

A new species of hermit crab of the family Parapaguridae (Decapoda, Anomura) from French Polynesia

Rafael LEMAITRE

Smithsonian Institution, National Museum of Natural History,
Department of Invertebrate Zoology,
Washington, D. C. 20560 (United States)

Lemaitre R. 1998. — A new species of hermit crab of the family Parapaguridae (Decapoda, Anomura) from French Polynesia. *Zoosystema* 20 (1) : 101-107.

ABSTRACT

A new deep-water hermit crab species of the family Parapaguridae, *Oncopagurus oimos*, is described from Moruroa (French Polynesia, Tuamotu Archipelago). The new species is distinguished primarily by its distinctive colour pattern (still visible in alcohol-preserved specimens after one year), and consisting of broad stripes on the left cheliped and ambulatory legs. Other diagnostic characters of the new species are: (1) males lacking first pleopods and having reduced unpaired left second pleopods; (2) slender left cheliped; (3) rounded mesial face of the right chela. The new species is compared to another congeneric species, *O. tuamotu* Lemaitre, 1994 that also occurs in French Polynesia, as well as to other species of the genus in which males lack first pleopods.

KEY WORDS

deep-water hermit crab,
new species,
Parapaguridae,
Oncopagurus,
French Polynesia,
Tuamotu Archipelago.

RÉSUMÉ

Une espèce nouvelle de pagure de la famille des Parapaguridae (Decapoda, Anomura) de Polynésie française. Une espèce nouvelle de pagure d'eau profonde, appartenant à la famille des Parapaguridae, *Oncopagurus oimos*, est décrite de Moruroa (Polynésie française, archipel des Tuamotu). Cette espèce nouvelle se distingue en particulier par la couleur (encore visible après un an de conservation en alcool) des bandes longitudinales sur le chélicèpe gauche et les pattes ambulatrices. D'autres caractères distinctifs sont : (1) la présence, chez les mâles, d'un seul deuxième pléopode gauche ; (2) le chélicèpe gauche grêle ; (3) la face mésiale de la pince droite arrondie. Cette nouvelle espèce est comparée à une autre espèce du genre, *O. tuamotu* Lemaitre, 1994 qui se trouve également en Polynésie française, ainsi qu'aux autres espèces du genre dont les mâles n'ont pas de premiers pléopodes.

MOTS CLÉS

pagure d'eau profonde,
nouvelle espèce,
Parapaguridae,
Oncopagurus,
Polynésie française,
archipel des Tuamotu.

Study of parapagurid samples, obtained from French Polynesia since Lemaitre's (1994) report on the species of this family from the area, has revealed the existence of an undescribed species. This new species belongs in the recently proposed genus *Oncopagurus* Lemaitre, 1996, the species of which are characterized primarily by: (1) presence of upward curved epistomial spine; (2) phyllobranch gills; (3) operculate right chela; (4) males having poorly to moderately developed first and second pleopods, with first sometimes absent (Lemaitre 1996).

In the material examined section, the length of the shield of the specimens is indicated in parenthesis, measured (to the nearest 0.1 mm) from the tip of the rostrum to the midpoint of the posterior region of the shield. The term "semichelate" is used for the fourth pereopod in accordance with the definition provided by McLaughlin (1997). The spelling of the island locality where this new species was found is according to Motteler (1986). A summary of deep-water collecting activities in French Polynesia, including a list of crustacean species and station data, can be found in Poupin (1996).

Oncopagurus oimos n.sp.
(Figs 1-3)

MATERIAL EXAMINED. — **French Polynesia.** Tuamotu Archipelago, Moruroa atoll, *Marava*, stn 499, 21°47,6'S - 138°55,7'W, trapped, 200 m, 5.V.1996: holotype ♂ (2.8 mm) MNHN-Pg 5505; paratypes, 1 ♂ (2.4 mm), 1 ♀ (2.7 mm) MNHN-Pg 5506; 1 ♂ (2.9 mm) USNM 276085.

ETYMOLOGY. — The specific name is from the Greek *oimos*, meaning stripe, used as a noun in apposition, and refers to the distinctive colour pattern of this species.

