Landscaping for Hawksbill Turtles

2011 WIDECAST Annual Meeting

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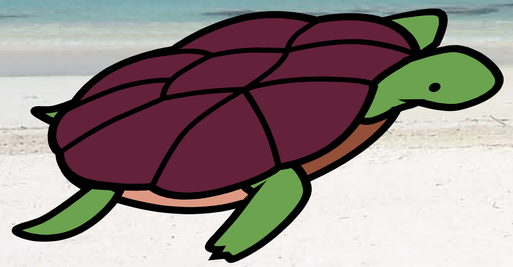
How does a hawksbill turtle use the LANDscape?


CAT
320
CAT



Jumby Bay Island

Master Development Plan

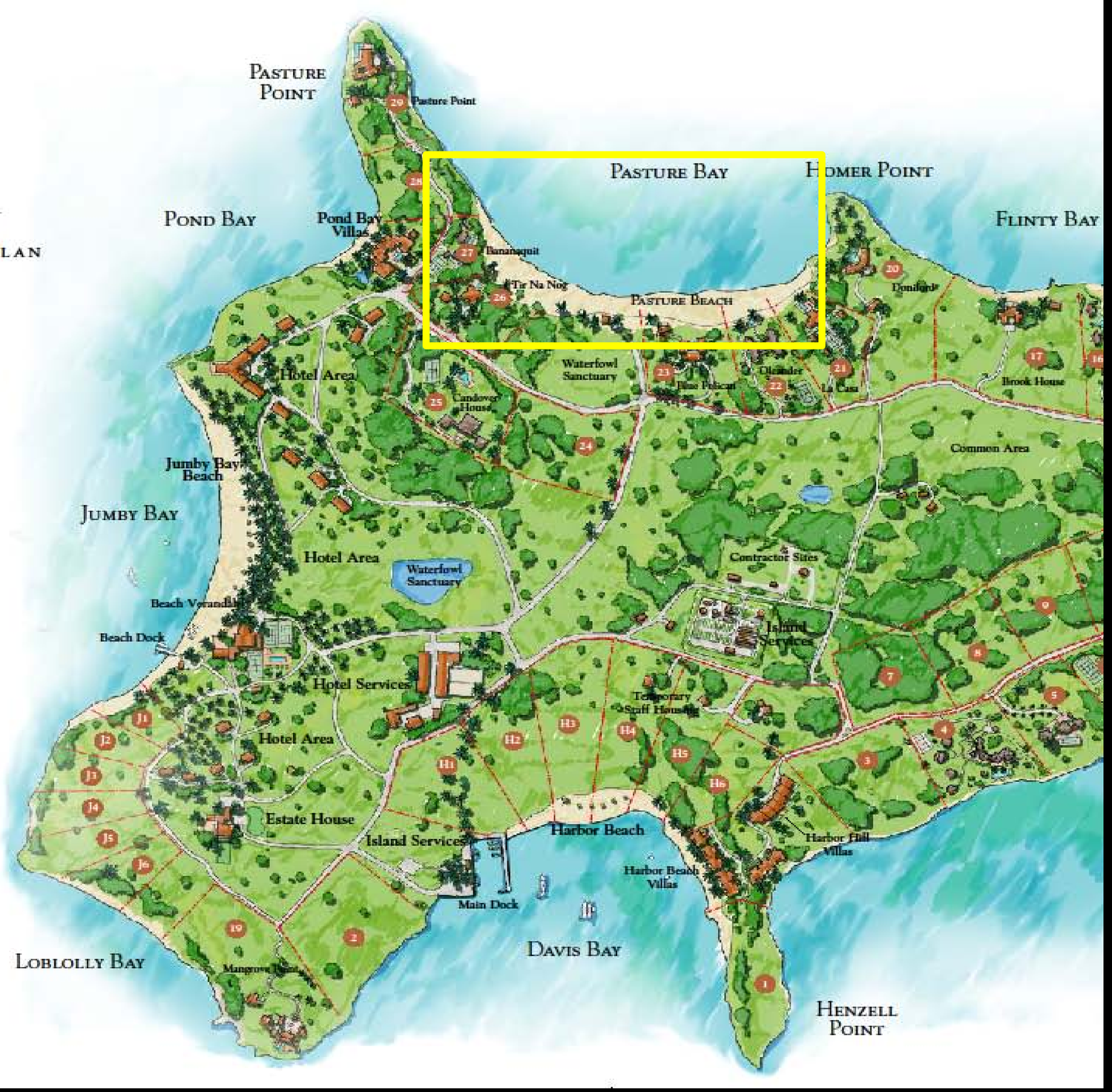
300+ Acre Island

4.5 Mile shoreline

42 Private Estate Lots

18 Private Villas

50 Hotel Suites



the Jumby Bay Hawksbill Project

1984

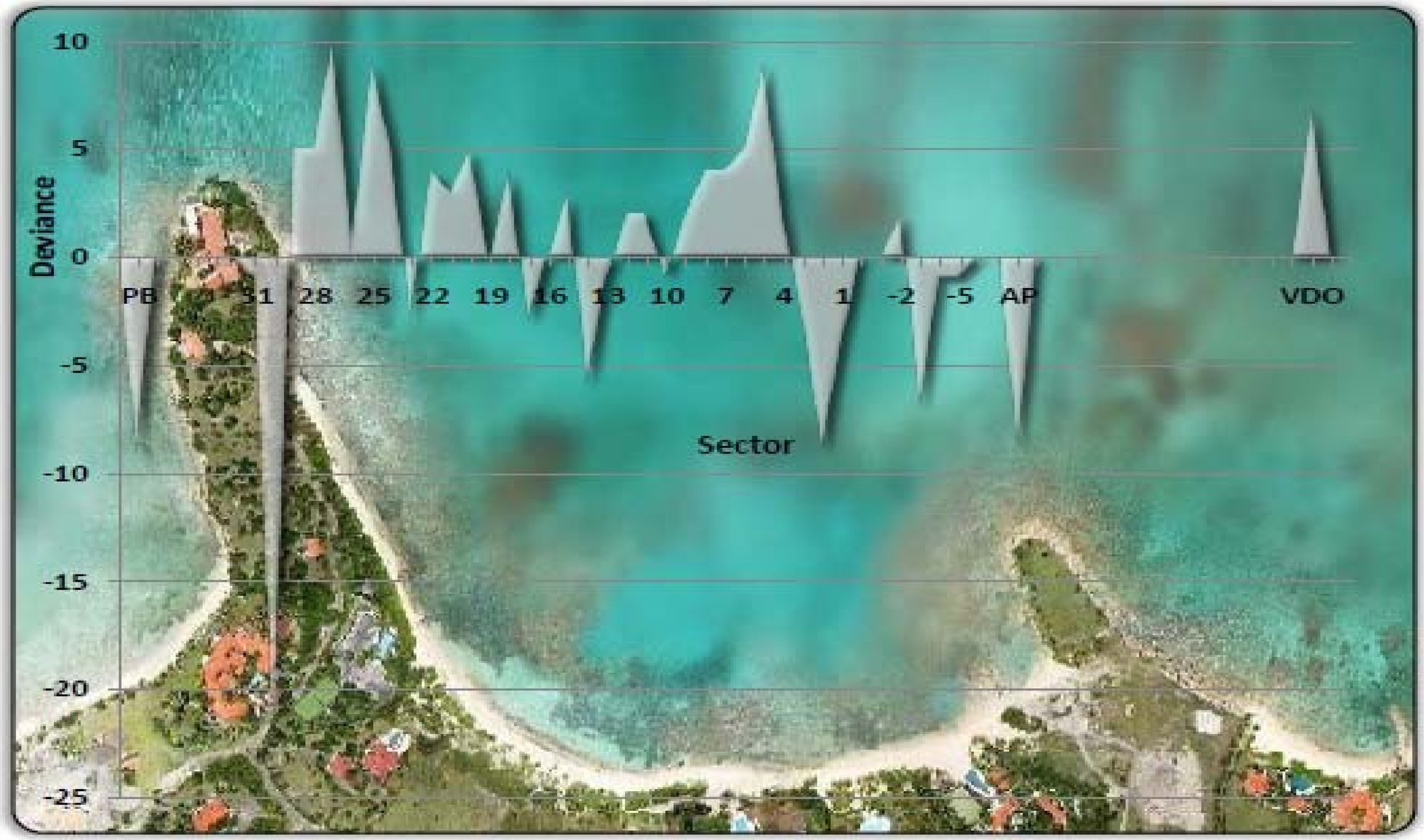


Figure 11: Deviation between nests and false crawls by beach sector on Pasture Beach recorded during the 2010 nesting season. Positive values represent areas where nests outnumber false crawls.

