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Department of Biodiversity,  
Conservation and Attractions

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# Turtle Research

The Western Australian Marine Turtle Project run by CALM scientists, conduct vital research to gain important information on the life history, behaviour and conservation needs of turtles.

Scientists and volunteers collect valuable data on female turtles as they nest their eggs, which later hatch on the beaches. As this database expands and population profiles are developed, priority habitat locations, such as Turtle Bay, can be identified and appropriate management activities implemented.

Should you come across a tagged turtle please record the numbers and code on both sides of the tag and information such as the date, time, place and circumstances. Forward this information to the nearest CALM office or to the return address on the tag. If you see a dead turtle please notify the nearest CALM office.

Illustrations by W Marston,  
courtesy The WA Gould League

## Further Information



**Department of Conservation  
and Land Management**

### **Karratha District Office**

Mardie Road, Karratha Industrial Estate  
KARRATHA WA 6714  
Tel: (08) 9143 1488

### **Gascoyne District Office**

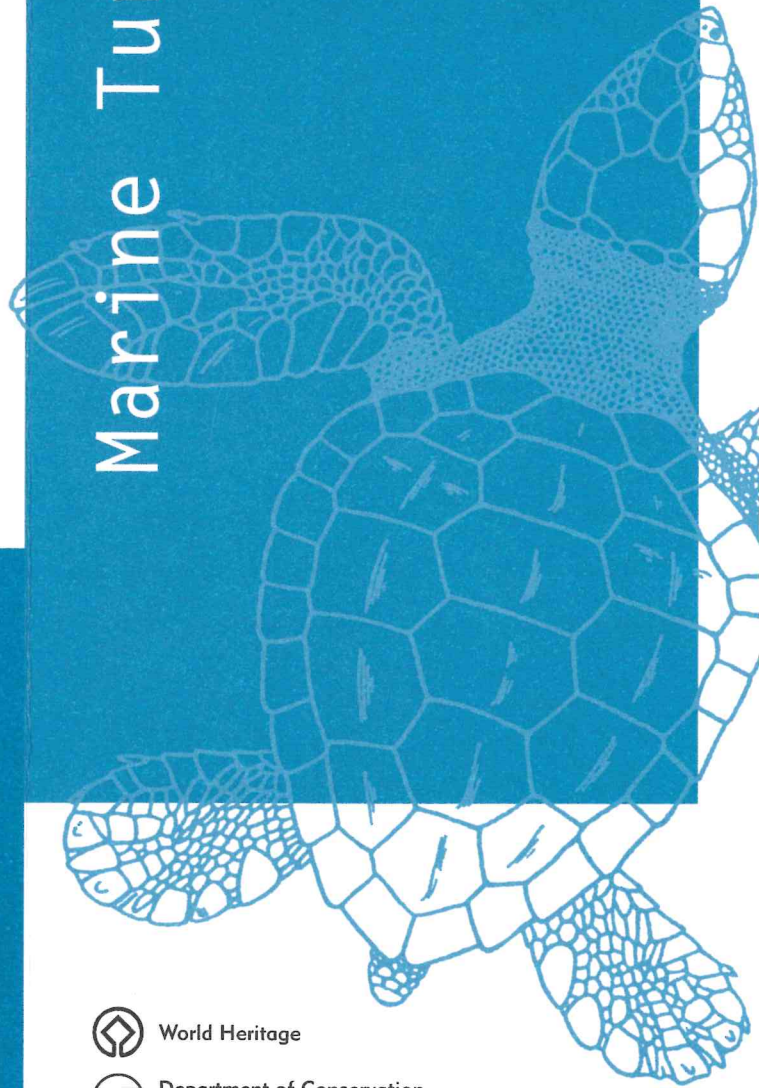
67 Knight Terrace  
Denham WA 6537  
Tel: (08) 9948 1208

### **Midwest Regional Office**

1st Floor, 193 Marine Terrace  
GERALDTON WA 6530  
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Visit CALM's website NatureBase at  
<http://www.calm.wa.gov.au>

# Marine Turtles

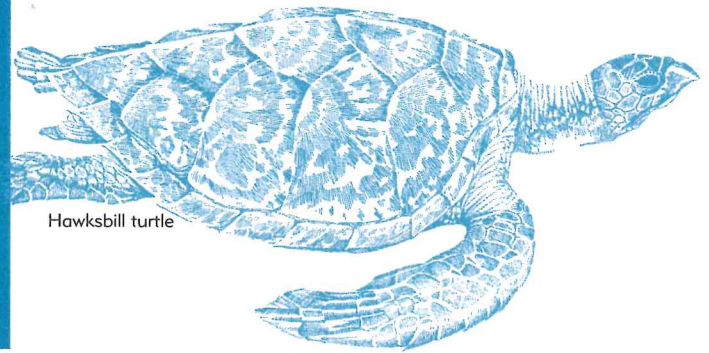


World Heritage



Department of Conservation  
and Land Management

The large, relatively undisturbed, coastline of Australia's northern waters is of international significance to the survival of marine turtles. Islands off the coast, in particular, provide important nesting sites for four species; the green (*Chelonia mydas*), loggerhead (*Careila carella*), flatback (*Chelonia depressa*) and hawksbill (*Erectmochelys imbricata*).



