Enhancing Conservation of river dolphins through Sub-Regional Cooperation

Exploring the impact of COVID-19 on the ecosystem health of rivers and its dolphin population: Present status and future strategy for conservation in India-Bangladesh-Myanmar-Nepal

Webinar Proceedings

24 - 25th August 2020

ICAR-CENTRAL INLAND FISHERIES RESEARCH INSTITUTE
BARRACKPORE, KOLKATA-700 120, WEST BENGAL

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Dr. B. K. Das
Dr. B. K. Behera
Dr. S. Samanta
Dr. P. K. Parida
Dr. A. K. Sahoo
Dr. D. Bhakta
Mr. Roshith C. M.

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B. K. Das, President, Inland Fisheries Society of India and
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Webinar for Enhancing Conservation of River Dolphins through Sub-Regional Cooperation

"Exploring the impact of COVID-19 on the ecosystem health of rivers and its dolphin population: Present status and future strategy for conservation in India-Bangladesh-Myanmar-Nepal"

Date: 24 -25th August 2020

Programme Schedule

SESSION	TIME	Registration and Address by Dignitaries	
INAUGURAL	10.00-10.30 AM	**Registration of participants**	
	10.30-10.35 AM	**Welcome address by Dr. B.K. Das**, Director, ICAR-CIFRI, Kolkata	
	10.35-10.45 AM	**Address by Dr. J.K. Jena**, Deputy Director General (Fisheries Science), ICAR, New Delhi	
	10.45-10.50 AM	**Address by Dr. B. C. Choudhury,** Former Principal Scientist, WII, Dehradun	
	10.50-10.55 AM	**Address by Prof. A.P. Sharma**, Former Director, ICAR-CIFRI, Kolkata	
	10.55-11.00 AM	**Address by Dr. Dilip Kumar**, Former Vice-Chancellor, CIFE-Mumbai	
	11.00-11.05 AM	**Address by Dr. M. Munawar,** Chief Editor, AEHMS, Canada	
	11.05-11.20 AM	**Address by Shri Rajiv Ranjan Mishra**, DG, NMCG, New Delhi	
	11:20-11:25 AM	**Vote of Thanks by Dr. B. K. Behera,** Principal Scientist, ICAR-CIFRI, Kolkata	
DAY-1 TECHNICAL SESSION-I	**Session I: 11:30 AM to 1:00 PM (IST)** Knowledge on habitat, population status, ecology, the biology of river inhabited dolphins		**Session Chairs** Dr. Ajit Pattnaik, Dr. A. P. Sharma Dr. Sayed Istiak **Rapporteurs:** Dr. Soma Das Sarkar, Mr. Roshith, C.M.
	Lead Lectures:		
	11.30-11.50 PM	**Dr. Hla Win**, DDG-Fisheries-Retired, Myanmar *-Conservative measure of Irrawaddy Dolphin in Myanmar*	
	11.50-12.10 PM	**Dr. Madhav K. Shrestha**, Professor, Aquaculture AFU (Retired), Nepal *-Status of Dolphins in Nepalese Rivers*	
	12.10-12.30 PM	**Dr. Tapan Kumar Dey**, Wildlife Expert, Ex. Deputy Conservator of Forest, Bangladesh *-Present Status of Dolphin Conservation in Bangladesh*	
	12.30-12.50 PM	**Prof. Md. A Aziz** *-National Atlas and Dolphin action plan- Bangladesh*	
	12:50-1:10 PM	**Panel Discussion** Dr. Ajit Pattnaik, Dr. A. P. Sharma, Dr. Sayed Istiak, Dr. Hla Win, Dr. Madhav K. Shrestha, Dr. T. K. Dey & Prof. Md. A Aziz	
DAY-1 TECHNICAL SESSION-II	**Session II: 2:30 PM to 6:00 PM (IST)** Assessment of river habitat in terms of water quality, anthropogenic pressure and landscape surrounding with a focus to dolphins		**Session Chairs** Dr. Dilip Kumar, Prof. S.P. Biswas **Rapporteurs** Dr. Dibakar Bhakta, Dr. Suman Kumari
	2.30-2:50 PM	**Dr. Syed Istiak**, Director, Deep Sea Fishers Ltd & ASAP Healthy Food Ltd., Bangladesh - Lockdown-2020 : A Blessing for Riverine Dolphins	
	2.50-3.10 PM	**Dr. Danielle Kerb**, Cetacean Specialist, IUCN, Indonesia *-Status and community-based conservation of the Critically Endangered Pesut Mahakam River dolphin in Indonesia*	
	3.10-3.30 PM	**Dr. Abdul Wakid**, Project Scientist, Wildlife Institute of India, Chandrabani, Dehradun *-Status of Ganges River Dolphin in the Brahmaputra river system*	
	3.30-3.50 PM	**Dr. M. Monirul H. Khan** *-Dolphin hotspots in and around the Sundarbans of Bangladesh: before and during the covid-19 pandemic*	
	3:50 -4:10 PM	**Dr. Modinul Ahsan**, District Forest Officer, Khulna, Bangladesh *-Expanding the Protected Area System to Incorporate Important Aquatic Ecosystems Project*	

Contd

	4.10-4.30 PM	**Dr. Ajit Pattnaik**, Vice President, Wetland International South Asia *Status of Irrawaddy Dolphin in Chilka lagoon*
	4:30-4:50 PM	**Prof. Ram Kumar,** Dean, School of EBES, Central University of South Bihar *-Covid-19 driven nationwide lockdown affects zooplankton community structure in River Ganga at Patna*
	4:50-5:00 PM	**Dr. Ruchi Badola**, Scientist, WII, - *Community participation in River Ganga for Dolphin conservation*
	5:00-5:10 PM	**Dr. S. A. Hussain,** Scientist- G, WII - *Dolphin conservation in Ganaga: WII-NMCG initiative*
	5:10-5:20PM	**Dr. Md. Zahangir Alom** - *Improving conservation prospects of river Dolphins through effective and sustained community engagement in Bangladesh*
	5:20-5:30 PM	**Dr. Raunak Dhankar** *-Changes in Microbial communities in response to Covid-19 forced lockdown at dolphin spotting site (Garhmukteshwar)of the River Ganga*
	5:30-6:00 PM	**Panel discussion** Dr. Dilip Kumar, Prof. S.P. Biswas, Dr. Ajit Pattnaik, Dr. Suresh Babu S.V, Dr. Abdul Wakid, Dr. Syed Istiak, Dr. Danielle Kerb, Dr. Raunak Dhankar, Dr. Zohangir Alom Dr. M. Monirul H. Khan, Dr. Modinul Ahsan, Prof. Ram Kumar, Dr. M. Munawar
	Session III: 10:00 AM to 12:00 PM (IST) Threats, conservation status and policy issues to protect riverine inhabited dolphins	**Session Chairs** Dr. B.K. Das, Dr. Sandeep Behera **Rapporteurs:** Dr. Raju Baitha Mr. Mishal P.
DAY-2 TECHNICAL SESSION-I	10.00-10.20 AM	**Dr. B.K. Das**, Director, ICAR-CIFRI, Barrackpore *-Fisheries enhancement towards Dolphin Conservation*
	10.20-10.40 AM	**Prof. Sunil K. Choudhary**, Former Prof. & Head, Dept. of Botany, T.M. Bhagalpur University, Bhagalpur, India *-Emerging threats for South Asian river dolphin Platanista gangetica gangetica & need for collaboration among range countries (India, Bangladesh & Nepal) for its conservation*
	10.40-11.00 AM	**Prof. S.P. Biswas**, Dept. of Life Sciences, Dibrugarh University, Assam, India *-Riverine health and future of dolphins in north-eastern India*
	11.00-11.20 AM	**Dr. Sandeep Behera**, Consultant, NMCG, India *-Dolphin conservation and Ganga rejuvenation*
	11.20-11.40 AM	**Dr. V. R. Chitranshi**, ADG –ICAR (Retd.), India *-Impact of nationwide Covid-19 pandemic lockdown on habitat of endangered dolphin Platanista gangetica : issues & challenges in the context of its rehabilitation in river Ganga*
	11.40-11:55 AM	**Dr. Suresh Babu S.V.,** Director-Rivers, Wetlands & Water Policy, WWF-India *-Restoring connectivity of our rivers and Dolphin habitats*
	11:55- 12:10 PM	**Dr. B.B. Nayak**, Head of Division FRHPHM, ICAR-CIFE, Mumbai - *Capacity building and human resource for Dolphin research*
	12:10-12:20 PM	**Dr. Benazir Ahmed,** Retd. Professor, Zoology Department, University of Chittagong - Conserving Cetaceans in Bangladesh
	12:20-12:40 PM	**Panel discussion** Dr. B.K. Das, Dr. Sandeep Behera, Prof. S.P. Biswas, Dr. B. B. Nayak, Dr. V.R. Chitranshi, Prof. Sunil K. Choudhary
Valedictory	12.40-1.30 PM	Shri. Rajiv Ranjan Mishra, Dr. J.K. Jena, Dr. Dilip Kumar, Dr. B.K. Das, Dr.M. Munawar, Dr. Ajit Pattnaik, Dr. Suresh Babu, Dr. Syed Istiak, Dr. V. R. Chitranshi, Dr. Hla Win, Dr. Madhav K. Shrestha, Dr. Tapan Kumar Dey, Dr Sandep Behera,

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(Dr. B.K. Das)
Convenor

Webinar for Enhancing Conservation of river dolphins through Sub-Regional Cooperation

Exploring the impact of COVID-19 on the ecosystem health of rivers and its dolphin population: Present status and future strategy for conservation in India-Bangladesh-Myanmar-Nepal

24 - 25th August, 2020

Background of the Webinar

Dolphins are widely recognized as indicators of ecosystem health in the river basins they flourish. A thriving population of dolphins in a given body of freshwater indicates a healthy state of that aquatic ecosystem. On the other hand, if the population is on the decline, then it is considered a red flag for the ecosystem. There is news making headlines in several newspapers these days about the positive impacts of COVID-19 lockdown measures on riverine ecosystem health and the population of dolphins. This impelled us to know the truth by giving a quick look at the issue by organizing a Regional Webinar of experts, academicians, and interested communities as we are constrained by the ban on travel and physical gathering. Dolphins are among the oldest creatures to inhabit the earth and most commonly associated with oceans, while few species are found in several major rivers of Asia and South America. Ganges river dolphins (*Platanista gangetica gangatica)* are distributed throughout the Ganges-Padma-Brahmaputra-Meghna and Karnaphuli-Sangu river systems of India, Bangladesh, Nepal, and Bhutan (Figure-1).

Figure 1 - Distribution of Gangetic Dolphin

The Ganges river dolphin, commonly known as 'Susu' and in some places as 'Sonsh', is the **National Aquatic Animal of India and** is among the four surviving freshwater dolphins of the world. The other three are the **'Bhulan'** (*Platanista gangetica minor)* of the **Indus** river system (River Beas), the **'Boto'** (*Inia geoffrensis*) of the **Amazon** River in South America and the **'Baiji' (*Lipotes vexillifer*) which is** now functionally extinct from the **Yangtze** River in China. While Indian and Sindh river dolphins are endangered, Amazon river dolphins are vulnerable as per the IUCN status. Irrawaddy dolphins (*Orcaella brevisrostris*) are presently known to inhabit fresh and brackish waters of Myanmar, Bangladesh, India (Chilka Lagoon), and other Southeast Asian countries (Figure-2).

