

Status of Ganges River dolphins in Kosi River, Saharsa District, Bihar

2019

With notes on other riverine biodiversity



Submitted to the

District Forest Officer, Saharsa Forest Division

Department of Environment and Forest, Bihar, India

By

Prof. Sunil Kumar Choudhary

Head University Department of Botany

T.M. Bhagalpur University, Bhagalpur

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Final Report

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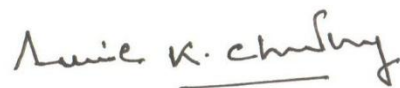
We wish to sincerely thank Divisional Forest Officer, Saharsa Forest Division, for awarding the assignment, *“Status of Ganges River dolphins in Kosi River, Saharsa District, Bihar”* and for organizing the required fund and logistical support to conduct the survey. We also wish to thank Range Forest Officers and Foresters of Saharsa and Birpur Range, and other staff of Saharsa Forest Division for their prompt help and coordination of field logistics throughout the survey. Thanks are also due to Mr. Deepak, driver of the jeep travelling with us as shore party with our luggage & food stuff and boatmen of our survey boat without whom help the survey would not have been completed.

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Project Team Leader

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ABBREVIATIONS

DO	Dissolved Oxygen
TDS	Total Dissolved Solid
°C	Degree Centigrade
km	Kilometer
m	Meter
GPS	Global Position System

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1. Introduction

The Ganges River Dolphin *Platanista gangetica gangetica* is an endangered species of river dolphin that is found only in Ganga-Brahmaputra basin across India, Nepal, and Bangladesh. It is one of the five known species of river dolphins that live exclusively in freshwater conditions. Owing to the murky nature of the river habitat that it thrives in, this species has lost the functionality of its eyes. It navigates and searches for food using echolocation by emitting ultrasonic click-sounds. It has been listed as a Schedule-1 species in India's Wildlife Protection Act 1972 following its decline in population and distribution by 1980s. In 2010, this species was also declared as a **National Aquatic Animal of India**. The best recent estimates of the global population of the Ganges River Dolphin range within 3000-4000 individuals.

Dams and Barrages have been built on almost all the rivers in the Gangetic basin, which have altered the natural flow and availability of water for riverine wildlife. They have further fragmented the river dolphin populations across the Gangetic basin which might hinder their gene flow and long-term viability of the population. Apart from low water availability, anthropogenic pressures such as channelization, embankment construction, and chemical pollution are known to be some major threats for this species (Smith & Smith, 1998; Choudhary *et al.*, 2006; Smith & Braulik, 2012).

The Kosi river is one of the major tributaries of the River Ganga and is one of the most dynamic river systems in the world. Recently, a few surveys have been conducted to assess the status of river dolphins in this tributary of the Ganges (Sinha & Sharma, 2003; Kelkar *et al.*, 2015; Choudhary *et al.*, 2016). This report is based on a survey of approximately 72.8 km stretch of Kosi flowing through the Saharsa district of Bihar. This report adds on to the pre-existing information on the distribution and abundance of river dolphins in the Kosi river and highlights the habitat-use and prevalent anthropogenic pressures for this species in the region. Recommendations based on our findings are included in the last section of this report.

1.1 Study Area

The survey was conducted in the Kosi river in the district of Saharsa from 28th January 2019 to 1st February 2019. We surveyed approximately 72.8 km of the river stretch, from Fungo Halt till Hati Ghat on Saharsa-Supaul border and again from Hati Ghat to Fungo Halt. The river channel is highly braided and forms multiple mid-channel alluvial islands in its course (Gaurav *et al.*, 2014). Intensive agriculture is practiced along the river banks, majorly of maize, wheat, and makhana. The discharge of Kosi ranges from 800 cumecs (m^3/s) in the dry-season (March) to 15000 cumecs in August which is the monsoon flooding peak (Gaurav *et al.*, 2014). The region receives over 1500 mm of annual rainfall and the temperature ranges from 2°C in winter to 40°C in the peak summer.

