GENERAL INTRODUCTION

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No two fish are identical. Variations may occur in fishes due to variations in environmental condition or genetic make up. Fish may differ in morphometric as well as meristic characters. Development of diversity of fishes in water accelerates the rate of speciation. Fishes occupy everything from Antarctic waters below freezing point to hot springs of more than 100°F (Lagler *et al.*, 1962). There are 22,000 fish species known to occur throughout the world, out of which 2,200 species have been reported from Indian region.

Fish may be considered as being jawed vertebrates that adapted to living in water which appeared on the earth about 40 crores years ago in the Devonian period and make about 42.6% of the total strength of the vertebrates (Lagler *et al.*, 1962). Fish remains with cut marks were obtained from the excavation of Mohan-jodero and Harappa of

Indus Valley civilization (2500 B.C.-1500 B.C.) in India, which indicated that fishes were used as food at that time (Nath, 1966). First reported fish in India was Dipnoi (*Ceratodus* Agassiz), the fossil remains of which were obtained from Maleribeds of the Godavary Valley during upper triassic period (Hora and Menon, 1952). Growth in knowledge of fishes has resulted from man's lasting curiosity about nature and from his need for information concerning species used for commerce or recreation. At least ten centuries before Christ, the Chinese were trying to find out about fishes successfully to propagate them. Ancient Egyptians, Greeks and Romans recorded observations on the varieties, habits and qualities of various fishes. The symbol of the early Christian underground movement in the Catacombs of Rome was the fish. The study of fish (ichthyology) was hardly scientific until the eighteenth century in Europe.

Basically fisheries started as "capture fisheries" from their natural resources such as rivers, lakes, streams, ponds, reservoirs and ditches etc. Fish that have faster growth rate, greater dressing percentage, higher food conversion and greater disease resistance are considered to be more economical for their cultivation. The target of fisheries development in India is to increase the fish production in order to combat malnutrition, because fishes are good source of animal proteins, fat, vitamins A and D and fish oil. Beside these, fisheries development also holds the promise of generating employment potential, and subsequently achieves the social and economic advancement of the fishing community. Export of fish and its products could fetch foreign exchange. Some larvicidal fishes are used as

biological agent to check the propagation of aquatic larvae of some pathogenic organism.

Pisciculture was done on very small scale before independence but fish production has increased about 7 times since the independence of the country after the introduction of the modern techniques for their cultivation. India receives good rainfall and has extensive freshwater and brackish water bodies available for aquaculture. The freshwater bodies consist of rivers and canals (1,64212Km.), ponds and tanks (2.21m ha.), reservoirs (1.97m ha.), beels and oxbow lakes (1.21m ha.). But out of these only 1 million hectare area has been brought under fish cultivation so far. Total fish production is 56.89 lakh tonnes during the years of 2000 – 2001.

India is mainly carp cultivated country. Induced breeding technique and improved technology for hatching, rearing and nursing of the three Indian major carps (*Labeo rohita, Catla catla,* and *Cirrhinus mrigala*) and other exotic carps (*Hypophthalmichthys molitrix, Aristichthys nobilis, Cyprinus carpio and Ctenopharyngodon idella*) have revolutionized the freshwater aquaculture. Early work in the field of fishery developmental researches in India was started in Kerala and Bengal in the dawn of twentieth century. Considerable amounts of work have been carried out on Indian major carps but no any sincere attentions were paid to the other group of fishes. Early in the last century, Central Inland Capture Fisheries Research Institute (CICFRI), Barrakpore (West Bengal) has recommended a practicable culture system for air breathing fishes inhabiting marshy