Figure 2- Distribution of Irrawaddy Dolphin

RATIONALE

River dolphins are affected by anthropogenic activities like river pollution, dumping of single-use plastics, water extraction, the restrictive flow of water, vessel traffic and dredging in the waterways along with climate change and accidental capture while fishing. The dependence on echolocation makes them vulnerable to noise pollution. Dolphins prefer water that is at least 1.5-2.4 meters in depth. They are usually found in water where there is enough fish for them to feed. River dolphin inhabits deep waters with adjoining shallow water. Thus due to increased vulnerability arising from their unique physiological requirements and anthropogenic stresses, the river dolphin populations are declining day by day. However, due to the COVID-19 lockdown, there has been a sharp decline in anthropogenic activities, including fishing. It is believed that COVID-19 lockdown has helped improve the river health condition and movement of dolphins upstream. This raised a lot of interest and positive awareness among experts, the general public, including local communities and civil society about dolphins as an indicator of the health of the riverine ecosystem. At this backdrop, it is imperative to organize a web-based regional consultation with virtual participation of experts, academicians and institutions from India, Bangladesh, Myanmar and Nepal to make a rapid assessment of the situation and formulate future strategies for maintaining and improving riverine health and conservation of dolphins through national and sub-regional cooperation.

Objective

- To assess the post-COVID-19 lockdown status of riverine ecosystem health and river dolphin population in the four sub-regional countries (India, Bangladesh, Myanmar and Nepal)
- To prepare a future strategy for conservation of the river dolphins through national interventions and sub-regional cooperation.
- To underline policy elements for mainstreaming the dolphin conservation efforts in the overall framework of river management and its possible integration into national and sub-regional policies.

Expected outputs

- Policy focus for the conservation of river dolphin in the India-Bangladesh-Myanmar - Nepal sub-region.
- Updates on the impact of COVID-19 lockdown on riverine ecosystem health
- AEHM special issue based on selected papers from the webinar (www.aehms.org)

INAUGURAL SESSION

River dolphins are indicators of riverine ecosystem health and the populations are declining day by day due to various anthropogenic activities. The dolphin population is also an indicator of fisheries development in the riverine ecosystem. The indiscriminate and illegal fishing has resulted in catching juvenile fishes and accidental/illegal catching of dolphins from inland waters. The lessening of this IUCN listed threatened species plays a crucial role in the fisheries development of the rivers. A two days International Webinar on "Exploring the impact of COVID-19 on the ecosystem health of rivers and its dolphin population: Present status and future strategy for conservation in India-Bangladesh-Myanmar-Nepal" was inaugurated by Shri Rajiv Ranjan Mishra, IAS, Special Secretary and Director-General, National Mission of Clean Ganga (NMCG), Ministry of Jalashakti, Government of India today. This Webinar aims at the conservation of river dolphins in the South East Asian region through regional strategy and partnership. Experts on dolphins from various countries viz. India, Nepal, Myanmar, Bangladesh and Indonesia are participating and share their experience in this Webinar. More than 1000 participants from various Research Organizations, Colleges, Universities of India and other countries have registered for this Webinar.

Dr. B. K. Das, Director, ICAR-CIFRI in his welcome address, welcome all the dignitaries and participants and gave a brief about the aim and objectives of this webinar. He emphasized that the representatives from Bangladesh, India, Myanmar, Nepal and Indonesia are participating in this noble cause for striving for the conservation of dolphins. The webinar would enhance the dolphin conservation in the South East Asian Regional Countries and Strengthens the Honourable Prime Minister flagship project River dolphin.

Dr. J. K. Jena, DDG (Fisheries Science), ICAR in his address discussed the river Dolphin status in India. He said that two of ICAR fisheries institutes are working on dolphin conservation, ICAR-CIFRI, Barrackpore on the river dolphin and ICAR-CMFRI, Kochi on the mammals of the Indian Ocean including marine dolphins. He hoped that this webinar deliberation will come out with recommendations for the conservation of river dolphins.

Dr. B. C. Chaudhury, Retd. Principal Scientist, Wildlife Institute of India in his address discussed the efforts of the wildlife institute of India in the conservation of dolphins in India and the genesis of it since the nineties. He also discussed the Ganga action plan and the Indus river Dolphins.

Prof. A. P. Sharma, Ex Director ICAR-CIFRI, Barrackpore in his address, stressed on the role of river habitat on the dolphin population in the rivers. He suggested more research needed to be taken up for the conservation of dolphin habitat restoration and also on the impact of pollutants on the dolphin population.

Dr. Dilip Kumar, Former Vice Chancellor, ICAR-CIFE, Mumbai in his address discussed the dolphin population in Indo-Nepal Rivers. He also spoke about the social aspects of fishers' life and dolphin in rural India.

Shri Rajiv Ranjan Mishra, IAS, Director General, National Mission of Clean Ganga (NMCG), Ministry of Jalashakti, Government of India in his inaugural address stressed that Biodiversity conservation is one of the priority areas of Namami Gange, with projects like biodiversity conservation with Ganga rejuvenation and Ganga river dolphin conservation education programme. During the first meeting of NGC, chaired by the Honourable Prime Minister of India on 14 December 2019, it was proposed to initiate "Project River Dolphin" to save and enhance the population of the Gangetic dolphin.

The webinar was organized jointly by the National Mission on Clean Ganga, ICAR-CIFRI, Inland Fisheries Society of India; Professional Fisheries Graduate Forum, India and AEHMS, Canada.

TECHNICAL SESSION – I : Knowledge on habitat, population status, ecology and biology of river inhabited dolphins

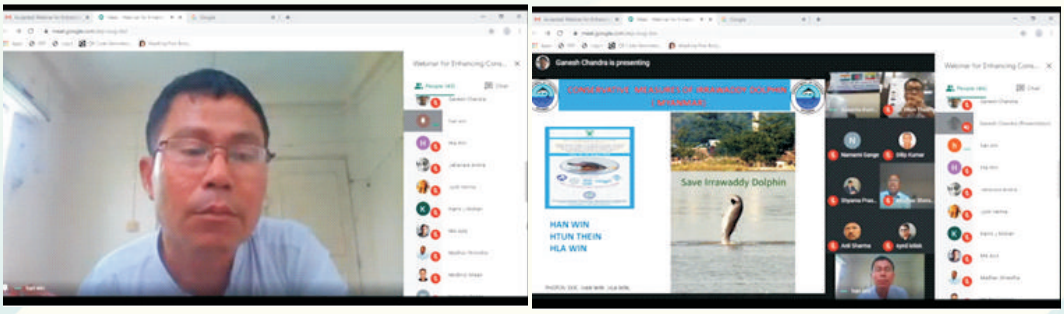
Lead lecture 1: Conservative measures of Irrawaddy dolphin (Myanmar), Han Win, Htun Thein and Hla Win

Presented by : **HAN WIN**, *DDG – Fisheries (Retired), Myanmar*

Irrawaddy dolphin (*Orcaella brevirostris*) exhibit patchy distribution along the coast of Myanmar and isolated freshwater populations also exist in the Irrawaddy river. Since 2003, yearly surveys on Irrawaddy dolphin populations were carried out by in the 400 km stretch of Irrawaddy river from Mandalay to Bhamo by boat-based continuous visual survey method with the assistance of binoculars (non-stop watching of dolphin group at day time). The dolphin population has increased gradually from 58 to 79 numbers from 2006-2020. In Myanmar, the Department of Fisheries in collaboration with Wildlife Conservation Society (WCS) has been involved in Irrawaddy dolphin research and conservation by establishing protected areas in the Irrawaddy river. The Irrawaddy dolphin protected area-I (72 km stretch from Mingun to Kyauk-myaung) was established in 2005 where a unique cooperative fishing practice exists between the cast net fishermen and the dolphins, in which the dolphins assist the fishers to locate the areas of fish abundance. This fishing practice was later developed into a fully-fledged Community Based Ecotourism Program where the tourist can

watch both dolphins and cooperative fishing. To further extend the conservation measures for Irrawaddy dolphins, the Department of Fisheries designated the 118.5 km stretch from Tigyaing to Shwegu as Irrawaddy dolphin protected area-II in 2018.

Due to the temporary halt of patrolling surveys in the protected areas during COVID-19 lockdown, it was difficult to assess the population status, though five carcasses of dolphins were reported during May-July 2020. The absence of visitors in the Protected Area-1 owing to COVID-19 lockdown had adversely affected the income of fishers from the Community Based Ecotourism sector. The major measures suggested for the conservation of Irrawaddy dolphins include MCS (Monitoring, Control, and Surveillance), enactment of proper legislative measures, management plans for protected areas, public participation, habitat restoration, and encouraging global/regional cooperation among the concerned countries.



Lead lecture 2: Status of Dolphins in Nepalese rivers

Presented by : **Dr. MADHAV. K. SHRESTHA**, *Professor of Aquaculture (Retired), Centre for Aquaculture-Agriculture Research and Production (CAARP), Chitwan, Nepal*

The Gangetic dolphin (*Platanista gangetica gangetica*), commonly known as Sous in Nepal, has been recorded from all the four major river systems of Nepal, viz., Mahakali, Gandaki (Narayani), Kosi and Karnali. In recent years, no dolphins were recorded from the river Mahakali. Among the other three rivers, Gandaki has the lowest reported dolphin population. Though the population has been steadily decreasing, the dolphins were recorded form river Kosi both upstream and downstream of Kosi Barrage, with 9 dolphins reported from the river during the 2018 survey. The Karnali river has the highest reported river dolphin populations among the rivers of Nepal and 43 dolphins were recorded during 2018. During monsoon, the dolphins migrate to the tributaries of Karnali river such as the Mohana and the Geruwa. The combined dolphin estimates from all the four rivers systems conclude that the count is very low (less than 100) in Nepalese rivers. Incidental capture in fishing nets was identified as the major threat for river dolphins in Nepal and cases of intentional use of gill net to capture dolphins have been reported from the Kosi river.

The Gangetic river dolphin is listed as 'Critically Endangered' in the National Red Data Book of Nepal and provided legal protection under the National Park and Wildlife Conservation

Act, 1973. During the COVID-19 lockdown, increased sightings of dolphins were reported from the tributaries of Karnali including Mohana and other smaller rivers. A group of dolphins was sighted at the confluence of the Mohana and Karnali rivers in July 2020. Though rivers of Nepal have a relatively small population of Gangetic dolphins, they might serve as breeding grounds for sustenance and enhancement of dolphin populations. Thus it is imperative to initiate collaborative studies between Nepal and India for the conservation river dolphin populations.

