

A new genus and new species of Crangonidae (Crustacea, Decapoda, Caridea) from the southwestern Pacific

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ABSTRACT

A new crangonid genus and species, *Pseudopontophilus serratus* n. gen., n. sp., is established from the southwestern Pacific. The new genus is closely related to *Pontophilus* Leach, 1817 and *Parapontophilus* Christoffersen, 1988 in having at least one pair of lateral teeth on the rostrum and a postorbital suture on the carapace. It is distinguished from both *Pontophilus* and *Parapontophilus* in the completely loss of exopod on the first pereopod and the less reduced second pereopod. Considerable variation in the number of median spines on the carapace, which not appear to be correlated with either size or sex, is found in this new species.

KEY WORDS

Crustacea,
Decapoda,
Caridea,
Crangonidae,
southwestern Pacific,
new genus,
new species.

RÉSUMÉ

Un nouveau genre et une nouvelle espèce de Crangonidae (Crustacea, Decapoda, Caridea) du Pacifique sud-ouest.

Pseudopontophilus serratus n. gen., n. sp. est décrit du Pacifique sud-ouest. Le nouveau genre est proche de *Pontophilus* Leach, 1817 et de *Parapontophilus* Christoffersen, 1988 en cela qu'il a au moins une paire de dents latérales sur le rostre et une suture postorbitale sur la carapace. Il se distingue de *Pontophilus* et *Parapontophilus* par la perte totale de l'exopode sur le premier péréopode et la réduction moindre du second péréopode. La nouvelle espèce présente des variations considérables dans le nombre d'épines médianes sur la carapace, ceci ne semble pas corrélé avec la taille ou le sexe.

MOTS CLÉS

Crustacea,
Decapoda,
Caridea,
Crangonidae,
Pacifique sud-ouest,
nouveau genre,
nouvelle espèce.

INTRODUCTION

During studies on the extensive collections of the caridean family Crangonidae made by various French expeditions in the Indo-Pacific regions, an undescribed species which could not be assigned to any known genus was discovered from waters in the southwestern Pacific around New Caledonia, Vanuatu, Fiji and Tonga. According to the recent key of Holthuis (1993), the new species is placed close to *Pontophilus* Leach, 1817 (only three Atlantic species are included; see d'Udekem d'Acoz 1999) and *Parapontophilus* Christoffersen, 1988 (seven species are known, world-wide distribution; see d'Udekem d'Acoz 1999). However, certain characteristics set the new species apart from either of the two genera. Therefore, a new genus, *Pseudopontophilus* n. gen., is established and diagnosed for the new species, *P. serratus* n. gen., n. sp. The new species is described and illustrated in detail.

MATERIALS AND METHODS

Materials for this study were collected during various French expeditions in the southwestern Pacific: MUSORSTOM 4, MUSORSTOM 6, CHALCAL 2, BIOGEOCAL and SMIB 3 (Richer de Forges 1990); BATHUS 4 and SMIB 8 (Richer de Forges & Chevillon 1996); MUSORSTOM 8 (Richer de Forges *et al.* 1996); NORFOLK 1; BORDAU 1 (Richer de Forges 2000); and BORDAU 2 (cruise report not published to date). The type specimens are deposited in the collection of the Muséum national d'Histoire naturelle, Paris (MNHN). Carapace length (cl) represents specimen size, measured from the posterior margin of the orbit to the midpoint of the posterior margin of the carapace.

SYSTEMATICS

Family CRANGONIDAE Haworth, 1825

Genus *Pseudopontophilus* n. gen.

TYPE SPECIES. — *Pseudopontophilus serratus* n. sp.

ETYMOLOGY. — From the Greek *pseudes* meaning false, and *Pontophilus*, a generic name proposed by Leach (1817), and referring the superficial similarity of this new genus to the genus *Pontophilus*.

DIAGNOSIS. — Rostrum armed with one pair of lateral teeth. Carapace with postorbital suture; midline with more than two spines in anterior 0.60, but no spine on posterior 0.40; one additional spine superior to antennal spine; postorbital carina low, blunt, bearing three epibranchial spines. Anterior five abdominal somites devoid of median carinae; sixth somite without submedian carinae. Eye with cornea well developed, darkly pigmented. Antennular stylocerite not expanded laterally, terminating distally in acute spine. Scaphocerite with well developed blade. Maxilla with posterior lobe of scaphognathite rounded, not greatly elongate. First pereopod without exopod. Second pereopod chelate, short, but reaching distal end of merus of first pereopod; ischium and basis partially fused. Podobranch on second maxilliped; one arthrobranch above third maxilliped; pleurobranches on fourth to eighth thoracic somites, each with anteriorly directed dorsal apex. Appendix masculina shorter and broader than appendix interna.

