

4.3 Sea Turtles

Sea turtles are iconic marine reptiles, genetically traced back some three million years to a common ancestor. They are well adapted for life at sea, with legs modified into flippers and bodies encased in a hard carapace. While these reptiles range widely in all oceans, they have remarkably localised nesting grounds.

Their extraordinary life history involves females laying a large clutch of eggs in delicately excavated nests on specific sandy beaches around the world. Most sea turtles are highly migratory and can range widely across oceans, invariably returning to the same nesting ground each season. However, sea turtles are vulnerable, having been exploited by humans for centuries. While these reptiles are today protected by law, there is still a demand for turtle meat, oil and especially their carapace for manufacture of ornaments. Their emergence from

the sea during nesting and their unguarded eggs make them vulnerable and easy targets. Vulnerability is exacerbated by their frequent capture in shark safety gear (*Section 7.4*) and longlines (*Section 8.2*) and disturbance of nesting beaches and destruction of foraging ground.

Seven species of sea turtle are known, five of which can be found in the waters off KZN: the green, hawksbill, loggerhead, leatherback and, least common, the olive ridley turtle.^{1;2;3} Two of these, the loggerhead and less commonly the leatherback, nest seasonally on the beaches of northern KZN in the iSimangaliso Wetland Park. Each summer, from October to February, the females of these two species emerge at night on beaches from Mabibi to the Mozambique border. They lay up to about 100 ping-pong ball-like eggs, in specially dug holes that can exceed 50 cm in depth.

Loggerhead turtle with sardines.

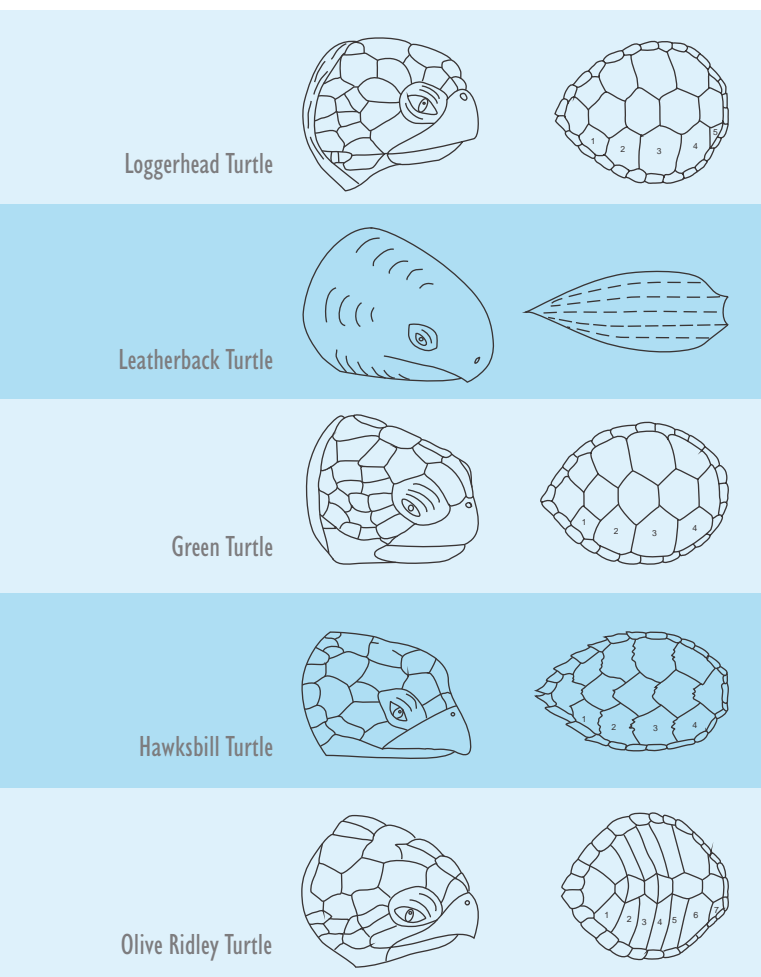


Photo: Camilla Floros

This exhaustive nesting phase may take an hour or more; often repeated on subsequent nights. Incubation takes about 70 days, when small hatchlings emerge before dawn to scurry to the water's edge, avoiding predatory ghost crabs, to swim far out to sea. Here, in the ocean currents, the hatchlings are widely dispersed, feeding on surface neuston such as jellyfish and bluebottles.

For several years, young sea turtles spend time in offshore waters before moving back inshore, except for the leatherback, which is a more oceanic species and its young and subsequent adults remain in offshore waters permanently. Eventually, all return to nesting beaches at maturity, about 10-15 years later. It is also believed that females return to the very beach where they were originally born, thereby repeating the cycle at these unique nesting beaches.

