SUMMARY

The mud crab, *Scylla serrata*, the most preferred of all the edible crabs, supports the sustenance fishery in Karwar region. In spite of the enormous commercial importance, information was not available on its biology and fishery. Hence, a comprehensive study was initiated and the results of the investigations spread over a period of two years from 1983 to 1985 are summarized below.

1. Hydrological, sedimentological, biological and other oceanographic features that characterise the study area are discussed.

2. A brief account of the species is given.

3. The distribution and abundance of *S. serrata* from Karwar waters has been found to be under the influence of several factors such as - habitat, depth, nature of the substratum, current action, tidal amplitude, food availability, photoperiod and other hydrological and sedimentological characters.

4. A study on width (and length) and weight relationship of 748 specimens of *S. serrata* was carried out employing cube law (\(W = aL^b\)). The results obtained shown a precise linear and exponential relationship between the carapace width (and length) weight in juveniles, adult male and female crabs.
The exponent (b) values indicated that the body weight of the adult female crabs grew slightly faster than the crab width (and length) while in juveniles and adult males it was slightly lesser than that of width cube.

5. The feeding habitat of *S. serrata* from Karwar region was found to be mainly intertidal and to a certain extent sub-tidal.

6. The feeding habits of the crabs depended mainly on the conditions prevalent in the mangroves, Kharland bunds, axial depressions from backwaters and also inshore waters.

7. In general assessment the crab has been found to be omnivorous, feeding on mainly molluscs, crustaceans, fish remains and a moderate amount of detritus.

8. Ontogenic and spatial changes in feeding of *S. serrata* have not shown marked variations with the season and nevertheless a decreased seasonality in diet with the increase in crab size was observed.

9. A linear and exponential relationship was observed between gut volume (calculated and observed) and size of the crab.

10. Observations on feeding of the crab revealed an active nocturnal feeding behaviour being more mobile than burried in the substratum.
11. The crab has been found to be capable of domineering the environment and exploiting the most available food resources by way of deposit feeding, foraging and scavenging.

12. Analysis of proximate composition in different edible portion of *S. serrata* indicated lower levels of moisture and higher percentages of protein and lipid content in gonads and hepatopancreas.

13. Higher protein and low fat content was found in crabs ranging in size 51 - 80 mm. In larger crabs (121 - 130 mm) the protein and moisture content were found to be lesser while glycogen, fat and ash levels were comparatively high.

14. The tissues of *S. serrata* possessed higher proportion of histidine, leucine, phenylalanine, lysine & threonine.

15. In general, of all edible portions of the crab, the hepatopancreas and gills were found to have higher levels of trace metals. Copper, mercury, and calcium have been found to be more in hepatopancreas while the gills exhibited high concentration of zinc, manganese, cobalt, nickel and iron.

16. Gonadal observations of male crabs indicated that *S. serrata* attained first sexual maturity at 80 mm size. At the size range 131 - 140 mm, males tended to be absolutely (100%) mature.

17. The female crabs also attained first sexual
maturity only after reaching 80 mm size but were never reached absolute maturity at any given size.

18. The growth pattern of certain morphometric characters (secondary sexual characters) such as length and depth of the chelar propodus (in males) and width and length of the abdomen (in females) have been found to be highly specific during ontogenic stages of the crab but indicating an abnormal increment in these characters at pubertal moult.

19. The mating pairs have been encountered throughout the year there by depicting its continuous reproductive activity.

20. Percentages of different maturity stages (in different months) and mean Gonado Somatic Index revealed that S. serrata was a prolific breeder but with two peaks one between December - March and another between September - November, which was further confirmed with the incidence of maximum sponge bearing females during the same period.

21. Spawning grounds of S. serrata have been identified in inshore waters and offshore waters but not in backwaters.

22. There was an apparent increase in the number of eggs carried with the increase in the size of the crab. The number of eggs carried by ovigerous females ranged between 0.50 and 2.02 million.

23. A precise, direct and a significant positive
correlation between fecundity (and egg mass) and size of the crab was observed.

24. A catch of 9608 kgs. of *S. serrata* was estimated during 1983 - 84 from Karwar region. Backwaters catch alone contributed 89.58 % of the total landings of *S. serrata*.

A general account on the status of crab fishery in India, its trade and utilization, was also been discussed in the thesis.