water bodies. This diversification in aquaculture is certainly a sincere step in the direction of obtaining sustainable yields from varied sources of fish production in India. However, the CICFRI covered the mass culturing of only a few air-breathing fishes like *Clarias batrachus, Heteropneustes fossilis, Anabas testudineus* and *Channa spp.* An important omission from this list is the spiny eel, *Mastacembelus pancalus* (Fig.1), which belongs to family Mastacembelidae. The striped spiny eel, *M. pancalus* is quite palatable and nutritive too. It is the most beautiful species among the spiny eels, the smaller size of this species has often been placed into aquaria and kept by hobbyists. The large size of this species is used as food and has high market value when sold alive in the market. The demand of this fish remains always high as compared to its supply. The fish being in high demand is indicated by the fact that its demand always increases its supply Exploitation is reckless. There are signs of dwindling in catches. This calls for the application of the rational methods of culturing of this freshwater spiny eel. However, the development of suitable method for its culture is inconceivable without a sound information of its biology. A survey of literature on this subject showed that a very little information is available on the biological aspects of this commercially important teleost. Job (1941) has studied the history and bionomics of the spiny eel, *M. pancalus*. Karim and Hossain (1972) worked on sexual maturity and fecundity of *M. pancalus*. Srivastava (1975) reported the unusual development of the caudal fin of *M. pancalus*. Saxena *et al.* (1979) observed the cytological details of the oocytes of *Mastacembelus pancalus*. Goel *et al.* (1984) studied comparative haematology in some freshwater teleost including

M. pancalus. Sikdar and Das (1980) studied the skin structure of *M. armatus.* Prakash and Saxena (1990) studied the behavioural responses tc varied environmental condition in the spiny eel, *M. armatus*. Mittal *et al* (1994) studied histochemical analysis of glycoproteins in the unicellular glands in the epidermis of *M. pancalus.* Serajuddin, Khan and Mustafa (1998) studied the food and feeding habits of the spiny eel, *M. armatus* Keeping in view the scanty of information of the biology of *Mastacembelus spp.* in general, the present study is undertaken in order to find out the informations on the various aspects of biology such as classification and morphological characteristics, age and growth, food and feeding habits and reproduction. Attempts were also made to distinguish the races of *Mastacembelus pancalus* on the basis of their morphometric and meristic characters in order to assess the growth potential of varied stocks. The studies on these lines were thought to be essential because without the knowledge of its habits and habitats, distribution, food and feeding, growth, breeding and stock regeneration potential etc. its scientific cultivation is impossible.

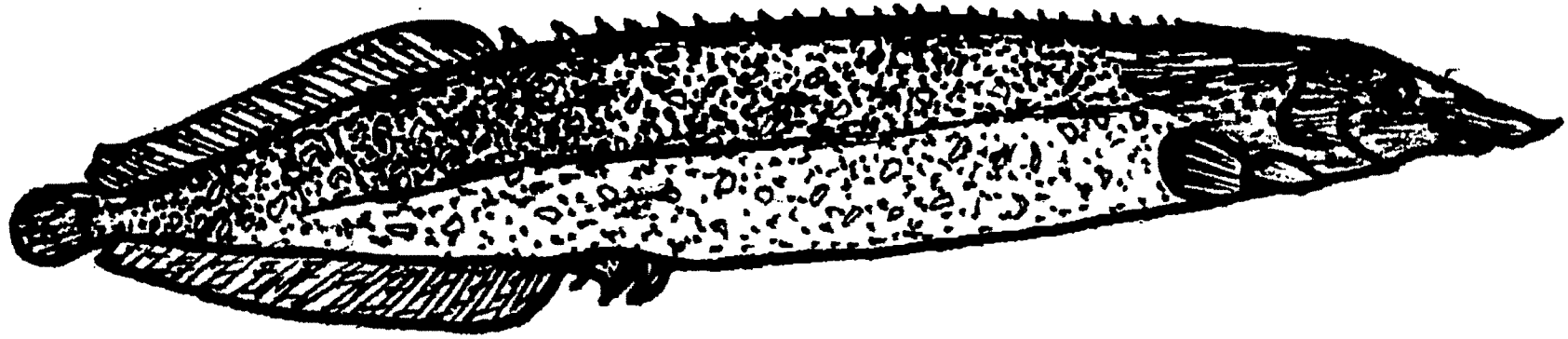

Fig . 1 : ***Mastacembelus pancalus***