

New species and new occurrence of Galatheoidea (Crustacea, Decapoda) from New Caledonia

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Macpherson E. 2006. — New species and new occurrence of Galatheoidea (Crustacea, Decapoda) from New Caledonia. *Zoosystema* 28 (3): 669-681.

ABSTRACT

Four new species of the genera *Eumunida* Smith, 1883 (*E. spinosa* n. sp.), *Munida* Leach, 1820 (*M. aulakodes* n. sp., *M. devastiva* n. sp.) and *Torbenia* Baba, 2005 (*T. calvata* n. sp.) are described and illustrated from specimens collected during recent cruises carried out off New Caledonia. *Eumunida spinosa* n. sp. has two well developed spines on the anterior border of the fourth thoracic sternite (subgenus *Eumunida* de Saint-Laurent & Poupin, 1996), the posterior region of the carapace with complete striae, the carapace with two pairs of anterolateral spines, no ventral pad on the propodus of the chelipeds, and two rows of well developed spines on the palm of the cheliped. *Munida aulakodes* n. sp. is characterized by the presence of three spines on the branchial lateral margins of the carapace, spines on the anterior ridge of the second abdominal somite, and two carinae separated by a furrow, on each lateral part of the seventh thoracic sternite. *Munida devastiva* n. sp. has a carapace without complete transverse ridges, small eyes, with the corneae barely wider than the eyestalk, and the abdominal segments unarmed. *Torbenia calvata* n. sp. is easily differentiated from the other species of the genus by the absence of spines on the anterior ridge of the second abdominal segment, and the small size of the first anterolateral spine of the carapace. A new occurrence of the rare species *Pseudomunida fragilis* Haig, 1979 is also reported.

KEY WORDS

Crustacea,
Decapoda,
Galatheidae,
Chirostylidae,
New Caledonia,
Pacific Ocean,
new species.

RÉSUMÉ

Nouvelles espèces et nouvelles mentions de Galatheoidea (Crustacea, Decapoda) de Nouvelle-Calédonie.

Quatre espèces nouvelles d'*Eumunida* Smith, 1883 (*E. spinosa* n. sp.), *Munida* Leach, 1820 (*M. aulakodes* n. sp., *M. devestiva* n. sp.) et *Torbenia* Baba, 2005 (*T. calvata* n. sp.) de Nouvelle-Calédonie sont décrites et illustrées à partir de spécimens récoltés durant des expéditions récentes au large de la Nouvelle-Calédonie. *Eumunida spinosa* n. sp. a une paire d'épines bien développées sur le bord antérolatéral du quatrième sternite thoracique (sous-genre *Eumunida* de Saint-Laurent & Poupin, 1996), la région postérieure de la carapace avec des stries transversales continues, la carapace avec deux paires d'épines antérolatérales, pas de vilosité ventrale de la paume des chélicèdes et deux lignes d'épines bien développées sur la paume des chélicèdes. *Munida aulakodes* n. sp. est caractérisée par la présence de trois épines latéro-branchiales, des épines sur la ride antérieure du second segment abdominal et une paire de carènes séparées par un sillon de chaque côté du septième sternite. *Munida devestiva* n. sp. a une carapace sans stries complètes, des petits yeux, avec des cornées réduites et pas d'épines sur les segments abdominaux. *Torbenia calvata* n. sp. se distingue facilement des autres espèces du genre par l'absence d'épines sur la ride antérieure du second segment abdominal et la première épine antérolatérale de la carapace est très réduite. Une nouvelle occurrence de l'espèce rare *Pseudomunida fragilis* Haig, 1979 est aussi indiquée.

MOTS CLÉS

Crustacea,
Decapoda,
Galatheidæ,
Chirostylidae,
Nouvelle-Calédonie,
océan Pacifique,
espèces nouvelles.

INTRODUCTION

During October-November 2003 the cruise NORFOLK 2 was carried out in the seamounts of the Norfolk Ridge, south of New Caledonia. Although the galatheid fauna of this area is well known (e.g., Macpherson 1994, 1996; Ahyong & Poore 2004a, b; Baba 2004, 2005; Macpherson & Machordom 2005), during the study of the numerous representatives of this group, four new species were found. One species belongs to the genus *Eumunida* Smith, 1883 (family Chirostylidae Ortmann, 1892), one species belongs to the genus *Munida* Leach, 1820, and a third species is included in the new genus *Torbenia* Baba, 2005 (both species belonging to the family Galatheidæ Samouelle, 1819). Additionally, in this paper, the description of a new species of *Munida* and the occurrence of a very rare species (*Pseudomunida fragilis* Haig, 1979, family Chirostylidae) collected during the cruise HALIPRO 2 (New Caledonia, November 1996) are also included.

The material examined is deposited in the collections of the Muséum national d'Histoire naturelle, Paris (MNHN). Measurements given are of carapace length, excluding rostrum, and the terminology used mainly follows previous papers (Macpherson 1994; Baba & de Saint-Laurent 1996; de Saint-Laurent & Poupin 1996).

SYSTEMATICS

Family CHIROSTYLIDAE Ortmann, 1892
Genus *Eumunida* Smith, 1883

Eumunida spinosa n. sp.
(Fig. 1)

HOLOTYPE. — **New Caledonia.** NORFOLK 2, stn 2055, 23°39.23'S, 168°16.43'E, 900-950 m, 24.X.2003, ♂ 18.3 mm (MNHN-Ga 4623).

