

# A new reef lobster of the genus *Enoplometopus* A. Milne Edwards, 1862 (Decapoda, Nephropoidea) from the western and southern Pacific

**Tin-Yam CHAN**

Institute of Marine Biology, National Taiwan Ocean University,  
Keelung, (Taiwan, R.O.C.)  
tychan@ntou66.ntou.edu.tw

**Hsiang-Ping YU**

Graduate School of Fisheries Sciences, National Taiwan Ocean University,  
Keelung, (Taiwan, R.O.C.)

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## ABSTRACT

A new reef lobster, *Enoplometopus crosnieri* n.sp., is described based on a Taiwanese specimen. This new species can be readily distinguished from all others of the genus by having one intermediate and one postcervical teeth on the carapace, as well as a distinctive coloration. *E. crosnieri* is also known from the Timor Sea and French Polynesia. A key to the genus *Enoplometopus* is also provided.

## KEY WORDS

Crustacea,  
Decapoda,  
Nephropoidea,  
*Enoplometopus*,  
new species.

## RÉSUMÉ

*Une nouvelle langouste récifale du genre Enoplometopus A. Milne Edwards, 1862 (Decapoda, Nephropoidea) de l'ouest et du sud Pacifique.* Une nouvelle « langouste » récifale, *Enoplometopus crosnieri* n.sp., est décrite à partir d'un spécimen de Taiwan. Cette nouvelle espèce peut être facilement distinguée de toutes les autres du genre par la présence sur la carapace d'une dent intermédiaire et d'une dent postcervicale et par sa coloration distincte. *E. crosnieri* est également signalée de la mer de Timor et de Polynésie française. Une clé du genre *Enoplometopus* est présentée.

## MOTS CLÉS

Crustacea,  
Decapoda,  
Nephropoidea,  
*Enoplometopus*,  
nouvelle espèce.

## INTRODUCTION

In January 1997, a live specimen of an unusual reef lobster of the genus *Enoplometopus* A. Milne-Edwards, 1862, was found in a sea-food restaurant near the National Taiwan Ocean University (NTOU), Keelung. The animal was immediately purchased and kept in an aquarium at the NTOU. This large specimen was found to have a completely different coloration (Figs 1, 2) than *E. occidentalis* (Randall, 1840), the only species of the genus previously known from Taiwan (Chan & Yu 1993). Although the presence of a large red ocellus (or "bullseye") on the lateral carapace in our Taiwanese specimen resembles the colour pattern reported for *E. holthuisi* Gordon, 1968, the morphological characters of the Taiwanese specimen differ considerably from *E. holthuisi*. Our specimen and *E. holthuisi* could be assigned to different subgenera or even genera [e.g. *Enoplometopus* (*sensu* Holthuis 1983) for the Taiwanese specimen and *Hoplometopus* Holthuis, 1983 for *E. holthuisi*] according to some authors (e.g. Holthuis 1983; Kensley & Child 1986; de Saint Laurent 1988; Türkay 1989; Poupin *et al.* 1990; Poupin 1996). Careful comparisons showed that our specimen is distinct from all known species of the genus. Moreover, the colour photograph of a specimen from French Polynesia (Poupin *et al.* 1990: pl. III-c; Poupin 1996: pl. V-h), and some unpublished photographs of a specimen from the Timor Sea (A. J. Bruce, pers. comm.) also clearly show that they represent the same undescribed species discovered in Taiwan. This reef lobster is here described.

## MATERIAL AND METHODS

The Taiwanese specimen was kept in an aquarium at NTOU for about four months, molting once before dying. Both the specimen and complete molt are deposited at the crustacean collection at NTOU. The carapace length (cl) and body length (bl) given were measured dorsally from the orbital margin to the posterior margin of the carapace and distal margin of the telson, respectively.

The following species deposited at NTOU were

used for comparisons: *E. occidentalis* (Randall, 1840) [Taiwan: 3 ♂♂ 44.2-46.5 mm cl; 4 ♀♀ 31.9-44.8 mm cl; Singapore aquarium shops, place of origin unknown: 1 ♀ 14.3 mm cl], *E. debelius* Holthuis, 1983 [Singapore aquarium shops, place of origin unknown: 2 ♂♂ 11.2-13.8 mm cl, 1 ♀ 12.3 mm cl], *E. daumi* Holthuis, 1983 [Philippines, 1 ovig. ♀ 18.5 mm cl; Singapore aquarium shops, place of origin unknown: 3 ♂♂ 13.6-18.6 mm cl, 2 ♀♀ 13.1-14.2 mm cl], *E. gracilipes* (de Saint Laurent, 1988) [French Polynesia: 1 ♂ 46.1 mm cl].