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

Sea Grape, Coccoloba uvifera

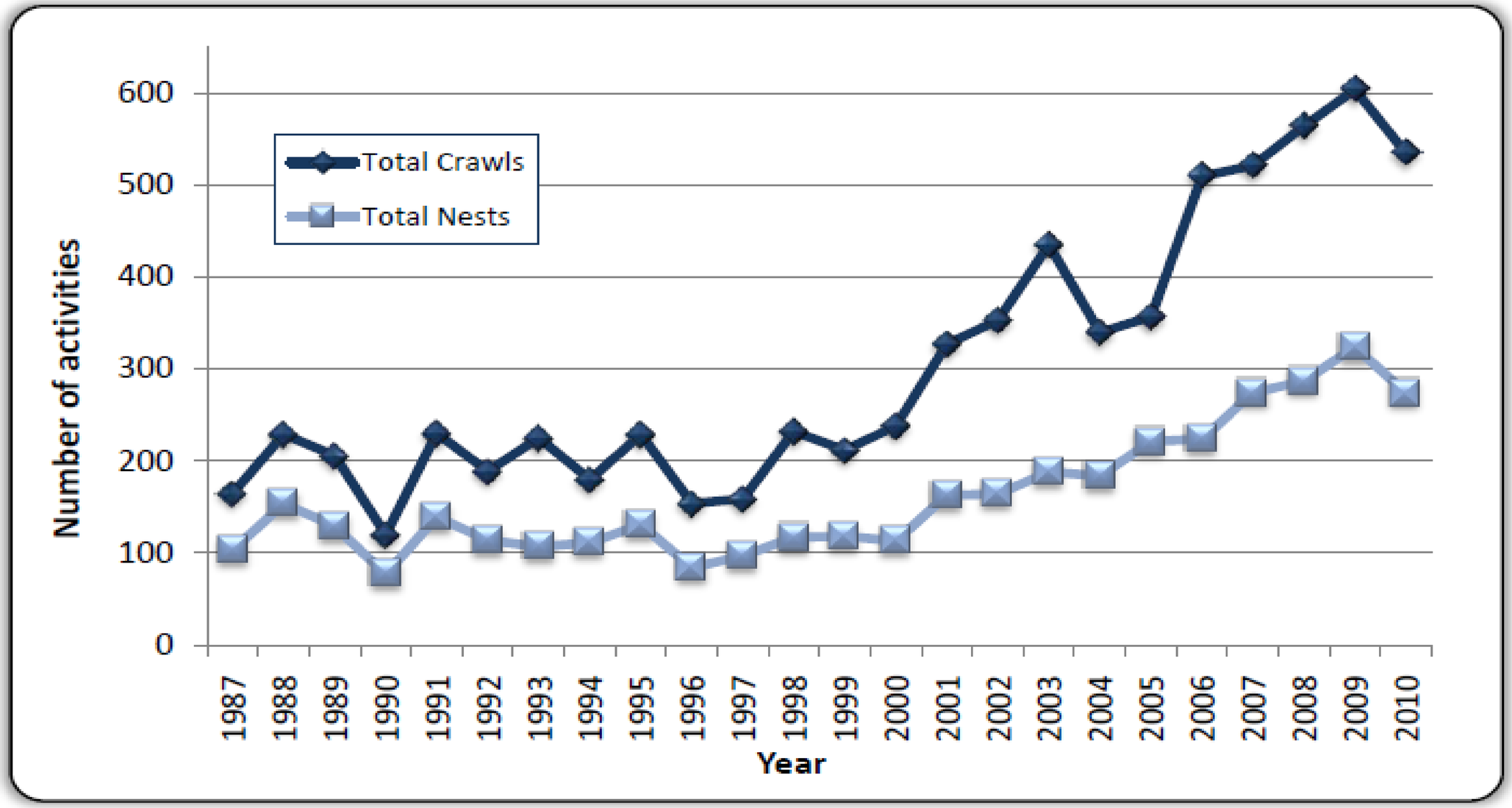


Figure 6: Evolution of the number of nests and total activities recorded on Long Island, Antigua, from 1987 to 2010.

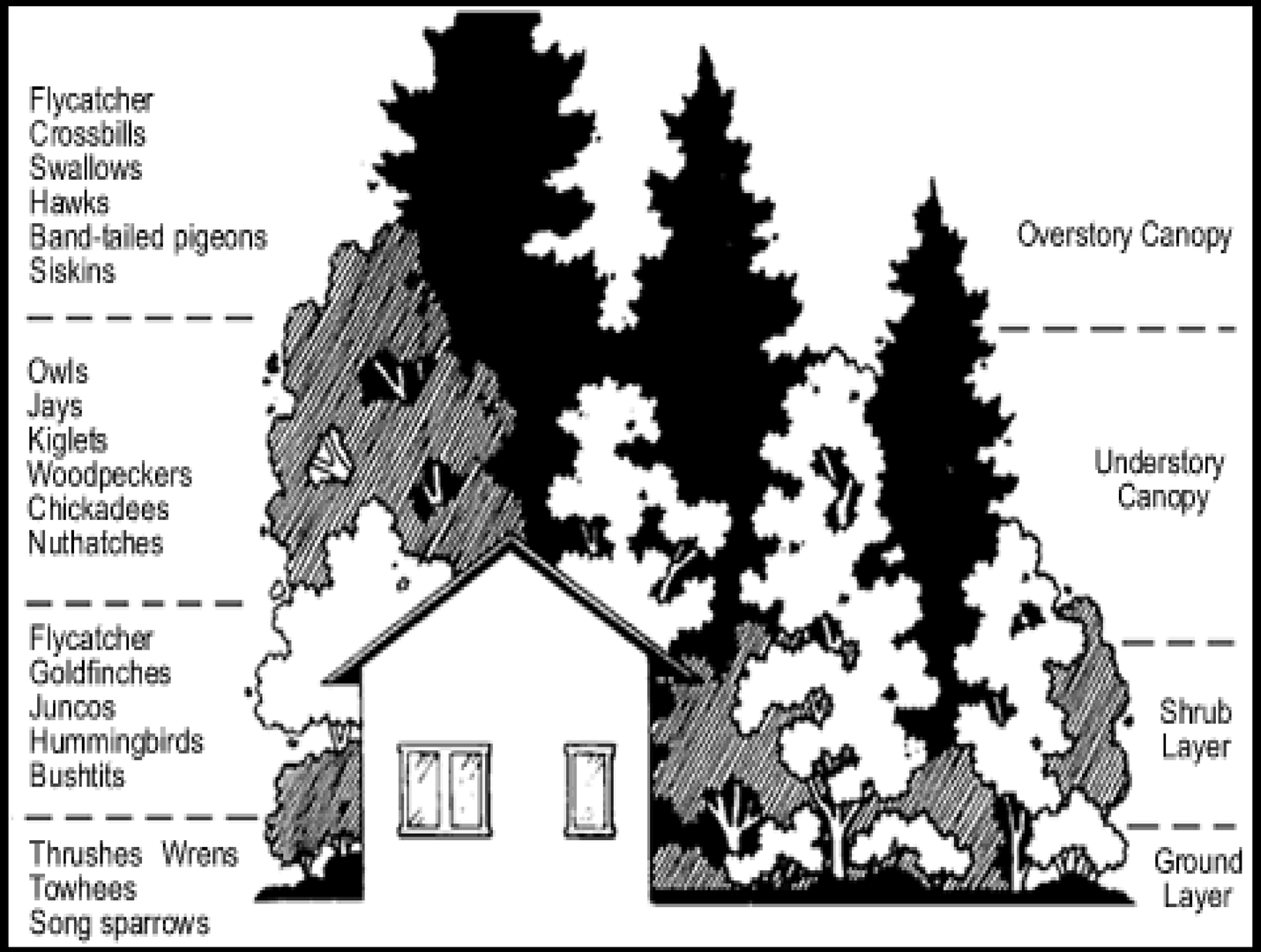
From the JBHP 2010 Annual Report, K. Levasseur and D.Tilley

Wildlife Habitat Needs

- Food
- Water
- Shelter
- Space

Habitat Quality

- Layers
- Diversity
- Edges
- Plants:Penetrability



Nesting Habitat Data Collection &Results

AVG Distance nested from HWL (m)	MIN (m)	Max(m)
8.05	0	33.6

For years 1990-2008 (N=2104)

**Total distance she crawled before Final nest location?

Distance to Veg Edge (M)	Min(m)	Max(m)
2.40	-14.8	20.2

For years 1990-2008 (N=2104)

Height of Veg Over Nest (M)	% of Total Nests
>2m	15%
1-2m	20%
0.5-1m	11%
<0.5m	16%

(2009)

Nesting Habitat Data Collection &Results Cont'd

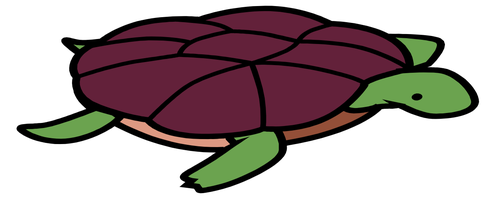
What should we consider EDGE habitat?