PARATYPES. — **New Caledonia.** NORFOLK 2, stn

2046, 23°43.87'S, 168°01.03'E, 785-810 m, 23.X.2003, 1 ♂ 11.5 mm. — Stn 2047, 23°43.04'S, 168°01.92'E, 759-807 m, 23.X.2003, 8 ♂♂ 6.5-14.8 mm; 1 ovig. ♀ 17.4 mm; 1 ♀ 6.4 mm. — Stn 2049, 23°42.88'S, 168°16.43'E, 470-621 m, 24.X.2003, 1 ♂ broken. — Stn 2054, 23°39.62'S, 168°15.17'E, 736-800 m, 24.X.2003, 1 ♀ 5.4 mm. — Stn 2055, 23°39.23'S, 168°16.43'E, 900-950 m, 24.X.2003, 1 ♂ 6.4 mm; 1 ♀ 6.5 mm.

ETYMOLOGY. — From the Latin, *spina*, spine, thorn, in reference to the numerous spines in the chelipeds.

DISTRIBUTION. — New Caledonia, Norfolk Ridge, between 470 and 950 m.

DESCRIPTION

Carapace slightly wider than long, exclusive of rostrum. Gastric region well defined, moderately convex; three hepatic spines, first spine strong, near base of outer supraocular spine, two outer hepatic spines small and subequal in size. Cervical groove and its posterior branch distinctly marked; grooves separating cardiac and branchial areas weakly developed. Transverse ridges as illustrated, with short and dense short setae; anterior branchial region smooth, with few short squamiform striae; five transverse ridges behind cervical groove, first and second interrupted in cardiac region; third to fifth interrupted medially; some small striae on anterior half of branchial regions. Lateral margins convex, armed with six spines decreasing in size posteriorly, two anterolateral spines anterior to cervical groove; greatest width measured between penultimate lateral spines; first spine strong, more than half length of second supraocular spine, and clearly overreaching sinus between supraocular spines, clearly longer than second anterolateral spines (Fig. 1A). Strong distal spine in pterygostomial area.

Second abdominal segment as illustrated; two transverse ridges, and some short striae on each side (Fig. 1C).

Sternal plastron medially concave; pair of well developed median processes on anterior margin of third thoracic sternum; fourth thoracic sternum with prominent lateral spine and setiferous transverse ridges (Fig. 1B).

Rostrum sharply spiniform, about one-half of remaining carapace; inner supraocular spine terminating in two-third of length of rostrum, longer than outer supraocular.

Eyes short, corneae moderately dilated, slightly exceeding end of outer supraocular spine.

First segment of antennal peduncle with short distolateral spine, distolateral spine of second segment nearly reaching mid-length of scaphocerite, third segment with long distal spine, slightly overreaching end of fourth segment; fourth segment with strong dorsomesial spine slightly exceeding antennal peduncle; fifth segment with three spines distally (dorsal, mesial and lateral), lateral spine the largest and with a small spine at base; acicle spiniform, slender, extending well beyond base of fifth segment. Fourth segment 1.5 times length of second segment, and more than two times longer than broad (Fig. 1D).

Merus of third maxilliped with small spine on flexor margin; ischium with crista dentata with 10-11 denticles (Fig. 1E).

Cheliped subcylindrical, 4.8 times (holotype) as long as carapace (4.2 times in ovigerous female), excluding rostrum. Ischium with moderate-sized ventral spine; merus squamate, slightly more than two times carapace length, armed with three rows of spines (dorsolateral, dorsal, and dorsomesial); dorsomesial row composed of large and small spines regularly alternated; few ventral spines. Carpus squamate, with three distal spines; usually with two rows of one to three spines (lateral and dorsal), few specimens with only one or two lateral spines (Fig. 1F). Palm 1.5 times length of finger, not massive, with some short setae, and few uniramous setae, armed with two rows of spines (dorsomesial and dorsolateral); no pad on ventral surface of palm. Fingers not gapping, furnished with relatively long coarse setae; opposable margins as illustrated (Fig. 1G).

First two walking legs similar, squamate, sparsely furnished with long coarse setae. Merus of first walking leg, 1.2 times longer than propodus, with well developed spines, and few small, on extensor margin, one strong distal spine on flexor border, all distal largest. Carpus with some acute spines on extensor border, ultimate largest. Propodus smooth on extensor margin, armed with 9-11 spinelets along flexor border, and one distal fixed spine. Dactylus one-quarter as long as propodus, with eight or nine movable spinules, along flexor border (Fig. 1H).

