

Marine Turtles: Imperilled Ancient Ocean Wanderers

Anouk Ilangakoon*

* 215 Grandburg Place, Maharagama.

Historical Background to Present-day Species

Marine turtles are ancient denizens of the world's oceans, boasting a proud ancestry dating back some 240 million years. Ancestors of these reptilian living fossils lived way back in the period referred to as the 'great age of reptiles', when dinosaurs ruled the earth. Today's marine turtles have remained virtually unchanged for about 140 million years since the geological epoch known as the Cretaceous. Supremely adapted to life in the ocean since ancient times, they have not only survived but have thrived through successive periods of climatic change, sea level fluctuation and natural disasters which sent many other species extinct, with no need to evolve any further. As descendants of this ancient lineage, seven species of marine turtles are found to inhabit the oceans of the world today. They are the Loggerhead turtle (*Caretta caretta*), Olive Ridley turtle (*Lepidochelys olivacea*), Kemp's Ridley turtle (*Lepidochelys kempi*), Hawksbill turtle (*Eretmochelys imbricata*), Leatherback turtle (*Dermochelys coriacea*), Flatback turtle (*Natator depressus*) and Green turtle (*Chelonia mydas*). A subspecies of the Green turtle known as the Black turtle due to its overall gray to black carapace, which is steeper than that of the Green turtle, has been the topic of debate and taxonomic controversy of recent times. Some researchers believe it to be a distinct species and have even classified it as *Chelonia agassizi*, while on the other hand, recent mitochondrial DNA analysis suggests that regardless of appearances, there is little genetic difference between the two forms.

Reproduction and Predation

Marine turtles spend more than 90% of their lives at sea, and undertake lengthy migrations but are still tied to land for purposes of reproduction. Being reptiles, they procreate by laying eggs that are temperature-dependent for successful hatching. As a result, every breeding female turtle must return ashore, to crawl laboriously up a sandy tropical beach at night, find a suitable nest site, dig a nest chamber to deposit her clutch of soft shelled eggs and cover them up again before returning to her familiar ocean habitat. She will go through this arduous procedure periodically throughout her reproductive years and amazingly every time she will return to the very same beach where she herself hatched out, due to a phenomenon known as imprinting.

The eggs thus buried and left untended in the egg chamber, will hatch in 45-70 days (depending on the species) after being laid. The emerging hatchlings must then find their way down to the ocean with no parental assistance and begin their potentially long aquatic lives. It is during this journey between nest and ocean that the process of imprinting takes place.

Adult sea turtles with their strong protective armour in the form of a carapace above and a plastron below, have few natural predators besides man. However, turtle eggs and hatchlings are highly vulnerable to natural predation at all stages of their development. Turtle eggs are eaten by a range of natural predators including wild boar, foxes and jackals, members of the mongoose family, lizards and burrowing crabs. In addition to these natural predators, when turtles nest in populated areas man and his domesticated animals such as dogs and pigs will extract and eat all the eggs from any nest that is discovered. Nests that remain undisturbed through the incubation period will hatch and the emerging hatchlings must evade a host of predators on their crucial first journey between the nest and the sea. Birds of prey, sea and shore birds and crabs will be waiting to catch and eat these tiny turtles, as they scurry down the beach as fast as their little flippers will carry them, in a mad rush to reach the relative safety of the ocean. For this reason, turtle hatchlings usually emerge from the nest at night, when fewer predators are around and immediately



Figure 1. Literally 'turned turtle' and awaiting slaughter, three Olive Ridley turtles at Negombo.

scramble down to the water. Once they reach the surf-line, they begin to swim frantically towards the open ocean, while having to deal with a further set of predators such as large carnivorous fishes and sea birds. Being highly susceptible to predation in the early stages of life, it is not surprising that only an estimated 0.01% of eggs laid, result in hatchlings that survive the

Loris, Vol. 22, No. 3



Figure 2. Olive Ridley turtles being killed at Kandakkuliya on the north-western coast.

vulnerable juvenile years to become reproductive adults.

