

Regional management of nesting sea turtles in the Palm Beach County BMA area



Dori Hughes, 2012



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Florida Fish and Wildlife Conservation Commission

Outline

- FWC's Commitment to the BMA
- What monitoring was required for sea turtles?
 - Cell-wide monitoring
 - Project –specific monitoring
- Status
 - Baseline monitoring complete
 - Quality control of data continuing
 - Preliminary Assessments
 - Challenges

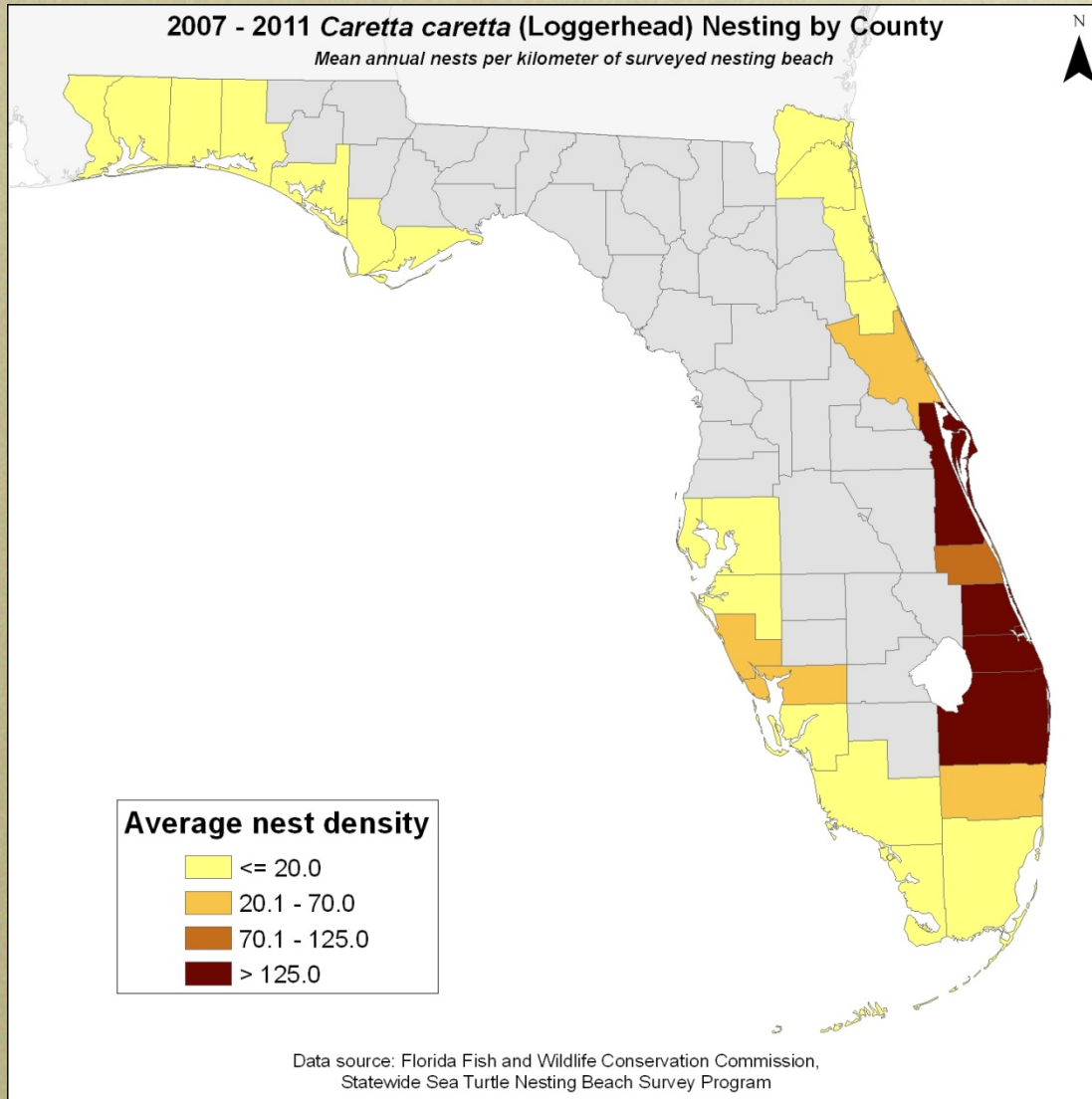


FWC's Commitment to the BMA

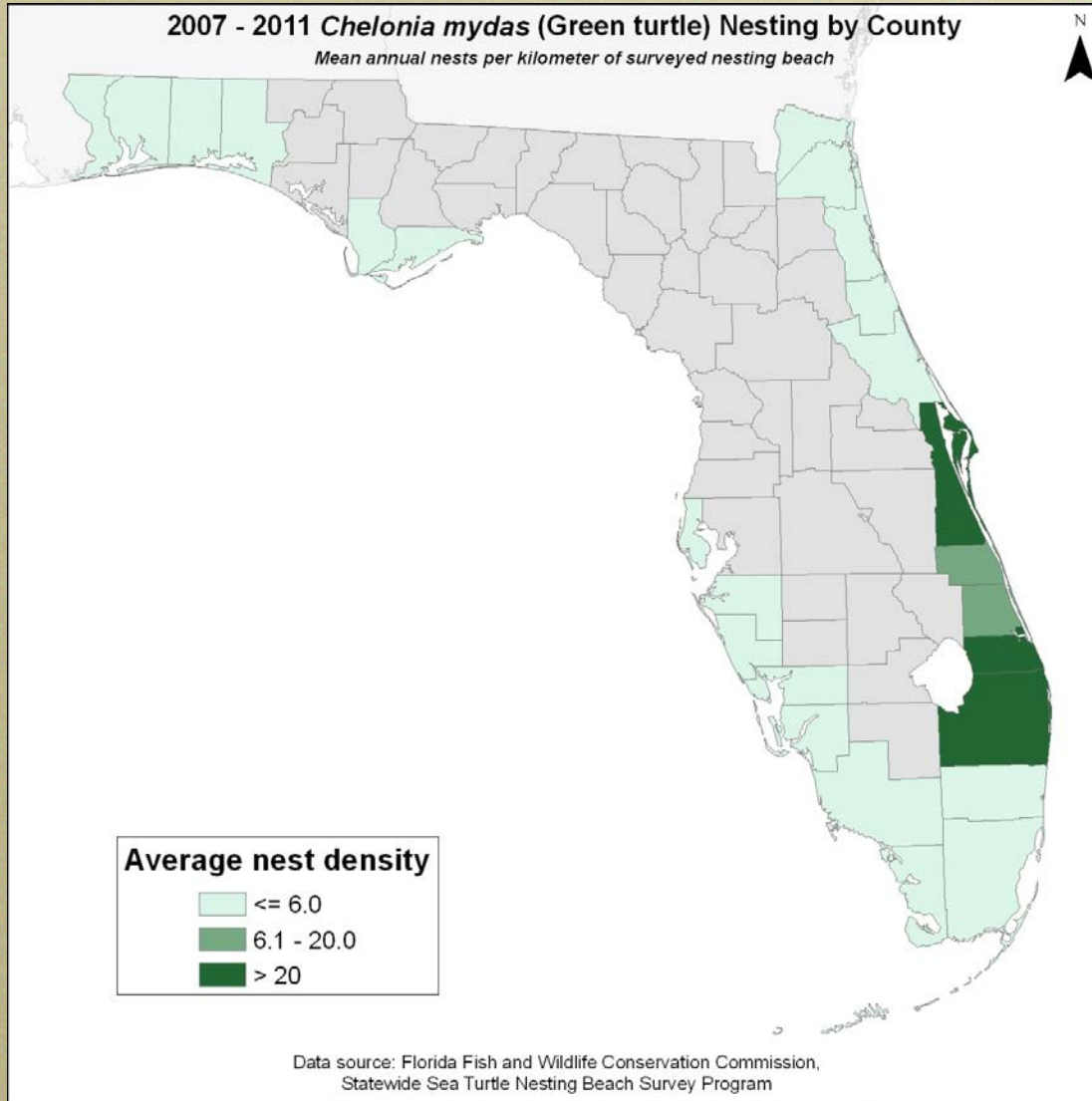
- Review of projects included in BMA and new projects (Individual Project Checklist)
- Adaptive Management
- Oversee and review sea turtle monitoring data
- Participate in meetings
- Meet all timeframes



