

A REVIEW ON THE BIOLOGICAL RESOURCES OF GANGA

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Abstract

As its water is used for human and cattle consumption, power generation, fish processing and irrigation and for pilgrimage, the Ganga River in northern India is of great importance. The upper Ganga River has known a total of 40 zooplankton species, four crustaceans, 15 molluscs, 51 insects, 83 fish, 12 freshwater turtles, two crocodiles, 48 aquatic birds and two species of mammals. The river has been under constant threat of sewage and industrial waste contamination, dead body disposal, deforestation, excessive fertilizer usage and pesticides, programs for bathing, pilgrimage and water production. The river's contamination has become a matter of concern for everyone. Any alteration in the aquatic ecosystem can alter the structure of the biotic population and its composition. The government of India has implemented an Action Plan for the biological conservation of the Ganga River. For example, several departments, the Central Ganga Authority, several research institutions, government and non-governmental organizations have done significant work on different projects. Local involvement in different programmes has significantly contributed to the ecological conservation of the Ganga River. This paper provides lists of species and addresses significant resource management concerns in the upper Ganga River.

Keywords: *Habitat requirements, Hydrology, Resource management, Species richness.*

I. INTRODUCTION

In rivers, marine species have unique requirements. Instead of studying an individual animal in an environment, it is important to research the animal community to understand the quality of the habitat (Rao, 1991). Ganga's faunal resources have distinct characteristic features that fall into three zones: in hilly terrain, the upper Ganga River; in Uttar Pradesh, Bihar and West, the middle Ganga River[1]. In the delta tract, Bengal and the final lower Ganga River (Ghosh, 1991)[2]. The 1960s and 1970s were times in which marine life and its ecosystems were destroyed without precedent. Conservation practice today tries to return ecosystems to

their previous ecology. Conservation planning also aims to recognize and preserve diverse populations. There are people along the river expressing concerns that the river is dirty and needs to be any restoration operation. The Indian Government has, in response, embarked on various conservation programs on the Ganga River. Latest accounts of, according to Ghosh (1991), The Ganga fauna is dispersed and sparse. On the Ganga River in general and the upper Ganga River, starting explicitly from Rishikesh downstream, no systematic survey was conducted. The biological profile of the Ganga River, in which knowledge about the biological culture of the Ganga River between Rishikesh and Kanpur is quite scanty, was recently reported by Bilgrami (1991)[3]. In view of these concerns, attempts have been made to classify the species in the upper Ganga River in the present report.

At 7010 m, the Ganga rises on the southern slopes of the Himalayan range in Gangotri, Uttarakashi District, U.P., India. Before entering the Bay of Bengal, it flows through three separate states, Uttar Pradesh, Bihar and West Bengal, covering a distance of 2525 km. It is joined by several tributaries along its long course. All along the River Ganga, in many big areas. Many pilgrims take holy baths, carry out cremation and post-cremation practices, and these are significant sources of river pollution. A large number of factories are located on the banks of the river in the study district, such as Indian Drugs and Pharmaceutical Ltd. (IDPL), Bharat Heavy Electrical Ltd. (BHEL), sugar, chemicals, fertilizers, engineering products, cotton and leather[4]. The releases from these sectors Directly or indirectly, join the Ganga River and The river is polluted to a large degree. The natural flow of the Ganga River has been limited by barrages in its upper reaches. These dams are built either for power generation or for agricultural land irrigation. In Rishikesh, Haridwar, Bijnor and Narora, a series of barrages have been installed[5]. The Rishikesh barrage was installed to supply the Chilla Power station with water. River water has been diverted both for irrigation at Narora (Lower Ganga Canal) and for the Narora atomic power plant. The irrigation via the Upper Ganga Canal and the Madhya Ganga Canal, respectively, includes other dams at Haridwar and Bijnor. The altitude decreases from 348 m at Rishikesh above sea level (m.a.s.l.) to 123 m.a.s.l. at Kanpur. Owing to the presence of dams (Haridwar and Narora) or due to the joining of tributaries (Kanpur) or feeder points, the river becomes broader at various sampling sites.

The Ramganga tributary canals (Brijghat). A typical hydrological feature of the Himalayan-fed river system is the steady rise in water levels in the Ganga River during the summer, which is called a summer flood. Flood rates can be very high during the monsoon. The mean annual precipitation observed in Narora during 1993 was 642 mm. The present study was conducted during 1993-955 on the Ganga River along a 645 km stretch between Rishikesh and Kanpur (Fig. 1). Water samples are obtained for physical and chemical analysis every month. The physical variables were: temperature of water and air; depth of water; flow of rivers; total dissolved solids; and pH; chemical variables: dissolved oxygen; demand for biological oxygen; and demand for chemical oxygen.