Turtles and Man

These ancient ocean dwellers that evolution made perfect, are however threatened with extinction today, due to the destructive actions of man, the late arrival on planet Earth and destroyer of all creatures! Marine turtle populations throughout the oceans of the world are presently

being decimated by direct exploitation by people as well as indirect man induced means. Indirect threats include the loss of nesting sites due to beach-front development, harmful fishing methods and destructive fishing gear such as nylon gillnets which lead to heavy unintentional by-catch in the fisheries industry, as well as marine pollution and ingestion of indigestible marine debris which have the adverse effects of making turtles susceptible to disease and death. Humans the world over, have been exploiting sea turtles and utilizing many turtle products for centuries. In the process of this unregulated utilization, they have driven turtle populations to dangerously low levels world-wide.

Since the advent of ocean navigation in human history, seafarers in all oceans have considered turtles a useful source of protein on their long voyages. Likewise, coastal populations have used turtle eggs and flesh as a source of food for centuries, on a subsistence level. Even today with the knowledge that marine turtles are endangered species in need of protection, they are the victims of direct hunting in many countries in whose waters they occur. Adult turtles are killed by people for their flesh, which is even canned and used for the very popular turtle soup, while the eggs are dug out of the nest chambers for human consumption as a source of protein and due to the belief among some people that they have aphrodisiac properties. The scutes of the carapace of some species such as the Hawksbill and Green turtles are used for making 'tortoiseshell' jewellery, ornaments and curios, in some countries. Likewise, in some parts of the world, adult and baby turtles are killed to be sold as stuffed animals with a

polished carapace, for use as wall ornaments and paperweights. The skin off the flippers of Olive Ridley and Green turtles is tanned and used to make leather for shoes, belts, handbags, wallets and watch-bands. As a result of such relentless exploitation over the years, marine turtles are now rapidly moving towards extinction. The problems caused by direct exploitation are further exacerbated by the indirect threats, which also take an increasing toll off turtle populations in all oceans.

Turtles in Sri Lanka

Five of the seven extant species of marine turtles found in the world today, not only inhabit the ocean around Sri Lanka, but also nest on the beaches around the island. While the Olive Ridley seems to be the most abundant species in our waters, the Green, Hawksbill, Leatherback and Loggerhead also nest in Sri Lanka. As in other parts of the world however, they are indiscriminately exploited in Sri Lanka too, with the fisheries industry accounting for both direct catches and accidental entanglement of turtles in nylon gillnets. Likewise, female turtles that come ashore to nest are sometimes slaughtered for their flesh while most nests in unprotected areas are plundered and the eggs removed for human use. This kind of exploitation continues to take place, despite all species of marine turtles being protected by law under the amended *Fauna and Flora Protection Ordinance*, since 1972. Legislation to protect marine turtles has been a part of Sri Lanka's law since 1938, when only the Leatherback was afforded initial protection. However, by subsequent regulations gazetted on 28 July 1972, Schedule III (where protected reptiles are listed) of the *Fauna and Flora Protection Ordinance* was amended to include all five species of sea turtles that inhabit Sri Lanka's waters. Therefore, it is presently a punishable offence under this ordinance to kill, wound or catch any marine turtle or have in ones possession the eggs or any other part of a marine turtle in Sri Lanka. Regardless of the existence of

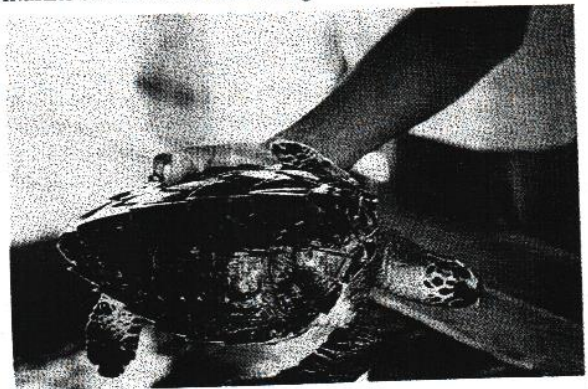


Figure 3. A sub-adult Hawksbill turtle held captive in a hatchery at Kosgoda.

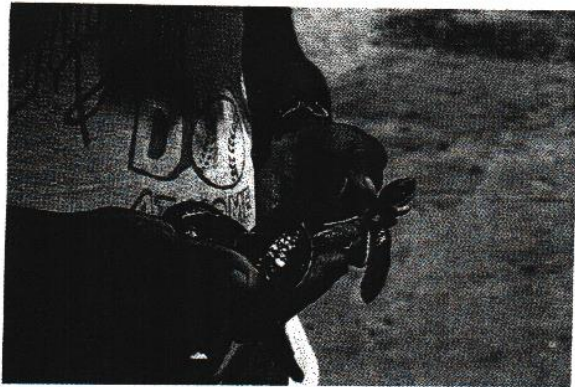


Figure 4. Three-day old Green turtle hatchlings about to be released at midday for the benefit of tourists at a hatchery in Kosgoda.