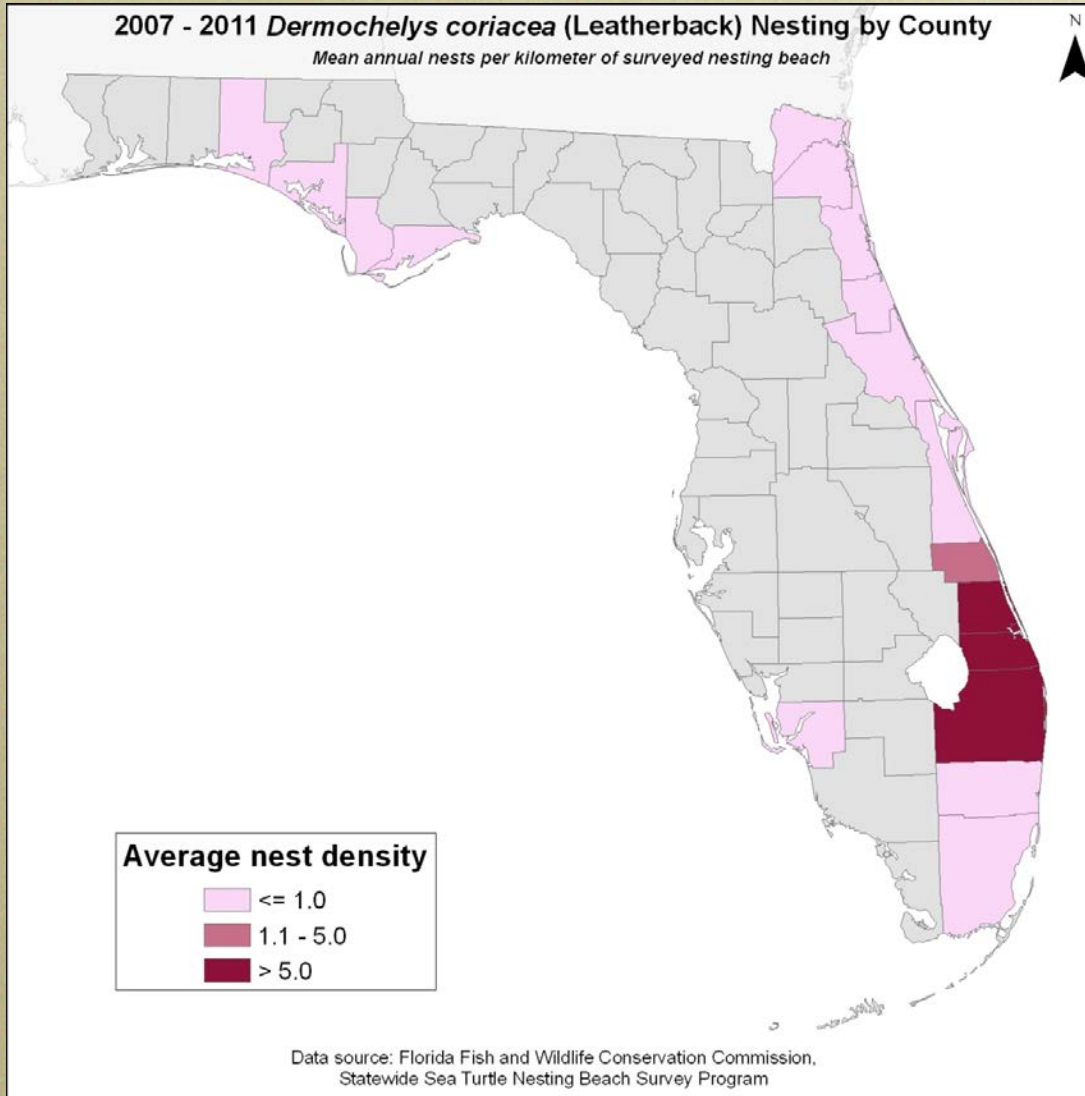
Loggerhead (*Caretta caretta*)



