

Study of Decapod Crustaceans from Dahanu Coast



Zoology

KEYWORDS : Decapod crustaceans, crab, prawn, lobster.

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ABSTRACT

The survey of decapod crustaceans of Dahanu coast was undertaken, since decapod crustaceans, prawn, crab and lobster are commercially important due to their high nutritional contents. Decapod crustaceans were collected from Dahanu coast and identified by studying distinctive characters and classified up to species level.

Introduction:

The Chhappgar (1957, 1962) has included the information *Scylla serrata* of taxonomic work in the marine crabs of Gujarat and Maharashtra state and Uttar Kannada district of Karnataka state Joel and Raj (1983) studied two species of *Scylla* from Pulicat Lake. Fuseya and Watanbe (1995) worked on taxonomy of genus *Scylla*. The genetic variability in the mud crab genus *Scylla* has been observed by Fuseya and Watanbe (1996). Overton et al., (1997) observed *Scylla serrata* from four locations in South-east Asia. Keenan et al. (1998) studied genus *Scylla* of family Portunidae. Anon (1998) observed the biogeography of *Scylla transquebarica* and reported this species from the east coast of India. Babu et al., (2003) reported the advent of crab culture. Balange et al., (2003) observed the occurrence of mud crab *Scylla transquebarica* on west coast of India and studied the traditional culture practices in kokan coastal region. Vartak et al., (2006) described the design methodology and economics of green crab fattening activity at village Mirya. Rao (1986) gave an account on the status of shrimp fishery of India along with review on the biology of important species. Suseelan and Pillai (1993) made an overview of crustacean resources (1984-92) of India and observations on the shrimp fishery of Cochin were made by Suseelan et al. (1993). Nandkumar et al. (2001) reported shrimp fishery of Sakthikulanagra in the context of monsoon trawling ban. Present status of penaeid shrimp fishery in India was discussed by Nandakumar and Maheswarudu (2003). Ammini et al. (2004) gave a brief report on the general fishery by mini-trawl operation in Kerala. In *Parapeneopsis stylifera* and *Metapenaeus dobsoni*, Nandakumar et al. (2005) observed species-wise detail on size distribution, sex ratio, maturity and spawning season and discussed the impact of mini trawl operation on the shrimp resources of Kerala along with possible management measures. Ali et al. (2005) studied the decapod crustacean community of southwest of Mahim of Mumbai coast to find out richness, diversity and evenness of this group and the changes in the diversity status on the temporal scale at the same location.

MATERIAL AND METHODS:

Decapod crustaceans were collected from Dahanu coast between 19° 58' North longitude and 72°, 42' East latitude. The identification of specimens was confirmed from ZSI, Pune. Species and supraspecific classification was evaluated using the phylogenetic systematic appropriate for task.

RESULTS:

The survey was revealed the presence of following decapod crustaceans from Dahanu coast. The phenotypic samples showed a variation in number and characteristics, which were ascertained by morphometric observation. The following decapods crustaceans were observed in the Dahanu coast. Their classification, using key and characters shown are mentioned.

Table 1 Decapod crustaceans collected from Dahanu coast

Crustacean	Name of Family	Name of animal
Crab	Family – Portunidae	1. <i>Scylla serrata</i>
		2. <i>Portunus sanguinolentus</i>
		3. <i>Portunus pelagicus</i>
		4. <i>Charybdis feriata</i>
	Family – Grapsidae	1. <i>Metapograpssus messor</i>
		2. <i>Varuna litterata</i>
	Family – Ocypodidae	1. <i>Uca lactea annulipes</i>
		2. <i>Ocypode platytarsis</i>
Prawn	Family – Potamonidae	1. <i>Barytelphusa cunicularis</i>
	Family – Penaeidae	1. <i>Penaeus indicus</i>
		2. <i>Penaeus canaliculatus</i>
		3. <i>Penaeus semisulcatus</i>
	Family – Hippolitidae	4. <i>Penaeus monodon</i>
		1. <i>Exhippolysmata ensirosteris</i>
Lobster	Family – Pauliridae	1. <i>Panulirus polyphagus</i> .

