

# Rising Death of the Ganga Dolphins

## An Analysis of Latest Study Research

### Abstract

In recent times, news of death of dolphins and whales has been increasing in India. A large no of dolphins is washed ashore every year. The Ganga Dolphins are found only in the fresh water and their ability to adapt themselves with changes that makes them unique in the world. Its presence in adequate numbers reveals greater biological diversity.

**Keywords:** The Ganga Dolphins, Hydrophones Sensor, Conservation, Sonars.

### Introduction

The Ganga river dolphins are rare species found only in India and neighboring countries. Dolphins are most intelligent animals on earth. There are less than 2000 Ganga dolphins left in India. River dolphins have pointed nose, almost blind and mostly rely on sound and echolocation to navigate and communication. Dolphin inhabited rivers are The Sacred river Ganga, Chambal, Gandak and the Brahmaputra River from the Assam-Arunachal Pradesh border to India-Bangladesh border.

Dolphins are at the top of food chains. They play an important role in maintaining the overall balance of environment in oceans and rivers. Studies are showing that dolphins may lead us to a better understanding of animal intelligence, as researchers are finding that dolphins may be more like humans than primates. They are found only in fresh water rivers; therefore, they are the indicator of health of the river.

Dolphins use sounds to generate nearby maps for their movement. They listen the sound generated called echolocation. Recently, a lot of research has been performed on marine pollution. Along with all the human based generated pollution effects, a new area of submarine pollution has emerged. It has been observed worldwide that the marine noise pollution level is increasing that is very disturbing for marine ecosystem. Since submarines use sonars for target detection, sonars use high power soundwaves. Sonars are a kind of radars in sea that can detect large, small targets, ships, missiles etc. Sonars uses the sound waves having the frequency almost like that of dolphins. Therefore, a lot of dolphin deaths are reported worldwide nearby high submarines traffic. It is due to the fact that high power echo causes physical damage to the dolphins.



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**Figure 1: Image of the Ganga dolphin (Source WCS Bangladesh program)**

In this paper, the recent progress made by the Indian and Japanese research team in understanding the effect of soundwaves noise due to submarines is described. The team uses a hydrophone

sensors to receive sound waves of dolphins. They can also track and count the population of dolphins in river/seas.

**Aim of the Study**

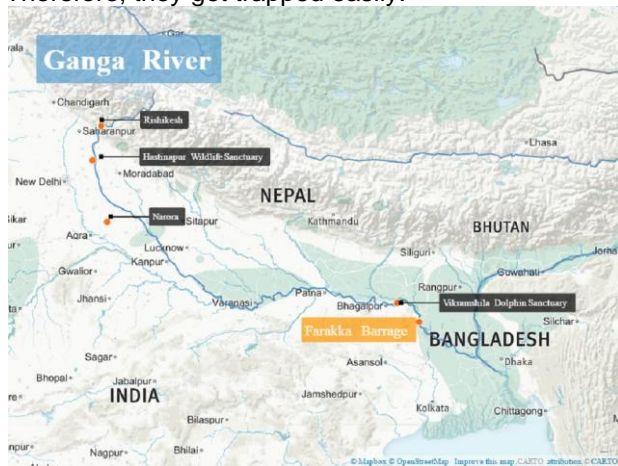
This article talks about the possible reasons of death of the Ganga Dolphins. Many researches have been carried out in finding the real cause of deaths. However, all the available reasons are yet to be accepted worldwide. The recent study by Indian and Japan with hydrophone sensors seems to be a significant milestone in studying the behavior and reasons of its decline. As per this study, marine pollution and submarine ultrasound waves are the major reasons of its death in oceans. However, river pollution and loss of habitat is the major cause of Ganga dolphins decline.

**Reasons of Its Decline**

Dolphins are in Danger because of less habitat area due to construction of dams, fishing and pesticide. They also killed for meat and oil. Dolphins in India are come under extinct animals due to polluted rivers and poaching. Every year nearly 100 Dolphins are getting killed by humans in India.

Untreated sewage from communities and industrial waste directly pollute the rivers. Industrial pollution only has caused a lot of fish deaths in India.

Despite ban on hunting, communities still practice poaching. The nets are made of nylons. Nylons does not reflect sound echo. Due to this, dolphins do not see any hindrance to movement. Therefore, they get trapped easily.