Lead lecture 3: Present Status of Dolphin Conservation in Bangladesh

Presented by : **Dr. TAPAN KUMAR DEY**, *General Secretary, Zoological Society of Bangladesh and DCCF (Retired) Bangladesh Forest Department*

The lecture dealt with the distribution pattern and present status of Dolphin species in Bangladesh waters. There are 8 dolphin species recorded from Bangladesh. These species are Gangetic river dolphin (*Platanista gangetica gangetica),* Irrawaddy dolphin (*Orcaella brevirostris)*, Humpback dolphin (*Sousa chinensis)*, Pantropical-spotted dolphin (*Stenella attenuata*), Spinner dolphin (*Stenella longirostris),* Indian Ocean Bottle-nosed dolphin (*Turisiops aduncus),* Bottlenose dolphin (*Tursiops truncatus),* Rough-toothed dolphin (*Steno bredanensis).* Moreover, the study also reported 225 Ganges river dolphins in Sundarbans and 125 in river Karnafuli-Sangu. Irrawaddy dolphin (450 nos.) was also reported in Sundarbans. Thus, Bangladesh has become the global hotspot for cetacean diversity and abundance. To conservation of Gangetic river dolphin and Irrawaddy dolphin population in and around Bangladesh, the Bangladesh Govt. has initiated many conservation measures.

The conservation initiatives are 1) Declaration of 9 (nine) Wildlife Sanctuary & 1 (one) Marine Protected Area, 2) Inclusion of the above bioserve in the Schedule – 1 of Wildlife (Conservation & Security) Act-201, 3) 2 years imprisonment and BDT 1 Lac Taka fine for

violation of the law. The Bangladesh Forest Department (BFD) lacks a sufficient database on the dolphin population in different river systems and estuary which need prior attention and followed by studying the impact of COVID-19 on the dolphin population.

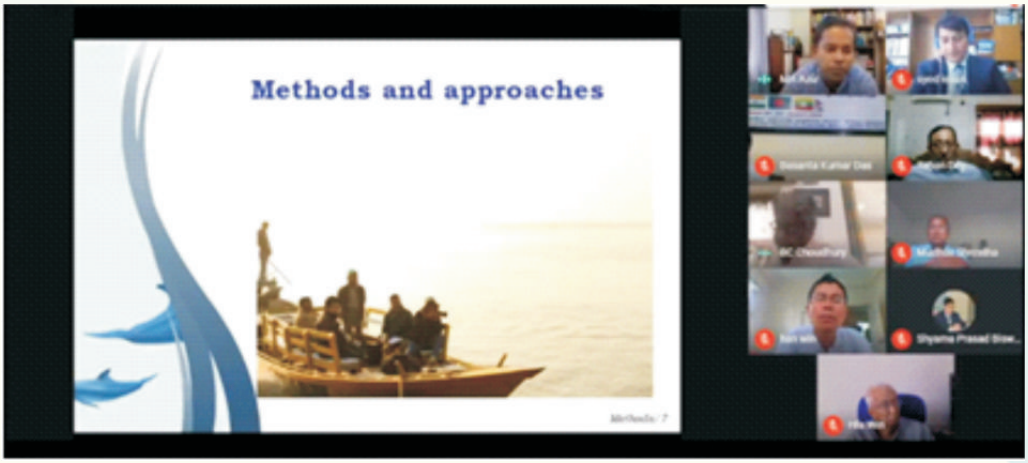
Lead lecture 4: Distribution of Ganges River Dolphin in Bangladesh & Bangladesh Dolphin Action Plan 2021-2030

Presented by : **PROF. MD. ABDULAZIZ**, *Jahangirnagar University, Dhaka, Bangladesh*

The 'land of rivers', Bangladesh is bestowed with five major river networks across the country namely, Ganges-Padma, Brahmaputra-Jamuna, Surma-Meghna, Padma-Meghna, Karnaphuli-Sanu. As research projects on dolphins in Bangladesh are location-specific, there is a need for a policy-based guideline to conserving in Bangladesh. BFD implemented the expanding the protected area system to incorporate important aquatic ecosystems project 'dolphin project' focusing Ganges river dolphin and Irrawaddy dolphins in Sundarbans. The main objectives under this plan include identifying the range of dolphins, preparation of dolphin distribution atlas for Bangladesh and to identify threats and propose mitigation measures. To execute this, methods and approaches involve discussion with local communities, the involvement of multi-stakeholders like Bangladesh Forest Department, and organisation of seminar symposia to aware local people. Dolphins have strong myths, stories, and local cultures across Bangladesh, and also the livelihood of millions of local people is depending upon this cetacean species.

Major threats faced by the existing dolphin population, *viz*., incidental killing during gillnet operation, poaching for dolphin oil, habitat loss due to dam construction and water abstraction, overexploitation of the prey base and pollution. Two goals were fixed to implement the action plan for reducing the direct loss of dolphins and degradation of dolphin habitat; Goal 1: Reduce dolphin killing in rivers and coastal waters of Bangladesh; Goal 2:

Ensure protection of existing dolphin habitats of Bangladesh. There is a specific objective *viz.,* to develop skill, capacity, and governance for improved protection and to understand socio-economic dimensions about dolphins to fulfill the first goal. Followed by, to increase knowledgebase on dolphin habitat and threats, to increase protected area network for dolphins, to engage all stakeholders in the protection of dolphin habitat, to understand and reduce the dependency of local communities on dolphin habitats were the specific objectives to fulfill the second goal.



TECHNICAL SESSION – II : Assessment of river habitat in terms of water quality, anthropogenic pressure and landscape surrounding with a focus to dolphins

Lead lecture 5: Lockdown-2020: A blessing for Riverine Dolphins

Presented by : **DR. SYED ISTIAK**, *Director, Deep Sea Fishes Ltd. & ASAP Healthy Food Ltd., Bangladesh*

Four freshwater dolphin species existed globally, which include the Ganges river dolphin (*Platanista gangetica gangetica*), Amazon River Dolphin (*Lnia geoffrensis*), Indus River Dolphin (*Platanista gangetica minor*), and Yangtze River Dolphin (*Lipotes vexillifer*). Historically, the Ganges river dolphin occurred across the entire Ganga and Brahmaputra rivers, and all their tributaries from the delta at the Bay of Bengal till the Himalayan foothills. Globally the Ganges River Dolphin (*Platanista gangetica*) is listed by IUCN-the World Conservation Union as endangered. The distribution of this species had been restricted to Bangladesh, India, Nepal, and possibly Sikkim and Bhutan, below an elevation of about 250 m. Currently, the species survives in the Ganges, Brahmaputra-Meghna and Karnaphuli-Sangu river systems, while a few individuals may survive in the Karnali and the Sapta Kosi Rivers in Nepal. The Ganges river dolphins are found in all of the major river systems of Bangladesh including the rivers Padma, Jamuna, Meghna, Halda-Karnafuli and the Sundarbans. Dolphins are usually found in turbulent water with availability of water at least

5-8 feet depth, and enough fish abundance for feed. The numbers of dolphins are decreasing day by day, and the most important cause was barrages and embankments followed by overfishing, ghost fishing, habitat loss, and different source of pollution.

Due to the imposed lockdown, human movement, transport movements in the land, and water drastically reduced, which acts as a blessing for sighting for dolphins in Bangladesh. Further, to improve the dolphin population, certain recommendations were suggested as:

- Water quality monitoring of the rivers
- Initiate Joint Program among four Countries: India, Bangladesh, Myanmar and Nepal
- Identified and declared hotspot of the river dolphins
- Conservation education and awareness programme
- Increase aquaculture for release fish fingerlings to the river during a fishing holiday
- Raise Fishermen Voice
- Turning fishermen into conservators through equipment and training
- Ecotourism the way to save Indus dolphin
- Dolphin rescue team (Health and welfare support)

Lead lecture 6: Status and community-based conservation of the Mahakam river dolphin in Indonesia

Presented by : **DR. DANIELLE KREB**,*Cetacean Specialist, IUCN, Indonesia*

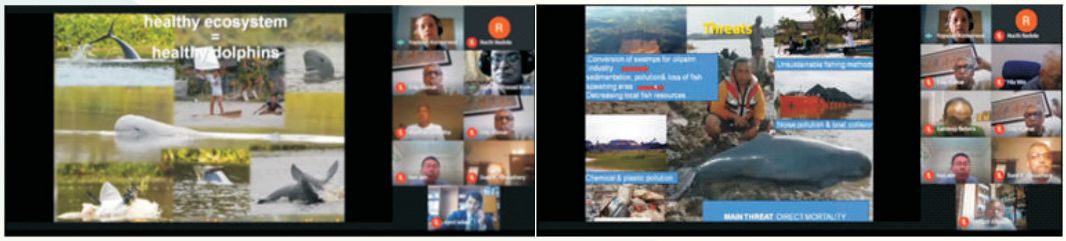
Irrawaddy dolphin (*Orcaella brevirostris*) locally known as Pesut Mahakam, a critically endangered species and protected by Indonesian Law. The length of an adult dolphin was reported as between 2.0 to 2.7 m and weight between 90-150 kg, where the male is bigger than the female. Newborns are 90 cm to 1.0 m long and weigh 10 to 12 kg. The age of first reproduction was found to be 8-9 years (female). Pesut often swims at a speed of 5 km/ hr but

very rarely swims fast with a maximum speed of 20 km/ hr. The abundance of Mahakam river dolphins declined and the main reason for the decline was found as, dolphin assault, natural predator, hook fishing, electro-fishing, poison fishing, boat collision, trapped in shallow water, entangling in a gill net, etc. The major threats which were found for dolphins populations death were observed as:

- Conservation of swamps for oil palm industry
- Sedimentation, pollution and loss of fish spawning area
- Decreasing local fish resources
- Unsuitable fishing methods
- Noise pollution and boat collision
- Chemical and plastic pollution

Necessary recommendations need to be adapted to conserve the dolphin populations and mentioned as:

- Raising awareness with local communities and youth
- Involving youth with social media and printed media
- Training to rescue team
- Sustainable community-based ecotourism and dolphin watching training
- Illegal catching of dolphins monitoring team
- Protection of fish spawning areas, the introduction of sustainable fishing techniques, alternative income generation, increased law enforcement of illegal fishing practices
- Creation of alternative livelihood options



Lead lecture 7: Development of conservation action plan for Ganges river dolphins

Presented by : **DR. ABDUL WAKID**, *Project scientist, Wildlife Institute of India, Dehradun*

Ganga river dolphin is an Endangered species (IUCN) and is kept in Schedule-I species (Wildlife Protection Act, 1972). It's declared as state Aquatic Animal of Assam in the year 2008. Key issues for Ganga river dolphin in India are:

- Lack of scientifically robust population monitoring methods
- Mortality due to killing, deliberate killing due to market demand for dolphin oil and accidental killing due to fishing net entanglement

- Underwater noise due to vessel movement
- Lack of community participation in conservation of this species

Direct sighting methods are being followed for the count of dolphin populations, which was found perception bias, due to observer fatigue, weather condition, etc. Henceforth, independent double observer-based capture-recapture method-trialed and standardized in Brahmaputra river, which was found quite satisfactory. A total of 947, 236, and 25 dolphins being recorded from the river Ganga, Hooghly, and Roopnarayan for the covered distances of 625, 499.5, and 32.4 km, respectively. The major reason for the mortality of the Ganges river dolphin was found as accidental killing due to fishing as well for intentional killing for dolphin oil. In an experiment, a device called pingers is being attached to the net to reduce fishing net entanglement. Recommendations to protect riverine dolphins,