## SYSTEMATIC ACCOUNT

*Enoplometopus crosnieri* n.sp.

(Figs 1-3)

*Enoplometopus* n.sp. — Poupin *et al.* 1990: pl. III-c; Poupin 1996: pl. V-h.

**MATERIAL EXAMINED.** — **Northern Taiwan.** Keelung, Ho-Ping Island (probably caught with lobster trap net at about 100 m deep off Keelung), January 1997: holotype, ovig. ♀, 55.4 mm cl, 135.7 mm tl, molt 54.7 mm cl, obtained from sea-food restaurant in fish market (NTOU 1997-1-H).

**TYPE-LOCALITY.** — Keelung, northern Taiwan.

**ETYMOLOGY.** — The genus *Enoplometopus* already has species named after two prominent macruran decapod taxonomists who are still with us; *i.e.* F. A. Chace Jr. and L. B. Holthuis. It is a pleasure here to include A. Crosnier's name in this genus. Moreover, this active and colourful lobster matches well with the impression of A. Crosnier to other carcinology colleagues.

**SIZE.** — Rather large for the genus, with carapace length 46-54.7 mm.

**DISTRIBUTION.** — Western and southern Pacific; known with certainty from Taiwan, Timor Sea (near Darwin, Australia) and French Polynesia (see "Remarks"). At depths of about 100 m, on hard bottoms.

## DESCRIPTION

Size moderately large. Body distinctly pubescent and with many long stiff hairs. Rostrum elongated, triangular and sharply pointed; exceeding antennular peduncle, and armed with two pairs

of lateral teeth. Carapace bearing one large supra-ocular spine, one large intermediate, six median, two lateral and one postcervical teeth; intermediate tooth larger than supra-ocular spine; median teeth with anteriormost one small but distinct while posteriormost one more or less as large as intermediate tooth; postcervical tooth large, similar in size to supra-ocular spine. Anterolateral carapace armed with large antennal spine (strongly bent inwards) and minute branchiostegal spine. Dorsal surfaces of rostrum and carapace scattered with few long stiff hairs. Eyes well-developed, subspherical. Scaphocerite (including distolateral tooth) reaching tip of antennular peduncle. Antennal peduncle slightly overreaching scaphocerite; basal segment bearing a strong ventral spine (basicerite spine), with dorso-lateral angle blunt and not developed into spine. Maxilliped III overreaching scaphocerite by distal two segments; carpus bearing small distoventral spine; merus with two large distoventral teeth; ischium having one disto-outer and one disto-

ventral spines, inner margin serrated, consisting of row of sharp teeth; basis with distoventral spine. First chelipeds exceeding scaphocerite by one half carpus; almost equal in size and shape except for cutting edges of fingers; chelae with fingers slightly longer than palm; fixed finger slightly longer than movable finger, outer and inner margins heavily serrated with large teeth and covered with many long stiff hairs, tips of fingers elongate and curving inwards; dorsal and ventral surfaces of palm densely covered with sharp tubercles except for marginal areas; dorsal hinge of fingers armed with large tooth, ventral hinge bearing large tubercle; fingers distinctly ridged medially and bearing only few sharp tubercles near bases; cutting edges of right fingers distributed with many small crushing teeth as well as a few larger ones on that of movable finger, while that of fixed finger also bearing five large broad teeth; cutting edges of left fingers serrated, with numerous small sharp teeth, that of fixed finger also bearing six large teeth while that



FIG. 1. — *Enoplometopus crosnieri* n.sp., holotype ovig. ♀, 55.4 mm cl., Keelung, Taiwan (NTOU 1997-1-H).

of movable finger having eleven additional moderate sized teeth; some long stiff hairs present along cutting edges of both chelae; carpus and merus nearly completely covered with large and small teeth along all margins; ischium having inner margin entirely serrated with teeth, outer margin bearing only large distal tooth. Pereiopods II to V subchelate, with distal prolongations (or palms) of propodi becoming less developed posteriorly; distal prolongation of propodus bearing two long distal spines in pereopod II, that of pereopod III having two distal and one subdistoventral long spines, that of pereopod IV with three distal and one subdistoventral long spines, that of pereopod V spoon-shaped and without spine; dactylus of pereopod V also bearing basal knob. Receptaculum seminis on thoracic sternum with blunt anterior end; posterior end wider and also blunt; lateral margins as double convex lobes, without spine or tubercle.