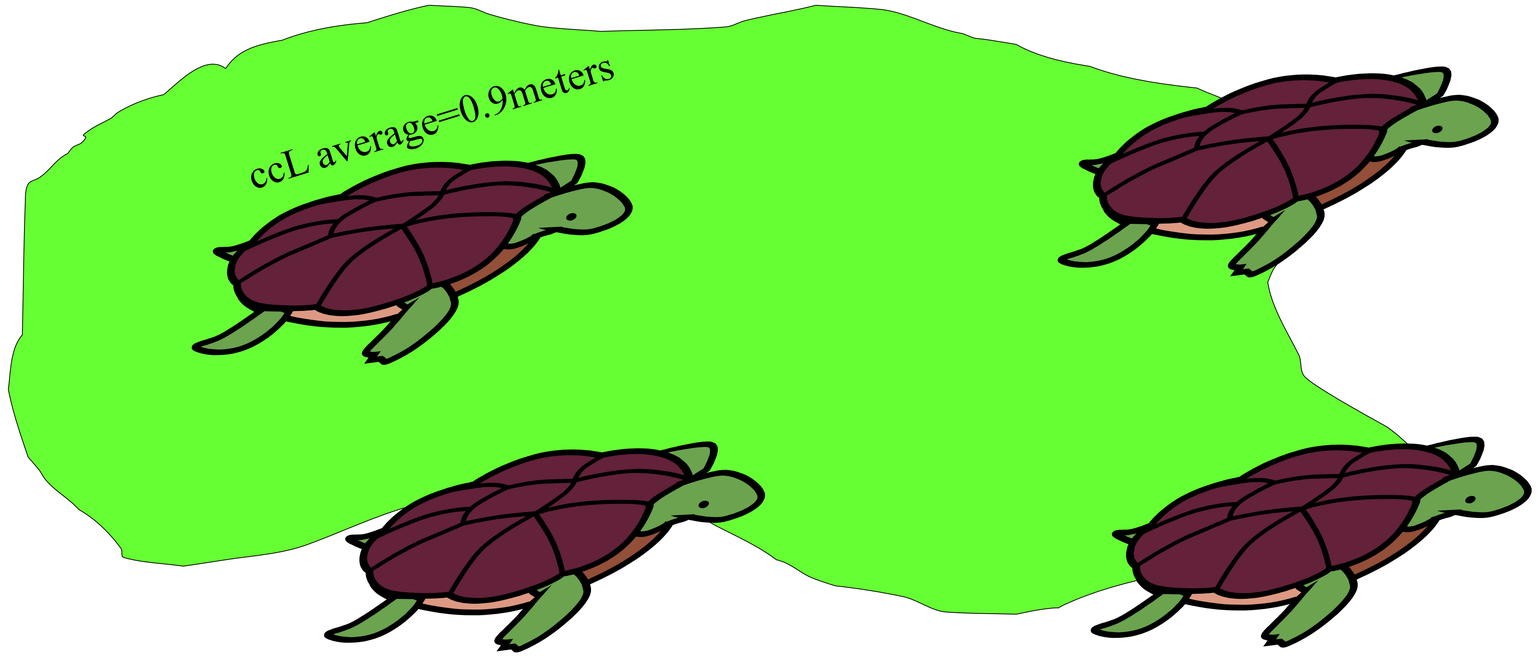
% on EDGE (0m)	% in VEG (<0m)	% in OPEN (>0m)
4.8%	83.3%	11.9%

% on EDGE (+/-0.5m)	% in VEG (<-0.5m)	% in OPEN (>0.5m)
13.2%	78.5%	8.4%

For years 1990-2008 (N=2104)

