

A novel application of photo-ID for understanding population size, geographic range and social structure of free ranging Ganges river dolphins

We observed and recorded skin lesions, abrasions and physical injuries in five out of seven total individual Ganges river dolphins (*Platanista gangetica gangetica*), in Nepal in the Sapta Koshi river below the Koshi barrage. Group size varied from 1 to 3 individuals, most often solidarity in a nature. Because of the development this structure (barrage across the river), distribution of these animals was restricted within a 7km range between the barrage and the Nepal-India border. There is the possibility of connectivity between the Nepal and India populations. However, further verification is needed to confirm the genetic connectivity between two countries.

The observations were documented as part of a long-term monitoring survey using focal animal sampling with the aid of a photo-ID approach and confirmed for the first time that Ganges river dolphins in Nepalese rivers could be individually identified. Lesions and evidence of past injuries that were photographed over 3 consecutive days during the survey included: a circular scar on the back of a dolphin, long scars on the abdomen of several dolphins, cross-hatch like scars on the dorsal ridge and dorsal fin of a dolphin, and two dolphins with missing tips to their upper and lower mandibles (jaws). Several images also show as yet unidentified skin lesions that may indicate the presence of skin disease. Factors that may influence these types of lesions include environmental parameters (eg. Water temperature) or anthropogenic factors (eg. contaminants and pollutants).

Ongoing monitoring of Ganges river dolphins frequently Nepalese waterways using photo-id technologies could facilitate surveillance of disease and anthropogenic impacts that affect the status, health and survivorship of river dolphins in the area. Intense interactions between river dolphins and fisheries at the base of the Koshi barrage, raises the question whether this remaining segment of the population in the Koshi River is indeed viable? Ongoing research and data collection are needed to confirm whether the dolphins mix with other dolphins within the river system, in India. The recent study and identification of individual animals will help researchers to inform the Government on the status of this species in Nepal.

Attention from the Government is needed immediately to help the community that is dependent upon the fish and other resources around the Koshi barrage area, with training and expertise, to conduct their activities sustainably. In addition, to extend the Koshi Tappu Wildlife Reserve boundary, together with effective management, thereby protecting the river that provides clean water and stocks of fish that feed both the human and dolphin communities in the region. This reserve is the ecosystem that humans and dolphins rely on.

Figures are attached below.



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