Carapace and beak structure of the five turtles found in KZN waters.⁴



Loggerhead (*Caretta caretta*)

Loggerhead turtles can attain 1 m carapace length, with plates that do not overlap. They are known to have a large head and have five lateral carapace scales. Adults feed on a variety of sessile marine shellfish and other invertebrates. Main nesting beaches are in KZN and southern Mozambique, as well as in southern Madagascar. The loggerhead is listed on the IUCN Red List of Threatened Species as endangered.⁵

Leatherback (*Dermochelys coriacea*)

Leatherbacks are the most pelagic species, widely distributed in the South West Indian Ocean. The species is easily recognised by its leathery carapace with seven longitudinal ridges, as well as its enormously enlarged front flippers that assist in long-range ocean migrations. As one of the world's largest reptiles, this species can attain a 2 m carapace length and weight of one ton. The Leatherback feeds on soft pelagic animals such as jellyfish, and nests mainly along the beaches of southern Mozambique and Maputaland and rarely in the south of Madagascar. Leatherbacks are listed as endangered on the IUCN Red List.⁵

Green turtle (*Chelonia mydas*)

The green turtle is the most abundant marine turtle species in the West Indian Ocean and is known to nest in most of the countries of the region. Nesting sites are primarily on isolated islands but nesting also occurs along much of the Madagascar and East African coasts, as far as 25°S. This species can attain a carapace length of 90 cm and has four lateral carapace scales. Green turtles are primarily herbivores and forage on seaweeds and seagrasses. They are included on the IUCN Red List as endangered.⁵

Hawksbill (*Eretmochelys imbricata*)

Hawksbill turtles are the most equatorial of the turtle species, mainly found nesting in the Seychelles Archipelago. They have a hawk-like beak and overlapping plates that display clear tortoiseshell patterns. This species has four lateral carapace scales. Hawksbill turtles can attain 90 cm carapace length and feed mainly on sessile invertebrates. Hawksbills are also listed as endangered by the IUCN.⁵

Olive ridley (*Lepidochelys olivacea*)

Although olive ridley turtles are widely distributed in the South West Indian Ocean, they are relatively rare and not known to nest regularly in the region. This species is small and has a hook-like jaw. It has seven lateral carapace scales and can attain a carapace length of about 75 cm. Its colouration is olivaceous, while younger animals have pale to white patches underneath. The olive ridley turtle feeds on shrimp and other crustaceans sometimes associated with mangrove systems. It is listed as vulnerable on the IUCN Red List.⁵

Threats

Sea turtles are inherently vulnerable. Their nesting behaviour subjects them to land-based predators while the eggs and hatchlings are taken by monitors, water mongoose, ghost crabs and birds. Turtles are also a known source of food for certain shark species, notably the tiger shark, which can take turtles in open water.

However, it is largely due to human activities, both directly and indirectly, that sea turtles are under threat. In KZN, direct mortality of sea turtles is relatively well managed, with nesting beaches being located in the protected area of the iSimangaliso Wetland Park.

At sea, interactions with a number of fisheries do exist in the EEZ, notably with longlining operations, the prawn trawl fishery and coastal shark safety gear⁵ (see *Section 8.2* and *Section 7.4*). In a study on turtle mortality, it was found that longline fisheries in the region resulted in 181 deaths per 2 256 line sets, which is likely to impact on KZN nesting populations.⁶ Turtles are also taken incidentally in the Thukela inshore prawn trawl fisheries; reports indicate that around 10% of drags may capture a turtle as by-catch, amounting to an estimated 20-50 mortalities per year, primarily loggerheads and green turtles.⁷

There are other indirect impacts that should be considered. Turtles often mistake discarded sheets of plastic for jellyfish and invariably succumb when such plastic is ingested, the effects of which are discussed in *Section 9.3*. It has also been shown that ambient temperature can influence the gender of hatchlings, with higher temperatures leading to more females. Given global climate change predictions, this may well become a problem.

Research and monitoring

Following a spate of turtle killings and nests being raided along the Maputaland coast in the 1960s, the then Natal Parks Board instigated a protection and monitoring programme in 1963.³ The programme has remained in place ever since and has become one of the most important indicators of the status of turtles in the region, and KZN in particular. Over the years the number of nests for both nesting species has increased, to reach a maximum in 2009/2010 of 3 001 and 583 for loggerheads and leatherbacks respectively.⁸ These trends suggest a strong recovery of loggerheads, amounting to a 250% increase since the 1970s. However, leatherback nesting has remained relatively constant since then, which is a concern for this depleted species.

A large proportion of the nesting turtles are tagged each year, providing insight into their oceanic distribution. As a result, turtles tagged in KZN have been recovered in virtually every West Indian Ocean country. Satellite tracking has shown spectacular movements, with leatherbacks traveling from Maputaland to the northern tip of Madagascar before moving to, and then rounding, the Cape of Good Hope into the Atlantic Ocean. Evidence suggests that leatherback turtles associate closely with ocean currents, including the Agulhas and its eddies.⁹ Genetic studies have been initiated to expand knowledge of stock size and linkages between different nesting populations.

One major benefit of a healthy sea turtle population is the potential for eco-tourism. Witnessing a large female sea turtle laying her eggs on a remote beach at dead of night is a unique and compelling experience (see *Section 8.1*).

Continued monitoring is needed, especially in areas where leatherbacks nest. South Africa is signatory to several international agreements and conventions dealing with turtles, including the West Indian Ocean Marine Turtle Task Force.

KZN's sea turtle nesting beaches are of enormous international significance, especially as they are among the best protected and monitored for the two species concerned. Sea turtles represent an important element of marine and coastal biodiversity for KZN and indeed South Africa and the world at large. As such there is a responsibility to ensure their protection. ■