Abdomen with many long stiff hairs (more numerous posteriorly), bearing a low but distinct median ridge on somites II to VI; pleura II, III, IV and VI provided with blunt posterolateral angle; pleuron V with margins generally smooth. Telson trapezoid and slightly longer than maximum width, bearing one pair of movable lateral spines and three pairs of posterolateral spines (inner pair longest). Uropods with protopodite divided dorsally into two lobes each with sharp spine-like apex, inner lobe also bearing two to three spinules on lateral margin and one spine on posterior margin; endopod shorter than telson and armed with a posterolateral spine; exopod slightly longer than telson, having distinct diaeresis with strong outer spine followed by one movable spine.

#### COLORATION

Body generally orange red. Eyes dark brown. Carapace with large white-margined red ocellus (or bullseye) on lateral surface. Two narrow oblique white lines running from dorsal to ventral carapace, also present behind the bullseye. Antero-dorsal carapace pinkish and distributed with many red blotches. Teeth on dorsal carapace banded with red and white. Rostral teeth, antennular and antennal peduncles with alternating orange and

white bands. Antennular flagella with outer surface orange; inner surface whitish. Antennal flagella uniformly orange. Base of antennal peduncle and branchiostegal area on carapace conspicuously white, with area in-between distinctly reddish. Abdominal tergites mainly orange pink and with some scattered red blotches; dorsal ridges on somite II to VI reddish, each bearing white median spot; red-margined white spot present above each abdominal hinge; pleura generally reddish and bearing two large white spots antero- and posterolaterally (former one larger); somite VI covered with irregular thick transverse white band near posterior margin. Tailfan with distal margin reddish, basal part mostly reddish, and distal part mainly pale purple.

Maxilliped III with alternating orange and white bands. Large cheliped with palm light purplish red, tubercles reddish, teeth on lateral margins whitish and with red bases (those on inner margin of palm as large red spots); hinge between fingers marked as large red spot; fixed finger whitish and with median ridge covered with thick red bands, cutting edges with small reddish teeth and large whitish teeth; movable finger orange purple, with median ridge covered with thick red bands, teeth on outer margin orange and with red bases, cutting edge with small reddish teeth and large teeth somewhat orange; carpus and merus with alternating orange and white bands, disto-dorsal margin of both segments bright purple, teeth generally whitish, with red bases. Pereiopods II to V with distal three segments entirely orange while meri and ischia with alternating orange and white bands, large white spot also present on lateral side of coxae. Pubescence on body light brown, with long stiff hairs golden brown. Eggs dark purple.

#### REMARKS

The present species can be readily separated from all the other known species of the genus and being somewhat intermediate between the two subgenera (or genera) "*Enoplometopus*" (*sensu* Holthuis 1983) and *Hoplometopus* Holthuis, 1983 proposed by some authors (*e.g.* Holthuis 1983; Kensley & Child 1986; de Saint Laurent 1988; Türkay 1989; Poupin *et al.* 1990; Poupin 1996). Morphologically, it may be grouped in