DISTRIBUTION. — Known so far only from Moruroa atoll, on the Tuamotu Archipelago, French Polynesia. Depth: 200 m.

HABITAT. — Gastropod shells.

DESCRIPTION

Shield (Fig. 1A) as broad as long; dorsal surface evenly calcified, with scattered short setae; anterior margins weakly concave; lateral projections subtriangular, terminating acutely; anterolateral

margins sloping; posterior margin broadly rounded. Rostrum broadly rounded, weakly produced, and with short mid-dorsal ridge. Ventrolateral margins of shield each with small spine (not visible in dorsal view, and often only on one side). Anterodistal margin of branchiostegite rounded, unarmed, setose.

Ocular peduncles more than half length of shield, with dorsal row of setae. Cornea weakly dilated. Ocular acicles subtriangular, terminating in strong spine; separated basally by less than basal width of one acicle.

Antennular peduncle long, slender, exceeding distal margin of cornea by entire length of ultimate segment; ventral flagellum with five to six articles. Ultimate segment twice as long as penultimate segment, with scattered setae. Basal segment with strong ventromesial spine; lateral face with distal subrectangular lobe armed with one or two small spines, and strong spine proximally. Antennal peduncle (Fig. 1B) exceeding distal margin of cornea by about one third length of fifth segment. Flagellum long, exceeding extended right cheliped and ambulatory legs, articles with setae less than one to two flagellar articles in length (Fig. 1C). Fifth segment unarmed, but with scattered setae. Fourth segment with strong spine on dorsolateral distal angle. Third segment with strong ventromesial distal spine. Second segment with dorsolateral distal angle produced, terminating in strong, simple spine; mesial margin with spine on dorsolateral distal angle. First segment with unarmed lateral face; ventromesial angle produced, with three to four small spines laterally. Antennal acicle slightly curved outward (in dorsal view), at most slightly exceeding distal margin of cornea, terminating in strong spine; mesial margin with row of eight to thirteen spines, setose.

Mandible (Fig. 2A) with three-segmented palp. Maxillule (Fig. 2B) with external lobe of endopod weakly developed, internal lobe with long terminal seta. Maxilla (Fig. 2C) with endopod exceeding distal margin of scaphognathite. First maxilliped (Fig. 2D) with endopod exceeding exopod in distal extension. Second maxilliped (Fig. 2E) with exopod about seven times as long as broad. Third maxilliped (Fig. 2F) with distal two segments each twice as long as wide; crista

dentata with about twelve corneous-tipped teeth; coxa and basis each with one tooth mesially. Sternite of third maxillipeds with small spine on each side of midline. Chelipeds markedly dissimilar. Right cheliped

(Fig. 1D-F) massive, with sparse setation. Fingers curved ventromesially, each terminating in corneous claw; cutting edges with irregularly-sized calcareous teeth. Dactyl approximately as long as mesial margin of palm, and set at strongly

