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EDITORIAL

NATION'S PRIDE GANGA AND BENGAL'S PRIDE HILSA

The Himalayas are home to the world's mightiest rivers, including the river Ganga. The Ganga stands out as a symbol of life, culture, and spirituality from ancient ages to modern times. According to the mythology it originates from "Jata" (plaited hair) of Lord Shiva which is situated at the icy slopes of the Gangotri Glacier and traverses 2,525 kilometres, a vast expanse of India (five states: Uttarakhand, Uttar Pradesh, Bihar, Jharkhand, and West Bengal) which nurtures both nature and humanity. The river finally passes through the holy places (Badrinath, Gangotri, Yamunatri, Haridwar, Rudraprayag, Varanasi, Prayagraj Sangam, Nabadwip, Dakshineswar, Gangasagar) through its different tributaries and distributaries such as Alakananda, Yamuna, Mandakini, Bhagirathi, Gomti, Kosi, Sone, Ramganga etc. and finally drained at Gangasagar to Bay of Bengal where Kapilmuni Ashram is situated. Revered as "Ganga Ma" (Mother Ganga), the river is believed to cleanse sins and purify souls. Its sacred waters are used in numerous Hindu rituals, from births to deaths. To bathe in the Ganga is considered a path to salvation, and millions gather along its ghats during festivals like Kumbh Mela at Prayagraj Sangam and Makar Sankranti in Gangasagar. The river not only provides life to the large Indian populace but also gives ecosystem services in terms of socio-cultural and economic aspects in general.

Recognizing the urgent need for protecting its prestine condition especially the biodiversity, the Government of India initiated the National Mission for Clean Ganga (NMCG) under the Namami Gange program. Supported by the World Bank-funded National Ganga River Basin Project (NGRBP), these initiatives aim to restore the river's ecological and geological integrity. The Vision for Ganga Rejuvenation constitutes restoring the wholesomeness of the river defined in terms of ensuring "Aviral Dhara" (Continuous Flow), "Nirmal Dhara" (Unpolluted Flow), Geologic and ecological integrity. Major interventions involve setting up sewage treatment plants, regulating industrial discharge, rejuvenating biodiversity, and promoting afforestation along the riverbanks. On December 14, 2019, the National Ganga Council (NGC) introduced a transformative concept known as Arths Ganga, translating to "Economic Ganga". This sustainable development model aims to create an economic bridge between the river Ganga and the millions who depend on it, ensuring that economic prosperity and ecological conservation go hand in hand. Implementation of these initiatives is aimed at developing a sustainable development model with a focus on economic activities related to the river Ganga.

ICAR-Central Inland Fisheries Research Institute (CIFRI), from 2016 onwards, has been significantly contributed towards upkeeping the Nirmal Dhara and Artha Ganga concept of Namami Gange contributing through different projects, which are now being executed in the third phase, tune of Rupees 51 crores in a holistic approach from biodiversity to ecology to sustainability to river ranging programme. From 2016 to 2025 ICAR-CIFRI ranched 148.97 Lakh Indian Major Carp throughout the river Ganga covering all the states from Uttarakhand to West Bengal. The institute also engaged with in-situ conservation of small Indigenous fish species of Ganga such as Punti, Pabda etc. In the Uttarakhand state, ICAR-CIFRI also taken initiatives to conserve Mahseer fish. Through awareness programmes in different river banks, schools, colleges and market places ICAR-CIFRI sensitized around 65,304 fishermen actively engaged in fishing. The institute has recorded 215 fish species in the river Ganga. Among these, Hilsa *Tenualosa ilisha* which is known as the State fish of West Bengal carries significant importance in term of socio-cultural, economical, and Nutritional aspects.

