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The Gangetic River Dolphin (*Platanista gangetica gangetica*): A Flagship Species for River Conservation

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Abstract
River Dolphins are found in 15 nations in some of the world's most ecologically diverse river basins, including Asia's Yangtze, Mekong, Indus and Ganges and South America's Orinoco and Amazon. The Ganges is home to a vast array of flora and fauna species, one of which is the endangered Gangetic River Dolphin (*Platanista gangetica gangetica*). Nevertheless, the Gangetic River Dolphin is a good bioindicator species for determining the health of the Ganga river system. It is commonly believed that protecting the biodiversity of freshwater ecosystems will conflict with human usage and exploitation (e.g., fisheries). River Dolphins are among the world's most threatened mammals. The dolphin population has dropped dramatically over the last few decades across much of its range due to human perturbations and anthropogenic disturbances. This article discusses the present status of the Gangetic River Dolphin, highlighting the threats that this subspecies faces in its current range and offering suggestions on conservation and management of this species.

Keywords: Gangetic River Dolphin, Distribution, Conservation, Threats, Flagship species

Introduction
Rivers and their linked habitats are some of the most endangered ecosystems in the world. The Gangetic River Dolphin belongs to the family Platanistidae and the Order Cetacea. It is, scientifically known as *Platanista gangetica gangetica*, is one of the most charismatic megafaunas found on the Indian subcontinent. It is one of four obligate freshwater dolphins found in the world, the others being, the "bhulan" or *Platanista gangetica minor* (Indus River Dolphin) in Pakistan's, the "baiji" or *Lipotes vexillifer* (the Chinese River Dolphin) in China's Yangtze River, and the "boto" or *Inia geoffrensis* (the Amazon River Dolphin) in the Amazon River. In 2006, it was reported that the 'baiji' was nearly extinct. The Gangetic River Dolphin, commonly known as "Susu", lives in the Ganges, Brahamputra, Karnaphuli-Sangu, and Meghna river systems and its tributaries from the Himalayas to the tidal zone in India, Bangladesh, Nepal, and Bhutan. (Behera et al., 2013). Being a top predator, this mammal serves as a crucial role in maintaining the delicate balance of the Ganga river environment. In spite of the fact that it is a "flagship" species, meaning that it is representative of an ecosystem that requires conservation, its status has become a cause for significant concern over the course of the last few decades (Bashir et al., 2010). The Gangetic River Dolphin, sometimes known as the "Tiger of the Ganges," is an indicator species that acts like a tiger in a river habitat. They are mostly blind and use echolocation for movement, prey gathering and communication. They are thought to have 2,500 to 3,000 members approximately in their entire range, out of which more than 80% live in Indian territory. This species is listed as

"Endangered" as per the International Union for the Conservation of Nature (IUCN) Red List, Schedule I of the Indian Wildlife (Protection) Act 1972, Convention on International Trade in Endangered Species (CITES) Appendix I and Convention on Migratory Species (CMS) Appendix II (Sinha and Kannan, 2014).

India's rich literary tradition has numerous references to the Gangetic Dolphins, both in myth and history. In 1801, William Roxburgh, then-Superintendent of the Calcutta Botanical Garden, published the first scientific study on this species. Although John Anderson released a biological report on the animal in 1879 that included a distribution map, no subsequent scientific research on the species was documented for the next century. Under the Ganga Action Plans (GAP) I (1985) and II (1991), the first efforts were made in the 20th century to document the status and risks faced by the Gangetic River Dolphin through research and conservation operations. These gave us the scientific groundwork we needed to know that the species was in danger due to pollution and decreased water flow in its habitat, as well as poaching. At the first meeting of the National Ganga River Basin Authority (NGRBA) on October 5, 2009, the Prime Minister named the Gangetic River Dolphin as the national aquatic animal of India. On October 28, 2009, he set up a Working Group under the leadership of Dr. R. K. Sinha of Patna University came up with a plan to save the Gangetic River Dolphin. Thus, India became the first nation to designate a cetacean species as the National aquatic animal. This strategy suggests management-related conservation initiatives. These policies need to be implemented to ensure the dolphin's long-term existence in Indian waterways (Sinha et al., 2010).