Some variables were analyzed at each sampling station, others were later analyzed by standard methods prescribed for water quality assessment in the laboratory at the School of Studies in Zoology, Jiwaji University, Gwalior (Trivedy & Goel, 1986)[6]. The fauna of the

field of study has been collected using different capture methods during various months, and during the rainy months (July-September). The benthic fauna was collected using the Ekman dredge (22 x 22 cm) from the deep region. Samples from the littoral zone were collected by scooping a measured distance from the zone through a scoop net and just a few fixed points. The specimens were washed and passed through a grade 40 sieve. Different fishing nets, with the assistance of local fishermen, were collected from different stations. It has described zooplankton species, insects, crustaceans, molluscs, whales, turtles, crocodiles, birds and aquatic mammals. The fauna of the field of study has been collected using different capture methods during various months, and during the rainy months (July-September). The benthic fauna was collected using the Ekman dredge (22 x 22 cm) from the deep region. Samples from the littoral zone were collected by scooping a measured distance from the zone through a scoop net. And just a few fixed points. The specimens were washed and passed through a grade 40 sieve. Different fishing nets, with the assistance of local fishermen, were collected from different stations. It has described zooplankton species, insects, crustaceans, molluscs, whales, turtles, crocodiles, birds and aquatic mammals.

The Zoological Survey of India, Calcutta, described samples of benthic fauna and freshwater prawns. Insects were recognized using the keys provided in Imms (1963)[7]. Fishes have been named by using Shrivastava's identification keys (1980). Turtle detection was based on direct sightings and collected on the riverbanks from dead shells. Also studied were live turtles captured by the fishermen. It was followed by keys for species identification provided by Smith (1933) and Pritchard (1979)[8]. During the reconnaissance survey, interviews were conducted with locals to collect information on the occurrence of crocodiles in the Ganga River research stretch. On field maps, the areas where crocodiles were reported were registered.

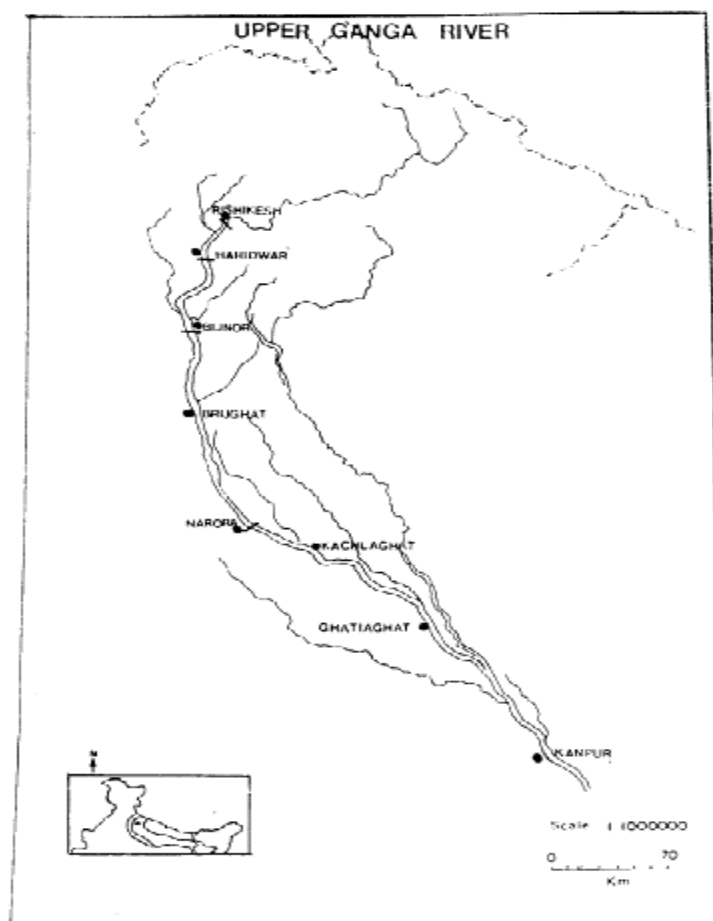


Figure 1: Flow of Ganga at various levels

Bio-resources of Ganga:

