

Bangladesh Fisheries: A Challenge to Resource Managers

Bangladesh's freshwater fishery resources generate over half a million tonnes (t) of fishery products per year. During the last decade, only China, India and the USSR have produced more freshwater fish than Bangladesh.

The country has a warm tropical monsoon climate with heavy rains, flooding, typhoons and occasional tidal waves from June to October. With 144,000 km² of land and 4.4 x 10⁶ ha of water bodies, over 14 x 10⁶ t of rice and 0.75 x 10⁶ t of fishery products a year are produced (Table 1). The abundant rivers, lakes, ponds, reservoirs, beels (small natural depressions), haors (big natural depressions), and marshy areas, together with overall geographic location, climate and ecological conditions, produce in Bangladesh a unique ecosystem with one of the richest inland fishery resources and largest floodplains in the world.

Table 1. Production estimates of inland and marine fresh fish in Bangladesh (t x 10³).

	Inland	Marine	Total
1970-1971	729	85	814
1971-1972	729	95	824
1972-1973	731	87	818
1973-1974	732	88	820
1974-1975	733	89	822
1975-1976	545	95	640
1976-1977	541	100	641
1977-1978	533	110	643
1978-1979	527	118	645
1979-1980	524	122	646
1980-1981	525	125	650
1981-1982	556	130	686
1982-1983	583	141	724
1983-1984	577	174	751

Source: Department of Fisheries (DOF), Ministry of Livestock and Fisheries, Bangladesh.

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Boat transporting fish along the Surma river near Shylet (northeast of Bangladesh). Photo by M. Aguero.

Bangladesh, however, is a relatively small country, and its population of over 100 x 10⁶ persons results in a mean density of 675 persons per km². The scarcity of land and space becomes even worse during the monsoon period (June to October) when the heavy rainfall and huge amounts of water carried by rivers from the Himalayas submerge more than one-third of the country beneath floodwaters of up to 5 m deep.

Fisheries in Bangladesh are the most important source of animal protein (80%), generate considerable employment and foreign exchange, and offer good potential for improved production and social welfare. The fisheries provide full-time employment to more than 1.1 x 10⁶ people and over 10 x 10⁶ more are involved in fishery-related activities on a part-time basis. Shrimp exports provide nearly 9% of the value of total national exports.

Inland Production

The fish usually spawn at the headwaters of streams, making the best use of the flood water runoff during the monsoon season for dispersal of their offspring. The inundated basins and fields provide rich feeding grounds for growth during the warmer season.

During winter, the numerous canals, beels and rivers in the lowlands provide fish with food and shelter. Fish are trapped in the beels when the water recedes, thus increasing their density and vulnerability to fishing gear.

Interference in this natural river-floodplain ecosystem may have strong negative effects on fisheries in floodplain and perennial waters.

After the monsoon period, flood waters drain through the river system to the Bay of Bengal, resulting in 1.3 million ponds, haors, beels, baors (ox-bow lakes) and lakes, as well as numerous rivers. Table 2 shows areas of inland fish production in Bangladesh.

Table 2. Areas of inland fisheries in Bangladesh.

Type of area	Area (ha)
Ponds and tanks	136,032
Natural depressions (beels and baors)	293,117
Reservoirs	90,688
Rivers and canals	830,040
Paddy fields under water	3,521,296
Total	4,871,173

Source: Department of Fisheries (DOF), Ministry of Livestock and Fisheries, Bangladesh.

Rough estimates by the FAO and World Bank indicate that through culture-based fisheries and efficient use of the wide variety of water bodies, it is possible to obtain an increased production of about 300,000-330,000 t/year; fishfarming is estimated to be able to yield an additional 120,000 t/year.

Nonetheless, the inland fisheries in Bangladesh are facing increasingly severe problems derived from overfishing, pollution, sedimentation, flood and tidal control projects, excessive removal of surface water for irrigation, large-scale reclamation of haors, beels and other depression areas for crop production, and most importantly, increasing inequity in the distribution of benefits among users of the resources.

Increasing use of pesticides for more efficient crop production has polluted the waters. Emphasis on rice production is accelerating the process of drying out beels, haors, ponds and lakes and has resulted in premature fish harvests.

Finally, short-term revenue-oriented water/fish access management policies, designed mainly to raise government funds, have not considered the renewable character of fish resources, and have resulted in excessive fishing effort levels. These management policies would probably produce more medium-term costs than benefits. They have also failed to consider important sociocultural and economic relationships; instead they have generated a network of social and economic linkages among resource users (fishermen, middlemen, processors, con-



Artisanal fishermen pulling a net as they sing traditional songs. Photos by M. Aguero.

sumers) which seem to be perpetuating and worsening the very inequitable distribution of benefits among them.

Bangladesh inland fisheries present the complex set of dynamic, multivariate, randomly variable and cyclical factors about which resource managers often speculate and build theories but which they can rarely improve. Yet, the population is expected to reach 120×10^6 by the year 2000, requiring at least 1×10^6 t of fish just to maintain the present low level of consumption of 21 g/day. The challenge to resource managers is obvious. Fisheries management will need an integral approach, based on firm knowledge of the many factors affecting fish yields. It will require teamwork rather than the usual compartmentalization of government departments common to so many countries; it will require a clear conviction to break existing linkages at the institutional, social and economic level. Finally, it will require the patience to evaluate results over a long period rather than over a short term only.

Fisheries Management Plan

The Bangladesh Ministry of Livestock and Fisheries has, therefore, decided to implement a new Management Plan for Fisheries with an admirable conviction and integral long-run perspective. The novelty of the policy lies not so much on the specific instruments and mechanisms to be used but on the strategy to follow.

An initial two-year management program will be conducted on a trial basis at several sites representing different physical/geographical as well as socio-cultural conditions. Alternative management schemes will be applied to each site and close monitoring of the management program will be conducted to evaluate its performance. Results will be used to reinforce or modify the long-term management policy.

Moreover, recognizing the need for independent evaluation, the Government has agreed to work on this novel venture with national professional consultants working in association with ICLARM.

The Ford Foundation (Bangladesh Office) has played a key role in raising the funds for this unique program and in bringing together government authorities, nongovernmental organizations, highly qualified national professionals and the experience of ICLARM in fisheries management in this future joint collaborative activity.

The results and experience to be gained during these initial two years will not only provide the necessary empirical information for the long-term fishery policy of Bangladesh but will also shed light on possible measures for successful management and small-scale fisheries in other countries facing similar problems. ●



Dead end of a river. Semi-dry branch of a river separated from the main course by a recent embankment.