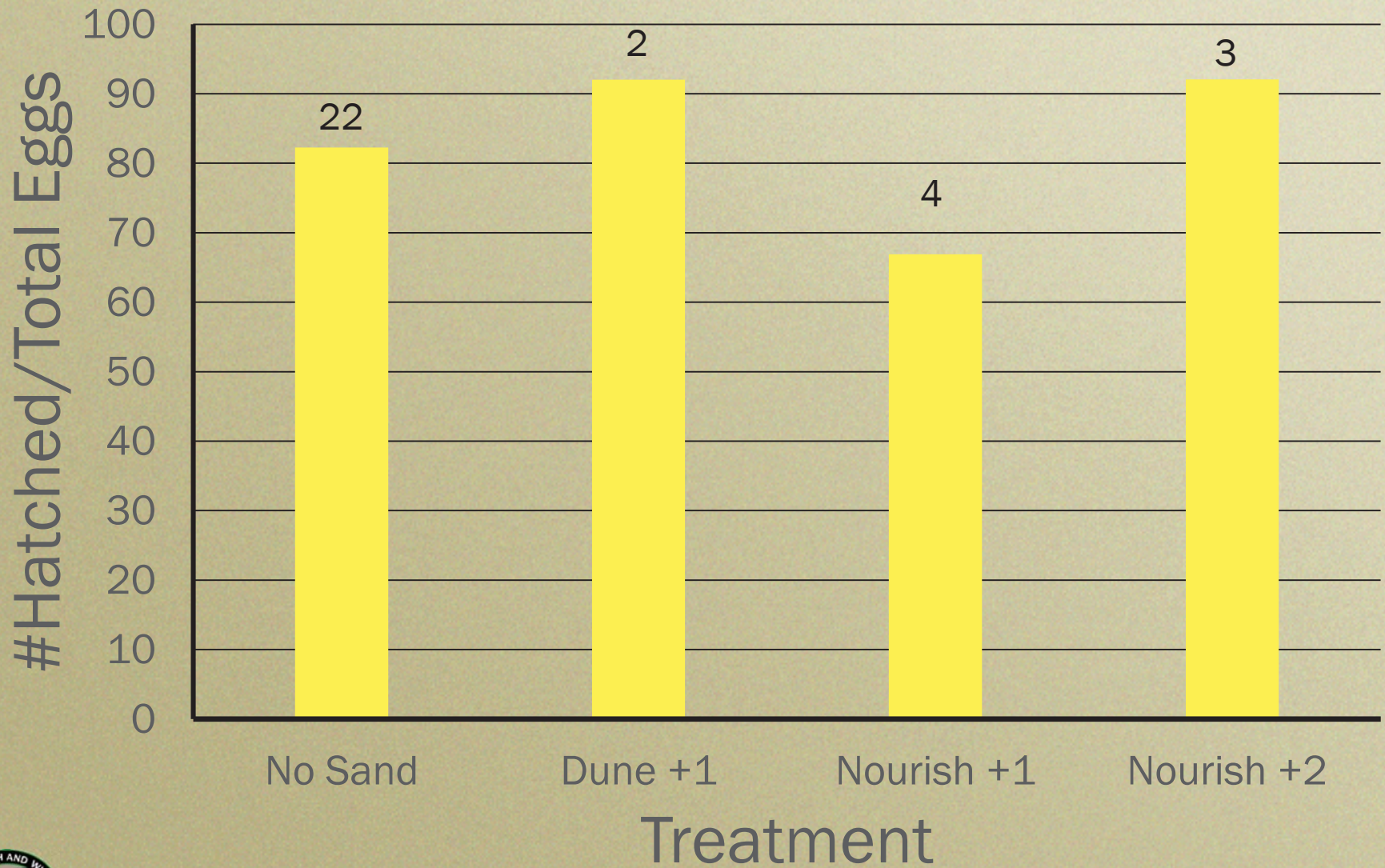
- Hatch Success



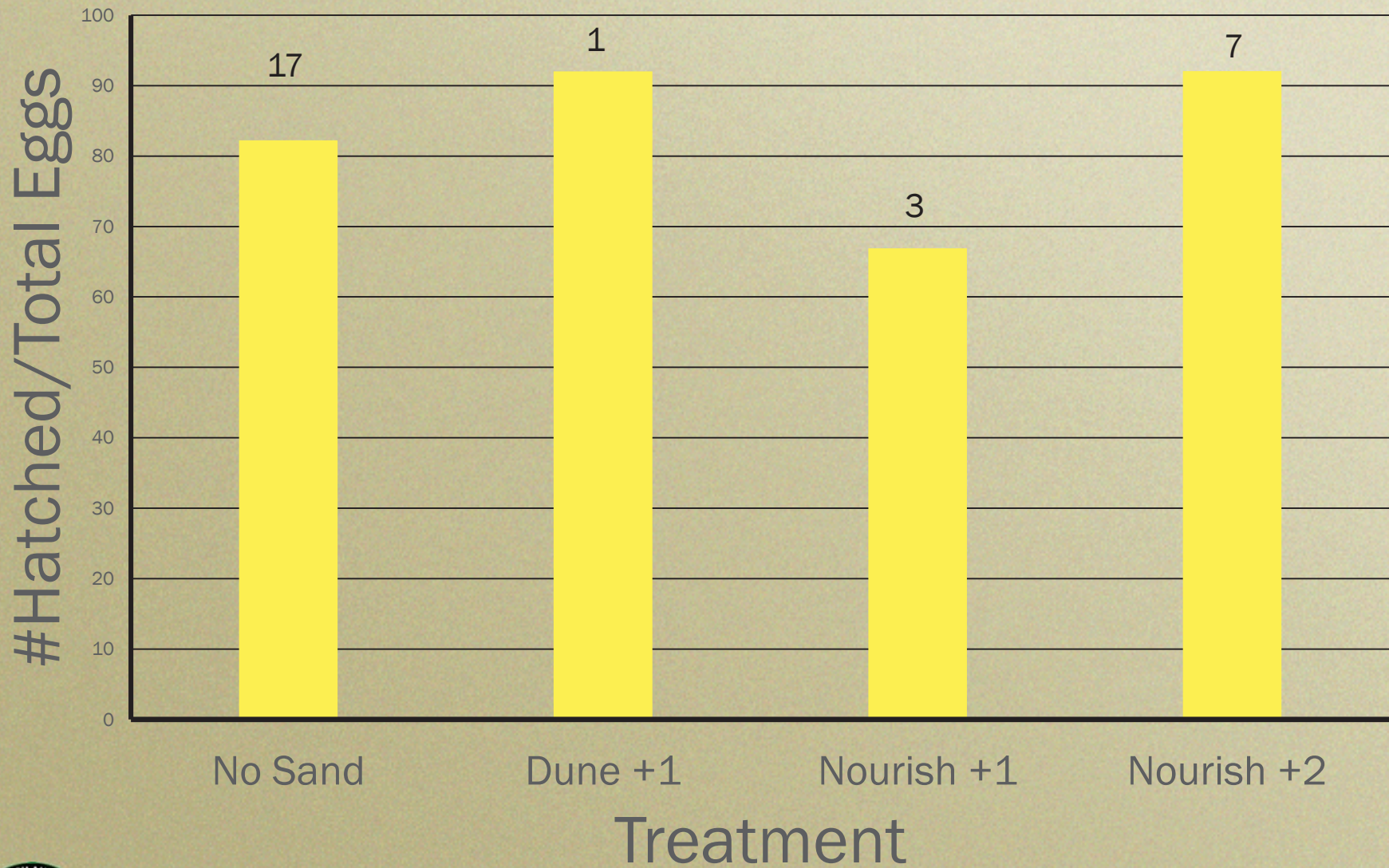
Loggerhead Hatch Success



Green Turtle Hatch Success



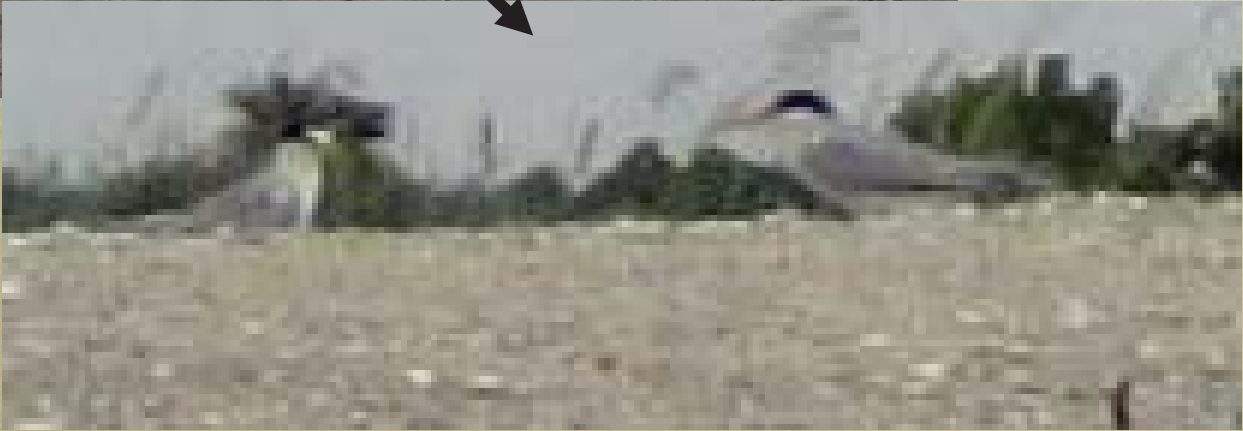
Leatherback Turtle Hatch Success



Preliminary Conclusions

- Loggerhead nesting was significantly lower on the nourished berm
 - First and second years after sand placement
- No differences in nesting success for green and leatherback turtles on different sand placement types
- No differences in hatch success for any species for any sand placement type





Shorebirds





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