Crabs: 1) *Scylla serrata* (Forsk., 1775) Phylum – Arthropoda, Class-Crustacea, Order – Decapoda, Family –Portunidae, Genus -*Scylla*, Species -*serrata*. It is commonly called Mangrove crab. It occurs in water of east as well as west coast. The maximum size ranges from 130 mm to 220 mm. The colour of the body is uniformly dark greenish gray. There is one stout spine on outer angle of carpus of cheliped. The Antero-lateral border of carapace has nine sharply acuminate teeth of about equal size. The anterior male abdominal appendages elegantly bent and bear hairs along one border and spinnule along the other. It is commercially important common edible crab. (Fig. 1)

2) *Portunus sanguinolentus* (Herbst) Phylum – Arthropoda, Class –Crustacea, Order – Decapoda, Family-Portunidae, Genus - *Portunus*, Species – *sanguinolentus*. Carapace is marked with three large blood red spots. No Spine on posterior border of merus of cheliped. Nine teeth on anterolateral border of carapace, posteriormost tooth is longest. Colour is dark gray. Legs are with bluish tinge. (Fig. 2)

3) *Portunus pelagicus* (Linnaeus) Phylum – Arthropoda, Class – Crustacea, Order- Decapoda, Family –Portunidae Genus -*Portunus*, Species – *pelagicus*. Numerous white spots are present on the carapace, chelipeds and other legs. There is a spine at distal end of posterior border of merus of cheliped. Nine teeth on anterolateral border of carapace. Posterior most tooth is longest. Colour – Brownish with bluish tinge. The fifth pair of leg paddle like. (Fig. 3)

4) *Charybdis feriata* (Linnaeus) Phylum – Arthropoda, Class – Crustacea, Order - Decapoda, Family - Portunidae, Genus - *Charybdis*, Species - *feriata*. First tooth of anterolateral borders obliquely truncate on outer border. Palm with four sharp spines in all. Anterolateral teeth are broad at base, first anterior lobe bifid. There are three spines on anterior border of arm. There is

a cross on the carapace. Colour is dark brown. Numerous white spots are present on legs. The fifth pair of leg paddle like. (Fig. 4)

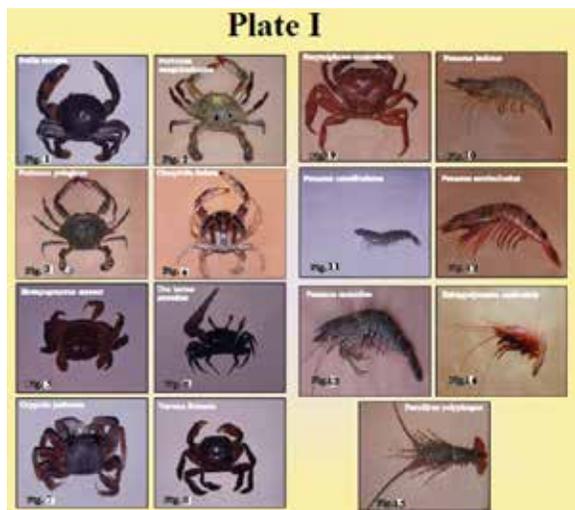
5) *Metapograpsus messor* (Forsk.) Phylum – Arthropoda, Class – Crustacea, Order-Decapoda, Family – Grapsidae, Genus – *Metapograpsus*, Species – *messor*. Walking legs are shorter, dactylus nearly as long as propodus. Lateral margin markedly convergent posteriorly. Last segment of male abdomen is triangular. Carapace is four fifths as long as broad. There are fine transverse markings on the postfrontal region. Terminal segment of male abdomen is triangular. (Fig. 5)

6) *Varuna litterata* (Fabricius) Phylum – Arthropoda Class – Crustacea, Order-Decapoda, Family- Grapsidae, Genus – *Varuna*, Species – *litterata*. Spines on anterolateral border of carapace are not sharp. First pair of leg is chelate, other legs with brush border. Colour is dark brownish to black. (Fig. 6)

