

Introduction

Sea turtles have lived in the oceans for over 100 million years. In the last 50-100 years turtle numbers have decreased so much that five of the seven remaining species are endangered, according to the 1990 IUCN Red List of Threatened Animals. This means that these animals may become extinct if the reasons for their decrease continues.

Turtles are reptiles, and even though they live in the water they have lungs and not gills. Sea turtles have a large shell called a **carapace**, and four strong flippers which are used for swimming and steering them through the water. They have no teeth, but the shape of each species' jaws is determined by what they eat.

It is hard to tell the sex of a small turtle just by looking at it. Once a turtle becomes adult, a male can be identified by a long tail and long claws on the front flippers. An adult female is believed to be 20-50 years old before she can lay eggs.

Turtle species

There are seven species of sea turtle in the world, and six are found in the Pacific Ocean. Three of these six species commonly breed within the area covered by the *South Pacific Regional Environment Programme* (SPREP).

The **green turtle**, *Chelonia mydas*, is a large turtle with a small head and an oval, green-brown carapace.

Green turtle, *Chelonia mydas*

Photograph: Department of Environment and Heritage



Hawksbill turtle, *Eretmochelys imbricata*

Photograph: Department of Environment and Heritage

Green turtles eat mostly seagrass and algae, and so are called herbivores. This species of turtle is found throughout the Pacific in feeding grounds and nesting areas (**rookeries**) such as Surprise Island in New Caledonia, Gielop Island in Yap, and Scilly Atoll in French Polynesia. Green turtles that nest or feed in Australia often migrate to Pacific Island nations.

The **hawksbill turtle**, *Eretmochelys imbricata*, is smaller than the green turtle and has a brown-black carapace and a long beak-like mouth. This type of turtle has overlapping scales on the carapace which are used to make tortoiseshell jewelry. Although many people in Pacific countries eat this type of turtle, it is sometimes poisonous. Scientists are not sure why, but think it may be something that the turtle eats. Hawksbills eat sponges, crustaceans, jellyfish, molluscs, algae and seagrass. Their sharp beak allows them to search amongst the coral for these foods.

Hawksbills nest and feed in many areas within the SPREP region. Nesting occurs in the Arnavon Islands in the Solomon Islands and the Rock Islands of Palau. Rookeries are also found on islands in Torres Strait and the northern Great Barrier Reef in Australia. Turtles from these areas are known to migrate to Pacific countries.

The **leatherback turtle**, *Dermochelys coriacea*, is the largest living species of turtle. It has a soft, leathery skin with seven ridges on its back. It is black with light spots, and feeds mostly on jellyfish. Unlike other species, leatherbacks live in the open ocean. Nesting occurs in several areas including Maus Buang in Papua New Guinea and Lilika Bay in the Solomon Islands.

Three other species of sea turtle that are not as common in the SPREP region are:

- ♦ The **loggerhead turtle**, *Caretta caretta*, has a large head and a reddish brown carapace shaped like a heart. Loggerheads have thick jaws that can crush crustaceans and molluscs. Small numbers nest in New Caledonia, and rookeries also exist at Wreck Island and Mon Repos in Queensland, Australia.
- ♦ The **flatback turtle**, *Natator depressus*, is grey and has soft skin covering a flat carapace. Nesting only occurs in northern Australia, and this turtle is found in feeding areas in southern Papua New Guinea.

- ♦ The **olive ridley turtle**, *Lepidochelys olivacea*, is the smallest of the sea turtles. This species has a round, olive-grey carapace, and eats crustaceans. Olive ridleys only nest occasionally in the SPREP region.

Life cycle

Adult male and female turtles migrate from feeding grounds to nesting beaches, and mating takes place in the shallow waters nearby. The females mate with more than one male. After mating the males return to the feeding grounds, while the females gather together into areas beside the nesting beaches.

Nesting occurs at night, about four weeks after the turtles have mated. The female turtle makes her way to the beach, and any movement or light scares her back into the water. She drags her heavy weight over the sand above the high tide mark where she chooses a place to nest.

The turtle digs a hole called a **body pit** around herself by scooping away the dry sand with her front flippers. She uses her back flippers to dig into the damp sand below to form a vertical tunnel with a round base called an **egg chamber**.



