

SEA TURTLE DIVERSITY AND TAXONOMY

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INTRODUCTION

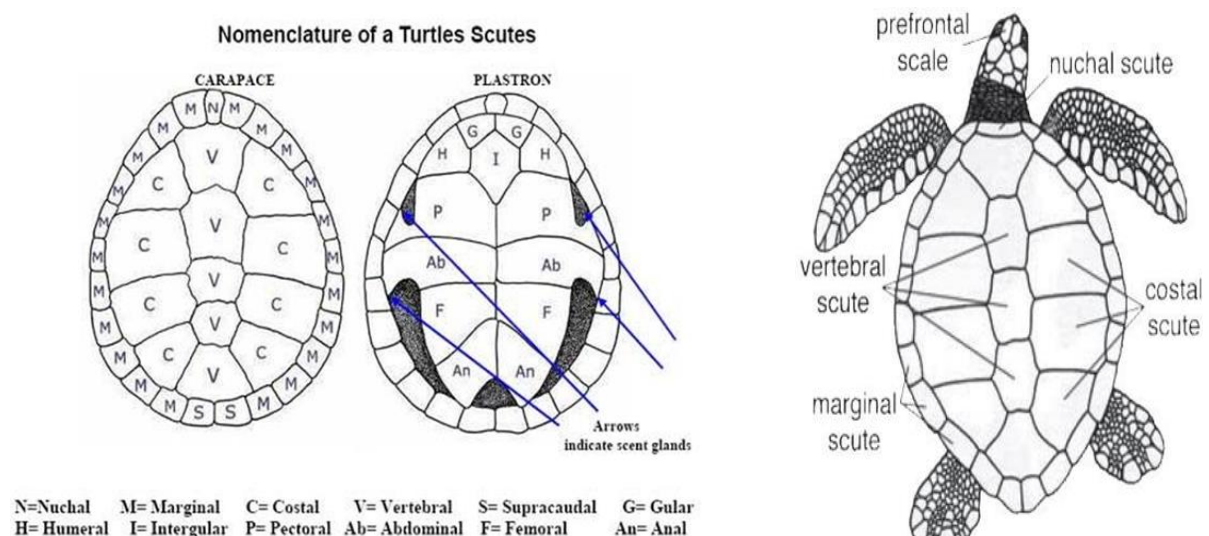
There are seven species of sea turtles found worldwide, belonging to six genera and two families. Five of these species inhabit India's coastline: olive ridley (*Lepidochelys olivacea*), green (*Chelonia mydas*), hawksbill (*Eretmochelys imbricata*), loggerhead (*Caretta caretta*), and leatherback (*Dermochelys coriacea*). Sadly, sea turtle populations face global decline due to factors such as over-exploitation, pollution, habitat loss, vessel strikes, and accidental bycatch in fishing gear.

The coasts of Tamil Nadu and Orissa are critical marine habitats for sea turtles in India. Tamil Nadu supports all five species, while Orissa's Gahirmatha beach is the world's largest nesting site for olive ridley turtles. The Indian Wildlife (Protection) Act of 1972 offers protection to all five species. However, conservation efforts need to be strengthened, focusing on involving local communities and finding alternative ways of earning a living.

