Landscaping for Hawksbill Turtles

2011 WIDECAST Annual Meeting
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www.jbhp.org
How does a hawksbill turtle use the LANDscape?
Jumby Bay Island
Master Development Plan

- 300+ Acre Island
- 4.5 Mile shoreline
- 42 Private Estate Lots
- 18 Private Villas
- 50 Hotel Suites
Figure 11: Deviation between nests and false crawls by beach sector on Pasture Beach recorded during the 2010 nesting season. Positive values represent areas where nests outnumber false crawls.

From the JBHP 2010 Annual Report, K. Levasseur and D. Tilley
Canavalia rosea, Baybean

Ipomea pes-capre, Beach Morning Glory

Scaevola sericea, Beach Naupaka

Thespesia populnea, Seaside Mahoe

Surinama maritima, Bay cedar

Sea Grape, Coccoloba uvifera
Figure 6: Evolution of the number of nests and total activities recorded on Long Island, Antigua, from 1987 to 2010.

From the JBHP 2010 Annual Report, K. Levasseur and D. Tilley
Wildlife Habitat Needs

- Food
- Water
- Shelter
- Space

Habitat Quality

- Layers
- Diversity
- Edges
- Plants: Penetrability
Nesting Habitat Data Collection & Results

For years 1990-2008 (N=2104)

<table>
<thead>
<tr>
<th>AVG Distance nested from HWL (m)</th>
<th>MIN (m)</th>
<th>Max (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>8.05</td>
<td>0</td>
<td>33.6</td>
</tr>
</tbody>
</table>

**Total distance she crawled before Final nest location?**

<table>
<thead>
<tr>
<th>Distance to Veg Edge (M)</th>
<th>Min(m)</th>
<th>Max(m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.40</td>
<td>-14.8</td>
<td>20.2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Height of Veg Over Nest (M)</th>
<th>% of Total Nests</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;2m</td>
<td>15%</td>
</tr>
<tr>
<td>1-2m</td>
<td>20%</td>
</tr>
<tr>
<td>0.5-1m</td>
<td>11%</td>
</tr>
<tr>
<td>&lt;0.5m</td>
<td>16% (2009)</td>
</tr>
</tbody>
</table>

For years 1990-2008 (N=2104)
What should we consider EDGE habitat?

<table>
<thead>
<tr>
<th>% on EDGE (0m)</th>
<th>% in VEG (&lt;0m)</th>
<th>% in OPEN (&gt;0m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.8%</td>
<td>83.3%</td>
<td>11.9%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>% on EDGE (+/-0.5m)</th>
<th>% in VEG (&lt;-0.5m)</th>
<th>% in OPEN (&gt;0.5m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>13.2%</td>
<td>78.5%</td>
<td>8.4%</td>
</tr>
</tbody>
</table>

For years 1990-2008 (N=2104)

Is her head covered by vegetation? Which direction from the ocean does she face?
Other Habitat-Related Initiatives: JB & Antigua

- Vegetation assessment of PB beach (08-09)
- Plant species guides for turtle team (09)
- Fostering a healthy relationship with JB’s landscape department, island residents and resort management
- Recommended Management practices for JB hawksbills (10)
- Beach/Turtle Gardens

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**Keeping Beaches Turtle-Friendly: Recommended Management Practices for Jumby Bay’s Hawksbills**

Hawksbill nesting has been studied for more than two decades at Jumby Bay. Over the years, the Jumby Bay Hawksbill Project (JBHP) and other research projects worldwide have accumulated a wealth of knowledge about what makes a good hawksbill nesting beach. Vegetation, suitable sand depth, and low lighting levels are among the key attributes of successful nesting beaches. We still have much to learn about hawksbill nesting, but here are some beach management practices to ensure your beach stays turtle-friendly:

- Plant native species such as sea grass, button mangroves and key oysters and preserve remnant maritime forest. Hawksbills have evolved with these native species and are well-adapted to nesting in this vegetation. These native species have tremendous ecological value in sand stabilization and nutrient enrichment. Other species, such as the introduced cordgrass, have been successful in stabilizing cleared areas and may be conducive to hawksbill nesting. However, they can quickly become overgrown and preclude successful nesting. JBHP research is currently assessing hawksbill use of these vegetation beds in order to better evaluate this nesting habitat.

- If natural debris such as sea grass is raised, collect and remove the debris or use it to mulch landscaping or for use as nest debris. Creating piles of debris in vegetation may suffocate nests and reduce hatchling quality. Extra debris also makes it more difficult for hatchlings to emerge and crawl down the beach.

