

The present study encompasses the lacunae of biology and fisheries of *Tenualosailishain* Gujarat, majorly focused on the Narmada River.

For the first objective, the diversity studies for Hilsa have been carried out in and around the waters of Gujarat. The species *Tenualosailisha* has been found majorly inhabiting the seas and rivers of Gujarat. But Bhakta *et al.*, (2018) in during their work for finfish diversity in Narmada River has reported *Hilsakelee*, one of the key species of Hilsa found in the India subcontinent. Bhaumiket *al.*, (2013) have also reported *Hilsakelee* and *Tenualosatoliin* the Tapi estuary with the major catch of *Tenualosailisha* of 69.5%. But the absence of the other two species Narmada River can be attributed to factors like biology of the species which says that the habitat of both the *Hilsakelee* and *Tenualosatoliare* marine waters, also the outflow of less fresh water, turbidity, chemical deposits from industries might have extended the range of both the species to a farther point into the sea thereby reducing their percentage in the inland fish catch of Narmada River.

In the second objective, the genetic variation of *Tenualosailisha* on the basis of Cytochrome oxidase subunit I and 16S rDNA has been checked and comparative phylogeny studies have been carried out with sequences of DNA from other geographical locations to understand about isolation differences of populations. The specimens of Hilsa have been collected from different place throughout Gujarat, from both freshwater and marine landing zones. The results did show close relationship of the species with each other but separate clade formation suggested different sub populations. The work done by Brahmaneet *al.*, (2006) in six different locations of India discriminated all the populations of

*Tenualosailisha* with RAPD showing very high degree of polymorphism within and between the species. Similarly in Bangladesh, two population of Hilsa caught from Padma and Meghna River has been discriminated based on their genetic variation. The results obtained can be ascertained that there are two or more races or varieties of Hilsa with different spawning grounds as discussed by Jenkins (1938), Raja (1985), Mazid and Islam (1991). So the differential population stock in rivers of Gujarat as well as throughout India for spawning and breeding can be justified.

The third objective deals with the fisheries and stock assessment of Hilsa in inland waters of Narmada River, Gujarat. The fisheries has been analysed with studies on population dynamics showing a positive correlation of growth in terms of length and weight of both male and female fishes. However, when the stock was analysed with the secondary data it was observed that the stock has considerably decreased along the years showing the declining trend of Hilsa in Narmada River inland fish catch. Amin *et al.*, (2002) in Bangladesh also concluded that the pressure on Hilsa has increased so new policies and regulations are very much necessary to inhibit the growing concern of declining trend. Overexploitation of Hilsa was also observed by Panhwar and Liu (2012) in Sindh, Pakistan concentrating on the fact that restricted laws should be imposed during upstream migration of Hilsa in Indus River to give fitting access to Hilsa for spawning and breeding also in the case of Narmada River, Gujarat.

And at the last objective, wherein the proximate analysis has been investigated in Hilsa caught from Bhadbhut, the primary landing centre of Narmada River. The

parameters of protein, fat, ash and moisture from Hilsa shows a simultaneous change according to the different portions of the body, environmental conditions, season, age and feeding habit as studied by Shamimet *et al.*, (2011). Rao *et al.*, (2012) discussed that the Hilsa from freshwater tastes much better than that of marine waters thereby increasing the economic value of Hilsa caught at inland water during migration. The change in taste of Hilsa of Arabian Sea and Bay of Bengal can be attributed to the feeding type and food intake as explained by Hossain *et al.*, (2014) and Sikorshiet *et al.*, (1990).