

Reducing the Impacts of Artificial Lighting On Sea Turtles as Mitigation for the Deepwater Horizon Oil Spill

Light pollution is a major factor in the decline of sea turtles.

It adversely impacts their nesting habitat and survival rates of both nesting females and hatchlings. Reducing this source of mortality can mitigate for turtle deaths and habitat degradation caused by the Deepwater Horizon Oil Spill.



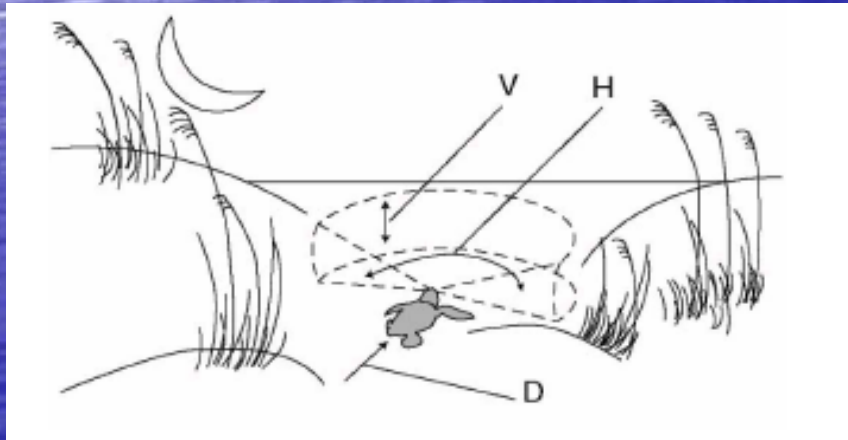
Effects of Poorly Managed Beachfront Lights on Nesting Sea Turtles

- Artificial lighting can deter females from emerging from the water to nest
- Lighting can interfere with females finding their way back once ashore
- Disoriented females waste their energy on the beach and may be killed by heading the wrong way



Effects of Lighting on Hatchlings

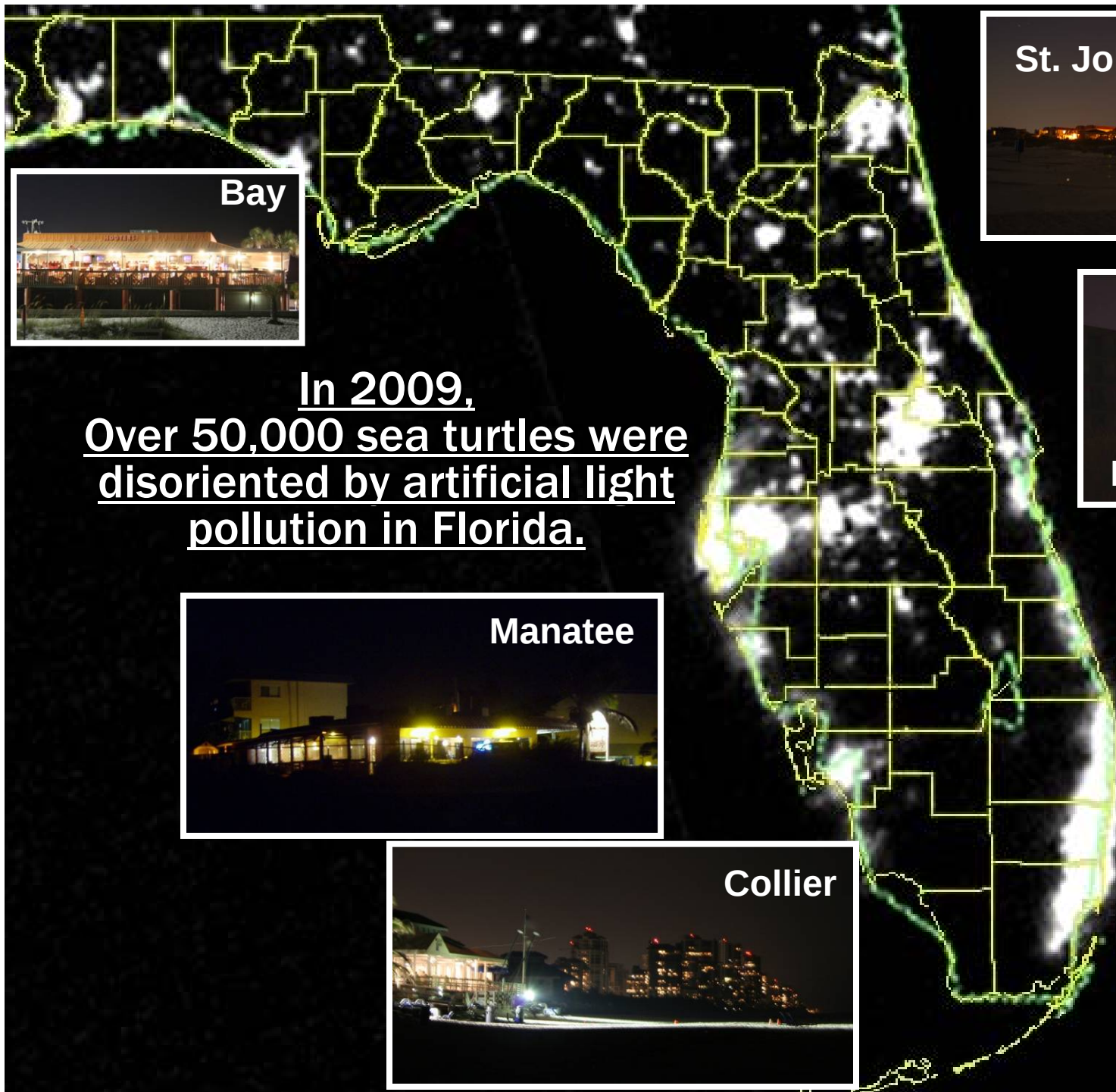
- Hatchlings rely on vision to find the water. They orient TOWARD bright open areas/horizons and AWAY from dark silhouettes such as dunes and vegetation.