- Manage light sources. Turn off unnecessary lights and install motion-sensitive lights. Use directional lighting or light shields to minimize light reaching the beach. install pure yellow light sources, such as low pressure sodium vapor bulbs, which are less distracting to hawksbills. Remember, if you can see a light while standing on the beach at night, sea turtles can see it too.

- Remove trash from the beach that can entangle hawksbills, particularly hatchlings.

- Try to minimize beach disturbances, including the use of heavy equipment, during the peak of the nesting season, roughly June through November.

- Replenish beach areas may create more potential nesting sites by providing greater sand depth. Hawksbills typically require about 2 feet (60 cm) of sand to lay their eggs. However, adding sand in areas that are accessible to wildlife may attract nesting turtles to sites that will ultimately be washed out or flooded and could reduce overall hatch success.

Conserving hawksbills and maintaining turtle-friendly habitats provides for the conservation of many other marine resources we enjoy, such as beaches, reefs, and the ocean. In this way, the health of the Jumby Bay hawksbill population is directly tied to the well-being of the island’s residents and visitors. Thank you for considering these recommendations.

Please contact the JBHP for more details on maintaining turtle-friendly beaches!
‘Beach Garden’ Chronology and Growth
2000-2008
Quality of Habitat Matters: Lessons from the Gardens
Claws
The Lure and Benefits of the Garden

Wildlife Survival
Educational Opportunity
Community Involvement
Wildlife Viewing
Psychological Value
Economics
Natural Beauty

‘When the world grows weary and ceases to satisfy there is always the garden’ --Mary Howitt
Schematic Elevation View of Existing Landscape Development Conditions of Jumby Bay Shore Line

Views of the sea are obstructed.

Drawing by Jose Buitrago, Associate Professor of Landscape Architecture, The University of Georgia, USA
Schematic Elevation View of Proposed Landscape Development Conditions of Jumby Bay Shore Line

Drawing by Jose Buitrago, Associate Professor of Landscape Architecture, The University of Georgia, USA
Schematic Plan View of Existing Landscape Development Conditions of Jumby Bay Shore Line

NOTES:
- Plan Not to Scale.
- Assume Home’s FFE at 8' above sea level.
- Lots & homes layouts are schematic renderings.
- Dominant landscape element between properties is grass and scattered tropical trees.
- Existing planting of islands along the beach front (consisting of coconut palms and scuaevola) are screening ocean vistas and limiting beach access from properties.

Drawings by Jose Buitrago, Associate Professor of Landscape Architecture, The University of Georgia, USA

Schematic Beach Gardens Landscape Architecture Plans for Development for Jumby Bay Shore Line

Proposed Planting Plan for Beach Gardens
- Planting Zone A
  - Green buffer between adjacent properties. Select plants that discourage turtles from nesting in this zone. Use tropical trees of strong root systems to serve as physical barriers.

- Turtle Friendly Barrier
  - Of no more than 3' height. Made of manmade materials, local stone, and/or coconut trunks. The wall will curve into the corridors.

- Planting Zone B
  - Create large Scareaevola and Sea Cocke planting islands with center passage way leading in/out to the ocean. Green Corridors designed with a sandy path center core. Coconut Palms planted at center of nesting islands to serve as wind breakers and for sand catchers (dune restoration).

Clearing Zone
- Selective removal of vegetation to allow homeowners un-obstructed vistas to the ocean.
Benefits to the Homeowner

- Beach stabilization
- Increase Property Values
- Adds Privacy
- Benefits Water Quality
- Shading
- Maintain Vista of Ocean
Information Needs and Future Directions

1. Establish Reference Beaches

To better understand and document our non-developed nesting grounds and how turtles nest within these areas.

2. Nesting Habitat Data Needs & Standardization Caribbean-wide

3. Create ‘beach garden’ landscape designs, and guidance manual(s)

4. Beachfront/Backyard habitat certification program (i.e. NWF)

Windward Beach, Antigua
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Microhabitat parameters
- Nest distance to HWL
- Habitat type (open, edge, vegetation)
- Nest location in reference to vegetation edge (distance)
- Nest success
- Vegetative vertical structure (Height over turtle/final nest)
- Species of vegetation
- Which direction nesting turtle faces
Information
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What is our goal? Success?
THANK YOU

James Richardson
Jumby Bay Hawksbill Project Members
Jose Buitrago
Kimberly Andrews
Jumby Bay Homeowners

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