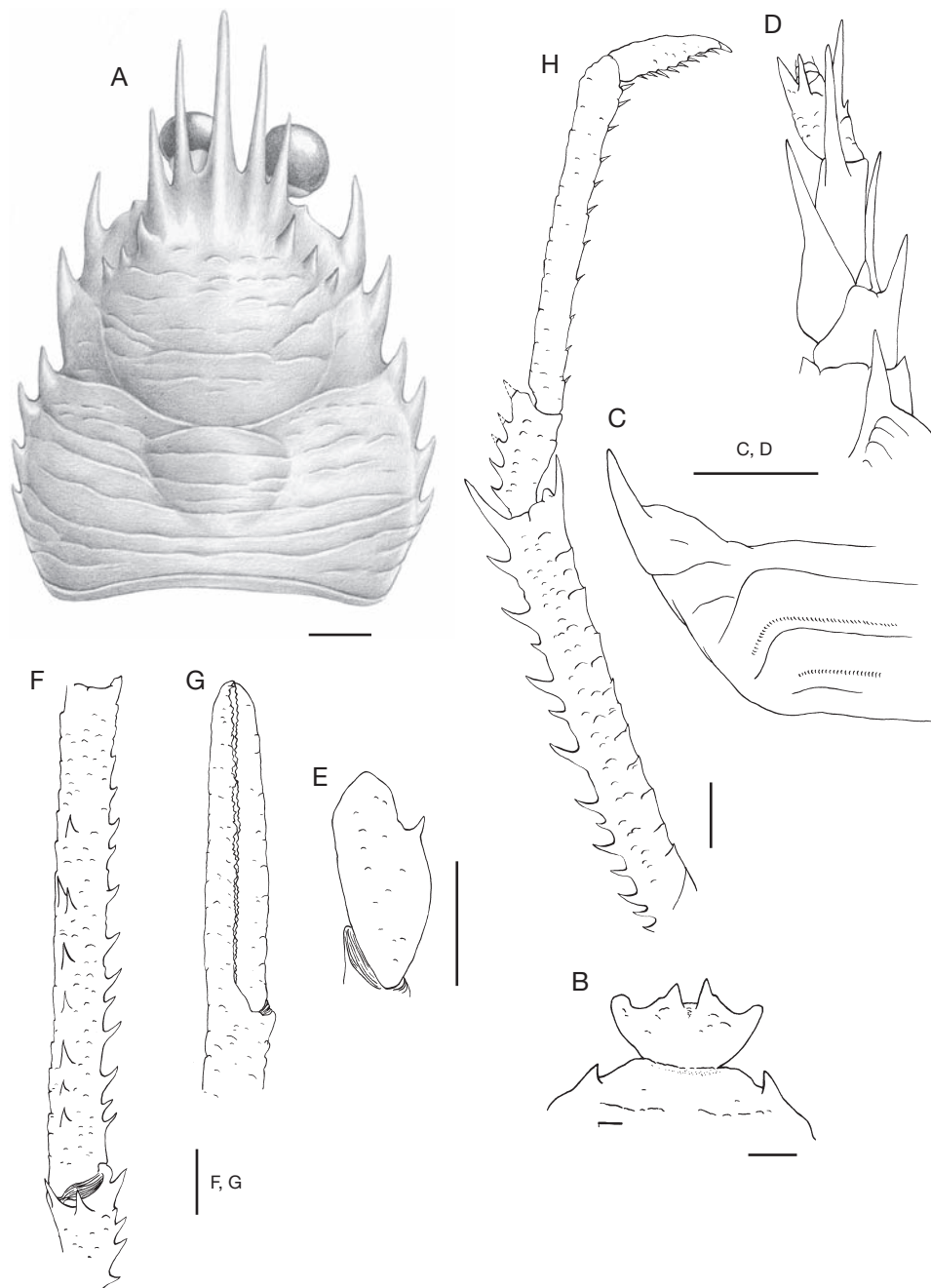


FIG. 1. — *Eumunida spinosa* n. sp., holotype, ♂ 18.3 mm: **A**, carapace, dorsal view; **B**, anterior part of sternal plastron; **C**, left lateral side of the second abdominal somite; **D**, ventral view of left antennal peduncle; **E**, merus of right third maxilliped, lateral view; **F**, right cheliped, mesial view of the carpus and palm; **G**, right cheliped, mesial view of the fingers; **H**, right first walking leg, lateral view. Scale bars: 2 mm.

Second walking leg similar to first leg, but merus slightly shorter, and propodus similar in length. Merus of third walking leg 0.7 times shorter than that of second, armed with some spines in middle of dorsolateral face.

REMARKS

The genus *Eumunida* comprises 27 species, three from the Atlantic ocean, three from the Indian ocean and the other species from the Pacific ocean (de Saint Laurent & Macpherson 1990; de Saint Laurent & Poupin 1996; Baba 2005). *Eumunida spinosa* n. sp. belongs to the group of species possessing two well developed spines in the anterior border of fourth thoracic sternite (subgenus *Eumunida* de Saint Laurent & Poupin, 1996), the posterior region of the carapace with complete striae, and the carapace with two pairs of anterolateral spines. This group includes three species: *E. annulosa* de Saint Laurent & Macpherson, 1990, *E. australis* de Saint Laurent & Macpherson, 1990 and *E. sternomaculata* de Saint Laurent & Macpherson, 1990, from the southwestern Pacific. However, the new species is readily distinguishable from these three species by the absence of a ventral pad on the propodus of the chelipeds, and the presence of two rows of well developed spines on the palm of the cheliped. The ventral pad on the cheliped can be absent in some specimens of *E. annulosa* (usually small sizes). However, the new species is easily distinguishable by the greater size of the first anterolateral spine of the carapace (clearly smaller in *E. annulosa*), the presence of three distal spines on the carpus of the cheliped (two spines in *E. annulosa*) and the two rows of spines on the propodus of the cheliped (only one in *E. annulosa*).

Genus *Pseudomunida* Haig, 1979

Pseudomunida fragilis Haig, 1979

Pseudomunida fragilis Haig, 1979: 89, figs 1, 2. — Baba 2005: 21.

MATERIAL EXAMINED. — **New Caledonia.** HALIPRO 2, stn 055, 25°04'S, 168°44'E, 1098-1480 m, 17.XI.1996, 2 ♂♂ 14.2 and 16.3 mm; 3 ovig. ♀♀ 19.9-25.1 mm.

REMARKS

This rare species was only known by three females. Two were caught off Oahu, Hawaii Islands (type locality), at 969-1280 m (Haig 1979), and the third female was collected in Bonin Islands, at 1370 m (Baba 2005). The present record extends its geographical range to the southwestern Pacific, between 1098 and 1480 m.