- The double observer-based capture-recapture method need to be adapted for range-wide robust population estimate of the Ganges river dolphin
- Use of dolphin oil need to be strictly monitored and stopped
- Acoustic reflectors, viz., Pingers need to be tested extensively for preventing dolphin accidental mortalities in net entanglement
- Ship noise need to study more details to prevent underwater noise pollution impact on dolphins

Lead lecture 8: Dolphin hotspots in and around the Sundarbans of Bangladesh: before and during the Covid-19 pandemic

Presented by : **DR. M. MONIRUL H. KHAN**, *Department of Zoology, Bangladesh*

Identification and establishment of new sanctuaries especially for Gangetic dolphin (*Platanista gangetica gangetica*) and Irrawaddy dolphin (*Orcaella brevirostris*) in the Sunderban plateau of Bangladesh are in virtue. The relationship between the abundance of the Ganga river dolphin with water quality parameters such as salinity, turbidity, water pH, and dissolved oxygen has been discussed. Identified five dolphins hotspots around the Sundarbans of Bangladesh namely, Sela-Supati rivers, Sibsa river, the estuarine area around Putney Island, Passur river, and Baleshwar estuary. Certain recommendations were provided to conserve riverine dolphin in Sundarbans areas as:

- A systematic study is required to understand the impact of the pandemic on dolphin habitat

- Create awareness regarding dolphin conservation
- Expansion of declaration of protected area network for dolphin conservation
- Need special dolphin management and action plan
- Elimination of fishing using gill net dolphin hotspot area
- Create awareness among the fishermen for the conservation of dolphins

Lead lecture 9: Expanding the Protected Area System to Incorporate Important Aquatic Ecosystems

Presented by : **DR. MODINUL AHSAN**, *District Forest Officer, Khulna, Bangladesh*

The conservation status of dolphins, whale, and porpoise in Bangladesh was discussed. Seven species of dolphins, namely Ganges river dolphin, Irrawaddy dolphin, Indo-pacific humpback dolphin, Pantropical spotted dolphin, Spinner dolphin, Indo-pacific Bottlenose dolphin, Rough-toothed dolphin along with other Cetaceans has been found in Bangladesh water bodies. The Government of Bangladesh has taken initiatives to conserve dolphins in the Sundarbans by expanding the protected area system to incorporate important aquatic ecosystems. For that certain agencies like Government, NGOs, IUCN, UNDP, etc. were taken part to successful implementations of the Cetaceans development programme and come up with the achievements as:

- Introduced an effective management system in the three Wildlife Sanctuaries of the Sundarbans
- Demarcated sanctuary boundary with buoys and flags
- Frontline staff are patrolling with GPS and recording data and preparing reports

Empathized also been given on the creation of livelihood options, awareness, and training programme for dependent fishermen to create awareness celebrated international freshwater dolphin day (24th October), dolphin fare. A certain recommendation has been provided as:

- Create a livelihood option
- Training for skill development
- Sectoral policy for Aquatic ecosystem friendly practice
- Biodiversity friendly guidelines for development and industries

Lead lecture 10: Status of Irrawaddy Dolphin in Chilka lagoon

Presented by : **DR. AJIT PATTNAIK**, *Vice President, Wetland International South Asia*

Irrawaddy dolphins inhabiting in Chilika lagoon are considered to be as physically isolated population. The Chilika contains the most important lagoonal population of Irrawaddy dolphins, compared to other marine-appended brackish water bodies like Songkhla Lake in Thailand, and Malampaya sound in the Philippines. Based on direct sighting using line-transect surveys, a total of more than 150 dolphin populations were reported from the lagoon. Hydrological restorations being done at Chilika lagoon during 2000 and an increase of the numbers of dolphin population observed after post-restoration (150 nos.) compared to the pre-restoration (around 70 populations). The season to increase in the dolphin population was due to the improvement of the water quality which directly increases the fish production of the lagoon and successive decrease of invasive species.

The threats are found for the dolphins in the lagoons, are high-density fishing nets and gears operation, traps being used in the route and channels of dolphin movement, and used to mechanized boats with long-tail diesel engines. Though the gill nets operated along the outer channel, the southern sector and central sector are identified as the major threat to dolphins. Certain measures have been taken to mitigate the threats of the dolphins' population, like :

- Wildlife (Protection) Act. 1972
- Implementation of Orissa Marine Fishing Regulation Act, 1982, OMFR Rules, 1983 for the conservation of Chilika fisheries
- Banned of the use of zero-mesh nets (net with fine mesh size) in the lagoon with effective from 2003 by the Fisheries and Animal Resources Department, Government of Odisha
- Orissa Boat Rules, 2004. The way of sensitizing fishers and boat operators conducting tourists for dolphin watching, the causality due to collision with mechanized boats and drowning by the gill nets is reduced, significantly. Further dolphin watching protocol based on carrying capacity is developed by WII.

The successful restoration of the lagoon by Chilika Development Authority (CDA) has catalyzed a significant improvement in the habitat and prey base of the dolphin, which is exemplified by their increase in population. However, lots more to be done to secure the

dolphin population of the lagoon. Some of the future steps proposed to be taken by CDA are as follows :

- Continue with the acoustic study to understand the underwater behavior of the dolphin and their habitat in a more resolute manner.
- Sustainable monitoring and data analysis for understanding their current status, identify with all precession the threat to the population from tourism, fishery, and other anthropogenic activities, and enhance surveillance.
- Study the possible migration between the lagoon & the Bay of Bengal to ascertain whether the dolphin population of the lagoon is an isolated population or otherwise.

Lead lecture 11: Covid-19 driven nationwide lockdown affects zooplankton community structure in River Ganga at Patna

Presented by : **PROF. RAM KUMAR**, *Dean, School of EBES, Central University of South Bihar*

The Gangetic river dolphin is mainly solitary and nonsocial, once in a while found in little gatherings. Prey accessibility, water quality, and volume are restrictive factors for their abundance. An indicator species for the river ecosystem, being at the apex of the food chain. Govt. of India declared a nationwide lockdown on 24th March 2020, limiting movement of the entire 1.3 billion population of India as a preventive measure against the COVID-19 pandemic in India. Lockdown completely stopped industrial units and people's movement, some reports suggested that dolphins started appearing at many sites and self-purification machinery of the ecosystem started functioning optimally in the absence of human intervention. The short term changes in the aquatic ecosystems can be reflected in changes in the zooplankton community structure. They show immediate response to changes in its ambient environment in terms of relative abundance, functional groups, and production of resting stages. Zooplankton was identified to the lowest possible taxa and segregated based on taxonomic and functional feeding groups.

To study the effects of different biotic parameters and zooplankton diversity routine monitoring of water quality of river Ganga at selected sites in Patna was collected during the lockdown period. The results summarized as:

- The parameters indicating a high level of river pollution have subsided during the lockdown period
- The amount of dissolved oxygen has increased significantly
- While those of COD, BOD, total suspended solids (TSS), total dissolved solids (TDS), recorded a decreasing trend
- Total coliform (TC), as well as faecal coliform (FC), records significantly decreased values
- Zooplanktonic diversity shows increasing trends after starting of lockdown at both of the sites

- Cladoceren abundance is increasing as the lockdown is extended
- The rotifer abundance decreases
- While TC and FC also record decreasing during the lockdown

The results indicate that the bottom-up effect might be working as dolphins are spotted more frequently during the lockdown.

Lead lecture 12: Community participation in River Ganga for Dolphin conservation

Presented by : **DR. RUCHI BADOLA**, *Scientist G, Wildlife Institute of India*

The river Ganga is divided into three stretches, like the upper, middle, and lower Ganga based on certain habitat parameters. Dolphin and communities competition to coexistence in the Ganga river systems, due to limited resources, limited livelihood opportunities for fishermen and other river dependent communities, developmental needs, poaching, and accidental killing, hydrology alteration, range reduction, etc. For the dolphin's conservations, certain approaches have been taken care of engaging communities, like :

- Identification of stakeholders
- Interactions with stakeholders including local communities
- Awareness and sensitization
- Establishment and training of *Ganga Prahari* cadre
- Site-specific livelihood development framework for sustainability
- Biodiversity sensitive village microplanning
- Mobilized communities for conservation

With the help of community participation, a total of 50 stakeholder groups were made comprising of 2621 numbers of activities and 102712 peoples were sensitized. The programme has been covered 31 districts, more than 500 villages, and 1010 socioeconomic surveys. To conserve the dolphin's population in the river Ganga certain recommendations needs to be followed:

- Strengthening linkages between local livelihoods and conservation goals
- Promotion of biodiversity sensitive livelihoods and development activities
- Market linkages for sustainable livelihood activities
- Site-specific strategies
- Ensure inclusion of Dolphin conservation in the mandate of local-level institutions macro- and micro-planning

Lead lecture 13: Improving conservation prospects for river dolphins through effective and sustained community engagement

Presented by : **DR. MD. ZAHANGIR ALOM**, *Country Representative, WCS, Bangladesh*

The Ganges river dolphin *Platanista gangetica gangetica* is globally Endangered due to extreme pressure from fishing and habitat degradation throughout its range. In many places, the Ganges river dolphin tends to occur in deep pools and confluences, often adjacent to human communities where there is a strong potential for engaging local communities in their conservation. For conserving Ganges river dolphins in Bangladesh, WCS focuses on the Sundarbans where freshwater dolphins are protected specifically within three sanctuaries located in hotspots.

The survey by the WCS, revealed that a total of 127 dolphins mortality recorded during 2007-2020, and 7 live individuals released successfully. Among the known factors fishing was found to be the main source of cause of death. The WCS mortality monitoring network aims to increase our understanding of mortality rates and causes, contamination levels, and food habits of cetaceans, and identify new species not previously recorded in our waters. WCS Bangladesh supports the use of the Spatial Monitoring and Reporting Tool (SMART) to strengthen systematic patrols for wildlife law enforcement and monitoring in the Sundarbans. SMART patrols record sightings and mortality incidents of Asia's last two remaining freshwater dolphin species, Ganges river dolphins and Irrawaddy dolphins. Results of SMART patrols in the Sundarbans (2016 – 2018):

- 122,000 kilometers of waterways were covered during 17,134 hours over 1,183 days.
- 18,807 sightings of 23 key wildlife species including 345 Ganges river dolphin sightings.
- 650 people were arrested with legal action initiated.
- 1,143 small boats and 4,306 fishing gears including gill nets and long-lines were seized (primary gear types for human-caused freshwater dolphins mortalities.

Successful community engagement that resulted in increased awareness or reduced mortalities of Ganges river dolphins is indicative of opportunities for trans-national outreach strategies.