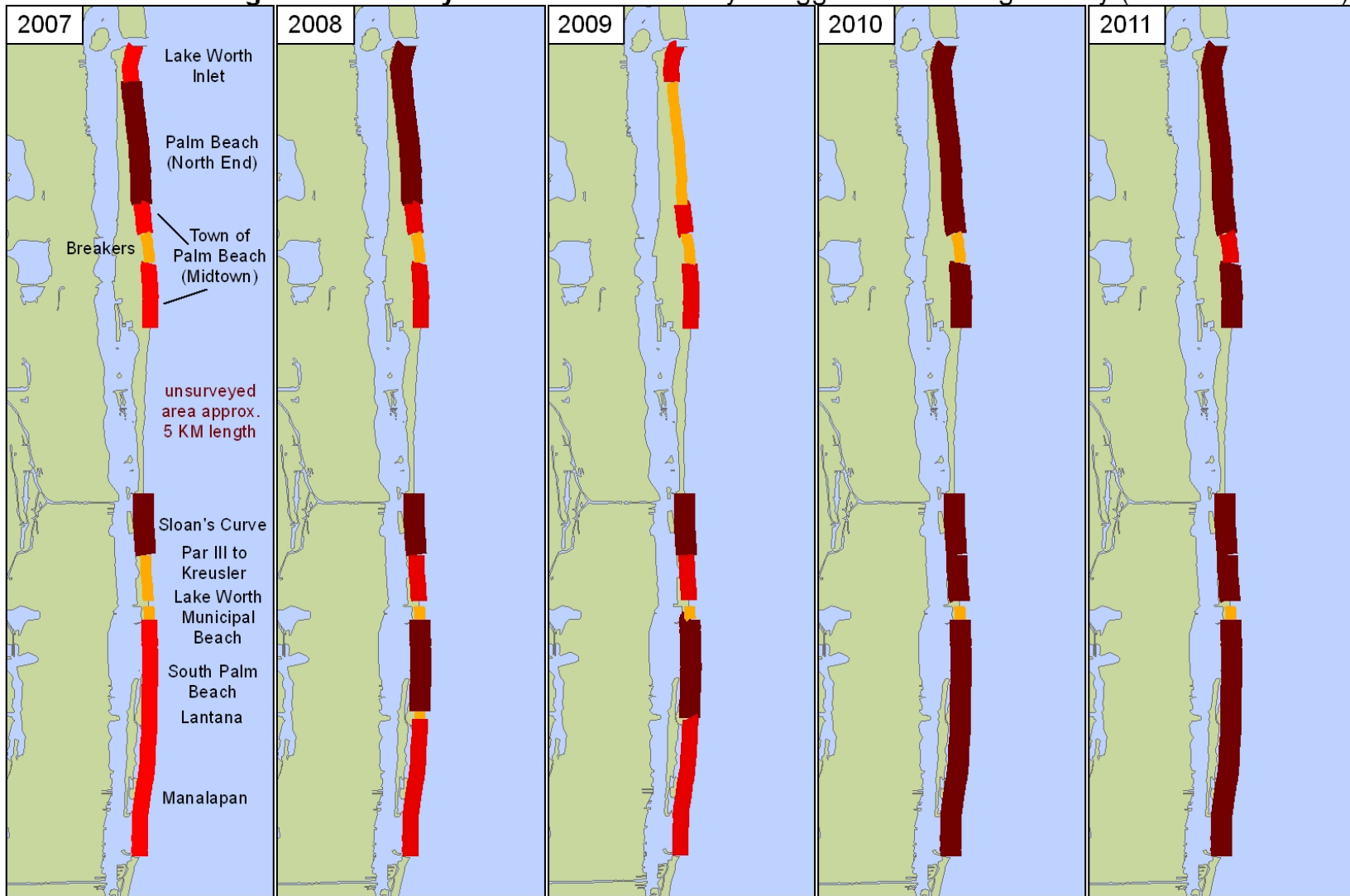
Green Turtle (*Chelonia mydas*)



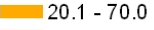
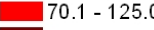
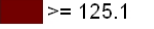
Leatherback (*Dermochelys coriacea*)



Statewide Nesting Beach Survey • Palm Beach County • Loggerhead nesting density (2007 - 2011 data)



Legend for all maps:

	20.1 - 70.0
	70.1 - 125.1
	>= 125.1

Loggerhead nesting density (nests / km)

0 3 6 Kilometers
scale applies to all maps



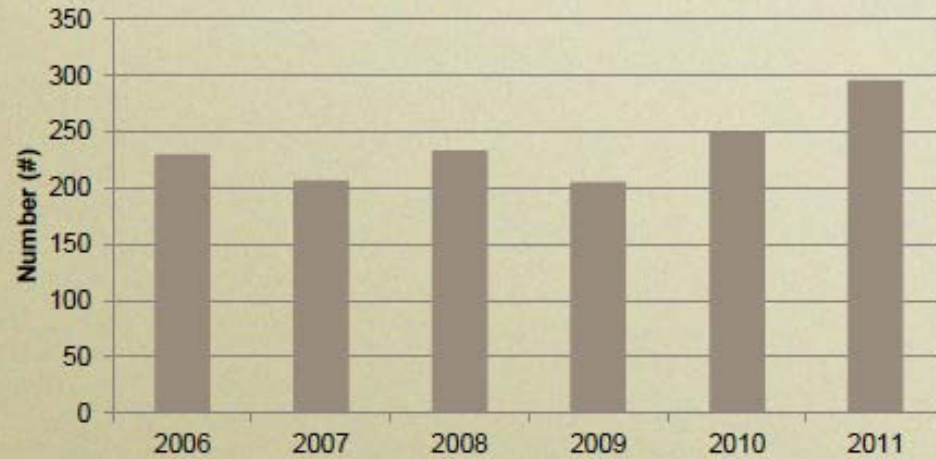
Monitoring Goal: Impact Assessment

- Separate natural spatial and temporal variability from variation caused by the activity of interest (= impact)
- Correctly identify a 20% decline in nest numbers on project beaches with 70% confidence (= impact) –Use long term data to identify natural variability

