



## First record of the reef lobster *Enoplometopus macrodontus* Chan and Ng, 2008 from Indian waters

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### Abstract

The reef lobster *Enoplometopus macrodontus* was caught during the deep sea trawl operations off Chavakkad from a depth of 320 m. About ten specimens were landed at the Kalamukku Fishing Harbour, Kochi. The carapace length was 66-75 mm and weight was 79.3-94.2 g. This is the first report of the species in the Indian waters. The species has a smooth carapace with hair on the abdomen, chelipeds and telson. The morphological characters along with colour pattern are described.

**Keywords:** reef lobster, Enoplometopidae, Indian waters

### Introduction

*Enoplometopus macrodontus*, also referred to as reef lobster, is a member of the family Enoplometopidae under the order Decapoda. Holthuis (1983) considered *Enoplometopus* as Axiids (Infra order: *Thalassinidea*, now *Axiidea* see De Grave *et al.*, 2009) rather than Nephropsids. They can be distinguished from the clawed lobsters of the family Nephropidae by the presence of full claws on the first pair of the pereopods, the second and third pairs being only sub-chelate. They have a shallow cervical groove compared to the clawed lobsters in which the cervical groove is deep. *E. macrodontus* is relatively a newly recorded species which was first reported from Balicasay Island, near Panglao, Visayas Central Philippines in 2002 probably from depths of 90-200 m (Chan and Ng, 2008). Totally twelve species have been recorded under this genus, two from the Atlantic, four from the Indo-West Pacific region, two from West Pacific, two from Philippines, one from Reunion and one species from French Polynesia, New Caledonia and Japan (Chan and Ng, 2008). They are brightly coloured inhabiting rocky reefs or in the deeper part of the reef slopes and are nocturnal and timid. This is the first record of the species from the Indian coast.

### Material and Methods

Ten specimens were observed in the deep sea trawl landings at the Kalamukku (Kochi) Fishing

Harbour on 17/9/2009. The specimen measured 66-75 mm in carapace length, 143-170 mm in total length and weighed 79.31-94.2 g. They were caught off Chavakkad (10° 30', 75° 24') from a depth of 320 m. The specimens were identified following the keys provided by Chan, (1998) and Poupin (2003). A specimen is deposited in the Marine Biodiversity Referral Museum of the Central Marine Fisheries Research Institute, Kochi, India (Acc.No. ED. 3.4.1.1, date 14.10.2009). The Crusher Propodite Volume index for four male specimens was estimated by the method of Aiken and Waddy (1980) by using the equation

$$CPV = \frac{LxWxD}{CL} \times 10$$

The chelipeds in male lobsters increase in volume on attaining maturity. This index known as 'Anderson-Cheliped Index' when plotted against the carapace length for a range of males, produces an inflection which corresponds to the size at maturity for the species of that area.

### Results

**Material examined:** 10°30', 75°24', off Chavakkad, Kerala, South West coast of India.

Class: Malacostraca; Order: Decapoda; Suborder: Pleocyemata Burkenroad, 1963; Infraorder: Astacidea, Latreille, 1802; Family: Enoplometopidae

de Saint Laurent, 1988; Genus: *Enoplometopus* A.Milne Edwards, 1862; Specific name: *macrodontus* Randall, 1840.

### Description

Body is cylindrical, carapace pubescent with numerous long stiff setae on the chelipeds, pereopods abdomen and telson. The rostrum is elongated which overreaches beyond the base of the antennular peduncle, armed with four spines laterally. The carapace is with five median and one post cervical spine (Fig.1a). There are two lateral spines, one intermediate spine and one supra-ocular spine on the carapace. The intermediate tooth as large as the supra-ocular spine extends nearly to the margin of the eye. The median spines are almost equal but with anterior most spines slightly smaller. The post-cervical tooth smaller than median teeth and is well defined and extends beyond the cervical groove. Abdomen and telson with long stiff setae; low blunt median keel on somites I-VI with shallow depressions on pleura; pleura II-VI terminate as distinct spines that become progressively smaller posteriorly; anterior margin of pleura II-V denticulate, posterior margin smooth (Fig.1b). Telson rectangular, slightly longer than wide bearing two pair of movable lateral spine and two pairs of movable postero-lateral spines; two postero-lateral spines always very close with inner one longer; two lateral spines far apart; uropod with protopodite divided into two lobes; endopod shorter than telson and bearing a postero-lateral spine.



