Important Sights of Olive Ridley Turtle in Paradip, Odisha

Suruliyandi Vijayan[1], Sagar Kumar Biswal[2], Karmegam Balaji Sriram[3] & Nattamani Basker Suryakumar[4]

[1]National Centre for Sustainable Coastal Management (NCSCM), Ministry of Environment, Forest and Climate Change, Anna University Campus, Chennai, Tamil Nadu, India – 600025
[2]Residence: Cha406, Paradip, Jagatsingpur, Odisha, India – 754142
[3]Residence: Cha358, Paradip, Jagatsingpur, Odisha, India – 754142
[4]Residence: MB-57, Madhuban, Paradip, Jagatsingpur, Odisha, India – 754142
**Corresponding author: svvijay89@gmail.com*

Received: *22 March 2024* ***Accepted:*** *10 April 2024* ***Published:*** *05 May 2024*

Suggested Citation
Surliyandi V., Biswal S. K., Karmegam B. S., Nattamani B. S., 2024. Important Sights of Olive Ridley Turtle in Paradip, Odisha, Prithivya, An Official Newsletter of WCB Research Foundation and WCB Research Lab. Vol 4 (1) 17-22.

The surviving members of this formerly varied group of reptiles are the marine turtles of today, including the leatherback and green sea turtles (Milton & Venkataraman, 2003). Of the seven sea turtle species found worldwide, the Olive ridley (*Lepidochelys olivacea*) is one of the most prevalent (Caceres-Farias et al., 2022). Their heart-shaped, olive-green carapace, which is normally between two and three feet (60 and 75 centimeters) long, gives them their name. The species, which is mostly found in the tropical regions of the Atlantic, Indian, and Pacific seas, is one of the smaller kinds of sea turtle worldwide (Caceres-Farias et al., 2022). They are well-known for their large-scale nesting occasions, or "arribadas," during which thousands of females simultaneously come ashore to deposit their eggs. The largest gatherings of these arribadas have been seen on the coasts of Costa Rica, Mexico, and India. These arribadas often take place around certain nesting sites.

Odisha is the longest coastline stretch in India. This coastline supports a large population of olive ridley turtles (Behera et al., 2013), that migrate for breeding and nest in a few areas (Kar and Basker, 1982; Pandav and Choudhury, 2000). Olive ridley turtles nest intermittently throughout their geographical range. Nevertheless, in certain areas, a specific member of the genus

Lepidopchelys - *Lepidopchelys olivacea* (Olive ridley) and *Lepidopchelys kempii* (Kemp ridley) - congregate in massive numbers and engage in coordinated nesting involving 100 to 1000 individuals (Bhupathy and Saravana, 2006). *Lepidochelys olivacea* (Olive ridley turtles) congregate along the Odisha coast from November to April, reproducing in great numbers on suitable nesting beaches (Behera et al., 2013). Before 1989, the Wildlife Wing of the Odisha Forest Department (WWOFD) estimated mass nesting in Odisha to be between one lakh to eight lakh across different years (Patnaik and Kar, 1999). In the year 1989, the olive ridley nesting area stretched for around 10 kilometers (Patnaik and Kar, 1999), but it decreased to one kilometer after 2000 (Behera et al., 2013). This study attempted to focus on the changes in geomorphology and the olive ridley response to nesting along the Odisha coast.

Similar to other marine turtles, the olive ridley is threatened by several factors, such as pollution, habitat degradation, bycatch—the unintentional entanglement of fish in fishing gear—and egg and adult poaching (Himpson et al., 2023). There are already conservation initiatives in place to save sea turtle breeding sites, lessen bycatch by using fishing gear that is friendly to turtles, and increase public understanding of the value of sea turtle protection (Gilman et al., 2010). The International Union for Conservation of Nature (IUCN, 2024) has classed olive ridley populations as vulnerable because they continue to suffer difficulties despite conservation efforts (Caceres-Farias et al., 2022). It is essential to preserve the health of marine ecosystems as well as the survival of these turtles and their habitats. Port operations have several effects on olive ridley sea turtles and their ecosystems:

Habitat Destruction and Alteration: Dredging and construction are frequently necessary for ports, and these operations have the potential to directly damage or change significant coastal habitats that olive ridley depend on for migratory, nesting, and food. The availability of appropriate nesting places may be impacted by dredging's disruption of nesting beaches and modification of sediment dynamics. According to Plotkin (2007), stated in an earlier study of the habitat conservation study of olive ridley.

Pollution: Wastewater discharge, oil spills, and other contaminants can cause pollution in maritime areas as a result of port operations. These contaminants have the potential to poison coastal waters and harm the health of olive ridley fish and the species they prey on. Additionally,

nesting beaches are susceptible to pollution, which could affect eggs and hatchlings. Oil spills on shores can lead to substantial habitat degradation and pose considerable hazards to all of the living species that thrive on and near coastlines (Michel et al., 2017). The possible impacts related to oil exposure on organisms differ by species (Bejarano and Michel, 2016). Oil spills may harm species both topically either the skin or inside from initial inhalation and consumption. Those that are most affected by oil include marine mammals, turtles, and seabirds (such as otters, whales, and seals) (Yuewen and Adzigbli, 2018). Likewise is difficult to determine the precise effect that has on seabirds because they can travel the biggest distances in search of nourishment as well as during periods of breeding (Beyer et al., 2016).

Noise and Light Pollution: Hatchlings may become confused on their voyage from the nest to the sea due to the high decibel levels and artificial lighting that are frequently associated with ports. In adult turtles, excessive noise can also hinder their ability to communicate and navigate, which may make it more difficult for them to locate mates and good foraging areas. From the point of view of Berry et al. (2013), light pollution or noise is a global threat to turtle nesting places as a result of coastal development, and it can make it difficult for hatching sea turtles to find themselves.

Collision Risk: Olive ridley turtles and other marine animals are more vulnerable to vessel collisions as a result of increased maritime traffic brought on by port operations. Injuries or even death can result from collisions with ships, especially for turtles that must surface to breathe. As stated by Foley et al. (2019), olive turtles are at risk through vessel collisions at docks and canals around urbanized coastal areas, as well as during their maritime travels in the open sea. When marine turtles are close to or on the surface, a variety of vessels might hit them as well, leading to harm or even death.

Invasive Species Introduction: Intentionally or unintentionally introducing alien species through ballast water could harm or threaten local species because they share the same environment and compete for food throughout their lives (Anil et al., 2002; Ibrahim and Manal, 2012). Ships' ballast water discharge has the potential to bring invasive species into coastal areas, where they may compete with native species like olive ridley turtles and upset the local ecosystems.

The implementation of environmental impact assessments before construction, the creation of marine reserves and protected areas, the enforcement of laws to lessen pollution and prevent vessel strikes, and the promotion of turtle-friendly port designs and practices are all steps taken to lessen the negative effects of port activities on olive ridley turtles. These steps are intended to ensure the sustainable functioning of ports and marine operations in the Paradip area while minimizing disturbance to olive ridley and their habitats. This important sight and records of *Lepidochelys olivacea* (Figure 1 & 2), Paradip, Coast of Odisha.

Figure 1: One deceased reptile, an olive ridley sea turtle (Lepidochelys olivacea), was found in the shoreline sand dune of Paradip, Odisha.

Figure 2: A dead olive ridley sea turtle flesh was being eaten by the street dogs.

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