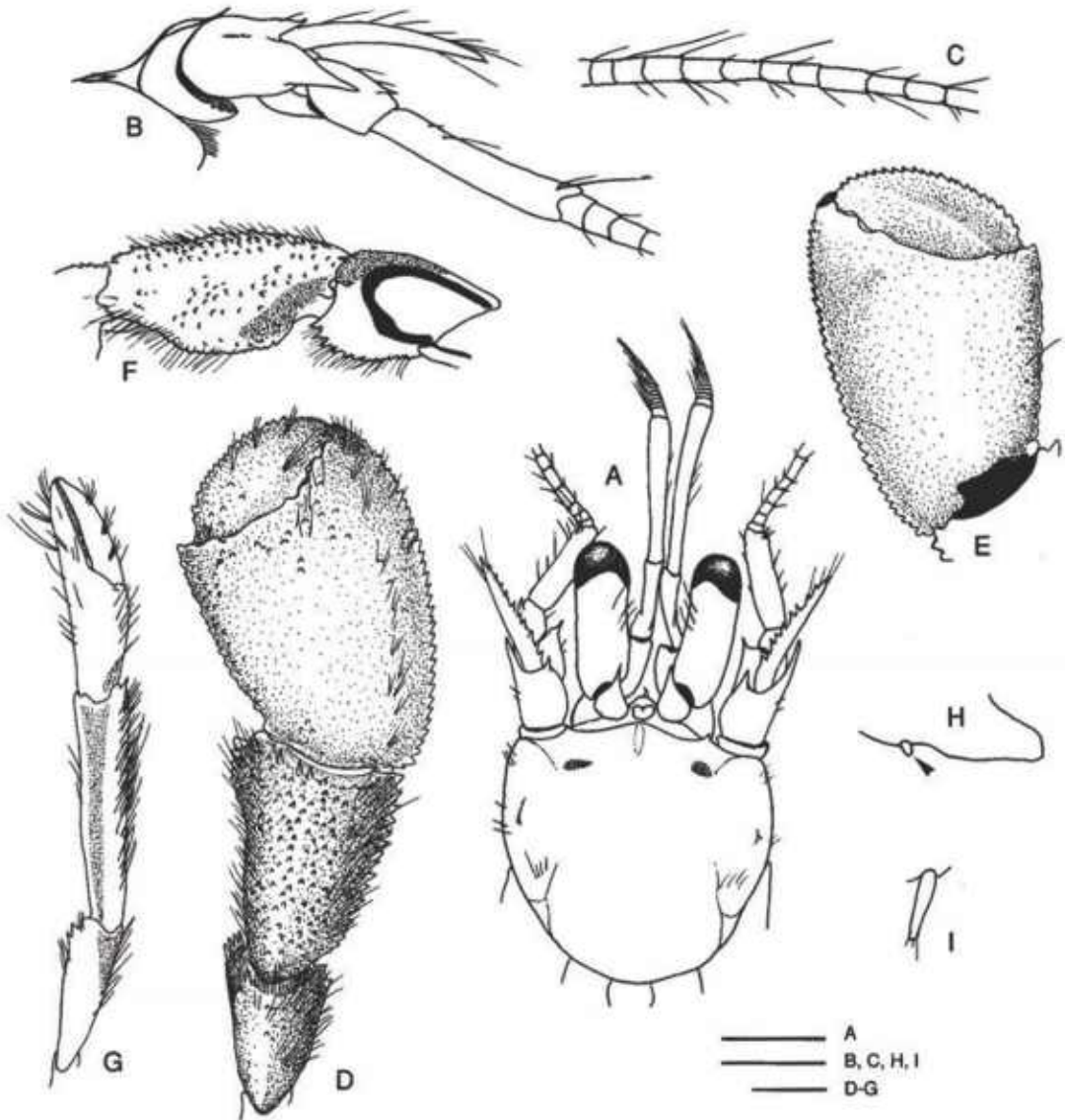


FIG. 1. — *Oncopagurus oimos* n.sp., Marara, stn 499, Moruroa atoll: A-H, holotype ♂ (2.8 mm) (MNHN-Pg 5505); I, paratype ♂ (2.9 mm) (USNM 276085). A, shield and cephalic appendages; B, right antennal peduncle (lateral view); C, proximal portion of flagellum of same; D, right cheliped (dorsal view); E, right chela of same (ventral view); F, merus and carpus of same (mesial view); G, left cheliped; H, merus and carpus of right cheliped (F), and left cheliped (G) indicate reddish colour pattern. Stippled areas on shield (A), merus and carpus of right cheliped (F), and left cheliped (G) indicate reddish colour pattern. Scales bars: A, D-G, 1 mm; B, C, H, I, 0.5 mm.

oblique angle to longitudinal axis of palm; mesial margin broadly curved, well defined by row of spines (corneous-tipped on distal half); dorsal face with scattered small spines proximally; ventral face smooth; ventromesial face concave. Fixed finger broad at base; lateral margin well defined by row of spines (corneous-tipped on distal half); dorsal face with scattered small spines or tubercles; ventral face smooth. Palm broader than long; lateral margin broadly rounded, well delimited by row of blunt to sharp spines; dorsomesial margin marked by row of small spines; mesial face rounded, with small spines or tubercles; dorsal surface smooth except for scattered small tubercles; ventral surface smooth. Carpus with lateral margin well delimited by row of spines; dorsal face with numerous small spines; dorsodistal margin with row of spines; ventromesial distal margin slightly expanded mesially, with row of spines; ventral face with scattered small tubercles. Merus with dorsal row of small spines; ventromesial margin with row of spines. Ischium with ventromesial row of small spines. Coxa with one or two small spines on ventromesial and ventrolateral margins, and ventromesial row of setae.

