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# **Journal of Threatened Taxa**

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# **SHORT COMMUNICATION**

# **ON THE EVIDENCE OF THE IRRAWADDY DOLPHIN ORCAELLA BREVIROSTRIS (OWEN, 1866) (MAMMALIA:** CETARTIODACTYLA: DELPHINIDAE) IN THE HOOGHLY RIVER, WEST BENGAL, INDIA

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# On the evidence of the Irrawaddy Dolphin Orcaella brevirostris (Owen, 1866) (Mammalia: Cetartiodactyla: Delphinidae) in the Hooghly River, West Bengal, India

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Abstract: We report the presence and status of the Irrawaddy Dolphin Orcaella brevirostris in the Hooghly River of West Bengal, India. These observations were made while conducting our field work on the Ganges River Dolphin, which involved vessel-based surveys as well as intensive monitoring from an anchored boat.

Keywords: Ganges River Dolphin, India, tides, West Bengal.

The Irrawaddy Dolphin Orcaella brevirostris is a euryhaline species of the family Delphinidae found in estuaries as well as freshwater river systems. In India it is found in Chilika Lake, Odisha (Sutaria 2009) and the Sundarbans, West Bengal (Smith et al. 2006) where it co-occurs with the Ganges River Dolphin Platanista gangetica. Recent survey reports and observations from rivers in southern West Bengal (India) indicate the extirpation of the Ganges River Dolphin from the Indian

Sundarbans (Mitra & Choudhary 2018). Globally, it is found along the coasts of southern and southeastern Asia, and in three river systems: the Ayeyarwady (Myanmar), the Mahakam (Indonesian, Borneo), and the Mekong (Baird & Beasley 2005). Three other subpopulations inhabit marine-appended brackish water bodies: Chilika Lagoon in India, Songkhla Lagoon in Thailand (Beasley et al. 2002), and Malampaya Sound in the Philippines. Recently, the threat status of the species has been elevated to the Endangered category on the IUCN Red List (Minton et al. 2017).

The Irrawaddy Dolphin is identified by a bulging forehead, a very short beak, triangular pectoral fin and a small dorsal fin on the back. It mainly feeds on fish and crustaceans (Mörzer Bruyns 1966). It relies on sound for communication, as well as for sensing their environment

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Competing interests: The authors declare no competing interests.

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PLATINUM





Image 1. Irrawaddy Dolphin sighting location in the River Hooghly in the state of West Bengal, India from March 2018 to March 2019.

and detection of both prey & predators underwater (Tyack & Clark 2000). They are also known to help fishermen in fishing (Anderson 1878; Tun 2008). The primary threat faced by them is accidental entanglement in fishing nets (Smith et al. 2003).

The lower Hooghly is a tidal river and an important conduit of national and international cargo movement. Kolkata Port is a key hub, and heavy shipping traffic is commonly seen. The river witnesses two tides a day, has a high sediment load with high water turbidity. It is an important habitat for the commercially important fish Indian Shad or 'Hilsa' *Tenualosa ilisha* which ascends the river for spawning. Here, we report the sighting of Irrawaddy Dolphin from four locations in the Lower Hooghly along with its persistence in the region. We also report on acoustic characteristics, which were briefly captured in our passive acoustic monitoring device.

### METHODS

Our work involves both systematic boat-based surveys for Ganges River Dolphin and observations from an anchored boat. We use independent double observer-based capture-recapture for systematic boatbased survey in Hooghly River except upstream of Kolkata where a single observer survey was done due to the narrow width of the river. We covered 123km in our first survey from Kolkata to Kakdwip (1–2 March 2018) and 114km during our repeat survey (19–20 March 2018). We surveyed for approximately five hours each day.

For acoustic monitoring, we anchored our boat for 1,058 hours totally on 45 occasions. We deployed our acoustic data loggers (C-POD, Chelonia Limited) moored with the anchor of our survey boat at each site to prevent drifting of the logger. It was a passive acoustic monitoring device which uses digital waveform characterization to detect cetacean echolocation clicks (http://www.chelonia.co.uk). The time of detection was logged together with other click features which were extracted from the custom-built software CPOD. exe freely available from the manufacturer. The data from the C-POD was used to record dolphin presence at each deployment site. It included automatic click train detection using the KERNO classifier and encounter classifiers. We used only high and medium quality acoustic detection and low-quality data were discarded.

