

Research Article

DOI: <http://dx.doi.org/10.22192/ijamr.2019.06.02.014>

## Endangered Gangetic dolphin: It's Major Threats and Conservation Strategies

**Kajal Nayan Majumdar**

Post Graduate Department of Zoology, Midnapore College (Autonomous), P.O. Midnapore, Dist. Paschim Medinipur, West Bengal, INDIA, PIN-721101.

E-mail: [kajalnm@gmail.com](mailto:kajalnm@gmail.com)

### Abstract

The Ganges river dolphin, *Platanista gangetica gangetica*, commonly known as Susuk, Ganges river dolphin, blind dolphin, Ganges dolphin, Ganges susu, Gangetic dolphin, Hihu, Bhagirath is obligatory freshwater dolphin found in the Ganga-Brahmaputra-Meghna and Karnaphuli-Sangu river systems of India, Nepal and Bangladesh between the foothills of the Himalaya and the estuarine zone. At the acme of the aquatic food chain, the gangetic dolphin epitomizes the life and wealth of the river biodiversity and plays a vital role in maintaining the essential balance of river ecosystem. They have been declared as India's national aquatic animal on 18<sup>th</sup> May 2010. But looking at their present condition, this is not very pleasing news. There were about 4000-5000 individuals in 1982 but in a short span of 15 years their number has declined dramatically by 50% and further to less than 2000 with an annual mortality of 130-160 individuals. This resulted in the declaration of their IUCN status from vulnerable to endangered. The main reasons behind their declining are habitat fragmentation by construction of dams and barrages, water pollution by the disposal of chemical fertilizers and pesticides, heavy siltation, prey depletion, illegal killing of dolphins for meat and oil. In the present context we draw the attention towards the conservation of gangetic dolphins as its population is currently exposed to various threats. The species might face extinction in near future if all these demographic pressure continue to operate. Thus in order to save our national aquatic animals we need a number of conservation strategies such as proper regulation of dam construction, mass scale plantation in the catchment area of river system to prevent silt loading in river system, treatment of tributary mouths of rivers, banning of detrimental gill nets, regulation of uncontrolled fishing, taking of legal action against poaching, population awareness. A detail scientific study on the ecology, behavior, biology and genetics of gangetic dolphin may also help in long term conservation of our national aquatic animal. As these animals live and breed in the waterfronts of India, Nepal and Bangladesh, their protection and conservation is therefore a matter of International concern and thus a trans-boundary initiative is also necessary.

### Keywords

river dolphin,  
*Platanista gangetica gangetica*,  
conservation  
strategies

## Introduction

The Ganges river dolphin *Platanista gangetica gangetica*, is one of the three recognized species of obligate fresh water dolphins which inhabit in river and estuaries in Asia and South America. It is the most endangered cetaceans on earth as well as one of the charismatic mega-fauna of the Indian sub continent. The gangetic dolphin is also extensively mentioned in Indians' mythological and historical literature. Recently it has been

declared as India's national aquatic animal by the Ministry of Environment and Forest on 10<sup>th</sup> May 2010. The gangetic dolphin is an excellent indicator species of river and unique charismatic mega fauna. At the apex of the aquatic food chain they epitomize the life and wealth of river biodiversity and play a vital role in maintaining essential balance of river ecosystem. It is an endemic and rare aquatic mammal found only in the Indian subcontinent and is a part of our national heritage.

## Taxonomic position:

**Kingdom:** Animalia  
**Phylum:** Chordata  
**Sub Phylum:** Vertebrata  
**Class:** Mammalia  
**Order:** Cetacea  
**Family:** Platanistidae  
**Genus:** Platanista  
**Species:** gangetica  
**Sub species:** gangetica  
**Common Name:** SUSUK



**Fig-1.** Adult Gangetic Dolphin.

Source: <http://indiasendangered.com>

## Current status and distribution:

Anderson (1879) recorded its distribution in the river Ganga over an area comprises between 77 E and 89 E; In Brahmaputra it distributed throughout the main river as far as eastwards and upstream as 95 E by 27 30' N <sup>1</sup>. The gangetic dolphin is found in the Ganga-Brahmaputra-Meghna and Karnaphuli – Sangu river system of India, Nepal and Bangladesh. They are distributed in entire length of Ganga and Brahmaputra and all of their tributaries from the delta at the Bay of Bengal till the Himalayan foot hills. They are found in most of the large tributaries of Ganga basin: the Ramganga, Yamuna, Gomti, and

Ghaghara of the Ganga. In the Brahmaputra valley, it ranges into the major tributaries such as the Tista, Adadhar, Champamat, Manas, Bahareli, Subhansiri, Dihang, Lohit, Disang, Dikhlo, Kalsi rivers. Downstream it ranges through the large tributaries between the Hugh and Meghna rivers, as far as tidal limits at the mouth of Ganga. They are also reported from the Fenny, Karnaphuli and Sangu rivers to the southeast of the mouth of the Ganga <sup>2</sup>. In the 19<sup>th</sup> century, they were plentiful in the entire distribution range. However the range and abundance of these dolphins has sharply declined in the last 100 years. It is estimated that there are currently less than 2000 individual of this sub species globally.



