

Marine Turtles of Sri Lanka: A Historical Account

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Sri Lanka has a coastline of about 1,585 km consisting of sandy beaches, extensive lagoons, estuaries, mangroves, coastal marshes and dunes; and jurisdiction over a maritime territory of approximately 488,675 sq km. Five species of marine turtles—loggerheads, green turtles, leatherbacks, hawksbills and olive ridleys—inhabit the offshore waters of the island and nest on its beaches (Deraniyagala 1939, 1953, de Silva 1996, 1997, 1998, Hewavisenthi 1994). The warm sea, coral reefs, sea grass beds and suitable nesting beaches around the island provide ideal habitats for these five species. There are many accounts of the marine turtles of the country (for a bibliography, see de Silva 1998 and Hewavisenthi 1994).

Strabo (64 BC–AD 21), the Greek historian and geographer, indicated that large quantities of tortoiseshell along with ivory and other merchandise had been exported to India from Sri Lanka (Weerakkody 1992, Jones 1917–32). This suggests that turtles, especially hawksbills were exploited in Sri Lanka from pre-Christian times. The Romans traded with India, and tortoiseshell was a luxury item used by wealthy Romans as veneer for their rich furniture and ivory bedsteads (Weerakkody 1992). The Romans knew that large quantities of tortoiseshell came from Taprobane, as Sri Lanka was then known. Pliny (AD 24–79), the Roman historian, reports that, ‘catching large tortoises formed the chief object of fishing in Taprobane which had been pursued with great pleasure’. Pliny further adds that turtle shells formed the roof of houses, probably of the fisher folk who killed turtles. During the reign of King Bhatiya Tissa (19 BC–AD 9) in Sri Lanka, some ambassadors were sent to Rome (Nicholas and Paranvitana 1961); these ambassadors would have included ornamental scutes of hawksbills along with other gifts. Deraniyagala (1939) reported the inclusion of hawksbill scutes as gifts sent abroad

by Sinhala kings around this time. In fact, from the early days of the Roman empire, hawksbill scutes were used by the skilled artisans of Galle and Jaffna (Grenier 1958). However, according to Periplus, by the second century AD, the best tortoiseshell came from the Malay peninsula suggesting a decline of tortoiseshell products in Sri Lanka during this period (Weerakkody 1992). Even in the eighteenth century, the skill of the native tortoiseshell craftspeople who produced items such as snuff boxes, cigar cases, combs, jewellery boxes, writing tables and betel boxes (made from the best shell and inlaid with gold and silver filigree work) was well known (Bennett 1843) (Figure 1). Some animal remains have been found in Sri Lanka (including olive ridley bones, and the bones of two fresh water terrapins *Lissemys punctata punctata* and *Melanochelys trijuga*), which are believed to have been part of the diet of the early inhabitants of the Citadel of Anuradhapura (800–250 BC) in the North Central Province of Sri Lanka (Chandraratne 1997).



Figure 1. Tortoiseshell products in Sri Lanka, including snuff and betel boxes.

Bennett (1843) describes the dealings of a ‘fish renter’ (a businessperson who controlled the fishing activity in an area, by buying from the fisher folk and selling to the market) at Amaduwa (known as Turtle Cove in Bennett’s time). The fish renter assembled his people, constructed some huts and stayed at Amudawa throughout the turtle season (April–May). At night, the renter’s people scouted the beach for hawksbill turtles; immediately after egg-laying, the turtles were captured, turned on their backs and their limbs tied across the plastron. After catching several turtles, a large fire was lit and the live turtles were held over the fire on a bamboo pole passed between the tied limbs and the plastron. After the scales were well-heated and softened, the men quickly removed the vertebrals and costal scutes. The marginals were seldom taken and the reptiles were released into the sea on the assumption that the scales would regenerate and that they would return to the same cove during the next season.