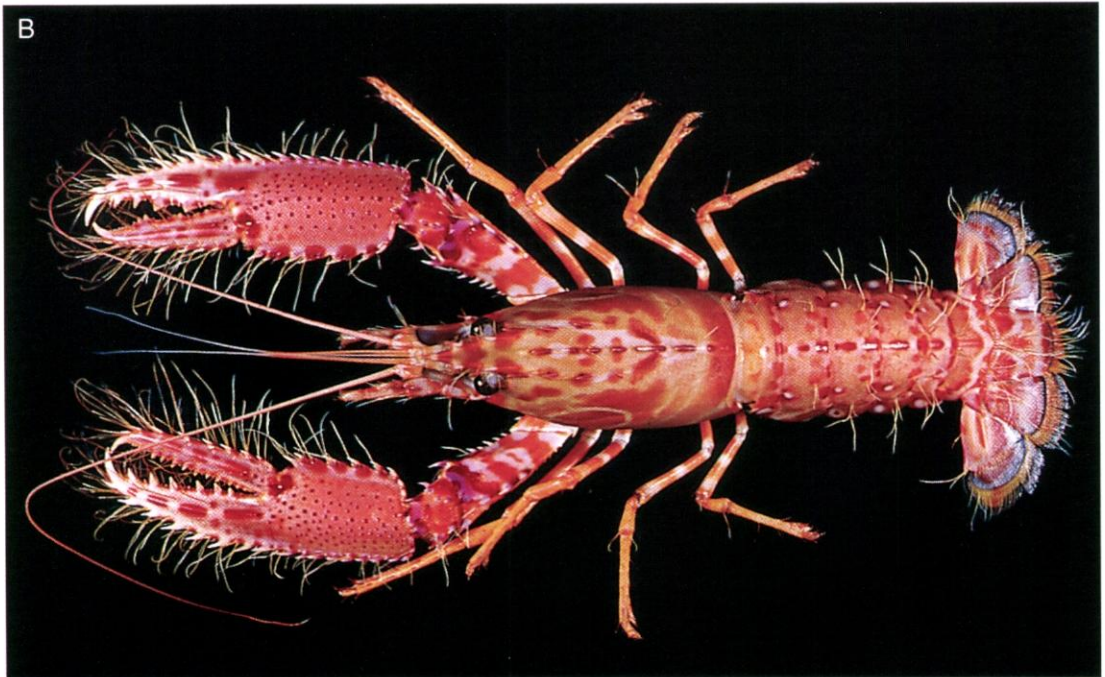
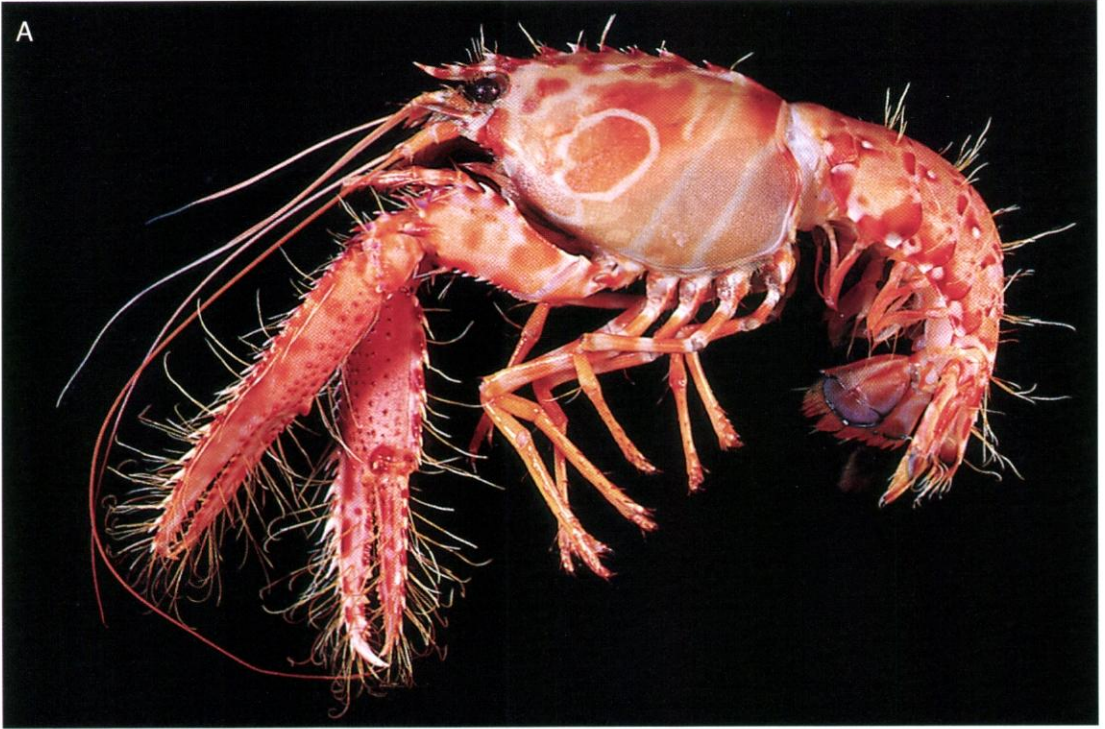


FIG. 2. — *Enoplometopus crosnieri* n.sp., holotype ♀, 55.4 mm cl., Keelung, Taiwan (NTOU 1997-1-H); **A**, lateral view; **B**, dorsal view.

