

# Hilsa fish: An endangered fish due to climate change and over exploitation

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**ABSTRACT :** Hilsa is into breeding migration in three major river systems of the Indo-Gangetic and Brahmaputra river network viz., Ganga, Brahmaputra and Meghna. In Persian Gulf this fish migrates to Arvand river and Bahmanshir river for spawning. The main peak season is September and October in all environments. Two to three years into their life cycle the hilsa migrate into the freshwater rivers upstream from the Bay of Bengal in order to spawn. The main objectives of this paper are: to study the situation of Hilsa in Bangladesh and India and to identify the reasons for reducing numbers of hilsa.

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## Key Words :

Hilsa, Bangladesh, Jatka, Migration, Fish, Fisherman

The hilsa shad, *Tenualosa ilisha*, belongs to the family Clupeidae, locally known as 'sbour' in Iraq and other Arabian Gulf countries. Its geographical distribution extends from Shatt Al-Arab river, along the coasts of Iran, Pakistan, India, Bangladesh, and Burma to South Vietnam. The species is largely anadromous in nature, migrating up rivers during the breeding season and after spawning return to the original habitat where they remain until the next breeding season (Mohamed and Qasim, 2014). The main peak season is September and October in all environments (Islam, 2012). Hilsa shad spends most of its life in the inshore areas of the sea and undertakes extensive migrations ascending the estuaries and rivers for breeding purpose (Reuban, 1992).

From the very beginning of human civilization, fish is considered as one of the most important food items throughout the world including Bangladesh and major protein providing source (Faruque and Ahsan *et al.*,

2014). Fishery plays a significant role in the field of nutrition, employment opportunity and foreign exchange earning for the people of Bangladesh (Shamsuzzaman, 2011). Hilsa is a widely distributed anadromous fish occurring from the Persian Gulf to South Vietnam (Islam and Talbot, 2011).

Hilsa is into breeding migration in three major river systems of the Indo-Gangetic and Brahmaputra river network viz., Ganga, Brahmaputra and Meghna (Ahsan *et al.*, 2014). It called 'Ilish' in Bengali, is of national importance to Bangladesh. It's one of the country's main staple foods (Mohammed, 2013). Fish constitutes almost half of the total number of vertebrates in the world (Kar 2006). Lona ilish is a traditional salt fermented fish product widely consumed in Bangladesh and Northeastern parts of India (Majumder and Basu, 2010). In Persian Gulf this fish migrates to Arvand River and Bahmanshir river for spawning (Roomiani, 2014). In terms of volume, value and employment, the fish

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market in Bangladesh is large (Ahmed, 2007). Hilsa is an extreme popular fish in Bangladesh and in the Indian States of West Bengal, Orissa, Tripura and Assam and consumed by 250 million people (Puvanendran, 2013).

## EXPERIMENTAL METHODOLOGY

The paper is based on secondary information. Information were called from published sources, like journals, books, news papers, government reports, magazines etc.

## EXPERIMENTAL FINDINGS AND DISCUSSION

The hilsa shad fishery is by far the largest single species fishery in Bangladesh. Most hilsa fishing in Bangladesh is conducted by small scale, low technology, labour intensive fishing methods which may be classified as predominantly an artisanal fishery. The hilsa stocks are exploited by a variety of gears, the most common of which are clap nets, gillnets, driftnets, seine nets, barrier nets, and fixed bag nets. The largest part of the harvest is caught by gillnets (Mome, 2008). Two to three years into their life cycle the hilsa migrate into the freshwater rivers upstream from the Bay of Bengal in order to spawn. Generally the peak upstream migration of hilsa in the rivers takes place during the South-west monsoon (Bhaumik, 2015).

The hilsa fishery is essentially confined to the artisanal sector-traditional non-mechanized and small mechanized boats, both in inland and inshore waters (Raja, 1985). Generally, two seasons for hilsa migration have been observed in Bangladesh: (a). Southwest monsoon migration: the main period of migration between May and November, when monsoon rains flood the rivers, and (b) Winter migration: a short migration season outside the monsoon period, during the winter months of February and March (Islam *et al.*, 2014). The frequency of fish consumption in Bangladesh is high, ranking second (after rice) or third (after rice and vegetables). The diversity of fish species consumption in Bangladesh is very high (Thilsted, 2014).