The specimens agree quite well with the original description and illustrations, and additional data from Baba (2005). The pleopods are absent in males. Ground colour of the carapace, abdominal segments and pereopods are pink, being darker in the anterior part of the carapace and pereopods.

Family GALATHEIDAE Samouelle, 1819

Genus *Munida* Leach, 1820

Munida aulakodes n. sp.

(Fig. 2)

HOLOTYPE. — **New Caledonia.** NORFOLK 2, stn 2122, 23°21.55'S, 168°00.12'E, 560-577 m, 1.XI.2003, ♂ 8.0 mm (MNHN-Ga 4624).

PARATYPES. — **New Caledonia.** NORFOLK 2, stn 2024, 23°27.92'S, 167°50.90'E, 370-371 m, 21.X.2003, 1 ♂ 5.9 mm. — Stn 2087, 24°56.22'S, 168°21.66'E, 518-586 m, 28.X.2003, 1 ovig. ♀ 6.1 mm.

ETYMOLOGY. — From the Greek, *aulakodes*, furrow-like, in reference to the furrow between the two carinae on the lateral parts of the seventh thoracic sternite.

DISTRIBUTION. — **New Caledonia,** Norfolk Ridge (Antigonia, Éponge and Brachiopode banks), between 370 and 586 m.

DESCRIPTION

Carapace 1.2 times longer than wide. Few secondary striae between main transverse ridges. Ridges with very short non-iridescent setae. Few small scales on intestinal region. Gastric region with three pairs of epigastric spines. One parahepatic, one anterobranchial and one postcervical spine usually on each side. Frontal margins slightly oblique. Lateral margins slightly convex. Anterolateral spine long, at anterolateral angle, overreaching

level of sinus between rostrum and supraocular spines. Second marginal spine before cervical groove three or four times smaller than preceding one. Branchial margins with three spines. Rostrum spiniform, about half as long as remaining carapace, straight and horizontal. Supraocular spines reaching mid-length of rostrum and not reaching end of corneae, subparallel, slightly directed upwards (Fig. 2A).

Lateral surfaces of seventh thoracic sternite with two distinct carinae. Fourth sternite smooth. Anterior margin of fourth sternite clearly narrower than third (Fig. 2B).

Second abdominal somite with row of six or seven spines on anterior ridge. Second and third somites each with one transverse stria.

Eyes large, maximum corneal diameter almost one-half distance between bases of anterolateral spines.

Basal segment of antennule (distal spines excluded) about one-third carapace length, elongate, overreaching end of corneae, with two distal spines, mesial spine shorter than lateral; two spines on lateral margin, proximal one short, located at mid-length of segment, distal one long, not reaching end of distal spines (Fig. 2C).

First segment of antennal peduncle with one long distomesial spine reaching end of third segment; second segment with two distal spines, mesial spine as long as lateral spine, slightly exceeding third segment; third segment unarmed (Fig. 2C).

Ischium of third maxilliped about 1.5 times length of merus measured along dorsal margin, distoventrally bearing spine. Merus of third maxilliped with two well developed spines on flexor margin, distal smaller; extensor margin unarmed (Fig. 2D).

Chelipeds subequal in length, squamous, with numerous uniramous setae denser on mesial borders of articles. Palm slightly shorter than fingers. Merus armed with some spines, strongest spine on distal border, not overreaching proximal quarter of carpus. Carpus with several spines on dorsal and lateral sides. Palm with some spines along dorsal border, some spines on lateral border. Fingers unarmed, except terminal spines,

distally curving and crossing, ending in a sharp point (Fig. 2E).

Second pereiopod about 2.7 times carapace length; merus as long as carapace, about eight times as long as high, about three times carpus length and 1.2 times as long as propodus; propodus about nine times as long as high, about twice dactylus length (Fig. 2F). Merus with well developed spines on dorsal border, increasing in size distally, ventral margin with several spines and one long distal spine. Carpus with several dorsal spines and one distoventral spine. Propodus with eight to ten movable ventral spines. Dactylus slightly curving distally, with 10-13 movable spinules along entire ventral margin, last spine very near end of dactylus (Fig. 2G). Third pereiopod similar to second; fourth pereiopod shorter than second and third. Merus of fourth pereiopod 0.75 length of second pereiopod.

REMARKS

Munida aulakodes n. sp. belongs to the group of species having three or four spines on the branchial lateral margins of the carapace, distinct carinae on the lateral parts of the thoracic sternites, moderately large eyes, and spines on the anterior ridge of the second abdominal somite. The new species is closely related to *M. rufiantennulata* Baba, 1969 from Japan to New Caledonia and Fiji (Macpherson 1994, 2004) and *M. kapala* Ayhong & Poore, 2004, from Australia (Ayhong & Poore 2004b).

However, *M. aulakodes* n. sp. is easily distinguished from *M. rufiantennulata* and *M. kapala* by several constant characters:

- the thoracic sternites have only two carinae, separated by a furrow, on each lateral part of the seventh sternite in *M. aulakodes* n. sp.; *M. rufiantennulata* has several carinae, widely separated, on lateral parts of the sixth and seventh thoracic sternites, and *M. kapala* has similar carinae on the fifth to seventh sternites. Furthermore, the anterior border of the fourth sternite is clearly narrower in the new species than in *M. rufiantennulata* and *M. kapala*;

- the eyes are larger in the new species. The maximum corneal diameter is about one-half distance between

