

Is Gahirmatha the world's largest sea turtle rookery?

Of the seven species of world's sea turtles, four species are known from Indian seas and the olive ridley turtle is the most numerous along the mainland coast. The olive ridley (*Lepidochelys olivacea*) turtle nests sporadically along the east coast and west coast of India including the Lakshadweep and Andaman and Nicobar Islands. However, mass nesting takes place only along the Orissa coast. The olive ridley turtle is well known for its synchronous nesting behaviour, also known as *arribadas* in which several hundreds of thousands of female ridleys nest *en-masse*. The major *arribada* sites in the world are located at Nancite and Ostional in Costa Rica, Oaxaca in Mexico, and at three sites (Gahirmatha, Devi and Rushikulya) along the Orissa coast of India¹⁻⁵. From the time of its discovery, Gahirmatha has been reported as the world's largest sea turtle rookery⁶. Gahirmatha is located in the river mouth of Maipura, between Dharma and Paradeep port, in the northern part of Orissa coast (21°N–87°E). The beach of Gahirmatha is part of Bhitarkanika National Park. The mass nesting of olive ridley in Gahirmatha was first reported by H. R. Bustard, a FAO/UNDP consultant during his all India crocodile survey in 1974 (ref. 6). Estimate of mass nesting in Gahirmatha has ranged between 100,000 and 800,000 in different years⁷. However, the reliability of these estimates has recently been questioned⁸. Before 1989, mass nesting occurred on a 10-km mainland beach near the river mouth, which subsequently got fragmented into smaller islands⁹. Now mass nesting takes place on small islands, each less than one km in length. Mass nesting of olive ridley turtles at Gahirmatha takes place between December to March. The first *arribada* at Gahirmatha is normally followed by a second one of much lower intensity after a gap of 45–60 days^{1,3}. However, recent trends in mass nesting at Gahirmatha show a failure of the second *arribada* (Bivash Pandav, pers. commun.).

Of the other two *arribada* rookeries, the Ostional Wildlife Refuge in Costa Rica has mass nesting twice a year, once during dry season (January to May) and again in the rainy season (June to September)^{4,10}.

Mexico has mass nesting populations of both species of ridleys. The Pacific coast beach of Oaxaca is known for the olive ridley mass nesting, while the Atlantic coast beach of Tamaulipas is the only nesting ground of the Kemp's ridley. The

Oaxaca beach (La Escobilla) supports a single *arribada* with an average of approximately 100,000 annual nesting/year. During 1996, the nesting population crossed⁵ the figure of 800,000. Since the total ban in 1990, the number of annual nestings on this beach has increased from 150,000 in 1990 to 835,000 in 1996 and it is considered as a recovering population⁵.

Looking at the above three olive ridley *arribada* nesting populations, an easy comparison can be made on the status of olive ridley at these three rookeries. The nesting data from Nancite and Ostional beach are available since 1988 (ref. 10). Existing literature suggests biannual nesting of olive ridley at Ostional beach and population variation between 200,000 and 1,100,000 in different years¹⁰.

However, the Oaxaca nesting record is older among the *arribada* population available till date, i.e. from 1976 to 1997 (ref. 5). Between 1994 and 1996, the average olive ridley sea turtle nesting in Oaxaca beach of Mexico was 900,000 while before 1994 it was restricted to between 50,000 and 300,000 (ref. 8).

The available data of *arribada* at Gahirmatha rookery between 1977 and 2001 record major *arribadas* in all years with nesting failure in 1981–82, 1987–88 and for two consecutive years during 1996–97 and 1997–98 (ref. 7), and also 2001–02. In many years, two *arribadas* have been recorded from Gahirmatha. Mass nesting and the methods have been extensively reviewed by Shankar *et al.*⁸. They conclude that the individual *arribadas* in Gahirmatha range from 150,000 to 350,000 turtles. Most recently, the (Wildlife Institute of India) census data was used to arrive at an estimate of ~180,000 turtles for the *arribada* in March 1999.

Thus a comparison of data of the above three *arribada* population raises the question as to whether Gahirmatha is indeed the world's largest sea turtle rookery. Furthermore, declaring a nesting population to be largest in the world by improper estimation may result in the downlisting of species in the Indian Wildlife Protection Act and IUCN's Red List. This may result in the reduction of protection for the olive ridley in their breeding ground which is already meagre. This also raises concerns that the olive ridley mortality on the Orissa coast – over 90,000 turtles since 1994 (refs 11, 12) – may not be taken seriously by various agencies. Therefore, standard and

accurate techniques for mass nesting censuses are urgently required for monitoring the status and trends in Gahirmatha to ensure appropriate conservation measures.

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