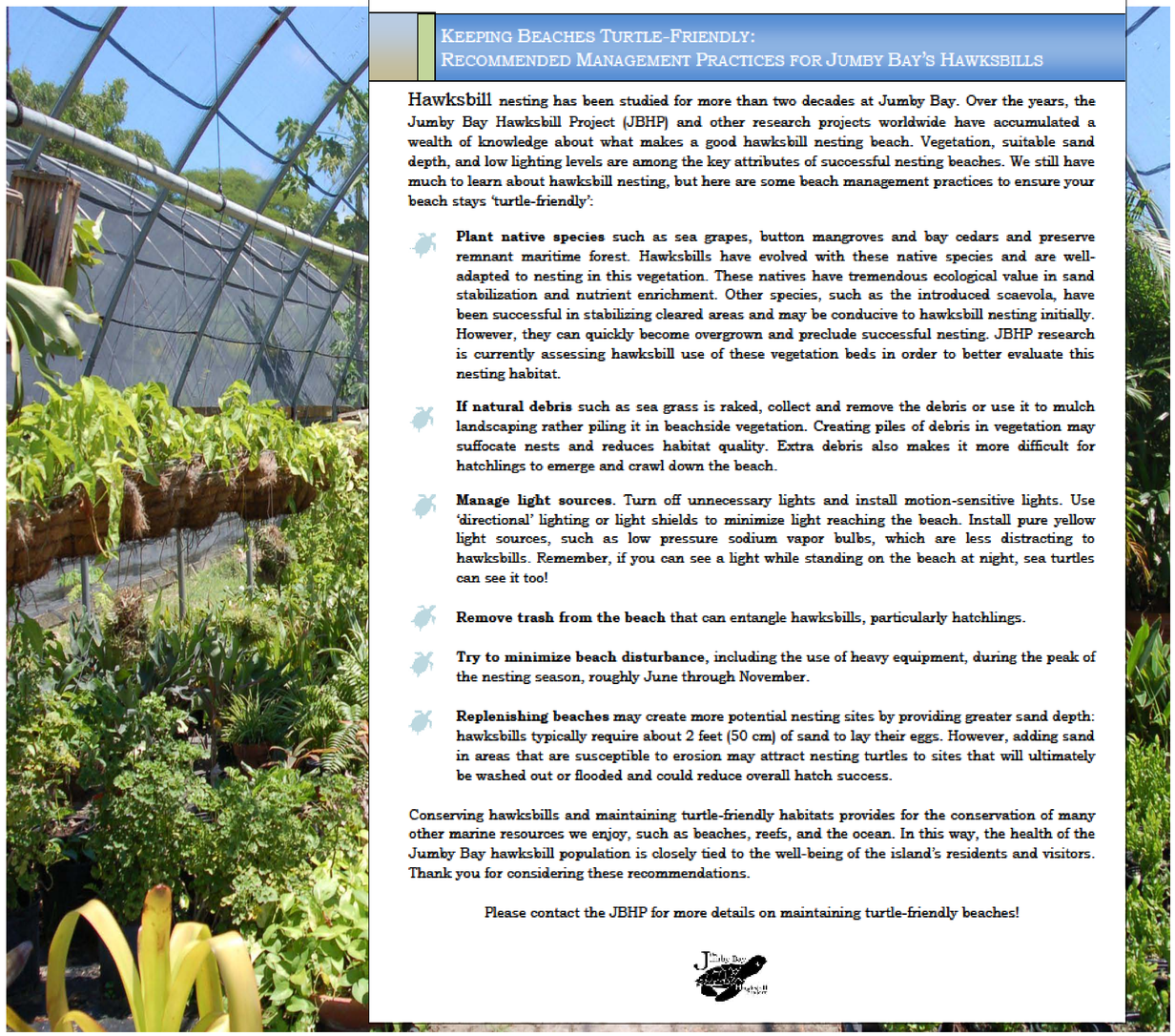
Is her head covered by vegetation?
Which direction from the ocean does she face?





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



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 grapes, button mangroves and bay cedars and preserve remnant maritime forest. Hawksbills have evolved with these native species and are well-adapted to nesting in this vegetation. These natives have tremendous ecological value in sand stabilization and nutrient enrichment. Other species, such as the introduced scaevola, have been successful in stabilizing cleared areas and may be conducive to hawksbill nesting initially. 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 raked, collect and remove the debris or use it to mulch landscaping rather piling it in beachside vegetation. Creating piles of debris in vegetation may suffocate nests and reduces habitat 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 disturbance,** including the use of heavy equipment, during the peak of the nesting season, roughly June through November.
- **Replenishing beaches** may create more potential nesting sites by providing greater sand depth: hawksbills typically require about 2 feet (50 cm) of sand to lay their eggs. However, adding sand in areas that are susceptible to erosion 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 closely 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!

