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Research Paper

Diversity of Brachyuran Crabs of Kanyakumari Area, South West Coasts of India

Fisheries

KEYWORDS : Brachyuran crabs, Portunidae, Leucosidae, Kanyakumari Coast

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ABSTRACT

Brachyuran crabs are the most diverse group of crustaceans. The infraorder Brachyura contains 6,793 species in 93 families as many as the remainder of the Decapoda. The brachyuran crab diversity was studied from ten stations of Kanyakumari District (8.0780° N, 77.5410°E) of Tamil Nadu; south west coast of India, which recorded 40 species, 16 genera from 7 families during the study. Out of the seven the most diverse families are Portunidae and Leucosiidae. Out of 16 genera, Charybdis has 23 species under the family Portunidae.

INTRODUCTION

Brachyuran crabs found at even 6000m depths to seas shore and are dominant in many estuarine habitats where salinity and temperatures can fluctuate dramatically daily (Ng *et al*., 2008). Tropical and subtropical regions have more number of crab species compared to temperate and cold regions (Fransozo and Negreiros-Fransozo, 1996; Boschi, 2000a). Brachyuran crabs, comprise about 700 genera and 5000 to 10,000 species worldwide (Kaestner, 1970; Melo, 1996; Ng, 1998; Martin and Davis, 2001; Sternberg and Cumberlidge, 2001; Ng *et al*.,2008; Yeo *et al*., 2008), out of which 2,600 are present in Indo-West Pacific Region (Serene, 1968). Boschi (2000) and Hendrickx (1995, 1999) prepared major species of crab lists for the Americas.

Since 1961, there has not been notable progress in the studies of diversity of crabs of west coast of India, except few occasional reports. Within this period, the taxonomic status of several species has also been revised. Hence, there is a need to update the current knowledge of the biodiversity studies of crabs of south west and south east coasts of India. In India 705 brachyuran crab species represented under 28 families, 270 genera have been reported (Venkataraman & Wafar, 2005). Tamil Nadu coast has 404 species of crabs belonging to 26 families and 152 genera (Kathirvel, 2008). Maximum percentages of crab catches are landed from Gulf of Mannar, Palk Bay, Nagapattinam and Puducherry landings of Tamil Nadu coast in India (Rao *et al*., 1973). Chennai coast has witnessed an annual crab landings were over 1500 t (Thangaraj Subramanian, 1998).

There were number of studies reported about the diversity of brachyuran crabs near our study area, Gulf of Mannar areas (Jeyabaskaran and Ajmal Khan, 2007), Pondicherry mangrove areas (Satheeshkumar and Khan, 2011), Pichavaram mangrove areas (Ajmal Khan et al., 2005; Ravichandran and Kannupandi, 2007) and Parangipettai coast (John Samuel et al., 2004; John Samuel and Soundarapandian, 2009).

The entire kanyakumari distirct was surveyed and ten identified stations were marked for detailed Brachyuran crab study. Hoping that, this study would bring out more new species and new reports from this region. Also the literature shows there is a lacuna on the diversity of Brachyuran crabs of Kanyakumari coast hence this present study was attempted.

MATERIALS AND METHODS

Specimens were collected monthly from 10 stations, randomly selected from Kanyakumari (8.0780° N, 77.5410°E) south west coast of India (Fig.1).

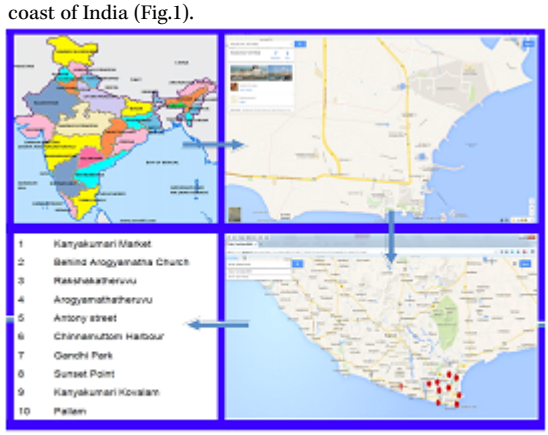

Fig.1 Map Showing Study Sites

The selected ten stations are (i) Kanyakumari Market, (ii) Behind Arogyamatha Church, (iii) Rakshakatheruvu, (iv) Arogyamathatheruvu, (v) Antony street, (vi) Chinnamuttom Harbour, (vii) Gandhi Park, (viii) Sunset Point, (ix) Kanyakumari Kovalam and (x) Pallam. Specimens collected by handpicking from coasts, from trawl bycatches, visiting landing centres, for a period of August 2013 to June 2014. The burrowing intertidal crabs collected either by digging or by pouring dilute formalin or weak acid inside the borrow. From each site the collection was made from a 1m x 1m quadrate area during low tide. The collected crabs were then washed in sea water, photographed from the sites itself and kept in ice boxes, packed and transported to laboratory. These were processed appropriately and samples were preserved. Specimens were identified up to the species level as far as possible. The species level identification was done using text books/monographs/ reprints/CD ROMs & standard publications, keys (Sakai, 1976; Sethuramalingam and Ajmal Khan, 1991) and with the help of subject experts.

