



Observation of Bryde's Whale *Balanoptera edeni / brydei* (Cetartiodactyla: Balaenoptiidae) in the offshore waters of southern Odisha, eastern India

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Balanoptera edeni / brydei (Anderson, 1879 / Olsen, 1913) is a widely distributed rorqual (Reilly et al. 2008) that inhabits tropical waters and does not perform extensive migrations to high latitude feeding grounds like other whales in the genus (Best 2001). The taxonomy of the genus is uncertain due to the similar appearance of two generally recognised forms which are almost certainly separate species, *B. edeni* and *B. brydei* (Wada et al. 2003). The International Union for Conservation of Nature (IUCN) lists this species as

Data Deficient (Reilly et al. 2008) but it is included in Appendix I of Conservation of International Trade of Endangered Species of Flora and Fauna (CITES) and listed in Appendix II of Convention on Migratory Species (CMS).

Bryde's Whales are widely distributed in the Indian Ocean; however, records in Indian waters are rare (Sathasivam 2004) and largely based on strandings. On 22 May 2009, around 09:35 (IST) three whales (two adults and one probable juvenile) were sighted 6km offshore (19°16'42.43N & 85°02'46.87E), at a depth of 28–32 m, south of Rushikulya River mouth, southern Odisha (Image 1). All three whales were heading north along the coast at about 3.5km/hr. No indications of feeding were observed. The lengths of the adult whales were estimated to be 11–13 m and the probable juvenile 8–10 m based on their size relative to our 7m long boat.

The whales were identified as Bryde's Whales (*Balanoptera edeni / brydei*) based on the prominent lateral ridges located on each side of the median ridge on the head of the two adult whales and their pointed falcate dorsal fin (Cummings 1985). The irregular rolling pattern of the smaller whale did not allow us to observe its head region. The smaller whale was slightly paler in contrast to the adults and its dorsal fin was more falcate.

The whales were cruising through the water and approached the boat as close as 2m. The surfacing sequence was captured using a digital still camera (Image 2). The whale did not lift its flukes when diving. Three whales, which were sighted earlier in the same region during April 2009 (by the first author), had similar dorsal fins and rolling patterns; it is uncertain whether or not these were the same individuals.

Bryde's Whales are the only non-migratory species of Baleen Whale. They are found in the tropics and sub-tropics (Barlow 2006). The nearest known Bryde's Whale population from the Odisha coast is 500km north in the Bangladesh region of the Swatch-of-No-Ground (SoNG) submarine canyon (Smith et al. 2008). Genetic evidence from the MtDNA control region of 38 tissue samples from Bryde's Whales in the SoNG indicates the presence of the small *edeni* form; however, the same analysis also included a single tissue sample of a Bryde's Whale that stranded

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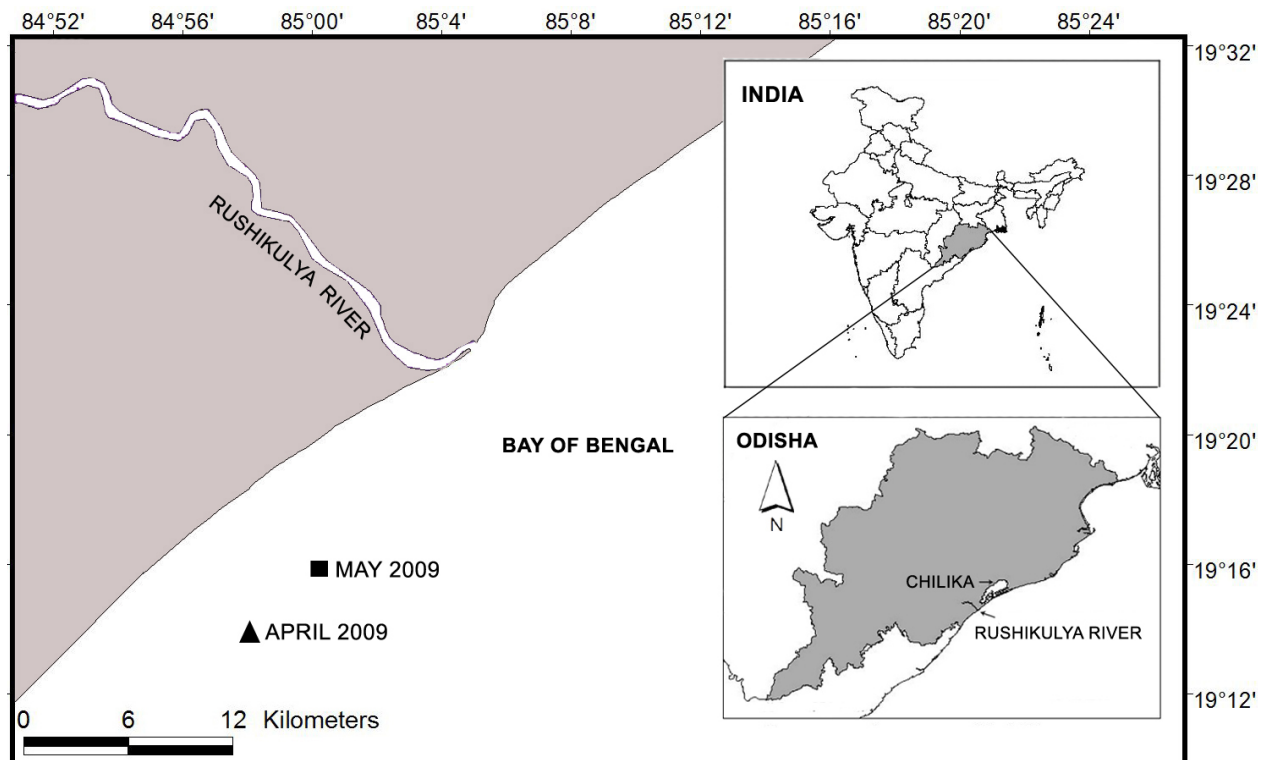


Image 1. Map of the Odisha coast showing the Rushikulya River and whale sighting locations.

near Cox's Bazaar which was found to be from the large *brydei* form. So there is at least some degree of sympatry between the two incipient species in the Bay of Bengal (Smith B.D, pers. comm. 29 May 2011).