Deraniyagala (1939) reported that ‘V’ shaped marginals were the most prized by the Sinhala jewellers; they also believed that scutes taken from dead animals would lose much of their translucent lustre. He illustrated the regeneration of scutes under captivity—in October 1928 one young hawksbill turtle lost its second left costal and two marginals; all lost scutes were regenerated by June 1929.



Perhaps the first report of marine turtle tagging in the world is from Sri Lanka. In 1794, during the Dutch occupation of Sri Lanka (1658–1796), a Dutch district officer tagged some turtles with brass ring tags (marked with the date of capture) to ascertain whether the de-scaled turtles returned to the same cove. In 1826, the fish renter of the district brought Bennett a 400-pound turtle with a brass ring. The renter affirmed that the same turtle had revisited the cove for the past 32 years; it was released after re-inscribing the tag (Bennett 1843). During the British period (1796–1948) there was a marine turtle egg-collecting centre at Amaduwa (c.f. Jayawardhana 1995).

Turtle meat is a delicacy in coastal areas, especially in Jaffna. Tennent, in his classic work *Sketches of the Natural History of Ceylon* (1861), reports that in the markets of Jaffna, marine turtles were butchered piece by piece over a prolonged period, while they were still alive. This attracted the attention of the Humane Society in England in the nineteenth century, and they requested the government of Ceylon (Sri Lanka), to pass a law against the cruel treatment of animals. William Ferguson, author of a classic early summary of the herpetofauna of Sri Lanka (1877), was witness to this during a visit to Jaffna in 1849. The turtles had been captured in Jaffna by turning nesting females on their backs, and also using harpoons and three types of nets (Twynam 1889).

During the early twentieth century, a large number of live green turtles were captured by fishermen in Portugal Bay (northwest Sri Lanka), and kept in salt water pens until they were transported to Jaffna (Jonklass 1937). Deraniyagala (1939), on investigating turtle skulls scattered around the camps of turtle fishermen, found that the ratio of loggerheads to ridleys was 1:20. He also found several loggerhead skulls at Karaduva Island and other beaches in the northwest. During the mid-twentieth century, green turtles were widely caught off the shores of the Gulf of Mannar. Over one hundred green turtles were captured within a period of a few days and kept alive in enclosures (60 x 40) feet constructed in water, until they were bought by middlemen (Somanadar 1954) (Figure 2). Jones and Fernando (1968) estimated that the catch in the Gulf of Mannar and Palk Bay touched 5,000 specimens. During this period, 20–30 green turtles were slaughtered in Jaffna every Sunday (Parson 1962). In the 1970s, the local demand for green turtles was met from imports from India. Due to the Sri Lankan government's ban on the import of turtles during this period, turtle traders approached fishermen along the southern and eastern coasts and asked them to take all accidentally caught turtles to collecting centres, from where the turtles were transported to Jaffna by lorries (Anon. 1973). Even during the latter part of the twentieth century, 60 to 70 turtles were slaughtered per day from Kalpitiya to Galle along the west coast (Karunaratne 1991).

Green turtles were widely sold in Jaffna and the islands in the north in the mid-1970s. While slaughtering the turtles, blood was collected in pans and allowed to clot, after which it was tempered in oil with chillies, scrambled, and eaten as a snack to go with palm toddy (a local alcoholic drink). It is widely believed in Jaffna that turtle blood gives invigorating powers.

