ARTICLES

DO OLIVE RIDLEY TURTLES MIGRATE EN-MASSE ALONG THE EAST COAST OF INDIA?

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Sea turtles undertake long distance migrations from feeding to breeding grounds, but until recent studies involving satellite telemetry, little was known about their migratory behaviour. Over the last decade, thousands of sea turtles have been tracked, providing insights about their migratory routes, use of habitats, and behaviour (Jeffers & Godley, 2016). One thing is clear – sea turtles may aggregate at feeding and breeding grounds, but typically they travel alone. Given the mass nesting behaviour of olive ridley turtles, however, there has long been speculation – fuelled by anecdotal accounts of group sightings - that they may show socially facilitated group migrations.

Olive ridley turtles are known to nest along the entire east coast of India, with mass nesting sites at multiple locations in Orissa, in particular Gahirmatha and Rushikulya (Shanker *et al*., 2003; Tripathy & Pandav, 2008). Till the 2000s, all that was known about the pre- and post-nesting migrations of these turtles was anecdotal, with little understanding about where they went, what routes they followed and whether they travelled in groups.

In the 1970s and 1980s, many myths abounded. An article in the Oriya Daily 'The Samaj' in 1983 (Silas *et al*., 1983) described ridleys as being from the Pacific Ocean, implying that they migrated all the way to the Orissa coast each year. Another article in the Times of India (December 6, 1982) says that the 'oval shape olive-green creatures which form an endangered species used to migrate in large numbers from the Pacific Ocean' to the eastern coast (Silas *et al*., 1983).

Anecdotal accounts suggested that large numbers of turtles had been seen migrating together along the east coast of India. One of the oft cited references to the sighting of shoals of turtles swimming together along the east coast of India is a paper published in the American Museum of Natural History (Oliver, 1946). This reference is cited as a documented record of ridleys swimming in groups in the Bay of Bengal in many publications including Dash and Kar's classic book 'Gahirmatha: The turtle paradise' (Dash & Kar, 1990), Satish Bhaskar's review paper (Bhaskar, 1984) and many others over the last three decades. However, Oliver was not referring to the Bay of Bengal at all; he had recorded this observation during a trip from San Diego to the Panama Canal zone about 50 miles from the coast. Several ridleys (> 20) were seen floating on the surface, and his coordinates suggest that this was just offshore from the mass nesting beaches at La Escobilla, Oaxaca in Mexico. As such, this does not even provide strong evidence of group movement in that region.

This is not the only misleading citation. Deraniyagala, in his book 'A colored atlas of some vertebrates from Ceylon' (Deraniyagala, 1955) is said to have reported the sighting of large numbers of turtles migrating northwards along the Sri Lankan coast, in the month of November. Like Oliver (1946), this is cited repeatedly as evidence that ridley turtles were seen migrating together in the Bay of Bengal. Indeed, sea turtles were seen together, but this event occurred in the Mediterranean in September 1947. A clerk to the House of Representatives of the Ceylon Parliament, incidentally of the same name as the author, was travelling to England and observed the group about 350 miles west of Port Said. The Speaker of the House, travelling with the delegation confirmed the story. The turtles were said to be swimming eastwards and the ship sailed through the group for 3 hours. While the observation is interesting, it is still not about group migrations on the east coast of India, and the identity of the species is unknown.

Later, TFH Hoffman, a former President of the Nature and Wildlife Protection Society of Sri Lanka, wrote to Romulus Whitaker (In Letter), that he had received reports that Sri Lankan fishermen had seen a large group of turtles migrating northwards in December

1978. In November 1983, the Indian Coast Guard informed the Chief Secretary of the Government of Orissa that they had seen a mass migration of sea turtles in the coastal waters of Tamil Nadu near Pondicherry. Whitaker recalls a visit by a Coast Guard officer to the Madras Crocodile Bank where he related the sighting of 'islands of turtles migrating northward' during a helicopter sortie from Vishakapatnam to Chennai. This probably refers to the same November 1983 report. Mass nesting that year occurred in the last week of January.

Though there have been many such anecdotal accounts of group migrations, they could just as easily refer to static aggregations at feeding or breeding grounds. Demonstration of group or socially facilitated migrations requires a combination of methods including satellite telemetry, field observations and other behavioural studies. So far, flipper tagging of nesting and mating turtles in Odisha has provided evidence that olive ridley turtles migrate to the offshore waters of Tamil Nadu and Sri Lanka after breeding (Pandav & Choudhury, 1998, 2006). More recently, satellite telemetry studies have demonstrated that some olive ridley turtles migrate southwards towards Sri Lanka, while others remain in offshore waters up to distances of 200km from the coast (Kumar, 2016). Similarly, studies of the species in Costa Rica did not provide any evidence of group migrations (Plotkin *et al*., 1996; Plotkin, 2010). Unfortunately, there still is little evidence that group movement of any sort occurs in olive ridley turtles, or whether these are chance aggregations of large groups that are migrating along similar routes at similar times. It is worth noting though that information from coastal residents, fishers, and other opportunistic observations at sea (Coast Guard, Navy etc.) can provide valuable information and insights about unknown aspects of sea turtle biology. There are currently few citizen science programmes that involve at-sea observations of sea turtles and other species such as marine mammals. A carefully crafted programme with simple but adequate training for potential observers could greatly supplement our knowledge about these animals.

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