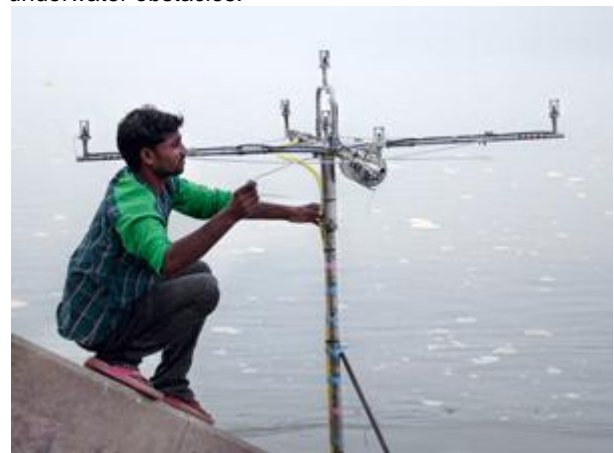
**Figure 2: Ganga Biodiversity [Image by Beth Walker]**

Habitat destruction is the primary cause of the ganga dolphin deaths. Earlier, habitat destruction was mainly due to dams and hydroelectric plants in the ganga river upstream as shown in the figure 2. Recently, in march 2016, Indian government has passed National Waterways Act (NWA) which talks about 106 rivers to be developed for cargo shipping. Wherein Allahabad -Haldia National Waterways (NW-1) comes on Ganga river. In order to make it suitable for cargo shipping, the needs to maintain constant depth of water. Therefore, it needs a 45 feet width and 3 mtr bed always

available for 1500 to 2000 tons of cargo shipping. It can be possible by making a lot of barrages. Finally, this single development poses a challenge to aquatic life of river ganga.

**Indian and Japanese team study on Ganga dolphins**

The research team consists of sonar engineers from navy of both the countries. They were having a less data source on their characteristics. They have decided to generate their own data of dolphin's movement, patterns and echo analysis. Therefore, they have started using hydrophone to acquire dolphins sound waves. They have established the fact that dolphins use echolocation to develop detailed mental maps of its muddy river water habitat. They behave like a submarine moving through deep, the dolphin sends out sound waves that bounce off underwater obstacles.



**Figure 3: Working personal is assembling hydrophones sensor**



**Figure 4: On boat survey to dolphins [Image by research team]**

The research was led by Tamaki Ura, University of Tokyo to study dolphin in its natural environment. In figure-3, They have installed hydrophone sensors in triangular grid so that at any point the movement and location of the dolphin can be easily determined. The sonar engineers first placed their dolphins' detector near Kanpur and then at different locations. The research team uses complex signal processing and noise reduction algorithms like they use in submarines signature analysis. They produce almost real time analysis of the movement of dolphins in softwares.

There are still some limitations to this measurement. For doing accurate measurements, the site needs to be free from crowd or construction noise. It shows that sensitivity of the sensors and background noise optimization needs to be further improved. They have started doing surveys on boats using sensors located inside the waters and keeping the analysis software in laptops. In future, the survey can be conducted on boats having apps in their mobiles.

#### **Technological Gaps in monitoring**

First issue is getting a reliable data of Ganga dolphins. Indian govt doesn't have a verified estimate of dolphin's population. They are mostly using visual surveys for counting. The dolphins must come to surface to breathe once in every four minutes. Therefore, simply counting by visual method would not be an effective way of counting. In visual counting, there are chances of multiple counting of a single dolphin. Generally, state authorities are incharge of the management wherein their personals are neither equipped nor trained enough. The latest technology demonstrated by the Japanese and Indian IIT-Delhi team using hydrophone sensor shown in the figure-4, allows us to study overall dolphins behavior and its population. Therefore, people are to be trained and deployed for using hydrophone sensor.

#### **Conservation**

Fifteen years ago, there were three species of fresh water dolphins in the world, living in the Ganges, Amazon, Yangtze rivers. Yangtze rivers became extinct in 2006. Now, Ganga dolphins consists of the significant no of freshwater dolphins which also comes under endanger species. Therefore, it becomes imperative to take an immediate step in developing a scientific conservation methods on Ganga Dolphins.

There are national and state level organizations exist to conserve all endangered animals. There are few solely to protect dolphins. Ministry of Environment and forest has declared Ganga Dolphin an aquatic animal of India. Also, Indian govt has created Vikramshila Gangetic Dolphin Sanctuary (VGDS) for its conservation. Furthermore, it is also covered under Indian wildlife act. The UP govt is also taking conservation efforts by bringing the dolphin issue related with ancient Hindu culture.

Therefore, a lot of legislation and laws are there, its implementation needs to be speed up. There should be mission mode effort for its awareness and cooperation with local NGO's. Many organizations are attempting to protect endangered dolphins but dolphins continue to be illegally caught and traded across the world. The following are proposed efforts needed for its protection and conservation:

1. Bollywood celebrities are to be encouraged for its promotion and spreading awareness.
2. Consumers should be made aware about using dolphin friendly products.
3. People may encourage for signing petition on bringing the issue to authorities.

4. Academic institutions are to be encouraged for research and development on conducting more awareness about dolphins and its behavior.
5. Regularly monitor the population of dolphins.
6. Strictly enforce Indian Wildlife protection acts.
7. Create protected areas for Gangetic dolphins.

#### **Conclusion**

The Ganga dolphin's death is reported every day. The ganga dolphins are found only in fresh water, that's make them unique for India. Therefore, further research work on latest technology should be encouraged. As many development works are planned in river Ganga, there should be concern for protecting aquatic environment for dolphins. Also, access to low cost survey tools based on the research done by Indo-Japan team should be adopted for effective monitoring.

#### **Acknowledgment**

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