Effects of Lighting on Hatchlings

- Hatchlings have a limited energy reserve for their “frenzy” period.
- Any delay on the beach results in increased dehydration, exhaustion, predation and death.





St. John's



Bay

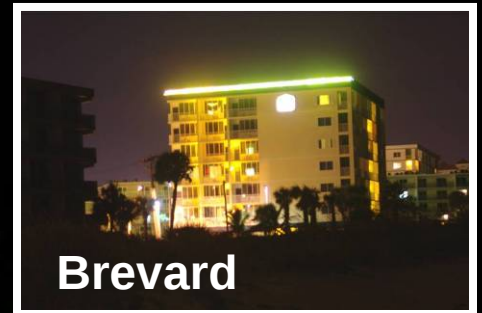


In 2009,
Over 50,000 sea turtles were
disoriented by artificial light
pollution in Florida.

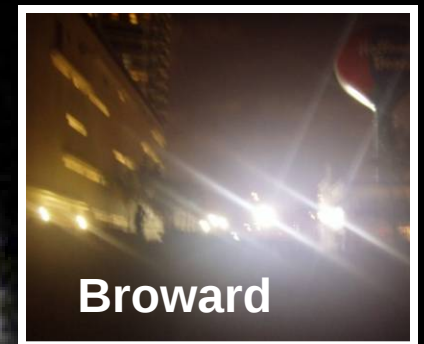
Manatee



Brevard



Broward



Collier



Dade



NFWF Recovered Oil Fund for Wildlife Grant Maximizing Sea Turtle Nesting Success

(July 2010 – December 2011)

- STC worked with 76 coastal properties throughout Florida to design a lighting retrofit plan that met both the safety and security needs of the owners while complying with sea turtle lighting guidelines.
- Of the 76 properties, 45 were able to accept the grant funds and complete the lighting modifications under the time frame of the grant. Photos depicting “Before” and “After” results are shown on the next slides.

Martinique Condominium
Holmes Beach, FL
Grant #L-011
Manatee County



“BEFORE”



“AFTER”

Note: In this photo, all light sources have been converted; however, window tinting had not yet been applied to bottom floors.

Boca Mar Condominium
Boca Raton, FL
Grant #L-001
Palm Beach County



“BEFORE”



“AFTER”

Gulf Shores
Holmes Beach, FL
Grant #L-008
Manatee County



“BEFORE”



“AFTER”

Cabana Beach Club and Silver Sands (adjacent properties)
Longboat Key, Fl
Grant #L-027 and L-028
Sarasota County



“BEFORE”



“AFTER”

Oceanique Resort
Indian Harbour Beach, FL
Grant #L-012
Brevard County



“BEFORE”



“AFTER”

*Note: Photo taken landward of dune vegetation as there was not enough light reaching the beach to take a photograph. Dune vegetation will help to block out garage lights from being seen from the beach.

Gulf Trace Community
Santa Rosa Beach, FL
Grant #L-031
Walton County



“BEFORE”



“AFTER”

Crystal Sands
Siesta Key, FL
Grant #L-018
Sarasota County



“BEFORE”

Note: lights on condo in the
distance were already
converted in this photo



“AFTER”

