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Hilsa shad (*Tenualosa ilisha*) fishery in the gangetic river systems and its potential for revival through adaptive co-management

Md. Abdul Wahab

WorldFish Bangladesh and South Asia, Bangladesh

Hilsa shad (*Tenualosa ilisha*), an anadromous fish, is the most popular national fish of Bangladesh and is harvested by over 0.5 million coastal small-scale fishers. The abundance of hilsa shad in different rivers in the Gangetic River systems gradually declined since middle of 1980 due to habitat degradation, water abstraction, pollution, reduced migratory routes and overfishing. Its scarcity has significant impacts on nutrition security, income and livelihoods of the millions of poor fishers and various stakeholders reliant on hilsa shad in the countries within the Bay of Bengal region. Owing to decline of hilsa fishery to as low as less than 2 million tons in 2002-2003, the Government of Bangladesh introduced Hilsa Fisheries Management Action Plan that included declaration of fish sanctuaries in different interconnected rivers to allow uninterrupted breeding and nursing of juveniles, enforced patrolling against the use of illegal small meshed nylon monofilament nets (*B. current jal*), and introduction of modest compensation, supply of food grains to the poor fishers during fishing ban period. While this has positive impacts on the hilsa production, the growth was limited to only 5% per year until 2013-2014. Considering the scarcity of supply of hilsa shad and national urge on its conservation and development, WorldFish jointly with the Department of Fisheries has been implementing a USAID funded ECOFISH-BD activity since June 2014 with the objective of improving the resilience of the Padma-Meghna River/Estuarine ecosystems and the fishers reliant on coastal hilsa shad fishery. The collaboration aimed to emphasize science-based decision-making, strengthen fisheries adaptive co-management, and enhance livelihood options of poor fishers. Through the establishment of adaptive co-management with fishing communities in partnership with stakeholders in six hilsa sanctuaries, resulted in an increased total hilsa catch by around 29% from 387,200 in 2015 to 500,000 MT in 2017; habitat-wise hilsa increased by 61% in the rivers and 11% in coastal waters. Anecdotal evidence suggests that the adaptive co-management measures taken in Bangladesh have also contributed to enhance hilsa catch in the Indian rivers as these are all part of the major Gangetic River systems. Our findings suggest that community engagement and enforcement that ensures spawning success and recruitment of juvenile hilsa has been sufficient towards a substantial improvement in the hilsa fisheries. While hilsa population apparently revived, the combination of local and transboundary approaches to management may further ensure its sustained production in the Gangetic River systems. The restoration of habitats through major river excavation programs, maintenance of uninterrupted water flows, control of pollution along the rivers courses around major cities and changes in the livelihoods of the fishers may ensure sustenance of enhanced hilsa shad production and help in nutrition, income and livelihood of the coastal vulnerable people of Bangladesh and the region. This research backed solutions to the declining fishery created resilience in the Padma-Meghna Rivers and livelihoods of the fishing communities through alternate income generating options. The creation of science-based information regarding the brood ban period, legal gears and mesh size strengthened decision making for compensation and enforcement. Local and international partners helped behavior change and transformation in 135 communities along six hilsa sanctuaries that refrained from juvenile and brood fish harvesting and enhanced recruitment and bumper production of hilsa fish over last two years. The lessons learned will help revival and sustain future small-scale fishery in the Gangetic River systems and may be useful elsewhere.

Biography

Md. Abdul Wahab is present at Professor of Limnology & in the department of Aquaculture Fisheries Management, Faculty of Fisheries Bangladesh Agricultural University (BAU), Mymensingh, Bangladesh he did Ph.D. in Aquaculture (Stirling, UK) Sustainable Aquaculture (Systems and Environment) his Area of Interest Water Quality Management, Periphyton-based Aquaculture, Integrated Pond Dyke Aquaculture-Agriculture, Environmental Impacts of Shrimp Aquaculture, Prawn & Nutrient-rich Small fish (SIS) culture, Hilsa Fishery, Climate Change & Fisheries, Floodplain Fisheries & Ecology he's 34 years (Teaching, Research & Extension). G. Students Supervision Supervised 105 masters, and 20 Ph.D. students (15 Ph.D. completed and 5at present) so far.

A.Wahab@cgiar.org