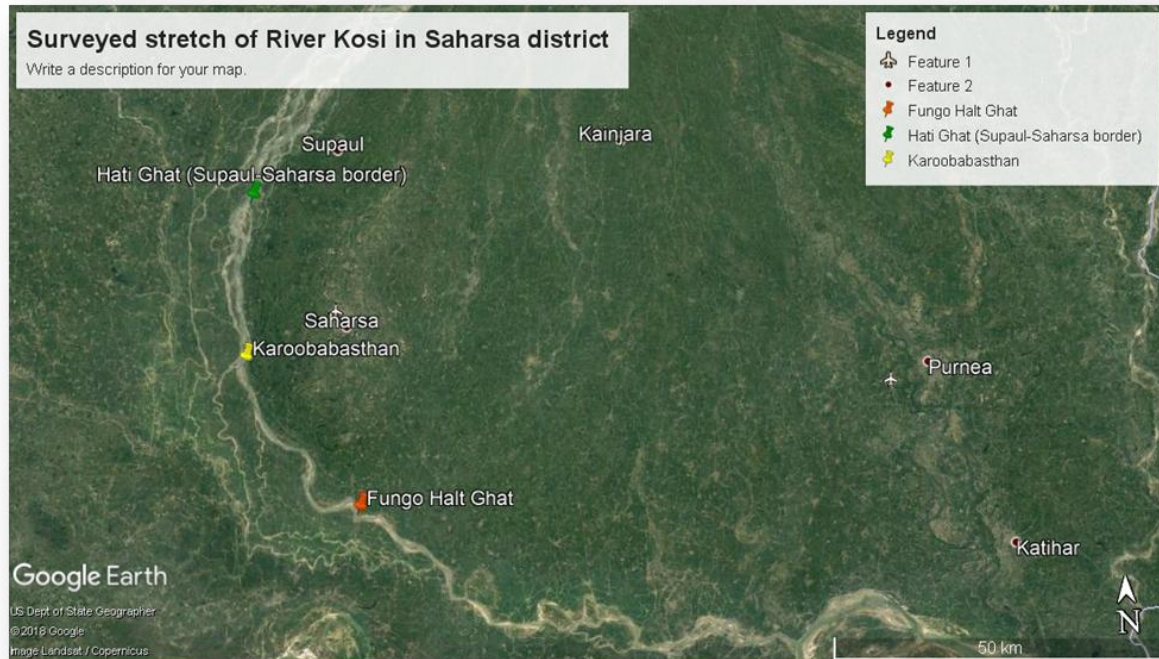


Figure 1: Map showing the study area in River Kosi within Saharsa District

The Kosi river forms one of the largest alluvial sediment deposits in the world and is considered to be among the most dynamic riverscapes. The flooding events lead to a tremendous loss of human life and property due to which it is also called as '*Sorrow of Bihar*' (Chakraborty *et al.*, 2010). Although the construction of Birpur Barrage has reduced the frequency of flooding, it has also made flooding effects unpredictable and floods of dangerously high intensity might actually increase because of the embankments, according to experts. Further, the control over river flow has led to a reduction in the river flows in the dry-season, which impacts the exchange of nutrients and water between the river and the adjacent floodplain. Although the embankments and barrage-led flood control may have benefitted agriculture in the short term, fisheries and

biodiversity seem to have been negatively affected due to a reduction in river flow and biological productivity

2. Methods

2.1 River Dolphin Survey

The river stretch passing through Saharsa was surveyed using a mechanized country boat. A team of three trained observers (two on the sides and one central data recorder) recorded dolphins and estimated the distance and angle of the sightings (Reeves, 2000; Choudhary *et al.*, 2006). Locations of the boat at all the sightings were logged in a handheld Global Position System (GPS, Garmin etrex 30). The locations of the dolphins were then estimated using known location of the boat at the time of sighting and the distance and the angle of each dolphin sighting in software R-3.3 (R Core Team 2018).



Figure 2: Survey Team in River Kosi

These locations were then plotted on satellite image which was downloaded from USGS Earth Explorer (www.usgs.earthexplorer.gov) using software QGIS 3.0.3 Girona (www.qgis.org). Dolphin stage-classes (Calf, Sub-adult or Adult) were estimated based on the observations of size-class for each sighting. By recording simultaneous resurfacings of more than one dolphin, care was taken to avoid double count of dolphins. Encounter rates of dolphins were then calculated for each of the surveyed stretches. To maximize the counting accuracy the boat speed was maintained at 4-5 km/h to ensure sufficient time to detect surfacing.

2.2 Habitat Variables

One trained observer was deployed to record habitat variables at each kilometer of the surveyed stretch. River width was estimated using a handheld range finder (Yukon LRS 1000) at each kilometer of the surveyed stretch. For depth profile of the river, we used a chart plotter that was set to record depth at every 6 second interval (Garmin GPSMap 585 Plus). Water samples were collected at different points/Ghats from where the survey started and ended each day. Variables like temperature, Dissolved Oxygen (DO), pH and conductivity were recorded on the spot whereas for analysis of other water quality parameters, water samples were brought to Environmental Biology Research Lab of T. M. Bhagalpur University. Water quality parameters were analysed following Standard Methods (APHA, 2005). Further, the observer also recorded anthropogenic activities in and around

the survey stretch of the river including navigation of fishing boats and ferry boats.

2.3 Other Biodiversity

Biodiversity, like other river fauna such as birds, turtles, and signs for gharials, crocodiles and otters for the entire survey length of the river were recorded by an experienced observer other than the three dolphin observers.