Hawksbill turtle

## Status

**Green turtles** are at their southern breeding limit in the Shark Bay waters, yet they are the most abundant species in the area. They are found throughout tropical and temperate waters, from the midwest of WA to southern Queensland.

**Loggerhead turtles** are declared threatened under the Western Australian Wildlife Conservation Act, and are considered the most endangered turtle species that nests in the Australian region. They are found in the tropical and warm temperate waters off the Australian coast.

**Hawksbill turtles** are abundant along the tropical coasts of northern and eastern Australia, from the midwest of WA to southern Queensland. Breeding is rarely observed in Australia, but nesting has been observed in the Gulf of Carpentaria and Torres Strait.

**Flatback turtles** are believed to nest only on Australian coasts, differing from the other species that nest in tropical areas elsewhere in the world. They are commonly found in the coastal waters of northern Australia, from the Kimberley region to the Torres Strait.

In many areas, turtle populations have suffered drastic declines, primarily through human exploitation for eggs, meat, soup and shell. In Australian waters, all marine turtles are fully protected. Exception is made for Aboriginal people whose diet has traditionally included turtles. Their turtle-hunting activities are minimal compared to those found in other countries.

## Breeding

Turtles are thought to be 40-50 years old before they breed. They usually nest between September and April. Mating occurs in shallow, protected waters and females come ashore at night on a high tide to lay their eggs.

### Nesting

Turtle nesting is a nightly occurrence during the warmer summer months, with a peak in activity from November to February. Nesting is a lengthy process and may take two hours to complete. A nesting site is selected above the high water mark and is usually near the first line of beach vegetation.

Nesting turtles are most likely encountered one or two hours before or after the night high tide. More turtles can be expected on nights when the high tide occurs near midnight.

The female first digs a depression with her front flippers, and then digs with her rear flippers a nesting chamber, which may be 0.6m deep. Up to 160 soft-shelled eggs are laid, then covered and left to incubate in the warm sand. The female returns to the sea, but may return as many as eight times in a season to nest again.

It is estimated that more than 1000 females nest each year in Western Australia, most of them between Shark Bay and Exmouth Gulf. Individual females don't nest every year, but 'skip' several years and may not return for seven years or more.

## Turtle Bay

Resident loggerheads are found in the Bay, and numbers increase significantly in the summer months, when many migrate to the Shark Bay waters for annual breeding.

Female Loggerheads lay their eggs on Bernier, Dorre and Dirk Hartog Islands, situated on the Shark Bay World Heritage Property.

One of the furthest southern points that turtles have been observed nesting in W.A. is Dirk Hartog Island. Turtle Bay, on the northern tip of Dirk Hartog Island, is one of the world's most significant rookeries and is one of the few loggerhead nesting areas on the Western Australian coast. A small number of loggerheads have also been recorded nesting on the beaches at Steep Point.

## Hatchlings

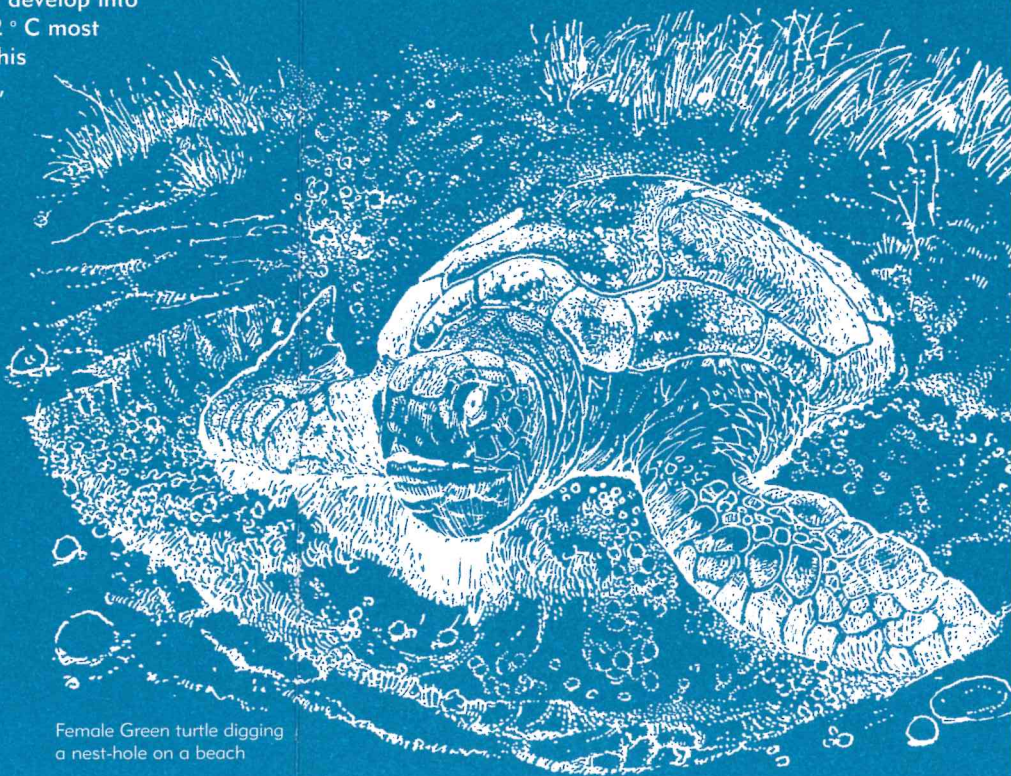
The sex of a turtle hatchling is determined by the incubation temperature. At incubation temperatures of 24°–27° C most develop into males, while between 28° C–32° C most develop into females. Outside this temperature range of 24°–32° C, no egg development will occur, which to some extent determines the nesting season of the turtles.