Turtle in feeding ground

Photograph: Department of Environment and Heritage

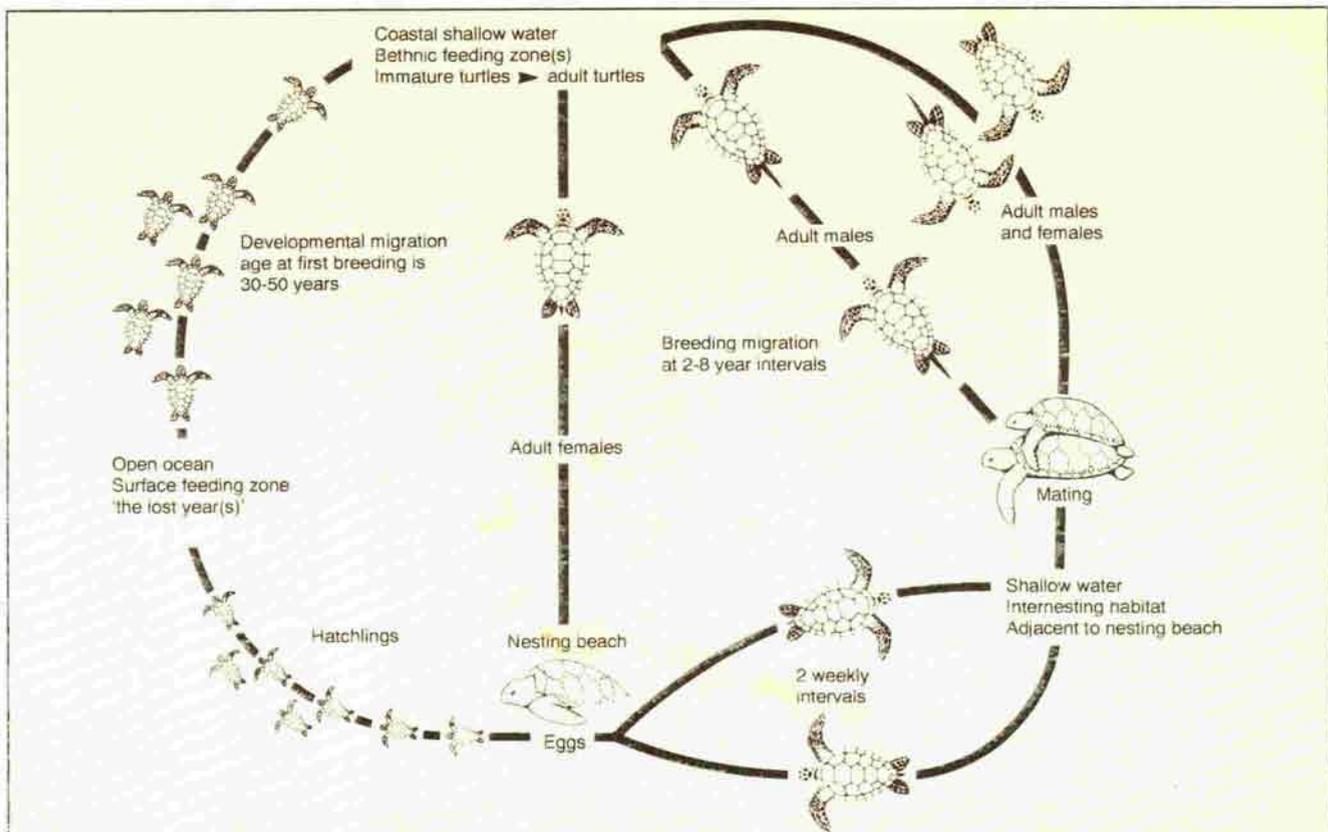
Depending on the species of turtle, she lays about 120 round white eggs which are dropped into the egg chamber. The turtle then fills in the nest, using her back flippers to pat down the damp sand so the eggs are packed in tightly. Once the nest is covered the turtle moves forward, throwing sand over the nest with her front flippers. This protects the eggs from drying out in the sun. She crawls back to the water and will return to lay another clutch of eggs about two weeks later.