3. Results and Discussion

3.1 Ganges river dolphin

A total of 79 dolphins were sighted in 72.8 km stretch of the Kosi river in the Saharsa district between Hati Ghat on Supaul-Saharsa border and Fungo Halt between Saharsa-Khagaria border (Table 3). The encounter rate of dolphins was 1.08 per kilometer (Figure 2). The dolphins were mostly recorded in sections of the river with an average depth of 1.81 ± 1.00 m. The overall available depth is lower than the required depth for the dolphin which is clearly indicated by the average depth preferred by the dolphins (approximately 2.4 m). Low depth forms a hydrological barrier for the movement of dolphins fragmenting them into small isolated sub-populations. Out of the 79 individuals that were recorded, 51 were adult, 27 sub-adults and 1 calf. Our survey indicates a higher number of dolphins (79) when compared with the sightings in previous surveys (March, 2016: 29 dolphins; April, 2018: 72 dolphins). This may be attributed to the fact that water has shrunk in the river, as January is one of the leanest periods of the year when the water is at its lowest level and maybe many narrower channels like side channels, braided channels and maybe some anabranches have become very shallow, deep pools may not be present in these channel or even have dried up in certain stretches which leaves no room for the dolphins to move around and so those present in those channels during the previous surveys, during high water

level have come in the main channel. Average depth of the river during April, 2018 (approximately 2 m) was less than the average depth of the river during March, 2016 and the average depth during the January 2019 is lower than the April 2018 survey. As discussed earlier, this leads to isolation of sub-population near deeper pools and hence increases the probability of detecting animals. In this survey only one calf was sighted whereas in April, 2018 survey, 4-calves were sighted.

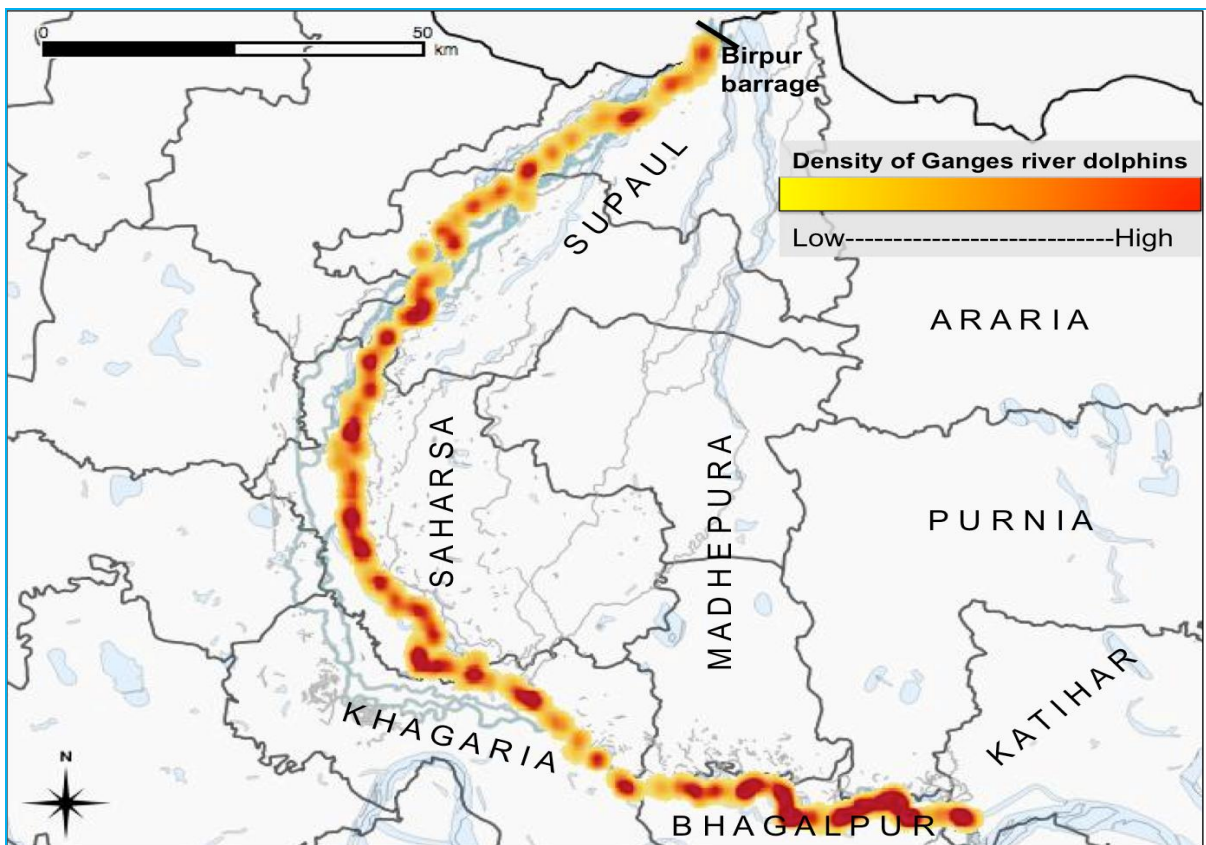


Figure 3: Showing density of dolphins in the River Kosi, the area highlighted with yellow colour being the area of lower density and the area highlighted with the deep red colour being the area of the higher density of dolphins.

