

Shrimp Fisheries of Bangladesh

Introduction

Bangladesh has more than 1.58 million ha of perennial waters, 2.83 million ha of seasonal inland waters and 480 km of coastline. Both inland and offshore waters of Bangladesh retain a good potentiality of shrimp fisheries. In 1982-83, shrimp ranked second in foreign exchange earnings of Taka (Tk)* 1,500 million, next to jute. Approximately 11,000 to 12,000 t of headless shrimps are annually produced both from culture and capture sources, of which about 75-80% is exported.

The standing stock of shrimps in Bangladesh continental shelf is estimated to be approximately 9,000 t. This does not include the rich shrimp fauna of more than 13,000 km² of brackishwaters in the Ganges-Brahmaputra delta.

There are four shrimp grounds in the Bay of Bengal with a maximum sustainable yield of 2,000 to 4,000 t: "Swatch of no Ground," the western side of the "Kahinor Ground," Saint Martin and the Elephant Point.

The most important gears used for catching shrimps are the drag net, seine net, trawl net, fixed purse net, stake net, framed or dip net and cast net.

Shrimp Species in Bangladesh

To date, 45 species are recorded of which 26 are marine shrimps, 13 are freshwater shrimps and 6 are brackish-water shrimps. Of the 45 species, 11 are commercially important species—*Palaeomon (Exonalaemon) styliferus* (H. Milne Edwards); *Macrobrachium rosenbergii* (de Man); *M. malcolmsonii* (Edwards); *M. villosimanus* (Tiwari); *M. rude* (Heller); *M. mirabile* (Kemp); *M. lamarrei* (Edwards); *Penaeus monodon* (Fabricius); *P. indicus* (Edwards); *Metapenaeus monoceros* (Fabricius) and *M. brevicornis* (Edwards).

Shrimp Export

Shrimps make a significant contribution to Bangladesh export and foreign exchange earnings. Shrimps are now

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exported to America, Japan, the United Kingdom, France, Thailand, Hongkong, Malaysia, Singapore, Saudi Arabia, Sudan and Pakistan (Table 1).

Table 1. Shrimp exports, 1972-1983. (Source: Export Promotion Bureau)

Year	Shrimp (frozen)	
	Quantity (tonnes)	Value (Tk. millions)
1972-1973	NA	22.60
1973-1974	NA	33.31
1974-1975	NA	23.81
1975-1976	NA	145.02
1976-1977	NA	246.20
1977-1978	3,155	253.08
1978-1979	4,716	446.44
1979-1980	4,214	529.35
1980-1981	5,442	549.54
1981-1982	6,794	904.40
1982-1983	8,964	1,466.70

Shrimp Culture Overview

Freshwater shrimp culture. Wild fry or juveniles of freshwater shrimps (*M. rosenbergii*) enter ponds, tanks, burrow pits and paddy fields through flood waters together with wild fish. These shrimps grow in these bodies of water and are harvested when the water level has subsided. Recently, interest in freshwater shrimp culture began to surge. Particularly in the districts of Khulna, Barisal, Patuakhali, Chittagong and Jessore, juveniles of *M. rosenbergii* are cultured in ponds with carp. Stocking density is 7,500/ha and per ha production is about 37-50 kg.

Juveniles of freshwater shrimps are sold at Tk. 600-800/thousand.

Marine shrimp culture. Marine shrimp culture is still a traditional process in Bangladesh. About 28,000 ha of land in the tidal zone are used to trap and raise *P. monodon*, *P. indicus* and *M. monoceros*. Of this land, 16,000 ha are located in three subdivisions within Khulna District while the rest are in Chittagong District.

Shrimp farming is done on these lands in rotation with transplanted aman paddy production (as in Khulna) or with salt (as in Chittagong). In Khulna, low-lying areas both inside and outside of polders which can be easily flooded and drained are used for *P. monodon* culture. Low earthen dikes of 1.2 m are constructed around such low-lying regions encircling areas usually ranging from 33 to 53 ha

in one rearing unit. Each rearing unit is locally called *gher*. The number of sluice gates depends on the size of the *gher*. Land within the *ghers* are leased by a large number of small farmers annually. Both shrimp postlarvae and fish juveniles are allowed to enter the diked area through sluice gates.

Shrimp culturists also stock tiger shrimp (*P. monodon*) postlarvae by collecting from nearby rivers or by purchasing from shrimp seed traders. Artificial stocking rate is done 25,000-37,500/ha. One thousand postlarvae cost Tk. 250-350. The tiger shrimp culture season starts in January and ends in July. Stocking and partial harvesting methods are then repeated.

