

PREFACE

Production of fishes and crustaceans through natural resources is on the decrease in several countries, especially in India. Mariculture is therefore, a fast developing field, in fisheries, in view of both decrease in natural production as well as the enhancing demand of cheaper protein resources to be produced with scientific manipulation methods to bring about large scale production. It has gained momentum in all the developed and developing maritime countries. Especially in India, Crustaceans, Molluscs, fin fishes and seaweeds are the major important fields where much importance is given to improve the maximum return by culture methods. Keeping all this in mind the Central Marine Fisheries Research Institute (CMFRI), has taken up multidisciplinary programmes under the centre of advanced studies (CAS) in Mariculture of CMFRI funded by ICAR/UNDP/FAO Project.

After attaining M.Sc. degree in Zoology from the Madurai Kamaraj University in 1983 I joined in CAS in Mariculture as a Senior Research Fellow in the Ph.D. Programme in March 1984. During the first semester took up course work in Mariculture with a curriculum including

fishery and biological aspects of finfishes and shellfishes, culture methods of finfishes, prawn, lobster, crab, mussel, oyster, pearl, clam and sea weed along with site selection grow-out systems, production, economics and extension and environmental aspects.

Besides theory and practicals, study tours were undertaken to different Mariculture field laboratories of CMFRI. During the second semester a special subject "Fish and Shell Fish Genetics" was assigned for detailed study and I passed the Ph.D. qualifying examination conducted by the Cochin University of Science and Technology.

Afterwards the particular research project entitled "Biochemical genetics of selected commercially important penaeid prawns" allotted was carried out by collecting samples from different important fishing centres of India and the practical work was carried out in the Research Centre of CMFRI laboratories attached with those places. On the whole, in crustacea little importance has been given so far in finding out the genetic characteristics of different species, genetic variation within and between species and ontogenetic variations in lobsters, prawns and other crustaceans. Prawn is commercially important group

where very little attention had been given so far to find out the racial divergence which may exist in different species. With the increased foreign exchange earning and consequent indiscriminate over exploitation of existing resources of prawns resulting in depletion of the marine resources, alternative ways and augmenting production has become essential. In this connection genetic manipulation of the broodstock will surely bring about the heterogenous characters to multiply production. In order to understand racial fragmentation of some of the commercially important prawns such as Penaeus indicus and Parapenaeopsis stylifera the isozyme studies were carried out. Ontogenetic variation of P. indicus showed stage specific electrophoretic variation. Inter species variation studies was carried out for the closely aligned Penaeus species like P. merquiensis and P. penicillatus; P. japonicus, P. canaliculatus and P. latisulcatus. Metapenaeus sp. like M. brevicornis, M. affinis, M. monoceros and M. kutchensis, Parapenaeopsis species like P. stylifera, P. sculptilis and P. hardwickii.

These studies on inter species and intraspecies genetic variation along with morphometric variables and ontogenic genetic delineations carried out for the first time on Indian species of prawn would go a long way in delineating stocks in commercial populations and determining their genetic characteristics in order to use them for genetic engineering and manipulation.