We suggest that long-term monitoring is essential to devise efficient management strategies to ensure the long-term survival of this species in this river. Further,

maintenance of adequate water flow and depth is crucial for this species and appropriate measures should be taken to ensure this.

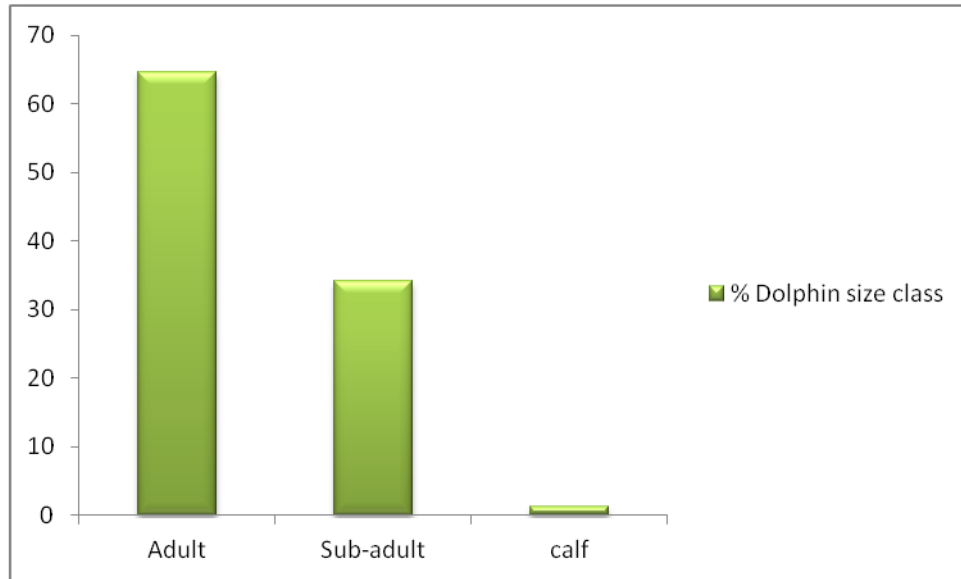


Figure 4: Percentage of dolphin size class

3.2 Other Riverine Biodiversity

3.2.1 Avian diversity: Altogether 41 species (Appendix 1) of birds were recorded in Saharsa district during the survey. The threatened species included Lesser Adjutant Stork *Leptoptilos javanica*, Painted Stork *Mycteria leucocephala*, Woolly-necked Stork *Ciconia episcopus*, River Lapwing *Vanellus duvauceli* and Twany eagle *Aquila rapax*. Bird poaching was seen and documented at few locations along the river. It seemed to be rampant in the river stretch near Fungo Halt Ghat. Three dead and one sub-conscious Ruddy Shelduck were recovered from a fisher who had used 'Furadan' (a pesticide) laced grains to trap the birds. The sub-conscious Ruddy Shelduck probably had consumed the pesticide in

lesser amount resulting into this condition. The survey team members observed scattered wheat grains laced with Furadan at one location on the river bank. This method is practiced to trap birds like ducks and geese who feed upon grains. The survey team members also observed one bird trapping net, tied and spread on fixed bamboo poles, near the shore along the river near Hati Ghat. Birds get trapped in these fine mesh nets when flocks of birds take flight from the river or the ground near the net. Two little stints were found hanging dead in the net. The nets were removed/recovered by the Saharsa Forest Department persons who had accompanied the survey team from Hati Ghat to Karoobabasthan. The team also came to know from interview of local people at Karoobabasthan and Kamra D Ghat about a bird hunter from Simri- Bakhtiarpur who is involved in hunting ducks and geese with a gun regularly in the river floodplain between Karoobabasthan and Fungo Halt Gaht. Compared to survey conducted in April, 2018, 13 new bird species were recorded in the present survey. A total of 810 birds were counted during the survey. 22 *Pangshura smithii* sitting on sandbars were recorded in this survey.

3.2.2 Sighting of Gharials in Kosi River after more than Fifty years

The most significant observation of all the biodiversity that were observed during this survey was the detection and photographic documentation of two Gharials basking on a sandbar, one adult and one juvenile approximately 5.5km upstream (N 25° 37' 51" E 86° 33' 49") from Fungo halt. The sighting of the Gharials in Kosi has happened after almost 50 years.