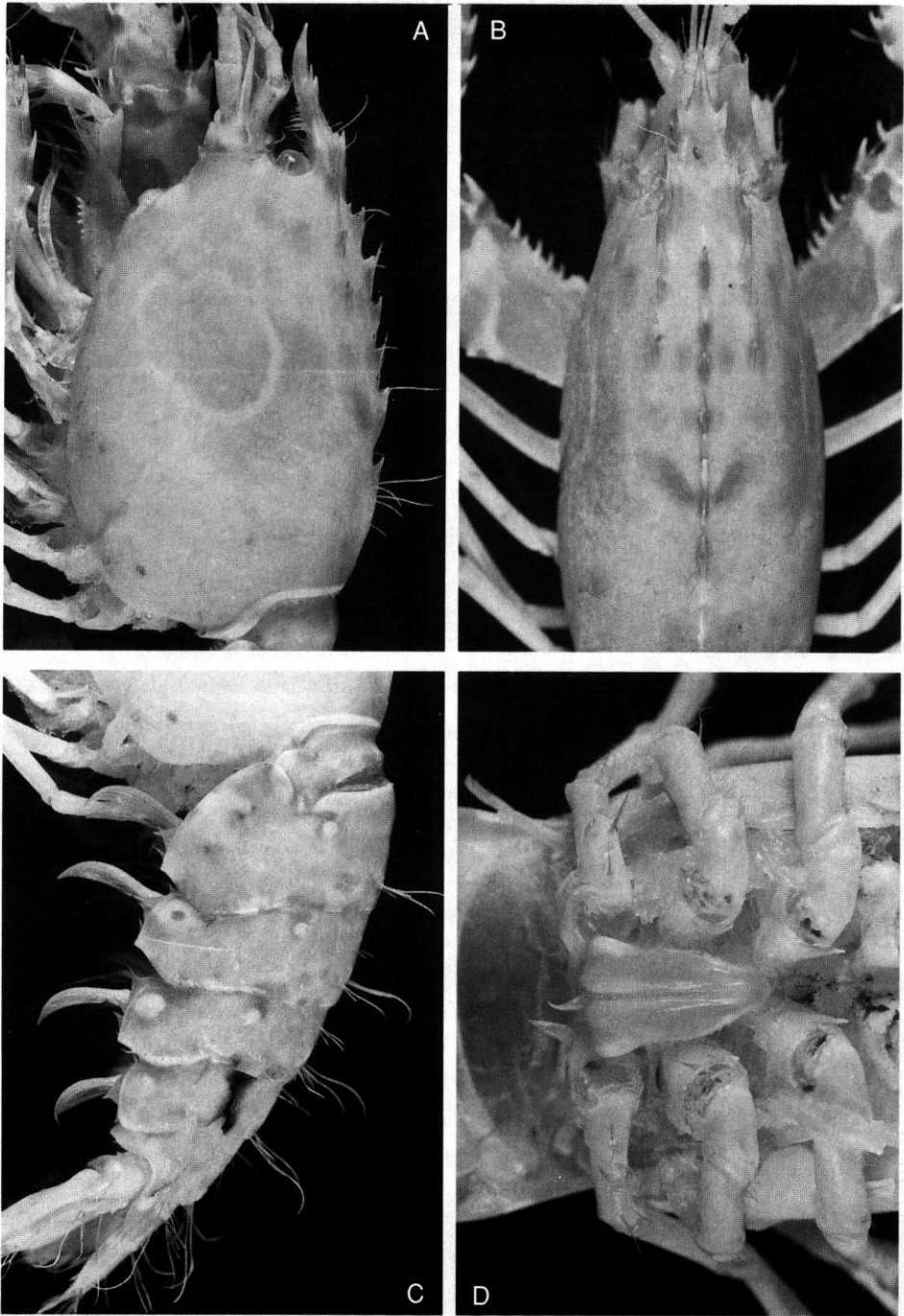


FIG. 3. — *Enoplometopus crosnieri* n.sp., molt of holotype ♀, 54.7 mm cl., Keelung, Taiwan (NTOU 1997-1-H); **A**, carapace, lateral view; **B**, carapace, dorsal view; **C**, abdomen, lateral view; **D**, receptaculum seminis, ventral view.

