policy brief

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Integrated Floodplain Management

How can we save fish from being over fished in Bangladesh floodplains?

The floodplain fisheries have been supporting the livelihoods of rural poor over centuries are now under serious threat from over fishing.

Could fishing effort control measures be a sustainable solution to protect rapidly declining floodplain fisheries?

Putting research knowledge into practice

The floodplain fisheries and rural livelihoods

Bangladesh floodplains support rich and diverse fisheries comprising of over 300 fish and shrimp species, is recognized as one of the richest freshwater fisheries in the world, contributing nearly 50% to the country's total annual fish landing (see references). Diversity of fish species contributes to the diet as rural people consume around 75 varieties of species over the seasons.

As the largest aquatic commons in the world, Bangladesh's floodplain fisheries have been supporting the livelihoods of millions of rural poor households over centuries. Over 80% of rural households, at varying degrees, subsist on fishing and harvesting other resources from floodplains. Fish alone contribute 63% of animal protein, and various essential vitamin and mineral requirements in the diet of Bangladeshi people. Despite various constraints, poorer communities still manage to receive over 50% of the direct benefits, and share in many of the remaining benefits from floodplain fisheries.

The resource is in peril: making the poor more vulnerable

User communities and fisheries professionals recognize a fast declining trend in floodplain fisheries production and biodiversity due to various natural and anthropogenic causes (over fishing, shortage of dry season water, migration obstruction, siltation). Studies reveal that the production of major carps and large catfish (*Aair*, *Boal* etc.) declined by about 50% as compared to 30 years ago.

IUCN studies showed that 54 floodplain fish species are in danger of extinction. Current fisheries production in some floodplain areas ranges from 51-160 kg/ha/yr as opposed to an average desired production of around 300 kg/ha/yr that can be obtained from more balanced or semi-natural floodplains. The per capita fish consumption has also reduced by 38% among the poorest households in rural Bangladesh.

The annual loss of floodplain fish production in Bangladesh has been estimated to be 30-40% equivalent to Tk 500-1000 million

Increasing fishing effort: declining fisheries stock

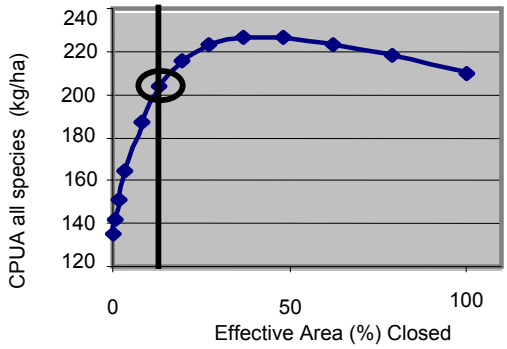
Among other problems, increased fishing effort coupled with destructive fishing practices are recognized by all concerned as the major problems, causing loss of year classes (most fish are caught before reaching 1 year of age) and brood stock at a level too low to support the fisheries at a sustainable level in the floodplains.

Studies revealed that the fishing pressure in Bangladesh floodplains is so high that less than 2% of produced fish survives until the end of each year

Fishing effort control: proved successful at community level

Closed area: An area in a given fisheries management unit that retains water year round is set aside as a no fishing zone, declared by the communities in consensus. Such closed areas may be defined as fish sanctuaries that can be enforced for long or short periods depending on the local hydrological regime and use pattern**.**

Research findings indicate that most benefits obtained after about 25% closed area, attaining a maximum with a closure between 30-40%. Even 10-15% area closure in deeper beel and river sections could increase catch by over 50% within 2-3 years of reserve establishment.



30- 40% best results: 10% dry season area is sufficient to sustain fisheries production. Modeling result, Pabna Irrigation project, MRAG.

Closed season: A certain period (days, weeks, months) is declared for no fishing in a given management unit. Closed seasons relate to protecting brood stock, allowing juvenile and young to attain maturity or protecting migrating fish. Closed season towards the end of the dry season/beginning of the flood season protect spawning fish and provide significant benefits with relatively small sacrifices. The best results can be obtained from closed season in early monsoon (2-3 months: within January-June) allowing fish to breed.

Selective gear restriction: Identify and restrict certain gears (e.g., *moshari jal*, *current jal*), which are considered harmful, for a certain period or in certain locations. For example, use of *moshari jal* (fine mesh seine net) during early monsoon flooding is very harmful as it traps the eggs, fry, and juveniles of all fish species in floodplains. *Veshal jal* use in *khals* in early monsoon targets migrating fish and affect the fisheries production much more than that of in other time of the year or in other locations.

Ban destructive fishing: There are various destructive methods being applied in wetlands all over the country affecting production and biodiversity. This includes complete dewatering of wetlands, bamboo fencing, blocking canals by fence and traps. In each management unit, communities should identify the destructive practices and set strong norms to stop or reduce fishing by complete dewatering and barriers that block migration routes completely.

Effort control: encouraging results from piloting

There are very significant gains from closed areas and closed seasons, mostly coming from increased recruitment due to the protection of brood stock. Most benefits are visible immediately after a closed season. Pre monsoon/late dry season closer protect the brood fish that spawn at the onset of monsoon and the fry, thus immediate impact, in terms of increased catch can be found by late or post monsoon

- The best result could be attained from 30-40% closed area as sanctuary, however 10% dry season area is sufficient to sustain fisheries production.
- The fish catch increases from a minimum of 25.4%, for a single-month closer in August, to a maximum 138% for a 3-month closer in the dry season (January-March).
- Two months closure in late dry-season (April-June) increases catch by 120%.
- Single-month closure is also very effective – longer closures may not be socially accepted.
- Communities accepted effort control options as effective and it proved to be enforceable.

Policy Recommendations

- Delineate and maintain around 10% dry season water area in the deeper part of floodplain beels and rivers as sanctuary.
- Ensure 2-3 months closures, late in dry season (within January to June), depending on the specific patterns of local hydrology, and catch.
- Incorporate conditions and penalties in *jalmohal* lease agreements for any destructive fishing method such as dewatering, fixed engine, *veshal jal* in fish migration routes, especially during early monsoon and draw down.
- Include *moshari/kafri/katha jal* (very fine mesh seine net) in the list of banned gears that is more destructive than current jal (already a banned gear) used in floodplains, especially during early monsoon.
- Ensure community participation through local institutions in decision making and maintaining the effort control measures.

Reference and Further reading

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This policy brief is prepared based on research findings of various projects aiming at improved floodplain resources management.

Further Information

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