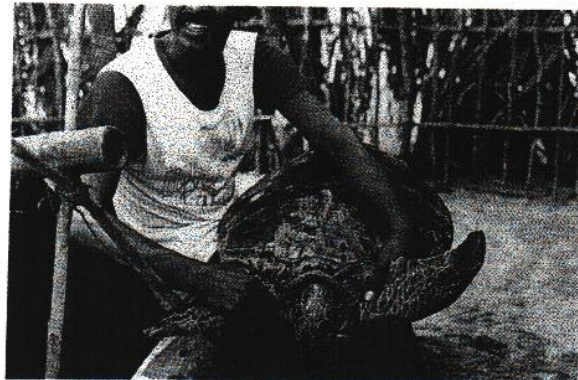


Figure 5. Adult Green turtle illegally held in a hatchery at Kosgoda.

such strong protective legislation, the law has never been implemented effectively to protect marine turtles in Sri Lanka from relentless exploitation by man.

Within the last two decades, a new threat has been added to direct exploitation of adults and eggs, in the form of a proliferation of so-called turtle hatcheries along the south-western coastline of the country. Though operated in the name of conservation, they are often in fact an illegal source of income for hatchery owners who exploit both the turtles that nest here and the flourishing tourist industry on this coastal belt. These hatcheries buy turtle eggs from the coastal community who patrol the beaches at night and remove as many eggs as they can find from newly-laid turtle nests. Some go to the extent of removing the eggs even as a female turtle lays them. The hatchery operators buy these eggs and re-bury them within an enclosure at the hatchery. Here, some clutches of eggs are left undisturbed to hatch, while others are often re-opened to show the eggs to visiting tourists and such eggs are doomed never to hatch successfully. The hatchery enclosures themselves are sometimes unsuitable, as they are located on the beach and are sometimes inundated by the rising tide, so that all the eggs buried at such times will not hatch. In most such hatchery enclosures, the clutches of eggs are buried too close to each other, so that if one clutch hatches the others around it will be disturbed when the hatchlings dig collectively out of the chamber. Once a nest hatches and the hatchlings emerge, the hatchery owners hold these unfortunate baby turtles in overcrowded cement tanks, for tourists to see, touch, hold and photograph. The water in the tanks is rarely changed and the conditions in them are generally unhygienic. Therefore, the hatchlings kept in these tanks for anything between three days and a week, often suffer from fungal and bacterial infections. Being over-crowded in these small tanks, they often begin to bite each other, causing ulcerating wounds and lacerations on the flippers and neck.

It is a well-known fact that turtles are born with a

yolk sac, which provides them with the necessary energy to swim out to the open ocean in the first three days of life, when they do not feed at all. Once this yolk sac is fully absorbed, approximately three days after hatching, young turtles no longer have this energy source to carry them out to the relative safety of the open ocean and if released, are bound to fall prey to predation, or die of starvation in their weakened state. Hatchery owners who hold hatchlings in tanks for several days before releasing them are therefore making sure that none will survive once released. Some hatcheries even allow visiting tourists to release a few hatchlings for an extra fee and this is done even during the day when they are sure to be eaten by predators. Most hatcheries also hold a few adult turtles in captivity, to make the hatchery more attractive to visitors. These adults are kept in such small tanks, that they can hardly move around and the water in them is not deep enough for them to swim without injuring their flippers by repeatedly being dragged against the bottom and sides of the tank. These pathetic captives often have eye infections and some have even gone completely blind, while injuries to the soft parts of the body are numerous.