Left cheliped (Fig. 1G) slender, with chela as long as carpus; well calcified. Fingers terminating in small corneous claws; dorsal and ventral surfaces unarmed except for scattered tufts of setae; cutting edge of dactyl and fixed finger each with row of minute corneous teeth. Dactyl subequal to palm in length. Palm unarmed or at most with inconspicuous tubercle on dorsomesial angle, and scattered setae; ventral face smooth except for scattered setae. Carpus with strong dorsodistal spine; dorsal margin with moderate setation; ventral face smooth. Merus with setae on dorsal margin; ventrolateral distal margin with row of spines; ventral face smooth. Ischium unarmed, with setose ventral face. Coxa with one spine on ventromesial and ventrolateral distal margins, and ventromesial row of setae.

Ambulatory legs (Fig. 3A-C) similar from right to left, reaching approximately to, or just beyond, tip of extended right cheliped. Dactyl slightly less than twice as long as propodus, terminating in sharp corneous claw; with dorsal and dorsomesial rows of setae, and ventromesial row

of about ten to fourteen corneous spines; lateral and mesial faces with shallow, longitudinal sulcus on proximal half (deeper on mesial face). Propodus with row of setae on dorsal and ventral margins. Carpus with small dorsodistal spine and setae dorsally and ventrally. Merus unarmed, with setae on dorsal and ventral margins. Ischium and coxa unarmed. Anterior lobe of sternite of third pereopods setose, subsemicircular, armed with simple terminal spine.

Fourth pereopod (Fig. 3E) semichelate. Dactyl terminating in sharp corneous claw; with ventrolateral row of small corneous spinules. Propodus longer than dorsoventral width, rasp formed of one row of rounded scales. Carpus with long setae on dorsal margin. Merus with rows of long setae on dorsal and ventral margins.

Fifth pereopod (Fig. 3F) chelate. Propodal rasp extending to mid-length of segment.

Uropods and telson (Fig. 3G-I) markedly asymmetrical. Telson lacking transverse suture; dorsal surface with scattered setae; terminal margin with shallow median cleft separating left and right lobes, each with several marginal corneous spines.

Male lacking first pleopods; with unpaired reduced second left pleopod (Fig. 1H, I) consisting of minute bud or very short segment with few terminal setae. Female lacking vestigial second right pleopod.

Colour pattern (Figs 1A, F, G; 3A, B)

No observations of colour in life were made of this species. However, after approximately one year in alcohol, a distinctive reddish colour pattern was still visible in the specimens. The shield has two small reddish spots (Fig. 1A) on the anterior half, one just behind each lateral projection. On both chelipeds (Fig. 1F, G), the dorsodistal portions of the meri are reddish. The carpus of the right cheliped has a reddish area on the proximal portion of the lateral and mesial faces. The carpus of the left cheliped has a distinctive broad reddish stripe on the dorsolateral and mesial faces; the dorsomesial margin of the palm is light reddish; the dactyl is reddish. The ambulatory legs (Fig. 3A, B) have a reddish colour dorsodistally on the meri; the carpi each have a reddish stripe on the lateral and mesial faces, and the stripes of the carpi continue on the

