Sea Turtle Action Plan for Baker’s Bay Golf and Ocean Club

Approaches to Turtle Friendly Lighting and Beach Cleaning
Nesting Biology of Sea Turtles

- Nesting Season: March to September
- Hatching Season: June to October
- Six Species in Bahamas

  - Loggerhead (*Caretta caretta*)
  - Olive Ridley (*Lepidochelys oliveacea*)
  - Leatherback (*Dermochelys coriacea*)
  - Kemps Ridley (*Lepidochelys kempii*)
  - Green (*Chelonia mydas*)
  - Hawksbill (*Eretmochelys imbricata*)
Laws and Regulations Protecting Sea Turtles

- Sea turtles are listed as either threatened or endangered Nationally and
- In the Bahamas they are protected under ??
- Internationally they are listed as ?? On CITES
Nesting

- Sea turtles typically nest at night, anytime between sunset and sunrise.
- Each female may lay up to 4 times during one season.
Hatching

- After the incubation time the sea turtles will hatch from their paper-like shells
- Usually occurs at night when a drop in outside temperature is sensed most of the hatchlings will emerge at once
- Hatchlings will then follow the brightest horizon to find the sea
“The Brightest Horizon”

• Studies have shown that visual cues are the major environmental stimuli used by hatchling in ‘sea-finding’ behavior

• Any light source is a visible cue

• Thus lights from homes, streets, and beach board walks could possibly disrupt the sea-finding behavior in hatchlings causing:
  – **Disorientation** - hatchlings lack direction and crawl in circuitous paths
  – **Misorientation** - hatchlings crawl in straight path other then the direction of the sea
Consequently…

• Hatchlings will move toward
  – Streetlights
  – Porch lights
  – Condominiums
  – Parking Lots

• Hatchlings then succumb to attacks by predators, exhaustion, drying by the sun, and even run over by cars on roads and parking lots
Data from Florida relays the extent to which hatchlings can become disorientated. (Data courtesy of Nova Southeastern University).

<table>
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<th>Year</th>
<th>1999</th>
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<th>2002</th>
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<tr>
<td>Total Number of Hatchling Disorientation Events (Nests Disoriented)</td>
<td>668</td>
<td>1,043</td>
<td>741</td>
<td>896</td>
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<tr>
<td>Total Number of Hatchlings Involved</td>
<td>28,157</td>
<td>46,845</td>
<td>28,764</td>
<td>43,226</td>
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<tr>
<td>Total Number of Adult Disorientation Events (Nesting Females Disoriented)</td>
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<td>22</td>
<td>19</td>
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<tr>
<td>Total Number of Events</td>
<td>677</td>
<td>1,065</td>
<td>760</td>
<td>933</td>
<td>1,460</td>
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</table>
Lights Disrupt Nesting Females

- Studies have shown that females are more likely to nest on low lit beaches compared to lighter beaches.

- Light pollution can decrease available nesting habitat.

- And lights will also cause adult females to disorientate.
What are turtles attracted to?

- Most marine turtles show attraction toward shorter (UV) wavelengths and aversion to longer (IR) wavelengths.
- Red (~650 nm) appears to be the least attractive.

In an effort to reduce the negative effects of beach lighting, some U.S. cities have adopted lighting ordinances.
Turtle Friendly Lighting

- Turn off unnecessary lights and close curtains and blinds at night.
- Shield or reposition lights away from the beach.
- Avoid and replace exposed bulbs and globe lights that scatter light.
Turtle Friendly Lighting

- Replace incandescent, fluorescent and high pressure sodium lights
- Use shielded motion detector lighting that stay on for a minimum time
- Plant vegetation buffers
Lighting Alternatives

- Low pressure sodium bulbs
- The Twister light bulb
- Yellow bug lights
- Beeman LED (light emitting diode)
Share the Beach- Guidelines for Beach Cleaning

Nesting and Beach Cleaning

Sea turtle nesting habitats include all sandy beaches adjoining the waters of the Atlantic Ocean, the Gulf of Mexico, and the Straits of Florida in all coastal counties and all inlet shorelines of those beaches. At Baker’s Bay, nesting habitat extends from the high tide line to the top of the dune. Sea turtle nesting season starts March 15 in the Bahamas and extends through ????

Beach cleaning removes material left by the tides or beach goers on sandy shorelines. Stranded seaweed provides an important food source for beach and nearshore food chains, and should be left in place when possible. Human debris can pose a hazard to humans and animals, and should be removed.

Beach cleaning equipment should be limited during times of the year when sea turtles are nesting.

In order for beach cleaning to occur during nesting season, special measures should be take to protect marine turtles, their nests and hatchlings.
Share the Beach- Guidelines for Beach Cleaning

1. Cleaning should only occur seaward of the high tide line and only during the day.
2. Cleaning should only occur once an area has been surveyed for sea turtle nests.
3. Cleaning should only be done by properly trained personal.
4. All nests found should be marked and the information given to the Environmental Manager.
5. Cleaning equipment should not penetrate more than two inches into the beach surface.
6. Cleaning equipment must stay at least 10 feet from salt-tolerant vegetation.
7. In higher density areas where marking every nest is not feasible, non-mechanical methods of cleaning, such as hand raking, may be necessary.