The first marine turtle hatchery was started in 1956 at Yala National Park by the divisional game ranger (Jayawardhana 1995) and subsequently another hatchery was started in the late 1960s at Palatupana, on the southeastern coast, by the Wildlife and Nature Protection



Figure 2. A haul of green turtles in the Gulf of Mannar. (Source: Somanadar 1954)

Society of Sri Lanka. Hawksbill eggs were first incubated over one hundred years ago in Galle, south Sri Lanka; some eggs were incubated inside a container filled with sea sand, and the hatchlings kept in sea water (which was changed regularly) until they attained a length of 2–3 feet in two years (Bennett 1843). During the past 25 years, about 25 marine turtle hatcheries have opened along the coast from Chilaw to Bundala; only a few are still functional. Of these, the hatchery at Bundala and Rekawa are managed by the Department of Wildlife Conservation, while the others are managed by private individuals without permits from the Department of Wildlife Conservation (Hewavisenthi 1993, Richardson 1995a, Weerasinghe and Walker 1995, de Silva 1996, Amarasooriya 1998)

There is evidence of turtle eggs being lifted for consumption (Bennett, 1843). However, by the mid-twentieth century, 100 per cent of the nests from Colombo to Hambantota along the southwest coast of Sri Lanka were depredated, either to supply marine turtle hatcheries or for consumption (Anon. 1973, Richardson 1995b, author's pers. obs. from 1960–2002). Currently, rapid depletion of nesting grounds and coral reef, pollution of seagrass beds, increase in fishing activity using different types of nets, predation of eggs by monitor lizards, wild pigs, jackals and dogs, are additional threats faced by marine turtles in Sri Lanka.

Historic Population Trends

Nesting sites and seasons have been recorded from 1843–85 (Table 1, Figure 3), and some hatcheries have maintained records of collection of eggs and release of hatchlings



(Tables 2 and 3). The presence of sea grass beds, coral reefs and lagoons along the coastal waters around the island provide ample feeding localities for turtles. Some specific feeding localities are Unawatuna, Rekawa and the Wilpattu coast (Portugal and Dutch Bay).

It is clear from the accounts by Strabo and Pliny that, in pre- and early-Christian periods, the hawksbill turtle was common in Sri Lanka and widely harvested for its scutes. By the end of the first century AD, direct trading between the West and Sri Lanka began and developed rapidly thereafter (Nicholas and Paranvitana 1961). Thus, large quantities of tortoiseshell products were exported during the first and the second century AD. An ancient sea port lies at Mantai close to Mannar. There may have been a decline of hawksbill turtles around the second century AD due to over harvesting (Weerakkody 1992). From the sixteenth to the nineteenth centuries AD, hawksbill turtles were common at Amaduwa, southern Sri Lanka, but these were widely captured after nesting for their scutes (Bennett 1843). It is possible that this large-scale capture of nesting hawksbill turtles caused a decline by the end of the nineteenth century, which is perhaps why scutes had to be imported from Malaysia and the Maldives to meet the demand (Grenier 1958).

The detailed reports on the consumption of turtles in the Northern Provinces of Ceylon, by all assistant government agents and other government officers in charge of administration of the Northern Province, show that annually around 3,000 turtles were consumed in this region during the latter part of the nineteenth century (Twynam 1889). In the first half of the twentieth century, nearly 5,000 green and olive ridley turtles were caught off the shores of the Portugal Bay (northwest Sri Lanka) and the Gulf of Mannar (Jonklass 1937, Deraniyagala 1939, Somanadar 1954, Jones and Fernando 1968).

There is no historical or other evidence of the consumption of turtle eggs in Sri Lanka except for a brief note stating that the hawksbill turtle eggs are 'wholesome, not withstanding the noxious properties of the flesh' (Bennett 1843). Deraniyagala (1939) stated that olive ridley turtles were the most common chelonian found in Sri Lankan waters, and that ridley eggs were brought to the market more frequently than the others.

It is estimated that 100,000 to 150,000 green and olive ridley turtles were killed for meat in the Northern Province alone, from the latter part of the nineteenth to the early part of the twentieth century. Jonklass (1937) and Somanadar (1954) record turtle-catching in the Gulf of Mannar and other parts of the northwest coast, where hundreds of turtles were caught within a few days. This large-scale exploitation may have resulted in a decline of these turtles around the first quarter of the twentieth century, to such an extent that turtles had to be imported from India to cater to local demand. Jayawardhana (1995) observed smaller marine turtle populations during his observations in 1981–84, compared to previous observations in 1950–60.