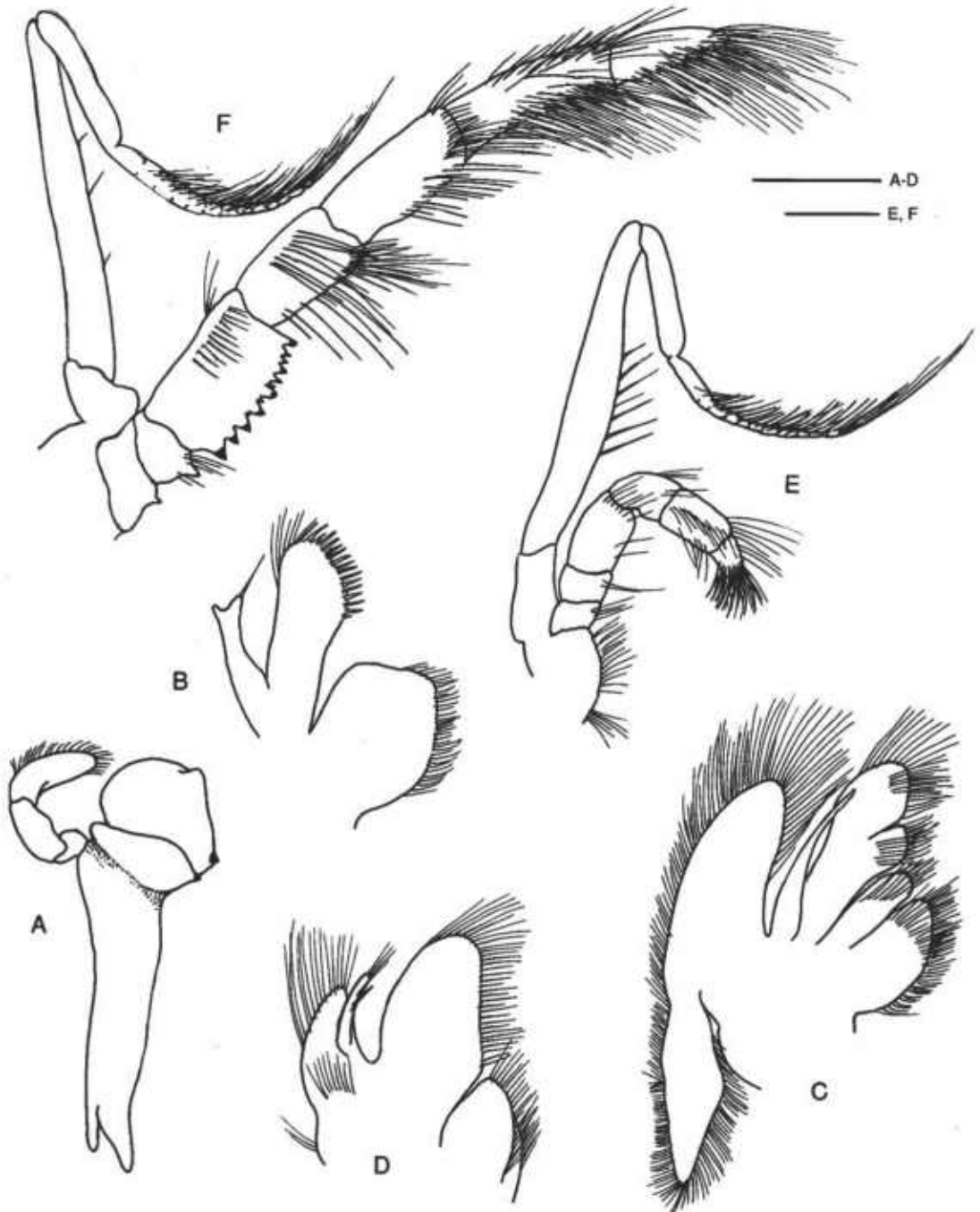


FIG. 2. — *Oncopagurus oimos* n.sp., Marara strn 499, Moruroa atoll, paratype ♂ (2.4 mm) (MNHN-Pg 5506). Left mouthparts (internal view): A, mandible; B, maxillule; C, maxilla; D, first maxilliped; E, second maxilliped; F, third maxilliped. Scale bars: 0.5 mm.

meri but only on the lateral faces; the dactyls have reddish dorsal faces.

REMARKS

This new species is the fifth in the genus *Oncopagurus* in which males lack first gonopods.