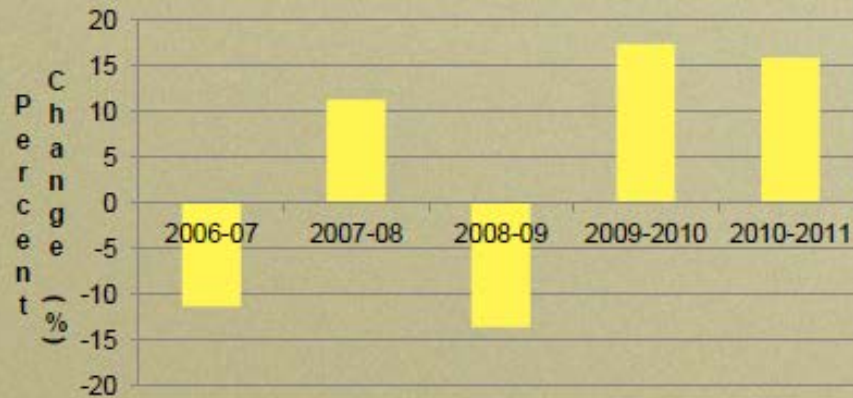


Why 20%?

Palm Beach Island Loggerhead Nests



Percent Change In Loggerhead Nests (n)



Cell-wide 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 Cell-wide (47, 490 feet or 8.99 miles)



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



Cell-wide Monitoring

- Daily surveys began island wide (across all zones) on March 1 and continued through October 15.



Cell-wide Sea Turtle Monitoring

All Zones

- All nesting emergences were counted and classified as to 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



Project Specific Monitoring

Reference and Treatment Zones

- Nest location was measured from the tideline and the dune in the 32 previously selected zones (16 treatment zones and 16 reference zones)



Project Specific Monitoring

Reference and Treatment Zones

- Nest inventories shall be conducted for all marked nests within the 32 zones (16 in the project areas and 16 outside the project areas) to document hatch and emergence success, including mortality amounts and sources (disorientation, inundation, wash out or erosion, predation).