Appreciable numbers of nesting female leatherback have been observed in Sri Lanka during the past few decades. In a 20-km stretch of beach in Yala National Park, the presence of 144, 226 and 166 leatherback nests were reported in the years 1981, 1982 and 1983, respectively (Jayawardhana and Pereira 1989). The Yala group of reserves has some of the best undisturbed, uninhabited and continuous coastlines—about 70 km, with several bays and broad beaches. In Godavaya, southern Sri Lanka, 333 leatherback

nests were counted in 2001 (Ekanayake et al 2002). These two reports and others (Wikramasinghe 1982, Amarasooriya 1998) and observations from various parts of the island indicate that there could be well over several hundred nesting leatherbacks in Sri Lanka.

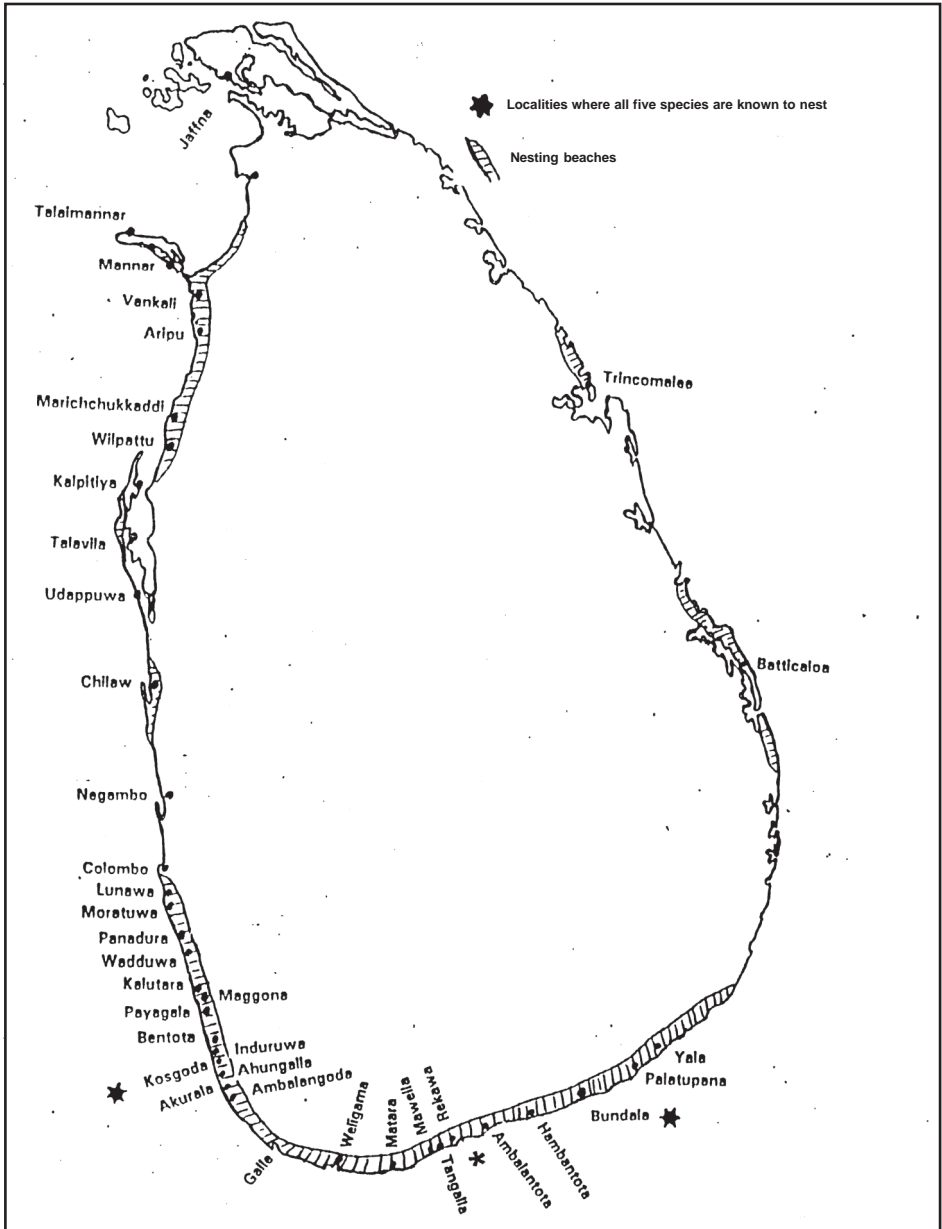


Figure 3. Historical nesting records of marine turtles in Sri Lanka (modified from Deraniyagala 1939).

**Table 1.** Historic distribution and nesting localities (NR=not recorded).

Species	Nesting Season	Locality (nesting / adults observed)	No. of nests	Reference
Loggerhead	June–Aug.	Gulf of Mannar, Marichchukadai, Karaduwa, Moratuwa	NR	Deraniyagala 1939
	Nov.–Feb.	Talaimannar, Karaduwa, Bundala, Kosgoda	NR	Wickramasinghe 1981
	June–Aug.	Unawatuna, Bentota		
Green turtle	Nov.	Ambalangoda	1	Deraniyagala 1939
	July	Talawila	1	Deraniyagala 1939
	NR	Jaffna, Mannar, Karaduwa, Ilippanduwa (NP), Chilaw, Negombo, Colombo, Pandura, Kalutara, Bentota, Ahangama, Weligama, Matara, Tangalla, Hambantota, Palatupana, Batticaloa, and Trincomalee.	NR	Deraniyagala 1939