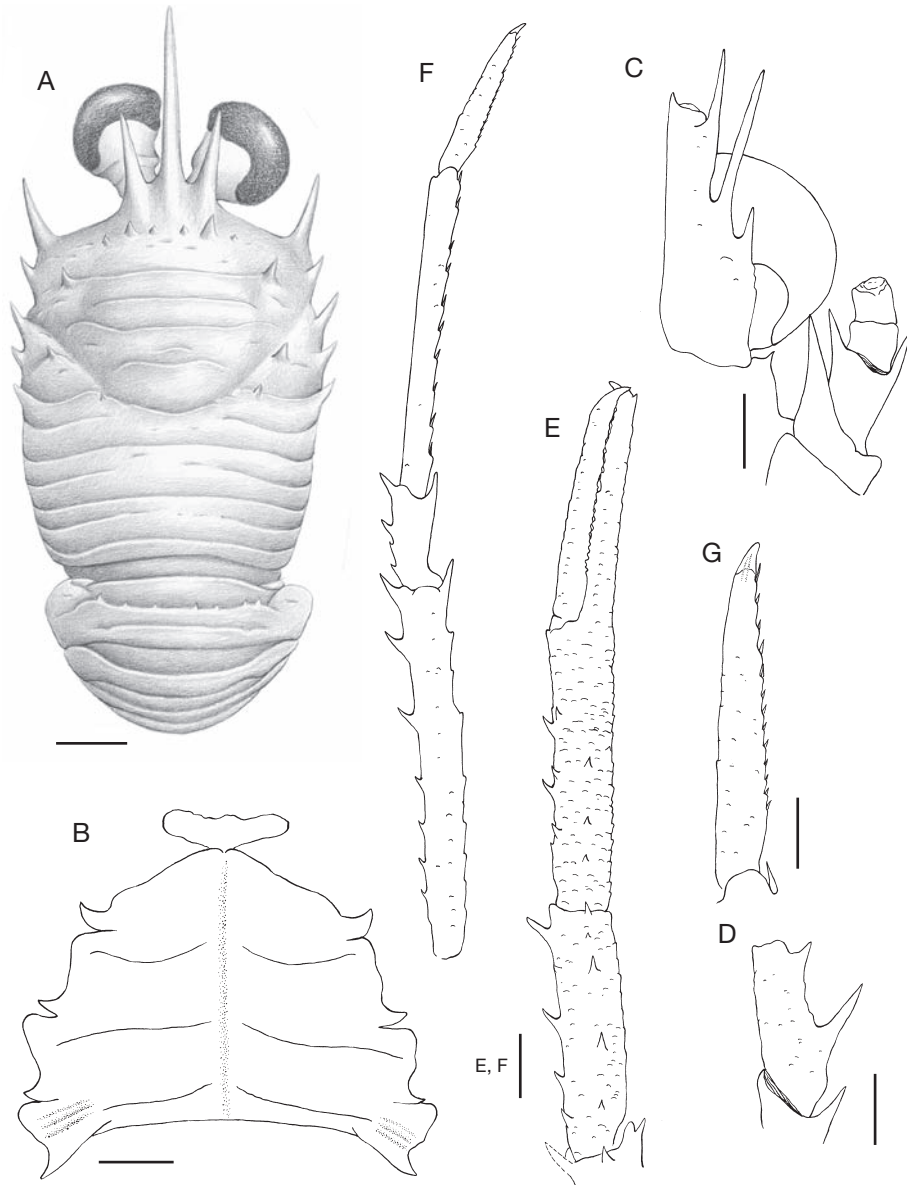


FIG. 2. — *Munida aulakodes* n. sp., holotype, ♂ 8.0 mm: **A**, carapace and abdomen, dorsal view; **B**, sternal plastron; **C**, ventral view of cephalic region, showing antennular and antennal peduncles; **D**, right third maxilliped, lateral view; **E**, right cheliped, dorsal view of the merus, palm and fingers; **F**, right first walking leg, lateral view; **G**, dactylus of right first walking leg, lateral view. Setae of carapace, abdomen and pereopods not illustrated. Scale bars: A, E, F, 2 mm; B-D, G, 1 mm.

bases of anterolateral spines. This diameter is about one-third in *M. rufiantennulata* and *M. kapala*; – the distomesial spine of the second segment of the antennal peduncle reaches or almost reaches the

end of the antennal peduncle in *M. rufiantennulata* and *M. kapala*, respectively. This spine slightly overreaches the third segment in *M. aulakodes* n. sp.

Munida devestiva n. sp.
(Fig. 3)

HOLOTYPE. — New Caledonia. HALIPRO 2, stn 60, 24°42'S, 168°44'E, 1133-1280 m, 18.XI.1996, 1 ovig. ♀ 5.8 mm (MNHN-Ga 4625). The species is only known from the holotype.

ETYMOLOGY. — From the Latin, *devestivus*, undressed, in reference to the absence of complete striae on the carapace.

DISTRIBUTION. — New Caledonia, between 1133 and 1280 m.

DESCRIPTION

Carapace as long as wide. Dorsal surface with many short striae, without complete transverse ridges. Striae with few, short, non-iridescent setae. Gastric region with two pairs of epigastric spines; postcervical spine on each side. Frontal margins slightly oblique. Lateral margins slightly convex. Anterolateral spine short, at anterolateral angle, not reaching level of sinus between rostrum and supraocular spines. Second marginal spine before cervical groove slightly smaller than preceding spine. Branchial margins with five spines, third spine small. Rostrum spiniform, short, about one-third as long as remaining carapace, straight and horizontal. Supraocular spines reaching mid-length of rostrum and not reaching end of corneae, subparallel, and horizontal (Fig. 3A).

Thoracic sternites smooth. Anterior part of fourth sternite clearly narrower than third (Fig. 3B).

Second abdominal somite unarmed on anterior ridge. Second and third somites each with one transverse stria.