### Habit and Habitat:

Although the gangetic dolphin is riverine in habit, it may also be found in brackish water but they are completely absent from the sea. It generally assumes that their distribution is imitated by salinity towards downstream and by physical barriers and low prey densities towards upstream. They are abundant in long stretches of deep water in association with shallow water meanderings, confluences and midchannel sand bars. They can survive in a wide range of temperature fluctuation ranging from 5 C in Karnali river in Nepal during winter to 35 C in places of Uttar Pradesh and Bihar during summer. The gangetic dolphin prefers surface water then other river dolphins. During summer, they occasionally keep their beaks out of the water. They are either solitary or communal individuals. They show migratory behavior from one place of the habitat to another for the purpose of feeding breeding of avoiding unfavorable environmental conditions. They feed on several species of fishes, invertebrates, and possibly turtles and birds <sup>3</sup>. They show active foraging behavior in the morning (700hrs-1000hrs) and afternoon (1500hrs -1700hrs).

### Physical description:

The gangetic dolphin has a characteristics long, pointed snout. Female snout is generally larger than that of the male. Both the upper and lower jaws bear long sharp teeth that are visible even when the mouth is closed. The eyes are extremely small openings slightly above the mouth. The body has a deep brown color, stocky in the middle and attenuating to a narrow tail stalk behind the dorsal fin. The dorsal fin is a very low triangular hump located two-thirds of the body length from the anterior end. The broad flippers have a crenellated margin; with visible hand and arm bones. The flippers and flukes are thin and large in relation to body size. Body size is about 2-2.2m in males and 2.4-2.6 in females. Adults weight measure between 70and 90 kg. Navigation and prey capture carried out by means of echolocation.

### Conservation status:

This sub species included in Schedule I of the Indian Wildlife Protection Act, 1972, in Appendix I of the Convention On International Trade in Endangered species (CITES), in Appendix II of the Convention on Migratory Species (CMS) and categorized as Endangered Species On the International Union For The Conservation of Nature and Natural Resources (IUCN) red list.

- ) [Indian Wildlife \(Protection\), Act 1972](#): Schedule I.
- ) [International Union for the Conservation of Nature \(IUCN\)](#): Endangered.
- ) [Convention on International Trade in Endangered Species \(CITES\)](#): Appendix I (most endangered).
- ) [Convention on Migratory Species \(CMS\)](#): Appendix II (migratory species that need conservation and management or would significantly benefit from international co-operation)

## Major threats for declinations of dolphin population:

### 1. Habitat fragmentation:

Construction of dams and barrages in Ganges River for the generation of hydroelectric power and irrigation has prevented dolphin migration and has led to fragmentation of population into subpopulations. Dolphins in the main channel of the Ganga were fragmented into two subpopulations when the Faraka barrage was constructed in 1976<sup>4</sup>. The lower Ganga barrage at Narora (1966) and middle Ganga barrage at Bijnor (1984) further split the Ganga main stem population into four sub populations. These activities have also altered the overflow and flooding cycles of the Ganga which influences the migratory and spawning behavior of flood plain dependent fishes. It leads to reduction of gene pool, loss of genetic diversity and make the species vulnerable. Other sources of habitat degradation include removal of stones, sands and woody debris from river<sup>5,6</sup>.

### 2. Pollution:

Fertilizers and chemicals released from agricultural fields, different factories and through sewage effect the dolphin population adversely. Now a days, the concentration of pollutants in rivers increases due to industrialization as well as spread of intensive agricultural practices<sup>4</sup>. A report by Lal Mohan (1989) showed that the river

basin received 1.15 million metric tons of pesticides annually<sup>7</sup>. Chemicals like Polychlorinated biphenyl (PBC), Hexachlorocyclohexane (HCH), Hexachlorobenzene (HCB) etc tend to accumulate in the muscles, liver, kidney of dolphins and cause death of these animals. The concentrations of organochlorine and organophosphorus compounds in the tissues of Gangaic dolphin are high enough to cause concern about their detrimental effects<sup>8</sup>.

### 3. Sedimentations:

Loss of vegetation in the catchment area and food plain of Ganga increases the rate of sedimentation. The sedimentations cause a rise of river bed that ultimately leads to the reduction of rivers water reteaming capacity. The sedimentation directly affects the physical and biological characteristics of river basin as well as the aquatic animals, thus reducing the play base of dolphin.