	Nov.–Feb.	Talawila and Bentota	NR	Wickramasinghe 1981
Hawksbill	April–June	Amadhuwa (many nests)	NR	Bennett 1843
	Nov.–Feb.	Bentota, Karaduwa	NR	Deraniyagala 1939
	NR	Amadhuwa, Karaduwa, Bentota, Gulf of Mannar, Talaimannar, Udappuwa, Jaffna, Galkissa, Marichchukatti	NR	Deraniyagala 1939
	Nov.–Feb.	Karaduwa, Udappuwa, Talawila, Bentota, Amaduwa and Palatupana	NR	Wickramasinghe 1981
Leatherback	Dec.–Feb.	Weligama, Matara, Kirinda	3	Deraniyagala 1939
	May–July	Negambo, Colombo, Galkissa, Moratuwa, Vadduwa, Kalutara, Bentota	21	Deraniyagala 1939
	April–Aug.	Weligama, Maggona, Vadduwa, Bentota, Kalutara, Lunawa and Hambantota	hatchlings	Deraniyagala 1939
	Oct–Jan. and May–July	Talawila, Galkissa, Lunawa, Vadduwa, Kalutara, Paiyagla, Maggona, Bentota, Weligama, and Palatupana	NR	Wickramasinghe 1981
	June–Aug. 1981, 82, 83 and 84.	Yala National Park, Block 1 (20-km beach front)	144, 226, 166, 16	Jayawardhana and Pereira, 1989
Olive ridley	NR	Breeds more than other species in Sri Lanka	NR	Deraniyagala 1939

Table 1 (contd.)

Species	Nesting Season	Locality (nesting / adults observed)	No. of nests	Reference
Olive ridley	NR	Talaimannar, Talavila, Dehiwala, Maggona, Karaduwa, Galkissa, Moratuwa, Colombo, Gulf of Mannar, Arripu, Marichchukattei, Kalpitiya, Udappuwa, Chilaw, Negombo, Bentota, Matara, Weligama, Hambantota.	NR	Deraniyagala 1939
	Sept.–Jan.	Arripu, Marichchukaddai, Karaduwa, Kalpitiya, Talawila, Chilaw, Galkissa, Moratuwa, Maggona, Bentota, Weligama, Matara, Hambantota and Palatupana	NR	Wickramasinghe 1981

Table 2. Hatchlings released from Bundala Hatchery, Sri Lanka.