After the eight to ten weeks of incubation in the sand, the eggs hatch and the hatchlings make their way to the sea. They usually leave their nests at night to avoid predators. The emergence of hatchling turtles from their nests and their rush to the sea can be witnessed annually from November until April.

## Mortality

Even though large numbers of eggs are laid each season (each female may lay 500 eggs in a season) mortality is high. Foxes (found only on the mainland), lizards and crabs dig up nests and consume eggs, and occasional cyclonic tidal surges wash nests away. Some females unwittingly destroy other nests while digging their own.

Of the turtles that do hatch, some die before they reach the surface of the nest, some are taken by crabs and sea-birds before they reach the water, and others are attracted away from the sea by bright lights. In the water, predation by fish continues and hence increases their mortality. In some parts of the world, human predation is also a contributing factor.



Female Green turtle digging a nest-hole on a beach

## How to find Nesting Turtles

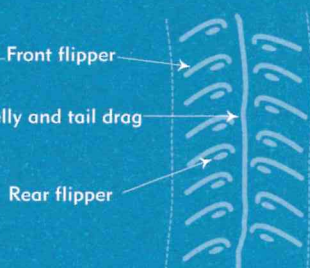
1. Walk the beach at about high tide mark and look for turtle tracks. Two types of tracks can be distinguished and these will be about one metre wide. The paired patterned tracks are created by green and flatback turtles. The alternate patterns are made by loggerhead and hawksbill turtles.

### Paired pattern



Green and flatback turtles

### Alternate pattern



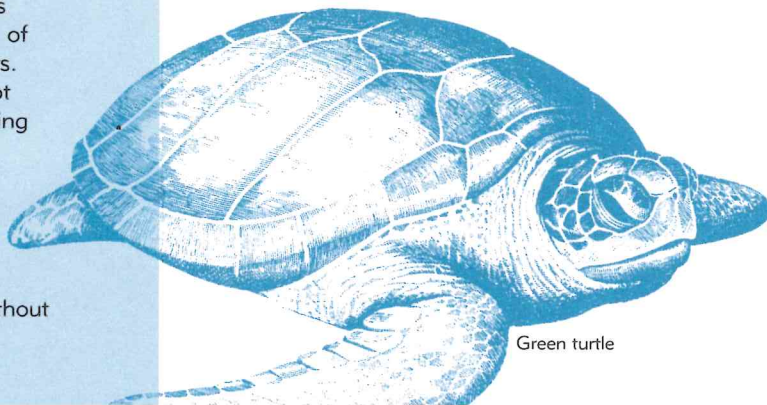
Loggerhead and hawksbill turtles

2. Lights can disturb turtles so keep lights off while walking on the beach. Turtle tracks are easily seen without lights.
3. Follow the tracks carefully and quietly up onto the dune to locate the turtle. Try to avoid excess movement, especially in front of the turtle.
4. Wait quietly, sitting behind the turtle until she has started laying her eggs. Laying occurs when she is sitting still after a long period of throwing sand forward off the hind flippers. Once the turtle is actually laying she is not normally disturbed by lights, gentle touching or noise.
5. Dig out gently behind the turtle to observe the eggs as they drop. Now is the time to turn on your lights to examine the turtle closely. Flashlight photography can be taken at this time without fear of disturbing the turtle.

## Successful Turtle Watching

Adult turtles are timid animals and are easily disturbed at any stage during mating and nesting, from leaving the shallow water until actually laying the eggs. Consideration is needed for these animals which for most of their lives do not leave the sea.

1. Keep the use of lights to a minimum while you are walking along the beach. Turtles are easily disturbed by lights, noise and movements—especially when they are leaving the water, crossing the beach and digging the nest.
2. Wait until the turtle is laying her eggs before approaching closely, turning lights on or touching her.
3. In the months from December to April, anchor boats in deep water and extinguish all deck lights at night. Turtles are attracted to lights and stay in the shallows where their chances of survival plummet.
4. Avoid access noise and sudden movements.
5. The larger the crowd gathers, the more likely the turtle will be disturbed.
6. Be patient while the turtle performs her nesting ritual.
7. Dogs are prohibited on the nature reserves. If turtle watching in other areas, keep dogs away from turtles.



Green turtle