

## Threats to turtle nesting:

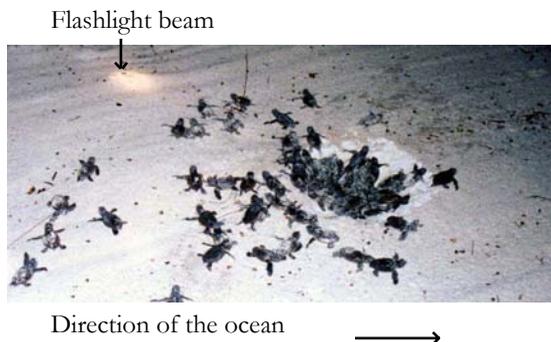
 Lighting – areas where lighting is visible from the beach are not suitable for marine turtle nesting or for hatchling emergence behaviour.

 Sea walls – Any hardened structure whether sandbags or concrete walls, removes nesting habitat from marine turtles by physically impeding access.

 Beach equipment – All beach equipment left on the beach overnight can block access to nesting turtles coming ashore or hatchlings trying to reach the ocean,

 Removal of vegetation – Loss of vegetation between property and beach increases the amount of light that reaches the beach from the property, and removes the vegetative cover, under which many turtles, in particular hawksbills, prefer to nest.

 Beach cleaning – Machines that clean and condition the sand have rotating sieves that reach down beneath the surface of the sand. These can destroy eggs laid in shallow nests, or crush hatchlings escaping from nests.



*Where can I buy 'turtle-friendly' lights and how much will it cost me?*

Location	Manufacturer	Type	Wattage	Price	comments	Product no.
A.L.Thomson's	Westinghouse	HPS	150	\$24.00		
	Abco	Bug-light	60/25	\$2.60 2pk		
	Abco	Flood bug-light		\$7.35	Where necessary	
Kirks	General Electric	Bug-light	100/60	\$1.95 2pk		
Phillips Electrical	Phillips	HPS	180 through 18	Varies	Not all in stock but can order sizes and shapes for different fittings	36867-0 36869-6 36872-0 36874-6 36876-1 36877-9 36879-5 36881-1 36883-7

## Marine Turtles and Lighting Management



### The Problem:

*Artificial lighting disrupts typically nocturnal nesting behaviour, decreasing suitable nesting habitat and confusing and disorienting hatchling turtles, preventing them from reaching the sea.*

### The solution:

*As few lights as practical should be used, and for essential lighting, long-wave light sources should replace more disruptive light sources. Using lights of minimal wattage that are housed within well-directed fixtures aimed down and away from the beach will reduce intensity. Motion-sensors should be fitted wherever possible and native vegetation should be planted between properties and the sea, to further reduce the amount of light that reaches the beach.*

## *The plight of the marine turtle in Cayman.*

'Las Tortugas', the Spanish for turtles, was the name first given to the Cayman Islands when they were discovered by Christopher Columbus in 1503. The name was chosen because the islands were said to be "full of tortoises, as was all the sea about, insomuch that they look'd like little rocks". Declared extinct in 1900 by the International Union for the Conservation for Nature, recent research by the Department of Environment shows that although the Cayman Islands can once again provide the conditions to establish, maintain and support a resident population of wild marine turtles, certain steps must be taken today to ensure adequate nesting habitat remains. Marine turtles today are a symbol of Cayman's history, culture and heritage, and are highly valued by tourists and residents, who perceive sighting of wild marine turtles as a very special experience.

Today, almost all threats to marine turtles and their nesting beaches are the result of coastal development. Massively increased numbers of people live on or near the coast, and tourism targets these areas specifically.

This drain on nesting grounds is a major factor affecting the re-establishment of a wild nesting marine turtle population in Cayman today. It is a problem faced by many areas throughout the region, and one that has been effectively dealt with in some of these places, for example in Florida. The negative impact on wild nesting marine turtle populations must be taken seriously and addressed in a comprehensive plan for recovery. This brochure addresses the problems associated with artificial lighting and marine turtle nesting behaviour, and looks at how you can help.



# Beach Lighting Management Plan:

Light management techniques are not meant to prohibit light near the beach, but to preserve useful light and reduce harmful light.

Be aware that ALL lighting visible from the beach is a problem. Removing/lessening all troublesome lights on one property may allow a nesting female a dark and private spot in which to lay, but *will not lessen the attraction of lights on adjacent properties to the newly emerged hatchling*. It is vital to the success of any lighting management effort, that all those residing in beachfront property are concerned about their local sea turtle population, and take part in the effort to darken beaches.