Lead lecture 14: Changes in microbial communities in response to Covid-19 forced a lockdown at dolphin spotting site (Garhmukteshwar) of the River Ganga

Presented by : **DR. DIWAKAR PRAKASH**, *Department of Environmental Science, School of Earth, Biological and Environmental Sciences, Central University of South Bihar*

The river Ganga is the habitat for a considerable number of endemic and endangered species, including the Gangetic river dolphin, *Platanista gangetica gangetica*. Discharging faecal wastes and urination in open spaces near the Ganga shoreline makes the Ganga faecal contamination. 22 Dolphins were recorded in 1993-95 approximately and 56 Dolphins were

recorded in 2010 between Bijnor and Narora Barrages. To study the changes in microbial communities in response to Covid-19 forced a lockdown at the dolphin spotting site (Garhmukteshwar) of the river Ganga. The water samples were collected immediately after the dolphin was spotted at the site Garhmukteshwar (28.7601°N, 78.1437°E) Uttar Pradesh, India.

The following observations were made:

- The bacterial community were assessed by collecting a sample from the exact site where dolphins were spotted
- The observed data indicates that bacterial load has reduced due to Covid-19 lockdown in river Ganga at Garhmukteshwar.
- The study revealed the differences in microbiota before and during the lockdown.
- The present results will form the baseline information for planning the dolphin conservation and restoration of the river Ganga.
- The bacterial communities identified in this study might be informative for future health monitoring of Gangetic dolphins.

Lead lecture 15: Dolphin conservation in Ganga-WII initiatives

Presented by : **DR. NILADRI DASGUPTA ON BEHALF OF DR. H.A HUSSAIN**, *Scientist G, Wildlife Institute of India*

The distribution patterns of the Gangetic dolphin show that compared to the historical distribution the present distributional patterns are much less in numbers as well as range reduction. As dolphins are flow and depth depended on species, the range deduction of the species was found as depth and flow of the river reduced drastically. The study also established that the Ganga river dolphin prefers to live in more than 7-meter water depth. Climate change, vulnerability along with habitat alterations impacts the narrow and less distributional ranges of Ganga dolphin.

The whole river Ganga has been surveyed to find out the hotspot areas of river dolphin based on hydrological parameters, and 6 such hotspots areas being recognized. Accordingly, a Gangetic dolphin conservation action plan 2020-2030 has been formulated. Based on the action plan, a proposal was made to initiate 'project River Dolphin' along the line of the project 'Project Tiger' to save and enhance the Gangetic dolphin. As the lockdown period improves the water quality of the river Ganga, accordingly sighting of river dolphins also increased, and during April and May a total of 6-10 Gangetic dolphins and an Irrawaddy dolphin located in different locations of the river. The way forward: align with 'Project River Dolphin' of India:

- Ecological and hydrological status assessment of Ganga river and its tributaries post-COVID
- Assess the occurrence and distribution of Gangetic dolphin in Ganga river and its tributaries-range, distribution (+/-)

- Mapping of good dolphin stretches and overlay with habitat and anthropogenic influences for focused conservation action
- Involving stakeholders and the local community in the conservation process for sustained conservation actions

PANEL DISCUSSION

The lead lecture was followed by a Panel discussion by experts comprising of Dr. Dilip Kumar, Prof. S.P. Biswas, Dr. Ajit Pattnaik, Dr. Suresh Babu S.V, Dr. Abdul Wakid, Dr. Syed Istiak, Dr. Danielle Kerb, Dr. Raunak Dhankar, Dr. Zohangir Alom, Dr. M. Monirul H. Khan, Dr. Modinul Ahsan, Prof. Ram Kumar and Dr. M. Munawar. The various questions raised by the participants were discussed in the session. The question of what is the suitable environment conditions prefer by the riverine dolphins and was answered by Prof. S.P. Biswas. He explained that dolphins prefer water that is at least 1.5-2.4 meters in depth. They are usually found in water where there is enough fish for them to feed. River dolphins inhabit deep waters with adjoining shallow water. The Ganges river dolphin favors deep pools, eddy countercurrents located downstream of the convergence of rivers and sharp meanders, and upstream and downstream of mid-channel islands. There was a question on at what duration, river dolphin comes to the surface for breathing and was answered by Dr. Abdul Wakid. He told that river dolphins cannot breathe in the water and must surface every 30–120 seconds. There was a question on what is the age of the first sexual maturity of the Ganga river dolphins and answered by Prof. Ram Kumar. He explained that Ganges river dolphins, reach sexual maturity at about 10 years of age. In general, calving takes place between October and March following a gestation (pregnancy) 8-9 months. Females nurse for up to 12 months. There was a question on what kinds of food generally preferred by the river dolphins and answered by Dr. Suresh Babu S.V. He mentioned that south Asian river dolphins rely on echolocation to find prey due to their poor eyesight. The species feeds on a variety of shrimp and fish, including carp and catfish. The Ganges subspecies may take birds and turtles. They are usually encountered on their own or in loose aggregations; the dolphins do not form tight interacting groups. *P. gangetica minor* has been known to eat some species of catfish, herring, carp, gobies, mahseers, prawns, and clams. Captive individuals reportedly consume about 1 kg of food each day. There was a question on what could be the life span of the Ganga river dolphin and answered by Dr. Dilip Kumar. He said that the life span of the Ganges river dolphin is thought to be about 26 years. There was a question on what are the distributional ranges of Irrawaddy dolphins and answered by Dr. Danielle Kerb. She said that Irrawaddy river dolphin, it is not a true river dolphin, but an oceanic dolphin that lives in brackish water near coasts, river mouths, and estuaries. It has established subpopulations in freshwater rivers, including the Ganges and the Mekong, as well as the Irrawaddy River from which it takes its name. Its range extends from the Bay of Bengal to New Guinea and the Philippines, although it does not appear to venture offshore. It is often seen in estuaries and bays in Borneo Island, with sightings from Sandakan in Sabah, Malaysia, to most parts of Brunei and Sarawak, Malaysia. A specimen was collected at Mahakam river in East Kalimantan.

TECHNICAL SESSION – III: Threats, conservation status and policy issues to protect riverine inhabited dolphins

The session started with the introduction of Chairs and a brief overview of the session by the moderator. In the beginning, Dr. Sandeep Behera, consultant, NMCG told that the session will highlight the threats, policy issues and ways to tackle the issues pertaining to dolphin conservation. He opined that there are policies and guidelines for conservation but are not implemented successfully necessitating the need for effective enforcement.

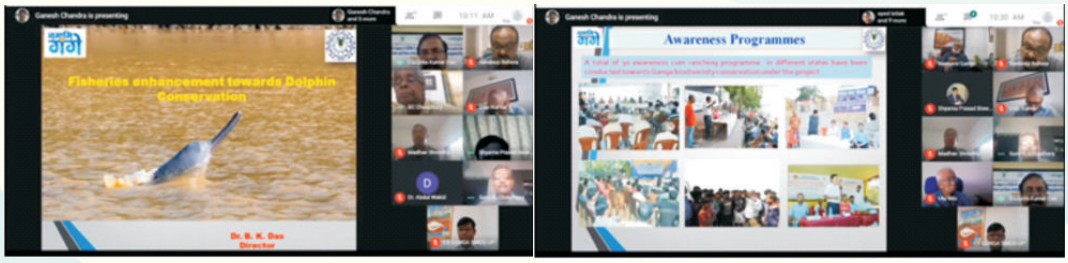
Lead lecture 16: Fisheries enhancement towards Dolphin Conservation

Presented by : **DR. B. K. DAS**, *Director, ICAR-CIFRI, Barrackpore, Kolkata, India*

In his lecture, Dr. B. K. Das has summarized the significant activities and achievements made by ICAR-CIFRI in river Ganga under the flagship programme with financial support from

NMCG, Govt. of India. A total of 30 fish ranching programmes (2017-2020) have been conducted in four different states (Uttarakhand, Uttar Pradesh, Bihar and West Bengal) of India under the project and over 30 lakh seeds have been released so far, he highlighted. He has also related how the various activities conducted including river ranching and awareness programmes are related/ beneficial to the dolphin population.

He has explained the dolphin distribution, their food and feeding habits, impact due to barge movement, mitigation measures for eco-friendly navigation, major threats faced by dolphins, factors affecting the persistence of dolphins, and recommendations for their conservation. The speaker recommended the ecosystem approach for the conservation and management of rivers and river dolphins, strengthening the scientific information and research on species of regional importance and sharing the knowledge with partnering countries, community empowerment and participatory approach for dolphin conservation, regulation of crafts and gears in the dolphin habitat sites and building inter-Governmental networking for dolphin conservation.

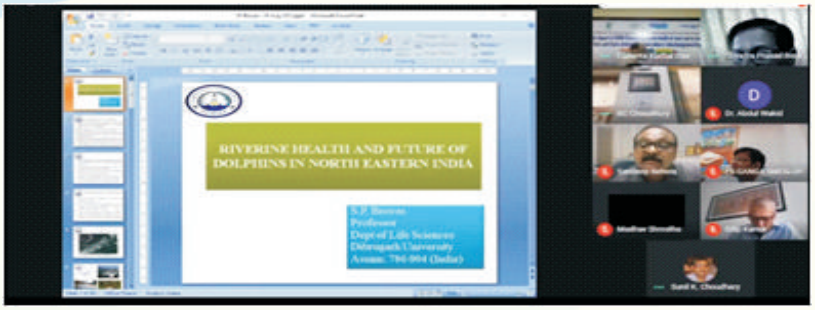


Lead lecture 17: Riverine health and future of dolphins in north-eastern India

Presented by : **PROF. S. P. BISWAS**, *Dept. of Life Sciences, Dibrugarh University, Assam, India*

Prof. S. P. Biswas has emphasized on ecological issues and major consequences, anthropogenic stress, eco-restoration of riverine habitat, the impact of global climate change on dolphins beside the long-term strategy for dolphin conservation. River dolphins prefer deep water and particularly favors counter-current pools, where fish assemblages are more, he told. A total of three factors, either individually or in combination relates the availability of the dolphin in a particular river is adequate water cover, water quality and abundance of prey food and there is a growing recognition that the environment must be viewed and studied as a social–ecological system, Dr. Biswas opined. The speaker asserted for sustainable development and alternative livelihood for riparian people to minimize dependence on natural resources which would help in conservation. Regular monitoring of river health (water quality) and assessment of dolphin population, a detailed behavioral study of river dolphin at the local and regional level, development of ecotourism in dolphin sighted areas, enforcement of fisheries and environmental acts in letter and spirit, restoration of riverine habitat by dredging of the riverbed, recovery plan/ transfer of dolphins in safer areas, co-

ordination among all stakeholders at local, regional and national/ international level were suggested.



Lead lecture 18: Dolphin conservation and Ganga rejuvenation

Presented by : **DR. SANDEEP BEHERA**, *Consultant, NMCG, India*

In his lecture, Dr. Behera spoke about the vision and mission of NMCG, the biodiversity profile of river Ganga and factors affecting biodiversity, and Ganga rejuvenation. Dr. Behera further stressed river dolphins in India, threats faced by dolphin population viz. fishing by-catch mortalities, dams and barrages, loss of habitat, pollution, developmental projects and lack of conservation plans. He has also emphasized on major status surveys conducted for dolphins, present status, areas with dolphin population, active groups working on dolphin, protected areas, need and efforts for conservation of dolphins during COVID-19, and efforts of Ganga Praharis towards dolphin conservation.