The hatcheries that have thus mushroomed along the south-western coastal belt, where many of Sri Lanka's turtle nesting sites are located, ensure that hardly any nests are left undisturbed to hatch in their natural state. The often poor, coastal communities find that selling turtle eggs to hatcheries, although illegal, is a new and easy source of supplementary income, and they make sure that all nests in these areas are plundered. This will go on unabated as long as the demand for eggs from hatcheries is present, but turtle egg collection is not the only livelihood of these people since it is only an additional source of income. Operating these hatcheries itself is an illegal activity, as it is an offence to have in ones possession any turtle or its eggs. Therefore, if the available laws are enforced by the relevant authorities, these hatcheries would not be in operation today. As it is however, this is

a thriving commercial venture, which is detrimental to the long-term survival of these endangered species in Sri Lanka's waters. There is provision under the prevailing law that exceptions can be made and hatcheries that are maintained purely for the purpose of conservation and scientific research can be licensed to operate under strict supervision and careful guidelines. However, no such guidelines have been designed or enacted as yet, and hatcheries operate illegally, with no scientific basis or monitoring of practices used. Therefore, the conservation purpose of hatcheries is defeated completely and the present hatcheries are possibly the biggest threat to the survival prospects of turtle populations that nest along this coastline.

Regular turtle nesting beaches located further south include the coastal areas within the national parks of Bundala and Yala. In these nesting grounds, nests are better protected from human exploitation, but are subject to heavy natural predation by wild animals such as wild boars, jackals, monitor lizards and crabs.

However, any nest that escapes such natural hazards in these areas has the chance of hatching successfully. While the five species of sea turtles occurring in Sri Lanka are all globally endangered and their plight is recognised by national legislation, the amount of protection offered to them in practical terms is wholly inadequate. If some meaningful action is not taken to mitigate the threats they face both in our waters and on their nesting grounds on our shores, soon the populations around Sri Lanka could disappear altogether, as they already have from several other such areas in the world. At least now the imminent threat to their survival must be recognised and taken seriously enough, to attempt some urgent action to arrest the situation created by our own consumptive attitudes towards the environment in general and specifically towards threatened species such as marine turtles. If not, soon it will be too late to save these amazing, ancient, marine reptiles that inhabited our planet long before us, due to human greed and negligence.

The Na-ketiya earth slip

Quintus Fernando*

* 3, Peterson Lane, Colombo 6.

While on holiday in Haputale in April last year, a friend suggested that I visit Na-ketiya Village and see the largest earth slip in Sri Lanka. Earth slips, being disasters like floods and fires, serve to remind us how small man is before the might of Nature.

In Sri Lanka, earth slips usually occur on steep slopes where there is a fracture in the bed rock. When the soil on the bed rock becomes saturated with water during heavy rain, the clay on the rock surface acts as a lubricant, sending everything on it—soil, boulders, trees and man-made structures—hurtling down with a terrific force.

Na-Ketiya is a small village nestled among the mountains of Uva. To reach it, turn off at Beragala junction towards Wellawaya on the Colombo-Ratnapura-Badulla Road. The sparsely-populated countryside is of breathtaking beauty. To your left are the majestic hills of Haldummulla and Haputale, covered with jungle and scattered with small waterfalls. Occasionally, one encounters a family of monkeys. On the right is the precipitous drop to the southern plains, hundreds of metres below deep. On the mountain slopes are trees more than 30 m high, hitherto spared by the woodcutter. Several ancient but lovely bridges later, one arrives at the 198 km post, and the Na Ketiya earth slip. To believe the extent of damage caused by this

massive slip, it has to be seen. There are acres and acres of loose red and yellow earth everywhere. A muddy stream now flows through the stretch of 100 metres that used once to be a main road. The area affected by the slip, according to H. L. S. Wijesinghe, Divisional Secretary, Haldummulla, is approximately 100 hectares. A local resident told me that there have been several earth slips prior to the most recent disaster that struck this sleepy village on 20 November 1997. The first slip in memory had taken place around 1930.

About 15 years ago, a crack had appeared in one of the plantation housing units (line-rooms) that then stood here. A few weeks before the present earth slip, it had rained incessantly both day and night. The local residents, warned of the possibility of a slide, were evacuated to safety as the threat of an avalanche appeared ever greater. At about 2 a.m. on the fateful day, a fearful noise reminiscent of continuous thunder announced the onset of trouble. The entire slope, together with rocks, boulders, houses and a portion of the Beragala-Wellawa road, complete with the huge *mara* trees that had stood there for years, went crashing down into the valley and were buried in mud.

Thanks to the timely warning and evacuation, no one was hurt. Even today, more than two years later, the road remains closed, for there have been several more slips since. Every day, visitors from all parts of the country visit to see the earth slip. My two children, who knew of such disasters only from books, were awestruck.

It is necessary for the government to identify the areas susceptible to earth slips and take precautionary measures, such as preventing the clearing of jungles on mountain slopes.