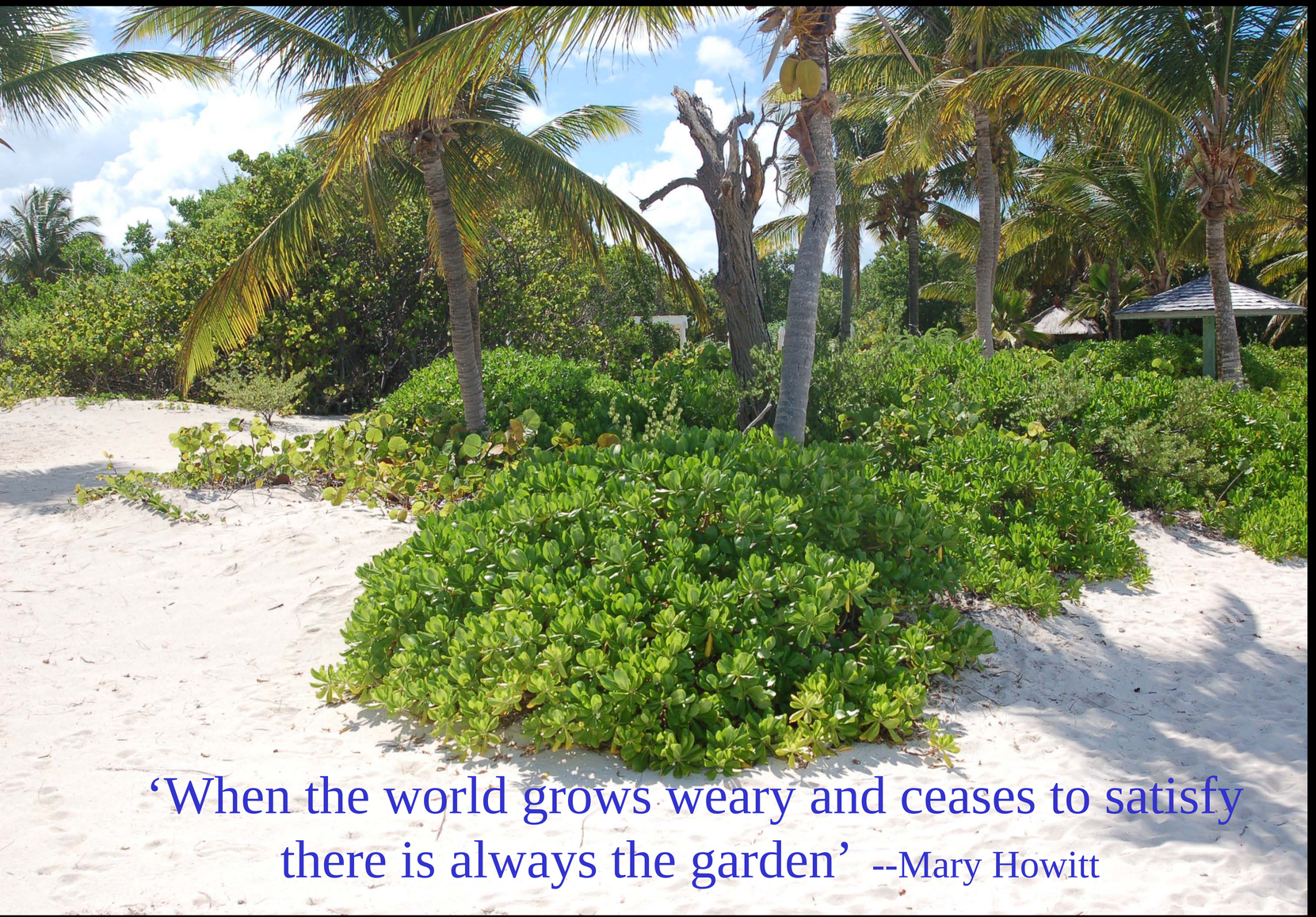
‘Beach Garden’ Chronology and Growth

2000-2008

Quality of Habitat Matters: Lessons from the Gardens

Claws

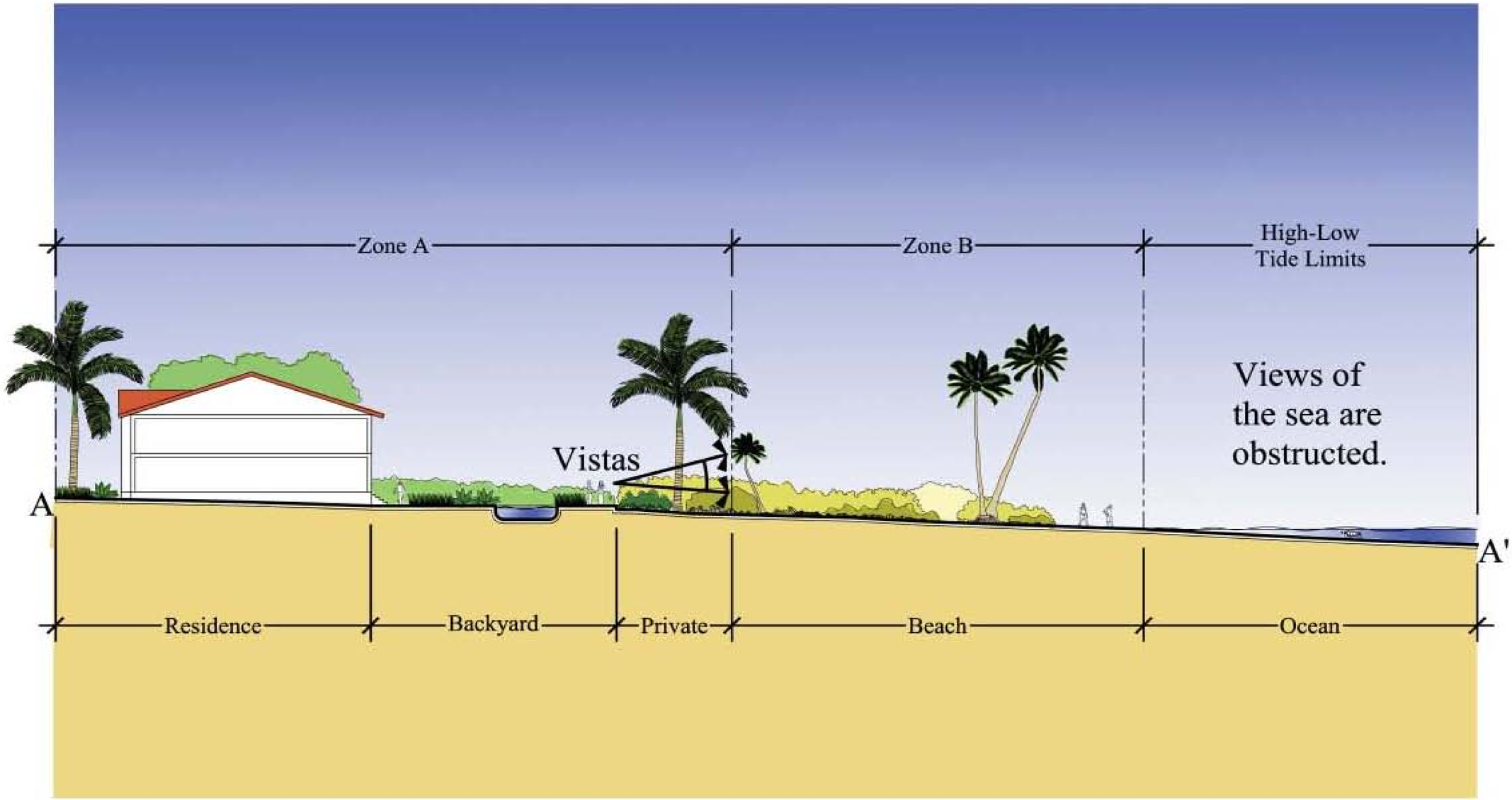
The Lure and Benefits of the Garden



‘When the world grows weary and ceases to satisfy there is always the garden’ --Mary Howitt

