VIKRAMSHILA GANGETIC DOLPHIN SANCTUARY

N.K. SHARMA*

Introduction

The river Ganga is one of the very important perennial river ecosystems in India. Sacred Ganga is the main habitat of Gangetic Dolphin. The Gangetic Dolphin *Platanista gangetica* is found in the Ganga-Brahmaputra-Meghna river systems. The main tributaries of these rivers are also home to this species due to upward movement. The estimated population of Gangetic Dolphin is about 4000-5000. The Gangetic Dolphins are commonly seen from Buxar to Farraka but its abundance is reported between Munger and Sahebganj in Bihar where the river is very wide and deep throughout the year. Studies conducted and observations made so far have indicated rapid decline in the population of this species during the last few decades. This trend is still continuing. There is an urgent need to halt this declining trend. With this objective in view, the river stretch lying between Sultanganj and Kahalgaon has been declared as Vikramshila Gangetic Dolphin Sanctuary in 1991.

The river stretch lying between Sultanganj and Kahalgaon is quite deep and wide and carries large number of Gangetic Dolphins. There is necessity of not only protecting this endangered species but also to develop and ameliorate its habitat so as to make it conducive for its breeding, growth and development. This is more so when Dolphin is the most important riverine mammal like Tiger in the Forest ecosystem.

Specific Objectives

Specific purpose of creating this Sanctuary is to preserve, protect and develop Dolphins in terms of numbers. The specific objectives also include the study of psychology, physiology and animal behaviour. Study of breeding behaviour will also constitute one of the major tasks of Sanctuary Management. Popular myth says that Dolphins may be the smartest creature on earth, as intelligent as human beings.

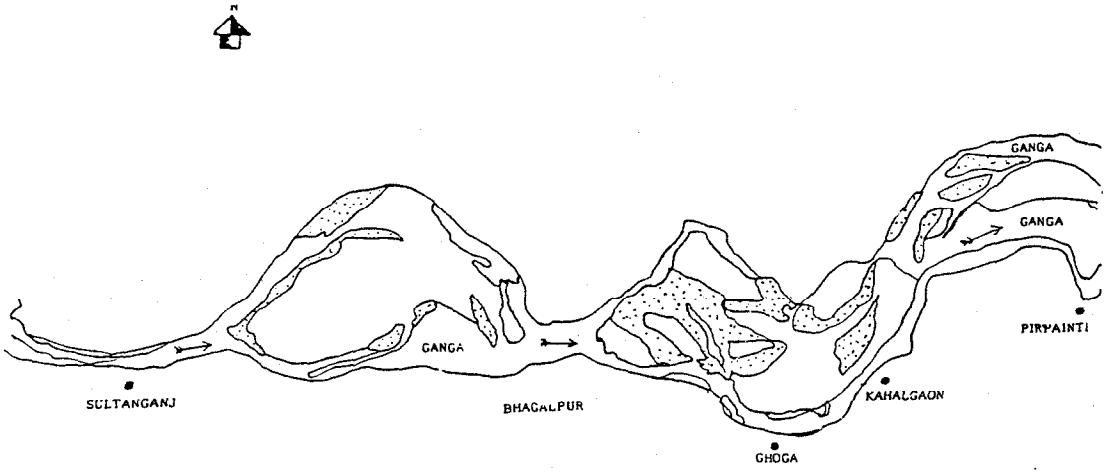
The Resource

The Vikramshila Gangetic Dolphin Sanctuary lies in river Ganga from Sultanganj to Kahalgaon in Bhagalpur District of Bihar. The river system Ganga-Brahmaputra-Meghna forms one of the major Dolphin resources of India, Bangladesh and Nepal. As far as India is concerned, the river Ganga, alongwith its tributaries forms a major Dolphin resource.

The legal status of riverine ecosystem and location : The state is the owner of river Ganga and its tributaries. The river is free from all legal encumbrances. Therefore, there are no legal hurdles in managing the Vikramshila Gangetic Dolphin Sanctuary. The Sanctuary extends from Sultanganj to Kahalgaon over a stretch of about 50 km and lies in between latitude 25^0 30'N and

* Conservator of Forests-cum-Deputy Chief Wildlife Warden, Bhagalpur (Bihar)

Fig. 1



Vikramshila Gangetic Dolphin Sanctuary

longitude 86°30'E to 87°30'E.

Climate

The climate of this Sanctuary can be described as mean between scorching heat of west and moist of east. There are distinctly four seasons. The hot weather starts in the beginning of March and lasts till middle of June. Likewise, winter lasts from November to February whereas spring visits shortly from February to early March and summer stretches between March and June. Monsoon extends from mid-June to October.

Temperature and Precipitation : Mean maximum temperature is about 31.3°C and mean minimum temperature about 18.6°C. Precipitation is mainly in the form of rain water. South-west monsoon is the main source of rainfall in this area. The average annual rainfall for the sanctuary as a whole is 1087.97 mm.

