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Artificial Lighting and Sea Turtle Hatchlings

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Abstract

Every year, sea turtles migrate thousands of miles from Europe to North America to lay their eggs on our shores. Currently, all seven species of turtles are considered endangered species. One of the main causes of turtle endangerment is seldom discussed: artificial lighting. Sea turtle hatchlings use the light of the moon and the natural glow of the horizon to find their way to the ocean. Artificial lighting interferes with this instinct.

Background

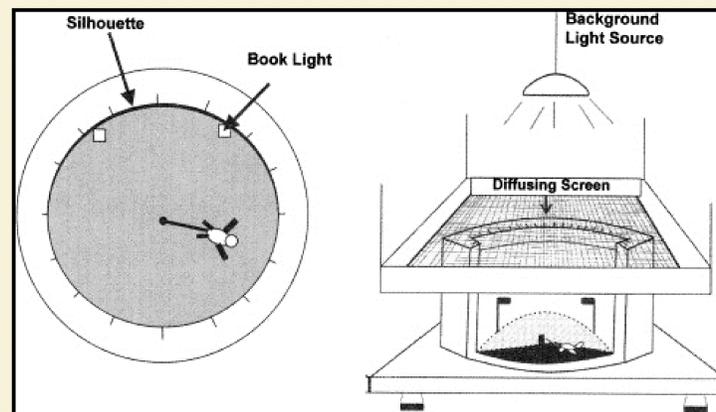
Sea turtles lay their eggs on warm-water beaches from April to September. The eggs hatch at night to protect against predation, and the hatchlings use the moon's light and the glow of the horizon to orient themselves. However, artificial lighting disorients them. As a result, some of the turtles never make it out to sea and die from desiccation, entanglement with beach vegetation, increased exposure to predators, or as road kill. We can help alleviate this issue by educating and raising awareness of the effects of artificial lighting on the turtles. It may even be as simple as flipping a light switch.

Project Goals

Our group's objectives are to educate the coastal citizens of Okaloosa County, Florida (one of the few towns without a blackout town ordinance) to utilize their artificial lighting safely and effectively in accordance with the protection of the sea turtles nesting along their beaches.

Methods

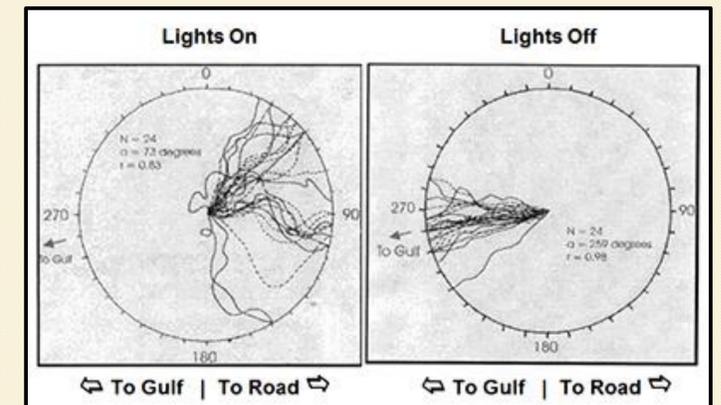
- Researched the ways in which turtles are effected by artificial lighting.
- Learned about the factors that lead to sea turtle orientation and disorientation.
- Came up with and researched ways to mitigate the disorienting effects of lights.
- Explored current efforts and analyzed their efficacy.
- Created an informational pamphlet to raise awareness of the issue.



An arena used for research on sea turtle orientation and the effects of artificial lighting.

Results

- Learned the factors that lead to orientation and disorientation, such as lighting and silhouettes.
- Found ways to diminish artificial lighting in areas where sea turtles nest.
- Created informational pamphlets for businesses and the general public.



The results of an experiment showing the paths of turtles in the presence of a strong artificial light source.

Conclusions/Recommendations

- Houses near beaches should have mandatory blackout hours during turtle mating season.
- Low pressure sodium vapor lamps should be installed, as research shows that they interfere with turtles less.
- Trees and shrubs can be planted between beaches and homes/businesses to provide a black backdrop and block artificial light.

Acknowledgments

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References

- Competitive interactions between artificial lighting and natural cues during seafinding by hatchling marine sea turtles.
- <http://environment.fhwa.dot.gov/strmlng/newsletters/may12nl.asp>