A wealth of biodiversity has been found in the Ganga River between Rishikesh and Kanpur. Figure 2 shows the list of aquatic species known from the Ganga River research stretch. Two species of marine mammals have been found in the Ganga River. They are *Lutraperspicillata* and Gangetic dolphin *Platanistaganetica*, smoothly coated otters. Otters were not present during the current research, but dolphins were seen in several locations, including Brijghat, Anupsahar, Narora, Farukhabad. *Gavialisgangeticus* and *Crocodiluspalustris* are endangered crocodiles. Four species, *Kachugakachuga*, *Aspideretesgangeticus*, *A*, are among the 12 species of freshwater turtles present in the Ganga River. *ChitraIndica* and *Hurum* are endangered. *Macrobrachiumaltifrens* (Henderson), *Macrobrachiumlamarreilamerrei* (H.M. Edw.), *Macrobrachiumhendersonayanum* and *Caridina* sp. are the crustaceans found in the study field. Owing to heavy human activities such as fishing, poaching and habitat degradation in the Ganga River, populations of higher vertebrates are under constant pressure. There is already large-scale exploitation of marine resources.

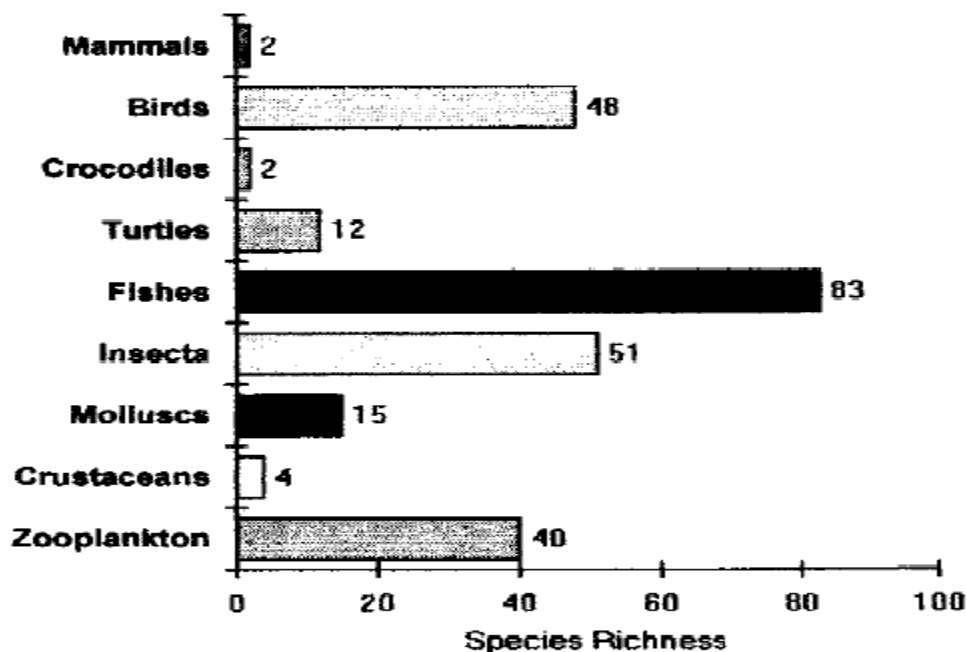


Figure 2: Species Richness of the Ganga River along a 645 km

II. CONCLUSION

The results of the survey showed that the Ganga River between Rishikesh and Kanpur is rich in biodiversity. A important advancement in biodiversity research is the discovery of 12 species of freshwater turtles from this stretch of the Ganga River. Before the beginning of the present research, it was assumed that crocodiles and Gangetic dolphins were extinct from the study area. In this stretch of the river, however, natural populations are still present. During the current short analysis, the survey findings The population status of higher animals such as turtles, crocodiles and dolphins is not indicated during the time, but simply their presence or absence. From the data collected, however, it is possible that some species of turtles, crocodiles, Threats such as exploitation and habitat loss are faced by dolphins and otters. The fish stocks, like Mahseer, have been reduced and it has been very difficult for fishermen to catch large-sized fish in this stretch. Captive reared gharials have been released upstream of the river after finding the Ganga River as an appropriate habitat. However, these animals may have been killed during fishing activities due to a lack of safety. Owing to extreme human consequences, crocodiles and dolphins have minimal habitat available. In the study region, river otters may have been totally extinct. The upper part of the river is visited by large numbers of migratory birds. This may be because in the upstream reaches, food supplies are more abundant than farther downstream, which is more contaminated. In turtle markets, freshwater turtles are caught illegally for sale. In some villages along the study area of the Ganga River, shooting wetland birds is a common activity. Gangetic dolphins in fishing nets are also destroyed. It is likely that the majority of larger species, especially turtles, crocodiles and dolphins, will soon become extinct unless immediate and strict steps are taken to protect these animals in the Ganga River

III. REFERENCES

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