During the systematic double observer surveys and while commuting on the river to and from the acoustic monitoring localities, all the observers stayed vigilant for any dolphin surfacing activity in the vicinity. The observers were experienced with identifying the Ganges River Dolphin, ruling out the possibility of misidentification.

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Image 2. Enlarged shot extracted from the video taken from a moving boat near Raichak (22.271°N & 88.087°E) showing melon and dorsal fin of Irrawaddy Dolphin. Photo by Kanad Roy.

#### **RESULTS & DISCUSSION**

#### Earlier surveys and reports of Irrawaddy Dolphin

Previous surveys in this stretch for the Ganges River Dolphin (Sharma 2010; Mallick 2013; Chowdhury et al. 2016) had not reported the presence of the Irrawaddy Dolphin. Anecdotal reports of Irrawaddy Dolphin exist in a social media post by Suvrajyoti Chatterjee from South 24 Parganas dated 17 February 2018 (https://m. facebook.com/story.php?story\_fbid=20958728604378 75&id=100000455455739). We also note that at least two Irrawaddy Dolphins (a male and a female reported to be "possibly pregnant") were translocated into the Roopnarayan River (a tributary of Hooghly) in 2004 (Jana 2004). These dolphins were rescued from fisher's nets in the Kalighai (Kelaghai) River, near Haldia.

# Observations of Irrawaddy Dolphin during the present study

While conducting our research (March 2018–March 2019) on the Ganges River Dolphins on the lower Hooghly River between Kolkata and Diamond Harbour, we sighted the Irrawaddy Dolphin at four locations (Table 1), Falta, Raichak, Burul, and Batanagar (Images 1,2). One of the sightings, in Batanagar, was 22km downstream of Kolkata (seen from a close range of 10m). Single individuals were seen on all four occasions.

#### Table 1. Location, date and time of Irrawaddy River Dolphin sightings.

Location	GPS location	Date and time	Distance from sea	
Falta	22.271 88.087	24 March 2018 16.54h	65km	
Raichak	22.201 88.108	28 June 2018 11.07h	51km	
Burul	22.349 88.097	21 July 2018 10.15h	73km	
Batanagar	22.508 88.202	09 January 2019 12.20h	98km	

The respective geographical coordinates were recorded by a handheld GPS (GARMIN e-trex 30x).

Since the sightings encompasses both wet and dry seasons, and the number of observations has been small taking into account the considerable time spent on the river, we believe that a resident but small population of the Irrawaddy Dolphin is present in this stretch of the river.

On 28 June 2018 near Raichak, our acoustic data logger which was moored for four hours with our survey boat, where we opportunistically recorded Irrawaddy Dolphin click trains (four trains) at the same time as we visually observed the individual. These were confirmed as the time of sighting matched precisely with that of the recordings. We confirmed that the Ganges River Dolphin

Train duration (μ seconds)	No of clicks	Modal frequency of clicks (KHz)	Minimum frequency (KHz)	Maximum frequency (KHz)	Maximum sound pressure level (Pascals)	Average sound pressure level (Pascals)	Minimum inter-click interval (μ seconds)	Maximum inter-click interval (μ seconds)
743240	20	51	39	63	89	37	29540	54115
488380	20	49	35	79	37	19	22220	50980
851965	21	52	39	63	62	28	38450	82155
1272315	34	61	39	63	52	21	34730	79710

#### Table 2. Click characteristics of Irrawaddy River Dolphin recorded in C-POD.

was absent from the area, thus ruling out confounding with the species (C-Pod does not discriminate between dolphin species). The data recorded were analyzed in CPOD.exe software. The click characteristics are given in Table 2. These are within range of the acoustic characteristics of the species (Jensen et al. 2013).

This is the first report of the Irrawaddy Dolphin from the river Hooghly in the literature; they have been observed in winter as well as monsoon suggesting a year-round presence. Although more frequent surveys are required for confirmation and future research in this data deficient region should be taken up as a priority.

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