RESULTS AND DISCUSSION

The survey during August 2013 to July 2014 revealed the occurrence of 7 families, 16 genera and 40 species (Table 1 and Fig 2)

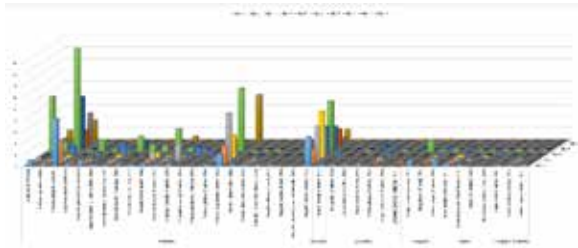

Fig 2: Disrtibution & Abundance of Brachyuran Crabs in 10 stations of Kanyakumari Coast

The number of species per family varied considerably; 1 to 23 species; and the most diverse families were Portunidae (23 species, 5 genera) followed by Leucosiidae (6 species, 4 genera) Majidae (4 species, 2 genera), Callapidae (3 species, 2 genera), Dorippidae (2 species, 1 genera), Galenidae (1 species, 1 genera), and Dromiidae (1 species, 1 genera). Species like *Portunus pelagicus* and *Charybdis feriata* from the family Portunidae were collected from all the ten stations of Kanyakumari and are the most abundant species. Among the 40 species *Portunus pelagicus* was the most dominant one followed by *Portunus sanguinolentus*.

A checklist of brachyuran crabs of the world 6,793 species 1,271 genera and 93 families prepared by Ng et al.(2008). Bertini et al. (2004) recorded 79 brachyuran species representing 9 superfamilies (4Dromioidea, 1Homoloidea, 2 Calappoidea, 5 Leucosioidea, 20 Majoidea, 7 Parthenopoidea, 17 Portunoidea, 18 Xanthoidea and 5 Pinnotheroidea) and 41 genera in sublittoral bottom on the northern coast of Sao Paulo state in Brazil. In waters 548 species belonging to 36 families including twenty new records reported by Ng et al. (2001). A total of 450 species, belonging to 181 genera reported on the west coast of America (Hendrickx, 1995). Kazmi (1984) recorded 47 species pertaining to 8 families and 34 genera at northern Arabian Sea (Pakistan).

Table1: Distribution & Abundance of Brachyuran Crabs in 10 stations of Kanyakumari Coast

Sl No	Species Name	Site 1	Site 2	Site 3	Site 4	Site 5	Site 6	Site 7	Site 8	Site 9	Site 10
Family Portunidae											
1	*Scylla serrata* (Forskal)	5	1	2	0	0	48	0	0	4	9
2	*Portunus argentatus* (White)	2	1	1	1	1	8	1	1	5	1
3	*Portunus pelagicus* (Linnaeus)	41	20	3	2	8	90	45	14	26	18
4	*Scylla tranquebarica* (Fabricius)	2	1	0	0	0	1	0	0	0	0
5	*Charybdis granulata* (De Haan 1835)	5	2	1	0	2	10	1	0	0	0
6	*Charybdis hellerii* (A. Milne Edwards, 1867)	1	0	0	0	0	2	0	0	0	1
7	*Charybdis hoplites* (Wood-Mason, 1877)	1	2	1	2	9	1	2	1	1	1
8	*Charybdis lucifera* (Fabricious, 1798)	2	0	0	0	0	14	7	1	1	0
9	*Charybdis miles* (de Haan, 1835)	1	0	0	0	0	6	1	0	1	1
10	*Charybdis natator* (Herbst, 1789)	2	3	7	4	1	5	1	1	0	0
11	*Charybdis truncata* (Fabricius, 1798)	1	1	1	1	1	20	1	0	0	4
12	*Charybdis variegata* (Fabricius, 1798)	2	0	14	1	1	3	2	0	0	0
13	*Podophthalmus vigil* (Fabricius, 1798)	0	0	0	0	6	1	1	1	1	0
14	*Portunus gracilimanus* (Stimpson, 1858)	0	0	0	0	2	0	0	1	0	1
15	*Portunus gladiator* (Fabricius, 1798)	1	0	1	1	1	1	1	1	0	0
16	*Portunus sanguinolentus* (Herbst, 1783)	10	15	41	20	2	55	2	2	2	40
17	*Portunus spinipes* (Miers, 1886)	1	0	0	0	0	1	0	0	0	0
18	*Portunus whitei* (Milne Edwards, 1872)	1	1	1	0	0	1	0	0	1	0
19	*Thalamita crenata* (Milne Edwards, 1861)	1	0	0	0	0	1	0	0	0	0
20	*Charybdis callianasa* (Herbst, 1801)	1	0	0	0	0	0	0	0	0	0
21	*Charybdis cruciata* (Herbst, 1794)	0	0	0	0	0	1	0	0	0	0
22	*Charybdis edwardsi* (Leene and Buitendijk, 1952	0	0	0	0	0	2	0	2	1	0
23	*Charybdis feriata* (Linnaeus, 1758)	25	12	30	40	25	44	20	15	5	10
Family Dromiidae											
24	*Dromia dehaanii* (Rathbun, 1923)	1	0	0	0	2	0	0	0	0	1
Family Leucosiidae											
25	*Ixa cylindrus* (Fabricius, 1777)	1	0	0	0	0	0	0	0	0	0
26	*Leucosia pubescens* (Miers, 1886)	1	0	0	0	0	1	0	0	0	0
27	*Philyra corallicola* (Alcock, 1896)	2	0	0	0	0	0	4	0	0	0
28	*Philyra globosa* (Fabricius, 1798)	0	1	2	0	2	0	1	0	0	0
29	*Philyra scabriuscula* (Fabricius, 1798)	0	0	0	0	0	1	0	1	0	1
30	*Oreophorus rugosus* (Stimpson, 1858)	0	1	0	0	0	0	1	0	0	1
Family Calappidae											
31	*Calappa calappa* (Linnaeus, 1758)	5	0	0	0	0	10	0	0	0	1
32	*Matuta lunaris* (Forskal, 1775)	0	1	1	1	1	1	1	0	0	0
33	*Matuta planipes* (Fabricius, 1798)	5	0	0	0	0	2	0	1	0	0
Family Majidae											
34	*Doclea gracilipes* (Stimpson, 1857)	2	2	2	2	2	0	2	1	2	0
35	*Doclea hybrida* (H. Milne Edwards, 1834)	1	0	1	0	0	1	0	0	0	0
36	*Doclea ovis* (Herbest, 1788)	0	0	0	1	0	1	0	0	1	1
37	*Thacanophrys aculeata* (Alcock, 1895)	0	0	0	0	1	1	0	0	0	0
Family Dorippidae 1 g											
38	*Dorippe astuta* Fabricius, 1793	1	0	0	0	0	2	0	0	1	0
39	*Dorippe dorsipus* (Linnaeus, 1758)	1	1	1	0	0	1	0	0	1	0
Family Galenidae											
40	*Galene bispinosa* (Herbst, 1783)	1	0	0	0	0	1	0	0	0	0