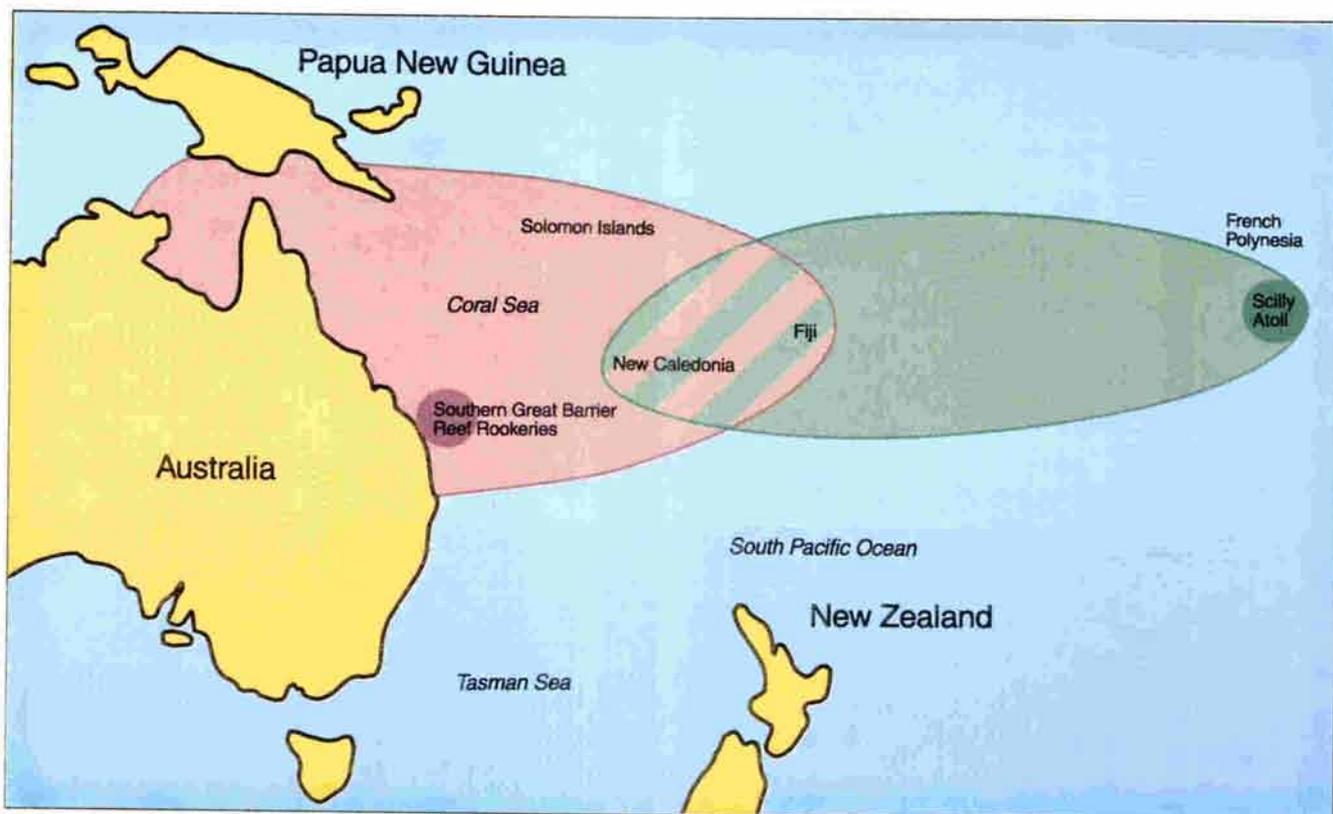
Female turtles lay more than one clutch in a season and they usually come back to the same beach to lay. However turtles do not lay eggs every year.

Most turtles return to nest between two and eight years after their last breeding season.

The eggs incubate in the sand for seven to twelve weeks before hatching. Incubation and sex of the hatchlings depends on the temperature of the sand. Warm sand produces mostly female hatchlings and the eggs hatch in a short time. Cool sand temperatures mainly produce male hatchlings and the eggs take longer to hatch. Once the hatchlings break out of the eggs they take a few days to dig their way up to the surface as a group.