Holthuis (1983) subgenus “*Enoplometopus*” by bearing one postcervical tooth, abdominal pleura only bluntly angular and the telson armed with one lateral spine. Nevertheless, for the number of intermediate teeth on the carapace (*i.e.* one instead of two) it conforms to the definition of *Hoplometopus*. Moreover, the presence of a large “bullseye” on the lateral carapace is very similar to the colour pattern of *E. antillensis* Lütken, 1865 (see photo in Gonzalez 1995) and *E. holthuisi* Gordon, 1968 (see photo in Debelius 1986; Debelius & Baensch 1994; Gosliner *et al.* 1996), the latter two species being both grouped in the so-called *Hoplometopus*. Therefore, the present species is treated as new for its unique combination of the above characters.

Compared to the five known species of the so-called “*Enoplometopus*” group (*sensu* Holthuis 1983), the present new species is distinct in having only one intermediate tooth and bearing a bullseye on the lateral carapace. Furthermore, it appears that only *E. occidentalis* (Randall, 1840) of this group can attain to a similar large size as *E. crosnieri*. A comparison of *E. crosnieri* with the four species at hand [*i.e.* *E. occidentalis*, *E. debelius* Holthuis, 1983, *E. daumi* Holthuis, 1983 and *E. gracilipes* (de Saint Laurent, 1988)] showed that the new species is also distinct in bearing only two pairs of lateral teeth on rostrum, carapace having two lateral teeth but six median teeth, branchiostegal spine very small, large chelipeds and inner protopodite of uropods more spinous, and receptaculum seminis with lateral margins smooth. It is found that the abdomens

of *E. occidentalis* and *E. gracilipes* bear a blunt median ridge, too. The median ridge is rudimentary in *E. gracilipes* but it is progressively more developed with size in *E. occidentalis*. On the other hand, no trace of median ridge is observed in *E. debelius* and *E. daumi*. *E. chacei* Kensley *et* Child, 1986 appears also do not possess a median ridge on the abdomen. It is interesting that the postcervical “spine” is merely represented by a small protrusion in the six specimens of *E. daumi* at NTOU (though in live specimens this postcervical protrusion was white in colour and being very distinct). In this way, the character used by Kensley & Child (1986) to separate *E. chacei* from *E. daumi* becomes unclear. Nevertheless, the possession of only two pairs of rostral teeth in *E. chacei* can probably separate it from *E. daumi* as well as the other species of the “*Enoplometopus*” group (*sensu* Holthuis 1983) except *E. crosnieri* (which, on the other hand, differs from *E. chacei* in many other characters as mentioned above). Species of this genus generally have a very distinctive coloration, and their identifications are heavily relied on coloration but with very slight morphological differences perceived (*e.g.* Holthuis 1983; Kensley & Child 1986; Türkay 1989). Nevertheless, it seems that some constant morphological differences can probably be found amongst the species if more specimens are available for direct comparisons. In the meantime, coloration is still a very important character in distinguishing the species of *Enoplometopus* and the following key is proposed for the eleven species recognized at present as valid in this genus.

#### KEY TO THE SPECIES OF THE GENUS *Enoplometopus*

1. Carapace at most with one postcervical tooth; abdominal pleura broadly convex or with a blunt posterolateral angle; lateral margins of telson armed with one pair of median spines ..... 2
- Carapace with two postcervical teeth; abdominal pleura bearing a strong tooth; lateral margin of telson armed with two pairs of median spines ..... 7
2. Carapace with one intermediate tooth and a very large ocellated spot on lateral surface ..... *E. crosnieri* n.sp.
- Carapace with two intermediate teeth and without very large spot on lateral surface ..... 3