There were about 482 species recorded in Portunidae family during 1970-1997 along southern Somalian coast (Vannini and Innocenti, 2000), 23 species recoded on that family during my collection

In Indian mangrove areas of Gulf of Kutch, Gujarat state 19 species of brachyuran crabs have been recorded (Trivedi et al., 2012). Mangrove areas of Pondicherry coast 15 species of brachyuran crabs belongingto 10 genera and 7 families were recorded (Satheeshkumar and Khan, 2011). Krishnamoorthy (2007) reported 54 species (excluding those belonging to family Portunidae) crabs from Chennai coast. In different areas of Gulf of Mannar such Manauli Island (32 species), Appa Island (26 species); Nallathanni Island (22 species) and Karaichalli Island (18 species) have been reported (Jayabaskaran and Ajmal Khan, 2007). A total of 38 species of brachyuran crabs (Ajmal Khan et al., 2005) and 46 species of crabs (Ravichandran and Kannupandi, 2007) were reported from Picharvaram mangrove areas.

A total of 68 species Brachyuran crabs including nine species Portunidae family reported in shallow marine and estuarine water from southern Bahia coast of Brazil (Almeida et al., 2010). Hundred and sixty two species of brachyuran crabs recorded in the state of Bahia in eastern Brazil comprises more than 12% of the entire Brazilian coast (Almeida and Coelho, 2008). The total annual crab landings of the Parangipettai coast reported (John Samuel et al., 2004).

During the present study *Charybdis feriata* was a present status. On 13th December 2004, *Charybdis feriata* was recorded for the first time from the Mediterranean Sea, based on a single adult female caught in a gillnet off Barcelona at the depth of 60-70 meter (Abello and Hispano, 2006). Crab species *Charybdis feriata* widely distributed in the Indo-Pacific regions (Stephenson et al., 1957; Stephenson, 1972a; Ng, 1998; Apel and Spiridonov, 1998).

In the present study *Portunus pelagicus* recorded as the abundant species. Portunidae crab *Charybdis hellerii* widespread in the whole Indo-Pacific, migrated to Mediterranean through the Suez Canal (Steinitz, 1929). *Charybdis hellerii* has been successfully introduced in the central western Atlantic Ocean (Lemaitre, 1995; Dineen et al., 2001). The species of genus Charybdis (*Charybdis hellerii*) is known to have been introduced as Lessepsian migrants into the Mediterranean Sea and occur in self-sustaining population with a distribution area stretching from Egypt to Turkey (Galil et al., 2002). *Charybdis hellerii* was recorded in Kanyakumari coast as a present status.

CONCLUSION

The study on diversity of brachyuran crabs of Kanyakumari coast recorded 40 species, 16 genera from 7 families. Out of the seven the most diverse families are Portunidae and Leucosiidae. Out of 16 genera, *Charybdis* has 23 species under the family Portunidae. The study site contains rich source of brachyuran crabs and further investigations and surveys will helps us to explore more diversity.

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