Floristic composition : The flora comprises of aquatic as well as river basin.

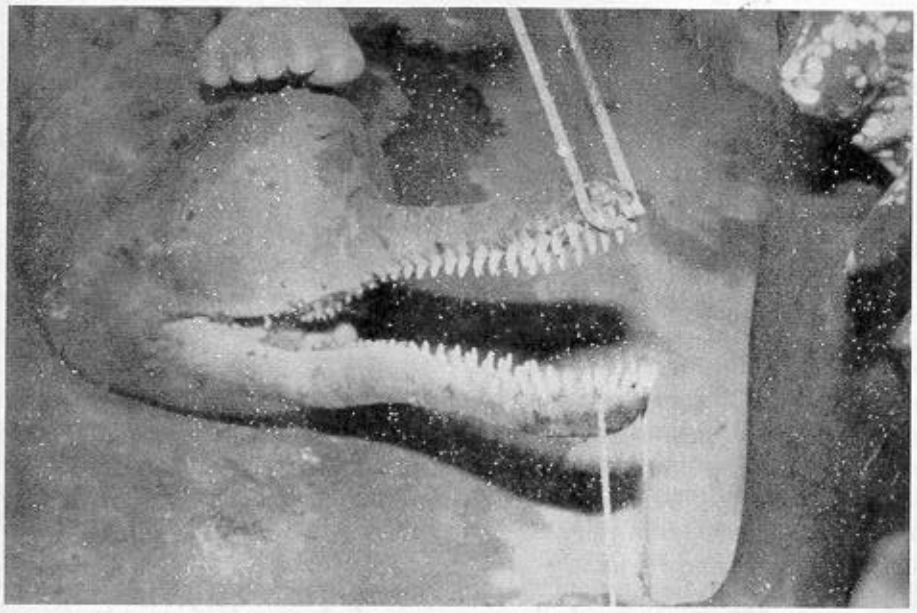
(a) *Aquatic vegetation* : The Sanctuary portion of river Ganga is fairly rich in aquatic vegetation. The free-floating species commonly found are *Pistia stratiotes, Azolla pinnata* and *Demna* species. Amongst the submerged aquatic plants commonly found are *Hydrilla verticillata, Vallisnaria spiralis* and different species of *Chara* and *Netella*.

(b) *River basin and embankment vegetation* : The most conspicuous plant species found in this zone are : *Xanthium strumarium, Verbascum* species, *Chenopodium ambrosioides, Nepeta hindostana, Justicea peploides, Celastrus paniculatus, Mallotus rependus, Barleria cristata.*

Aquatic vegetation has profound influence on the nutrient budget of the aquatic ecosystem and their hydrological balance.

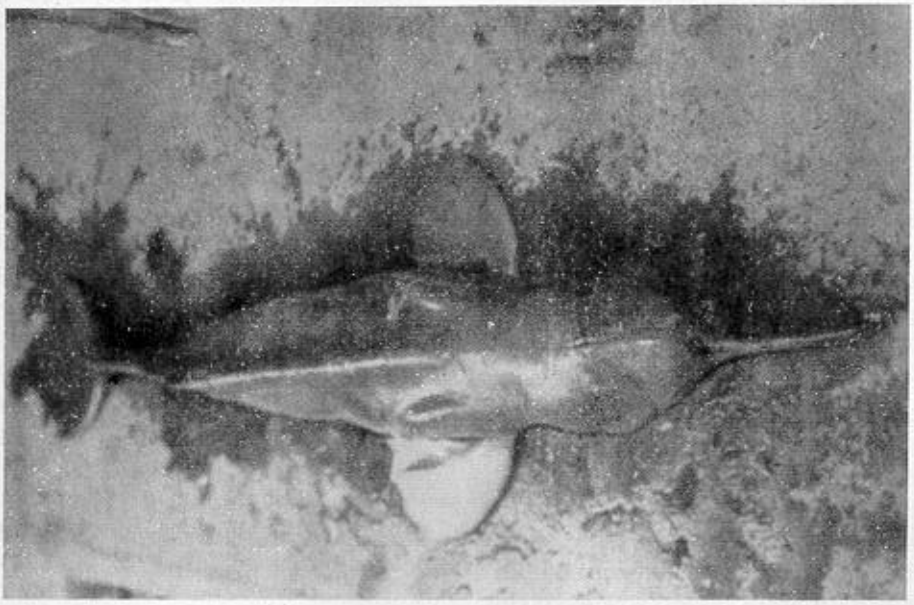
Fauna : The stretch of river Ganga between

Fig. 2



Teeth of a Dolphin

Fig. 3



A Dolphin caught incidentally
(Photographs courtesy Mandar Nature Club, Bhagalpur)

Sultanganj and Kahalgaon is quite wide and deep and contains a lot of water even during lean months. Therefore, this sanctuary harbours a variety of animals, fishes and other fresh water aquatic fauna. Amongst the important predators found are Gangetic Dolphins (*Platanista gangetica*), *Kachuga tectum* and Ghariyal. The prey animals are represented by fresh water molluscs, crustaceans, shrimps etc. Fishes thriving in this river are Rohu, Bachua and other cat fishes etc.