	1982		1983		Total
	Eggs	Hatchlings	Eggs	Hatchlings	
Loggerheads	98	NR	00	00	98
Green turtles	584	NR	53	NR	637
Leatherbacks	278	NR	00	00	278
Olive ridleys	2,828	NR	2787	NR	5,615
Not identified	3,490	NR	1725	N	5,215
Total	7,278	5,464 (75)	4,565	3,247(71)	

(Source: C Jayewardhana, 1996, pers. comm.) NR=Not recorded. Figures in parentheses indicate percentage.

Table 3. Hatchlings released in Kosgoda and Bentota, Sri Lanka 1981–82.

Species	Kosgoda	Bentota	Total	Percentage
Loggerheads	213(4)	75(2)	75(2)	03
Green turtles	987(18)	86(2)	1,073	11
Hawksbills	205(4)	310(6)	515	05
Leatherbacks	249(5)	275(6)	524	05
Olive ridleys	3,565(68)	4,122(85)	7,687	76

(Source: Wikramasinghe 1982) Figures in parenthesis indicate percentage.

Threats

CONSUMPTIVE USE: MEAT AND SHELL

Traditional craftspeople from Ambalangoda, Galle and Kandawatha used the scutes of hawksbills to fund a cottage tortoiseshell industry that lasted till recent times. These



scutes were used to produce ornaments such as bangles, bracelets, necklaces, jewellery boxes, combs and head ornaments known as *nemi panawa* (bent combs). These combs were worn by the elite in the southern coastal areas of the country till recent times. However, presently, none of the locals wear these combs. Codrington (1921) believes that the custom of wearing the semi-circular tortoiseshell comb came from Java around the eighteenth century.

Jayawardhana (1995) suggests that mechanised fishing off the coast of Yala interferes with nesting and causes mortality. The Amaduwa fishermen are believed to chop off the heads and flippers of marine turtles trapped in their nets. People living in coastal areas such as Jaffna, Mannar, Puttalam, Karativu, Kandakuliya, Kalpitiya, Mundel, Talawila, Chilaw, Loku Lellama, Podi Lellama, Negombo, Beruwala, Ambalangoda, Galle, Kandawatha, Tirukkovil, Samanturai and Kalmunai consider turtle meat a delicacy (Figure 4). They also believe the meat has medicinal and aphrodisiac value. During the past few decades, turtle meat and soup have been popular among tourists. Although turtles are protected under the Fauna and Flora Protection Ordinance of 1972, they are killed for meat even today. Karunaratne (1991) reported the slaughtering of 60–70 turtles per day from Kalpitiya to Galle. The meat is sold for Rs 30–60 per kilo, while eggs fetched from Rs 1.50–5.00 each at the time.