The other four are *O. haigae* de Saint Laurent, 1972 (Eastern Pacific); *O. orientalis* de Saint Laurent, 1972 (Indo-Pacific); *O. tuamotu* Lemaître, 1994 (known only from the Tuamotu Archipelago); and *O. cidaris* Lemaître, 1996 (known only from Australia). The males of these

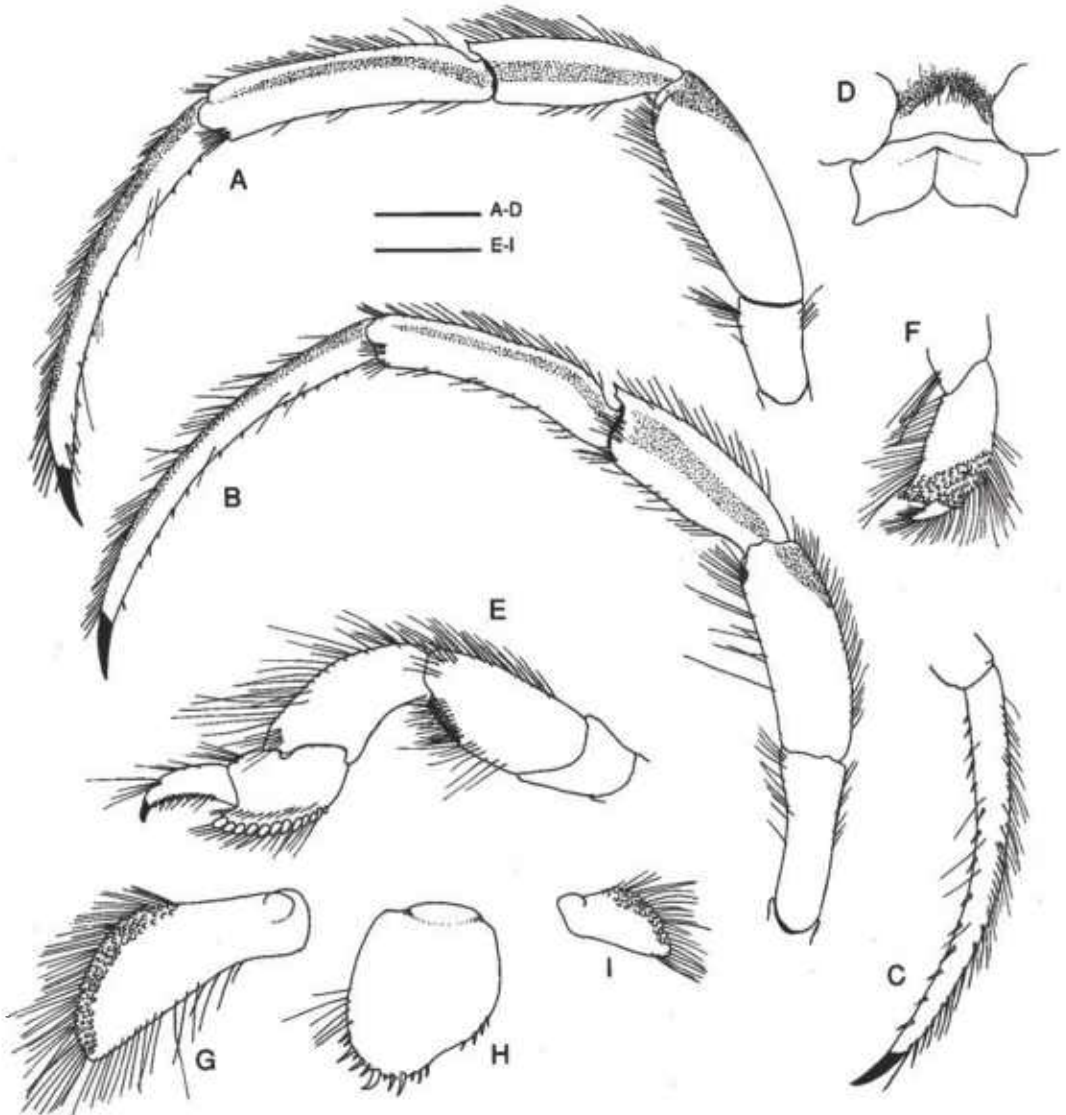


FIG. 3 — *Oncopagurus oimos* n.sp., Marara, stn 499, Moruroa atoll: holotype ♂ (2.8 mm) (MNHN-Pg 5505). A, left second paraopod (lateral view); B, left third pereopod (lateral view); C, dactyl of same (mesial view); D, sternite of third pereopods (ventral view); E, left fourth pereopod (lateral view); F, propodus and dactyl of left fifth pereopod (lateral view); G, exopod of left uropod (dorsal view); H, telson (dorsal view); I, exopod of right uropod (dorsal view). Stippled areas on second (A) and third (B) pereopods indicate reddish colour pattern. Scale bars: A-D, 1 mm; E-I, 0.5 mm.