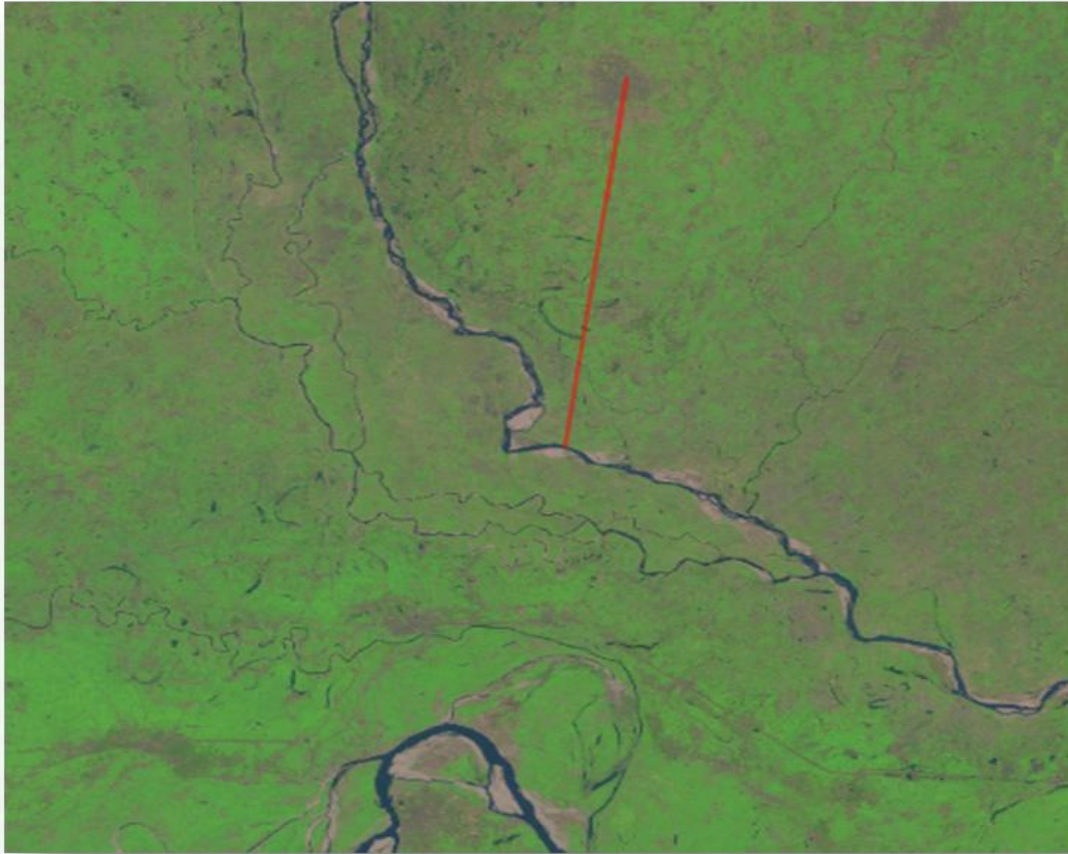


Figure -3: Map (area photographed by a satellite on the 2nd of Feb 2019) showing location where the Gharials were sighted. Top point of the red line is the town of Saharsa and the opposite point of the red line is the place where the Gharials were sighted. The inverted U shaped river channel below the Kosi is the river Ganga near Munger

3.2.3 Opportunistic records of Fish species

A few fish species were also identified from fishers catch. As survey was conducted in winter months, few fishers were seen doing fishing on foot using the cast net but other forms of fishing such as gill net fishing using small dengis were more frequent. The encounter rate of fishing boats during the upstream

survey was 0.19 fishing boat/km. The fish identified were *Mystus cavasius*, *Crossocheilus latius* and *Sicamugil cascasia* (Appendix 2). The other more commonly seen human activities in the river included ferry crossing by small boats(dengi) and medium size boats driven by bamboo poles, the encounter rate of the ferry boats were 0.45 ferry boats/km.