Matsya is the first of the ten avatars of the Hindu god Vishnu, which is depicted as a fish. The Hilsa shad (*Tenualosa ilisha*) denoted as Bengal's Pride is one of the most important and economical fish species of the river Ganga. In West Bengal, *ilish* (local name of Hilsa) is more than just a food; it is considered holy in Bengali culture as a sacrifice to the goddess during Durga Puja, Saraswati Puja, Lakshmi Puja symbolises auspiciousness and prosperity. The phrase "Macher Raja Ilish" (Hilsa is the king of fish) is commonly heard, underscoring its exalted status. The tradition of Jamai Shoshti, weddings and other happy celebrations often includes Hilsa as cultural heritage.

Apart from the main Ganga river channel Hilsa is found in different tributaries of Ganga i.e. Haldi, Icchamati, Matlah, Jalangi, Churni, Damodar, Rupnarayan and some other main rivers i.e. Bhrahamaputra, Narmada, Narmada, Tapti, Purna, Ulhas, Kali, Torsha, Mahananda, Raimangal and Thakurain. The fish is a major source of income for thousands of fishermen and traders. Areas along the Hooghly River and other deltaic regions are hubs for Hilsa fishing, processing, and distribution. Hilsa is also a lucrative export commodity, highly sought after in countries like Bangladesh, Myanmar, and the Middle East. The fish's economic value has led to its nickname, "Silver of Bengal," reflecting its importance as both a delicacy and a trade resource.

The Hilsa catch has been declining in India daily, including West Bengal. According to the most recent data from the FAO in 2021, it is estimated that Bangladesh's share of global Hilsa production has risen to 97.01% from 86% in 2018, while India's has decreased to 2.41% from 8% in 2018. West Bengal is the leading region in India for Hilsa production, contributing 70–80% of the total Hilsa production. In 2012, the annual production was approximately 12,000 tonnes, a significant drop from 80,000 tonnes in 2001. By 2021, India's Hilsa production further decreased to about 14,000 tonnes, accounting for only 2.41% of Hilsa global output. Despite that, West Bengal frequently falls short of meeting its demand and relies on imports of Hilsa from neighbouring Bangladesh. The conservation of Hilsa is critical for both economic reasons and livelihood in India, making its declining catch a major national concern and driving efforts to preserve the species. Realizing the importance, ICAR-CIFRI has taken numerous initiatives for the rejuvenation of the Hilsa fishery under the NMCG project. Starting from in-vitro fertilization of Hilsa to ranching of spawn at river Ganga ICAR-CIFRI has taken every effort to re-establish the Hilsa population in India. Till December 2024, ICAR-CIFRI ranched 1.42 lakhs adult Hilsa and 39.59 lakhs Hilsa spawn in different places of West Bengal. ICAR-CIFRI also ranched Hilsa in the upper stream of Farakka Barrage in river as after the establishment of Farakka Barrage Hilsa migration was restricted to upper stretches. Raising public awareness about the importance of Hilsa conservation, the ban period and mesh size regulation through educational initiatives and collaboration with NGOs are the most important initiatives taken by the institute. ICAR-CIFRI has already carried out 1632 awareness programme on Hilsa, Dolphin and Biodiversity conservation in river Ganga. ICAR-CIFRI also carried out the Hilsa tagging and already tagged 5122 Hilsa to track their survival and migration patterns. These significant holistic approaches towards reestablishment of Hilsa species in the river Ganga not only revive the cultural iconic species of the Bengal but also revive the biodiversity of the river Ganga, the nation's pride. ❐