7) *Uca lactea annulies* (H. Milne edwards) Phylum – Arthropoda, Class- Crustacea, Order -Decapoda, Family-Ocypodidae, Genus – *Uca*, Species-*lactea annulies*. It is commonly called fiddler crab. There is a straight row of smaller tubercles along sides of propodus of immobile finger of upper margin of major cheliped. Dactylus of major cheliped convex and notably, chela is rosey red in colour. An enlarged tooth near tip of large cheliped of male gives tip of this finger a notched truncate appearance. (Fig. 7)

8) *Ocypode platytarsis* (Milne edwards), Phylum –Arthropoda, Class – Crustacea, Order -Decapod, Family – Ocypodidae, Genus – *Ocypode*, Species-*platytarsis*. It is commonly called ghost crab. A stridulating ridge is present on inner surface of palm. Eyestalks in adults are prolonged beyond eyes to form a horn or style. Finger of both chelipeds pointed stridulating ridge consists entirely of small tubercles. No brushes of hair on propodus of any leg. (Plate II, Fig. 8)

9) *Barytelphusa cunicularis* (Westwood) Phylum -Arthropoda, Class – Crustacea, Order -Decapoda, Family-Potamonidae, Genus -*Barytelphusa*, Species –*cunicularis*. The first pair of leg is chelate. Other legs are nonchelate. Colour is brownish. Fifth pairs of leg are not paddle like. (Fig. 9)



Prawns

10) *Penaeus indicus* (De man) Phylum – Arthropoda, Class – Crustacea, Order - Decapoda, Family – Penaeidae, Genus - *Penaeus*, Species - *indicus*. It is commonly known as Indian white prawn. Colour is translucent whitish with gray and green coloured chromatophores distributed over the carapace and abdomen. The antennae and terminal portion of appendages are pinkish or reddish crest mostly brown. Rostrum is long and slen-

der with distinct double curve. There are 7-8 dorsal teeth and 4-5 ventral teeth on the rostrum. In male the tip of median lobe is rounded and its dorsal margin is serrated with 12 calcified teeth. In female, the thelycum is small and semicircular with minute apical spine on its border. It prefers to live in sandy mud. Juvenile spend their life in estuaries till they grow about 12-14 cm and then return to sea where they grow into an adult. (Fig. 10)

11) *Penaeus canaliculatus* (Olivier, 1811) Phylum – Arthropoda, Class – Crustacea, Order - Decapoda, Family – Penaeidae, Genus - *Penaeus*, Species – *canaliculatus*. It is commonly known as stripped prawn or witch prawn. Rostrum is horizontal rather short with 6-7 teeth on dorsal side and 1 tooth on ventral side. Carapace is smooth. Maximum size of adult male is 15cm and female is about 18cm. It is closely related with *P. japonicus* and very similar to several other penaeid species. The main difference is that the witch prawn lacks the movable spines along the side of the telson. (Fig. 11)

12) *Penaeus semisulcatus* (De Haan, 1844) Phylum – Arthropoda, Class – Crustacea, Order -Decapoda, Family – Penaeidae Genus – *Penaeus*, Species- *semisulcatus*. It is commonly called green tiger prawn. It is very important commercial species often known as flower shrimp. Carapace and abdomen are with pale transverse bands. Antennae stripped white and brown. Walking legs and pleopods are whitish. Size of male 19 cm and female 23 cm. Carapace is smooth. Rostrum has 5-8 teeth on dorsal side and 2-4 teeth on ventral side. Adrostral crest is grooved reaching beyond epigastric tooth. Postrostral crest is medially grooved nearly reaching posterior margin of carapace. Sixth abdominal somite bearing three scars. Telson is unarmed. Basial spine is present on first and second walking leg. Petasma is symmetrical. Thelycum is closed with convex tumid lateral plates. (Fig. 12)