The marine hilsa fishery is an artisanal type of fishery. Socio-economic conditions of the coastal fishermen communities are characterised by lack of alternative sources of subsistence. In the artisanal gill net fishery, mechanised and non-mechanised boats are engaged for hilsa fishing. The hilsa stocks are exploited by a variety of gears, the most common of which are the clap net, gillnet, driftnet, seine net, barrier net, and fixed bag net; the largest contribution, however, comes from gill/drift nets.

In the year 2002-2003 Bangladesh exported 1148 mt of hilsa, and in 2005-2006 it was increased to 3672 mt DOF (2007). In 2006-2007 the exports suddenly

**Table 1: Export quantity and value of frozen and chilled Hilsa in the last five years**

(Department of Fisheries, 2007)

Year	Export volume (MT)	Export earning (million Tk.)
2002-2003	1.148	15.000
2003-2004	1.930	79.000
2004-2005	3.584	51.950
2005-2006	3.672	63.610
2006-2007	5.20	3.700

Source: Fishery Department, Govt. of Bangladesh

**Table 2 : Total number of Hilsa fishermen in different areas of Bangladesh**

(Halder, 2004b)

Name of division	Total district	Total fishermen	Total Hilsa village	Total Hilsa fisher family	Total Hilsa fishermen	Occupation	
						Full time (%)	Part time (%)
Dhaka	12	75.687	579	8.902	17.454	26	74
Chittagong	8	257.715	773	66.608	142.649	56	44
Barisal	6	308.270	1.743	100.270	285.001	65	35
Rajshahi	7	27.636	307	2879	6.372	24	76
Khulna	5	78.268	260	4.570	11.783	10	90
Sylhet	2	9.500	41	383	825	10	90
Total	40	757.076	3.706	183.630	464.084	32	68

Source: Fishery Department, Govt. of Bangladesh.

dropped. The reason is that the Government of Bangladesh banned the hilsa export for this year. The whole year catch both inland and marine are locally consumed. The minnow or young hilsa fishes are known as Jatka. After successful breeding, they swim back to the sea (Hilsha Fish, 2016).

The estimated catch of jatka in West Bengal appears to be much lower than that estimated for Bangladesh (Milton, 2010). The fish contributes about 12 per cent of the total fish production and about one per cent of GDP in Bangladesh. About 450,000 people are directly involved with the catching for livelihood; around four to five million people are indirectly involved with the trade (Ilisha, 2017).

Among those hilsa fishermen (Table 2) 439 thousand belonging to 171 thousand families are artisanal fishers. From 1987 to 2007, with an increase of boats and gears, the numbers of hilsa fishers have been increased in the marine sector. The number of hilsa fishermen from the inland sector may have decreased because of less abundance of hilsa in the riverine habitats and habitat loss (Mome, 2007).

To protect the fishery from recruitment and growth overfishing, the Government of Bangladesh has declared five sanctuaries in the Meghna river and its associated tributaries (Islam, 2013). Following Bangladesh, India has recently introduced and declared three hilsa sanctuaries in West Bengal, where the mature fish can breed in peace (Firstpost, Jun 27, 2013). After decades of migration barriers, over-fishing and pollution that have pushed the hilsa fish to the brink of extinction, the West Bengal Government is planning to include provisions under penal codes that will allow the arrest of anyone buying and selling the variety weighing less than 500 g (The Indian Express, Jan 18, 2017).

### Conclusion :

In 21<sup>st</sup> century, hilsa is an endangered fish. In the artisanal gill net fishery, mechanised and non-mechanised boats are engaged for hilsa fishing. The hilsa stocks are exploited by a variety of gears, the most common of which are the clap net, gillnet, driftnet, seine net, barrier net, and fixed bag net; the largest contribution, however, comes from gill/drift nets. For protecting the hilsa Government of Bangladesh and West Bengal are declared various sanctuaries.

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