He has also focused on innovative ways like community-based conservation & IRBM, community-based dolphin tourism, community involvement and awareness, population estimation using acoustics, the management plan for riverine sanctuary and conservation of aquatic biodiversity through community participation. He suggested regional collaboration in conservation efforts and knowledge sharing among the partnering countries for the protection of river dolphins. He has also suggested making use of opportunities available for river dolphin conservation in India viz. Namami Gange Programme, MoEF' programme for wildlife outside protected areas, the focus of international conservation organizations, increased awareness of research institutions and academics on aquatic fauna, international convention obligations and the iconic status of dolphins.

Lead lecture 19: Impact of nationwide Covid-19 pandemic lockdown on the habitat of endangered dolphin *Platanista gangetica*: issues & challenges in the context of its rehabilitation in river Ganga

Presented by : **DR. V. R. CHITRANSHI**, *ADG –ICAR (Retd.), India*

Dr. Chitranshi explained the impact of nationwide COVID-19 pandemic lockdown on water quality of river Ganga at different stretches, the significance of the Ganga ecosystem and Gangetic dolphin, the present status of dolphin, the impact of revival efforts on dolphin population, issues, challenges and rehabilitation perspective for Gangetic dolphins. He cited the example of dolphin sitting in tributaries of river Ganga and Ganga itself at different sites after a gap of a decade and also increased frequency of dolphin sitting in river Ganga indicating that reduction of anthropogenic activities can help to revive the river dolphin population, fisheries and overall river health. He also presented the different issues and challenges viz. management of dolphin is a tedious task, vulnerable species in the vulnerable river, control on hunting, killing & poaching, restoration of the health condition of habitat, late maturity long gestation period milk feeding, and anticipated impact of dredging and noise pollution. The creation of dolphin parks in tributaries, creation of dolphin research center at ICAR-CIFRI, Ganga scout cadre and multi-institutional dolphin advisory group, skill development in dolphin management programmes and legal monitoring by the wildlife crime control bureau will help to revive the dolphin population in river Ganga, he suggested.

Lead lecture 20: Restoring connectivity of our rivers and Dolphin habitats

Presented by : **DR. S. V. SURESH BABU**, *Director- Rivers, Wetlands & Water Policy, WWF-India*

Dr. Suresh Babu has highlighted the species-specific e-flows requirements, understanding of hydrology and habitat preference, securing connectivity status of rivers, *dolphin Mitras*, river health index (RHI) and opportunity for regional collaboration. He also stressed upon the way forward, roadmap and action plan for restoring river connectivity towards dolphin conservation. He has suggested that the population assessments need to go hand in hand with habitat- connectivity assessment, map, identify and secure connectivity of river systems, enhancing connectivity status of habitats. Species-specific e-flows are to be established and integrated into the basin planning process. Besides, roadmap and action plans are required for restoring the connectivity with emphasis on environmental flows and zero loss of dolphin habitats, and connectivity should be a non-negotiable principle in development planning, he suggested.

Lead lecture 21: Capacity building and human resource for Dolphin research

Presented by : **DR. B. B. NAYAK**, *Head of Division, FRHPHM, ICAR-CIFE, Mumbai*

In his lecture, Dr. Nayak gave a brief review of the status of dolphin research and plan for dolphin conservation. He has also explained why the fisheries research has got more attention over dolphins, river dolphins of the world, action plan and associated actions, education support, major institutes and research groups working on dolphin, why research efforts are critical to conservation, application AI technology, conservation efforts, captivity success around the world and plans for dolphins. He has emphasized the importance of public education, school education, higher education and advanced research training in dolphin conservation. Dr. Nayak suggested habitat identification and characterization (for protecting, maintaining and developing), the biology of the species (leading to domestication, culture), genetics &health (for selection, breeding & management in captivity) and communication (for behavior control and use) as important aspects to be considered in conservation efforts and planning.

Lead lecture 22: Emerging Threats for South Asian River Dolphin (Ganges river dolphin) *Platanista gangetica gangetica* and need for collaboration among Range countries for its conservation

Presented by : **Dr. SUNIL K. CHOUDHARY**, *Former Prof. & Head, Dept. of Botany, T. M. Bhagalpur University, Bhagalpur, India*

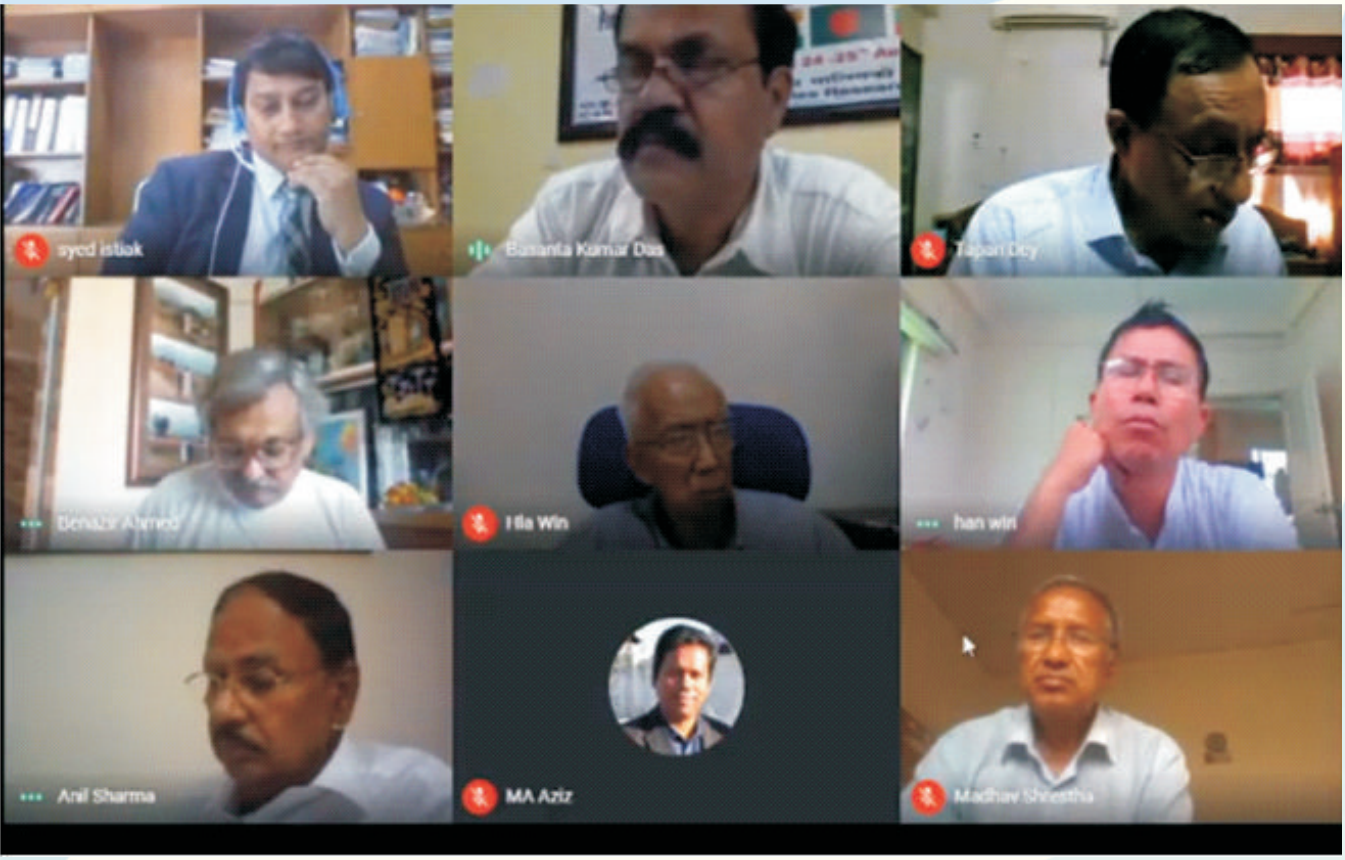
Dr. Choudhary has explained about river dolphins, the estimated population size of Ganges river dolphin, conservation status, conservation efforts, and identified threats for river dolphins. The issues highlighted were fisheries by-catch mortalities, deliberate killing for dolphin products such as meat & oil, the impact of dams and barrages, alteration, degradation &loss of habitat, etc. He has also stressed upon the emerging threats which are unrecognized and non-existent until recently like inland waterways development and infrastructure

projects in India, Nepal and Bangladesh, river interlinking plans, transboundary water sharing, pending dam projects (especially in North East India), the future of inland fisheries and its relationship with dolphin conservation, and impacts of climate change. He has further emphasized on global conservation initiatives and the need for collaboration among the range countries. Freshwater biodiversity declines much faster than terrestrial and marine species and wildlife knows no border, he stated. It is therefore in the interest of all the countries sharing international rivers/waters to work together in directions that will enable for better river management and biodiversity conservation including the Ganges river dolphin.

Lead lecture 23: Conserving cetaceans in Bangladesh

Presented by : **DR. BENAZIR AHMED**, *Retd. Professor, Zoology Department, University of Chittagong, Bangladesh*

In his presentation, Dr. Ahmed has explained the regional initiatives towards dolphin conservation, methods for studying freshwater cetaceans, the role of IUCN and other agencies in conservation efforts, the various initiatives taken by Bangladesh for dolphin conservation and the outreach programmes conducted. He has also shown the various news articles published on river dolphins from different places. He has highlighted the poaching and killing of dolphins and the recent dolphin scenario due to the COVID-19 lockdown. Dr. Ahamed suggested for regional collaboration with the active participation of international agencies and knowledge sharing for river dolphin conservation.



PANEL DISCUSSION

The lead lecture was followed by a Panel discussion by experts comprising of Dr. B.K. Das, Dr. Sandeep Behera, Prof. S.P. Biswas, Dr. B. B. Nayak, Dr. V.R. Chitranshi, Prof. Sunil K. Choudhary. The various questions raised by the participants were discussed in the session. The question of why there is a limited protected area in India was answered by Dr. Sandeep Behera. He explained that there exists only one exclusive dolphin sanctuary in Ganga, however, there are other sanctuaries/ protected areas where the dolphin is also conserved. There was a question on why the Irrawaddy dolphin is more vulnerable to which Dr. B. C. Choudhury replied that they are incidentally caught more in fishing nets in Chilika due to increased fishing effort. Dr. B.B. Nayak also supported his views and stated that this may be attributed to more fishing pressure in estuaries/lagoons. The question of how the river ranching is helping the dolphin pollution was answered by Dr. B. K. Das. He explained that the dolphins feed on fishes and hence the more availability of fish support dolphin through the food chain. Dr. Syed Istiak also supported his views. The last query was on the methods available for studying the movement of dolphin to which Dr. Sandeep Behera replied that there are published methods for studying dolphin and WII has developed two methods viz. double observer-based method and acoustic-based survey.