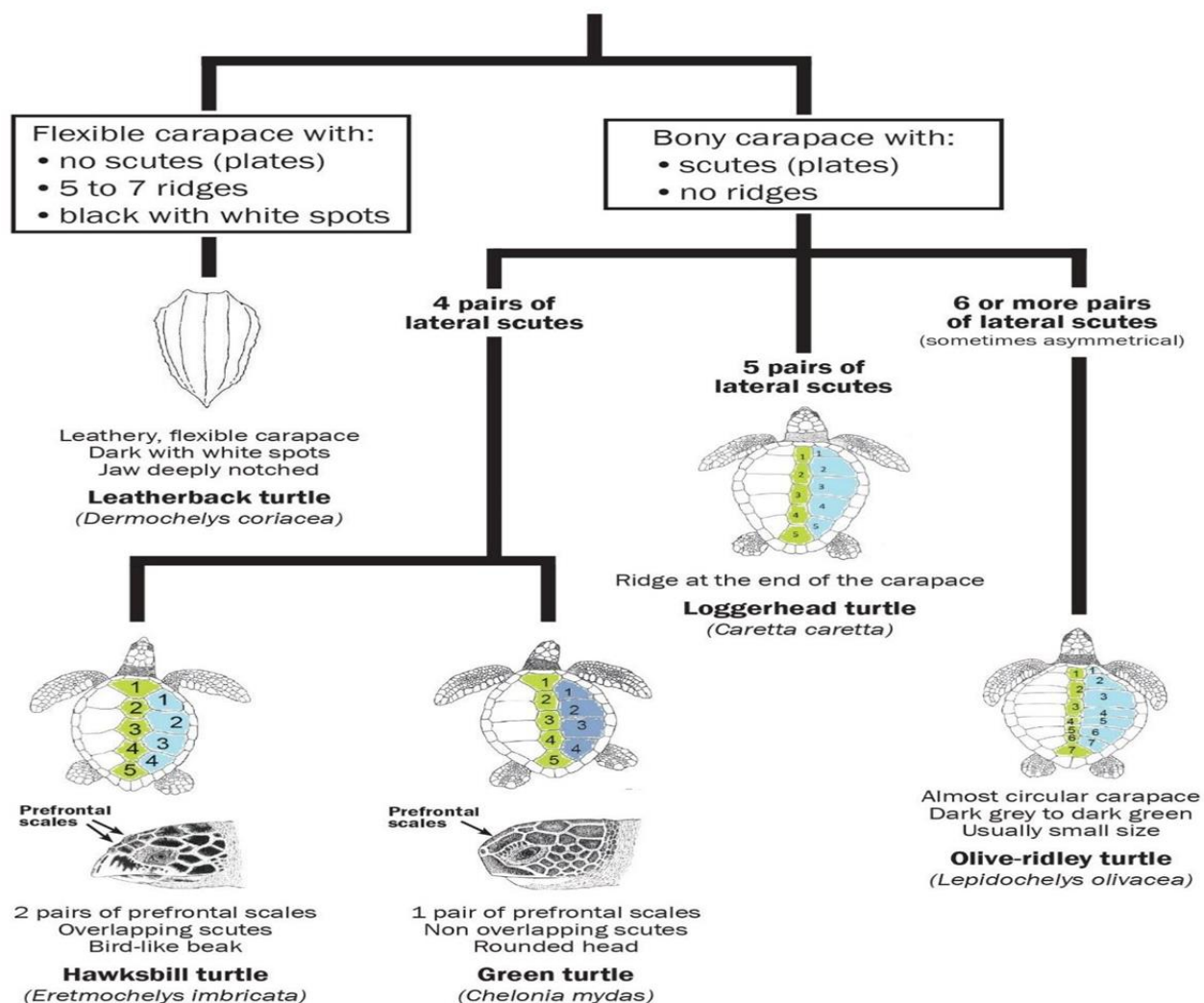
Turtle Excluder Devices (TEDs) have proven successful in reducing sea turtle deaths caused by trawling. Implementing TEDs in trawl fisheries, along with government regulation and enforcement, is vital for their protection (Boopendranath *et al.*, 2006).

To identify sea turtle species in Indian waters, experts look at features such as carapace length, the shape of costal scutes, prefrontal scales, and vertebral scutes. Clear photographs of the turtle's shell and head are essential for accurate identification.

Technical terms



MARINE TURTLES IDENTIFICATION KEY



Species Accounts

1. Olive ridley

The Olive ridley turtle (*Lepidochelys olivacea*) is a globally distributed species found in tropical waters. They prefer nesting sites along tropical mainland coasts and barrier islands, often near river mouths. In India, they nest extensively on the mainland, including the Andaman and Nicobar Islands, and less frequently in the Lakshadweep Islands.