Shrimp culture operations in Chittagong District are centered around Cox's Bazar subdivision. Most of the existing shrimp culture activities take place on salt-drying beds during the monsoon season (May to October) when salt production is not possible. Tidal mud-flats and mangrove swamps are also used for construction of shrimp ponds. Shrimp ponds at Cox's Bazar are large and

*US\$1 = 3.18 Tk. as of March 1985

shallow. The small embankments utilized in channeling water for salt production are raised a few feet to form shrimp ponds. Generally, wooden or bamboo sluices are installed on the embankment for the purpose of flooding and draining shrimp ponds. Entering waters are generally unfiltered allowing many predatory species, as well as food competitors, to enter. The shrimp culture season starts in May and ends in October. Table 2 shows shrimp production in different Bangladesh areas in 1983.

Shrimp Processing*

Frozen shrimps are a high-priced exportable product of Bangladesh. There are 25 freezing plants in Chittagong and 18 in Khulna to process frozen shrimps. As shrimp catching grounds are scattered all over the coastal belt and south and

Table 2. Shrimp production in the Khulna and Chittagong Districts, Bangladesh, 1983. (Source: World Bank Mission Report)

Location	Chittagong District		
	Khulna District	Cox's Bazar Subdivision	Chakaria-Sundarban
Farming system	Shrimp/paddy	Shrimp/salt	Shrimp
Level of farm production			
Shrimp, in kg/ha	40	30	50
Paddy, in kg/ha	1,000	—	—
Salt, in kg/ha	—	5,000	—

southeastern districts of the country, it is quite difficult to get raw materials in fresh condition in the factory premises.

Most of the raw shrimps are available from natural water areas as by-catch. Bulk catches, however, come from the shrimp culture projects at Satkhira, Bagerhat and Cox's Bazar. The main landing centers for shrimps are Chandpur, Barisal, Patuakhali, Khapupura,

Satkhira, Bagerhat, Khulna, Kuliarchar and Cox's Bazar, among others. Catches of nearby or remote places are brought to the landing centers where they are chilled with ice. Although most of the landing centers have ice factories, chilling done here is not sufficient. From these centers, the stocks are then transported directly to the factory or to the nearest freezing center.

*For more details on processing, see "Shrimp Processing in Bangladesh," p. 13.

NEW PUBLICATIONS

Paglutas ng Tunggalian ng iba't ibang Pamamaraan ng Pangangisda sa Baybay-Dagat
Ian R. Smith
Daniel Pauly
Translated from English by Jose Ma. T. Barbaque
INTERNATIONAL CENTER FOR AQUACULTURE RESOURCE MANAGEMENT

Paglutas ng tunggalian ng iba't ibang pamamaraan ng pangangisda sa baybay-dagat. J.M.F. Bartolome, translator. 1985. ICLARM Translations 6, 6 p. Available free on request by surface mail; US\$1.50 airmail.

Translation of a summary report on a multi-disciplinary research project in San Miguel Bay, Philippines. Originally in English, the article "Resolving multigear competition" in near-shore fisheries," by I.R. Smith and D. Pauly appeared in ICLARM Newsletter 6(4): 11-18.

Commercial Cockle Farming in Southern Thailand
Siri Tookwinas
Translated from Thai and edited by Edward W. McCoy
INTERNATIONAL CENTER FOR AQUACULTURE RESOURCE MANAGEMENT

Commercial cockle farming in southern Thailand. E.W. McCoy, translator. 1985. ICLARM Translations 7, 13 p. US\$1.00 surface; \$2.00 airmail.

Translation of S. Tookwinas' 1983 contribution on *Anadara* farming to the Department of Fisheries, Bangkok, Thailand. Original in

Experimental rearing of Nile tilapia fry (*Oreochromis niloticus*) for saltwater culture
Wak-O Watanabe
Chang-Ming Kuo
Mei-Chun Huang
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Experimental rearing of Nile tilapia fry (*Oreochromis niloticus*) for saltwater culture. W.O. Watanabe, C.M. Kuo and M.C. Huang. 1984. ICLARM Technical Reports 14, 28 p. US\$3.00 surface; \$6.00 airmail.

Represents a preliminary evaluation of the utility of various approaches of early salinity exposure for saltwater culture of tilapias. Studies the reproductive performance of Nile tilapia under laboratory conditions at various salinities; salinity tolerance of progeny; survivorship of fertilized eggs, spawned in freshwater but removed from the mouth of the parent female and artificially incubated at various salinities.

Salinity tolerance of the tilapias *Oreochromis aureus*, *O. niloticus* and an hybrid
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Salinity tolerance of the tilapias *Oreochromis aureus* (Steindachner), *O. niloticus* (L.) and *O. mossambicus* (Peters) X *O. niloticus* hybrid. W.O. Watanabe, C.M. Kuo and M.C. Huang. ICLARM Technical Reports 16, 22 p. US\$2.50 surface; \$5.00 airmail.

Studies ontogenetic changes in salinity tolerance in tilapias spawned and reared in freshwater using the indices of median lethal salinity, mean survival time and median survival time. Discusses implications of findings for brackish and seawater culture of tilapias.