- 3. Rostrum bearing two pairs of lateral teeth; body orange red and with colour markings limited to lower carapace and posterior margins of abdominal somites ..... *E. chacei* Kensley *et* Child, 1986
- Rostrum bearing three or more pairs of lateral teeth; colour spots and/or stripes present on entire body ..... 4
- 4. Five median teeth on carapace ..... 5
- Four median teeth on carapace ..... 6
- 5. Postcervical tooth large; body orange red and with some conspicuous white spots on abdomen, fewer on carapace, posterior pereopods with alternating white and orange bands ..... *E. occidentalis* (Randall, 1840)
- Postcervical tooth indistinct or absent; body purple red and with blue-margined white spots, posterior pereopods not banded and posterior margin of tailfan bluish ..... *E. pictus* A. Milne Edwards, 1862
- 6. Postcervical tooth distinct; body whitish and almost uniformly covered with small purple dots ..... *E. debelius* Holthuis, 1983
- Postcervical tooth rather indistinct; body purplish with carapace bearing vertical reddish brown stripes and abdomen provided with many white spots ..... *E. daumi* Holthuis, 1983
- 7. Lateral carapace with large ocellated spot ..... 8
- Lateral carapace without large ocellated spot ..... 9
- 8. Dorsal carapace covered with fine red dots; antennular flagella uniformly reddish .. *E. antillensis* Lütken, 1865
- Dorsal carapace distributed with irregular white stripes; antennular flagella with alternating red and white bands ..... *E. holthuisi* Gordon, 1967
- 9. Carapace covered with irregular orange red stripes ..... *E. voigtmanni* Türkay, 1989
- Carapace covered with red spots ..... 10
- 10. Antennal flagella whitish; antennular flagella with alternating red and white bands; abdominal pleura and tailfan with many conspicuous white spots ..... *E. callistus* Intés *et* Le Loeuff, 1970
- Antennal and antennular flagella uniformly orange red; abdominal pleura and tailfan without distinct white spots ..... *E. gracilipes* (de Saint Laurent, 1988)

(Only *E. antillensis* and *E. callistus* are found in the Atlantic, all other species inhabit the Indo-West Pacific.)



The presence of a bullseye on the lateral carapace makes the coloration of *E. crosnieri* rather similar to *E. holthuisi* (Debelius 1986; Debelius & Baensch 1994; Gosliner *et al.* 1996; Poupin 1996: pl. VIa-b, as "*Hoplometopus* n.sp.") which is also widely distributed in the western Pacific (perhaps even in the Indo-West Pacific). Other than these two species are morphologically very different, it appears that the bullseye of *E. holthuisi* has a median white spot which is lacking in *E. crosnieri*. Moreover, the antennular flagella as well as the pereopods II to V are distinctly banded in *E. holthuisi* but in *E. crosnieri* the antennular flagella and the distal three segments of pereopods II to V are not banded. Further differences in the coloration of *E. holthuisi* from *E. crosnieri* are: branchiostegal area without large white spot, white lines on posterior carapace more numerous and interrupted, large chelipeds without any bright purple colour and hinge of fingers not particularly reddish, and abdomen bearing more white spots. *E. antillensis* from the Atlantic also has a bullseye on the lateral carapace (Gonzalez 1995). Nevertheless, its coloration differs remarkably from both *E. crosnieri* and *E. holthuisi* by the dorsal carapace entirely covered with small dots.

The coloration of the French Polynesian specimen showed in Poupin *et al.* (1990, pl. IIIc) and Poupin (1996, pl. Vh) clearly depicts the present new species. Several photographs on a specimen collected from the Timor Sea (by lobster trap at about 100 m deep) near Darwin of Australia received from A. J. Bruce (pers. comm.) also show the coloration of *E. crosnieri*. Therefore, this new species is known from Taiwan, the Timor Sea and the French Polynesia. It is likely that *E. crosnieri* may later prove to be widely distributed in the western and southern Pacific or even Indo-West Pacific.

The genus *Enoplometopus* has recently received many attentions on its taxonomic affinity [*i.e.* from ranking it up to the superfamily level (de Saint Laurent 1988) or placing it under Axiidae (Holthuis 1983; Kensley & Child 1986) as well as separating it into two subgenera (Holthuis 1983; Kensley & Child 1986; Türkay 1989) or genera (de Saint Laurent 1988; Poupin *et al.* 1990; Poupin 1996)]. There is no intention to

discuss further on these subjects in views of the insufficient specimens available and many species being still poorly known. This genus is here placed under Nephropoidea mainly referring to the close resemblance in the general appearances of these animals, may it be just for convenience. On the other hand, the intermediate characters of the present new species at least diminish one (*i.e.* the number of intermediate teeth) of the four characters used before to define the two "subgenera" of these interesting lobsters.

The holotype was alive when collected in January 1997. It was a berried female but the eggs quickly shaded after it was transferred to an aquarium in the laboratory. The animal readily accepted various kinds of food such as fish and shrimp meats as well as frozen adult artemia. It was very aggressive and whenever something approached its tank it would be immediately face the approaching object and viciously wave its massive claws. The animal molted on 10 April 1997 and died on 8 May 1997 of an unknown cause, after being held in the laboratory for about four months.

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