

Hilsa has extreme interest everywhere throughout the world for its tasty taste and number of medical advantages. The regular water body is the sole wellspring of this fishery and till now it has not been conceivable to yield this fish monetarily in captive condition. Also the fish yield is diminishing. To gather data on this fish one needs to rely upon characteristic riverine water. It is hard to think about the science of any anadromous fish as they have two unique periods of life cycle - fresh water and other in marine. Besides ecological condition and erratic individual conduct makes numerous troubles to think about any species in indigenous habitat as it were. Work on catch insights and length-weight relationship of Hilsa is held a lot before in the eastern part of India but very less has been done on the western part mainly the Narmada riverine system.

Hilsa is a fish which is very tolerant to wide range of salinity levels. It comes across marine water to fresh riverine water for breeding and spawning. During this long time, migration various physiological changes occur within fish body. It spends huge metabolic energy for this upstream migration. So, during this migratory period its body profile is like to be changed. Comparisons between upstream riverine and downstream marine different body sized fishes are useful in this regard. Moreover, here from the nutritional value of various weight group of fishes could be ascertained which may carry useful information on food value of Hilsa. In this context, present work had selected to gain some detail knowledge about physical and physiological conditions of Hilsa during migration in Narmada riverine system. Thus the study deals with related topics which will help to understand this fishery well.

The study was done in three parts as follows:

1. Diversity and spatio-temporal distribution of Hilsa in Gujarat

- Diversity of species of Hilsa in Gujarat.
- Difference in diversity with respect to rivers and marine regions of Gujarat.

2. Taxonomic and molecular identification of Hilsa.

- Taxonomic classification of *Tenualosa ilisha*.
- Barcoding and molecular identification of *Tenualosa ilisha* with respect to phylo-geographic status of different genes.

3. Fishery ecology and stock assessment of Hilsa in Narmada River.

- Population dynamics by assessment of length-weight relationship.
- Status of Hilsa catches in respect to water quality in Narmada riverine system.
- Evaluation of stock of Bhadbhut, a major landing centre of *Tenualosa ilisha* in Narmada River, Gujarat.

4. Bio-assay studies of Hilsa in relation to migration in Narmada River.

- Proximate analysis of *Tenualosa ilisha* caught at landing centres of different regions in Narmada River, Gujarat.
- Reproductive biology of *Tenualosa ilisha* with respect to gonado-somatic index and hepato-somatic index.