Avifauna : Avifauna is very rich. The resident birds found are Darter, little Cormorant, large Cormorant, egret and a host of others. Besides, the river Ganga is home to many beautiful migratory birds such as red-crested pochard and others.

Ecology of Platanista gangetica : The ecology of Gangetic Dolphins is the ecology of river Ganga. The physico-chemical conditions of Ganga do not appear to be detrimental for Dolphins. It is reported that the Dolphins are heavily infected with nematode worms. The high infection with nematode parasites may be attributed to high pollution which also affects the food chain of the Dolphins.

Habitat : The local name of Dolphin is 'Soons' in this stretch. They are fluviatile in habit and are known to enter brackish water and also tidal waters during flood season. It is generally assumed that salinity conditions define the down stream limits of 'Soons' distribution, while rapids, rocky barriers and possibly low productivity in high elevation areas define the upstream limits. Dolphins are found most abundant in the long stretches of deep waters specially during the dry season, but they occasionally enter shallow waters (>2 m) while chasing the prey. They generally prefer deeper channels of the river or in the shallow water with ready access to deeper channels.

Water temperature is not reported to have any effect on these animals. Dolphins tolerate temperature as low as 5^{0}C. The water, where Dolphins are found, is highly turbid with visibility no more than few centimeters.

Life History

Dolphins are solitary in nature except during breeding season. Generally single young one is born after a gestation period of 8 to 9 months. These mammals are well known to engage frequently in sexual behaviour including mock copulation. This animal is the least studied animal so far. Therefore, more knowledge about female harmonal cycles and means of distinguishing between the sexes in the field is required before categorically acertaing the mating time and correct gestation periods. It is reported that the average longevity of the Gangetic Dolphins is about 28 years.

This mammal has a very poor eye sight. Its eyelens is lost completely.

Factors affecting growth

The factors enumerated below ensure proper growth and development of this mammal.

(a) The river should be deep and wide.

(b) River water to be free from pollution of all kinds.

(c) River should be free from siltation and microphytes.

The above mentioned factors constitute the ideal conditions for Dolphins habitat

but are difficult to attain. However, the management plan formulated for this Sanctuary endeavours for the attainment of ideal habitat conditions.

Factors affecting abundance

Gangetic Dolphin is a most endangered species. It has been classified as "Vulnerable". The abundance of Dolphins in this Sanctuary are affected by both incidental and deliberate catches. This is happening because they are mostly found where the fishes are in abundance. At times such areas are subjected to over fishing throughout the whole year.

Other causes for depletion of Dolphin population due to habitat degradation are extraction of water beyond the sustainability of Dolphin population, high rate of siltation due to indiscriminate deforestation in the catchment areas, luxuriant growth of microphytes, chemical pollution and construction of obstacles such as barrages etc.

The consensus opinion is that the aggregate population and sub-populations in India are declining. This decline has been precipitous in some areas during the past one or two decades. However, no studies on regular and scientific basis have been carried out to ascertain the real status of this animal in its habitat. The available evidence for such decline is anecdotal and non-quantitative.

There is a growing awareness that the carrying capacity for 'Soons' has been declining during the past century but this shrinkage of range is not extreme so far. Direct catches and incidental catches of 'Soons' continue at an alarmingly high rate even today. In such a situation it is difficult to judge whether the reduced abundance or disappearance of 'Soons' from a given stretch of river is due more to the habitat degradation or harvesting. The management plan of this Sanctuary envisages the study of various factors affecting abundance so that these adverse factors are identified and then steps taken to eradicate them.

Migration

The Dolphins migrate from location to location in search of food. Such movements result in fluctuations in number at a particular location. During floods, they migrate upstream and remigrate to deeper channels when the water recedes. The downward movement of Dolphins is an indicator of receding water during the floods to the local people. The survey proposed in the management plan for studying the migratory behaviour will help in prescribing the right management for the propagation of Dolphin population in the Sanctuary.

Feeding habit

Dolphins are basically voracious piscivorous. Besides fish, the diet includes shrimps, crustaceans and molluscs. Generally, this mammal feeds on smaller fish only. Sometimes when it catches larger fishes, it keeps its snout above water surface and taken a round to swallow the fish. It is also reported that 'Soons' decapitate the fish before swallowing.