Turtle life cycle





Turtle migration - tag recoveries show that turtles nesting in French Polynesia and the Southern Great Barrier Reef often share the same feeding area

When the temperature is cooler, usually at night, the hatchlings come out of the nest and head for the water.

Crabs, birds and other land predators eat a few of the young turtles, but once they reach the reef flat many of the hatchlings may be taken by fish and sharks. Those that survive to cross the reef flat swim until they reach deep water. Scientists believe that young turtles are then moved about by the ocean currents, where they drift for the first few years. Turtles are not usually seen again until their carapace is 35-40 cm long when they move to live and feed in shallow waters.

Migration

Turtles are migratory animals, and there is still much to learn about their behaviour. Turtles tagged on nesting beaches by researchers have been found in feeding grounds. Some travel over thousands of kilometres to nest even though a beach may be close to the feeding ground. Turtles tagged while nesting at Scilly Atoll in French Polynesia have been caught feeding in Fiji, New Caledonia, Tonga, Wallis Island, Vanuatu and the Cook Islands.

Problems

In many Pacific Island countries turtles are hunted for food. They are caught in nets and killed with spears and harpoons. Sometimes the females that come ashore to nest are turned on their backs before they lay eggs. Turtle eggs are also a source of food. The use of motor-boats and an increase in population means that isolated areas where turtles nest or feed are easier to get to, so more turtles are taken. Although there are many laws protecting sea turtles, they are not always well enforced.

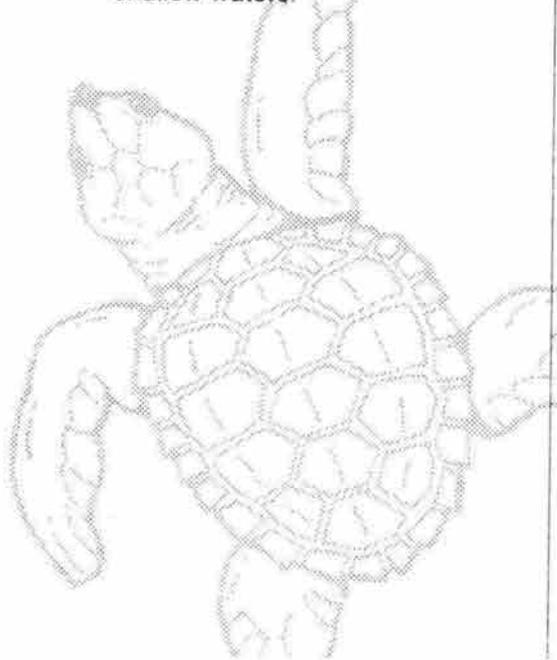
For people living on outer islands, turtles are a fresh source of protein, and in many countries the meat and eggs are eaten at traditional feasts and are sold in local markets.

Turtles are also killed to make leather products such as wallets and shoes, the oil is used in cosmetics, the shell of the hawksbill turtle is sold for making jewelry, and small turtles are preserved and sold to tourists. The export of these items means that more turtles are being hunted.

Accidental killing of turtles occurs in fishing nets where the trapped turtles drown as they become entangled in the nets underwater. Turtle Excluder Devices (TEDs) are special nets designed to automatically release trapped turtles, but they are not always used.

Marine pollution is also a problem for turtles. Turtles may mistake plastic for food which clogs their throat, or they can become tangled in abandoned fishing nets. Oil which has been spilled from ships blocks the throats and jaws of small turtles, and other poisonous chemicals released into the sea may also cause death.

Many turtles have been caught in Hawaii, Australia and the Federated States of Micronesia with wart-like growths, known as **fibropapillomas**. These can kill the turtle if they grow over the eyes or into the internal organs. Research is currently being carried out to discover what causes this disease.



Conclusion

The sea turtle populations of the Pacific region are severely declining due to over-exploitation. Due to the increase in human population within the Pacific Islands, coastal people are hunting more turtles to sell or feed their families, causing a further decrease in numbers. This could soon lead to the extinction of some turtle populations. This may not be obvious for another 20-40 years, due to the time it takes for turtles to become adults and the females to start laying eggs.