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Principal Scientist, ICAR-Central Institute of Freshwater Aquaculture, Bhubaneswar, 2009-2016. His main field of research includes Aquaculture & Molecular Immunology, Fish Health Management, Inland Fisheries. Dr. Das Developed Linkages with Worldfish, NACA, FAO, GIZ, SAARC, BOBP, IUCN, World Bank, RMIT University, Waterloo University, University of Manitova, University of Aberdeen, TWAS, MoEF &CC, Ministry of Jalshakti, DoF, NMCG, NFDB, CPCB, CWC, State Fisheries Departments. Guided 25 Ph.D. and 35 Masters students including 2 post Doc and 2 international students. Signed 11 MOU with the Govt. department, 3 MoU for commercial, 7 MoU for consultancy project. 2 MoU for research collaboration and 3 MOU for academic and research collaboration. More than 355 international publications having Citations–12895, h-index – 50, i10 index – 216. Received Awards/ Honours like Jawaharlal Nehru Award for outstanding post graduate research conferred by ICAR 1999; Lal Bahadur Shastri Young Scientist Award conferred by ICAR for the biennium 1999- 2000; Dr. Hiralal Chaudhuri Annual Awards 2001-2002; DBT Overseas Associateship 2005; Krushakbandhu Award by Orissa Krushak Samaj 2011; Dr. M.S. Swaminathan Award for Best Indian Fisheries Scientist by Professional Fisheries Graduates Forum 2011; Krushi Ratna Award from Orissa Krushak Samaj 2016; Eminent Zoologist of the Year Award by Zoological Society of India 2017; Krushak Gourav Award from Orissa Krushak Samaj 2017;Cashless Award for making ICAR-CIFRI a Cashless Office, ICAR, New Delhi, 2017; Ganesh Chandra Vidyarthi Award for Hindi Journal, Nilanjali, ICAR, New Delhi, 2018; Best annual Report Award of ICAR-CIFRI, ICAR, New Delhi, 2019; Sardar Patel Outstanding ICAR Institution Award-2020 under Large Institute Category, ICAR, New Delhi, 2020; Rafi Ahmed Kidwai Award for Outstanding Research in Agricultural Sciences under Animal & Fisheries Sciences Category, ICAR, New Delhi, 2020; Ganesh Chandra Vidyarthi Appreciation Award for Hindi Journal, Nilanjali, ICAR, New Delhi, 2020; Agri-Food Empowering India awards 2021; Special Felicitation for outstanding and exceptional contribution to the Nation by State Bank of India, 2022. He is a Fellow of the International Society for Environmental Protection (ISEP); Member, Executive Council, India Science Congress Association for the year 2020-2021; Member, The National Academy of Sciences, India.

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Dr. Amiya Kumar Sahoo is currently working as a Senior Scientist in the Riverine and Estuarine Fisheries Division at ICAR-Central Inland Fisheries Research Institute, Barrackpore. Since more than 15 years, he has been working in the area of Hilsa fisheries and aquaculture, Ecohydrology under climate change, and Environmental flows. Dr. Sahoo has wide working experience in hilsa fisheries conservation in different rivers including rivers Mahanadi, Ganga, and Narmada, particularly on the impact of dams on the Hilsa migration. Dr. Sahoo initiated the first-ever regional collaboration on Hilsa fisheries and aquaculture with Bangladesh and Norway. Currently under the Bay of Bengal (BOBP) programme, including Myanmar, Bangladesh, and India, Hilsa fisheries research activities have been initiated for a period of three years to develop a regional hilsa fisheries management plan. Dr. Sahoo has been involved in multi-national mission projects, including the National Mission for Clean Ganga (NMCG) and National Antimicrobial Resistance Initiatives. He has made an immense contribution towards the conservation of migratory fish species through technical guidance on fish pass, delineating the migratory path of fish through tagging and fish breeding. The major migratory fish species under investigation are Hilsa, Mahseer and Trouts. Dr. Sahoo is a recipient of many awards including the Fulbright Kalam Academic Excellence, Young Scientist Award from AFS, Padmashree S. Ayyappan gold medal award, ZSI Gold Medal, University Gold medal and fellow of JFLS and has more than 90 publications to his credit. He is currently serving as Guest Editor to Frontiers in Marine Biology. Dr Sahoo represents as a Technical member of the Expert Appraisal Committee, River Valley Project, MoEFCC and a Technical member of Biodiversity ISO certification and Farakka Barrage Authority.

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