13) *Penaeus mondon* (Fabricius,1798) Phylum – Arthropoda, Class –Crustacea, Order – Decapoda, Family – Penaeidae, Genus – *Penaeus*, Species- *monodon*. It is the largest penaeid prawn in the world. It is known as giant tiger prawn. Maximum size of male about 27 cm and female about 35 cm. Quite abundant on mud and a mixture of sand and mud. The fifth pereopod is without exopod. (Fig. 13)

14) *Exhippolysmata ensirostris* (Kemp) Phylum-Arthropoda, Class-Crustacea, Order- Decapoda, Family-Hippolytidae, Genus -*Exhippolysmata*, Species – *ensirostris*. Rostrum is longer than carapace, with elevated dentate crest. The apex of telson is acute and unarmed. Chelae of first pair of pereopods are distinct on both sides. Eyes are long never extreme elongate. (Fig. 14)

Lobster

15) *Panulirus polyphagus* Phylum – Arthropoda, Class-Crustacea, Order- Decapoda, Family- Panuliridae, Genus – *Panulirus*, Species – *polyphagus*. It is commonly known as the spiny lobster or rock lobster. Size ranges about 12 to 25 cm in length. It occurs among the rocks in shallow water in the sea. Exoskeleton is thick armed with spines. Rostrum reduced into small spine. Antennae are very long and fused proximally. There are five pairs of nonchelate legs. Four pairs of fan like pleopods or swimmerets in the abdomen. (Fig. 15)

Discussion: Crustaceans constitute an important fishery in India for the reason that most of them command good domestic as well as export market. However, among the crustaceans, crabs are not accorded the same importance that shrimps or lobster, prawn command, despite the fact that they have a significant export market. The demand is mostly for live crabs though limited to certain south-east Asian countries. As regards the nutritional quality, shrimps, prawns and crabs are almost on par having high protein content of 14.37 % and 17.5 0% respectively. Among the edible marine crustaceans of India, crabs rank third by virtue of their

importance as favored delicacy and the value of fishery they support while shrimps and lobsters occupy the first & second place respectively (Balange and Vartak et. al., 2003). In the present study, survey of crustaceans has been conducted on Dahanu coast. The crabs observed belonged to the family Portunidae (4 species *Scylla serrata*, *Portunus sanguinolentus*, *Portunus pelagicus* and *Charybdis feriata*), family Grapsidae (2 species *Metapograpsus messor* and *Varuna litterata*), family Ocypodidae (2 species *Uca lactea annulipes* and *Ocypode platytarsis*), and family Potamonidae (1 species *Barytelphusa cunicularis*) prawn belonged to family Penaeidae (4 species *Penaeus indicus*, *Penaeus canaliculatus*, *Penaeus semisulcatus* and *Penaeus monodon*) and family Hippolitidae (1 species *Exhippolysmata ensirosteris*). Among lobsters only one species of family Panuliridae (*Panulirus polyphagus*) was noticed. The appearance and disappearance of species might be due to the frequent mobility of species in and out of the area in response to environmental changes and disturbances created by trawling and probably by pollution (Ali et al. 2005). Similar observation was also supported by Chou et al. (1999).

Summary

In the present study, the survey of crustaceans has been conducted on Dahanu coast. Crabs observed belonged to the family Portunidae (4 species *Scylla serrata*, *Portunus sanguinolentus*, *Portunus pelagicus* and *Charybdis feriata*), family Grapsidae (2 species *Metapograpsus messor* and *Varuna litterata*), family Ocypodidae (2 species *Uca lactea annulipes* and *Ocypode platytarsis*), and family Potamonidae (1 species *Barytelphusa cunicularis*) prawn belonged to family Penaeidae (4 species *Penaeus indicus*, *Penaeus canaliculatus*, *Penaeus semisulcatus* and *Penaeus monodon*) and family Hippolitidae (1 species *Exhippolysmata ensirosteris*). Among lobsters only one species of family Panuliridae (*Panulirus polyphagus*) was noticed. The investigation is helpful for the study of distribution and conservation of crustacean species.

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