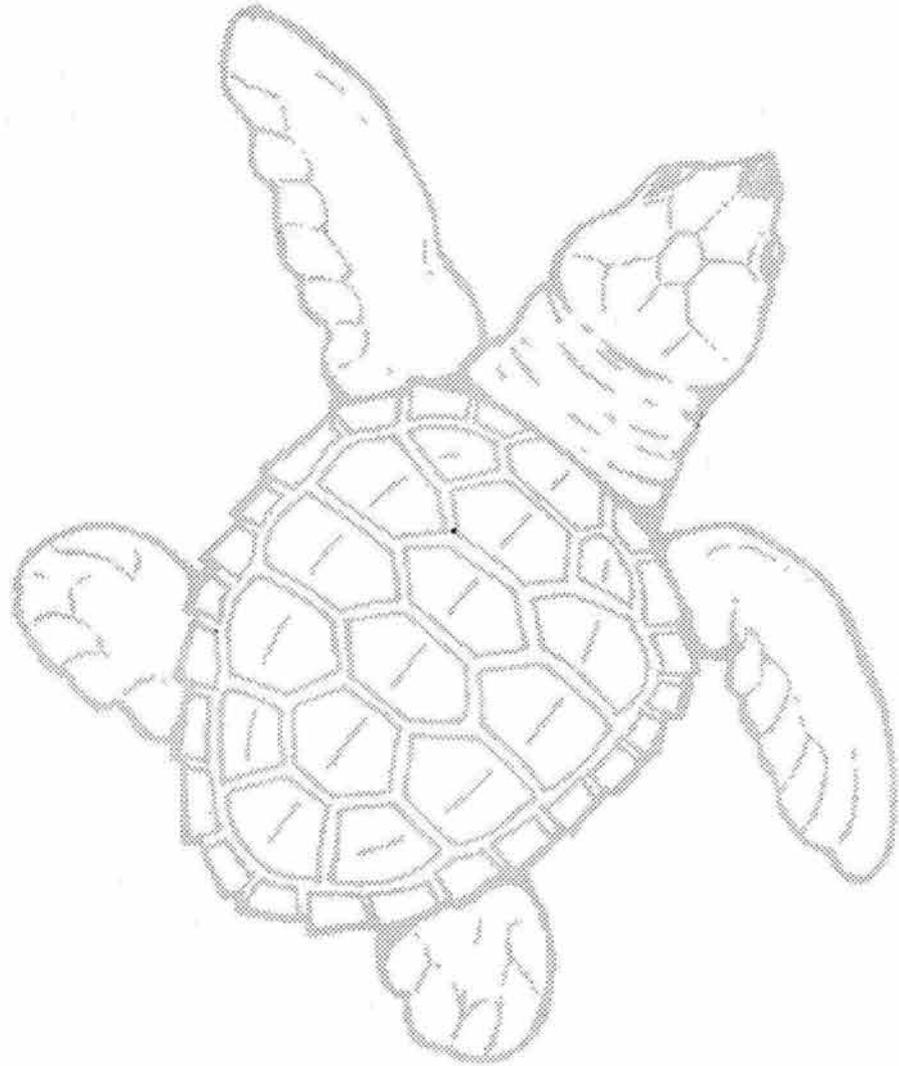
We should stop excess harvesting now!

Tag recoveries show that turtles migrate between New Caledonia, Papua New Guinea, the Federated States of Micronesia, Solomon Islands, Vanuatu, Fiji, French Polynesia, Western Samoa, Tonga, Cook Islands, Australia, Indonesia and the Philippines. This tells us that turtles are a shared resource, and that countries must co-operate to protect and manage these creatures.

Some laws in the Pacific only allow turtles to be killed for traditional reasons. Many people ignore these laws and kill turtles to sell the meat, thus contributing to the decrease in turtle numbers in many of our island nations.

SPREP is the environmental organisation formed to help the Pacific Island Countries. The SPREP *Regional Marine Turtle Conservation Programme (RMTCP)* helps fisheries and conservation agencies within the Pacific to protect the sea turtles of the region. Obtain a sea turtle identification sheet and if you see a tagged turtle write down the tag details, species and location, and send the information to SPREP, at **PO Box 240, Apia, Western Samoa**, or tell your local fisheries officer.

Your assistance could help in our understanding of how to look after the turtles of the Pacific.



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