Adult Olive ridleys weigh approximately 50 kg and have a short, wide, and smooth carapace with a raised, tent-like shape. Their coloration is olive green, and they are easily recognized by 6-9 pairs of asymmetrical costal scutes. They have a triangular head, a creamy yellow plastron (underside), two claws per flipper, and pores near the edges of their shell.

These turtles nest at night, laying 1-3 clutches of 100-120 eggs per season (each egg about 4 cm in diameter). They typically re-nest every 20-28 days, and return to nest

every 1-2 years. Their distinctive 70-80 cm wide tracks show asymmetrical forelimb marks with little to no tail drag.

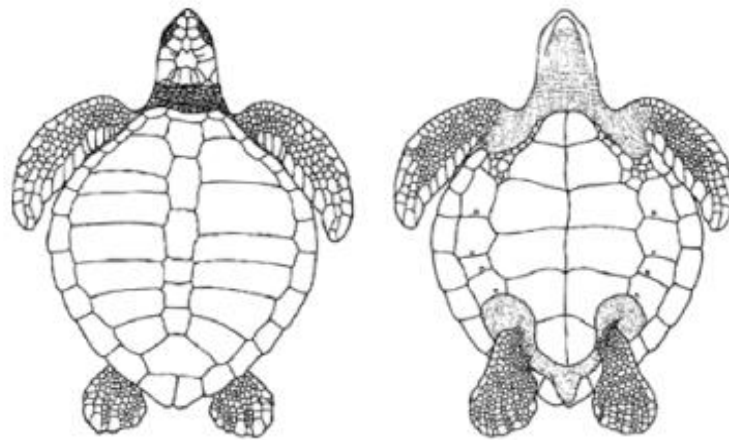


Figure 1. Olive ridley turtle: dorsal (left) and ventral (right) view
(Illustrated in Sea Turtles of India, 2011)



Figure 2. Live Olive ridley turtle (*Lepidochelys olivacea*) sighted in the offshore survey off Maharashtra (Jayasankar et al., 2022)

2. Green turtle

Green turtles (*Chelonia mydas*) inhabit tropical and subtropical waters worldwide. These distinctive turtles prefer to nest on tropical beaches, both on mainland coasts and remote islands. Major nesting sites in India occur along the Gujarat mainland and on beaches across the Lakshadweep and Andaman Islands. Adult Green turtles can reach weights of about 250 kg. Their broadly oval carapaces have scalloped, non-serrated edges. Coloration varies: juveniles often show brown tones with radiating streaks, while adults have more diverse patterns. Key identifying features include four

pairs of costal scutes, a rounded head shape, and a single claw on each flipper. Hatchlings have white plastrons that gradually turn yellowish with age. Their large central scutes prevent the first costal scute from touching the nuchal scute.

Green turtles are nocturnal nesters. Females lay between 4 and 6 clutches of 100 to 120 eggs each season. Their nesting tracks are 100 to 130 cm wide and show symmetrical diagonal flipper imprints. Look for a continuous or interrupted central line marking the tail drag.

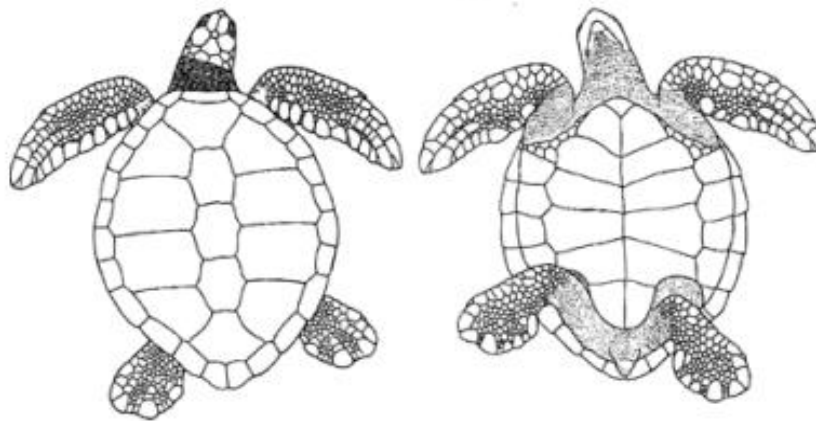


Figure 3. Green turtle: dorsal (left) and ventral (right) view
(Illustrated in Sea Turtles of India, 2011)