Since the Dolphin has very poor eyesight, it searches its food with the help of its long snout and echo location. Its stomach is four-lobed and degree of maceration and digestion varies in different lobes. The first lobe contains almost undigested complete prey and the fourth

lobe is found with totally macerated preys.

Exploitation

Directed hunting of 'Soons' had been in practice since ages. Catching of Dolphins along with the fish in nets is known as by-catches. At times net deployment is intended for a multi-species catch. Therefore, netting is both deliberate and accidental. Since Dolphin is Schedule '1' animal under The Wildlife (Protection) Act 1972, it enjoys full protection presently.

Uses of Products

Dolphin meat is not usually eaten by the people. But some people eat its meat and blubber. River people in many areas traditionally use Dolphin oil in burning and linement. It's oil is highly prized for preserving leather. Dolphins meat and oil are also used as fish attractants in some areas. Some tribal women use its oil in their hair and the jaws of young Dolphin may be used as combs. Its milk is used in the preparation of Ayurvedic Medicines.

The multifarious uses of the Dolphin and its products are a great attraction to its poaching.

Habitat loss and Environmental Degradation

Rivers are fast deteriorating environmentally. Pollution of various kinds increase siltation and sedimentation and water withdrawals for irrigation and other purposes have changed the physiography and ecology of Ganga during the last few decades. The barrage at Farraka over river Ganga has really created the physical barrier to anadromous and migratory fishes as well as Dolphins. This has profound adverse effect on the growth and development of Dolphins in river Ganga.

Pollution

River Ganga is being heavily polluted. Untreated sewage and industrial effluents are often discharged directly in this river. As a result of contamination, the resultant reduction in plant or invertebrate biomass can damage the food base of Dolphins.

Thus, pollution is a hazard against growth and development of Dolphins in river Ganga.

However no scientific data is available on such hazards and their adverse effects on the food base of Dolphins in river Ganga. The management plan prepared for this Sanctuary envisages such studies.

Noise

Many experts are of the opinion that noise pollution is a serious problem for Dolphins. The increased motor traffic in narrow stretches may force the animal to relocate. The noise pollution may also contribute to the depletion of its population. The Sanctuary management has to keep these adverse factors in view, while evolving the safe methodology for survival of Dolphins.

Protected areas

The Vikramshila Gangetic Dolphin Sanctuary over a stretch of 50 km from Sultanganj to Kahalgaon was declared in 1991, under the provisions of The Wildlife (Protection) Act 1972. This is the first Sanctuary of its kind in the country. The management plan of this Sanctuary for five years has been prepared. This management

plan envisages the extension of the Sanctuary up-stream upto Buxar and downstream upto Farraka and also in some of the important tributaries of river Ganga such as Gandak etc. The present sanctuary should be fully developed from the point of providing protection and multiplication of Dolphin. Poaching should be a matter of by-gone days over a period of five years. On completion of this phase, this sanctuary should be extended up-stream upto Buxar and downstream upto Farraka in phases and put under the charge of a Director and other supportive officers and staff.

Management plan : The management plan prepared for this Sanctuary envisages the protection, multiplication and development of Dolphin. To achieve these objectives, a number of steps have been outlined such as (1) carrying out of status surveys and ecological studies, (ii) habitat improvement works, (iii) organisation of research wing, (iv) pool for inbreeding and translocation, (v) protection, and (vi) extension and publicity to create awareness on the necessity of protecting Gangetic Dolphin.

The management plan prepared for a period of 5 years has also made adequate provision of officers and staff, boats, cameras, binoculars, vehicles and wireless equipment etc.

Conflict of interest between the Sanctuary Management and the people dependent on river Ganga are likely to hamper the Dolphin management. It is well known that river Ganga provides food and employment to large number of local people. Deprivation of this bounty to large number of poor people will be counter productive and it will be difficult to ban poaching in the absence of cooperation from local people. It is, therefore, suggested that committees should be formed to oversee the interest of both Sanctuary management and local people as a step to solicit people's cooperation in preserving this 'vulnerable' species.

Thus the various facts included in the plan take care of the objectives for which this management plan has been prepared.

SUMMARY

The Vikramshila Gangetic Dolphin Sanctuary was declared in 1991 over a stretch of 50 km from Sultanganj to Kahalgaon. To protect and preserve this vulnerable species, management is essential.

विक्रमशिला गांगेय शिंशुमार अभयारण्य

एन०के० शर्मा

सारांश

सुलतानगंज से कहल गांव तक 50 कि०मी० में फैला क्षेत्र 1991 विक्रमशिला गांगेय अभयारण्य घोषित किया । इस मिट जाने वाली जाति को बचाने और संरक्षित करने के लिए इसका प्रबन्ध करना अनिवार्य है ।

Reference

Sharma, N.K. (1993) *Management plan of Vikramshila Gangetic Dolphin.*