Table 1: Dolphins recorded in River Kosi between Hati Ghat and Phango Halt within Saharsa district in upstream and downstream surveys (28 Jan. – 01 Feb., 2019)

S. No	Date	Survey From	Survey To	Distance (km) covered	Dolphin Count (Upstream)	Adult	Sub-Adult	Calf	Unclassified
1	29-01-2019	Fungo Halt (N 25° 37' 04" E 86° 36' 12")	Kamra D Ghat (N 25° 40' 30" E 86° 32' 56")	17.00	22	15	6	0	1
2	30-01-2019	Kamra D Ghat	Karoobabasthan (N 25° 49' 30" E 86° 26' 35")	24.80	25	13	12	0	0
3	31-01-2019	Karoobabasthan	Hati Ghat (N 26° 02' 35" E 86° 27' 58")	31.00	32	23	8	1	0
Total distance covered and dolphin count				72.80	79	51	26	1	1
S. No.	Date	Survey From	Survey To	Distance (km) covered	Dolphin Count (Downstream)	Adult	Sub-Adult	Calf	Unclassified
1	28-01-2019	Karoobabasthan	Fungo Halt	41.10	19	14	5	0	0
2	01-02-2019	Hati Ghat	Karoobabasthan	31.00	27	18	9	0	0
Total distance covered and dolphin count				72.10	46	32	14	0	0

Table 2: Habitat variables and Water quality variables of River Kosi in Saharsa district (Jan. – Feb., 2019)

Variable				
Depth (m)	1.81±	Hati Ghat (Supaul-Saharsa border)	Karoobabasthan	Fungo Halt
1.00				
Depth range (m)	0.6 –			
13.87				
Conductivity (uS/cm)		135	125	145
TDS (g/L)		68	63	72
Dissolved Oxygen (mg/L)		12.8	14	14.8
pH		7.2	7.1	7
Water Temperature (°C)		17.2	17.9	15
				19.6

4 Summary

A total of 79 dolphins (upstream count) were recorded in 72.8 Km stretch of the Kosi river in Saharsa district in the present survey .Most of the sightings were of adult (51) and sub-adult (26) individuals. Only one calf was sighted this time compared to four that sighted in April 2018 survey. The dolphins were recorded mostly in sections of river where the average depth was two meters or more (Mean recorded depth for dolphin = 2.04 ± 1.11 m). However, the average thalweg depth for Saharsa was found to be lower than the required threshold depth as suggested in the report submitted to the Forest Department for the 2016 survey. The low depth of the river is a major concern for dolphins as well as for the health of the entire Kosi river ecosystem. We suggest that long-term monitoring measures should be taken up by the Saharsa Forest Department which will help in formulating a sound scientific management strategy for protection and conservation this species and its habitat.

The most significant observation of all the biodiversity that were observed during this survey was the detection and photographic documentation of two **Gharials** *Gavialis gangeticus* basking on a sandbar, one adult and one juvenile approximately 5.5km upstream (N 25° 37' 51" E 86° 33' 49") from Fungo halt. The sighting of the Gharials in Kosi has happened after almost 50 years.

Other riverine biodiversity observed during this survey included 41 species of birds. These included threatened species like Lesser Adjutant Stork *Leptoptilos*

javanicus, Painted Stork *Mycteria leucocephala*, Woolly-necked Stork *Ciconia episcopus*, River Lapwing *Vanellus duvauceli* and Twany eagle *Aquila rapax*. 22 *Pangshura smithii* sitting on sandbars were also recorded.

4.2 Identified Threats

I) Available depth of the river low: Side-channels, braided-channels and some anabranches found very shallow. The average depth of the river was found $1.81 \pm 1.00\text{m}$ which is lower than the depth preferred by the dolphins (approximately 2.4m).

II) Agricultural practices on River Bank: Modern agri-practices using chemical fertilizers and pesticides were observed throughout the river stretch surveyed in Saharsa district. This is injurious to birds feeding upon grains from the crops in the floodplain. The alteration in the River bank habitat results also into the loss of habitats for Gharials. The remains of chemical fertilizers and pesticides come into the river with run-off resulting into pollution of the river, and thus affecting the aquatic wildlife including dolphins.

III) Rampant Bird poaching: Rampant Bird poaching was seen in the river stretch near Fungo Halt Ghat. It was observed that poachers use 'Furadan' (a pesticide) laced grains to trap the birds. This method is practiced to trap birds like ducks and geese who feed upon grains. Bird trapping nets are also being used and the survey team members observed one such net near the shore along the river near Hati Ghat. Birds get trapped in these fine mesh nets when flocks of birds take flight from the river or the ground near the net. There was report of bird

hunting with gun shots in the river floodplain between Karoobabasthan and Fungo Halt Gaht.

