

STATUS AND CONSERVATION OF GANGETIC DOLPHIN (*Platanista gangetica*) IN THE KARNALI RIVER, NEPAL

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Introduction

The Ganges river dolphin (*Platanista gangetica*), also known as Susu, is a freshwater dolphin distributed throughout the Ganges, Brahmaputra and Meghna river systems in India, Bangladesh and Nepal (Jones, 1982). The World Conservation Union (IUCN) regards the species as being endangered and has listed it in Appendix I of CITES.

The total world population of Gangetic dolphin has been crudely estimated by Jones (1982) to be only 4,000-5,000 animals, with an unknown, but probably very small, number in Nepal. In Nepal, dolphins have been reported from the Karnali River (Shrestha, 1989; Smith, 1994). In the past, dolphins occurred in great abundance in the Mahakali (Sarda), Koshi and Gandaki or Narayani river systems. But at present there are small, isolated populations confined to only three rivers, viz. Mahakali, Karnali and Koshi.

The dolphin population is decreasing day by day. The main causes of its decline are habitat deterioration and modification, inadvertent trapping in fishing nets, segregation of breeding populations by dams, and – to some extent – poaching. In comparison to India, very few studies have been carried out on dolphins in Nepal. Pilleri and Tagliavani (1982) visited Nepal for a few weeks and made general observations about the habitat of the Narayani River. Shrestha (1989), Smith (1994) and Smith *et al.* (1996) studied dolphins and other aquatic fauna in the Karnali, Koshi and Mahakali Rivers of Nepal.

Shrestha (1989) recorded 20 dolphins in the Karnali River, but within 5 years the population had plummeted to 7 animals (Smith, 1994). Regular monitoring of the population status is

crucial from a conservation perspective, especially for endangered species, because the population status will need to be considered when drawing up a management plan. Therefore, a study on the status and conservation of the Gangetic dolphin was carried out in order to provide depth and insight for its conservation and as a follow up to the previous studies. During this study, only four dolphins were recorded in the Karnali River.

Downstream from Chisapani, the Karnali River fans out into two main channels – Geruwa on the left and Karnali on the right. After about 52 km, these by-rivers rejoin to form the Ghorga or Sanju river about 3 km upstream of Girija Barrage in India. The total drainage area of the Karnali River basin is 44,000 km², out of which 41,550 km² lies in Nepal. The average annual discharge of the Karnali was about 1,370 m³ for the period 1965 to 1995. The Karnali flows along its channel to join with the Ganges River.

For this project, the main study area was a stretch of river approximately 31.92 km long, of the Geruwa branch of Karnali River from Chisapani Bridge to Kothia Ghat. The Geruwa branch of Karnali River forms the western boundary of Royal Bardia National Park.

Methodology

Potential sites for observing dolphins were located by searching literature for reports of sightings and from interviews with local people and park staff. Because of the low number of reported animals, and following the recommendations of a panel of experts (Perrin *et al.*, 1989), the direct count method was used.

Observations of the river dolphin population were carried out in April 1998 (pre-monsoon

season) and November 1998 (post-monsoon season). The river is not so wide and deep at most of the places chosen, so a raft was rowed down the middle of the river and surfacing dolphins were observed on both sides. At least two persons were posted to spot the dolphins on the two sides. Counting was done from the raft. Searches were also made at potential dolphin habitats where the convergent streams form an eddy counter current system.

During the raft survey it was found that most of the dolphin movement was concentrated in the confluence (generally called ghats), so a multi-platform count was done to increase the chances of recording all the individuals and to reduce sampling biases. There were two persons were posted in each of five different ghats in a single day. During the fixed time period, observers noted the times of all surfacing dolphins in each ghat. Data collected from the raft survey and multi-platform count were pooled to get less biased results. In addition, notes on dolphin habitat, human disturbances and other associated fauna were also made.

Results

During the pre-monsoon season (April/May) raft survey, three dolphins were recorded in Gola, Banjariya and Kothia ghats. Another post-monsoon dolphin survey by raft was carried out during November. This survey recorded three dolphins in Gola, Manau and Kothia ghats. Banjariya ghat is closer to Manau, so it was strongly suspected that the dolphin observed in Manau and Banjariya was one and the same. The multi-platform count made in the pre-monsoon survey recorded four dolphins in four ghats; this time a dolphin was observed in Saijana ghat as well. The multi-platform count after the monsoon recorded only three dolphins, one each in Gola, Manau and Kothia ghats. The majority of these surveys of the relatively pristine habitat along the Karnali River between Chisapani to Kothia ghat yielded counts of three dolphins, with only a single count of four dolphins.

Two types of dolphin habitat were identified. Primary habitat was the location where the river

flows along a single channel slightly downstream of convergent streams. With the resulting deflection of the main flow, an eddy counter current system was created with a center pool where little or no flow could be detected. Water velocity at these slow-flowing habitats was 0.24 m/sec (SD=0.05) and the water depth ranged from 5 to 15 m. Gola, Manau and Kothia ghats were the primary habitat, where most of the dolphin movements were confined.

The second type of habitat was marginal, and located either on an ancillary branch of the main river flow or where upstream divergent branches diminished the main flow. These habitats were with or without point bar and eddy counter current systems similar to that of primary habitats; if present it was of much small dimensions. The mean water velocity of these habitats was 0.8 m/sec (SD=0.3). Saijana, the Lalmati area and the stretch of river between the primary ghats were marginal habitats.

Though there was lack of conservation awareness among the local people, illegal poaching was not reported. Harmful practices like the use of gill nets and explosives for fishing, removal of woody debris and rock mining were prevalent. The survey of other associated aquatic fauna recorded 12 species of fishes, 32 species of birds, two species of crocodiles, otters and turtles.

Discussion

Shrestha (1989) reported 30 dolphins and Smith (1994) counted a maximum of seven dolphins in the Karnali. This study with its maximum count of four dolphins confirms that the population is declining. Dolphins were not sighted in the places where Smith (1994) and Shrestha (1989) had previously recorded them from (Patharboji, Lalmati and the area upstream of Gola ghat up to Kachali). This may be due to the low number of animals and also may be due to the larger order of human exploitation in those areas.

Construction of barrages, especially Kailashpuri dam on the Indian side, has isolated wildlife populations from any possible genetic interchange with animals inhabiting downstream

waters. This may be the prime cause of the population decline. This survey did not record any sub-adults or infants. In order to preserve the endangered Gangetic dolphin, along with other associated fauna, including the gharial, mugger crocodile and important food fishes for future generations, it is vital that the riverine habitat be preserved in an undisturbed state to the degree practically possible.

Recommendations

The present population of four individuals is not genetically viable for the long-term survival of the animals, but there is an exigent need to conserve this unique natural heritage for the conservation of the riverine ecosystem. Active management will definitely boost the dwindling population of dolphin. The following points are strongly recommended:

1. Regular monitoring should be done and surveys should be conducted in other potential rivulets.
2. Upstream and downstream migration should be facilitated so that there a gene flow is possible between the now isolated upstream and downstream populations.
3. The area between Chisapani Bridge and Kothia ghat up to the Nepal/India border should be established as a dolphin sanctuary so that the area outside the national park will be well protected.
4. Stringent fishing laws should enacted and enforced and extension programs should be launched for the local people.
5. The present habitat sites should be kept free from human disturbance and environmental degradation.

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