Eyes small, barely wider than eyestalk, maximum corneal diameter less than one-fourth distance between bases of anterolateral spines.

Basal segment of antennule (distal spines excluded) about one-third carapace length, elongate, clearly exceeding end of corneae, with two distal spines, mesial spine distinctly shorter than lateral; three spines on lateral margin, proximal two short, located at mid-length of segment, distal one long, clearly not reaching end of distal spines (Fig. 3C).

First segment of antennal peduncle with one well developed distomesial spine reaching end of second segment; second segment with two distal spines, mesial spine as long as lateral spine, not exceeding third segment; third segment unarmed (Fig. 3C).

Ischium of third maxilliped about two times length of merus measured along dorsal margin, distoventrally bearing spine. Merus of third maxilliped with two well developed spines on flexor margin, distal smaller; extensor margin unarmed (Fig. 3D).

Cheliped with few scales, with few setae on mesial borders of articles. Carpus twice as long as wide; palm as long as fingers. Merus armed with some spines, strongest spines on distal border, not overreaching proximal quarter of carpus. Carpus with several spines on dorsal and lateral sides. Palm with spines along dorsal border, some spines on lateral border. Fingers unarmed, except proximal spine on movable finger, distally curving and crossing, ending in a sharp point (Fig. 3E).

Second pereopod about 1.7 times carapace length; merus 0.6 times carapace length, about seven times as long as high, about three times carpus length and slightly longer than propodus; propodus about nine times as long as high, about 1.8 times dactylus length (Fig. 3F). Merus with well developed spines on dorsal border, increasing in size distally, ventral margin with few small spines and one long distal spine. Carpus with few dorsal spines and one distoventral spine. Propodus with six movable ventral spines. Dactylus slightly curving distally, with 12 movable spinules along entire ventral margin, last spine very near end of dactylus (Fig. 3G). Merus of fourth pereopod 0.8 length of second pereopod.

REMARKS

Munida devestiva n. sp. belongs to the group of species having small eyes, and the corneae barely wider than the eyestalk, with the maximum corneal diameter less than 0.25 length of anterior border of carapace between external orbital spines, the abdominal segments unarmed and the distomesial spine of the basal antennular segment clearly shorter than the distolateral spine. The new species is closely

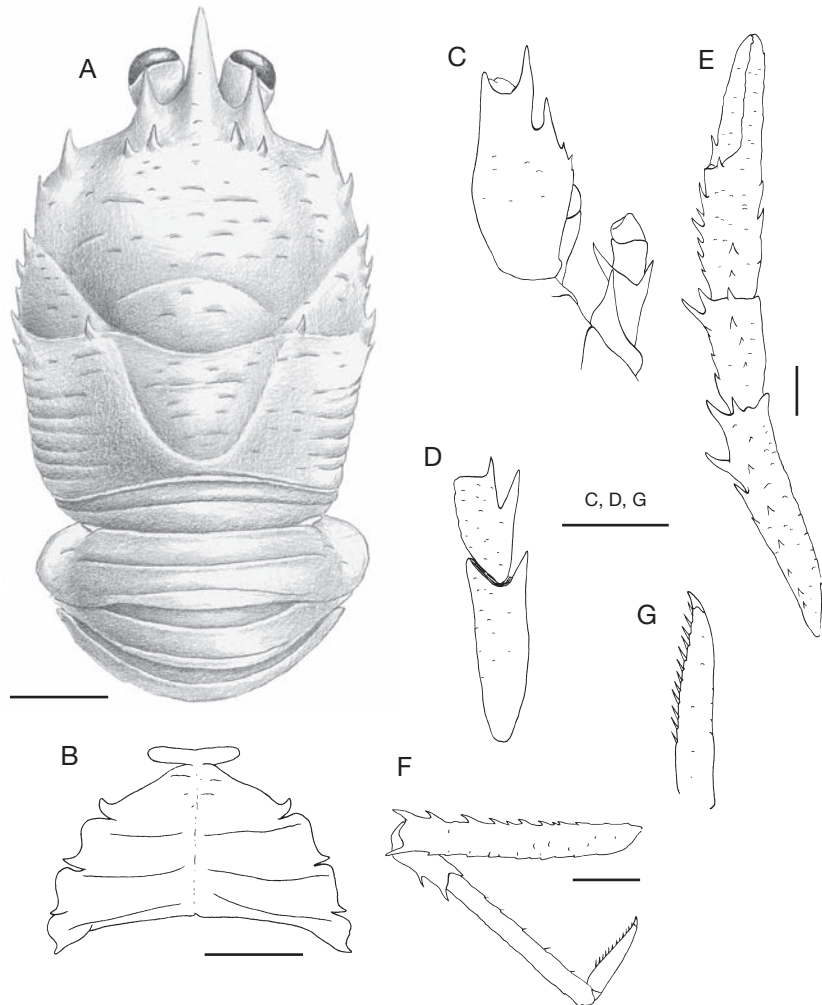


FIG. 3. — *Munida devastiva* n. sp., holotype, ovigerous ♀ 5.8 mm: **A**, carapace and abdomen, dorsal view; **B**, sternal plastron; **C**, ventral view of cephalic region, showing antennular and antennal peduncles; **D**, right third maxilliped, lateral view; **E**, right cheliped, dorsal view of the merus, palm and fingers; **F**, left first walking leg, lateral view; **G**, dactylus of left first walking leg, lateral view. Setae of carapace, abdomen and pereopods not illustrated. Scale bars: A, E, F, 2 mm; B-D, G, 1 mm.

related to *M. tiresias* Macpherson, 1994 from New Caledonia (Macpherson 1994).