RECOMMENDATIONS

- The ecosystem approach for the conservation and management of rivers and river dolphins, strengthening the scientific information and research on species of regional importance and sharing the knowledge with partnering countries, community empowerment and participatory approach for dolphin conservation, regulation of crafts and gears in the dolphin habitat sites and building inter-Governmental networking among India-Bangladesh-Nepal and Myanmar for dolphin conservation

- Regular monitoring of river health (water quality) and assessment of dolphin population, the detailed behavioral study of river dolphin at the local and regional level, development of ecotourism in dolphin sighted areas, enforcement of fisheries and environmental acts in letter and spirit, restoration of riverine habitat by dredging of the riverbed, recovery plan/ transfer of dolphins in safer areas, co-ordination among all stakeholders at local, regional and national/ international level were suggested

- The management measures like MCS (Monitoring, Control, and Surveillance), enactment of proper legislative measures, management plans for protected areas, public participation, habitat restoration, and encouraging global/regional cooperation among the concerned countries are suggested for the conservation of Irrawaddy dolphin.

- Collaborative studies between Nepal, Bangladesh, Myanmar and India for the better understanding and conservation of river dolphin populations are highly required.

- Research work on dolphin excluder devices in the fishing gear for the survival of Dophin during the fishing activities by the fishers is essential.

- Declaration of protected areas in the form of wildlife sanctuaries, marine protected areas, biosphere reserves may be declared to conserve dolphins.

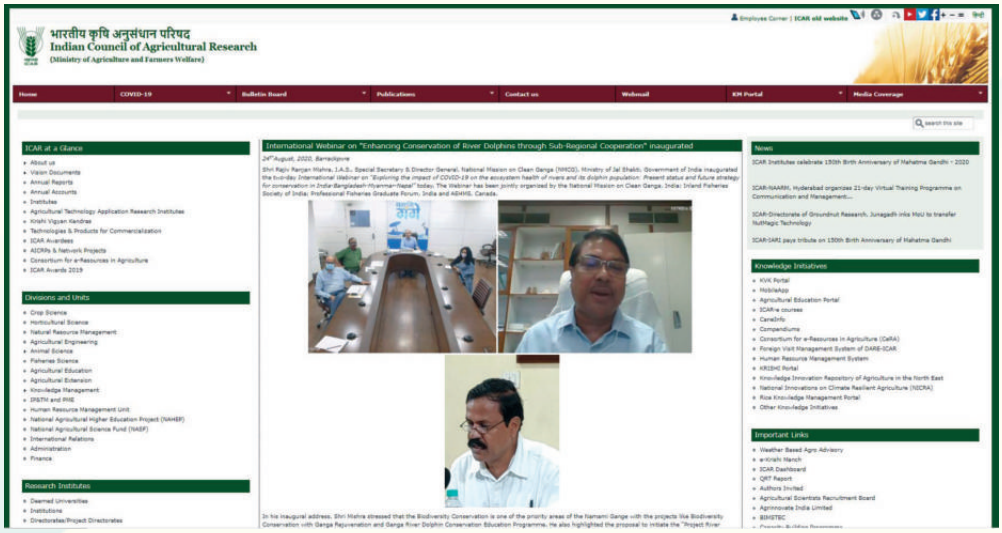
- Enough water depth (5-8 m) to be maintained in the lower stretch (after the dam) is a pre-requite to support the dolphin population in riverine environments.

- Raising awareness with local communities and youth, the involvement of social media and print media, training to rescue team, protection of fish spawning areas, increased law enforcement of illegal fishing practices, creation of alternative livelihood options for the conservation of river Dolphin are necessary.

- Communality participations, identification and interactions with stakeholders, employing "Dolphin Prahari" like "Ganga Prahari" and strengthening linkage with local populations are needed to be strictly followed to conserve the Ganga river dolphins.

A double observer-based capture-recapture method needs to be adapted for a range-wide robust population estimate of Ganges river dolphin with a ban on the use of dolphin oil.

MEDIA COVERAGE



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International webinar for conservation of river dolphins through sub-regional cooperation held

Posted By: AQUAPOST on: August 27, 2020 In: Institution, News No Comments

Print Email

A two days international webinar on "Exploring the impact of COVID-19 on the ecosystem health of rivers and its dolphin population: Present status and future strategy for conservation in India-Bangladesh-Myanmar-Nepal" was held on 24th -25th August 2020. It was inaugurated by Rajiv Ranjan Mishra, Special Secretary and Director General, National Mission

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India, Bangladesh, Nepal, Myanmar join hands to enhance conservation of river dolphins

Author : ANI | August 25, 2020 11:37 PM

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Rajiv Ranjan Mishra, Director General, Namami Gange also shared his experiences on dolphin conservation linking its importance in the rejuvenation of Ganga. Continuous efforts of Namami Gange to bring dolphin conservation to national attention have resulted in the announcement of "Project Dolphin" by Prime Minister Narendra Modi under the Ministry of Environment and Forests (MoEF). This project will be in-line with "Project Tiger" which has successfully helped in increasing the tiger population.

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AUSTRALIA
MORNING TRIBUNE

India, Bangladesh, Nepal, Myanmar join hands to enhance conservation of river dolphins Aug 25, 2020

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Namami Gange has given importance to biodiversity and ecological improvement along with pollution abatement and projects have been taken up for the improvement of fisheries with CIFRI and for biodiversity conservation with Wildlife Institute of India (WII). Under this framework, this is a first of its kind occasion where the fishery sector is leading dolphin conservation discourse.

River Dolphins a unique species found mainly in rivers of Asia and South America are vanishing rapidly. Gangetic Dolphin, the national aquatic animal of India has been declared endangered by International Union for the Conservation of Nature (IUCN). This webinar was organised to discuss the future strategy to conserve and revive these Dolphins with regional cooperation.

During the webinar on Professor AP Sharma, former Director ICAR-CIFRI, Barrackpore, highlighted the need to research on dolphin habitat restoration and Dr. Dilip Kumar, Former Vice-Chancellor, ICAR-CIFE, spoke about the social aspects of fishermen's life and Dolphins in rural India.

Among all the points that the speakers in the webinar agreed on, the most important fact was that a coordinated approach is needed for synergising transboundary efforts and to develop a regional program. Other highlights of the webinar included Fishery conservation efforts under NamamiGange through CIFRI would improve prey base in Dolphin habitat leading to enhanced Dolphin population. Livelihood improvement of fishermen to help them join conservation efforts and a coordinated approach needed for synergising transboundary efforts and to develop a regional program.

As the Sunderban delta is a unique ecological space where Gangetic, as well as Irrawaddy Dolphin, are present, spread over India as well as Bangladesh, the conference gave a unique opportunity to the speakers to share experience on the dolphins.

It was also supplemented by Myanmar and Chilika Lake authority in the context of the Irrawaddy Dolphin.

The webinar attended by over 1000 participants across the world featured lectures on "Conservative measure of Irrawaddy Dolphin in Myanmar" by Dr. Hla Win, DDG-Fisheries- Retired, Myanmar, "Status of Dolphins in Nepalese Rivers" by Dr Madhav K. Shrestha, Professor, Aquaculture AFU (Retired), Nepal and "National Atlas and Dolphin action plan- Bangladesh" by Professor Md. A Aziz, Prof Benazir Ahmed, Senior expert from Bangladesh amongst other well-known global scholars. (ANI)

THE HINDU
BusinessLine

Experts discuss ways to conserve river dolphins

PTI New Delhi | Updated on August 26, 2020 Published on August 26, 2020

"The most important thing to focus on now is community participation along with scientific interventions"

Experts from India, Bangladesh, Nepal and Myanmar on Tuesday discussed ways to conserve river dolphins, the National Mission for Clean Ganga said.

A webinar on 'Exploring the impact of Covid-19 on the ecosystem health of rivers and its dolphin population: Present status and future strategy for conservation in India-Bangladesh-Myanmar-Nepal' was organised.

National Mission for Clean Ganga (NMCG) Director General Rajiv Ranjan Mishra, shared his experiences on dolphin conservation linking its importance in rejuvenation of the Ganga.

It was conducted by the NMCG, Inland Fisheries Society of India, Indian Council for Agricultural Research-Central Inland Fisheries Research Institute (ICAR-CIFRI), Professional Fisheries Graduates Forum (PFGF) and the Aquatic Ecosystem Health and Management Society.

Historically, the Gangetic dolphin was distributed throughout the Ganga, Brahmaputra and Karnaphuli-Sangu rivers and their tributaries in India, Nepal and Bangladesh, he said.

In India, the Gangetic dolphin is found downstream of Bijnore barrage and tributaries like the Ramganga, Yamuna, Gomti, Ghaghara, Rapti, Son, Gandak, Kosi; and the Brahmaputra river.

The most important thing to focus on now is community participation along with scientific interventions, he stressed.

"Namami Gange has given importance to biodiversity and ecological improvement along with pollution abatement and projects have been taken up for improvement of fisheries with CIFRI and for biodiversity conservation with Wildlife Institute of India (WII).

"Under this framework, this is a first of its kind occasion where the fishery sector is leading the dolphin conservation discourse," he said.

This webinar was organised to discuss the future strategy to conserve and revive these dolphins with regional cooperation, the statement said.

For the conservation of dolphins, Prime Minister Narendra Modi recently announced 'Project Dolphin'

The webinar was attended by more than 1,000 participants across the world, according to the statement.

Lectures on 'Conservative measure of Irrawaddy Dolphin in Myanmar', 'Status of dolphins in Nepalese River' and 'National Atlas and dolphin action plan- Bangladesh' were the highlights of the conference.

"The conference resolved to continue this regional and multi sectoral collaboration. The rich discussion would be very helpful in developing contours of the 'Project Dolphin' in India," the statement added.

In his address, ICAR-CIFRI Director B K Das stated that the discussion would enhance dolphin conservation in the south-east Asian regional countries.

ICAR DDG (Fisheries Science) J K Jena emphasised that with less disturbance and interference, dolphins could thrive on their own and that is what is being seen during the lockdown.

"These animals do not realise boundaries and have tried to find habitat wherever possible. Hence, regional cooperation is very important in conserving them," he said.

River dolphins, a unique species found mainly in rivers of Asia and South America, are vanishing rapidly.

Gangetic dolphin, the national aquatic animal of India, has been declared endangered by the International Union for the Conservation of Nature (IUCN).

The Sundarbans delta is a unique ecological space where the Gangetic as well as the Irrawaddy dolphin are present, the statement said.

The conference gave a unique opportunity to share experience on the Dolphins. It was also supplemented by Myanmar and Chilika Lake authority in the context of the Irrawaddy Dolphin, it added.

Experts from four nations including India come together to enhance conservation of river dolphins
In Focus

Mirror Now Digital

Updated Aug 25, 2020 | 17:56 IST

New Delhi: Paving the way for regional cooperation, experts from the four nations-India, Bangladesh, Nepal and Myanmar, have come together to enhance the conservation of river dolphins in the region.
The issue of river dolphin conservation was discussed during a webinar on "Exploring the impact of COVID-19 on the ecosystem health of rivers and its dolphin population: Present status and future strategy for conservation in India-Bangladesh-Myanmar-Nepal" organised by Inland Fisheries Society of India (ICAR), a Central Inland Fisheries Research Institute, National Mission for Clean Ganga, Professional Fisheries Graduates Forum (PFGF) and Aquatic Ecosystem Health and Management Society.