## Light management tactics:

### f Turn-off lights:

- [ The most direct and complete method of removing the threat of light pollution.
- [ The simplest, cheapest and most straightforward method.
- [ Many establishments use lighting to illuminate areas that do not need to be lighted. This is decorative lighting, and has limited use for anything other than aesthetics.
- [ Lighting necessary for safety or security can be used in the early evening hours and turned off during the night.
- [ Motion detectors can be fitted to lights used for security.

*Turning out lights will result in energy savings as well as marine turtle conservation.*

### f Control lights:

- [ The Department of Environment has information on simple methods for redirecting outdoor and indoor lighting that is deemed essential. This includes shielding, repositioning, recessing, lower pole mounts, redirecting and the use of timers and/or motion detectors for outdoor lights, and methods such as window tinting, closing curtains, moving lights that are placed near windows, and placing reminder notices on light switches in rental apartments.
- [ Additionally, vegetation may be planted between properties and the beach front, not only to increase suitable nesting habitat for marine turtles, but also to reduce the amount of light that reaches the beach.

### f Change bulb type and lower wattage:

This method should only be used as a substitute not as a replacement for beach darkening

- [ Short-wave bulbs: floodlights, ultra-violet lights and violet, blue and green lights. This is the most harmful to normal nesting and hatchling emergence behaviour.
- [ Long-wave bulbs: Have a minimal effect on sea turtles, but are not completely harmless and therefore should be used in conjunction with other light management techniques.

Types of long-wave lighting sources:

- [ Low-pressure sodium-vapour (LPS) lighting is the least disruptive to sea turtles among commonly used light sources. High-pressure sodium-vapour (HPS) is more widely available in Cayman. These are less suitable for nesting turtles but offer high directional control.
- [ Yellow-filters, and bug lights : light bulbs that have been tinted yellow to reduce the attraction to mosquitoes and other insects, can also be less disruptive to sea turtles. They are no as good as LPS lighting, but are less expensive and more widely available.

# Frequently Asked Questions and Answers

*There are too many disadvantages to using low/high pressure sodium vapour lighting.*

There are both advantages and disadvantages to using these types of lights.

Expense: Initially costs of LPS/HPS lighting are higher than for incandescent/fluorescent lights, but are only slightly higher than costs for high intensity discharge lighting. Operating costs are much lower for LPS/HPS than for any other commercial source

Color: These lights provide enough luminescence for safety and security lighting. They are used at U.S. Air Force Installations near nesting beaches in Florida,

Availability: Although not widely available in stores, these lights can be ordered using the product codes provided above, through Phillip's electrical. For more information concerning these lights, please visit the Phillip website at [www.lighting.phillips.com/nam](http://www.lighting.phillips.com/nam)

*What should be done with misdirected hatchlings found on the beach?*

**Hatchlings are disoriented and confused by artificial lights.** They should be taken to a darkened portion of the beach, placed on the sand near to the tide line and allowed to run into the sea. Hatchlings that do not move vigorously should be placed in the ocean and allowed to swim away, By no means should any turtle be removed from the beach. This period of time is crucial to their survival. The Department of Environment should be notified immediately on 9498469 (normal office hours) or 9477189 (5pm – 8am)

*There are other lights near my beachfront property that are visible from the beach. How can the lights*

Every bit helps! Any reduction in the amount of artificial light on a nesting beach is helpful. Hatchlings emerging far away from lighted areas will have a much higher chance of reaching the sea.

*What is an acceptable level of brightness for a beachfront light, so that it does not affect marine*

There is no method by which to measure the amount of light that will not interfere with nesting behaviour. The best option is to remove all unnecessary lighting, lower the wattage and/or change the type of bulb on all lighting deemed essential and apply directional fixtures to all lighting visible from the beach.

*There is not enough turtle nesting on this beach to justify beach-darkening efforts. Why should I make the effort?*

Beaches where only a few turtles nest are very important. The entire nesting range of a population can be made up of sparsely nested beaches. Hawksbill turtles, one of the most endangered species, do not nest in great numbers anywhere. In Cayman, numbers are so low that every turtle counts, losing even a tiny amount of nesting activity may at this stage destroy a potential breeding/nesting rookery.