Constructions of dams and barrages, road building in mountain ranges, forest managements are principal factors that influence sedimentation<sup>9</sup>.

### 4. Poaching:

Poaching is one of the major causes of the declinations of dolphin population. They are killed for meat and oil which are used as liniment, as an aphrodisiac and bait for cat fish<sup>10</sup>. Use of such products creates an incentive for poaching and a disincentive to dolphin conservations. A few cases of poaching are reported in the middle ganga in bihar<sup>11</sup>, in kalni-kushiyara river of Bangladesh and in upper reaches of the Brahmaputra river in Assam<sup>5</sup>. As the population density of this species is very low in river, a few catches will have devastating effect on long term survival of this endemic species.

## 5. Accidental killing:

It is a severe problem for gangetic dolphins throughout most of their habitat. The primary cause of such killing is the entanglement of dolphins in fishing nets because their preferred habitat is often overlapping with the primary fishing grounds. Accidental killing due to collision with vessels, steamer has also been reported.

## 6. River trafficking:

Heavy river trafficking in ganga is a major problems for dolphins. There is heavy river trafficking in around Kolkata and river tourism has been recently started between a Kolkata and Varanasi. Currently, cargo steamers carry goods from Haldia to Patna regularly, occasionally travelling up to Varanasi. Collisions with these vessels, steamers etc and noise generated by these vehicles may adversely affect dolphin populations.

## 7. Prey base depletion:

The excessive exploitation of small and non-target aquatic animals y the use of mosquito nets may reduce the prey population of Gangetic dolphins. But the rate of renewal of these resources is remarkably less thus it is essential to conduct researches for the purpose of estimating prey abundance of Gangetic dolphins in different regions of river

## Strategies for the conservation of Gangetic Dolphin:

In order to save our national aquatic animals we need a number of conservation strategies such as proper regulation of dam construction, mass scale plantation in the catchment area of river system to prevent silt loading in river system, treatment of tributary mouths of rivers, banning of detrimental gill nets, regulation of uncontrolled fishing, taking of legal action against poaching and population awareness. A detail scientific study on the

ecology, behavior, biology and genetics of gangetic dolphin may also help in long term conservation of our national aquatic animal. As these animals live and breed in the waterfronts of India, Nepal and Bangladesh, their protection and conservation is therefore a matter of International concern and thus a trans-boundary initiative is also necessary

**1. Habitat Protection:** the intensive development projects proposed in river basin that has direct impact on dolphins and their habitats need to be identified. The environmental impact assessment of such projects needs to focus and indicate the possible impact of proposed activities on Dolphins.

**2. Control of pollution:** The discharge of untreated industrial as well as domestic that have adverse effects on Dolphins must be regulated or prevented. The untreated pollutants that cause problems should be undergone effective treated procedures before release in river.

**3. Prevention of siltation:** Heavy siltation in river has degrade dolphin habitat, thus mass scale plantation in the catchment area of river is essential to reduce silt loading entering the river system. A minimal flow of water in river must be allowed even during lean season. So that Dolphin Population can survive and migrate.

**4. Banning of gill net:** The detrimental gill net, mosquito net must be banned and only Dolphin friendly net should be allowed, thereby reducing the chances of accidental killing of dolphin and its prey population.

**5. Monitoring of Dolphin:** Periodic monitoring of Dolphin population as well as a detail scientific study on the ecology, behavior, biology and genetics of Gangetic Dolphins may also help in long term conservation of them. Regular treatment of tributary mouths of river through which migration takes place is very much essential.

**6. Mass awareness:** Education and awareness programmes are essential to spread consciousness among common people, fisherman, officials, school and college about the importance of dolphin conservation.

**7. Legal actions:** It is essential to take legal action against the people, industries and authorities who are responsible for creating problems of Gangetic Dolphins.

## Conclusion

Gangetic dolphin is not only our National aquatic animal but also it is a keystone species of river ecosystem. Thus it is very much essential to save gangetic dolphin for saving our National pledge as well as the conservation of river ecosystem and biodiversity.


## Acknowledgments

I am very much thankful to Mr. Kartik Samanta, former post graduate student, Department of Zoology, Midnapore College for helping me to prepare the manuscript of this paper.

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	Website: <a href="http://www.ijarm.com">www.ijarm.com</a>
	Subject: Biological Conservation
Quick Response Code	
DOI: <a href="https://doi.org/10.22192/ijamr.2019.06.02.014">10.22192/ijamr.2019.06.02.014</a>	

How to cite this article:

Kajal Nayan Majumdar. (2019) Endangered Gangetic dolphin: It's Major Threats and Conservation Strategies. *Int. J. Adv. Multidiscip. Res.* 6(2): 127-133.

DOI: <http://dx.doi.org/10.22192/ijamr.2019.06.02.014>