River Dolphins, a unique species found mainly in rivers of Asia and South America, are vanishing rapidly. While, the Gangetic Dolphin, the national aquatic animal of India, has been declared endangered by International Union for the Conservation of Nature.

The webinar began with a welcome address by Dr BK Das, Director, ICAR-CIFRI who gave a brief about the aim and objectives of this webinar. Dr Das said that the webinar would enhance the dolphin conservation in the South East Asian Regional Countries. Dr JK Jena, Deputy Director General (Fisheries Science), ICAR, in his address emphasised that dolphins can thrive on their own with less disturbance and interference and that was visible during the lockdown. Jena said, "These animals do not realise boundaries and have tried to find habitat wherever possible. Hence, regional cooperation is very important in conserving them."

Dr BC Chaudhury, (Retired) Principal Scientist, Wildlife Institute of India (WII) also gave a historical overview of the research done on dolphins so far.

Rajiv Ranjan Mishra, Director General, Namami Gange shared also his experiences on dolphin conservation linking its importance in the rejuvenation of Ganga. Continuous efforts of Namami Gange to bring dolphin conservation to national attention have resulted in the announcement of "Project Dolphin" by Prime Minister Narendra Modi under the Ministry of Environment and Forests (MoEF). This project will be in-line with "Project Tiger" which has successfully helped in increasing the tiger population.

Namami Gange has given importance to biodiversity and ecological improvement along with pollution abatement, and took up projects for the improvement of fisheries with CIFRI and for biodiversity conservation with WII. Under this framework, this is a first-of-its-kind occasion where the fishery sector is leading dolphin conservation discourse.

Prof AP Sharma, Ex-Director ICAR-CIFRI, Barrackpore, highlighted the need to research on dolphin habitat restoration while Dr Dilip Kumar, former Vice-Chancellor, ICAR-CIFE, spoke about the social aspects of fishers life and dolphin in rural India.

Sunderban delta is a unique ecological space where Gangetic as well as Irrawaddy dolphins are present spread over India as well as Bangladesh. The latest conference gave a unique opportunity for experts to share experience on the dolphins.

The webinar was attended by more than 1,000 participants across the world. Lectures on "Conservative measure of Irrawaddy Dolphin in Myanmar" by Dr Hla Win, DDG-Fisheries-Retired, Myanmar, "Status of Dolphins in Nepalese Rivers" by Dr Madhav K Shrestha, Professor, Aquaculture AFU (Retired), Nepal and "National Atlas and Dolphin action plan-Bangladesh" by Professor Md A Aziz, Prof Benazir Ahmed, senior expert from Bangladesh, amongst other well-known global scholars were the highlights of the conference.

BW BUSINESSWORLD

India, Bangladesh, Nepal, Myanmar Join Hands To Enhance Conservation Of River Dolphins

India, Bangladesh, Nepal, Myanmar join hands to enhance conservation of river dolphins

25August, 2020

by ANI

New Delhi [India], Aug 25 (ANI): Experts from four countries -India, Bangladesh, Nepal and Myanmar have joined hands to enhance conservation of river dolphins in the region, paving way for regional cooperation.
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During the session, Dr JK Jena, DDG (Fisheries Science), ICAR said, "These animals do not realise boundaries and have tried to find habitat wherever possible. Hence, regional cooperation is very important in conserving them."
Rajiv Ranjan Mishra, Director General, Namami Gange also shared his experiences on dolphin conservation linking its importance in the rejuvenation of Ganga. Continuous efforts of Namami Gange to bring dolphin conservation to national attention have resulted in the announcement of "Project Dolphin" by Prime Minister Narendra Modi under the Ministry of Environment and Forests (MoEF). This project will be in-line with "Project Tiger" which has successfully helped in increasing the tiger population.
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River Dolphins a unique species found mainly in rivers of Asia and South America are vanishing rapidly. Gangetic Dolphin, the national aquatic animal of India has been declared endangered by International Union for the Conservation of Nature (IUCN). This webinar was organised to discuss the future strategy to conserve and revive these Dolphins with regional cooperation.

During the webinar on Professor AP Sharma, former Director ICAR-CIFRI, Barrackpore, highlighted the need to research on dolphin habitat restoration and Dr. Dilip Kumar, Former Vice-Chancellor, ICAR-CIFE, spoke about the social aspects of fishermen's life and Dolphins in rural India.
Among all the points that the speakers in the webinar agreed on, the most important fact was that a coordinated approach is needed for synergising transboundary efforts and to develop a regional program.
Other highlights of the webinar included Fishery conservation efforts under NamamiGange through CIFRI would improve prey base in Dolphin habitat leading to enhanced Dolphin population. Livelihood improvement of fishermen to help them join conservation efforts and a coordinated approach needed for synergising transboundary efforts and to develop a regional program.
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India, B'desh, Nepal join hands over conservation of river dolphins

ANI

26th August 2020, 10:55 GMT+10

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YAHOO! NEWS

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Outlook

Experts discuss ways to conserve river dolphins

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A webinar on "Exploring the impact of COVID-19 on the ecosystem health of rivers and its dolphin population: Present status and future strategy for conservation in India-Bangladesh-Myanmar-Nepal" was organised.

National Mission for Clean Ganga (NMCG) Director General Rajiv Ranjan Mishra, shared his experiences on dolphin conservation linking its importance in rejuvenation of the Ganga.

It was conducted by the NMCG, Inland Fisheries Society of India, Indian Council for Agricultural Research-Central Inland Fisheries Research Institute (ICAR-CIFRI), Professional Fisheries Graduates Forum (PFGF) and the Aquatic Ecosystem Health and Management Society.

Historically, the Gangetic dolphin was distributed throughout the Ganga, Brahmaputra and Karnaphuli-Sangu rivers and their tributaries in India, Nepal and Bangladesh, he said.

In India, the Gangetic dolphin is found downstream of Bijnore barrage and tributaries like the Ramganga, Yamuna, Gomti, Ghaghara, Rapti, Son, Gandak, Kosi; and in Brahmaputra river.

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LATESTLY

India, Bangladesh, Nepal, Myanmar Join Hands to Enhance Conservation of River Dolphins

Agency News ANI| Aug 25, 2020 11:42 PM IST

New Delhi [India], Aug 25 (ANI): Experts from four countries -India, Bangladesh, Nepal and Myanmar have joined hands to enhance conservation of river dolphins in the region, paving way for regional cooperation.

A webinar on "Exploring the impact of COVID-19 on the ecosystem health of rivers and its dolphin population: Present status and future strategy for conservation in India-Bangladesh-Myanmar-Nepal" was organised by Inland Fisheries Society of India, ICAR - Central Inland Fisheries Research Institute, National Mission for Clean Ganga, Professional Fisheries Graduates Forum (PFGF) and Aquatic Ecosystem Health and Management Society.

During the session, Dr JK Jena, DDG (Fisheries Science), ICAR said, "These animals do not realise boundaries and have tried to find habitat wherever possible. Hence, regional cooperation is very important in conserving them."

Rajiv Ranjan Mishra, Director General, Namami Gange also shared his experiences on dolphin conservation linking its importance in the rejuvenation of Ganga. Continuous efforts of Namami Gange to bring dolphin conservation to national attention have resulted in the announcement of "Project Dolphin" by Prime Minister Narendra Modi under the Ministry of Environment and Forests (MoEF). This project will be in-line with "Project Tiger" which has successfully helped in increasing the tiger population.

Namami Gange has given importance to biodiversity and ecological improvement along with pollution abatement and projects have been taken up for the improvement of fisheries with CIFRI and for biodiversity conservation with Wildlife Institute of India (WII). Under this framework, this is a first of its kind occasion where the fishery sector is leading dolphin conservation discourse.

River Dolphins a unique species found mainly in rivers of Asia and South America are vanishing rapidly. Gangetic Dolphin, the national aquatic animal of India has been declared endangered by International Union for the Conservation of Nature (IUCN). This webinar was organised to discuss the future strategy to conserve and revive these Dolphins with regional cooperation.

During the webinar on Professor AP Sharma, former Director ICAR-CIFRI, Barrackpore, highlighted the need to research on dolphin habitat restoration and Dr. Dilip Kumar, Former Vice-Chancellor, ICAR-CIFE, spoke about the social aspects of fishermen's life and Dolphins in rural India.

Among all the points that the speakers in the webinar agreed on, the most important fact was that a coordinated approach is needed for synergising transboundary efforts and to develop a regional program. Other highlights of the webinar included Fishery conservation efforts under NamamiGange through CIFRI would improve prey base in Dolphin habitat leading to enhanced Dolphin population. Livelihood improvement of fishermen to help them join conservation efforts and a coordinated approach needed for synergising transboundary efforts and to develop a regional program.

As the Sunderban delta is a unique ecological space where Gangetic, as well as Irrawaddy Dolphin, are present, spread over India as well as Bangladesh, the conference gave a unique opportunity to the speakers to share experience on the dolphins.

It was also supplemented by Myanmar and Chilika Lake authority in the context of the Irrawaddy Dolphin.

The webinar attended by over 1000 participants across the world featured lectures on "Conservative measure of Irrawaddy Dolphin in Myanmar" by Dr. Hla Win, DDG- Fisheries- Retired, Myanmar, "Status of Dolphins in Nepalese Rivers" by Dr Madhav K. Shrestha, Professor, Aquaculture AFU (Retired), Nepal and "National Atlas and Dolphin action plan- Bangladesh" by Professor Md. A Aziz, Prof Benazir Ahmed, Senior expert from Bangladesh amongst other well-known global scholars. (ANI)

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Our Eminent Speakers (Invited)


Dr. Hla Win

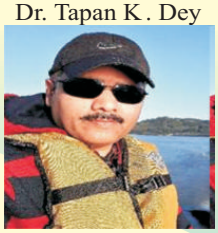

Dr. M.K. Shrestha


Dr. Tapan K. Dey


Dr. Md. A. Aziz


Dr. Syed Istiak


Dr. Danielle Kreb


Dr. Abdul Wakid

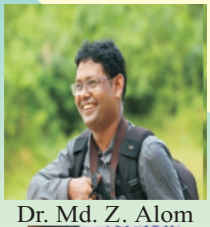

M. Monirul H. Khan


Md. Modinul Ahsan


Dr. A.K. Pattnaik


Prof. Ram Kumar


Dr. Ruchi Badola


Dr. Md. Z. Alom


Dr. Syed A. Hussain

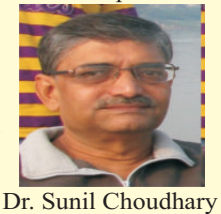

Dr. Shyama P. Biswas

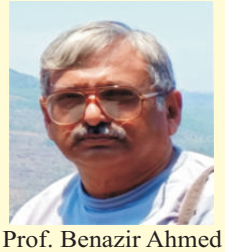

Dr. Sandeep Behera


Dr. V. R. Chitranshi


Dr. Suresh Babu S.V.


Dr. B. B. Nayak


Dr. Sunil Choudhary


Prof. Benazir Ahmed


Dr. B.K. Das