However, the two species are clearly distinguished by several characters:

- the dorsal surface of the carapace is clearly more squamate in *M. tiresias*; few, weak striae are present in *M. devastiva* n. sp.;
- the first anterolateral spine is situated in the frontal margin in *M. tiresias*. This spine is situated at the

anterolateral angle of the carapace in *M. devastiva* n. sp.;

- the distomesial spine of the basal segment of the antennal peduncle reaches the end of the second segment in the new species. This spine is very short, and clearly do not reach the end of the second peduncular segment in *M. tiresias*. Furthermore, the distal spines of the second segment of the antennal peduncle are clearly longer in the new species than in *M. tiresias*.

Genus *Torbenia* Baba, 2005*Torbenia calvata* n. sp.

(Fig. 4)

HOLOTYPE. — New Caledonia. NORFOLK 2, stn 2055, 23°39.23'S, 168°16.43'E, 900-950 m, 24.X.2003, 1 ovig. ♀ 4.5 mm (MNHN-Ga 4626).

PARATYPE. — New Caledonia. CHALCAL 2, stn 69, 24°43.70'S, 168°07.90'E, 260 m, 27.X.1986, 1 ♂ 4.3 mm.

ETYMOLOGY. — From the Latin, *calvatus*, made bare, in reference to the absence of spines on the anterior ridge of the second abdominal segment.

DISTRIBUTION. — New Caledonia, between 260 and 950 m.

DESCRIPTION

Carapace slightly longer than wide. Transverse ridges usually interrupted, except several on gastric region and posterior part of carapace, with few very short, non-iridescent setae. Main transverse striae on posterior part of carapace interrupted in cardiac region. Scales and secondary striae between main striae absent. Gastric region with two main epigastric spines, behind supraocular spines; two or three additional minute spines on each side. One to three small parahepatic spines on each side (male), one small anterobranchial and one postcervical spine on each side. Orbit with mesial, rounded mound, lateral limit slightly defined. Frontal margins concave. Lateral margins slightly convex. Anterolateral spine short, at anterolateral angle, clearly not reaching level of sinus between rostrum and supraocular spines. Second marginal spine anterior to cervical groove very small. Branchial margins with four small spines. Rostrum spiniform, less than half as long as remaining carapace, slightly carinated dorsally, straight, and slightly upwards directed. Supraocular spines reaching mid-length of rostrum and clearly not overreaching end of corneae, subparallel, directed slightly upwards (Fig. 4A).

Thoracic sternites smooth, without striae. Anterior part of fourth sternite slightly narrower than third. Transverse ridges between fifth, sixth and seventh sternites blunt, feebly granulated (Fig. 4B).

Second abdominal somite unarmed. Third and fourth somites with two median spines on anterior ridge; posterior ridge of fourth somite unarmed. Second and third somites each with several short striae. Fourth somite without striae.

Eyes large, maximum corneal diameter half distance between bases of anterolateral spines.

Basal segment of antennule (distal spines excluded) about one-third carapace length, elongate, slightly overreaching corneae, with two short distal spines, mesial spine shorter than lateral spine; lateral margin unarmed, bearing numerous long plumose setae (Fig. 4C).

First segment of antennal peduncle with unusually prolonged mesial process clearly not exceeding antennular peduncle, lateral border with numerous long plumose setae; second segment with two strong distal spines, slightly overreaching penultimate segment; third segment with small distolateral spine; ultimate segment unarmed (Fig. 4C).

Ischium of third maxilliped about two times length of merus measured along dorsal margin, distoventrally bearing spine. Merus with one well developed median spine on flexor margin; extensor margin unarmed (Fig. 4D).

Chelipeds about three times carapace length, squamous, with few setae on mesial borders of merus and carpus. Merus armed with some spines, strongest spine on distal border short, not overreaching proximal quarter of carpus. Carpus slightly longer than palm, with several spines on dorsal side. Palm slightly longer than fingers, with few small spines on mesial border. Fingers unarmed, distally curving and crossing, ending in a sharp point (Fig. 4E).

Second pereopod about 2.5 times carapace length; merus as long as or slightly longer than carapace, about eight times as long as high, about 3.5 times carpus length and 1.5 times propodus length; length of propodus 5.5 times as long as high, about 1.2 times dactylus length (Fig. 4F). Merus with several short spines along extensor and flexor margins, one well developed distal spine on each margin. Carpus with one spine on extensor and flexor border. Propodus with nine movable spinules along flexor border. Dactylus slender, with dorsal margin slightly convex, slightly curving distally, with one or two movable spinules on median portion of