4.3 Recommendations

1. **Maintaining minimum ecological river flow and depth:** The overall depth in Saharsa stretch of Kosi river was found to be low which is a major barrier to the dolphin movement. It is recommended that the Saharsa Forest Division along with the Supaul Forest Division request the Birpur barrage authorities to plan for better dry-season flows. A minimum depth of 2 meters or above is required for unhindered movements of dolphins in the river.
2. **Long-term Monitoring of Dolphins, other Biodiversity and human activities/threats:** Long-term monitoring of river dolphin populations and other fauna such as reptiles (Gharials) and birds should be taken up .We recommend at least two surveys every year, one in the Dry-season (March-April) and second in Post-monsoon season (November). . Anthropogenic activities threatening the health of the river should be monitored regularly.
3. **Local awareness:** Activities related to Environmental Education and Awareness about the need and importance of conserving river dolphins and other riverine biodiversity should be conducted regularly among the local stakeholders, in the local schools and colleges, villages and nearby townships. We recommend use of street-plays, mass meetings, workshops for fishers, display of posters and documentaries, and motivating school students for making river trips for environmental education and awareness programs.

4. *We recommend the survey of River Kosi from the point where it enters into Indian border (0 km at Birpur barrage) to Kursela, the point of confluence with River Ganga in one go to have a comprehensive and complete picture of aquatic biodiversity in River Kosi. We also recommend for an independent survey of River Kosi for gharials and its habitats as gharials are Critically Endangered species (IUCN 2008).*

Appendix 1: Listing of the Bird species recorded during the survey of River Kosi in Saharsa district (26 Jan. – 01 Feb., 2019)

Sl.No.	Species	IUCN Status
1	Asian Openbill <i>Anastomus oscitans</i>	LC
	Bank Myna <i>Acridotheres ginginianus</i>	LC
	Cattle Egret <i>Bubulcus ibis</i>	LC
2	Great Egret <i>Ardea alba</i>	LC
3	Little Egret <i>Egretta garzetta</i>	LC
4	Red-wattled Lapwing <i>Vanellus indicus</i>	LC
	Blue Tailed Bee-eater <i>Merops philipinus</i>	LC
5	Intermediate Egret <i>Mesophoyx intermedia</i>	LC
	Large-billed Crow <i>Corvus macrorhynchos</i>	LC
6	Pied Kingfisher <i>Ceryle rudis</i>	LC
7	Grey Heron <i>Ardea cinerea</i>	LC
8	Red-naped Ibis <i>Pseudibis papillosa</i>	LC
9	Little Cormorant <i>Microcarbo niger</i>	LC
	Small Pratincole <i>Glareola lacteal</i>	LC
10	Woolly-necked Stork <i>Ciconia episcopus</i>	VU
	Brown-headed Gull <i>Larus brunnicephalus</i>	LC
	Green Sandpiper <i>Tringa ochropus</i>	LC
11	Common Greenshank <i>Tringa nebularia</i>	LC
12	Indian Pond Heron <i>Ardeola grayii</i>	LC
13	House Crow <i>Corvus splendens</i>	LC
14	River Lapwing <i>Vanellus duvaucelli</i>	NT
15	Ruddy Shelduck <i>Tardona ferruginea</i>	LC
16	Black-winged Kite <i>Elanus caeruleus</i>	LC
	Common Tern <i>Sterna hirundo</i>	LC
17	Lesser Adjutant <i>Leptoptilos javanicus</i>	VU
18	Black Kite <i>Milvus migrans</i>	LC

	Indian Cormorant <i>Phalacrocorax fuscicollis</i>	LC
	Little Tern <i>Sternula albifrons</i>	LC
19	Painted Stork <i>Mycteria leucocephala</i>	NT
	Whiskered Tern <i>Chlidonias hybrid</i>	LC
20	Oriental Honey Buzzard <i>Pernis ptilorhynchus</i>	LC
	White-eyed Buzzard <i>Butastur teesa</i>	LC
	Common Pochard <i>Aythya ferina</i>	VU
21	Eurasian Curlew <i>Numenius arquata</i>	LC
22	Gadwall <i>Mareca strepera</i>	LC
23	Osprey <i>Pandion haliaetus</i>	LC
24	Peregrine Falcon <i>Falco peregrinus</i>	LC
25	Pied Harrier <i>Circus melanoleucos</i>	LC
26	Shikra <i>Accipiter badius</i>	LC
27	Striated Heron <i>Butorides striata</i>	LC
28	White-throated Kingfisher <i>Halcyon smyrnensis</i>	LC
29	Mallard <i>Anas platyrhynchos</i>	LC
30	Common Merganser <i>Mergus merganser</i>	LC
31	Sand Martin <i>Riparia riparia</i>	LC
32	White wagtail <i>Motacilla alba</i>	LC
33	Northern Pintail <i>Anas acuta</i>	LC
34	Long legged buzzard <i>Buteo rufinus</i>	LC
35	Pallas's Gull <i>Ichthyaeu sichthyaetus</i>	LC
36	Black stork <i>Ciconia nigra</i>	LC
37	Barn Swallow <i>Hirundo rustica</i>	LC
38	Great crested grebe <i>Podiceps cristatus</i>	LC
39	Great cormorant <i>Phalacrocorax carbo</i>	LC
40	Tawny Eagle <i>Aquila rapax</i>	VU
41	Greylag goose <i>Anser anser</i>	LC