3. Hawksbill turtle - A Unique and Globally Distributed Sea Turtle

Hawksbill turtles (*Eretmochelys imbricata*) are found across the globe, preferring to nest on tropical beaches, especially on secluded islands. In India, they favor Lakshadweep, the Andamans, and certain Nicobar beaches like Indira Point. Unlike ridleys, who like open sands, hawksbills often choose to nest beneath trees and vegetation.

Adult hawksbills are on the smaller side, averaging around 150 kg. They are easily recognized by their oval shell with its saw-like back edge and thick, overlapping scales (scutes). Their beautiful brown shells have striking amber and brown patterns. You can identify them by their four pairs of costal scutes (along the side of the shell), narrow and pointed beak, and two claws per flipper.

Hawksbills are adaptable nesters, laying eggs both during the day and at night. They produce 3 to 5 clutches per season, each holding around 120-150 eggs (sometimes even

up to 180!). Their eggs are about 3.5 cm across and they'll nest every 2 to 5 years. When they come ashore, their tracks are 70-85 cm wide with uneven marks from their flippers. While their tracks might look a bit like ridley turtles, the beaches they choose for nesting are very different.

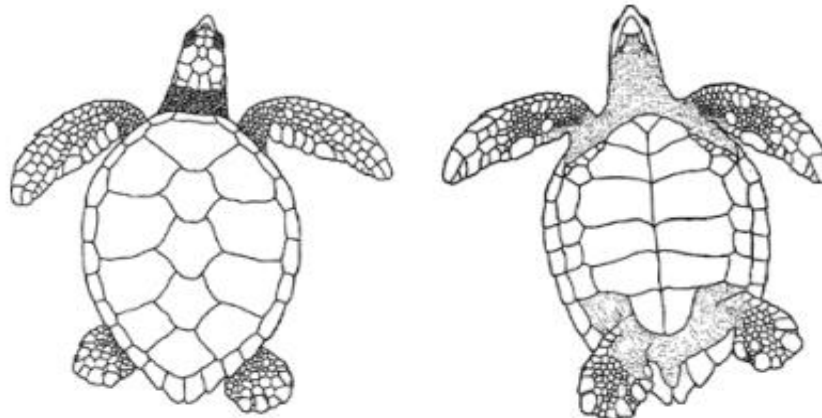


Figure 4. Hawksbill turtle: dorsal (left) and ventral (right) view
(Illustrated in Sea Turtles of India, 2011)

4. Loggerhead turtle

Loggerhead turtles (*Caretta caretta*) inhabit tropical oceans across the globe. They nest mainly in temperate regions, but their nesting range can extend into subtropical and tropical areas. In areas like Sri Lanka, they find ideal nesting grounds, but they are not known to nest in India. Loggerheads seek out expansive beaches on the mainland or on barrier islands for nesting.

Adult Loggerheads are large, weighing around 200 kg. In younger turtles, the moderately wide shell (carapace) has a slightly jagged back edge. Adults may have a thickened area at the base of the 5th vertebra. Their coloring is usually reddish-brown without markings. They are easily identified by their large triangular head, five pairs of scales (costals) on each side of the shell, two claws per flipper, and a yellow-orange underside (plastron). The narrow central scales (vertebrae) leave a space where the first costal scale touches the nuchal scale, a feature unique to Loggerheads.

Loggerheads nest at night. During a single season, they lay 3-5 clutches, each holding 100-120 eggs. Eggs are about 4 cm across. They will nest again after 12-16 days, and usually return to the same nesting area every 2-3 years. Their tracks on the beach measure 70-90 cm wide and are moderately deep. The tracks show diagonal marks from their front limbs, but usually lack a tail drag mark.