four species have paired asymmetrical second gonopods; however, Lemaitre (1996, 1997) has documented intra-specific variation in males of *O. orientalis* and *O. cidaris*, where the second right gonopod is occasionally lacking. The three known males of *O. oimos* n.sp. have only reduced, simple unpaired left second pleopods. The segmentation of the male second pleopods in these five species differs. The second pleopods are unsegmented in *O. oimos* n.sp., *O. haigae* and *O. orientalis*; they are two-segmented in *O. tuamotu*; and one- or two-segmented in *O. cidaris*. Of all known species of *Oncopagurus*, *O. oimos* n.sp. is the only one in which females have only unpaired left second pleopods; females of all other species have vestigial right second pleopods as well.

The distinctive colour pattern of *O. oimos* n.sp., can be used to distinguish it from *O. tuamotu*, the only other congeneric species known from French Polynesia. The new species has broad stripes on the left cheliped and ambulatory legs (Figs 1G, 3A, B), whereas *O. tuamotu* has red bands on the cheliped and walking legs (see Lemaitre 1994: 411, fig. 28I). In addition to the

previously mentioned differences in pleopod conditions, other characters can also be used to distinguish *O. oimos* n.sp. from *O. tuamotu*. The mesial face of the right palm is rounded in the new species, with a weak irregular dorsomesial row of spines, whereas the mesial face is expanded distally, and there is a distinct dorsomesial and ventromesial rows of spines in *O. tuamotu*. The left chela is noticeably more slender, as long as the carpus, and the fingers are set nearly parallel to the longitudinal axis of the palm in the new species; the chela is shorter than the carpus, and the fingers are set obliquely (pointing ventrolaterally) to the longitudinal axis of the palm in *O. tuamotu*.

Acknowledgements

The collecting efforts of Joseph Poupin in French Polynesia have been invaluable in documenting the crustacean fauna from this area. His efforts are gratefully acknowledged. I thank also Alain Crosnier for fostering this and other studies based on the important material gathered during many recent French expeditions.

REFERENCES

- Lemaitre R. 1994. — Crustacea Decapoda: Deep-water hermit crabs (Parapaguridae) from French Polynesia with descriptions of four new species, in: Crosnier A. (ed.), Résultats des Campagnes MUSORSTOM, Volume 12, *Mémoires du Muséum national d'Histoire naturelle* 161: 375-419.
- 1996. — Hermit crabs of the family Parapaguridae (Crustacea: Decapoda: Anomura) from Australia: species of *Strobopagurus* Lemaitre, 1989, *Sympagurus* Smith, 1883 and two new genera. *Records of the Australian Museum* 48: 163-221.
- 1997. — Crustacea Decapoda: Parapaguridae from the *Karubar* Cruise in Indonesia, with descriptions of two new species, in Crosnier A. & Bouchet P. (eds), Résultats des Campagnes MUSORSTOM, Volume 16, *Mémoires du Muséum national d'Histoire naturelle* 172: 573-596.
- McLaughlin P. A. 1997. — Crustacea Decapoda: hermit crabs of the family Paguridae from the *Karubar* Expedition in Indonesia, in Crosnier A. & Bouchet P. (eds), Résultats des Campagnes MUSORSTOM, Volume 16 (5), *Mémoires du Muséum national d'Histoire naturelle* 172: 433-572.
- Motteler L. S. 1986. — Pacific island names. A map and name guide to the New Pacific. *Bishop Museum Miscellaneous Publication* 34: 1-91.
- Poupin J. 1996. — *Atlas des crustacés marins profonds de Polynésie française. Récoltes du navire Marara (1986/1996)*. Service Mixte de Surveillance Radiologique et Biologique de l'homme et de l'environnement, Montlhéry, 59 p.

Submitted on 30 May 1997;
accepted on 8 September 1997.