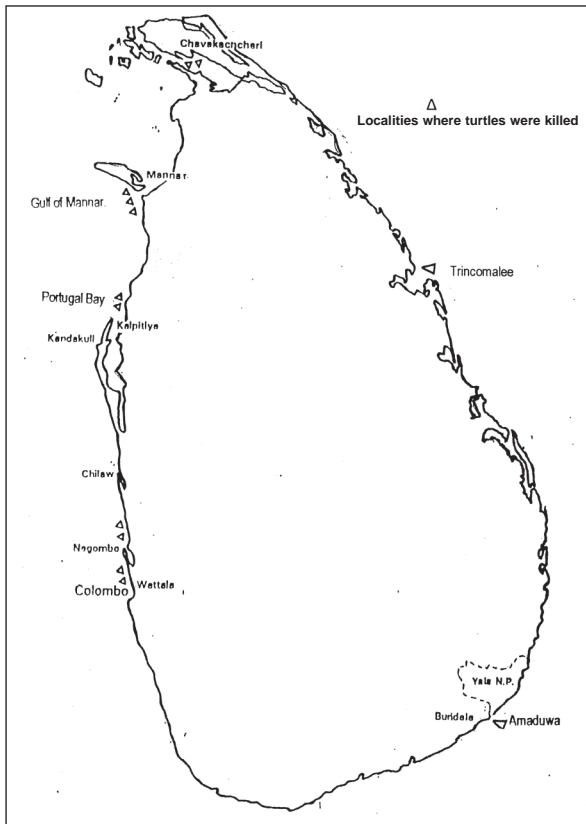


Figure 4. Localities where marine turtles are known to have been slaughtered (modified from Jayawardhana 1995).

HABITAT LOSS

Nesting beaches along the island have been destroyed or altered by erosion as well as by sand extraction. Along the 685-km coast from Kalpitiya to Yala National Park, about 175,000–285,000 sq m of coastal land is lost annually through erosion. Of these 145,000 sq m is lost annually from the 137-km coast that extends from the mouth of the Kelani River at Colombo to Talawila (Baldwin 1991). A 1984 survey by the Coast Conservation Department (CCD) estimated annual sand extraction at 916,000 tonnes, while 1,415,000 cubic feet of sand was mined in the coastal stretch from the Kelani River to Puttalam (Baldwin 1991). The study estimated that over 75,000 tons of coral was removed from the southwest coast annually, and 18,000 tons of coral was collected each year from Ambalangoda to Dikwella, of which 30 per cent was from reefs (Baldwin 1991).

LIGHTING

Artificial lighting on major turtle nesting beaches has increased due to the opening of hotels and houses. About 75 per cent of the graded hotels in Sri Lanka and 80 per cent of the rented rooms for tourists are located in coastal areas (Baldwin 1991). A new hotel project has commenced at Rekawa, a major turtle rookery.

Legislation

Though there are adequate laws for the protection of marine turtles in addition to the National Conservation Strategy, National Environmental Action Plan and Turtle Conservation Action Plan, they are not effectively implemented. In Sri Lanka, only a few beaches are protected which includes approximately 70 km of beach in the Yala group of reserves which is undisturbed, and which comes under the jurisdiction of the Department of Wildlife Conservation. However, predation by wild boar is common even in these areas. Other beaches under the same authority are Wilpattu National Park, Hikkaduwa Marine Sanctuary (45 hectares), Bundala, Great Bassess and Little Bassess.

- (i) The Government of Sri Lanka is a signatory to CITES, (signed on 2 August 1979) and the Convention on Biological Diversity (signed in 1992). However, it is well known that the enforcement of this legislation is weak (CEA 1988, Ministry of Environment 1991).
- (ii) Article 28 of the Constitution of Sri Lanka states that ‘it is the duty of every person in Sri Lanka to protect nature and conserve its riches’.
- (iii) The Department of Wildlife Conservation is the government agency responsible for the implementation and enforcement of marine turtle conservation measures. The leatherback turtle was the first species of turtle to be protected by law, in 1970. Subsequently, under the amendment of the Fauna and Flora Protection Act of June 1972, the other marine turtles (loggerhead turtle, green turtle, hawksbill turtle and olive ridley turtle) were also given legal protection. Section 30 of the Act makes it an offence for any person to possess, to take (capture), harm, kill or injure these animals or to collect or destroy their eggs. The sale of any part of the turtle is also an offence.

The decline of marine turtles has necessitated serious conservation efforts. Though the slaughter of turtles has decreased considerably, several other threats are faced by the marine turtles in Sri Lanka including fishery-related mortality and habitat loss. Laws are not effectively implemented due lack of resources and manpower. Thus, local communities have to become involved in conservation efforts.

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