Queen's Gate Resort
Bradenton Beach, FL
Grant #L-009
Manatee County

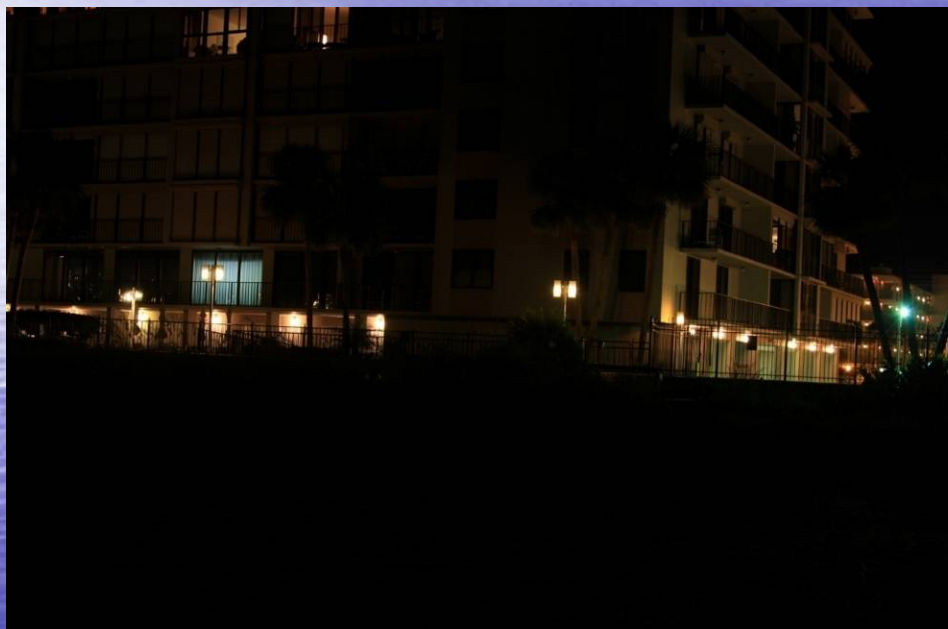


“BEFORE”



“AFTER”

San Seaair
St. Pete Beach, FL
Grant #L-032
Pinellas County



“BEFORE”

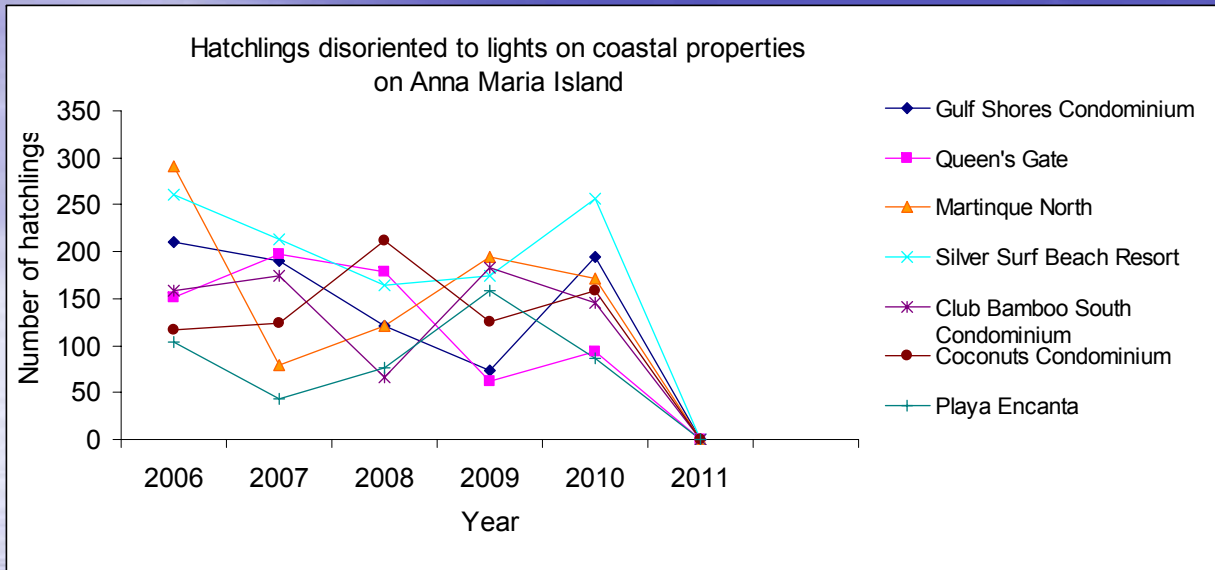


“AFTER”

Maximizing Sea Turtle Nesting Success

- All projects took place on important nesting beaches where there has been a significant history of disorientation events attributed to these properties.
- Developed a plan to add to existing stretches of dark beach (e.g. State Park) in order to create a contiguous stretch of nesting habitat rather than creating pockets of dark areas.
- Preliminary estimates: STC darkened 24,000 linear feet of beach and restored over 4 miles of sea turtle nesting habitat.

Documented Reduction in Disorientations



- Although results from the 2011 nesting season are still coming in, we have already seen a significant reduction in the number of statewide disorientations

Anna Maria Island Grant Number	Manatee County Property Name	Number of Hatchling disoriented to lights on each property					
		2011	2010	2009	2008	2007	2006
L008	Gulf Shores Condominium	0	194	73	121	190	210
L009	Queen's Gate	0	94	62	178	197	151
L011	Martinique North	0	171	194	121	79	291
L013	Silver Surf Beach Resort	0	256	175	164	213	261
L021	Club Bamboo South Condominium	0	145	183	66	175	158
L025	Coconuts Condominium	0	158	126	212	124	116
L035	Playa Encanta Condominium	0	87	158	77	43	104
Total number of hatchling disorientations		0	1105	971	939	1021	1291

Project Benefits

- A 70% decrease in monthly electric bills
- Satisfied property owners - Thank you letters still coming in.
- Documented increase in sea turtle nests in front of retrofitted properties and reduction of disorientations
- The turtle lighting project was NFWF's favorite Recovered Oil Fund project, and was also well received by BP as a successful mitigation effort.
- STC proposes to expand the project into the Florida Panhandle through a grant under the NRDA Early Restoration Program.