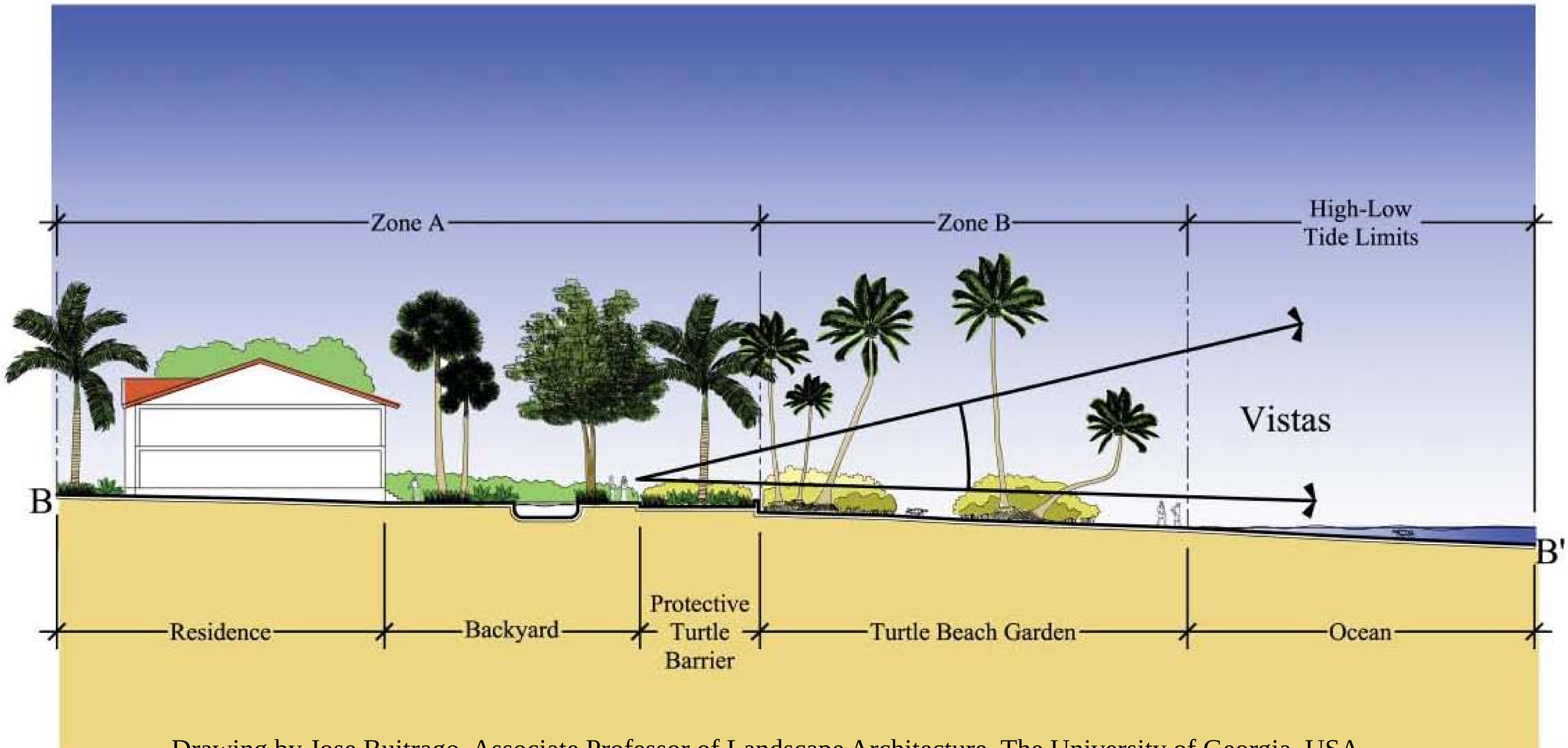
Wildlife Survival
Educational Opportunity
Community Involvement
Wildlife Viewing
Psychological Value
Economics
Natural Beauty

Schematic Elevation View of Existing Landscape Development Conditions of Jumby Bay Shore Line



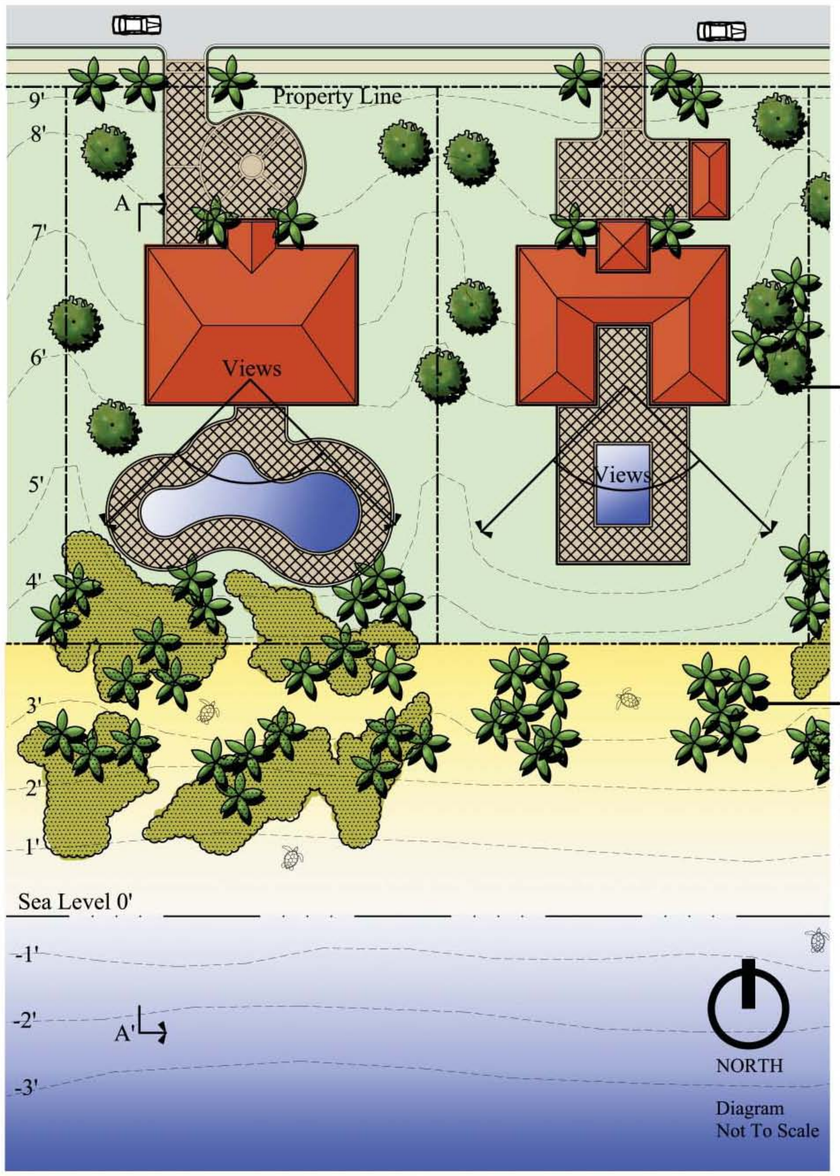
Drawing by Jose Buitrago, Associate Professor of Landscape Architecture, The University of Georgia, USA