* LC= Least Concern, VU= Vulnerable, NT= Near Threatened

**Bird names in red font are the once recorded during April 2018 survey but not seen during January 2019 survey.

*** Bird names in blue font are the once recorded during January 2019 survey but not seen during April 2018 survey.

Appendix 2: Fish species identified from the River Kosi in Saharsa district

Sl. No.	Scientific name	English name
1.	<i>Mystus cavasius</i>	Gangetic mystus
2.	<i>Crossocheilus latius</i>	Gangetic latia
3.	<i>Sicamugil cascasia</i>	Yellow tail mullet

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Explanation of the Photo Plates

Photo Plate I: Research Team surveying the river – Right to left-

1st photo: Research Team looking for dolphins and Gharials

2nd photo: Research team

3rd photo: Forester of the Saharsa Forest Division with the Survey Team.

4th photo: Saharsa Forest Division staff with the Survey Team

5th photo – Survey Team at Karoobabasthan

6th photo – Survey Boat

Photo Plate II: Gharial - 1st – 4th photo - Juvenile Gharial

-5th - 6th photo - Adult Gharial

Photo Plate III: Gharial habitat and interview - Stretch of the river where the Gharials were sighted, Research team members looking at the Gharials and Mr. Tarun Nair talking to a farmer, enquiring about the Gharials

Photo Plate IV: Bird species – Right to left- 1st photo – Black Stork

-2nd photo – Painted Stork with flock of Grey heron

-3rd photo – Greylag goose

-4th photo – Bar-headed goose

- 5th photo – Great crested grebe

- 6th photo – Woolly necked stork

Photo Plate V: Poaching -Right to left - 1st and 2nd photo - Poacher with hunted Brahminy duck

3rd photo – Packet of the pesticides Furadan

4th photo – wheat grains laced with Furadan

5th photo – Trap net fixed near Hati Ghat

6th photo – Two migratory waders trapped and killed in the net

Photo Plate VI: Fisheries - Right to left – 1st photo- *Mystus cavasius*

- 2nd photo – *Crossocheilus latius*
- 3rd photo – *Sicamugil cascasia*
- 4th photo – Fishers catch
- 5th photo – Fisher
- 6th photo – Catch compositions

Photo Plate VII: Human activities- Right to left – 1st – 4th photos – Different fishing method

- 1st – Bottom net fishing
- 2nd photo - Bottom net
- 3rd photo – Gill net fishing
- 4th photo – Mosquito net fishing
- 5th and 6th photo – Ferry boats.

***Photo credits: Mr. Subhasis Dey, Senior Research Person & Dolphin Expert**

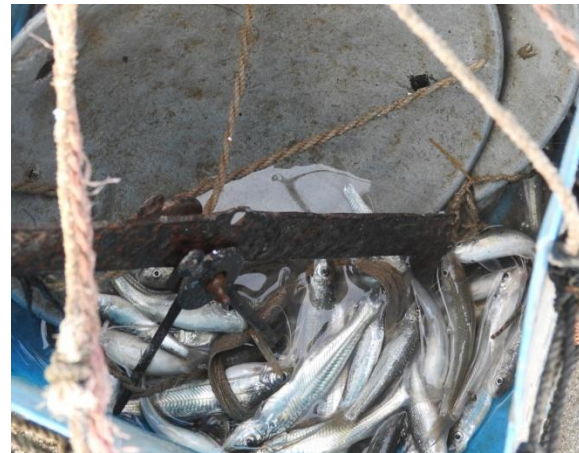














Survey of River Kosi in Saharsa District

2019

Status of Ganges River dolphins in Kosi River, Saharsa District, Bihar

Survey conducted by: T. M. Bhagalpur University, Bhagalpur

Project Team

Dr. Sunil K. Choudhary: Project Coordinator/Project Manager, T. M. B. U.

Mr. Subhasis Dey: Project Leader/Senior Research Person & Dolphin Expert, T. M. B. U.

Mr. Tarun Nair: Gharial Expert, Ashoka Trust for Research in Ecology & Environment, Bangalore

Mr. Amit Kumar: Primary Observer, T. M. B. U.

Mr. Kanhaiya Kumar Das: Primary Observer, T. M. B. U.

Mr. Akshay Kumar: Field Assistant, T. M. B. U.

Saharsa Forest Division Persons in Survey Team

Mr. Surendra Rai: Forester

Mr. Arvind Mukhiya: Dolphin watcher

Mr. Dipak Kumar Dinkar: Dolphin watcher

Mr. Manoj Mukhiya: Dolphin watcher

Mr. Balram Mukhiya: Boatman