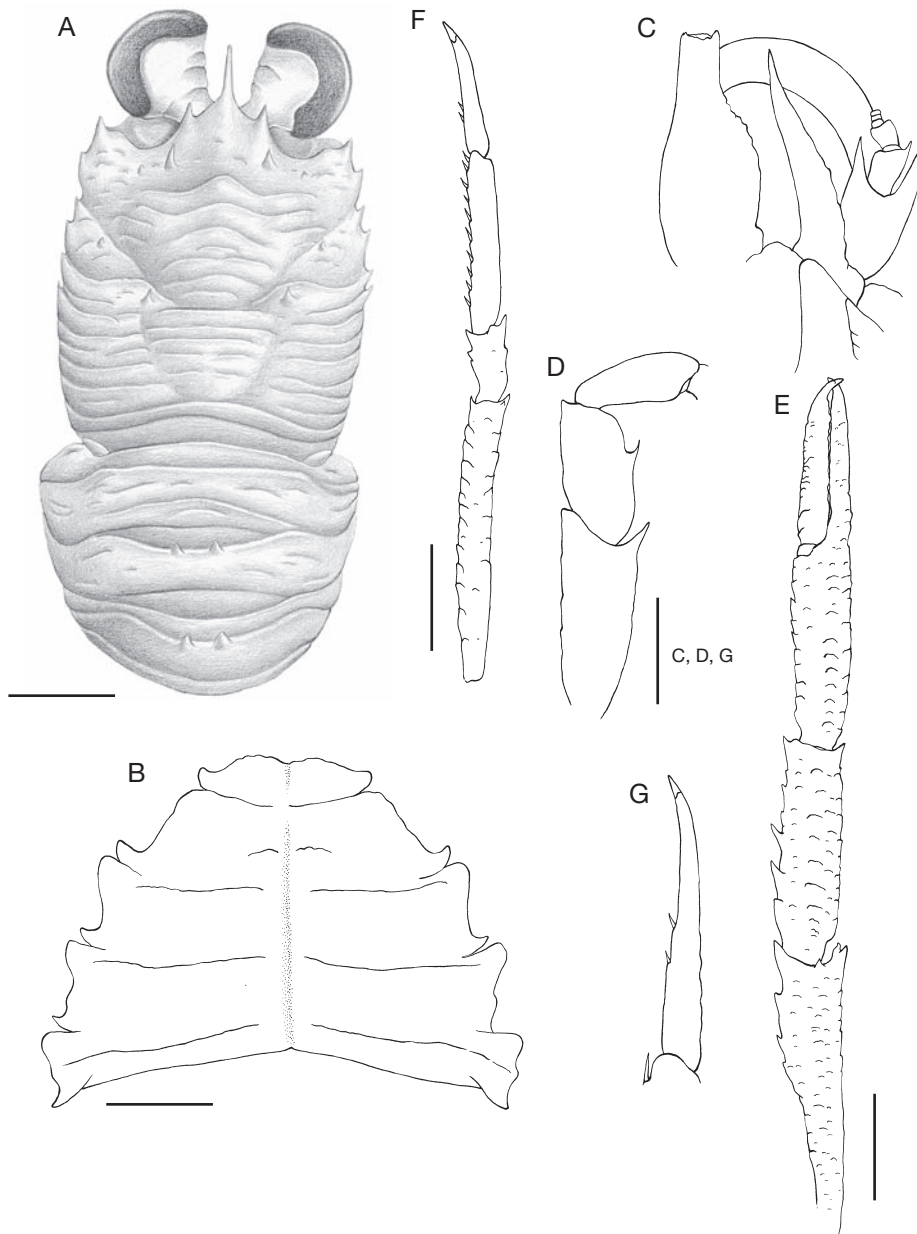


FIG. 4. — *Torbenia calvata* n. sp., holotype, ovigerous ♀ 4.5 mm: **A**, carapace and abdomen, dorsal view; **B**, sternal plastron; **C**, ventral view of cephalic region, showing antennular and antennal peduncles; **D**, right third maxilliped, lateral view; **E**, right cheliped, dorsal view; **F**, left first walking leg, lateral view; **G**, dactylus of left first walking leg, lateral view. Setae of carapace, abdomen and pereopods not illustrated. Scale bars: A, E, F, 2 mm; B-D, G, 1 mm.

flexor margin (Fig. 4G). Third and fourth pereopod shorter than second; dactylus unarmed; merus 0.75 as long as that of second pereopod.

REMARKS

The genus *Torbenia* contains two species: *T. orbis* Baba, 2005 (type species) from the Kei Islands,

Indonesia, collected between 156 and 305 m (Baba 2005), and *T. insolita* (Macpherson, 2004) from New Caledonia and Tonga, between 266 and 439 m (Macpherson 2004). The new species is distinguished by the absence of spines on the anterior ridge of the second abdominal segment, and the small size of the first anterolateral spine of the carapace, which clearly does not reach the sinus between rostrum and supraocular spines. *Torbenia orbis* and *T. insolita* have two median spines on the anterior ridge of the second abdominal segment, and the first anterolateral spine of the carapace reaching the sinus between the rostrum and the supraocular spines. Furthermore, *T. calvata* n. sp. and *T. orbis* can be distinguished by several additional characters:

- the posterior ridge of the fourth abdominal segment has a median spine in *T. orbis*, whereas this spine is absent in *T. calvata* n. sp.;
- the anterior/posterior margin length ratio of the fourth sternite is one-half in the new species, instead of one-fourth in *T. orbis*;
- the distal spines of the second segment of the antennal peduncle overreach the third segment in the new species, whereas these spines never reach the end of this segment in *T. orbis*;
- one transverse stria is distinct behind each of the anterior and posterior ridges of the second and third abdominal segments in *T. orbis*. These striae are absent (only few short lateral stria) in *T. calvata* n. sp.

T. calvata n. sp. also differs from *T. insolita* by the following additional characters:

- the long process on the mesial margin of the first antennal segment overreaches the antennular peduncle in *T. insolita*, whereas this process never reaches the end of the antennular peduncle in *T. calvata* n. sp.;
- the number of movable spinules along the flexor border of the walking leg dactyli is larger in *T. insolita* than in the new species.

Acknowledgements

I am greatly indebted to M.-C. Boisselier, A. Crosnier, S. Samadi and B. Richer de Forges for placing at my disposal these interesting specimens. Thanks are also due to K. Baba and S. Ah Yong for improvements

to the manuscript. The species were illustrated by Javier Macpherson.

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*Submitted on 25 November 2004;
accepted on 13 May 2005.*