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RELEVANCE OF THE STUDY OF MARINE FISH EGGS AND LARVAE IN INDIA

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India is a tropical, peninsular country, situated between about Lat. 3° and 38° N and between about Long. 68° and 80° E. There is an extensive coastline of more than 6,500 Km, dotted with many estuaries, creeks, backwaters bays, lagoons, etc., frequented by quite a few species of fishes. According to Talwar and Kacker (1984), there are about 1,400 marine and estuarine fish species in India. Of these, about 100 species belong to the group of sharks, rays and skates (Esasmobranchii), which are mostly viviparous, giving birth to their youngones and hence do not pose any problems with regard to their identity in their young stages. But, the rest of the number of species, about 1,300, belong to the group of bony fishes (Osteichthyes) and most of them are found along both the east and west coast of the peninsula, in Bay of Bengal and Arabian Sea respectively.

Among the many species of bony fishes, it has been observed that unlike as in temperate regions of the world where only one or two species contribute to fisheries, in the seas of a tropical country such as India, a number of species are present in the same genus and are allied genera, contributing to multispecies fisheries. A well known example of this kind is the Order Clupeiformes, represented by genera such as Sardinella, Dussumieria Escualosa, Hilsa, Ilisha, Opisthopterus, Raconda, Stolephorus

Thryssina, Thryssa, Setipinna and Coilia. In many genera, each is represented by quite a few species. For instance, the genus Sardinella is represented by 13 species including the subgenus Amblygaster in India, vide Fircher and Bianchi (Ed., 1984), viz., S. albella, brachysoma, dayi, fimbriata, gibbosa, jussieui, longiceps, melanura, neglecta, sindensis S. (Amblygaster) clupeoides, amblygaster, sirm; and the genera Thryssa, Stolephorus and Ilisha have 11, 8 and 6 species respectively. Another such group is the family Mugilidae which, as may be seen from Tircher and Bianchi (1984) has 6 closely allied genera and among which the genus Liza has 13 species and the genus Valamugil has 6 species. Such a multiplicity of species is said to be the result of a more rapid rate of speciation in tropical waters than in temperate regions; and, in many localities, groups of congeneric species as well as species of several genera contribute to a fishery, ranging from 3 - 5 to 30 - 32 numbers.

Apart from the presence of closely allied species and/or genera in the same locality, most of the species are observed to spawn in the same area and at the same time. Bensam (1981) has reported the spawning of quite a few species of Clupeids and Engraulids at Cannanore, Tuticorin and Porto Novo, during the same spawning season. In many cases, the spawning seasons appeared to be throughout the year, as evidenced by the occurrence of eggs, larvae and juveniles, vide, Bal and Pradhan (1945, 1946, 1951), Gopinath (1946). According to Qasim (1973), spawning of most marine teleosts fishes in India is protracted, usually beginning at the onset of monsoon rains along both the coasts. In the west coast of India, the south-west monsoon rains commence from June-July and end up in September-October and in the east coast the north-east monsoon rains start from September-October and end up in November-December.

Perhaps the most baffling problem encountered in the study of fish eggs and larvae in Indian Waters is the overlapping sets of characters of the developmental stages of various species and/or genera. Although in a very few cases the characteristic features are distinct enough (Delsman, 1926 b, 1929 b, 1930, 1932 a, 1932 b, 1933, Jones and Menon, 1950, 52, Bensam, 1968, 1971), in the vast majority of cases the overlapping sets of characters have forced most workers to rely very much on circumstantial evidence, such as neritic-pelagic distribution of adult fish and occurrence of eggs and larvae, coincident occurrences of eggs and larvae in the locality of capture of prespawners, spawners and postspawners. Most workers have generally followed such a method, although in some cases cogent reasons of diagnostic in value have also been advanced by them. Some groups of species with overlapping sets of characteristic features are these of Sardinella, Thryssa, Liza, Leiognathus, etc., These overlapping sets of characters will be dealt with in detail in some of the future lectures. For the present it is enough to indicate that these are: egg diameters, diameter of oilglobule, number and disposition of muscle segments called myomeres and the like.

The interest of mankind towards ichthyoplankton studies commenced only towards the end of the last century (Russell, 1976) when, in the year 1865, the eminent Norwegian planktologist has discovered that the eggs of the European cod, haddock and gurnard are planktonic. However, in India the first attempt to study marine fish eggs and larvae was made after another about fifty years when Bhattacharya (1916) described the early stages of three estuarine fishes. Thereafter, there was a progressive increase of research in this subject. An appraisal of work carried out till todate in the country recently

made by the present writer (Bensam, in press) shows that the number of species whose one or the other developmental stage has been identified is about 290 only, forming only about 23% of the marine bony fishes reported to occur in India (Talwar and Kacker, 1984). But, a more in-depth analysis shows that only in the cases of 100 species that almost all the vital developmental stages, viz., eggs, larvae, postlarvae and juveniles are known adequately, forming only 8% of the number of species in India. This fact warrents that for rational exploitation, management and conservation of our marine fisheries there is urgent need to fill up the lacunae in our knowledge in the case of the vast majority of the species as well as to document these of species not yet covered.

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