A stranded Bryde's Whale from Gulf of Mannar (south-east coast of India) was identified as *B. edeni* based on genetic evidence from MtDNA (Jayasankar et al. 2009). Another stranded Bryde's Whale from Thiruvananthapuram coast (southwest coast of India) also was genetically identified as *B. edeni* based on DNA sequences of mitochondrial cytochrome oxidase subunit I (COI) gene (George et al. 2011). These records are the only published information till date that have used genetic materials to confirm that the Bryde's Whale from Indian waters are the *edeni* form.

Odisha has a rich cetacean diversity. A total of 14 cetacean species [Minke Whale *Balaenoptera acutorostrata*, Sei Whale *Balaenoptera borealis*, Bryde's Whale *Balaenoptera edeni / brydei*, Sperm Whale *Physeter macrocephalus*, False Killer Whale *Pseudorca crassidens*, Ganges River Dolphin *Platanista gangetica gangetica*, Irrawaddy Dolphin *Orcaella brevirostris*, Bottlenose Dolphin *Tursiops aduncus / truncatus*, Indo-Pacific Humpback Dolphin *Sousa chinensis*, Spinner Dolphin *Stenella*

longirostris, Striped Dolphin *Stenella coeruleoalba*, Risso's Dolphin *Grampus griseus*, Finless Porpoise *Neophocaena phocaenoides phocaenoides*, Common Dolphin *Delphinus delphis*] have been recorded from the coastal and inland waters of Odisha (James et al. 1989; Jayaprakash et al. 1995; M. Khan pers. comm. 2010). Till date, only seven published documents are available on the occurrence of Bryde's Whale from Indian waters (Table 1). Of these, only one was a live sighting (Leatherwood 1984) and the rest were stranding records. The lack of systematic offshore cetacean monitoring might be a reason for this.

Photo-identification of distinctive marks from Bryde's Whales in the Indian region of Bay of Bengal could inform us whether the species migrates from SoNG or if a separate population exists in the Indian region of the Bay of Bengal. Molecular studies can also unravel the taxonomic complexities associated with these species.

All marine mammals are given priority under "Schedule I" of the Indian Wildlife (Protection) Act, 1972 (Anon 2003). There are no targeted fisheries for marine cetaceans in India. Possible threats to marine mammals are from ongoing and proposed off-shore development activities. In the near future, major



Image 2. Complete rolling sequence of the adult whale before diving sighted during May 2009. © Sajjan John

hydrocarbon exploration is planned for the offshore waters of Odisha (Pannu 2005). Oil exploration activities may impact pelagic and coastal marine mammals. Noise pollution from oil and gas exploration and increased vessel traffic can have negative impacts on cetaceans (Wyrick 1954; Bogoslovskaya et al. 1981; Malme et al. 1989). Oil itself can also cause cetacean mortality and adversely affect the fish and invertebrates on which the cetaceans feed (Ridoux et al. 2004).

Within a single year, the Odisha coast has witnessed two oil spills: from MV Black Rose near Paradip port (Pattnaik 2009) and the oil slick of MV Malavika, near Gopalpur Port (Reddy 2010). How these offshore development activities and marine pollution will affect the cetaceans along the Odisha coast needs further investigation and management interventions.

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Table 1. Sighting and stranding records of Bryde's Whale from Indian waters chronologically.

	Date	Details	References
1	???	Recorded from Bay of Bengal By Blanford	De Silva, 1987 *
2	02 Jul 1979	13m male stranded Near Calicut, west coast of India	Lal Mohan, 1992
3	20 Feb 1983	Seven of these whales seen on cruise from Madras to Trincomalee	Leatherwood, 1984 *
4	20 Feb 1983	13.52m stranded specimen from Gulf of Mannar, east coast of India	Lal Mohan, 1992
5	14 Nov 2000	12 m stranded specimen from Point Calimere, east coast of India	Sathasivam, 2002
6	08 Aug 2006	12m male stranded near Mandapam at gulf of Mannar, East coast of India	Jayasankar et al. 2006
7	23 May 2007	12m stranded specimen from south of Rushikulya River, Odisha, East coast of India	M. Khan pers. obs. April 2009
8	22 May 2009	Three, live whales sighted off Odisha coast	Present report
9	29 July 2010	15.7m stranded specimen from south of Rushikulya River, Near Gopalpur light house, Odisha, East coast of India. Skeleton preserved at RMNH, Bhubaneshwar	Dr. Siba Prasad Parida pers. obs. July 2010
10	27 Jun 2009	3.9 m stranded specimen from Trivandrum District, Kerala, south west coast of India	George et al. 2011

* Source of the reference - K. Sathasivan 2004

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