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.

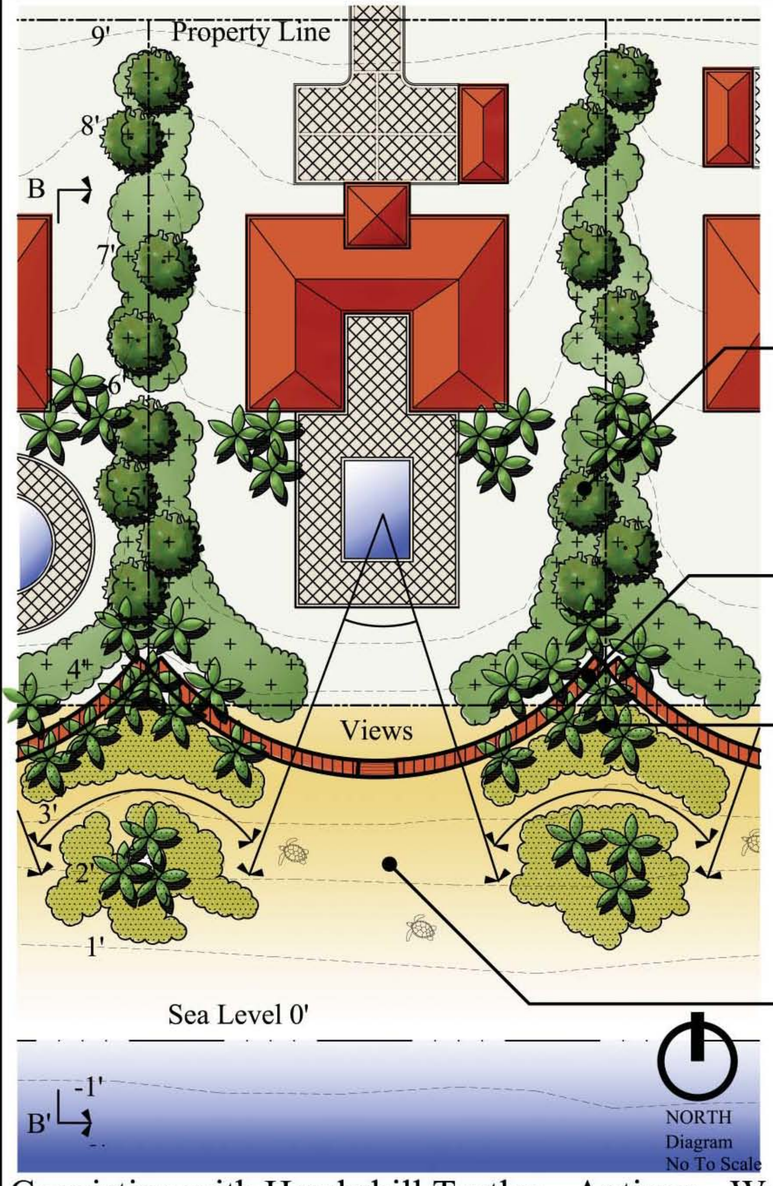
Assume Home's FFE at 8' above sea level.

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 scaevola) are screening ocean vistas and limiting beach access from properties.

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 Scaevola and Sea Grape 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/or sand catchers (dune restoration).

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

Coexisting with Hawksbill Turtles - Antigua - West Indies

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

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

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)

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

Windward Beach, Antigua

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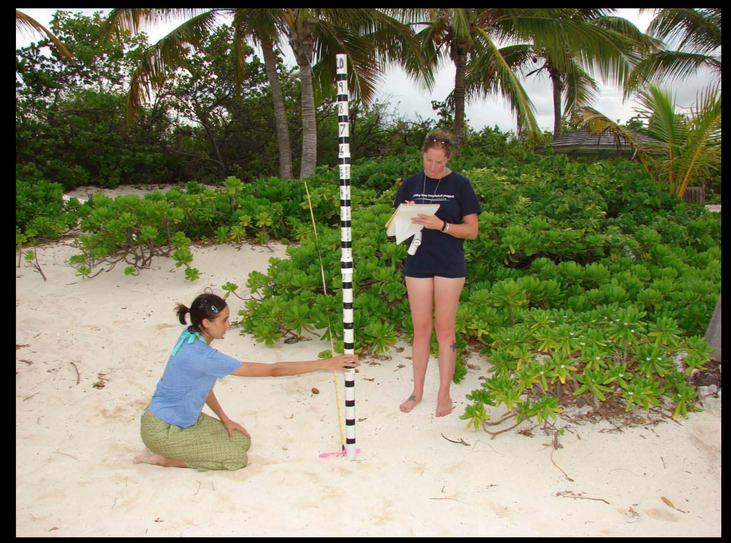
Microhabitat parameters

- 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



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What is our goal? Success?

THANK YOU

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Jumby Bay Homeowners

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