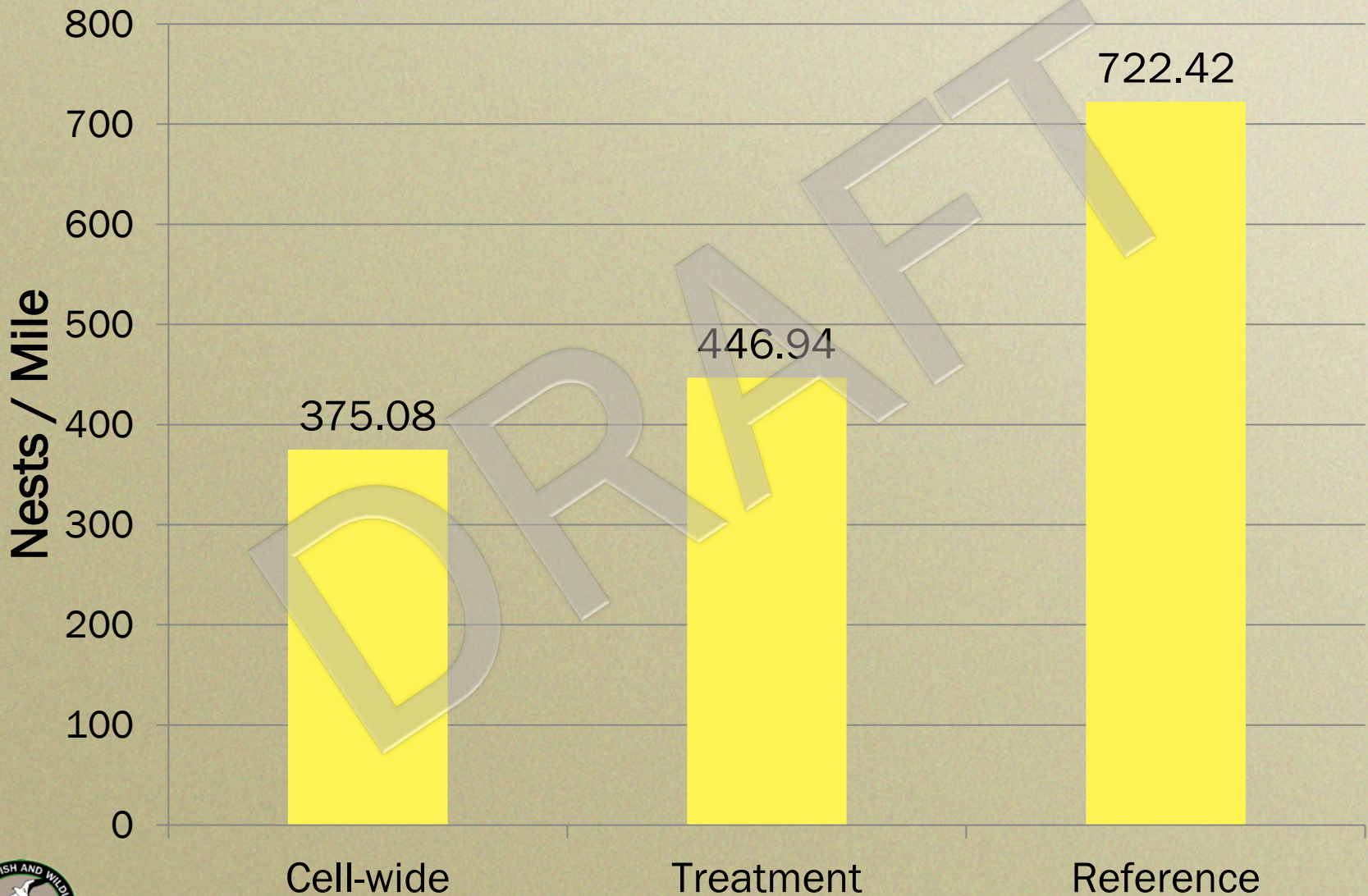


Preliminary Results

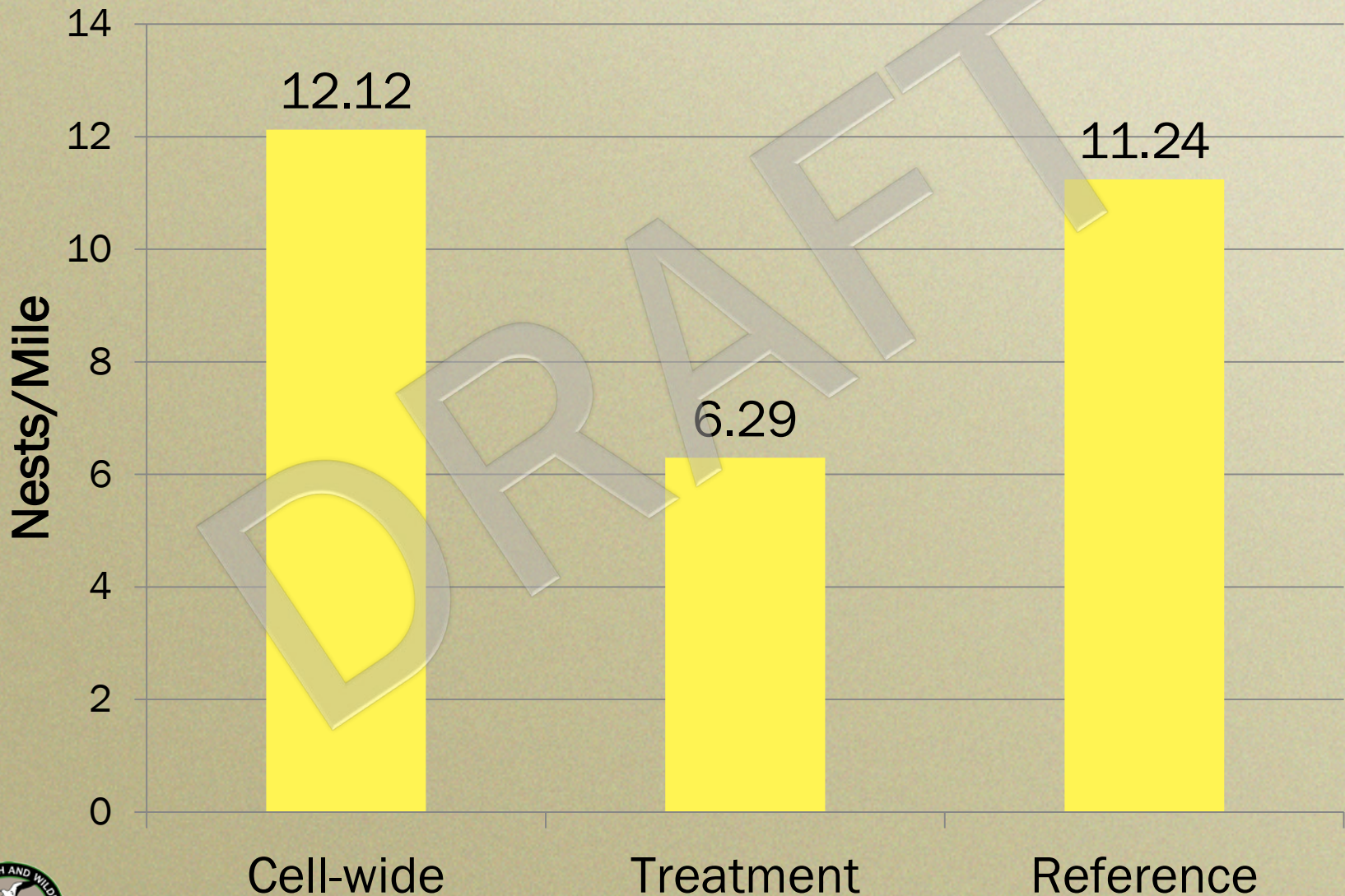
- Nest counts per species per zone
- Nesting decision per species per zone