Fig. 1a. Dorsal view of male (left) and female specimen of *Enoplometopus macrodontus*



Fig. 1b. Lateral view; the pleura with the anterior margin of II-V denticulate and posterior margin smooth

First cheliped on both left and right sides similar in size and shape; fingers as long or as slightly longer than palm; tips of finger curve inward; fixed fingers slightly longer than movable one; outer margins of fingers densely covered with stiff setae; dorsal and ventral surfaces of palm smooth but pubescent. Carpus and merus of first cheliped almost completely covered with large and small teeth along the margins except posterior 1/2 -1/3 of dorsal margin of merus which is finely denticulate or smooth. Pereiopods II to V sub-chelate. Receptaculum seminis (Fig.1d) on thoracic sternum with blunt anterior end, posterior end wider, triangularly notched, lateral margin convex but deeply notched at posterior 1/3 with a small spine on posterior part. The morphological characters of both male and female specimens from the present collection closely match the description of the specimen described by Chan and Ng (2008). The cervical groove is inconspicuous and shallow, antennal spine large. Branchiostegal spine is present and small. Eyes are well developed; black and sub-spherical. The first pereopod is long chelate and dorsoventrally compressed. The Anderson-Cheliped Index for four males was estimated, male of carapace length (CL) 68.45 mm had an index of 1461, CL 72.53 mm with 1668, CL 66 mm with an index of 1470 and CL 66.43 mm had an index of 1508. Second to fourth pereopods are slender. The inner face of the chela is with four spines and the outer face is with tubercles. Outer margin of the propodus has 9-10 teeth and the inner margin 8 teeth, rest are tubercles. The pleura of the abdominal somites II-V

is bluntly pointed. Sexes can be externally differentiated. The first pleopods of male specimen are thin, rigid and point towards the sternum (Fig. 1c) in between the fifth leg. The first pair of pleopods in males has been modified into a copulatory organ. In females, a large sperm receptacle process is present on the thoracic sternum between the last three legs.



Fig. 1c. Ventral view showing modification of first pleopod into petasma

### Colour

*E. macrodontus* can be easily distinguished from the other species of the genus by colour pattern. Four prominent white spots on the posterior margin of the carapace were present but in some specimen only two spots were visible. The colour of the specimen varies from orange to red. Anterio-lateral region of the carapace is with a large white spot and a smaller one below (Fig. 1a). The rostrum has three transverse white bands, one at the base of the rostrum, one in the middle and another on the horn. Basal antennal segment and second to fifth walking legs are banded with red and white. The spines are red with a white

tip. Antennae and antennules are white; uropods and telson are red with the uropods having a white band. A large white spot is present on the pleuron of the first somite, a similar but somewhat smaller spot is found on the base of each of the pleura of the following somites. White spots are also visible at the base of each pleuron. The abdomen is reddish



Fig. 1d. Ventral view of female showing receptaculum seminis

with white spots circled with orange along the median line and also laterally.

### Discussion

*E. macrodontus*, reported only from Philippines, is a new record from Kochi, southwest coast of India. This is the first record from Indian waters as well. Eleven other species of *Enoplometopus* recorded from the world oceans are *E. occidentalis*, *E. chacei*, *E. crosnieri*, *E. daumi*, *E. debelius*, *E. gracilipes*, *E. holthuisi*, *E. pictus*, *E. callistus*, *E. voigtmani* and *E. antillensis*. They are generally small in size and *E. macrodontus* is comparatively larger. The present



specimens measured 66-75 mm in carapace length (largest male 72.5 mm CL and female 75 mm CL) and are larger compared to their counterparts from Philippines where the largest female had a carapace length of 46.7 mm and the largest male 58 mm. *E. macrodontus* can be mistaken with the other Indo-West Pacific species *E. occidentalis* in certain colour patterns. Both have only one spot on the carapace, many white spots on tergites and pleura and plain antennular flagella. They can be distinguished from each other by the presence of only one white band on the large chelae and banded basal segments on the II-V pereopods in *E. macrodontus*. This species also closely resembles the Atlantic *E. callistus* in having two lateral teeth, one intermediate tooth, five median teeth and one post cervical tooth on the carapace, presence of disto-ventral spine on the Ischium of the III maxilliped and two lateral spines on the telson. Chan and Ng (2008) reported *E. macrodontus* having two pairs of lateral spines on the telson. The present specimen also has two pairs of lateral spines and two pairs of postero-lateral spines. They state that the disto-lateral spine sometimes is quite close to the postero-lateral spines and hence, this is not an useful tool for taxonomic purpose. Since all *Enoplometopus* species have beautiful colour patterns, with spots and some with stripes, fresh specimens can be easily identified.

### Acknowledgements

We thank Dr.G. Syda Rao, Director, Central Marine Fisheries Research Institute, for his constant encouragement and support. The authors extend their sincere thanks to Dr. Joseph Poupin, Institut de Recherche de l' Ecole navale (IRENav), France for referring the photograph of the specimen to Dr. Tim-

Yam Chan, Institute of Marine Biology, National Taiwan Ocean University, Taiwan for confirmation and Dr. Tim-Yam Chan for identification and confirmation of the species. We are also thankful to Mrs. Sajitha for secretarial assistance.

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Received : 04/06/2011

Accepted : 14/07/2011

Published : 15/12/2011