Distribution

Platanista was reported in the Ganges between longitudes 77 ^{0}E and 89 ^{0}E, from the mouth in the Bay of Bengal to the foothills of the Himalayas. Anderson (1879) reported that *Platanista* was found throughout all the main rivers, as far eastwards as longitude 95 ^{0}E by latitude 27300 'N, frequenting all its larger tributaries in the Brahmaputra. Outside of the Ganges, Brahmaputra, and Meghna river systems, "susus" were found in the Karnaphuli River and possibly the Sangu River in eastern Bangladesh. The Gangetic River Dolphin is native to the Ganges and Brahmaputra rivers in the Indian states of Uttar Pradesh, Uttarakhand, Bihar, Jharkhand, Madhya Pradesh, Rajasthan, West Bengal and Assam. They used to be very common in these states. Due to a dramatic decline in their population, they are now extinct. In the Ganges valley, it flows into most important tributaries, including the Sone, Yamuna, Chambal, Gomti, Ghaghra, Gandak and Kosi rivers. In the Brahmaputra valley, the Gangetic River Dolphin occupies a number of important tributaries, including the Tista, Gadadhar, Champamat, Manas, Bhareli, Dihang, Dibang, Lohit, Disang, Dikho, and Kapili rivers. During the monsoon season, the flooded lowlands and seasonal streams become additional habitats for the Gangetic River Dolphin. The dispersion is only limited due to a lack of water and rocky barriers (Singh, 2016).

Food and Feeding

The Gangetic River Dolphin is a "catholic feeder," that means it consumes a wide variety of foods, including fishes, invertebrates and even turtles and birds. They are actively foraging only during Morning (07:00 hrs – 10:00 hrs) and afternoon (15:00 hrs – 17:00 hrs). Dolphins have been witnessed hunting and preying upon surface-dwelling fishes like *Rhinomugil corsula*. It has been reported that they drive fishes to a certain location for communal feeding occasionally. (Sinha et al., 2010).

Threats

The main threats to the reduction in the number of dolphins is habitat degradation, poaching, construction of dams and barrages, changes in sediment and nutrient fluxes, boat trafficking,

intensive fishing accompanied by occasional by-catch, mining of sand and stones, overexploitation that harm biodiversity and ecosystem services in floodplain river systems and lack of awareness. There are other threats that the Gangetic River Dolphin faces, as depicted in Figure 1.

