

HOOGHLY ESTUARY



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Hooghly

The Hooghly estuary marked by the outer drainage of Ganga river system is subjected to constantly high volume of freshwater discharge all round the year. The annual freshwater discharge through the estuary accounts for 67200, 16200 and 62100 million ft³ from the main channel of river Ganga, Damodar and Roopnarayan covering an aggregate of about 11900 km² of catchment area. The system has a typical example of highly erosive tide dominated delta called Sunderbans, largest of its kind in the world. The tidal influence is fed to a distance of 290 km from the sea face.

Fishery

The fisheries of the Hooghly estuary have well recognized annual cycle in respect of quality and quantitative variability. In monsoon the fish yield mainly comprises hilsa, winter catches of harpodon, sciaenids, threadfins, ribbon fishes, catfishes, perches etc., and during summer thin populations of miscellaneous species contribute to the fish harvest.

A wide variety of fish and prawn diversity is observed in the freshwater zone, particularly in the lower stretch of this zone from Uluberia to Diamond Harbour. The fish and prawn fauna available in the stretch between Nabadwip and Kolkata are *Tenualosa ilisha*, *Aorichthys seenghala*, *Eutropiichthys vacha*, *Clupisoma garua*, *Setipinna phasa*, *Ailia coila*, *Puntius ticto*, *Mastocembelus armatus*, *Bagarius bagarius*, *Pangasius pangasius*, *Xenentodon cancila*, *Amphipnous cuchia*, *Mystus cavasius*, *Ompok pabda*, *M.gulio*, *Notopterus notopterus*, *N.chitala*, *Wallago attu*, *Labeo rohita*, *L.calbasu*, *Catla catla*, *Cirrhinus mrigala*, *L.bata*, *Chela spp.* Among prawns, *Macrobrachium rosenbergii*, *M.malcomsonii*, *M.rude*, *M.villosimanus*, *M.lamarrei*, *M.mirabiles*, *M. birmanicum*, *M.scabriculum* and *M.dayanum* are available in the stretch. The availability of featherback (*N.notopterus* and *N.chitala*) and carps

(*L.rohita*, *L.bata*, *L.calbasu*, *C.catla* and *C.mrigala*) is mostly confined to the stretch between Nabadwip and Tribeni and their abundance is poor in comparison to total catch. The important fish available in the stretch between Uluberia to Diamond Harbour are *Pama pama*, *S.phasa*, *T.ilisha*, *Polynemus paradiseus*, *Silaginopsis panijus*, and *Rhinomugil corsula*. Among prawns *Macrobrachium rosenbergii*, *M.mirabile* and *Metapenaeus brevicornis* are the most dominant species. Freshwater species viz., *E.vacha* and *C.garua* are available upto Uluberia.



Dominant species in the gradient as well as marine zone of Hooghly including other estuaries of Sunderbans are *Harpodon nehereus*, *Trichiurus spp.*, *T.ilisha*, *Setipinna spp.*, (mostly *S.taty*). *P.pama* and prawns (*Parapenaeopsis sculpilis*, *P.stylifera*, *Metapenaeus brevicornis*, *M.monoceros*, *Penaeus monodon*, *P.indicus*, *P.semisulcatus*, *Expalaemon stylifera*, *E.tenuipes* and *Leptocarpus fluminicola*). Next to these other important fish species are *P.paradiseus*, *Eleutheronema tetradactylum*, *Lates calcarifer*, *Polydactylus indicus*, *Coilia spp.*, *Stromateus cinereus*, *Arius sona*, *A.sagor*, *Ilisha elongata*, *Osteogeniosus militaris*, *Otolithoides biauritus*, *S.panijus*, *Liza parsia*, *L.tade*, *Chirocentrus dorab*, *Raconda*

russeliana, *Plotosus canius*, *Cynoglossus spp.*, *Anchoviella commersonii*, *Scatophagus argus*, *Eetroplus suratensis*, *Therapon jarbua*, *Synbranchus bengalensis*, *Strongylura strongylura* etc.

Production Trend

Per hectare average annual yield of this estuary fluctuates between 54 to 65 kg and a cycle of solar influence every ten yearly have been recorded over a period of six decades resulting in bumper fish catch from the system. The estuarine mixing zone represents the most productive zone where the fishing activity is consistently at a peak in winter contributing about 92-96% of the total estuarine production. Some species like *Liza tade*, *Plotosus canius*, *Latus calcarifer* showed a sharp declining trend and few like *Chanos chanos*, *Megalops cyprinoides*, *Elops saurus* almost disappeared from the system.

Hilsa Fishery

Hilsa (*Tenuulosa ilisha*) is the only important anadromous species migrating to the Indian river systems. The species ranks as the prime fish and commercially the most important fishery of the estuary. The hilsa migrates to freshwater environment of Ganga river system through Hooghly estuary. Presently the fishery of the species is recorded upto down stream of the lock gates of Feeder Canal at Farakka.

The shifting of breeding grounds to the downstream of Farakka Barrage has opened a new era for the hilsa fishery in Ganga river system. The two main seasons of this fishery are monsoon (July/August to mid-October) and winter (mid-November to January) when the fish ascends up the river. The annual yields of this fish from this estuary are highly fluctuating and generally varied between 1087 and 2854 m tons forming 3.6 to 16% of the total catch. The annual average catch of 1754.9 m tons of the fish observed during pre-Farakka period (1961-75) has

enhanced to an average of 5327.4 m tons (1981-05) after installation of the Farakka Barrage indicating a three fold increase in the fisheries due to the hydro-ecological changes in the down stream stretches of the river-estuarine system.



Destruction of juvenile hilsa

The fishing of juveniles of hilsa is commonly observed in freshwater tidal stretch of the Hooghly and upper freshwater riverine zones. The fishing is mainly through bagnet during November to May and sometimes upto July. The estimated catch of the juveniles fluctuated between 41.1 to 151.01 t per year during 1998-2003. An extrapolated estimation reveals that 50% reduction of the juvenile killing has the potentiality to increase the adult production by about 10%.

Migratory bagnet fishery

The Hooghly has an unique feature of concentrated bagnet fishery in lower mixing or transit zone during winter season. Fishers join into several groups and establish fishing camps in the sea coasts. Two major concentration of such *khuties* are established, one on the Sagar Island at the mouth of the

Hooghly estuary and the other cluster around Fraserganj, Bakkhali, Kalisthan, Upper and Lower Jamboodwip. The total catch from winter bagnet fishery which was 2579.33 m tons on an average in pre-Farakka periods (1960-75) has been elevated to an average of 25380.3 t after the installation of Farakka Barrage. The winter blooms of plankton is the main attraction for feeding and breeding migration of the fishes. Thus, the bagnet fishery mostly composed of carnivorous species of fishes. Small fishes in the bagnet hauls are sun dried while the bigger fishes are marketed fresh for higher prices.



The Hooghly estuarine fish catch has almost reached a plateau fluctuating in a narrow range of 62000 – 72000 t per annum. The average annual fish yield during the recent past from 1998-2004 was more or less of the same order (66027 t). The winter harvest alone contributed 84 -90 % of the annual fish production. The catch spectrum consisted of Bombay duck (16 %), scianeids (11 %), clupeids (8%), ribbon fish (8%), catfishes (5 %), miscellaneous fishes (30 %) and migratory population of hilsa (16 %). The extension of the mixing zone in the coastal Bay of Bengal and the increase in bagnet fishing activity have pushed up the average catch by about 3 .5 fold over a period of 30 years.