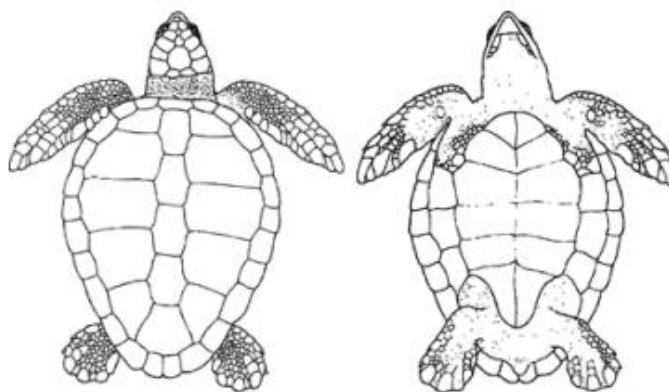


Figure 5. Hawksbill turtle: dorsal (left) and ventral (right) view
(Illustrated in Sea Turtles of India, 2011)

5. Leatherback turtle

The leatherback turtle (*Dermochelys coriacea*) is a globally distributed species, inhabiting oceans from sub-arctic to tropical regions. These large turtles prefer tropical beaches for nesting, favoring sites with wide stretches of sand, steep slopes, and easy access to deep, obstacle-free water.

In India, leatherback turtles primarily nest in the Andaman and Nicobar Islands. Key nesting locations include Galathea on the east coast, as well as several beaches on the west coasts of Great Nicobar, Little Nicobar, and Little Andaman Islands.

Adult leatherbacks can weigh over 500 kg. They have an elongated, tapered shell with seven distinct ridges, lack the scales (scutes) typical of other sea turtles, and possess a triangular head with two cusps on the upper jaw. Their coloration is primarily black with white speckles, and they have notable pink or blueish spots at the base of the neck and flippers.

Leatherbacks have a unique nesting pattern. They lay eggs at night, producing 4-6 clutches per season with 80-100 eggs each. Their nesting tracks are distinctive - 150 to 200 cm wide with symmetrical diagonal marks from their forelimbs and a deep central groove created by their dragging tail.

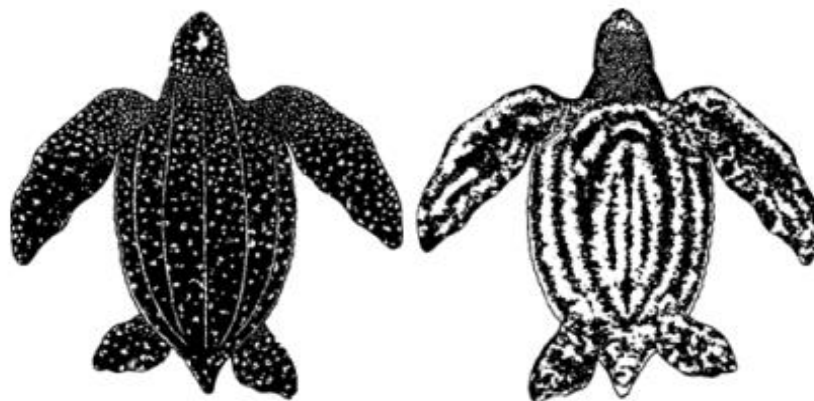


Figure 5. Leatherback turtle: dorsal (left) and ventral (right) view
(Illustrated in *Sea Turtles of India*, 2011).

Conclusion

Sea turtles are ancient marine creatures vital to the health of our oceans. Their global nesting habits on tropical beaches are an essential part of complex marine ecosystems. However, sea turtles face serious threats, including over-exploitation, habitat loss, and accidental capture in fishing gear (bycatch). This makes strong conservation efforts crucial. Laws like the Indian Wildlife (Protection) Act of 1972 offer a legal basis for protection, but success depends on cooperation between multiple groups, including local communities and research organizations. We must address ongoing issues like habitat destruction, human development near nesting areas, and widespread bycatch. By working together – governments, NGOs, and local communities – we can protect these ancient animals and create sustainable practices that benefit both marine ecosystems and people. Our responsibility as stewards of the ocean is to conserve sea turtles. Success stories in some regions show that positive change is possible with dedicated effort..

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