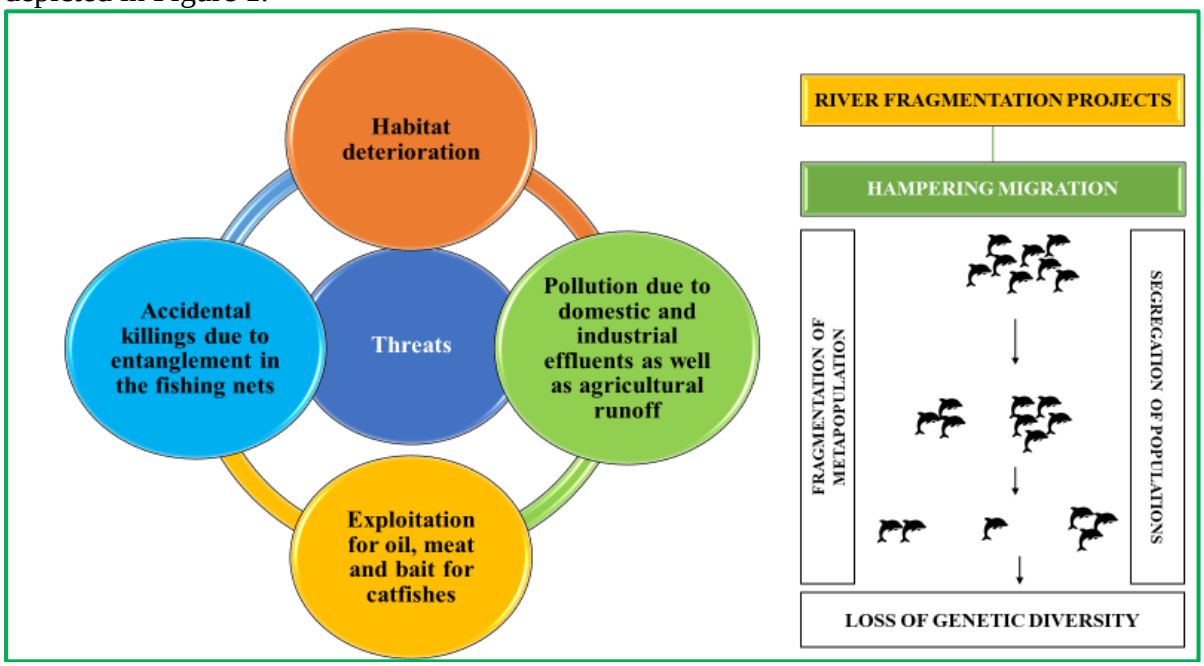

Figure 1: Threats to the Gangetic River Dolphin

Conservation and management strategies

Effective strategies are needed to speed up the recovery of dwindling populations such as ensuring sustainable exploitation, reducing accidental catch in fishing nets, rescue and release programmes, controlling environmental pollution, habitat protection and restoration. One of the most crucial steps in conserving any species is co-management between governmental and non- governmental organisations, agencies and local people. Some conservation and management strategies, together with their respective actions, are illustrated in figures 2 and 3 as well as table 1.

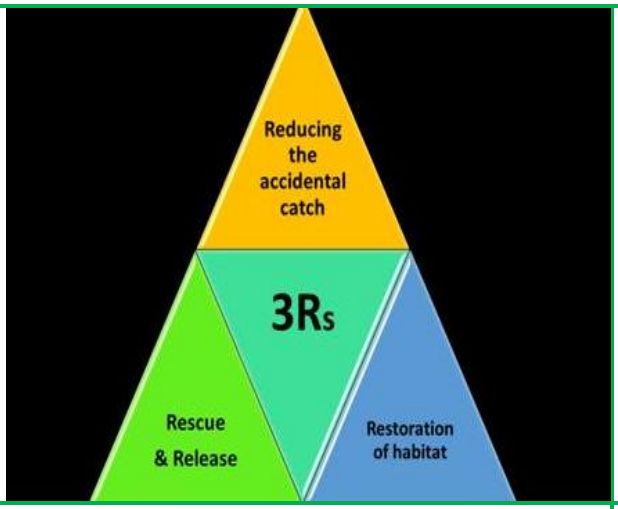

Figure 2: The 3 R_s in conservation of the Gangetic River Dolphins

Figure 3: Strategies for the conservation and management of Gangetic River Dolphin

Table 1: Actions taken towards conservation and management of the endangered Gangetic River Dolphin.

Year	Programme	Department/Ministry	Plan of action
1986	Included in First Schedule of Indian Wildlife Protection Act	By Ministry of Environment, Forest and Climate change. GOI	To raise awareness of the need for conservation of Gangetic River Dolphin
1991	Vikramshila Gangetic Dolphin Sanctuary in Bihar	By Department of Environment, Forest and Climate change of Bihar	To provide protection ground for conservation of Gangetic River Dolphin
2009	Declared as "National Aquatic animal of India"	By Ministry of Environment, Forest and Climate change, GOI	To focus on conservation of Gangetic River Dolphin
2013	Declared dolphins as "nonhuman persons."	By Ministry of Environment, Forest and Climate change, GOI	Prohibited captivity for entertainment purposes.
2020	Project Dolphin	By Ministry of Environment, Forest and Climate change, GOI	To boost conservation of river and sea dolphins
2021	National Dolphin Research Centre (NDRC)	By Bihar Urban Development Department with the help of Central government	To conserve endangered Gangetic River Dolphin

Conclusion

In addition to being an endangered species, the Gangetic River Dolphin is significant because it serves as a reliable indicator of riverine health. It is a flagship species for measuring the overall quality and structural integrity of riverine systems from the viewpoint of environmental sustainability. Gangetic River Dolphin populations have dropped dramatically due to aquatic pollution, hunting for flesh and oil, changes in river flow regimes and fragmentation, overexploitation and water abstraction. Few activities have been highlighted as critical for River Dolphin conservation. The dolphin habitat needs periodic assessments and monitoring. The fishing community, government officials, students and the general public are needed to be educated and made aware of the importance of protecting possible dolphin habitats. The creation of eco-centres for dolphins that emphasise conservation, education and research is necessary. Therefore, a community-based approach to management and conservation of this species is crucial. Capacity building and awareness programmes can preserve the Gangetic River Dolphin population, minimising the need for catch protection among fishermen.

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