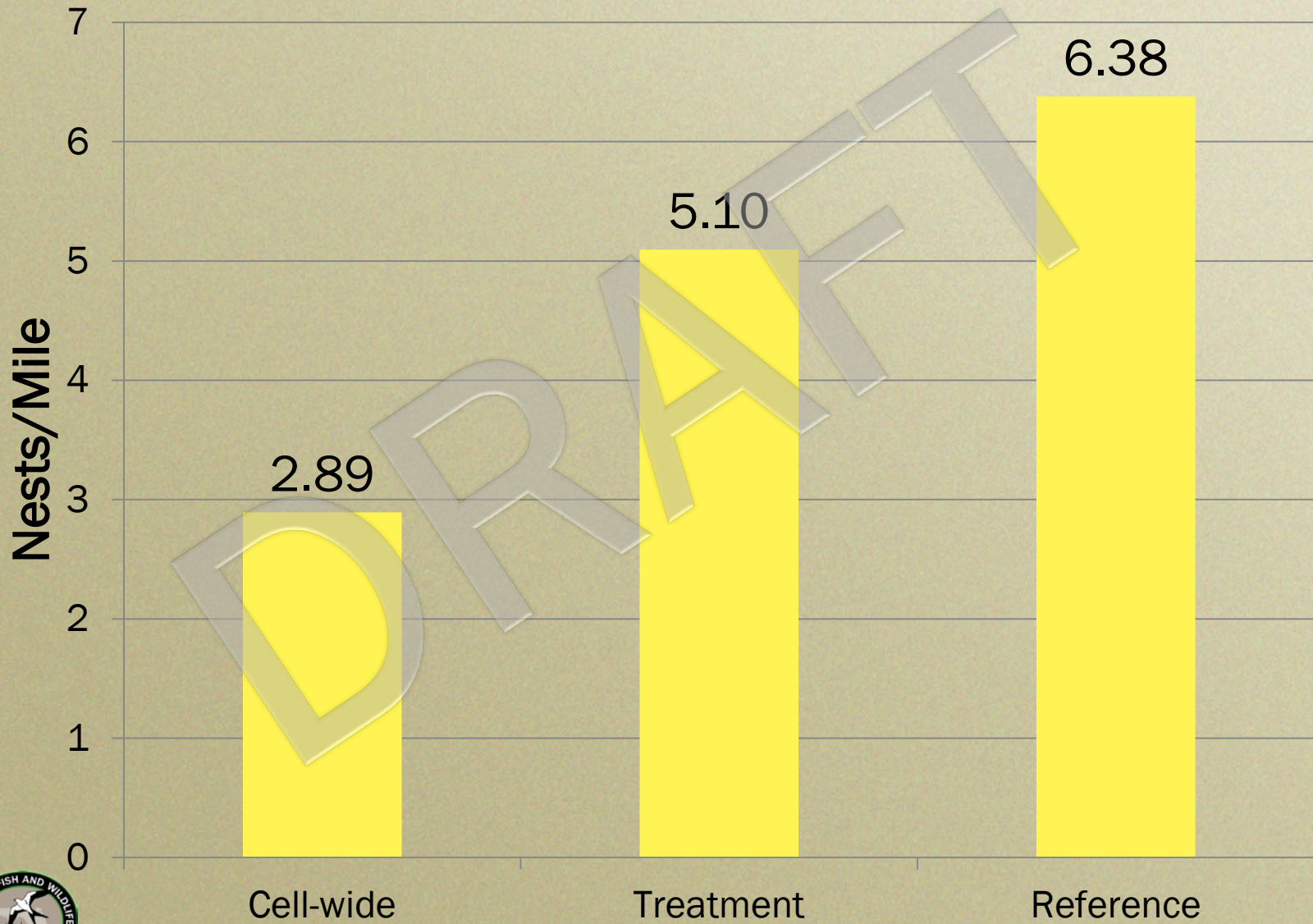
Loggerhead Nesting

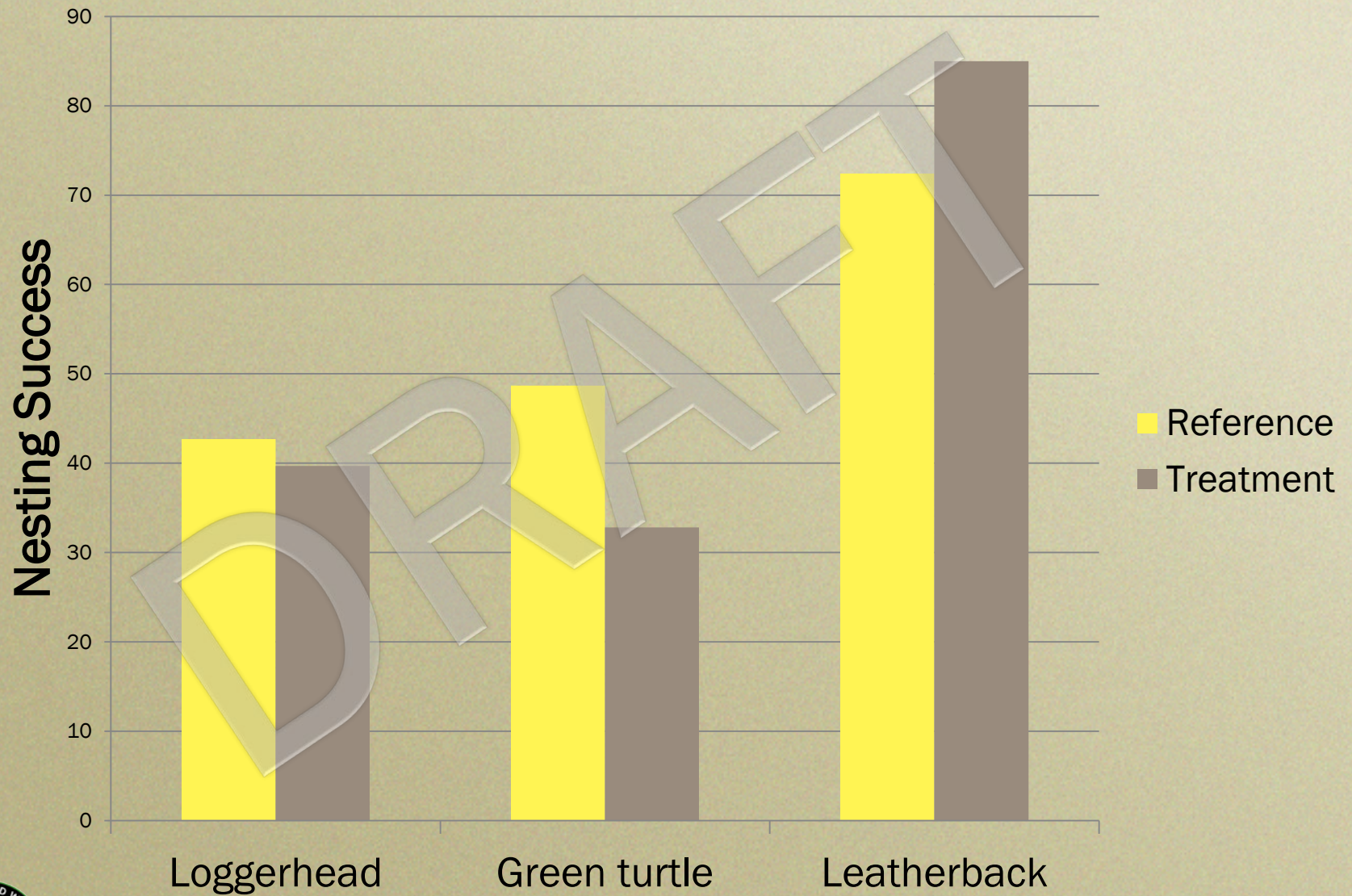


Green turtle



Leatherback Nesting



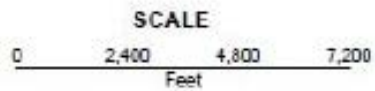


Challenges

- Using historical average to assess appropriate sample size.
 - “Unmark nests”
- Standardize monitoring across different Marine Turtle Permit Holders



TURTLE PERMITS PALM BEACH COUNTY



10-10-2012
Gary Cook GISP



Post-construction Monitoring

- Nesting, hatching
- 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