REMARKS

The new genus, which at present contains only the type species, is placed closest to *Pontophilus* and *Parapontophilus* using the key provided by Holthuis (1993). The three genera share the rostrum armed with at least one pair of lateral teeth, shortened but chelate second pereopod, and the postorbital suture on the carapace. *Pseudopontophilus* n. gen. differs from both *Pontophilus* and *Parapontophilus* in the completely loss of an exopod on the first pereopod and the more well developed second pereopod which reaches to the distal margin of the merus of the forwardly directed first pereopod. The presence of more than two median spines in the anterior 0.70 on the carapace also characterizes *Pseudopontophilus* n. gen. In some characters, the new genus appears intermediate between *Pontophilus* and *Parapontophilus*. In the general spination of the carapace (there are more than two median spines and more than one epibranchial spines), *Pseudopontophilus* n. gen. is similar to *Pontophilus*, although no middorsal spine is present in the posterior half on the carapace in the new genus. While, the smooth abdomen lacking median or submedian carinae and the short, robust appendix

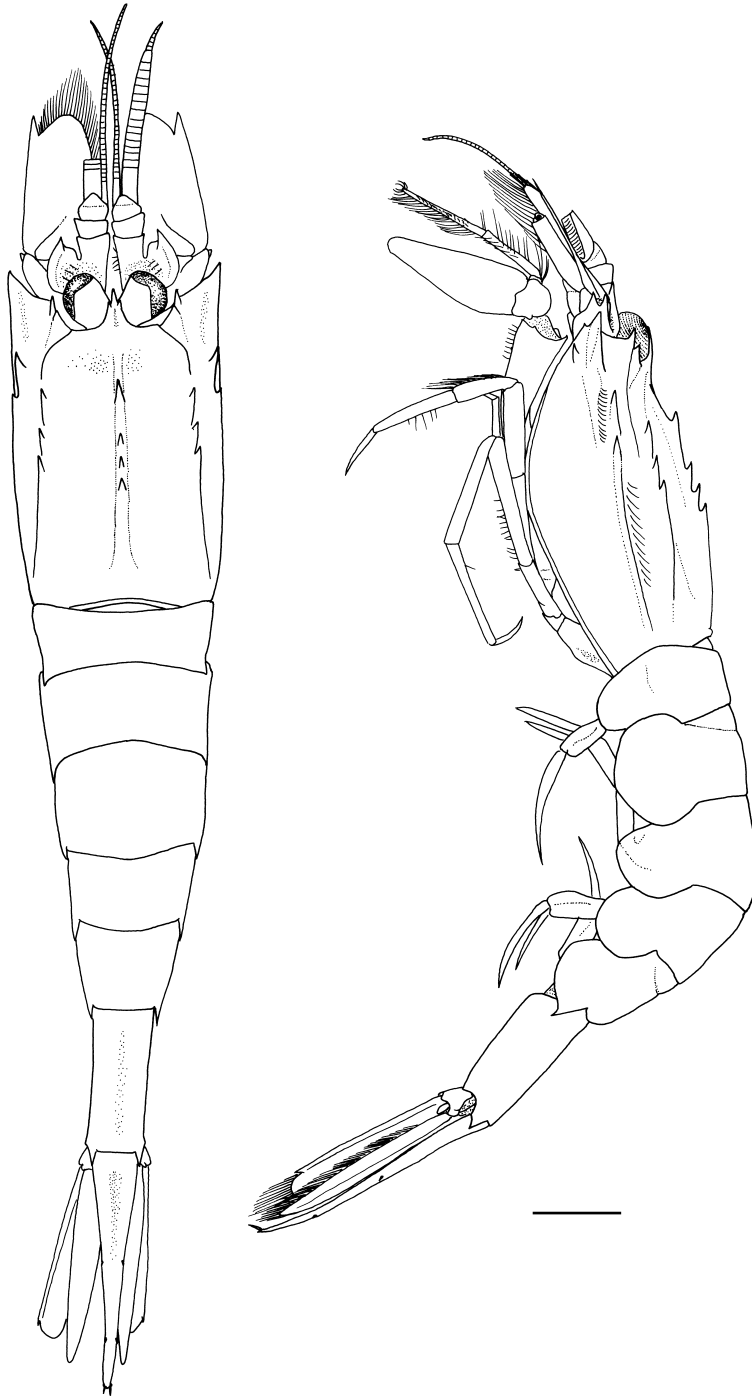


FIG. 1. — *Pseudopontophilus serratus* n. gen., n. sp., New Caledonia, SMIB 8, stn DW 148, holotype ♂ cl 5.6 mm (MNHN-Na 14186), habitus (lateral and dorsal views). Scale bar: 2 mm.

masculina relate *Pseudopontophilus* n. gen. to *Parapontophilus*.

Further, *Pseudopontophilus* n. gen. superficially resembles *Philocheras* Stebbing, 1900 in general appearance. The possession of the postorbital longitudinal suture on the carapace and the non-transversely oblong antennular stylocerite immediately distinguish the new genus from *Philocheras*. The presence of a pair of lateral teeth on the rostrum is useful to separate *Pseudopontophilus serratus* n. gen., n. sp. from all but two species of *Philocheras*, *P. gorei* (Dardeau, 1980) and *P. lapillus* Wicksten, 1983, both of which are known to have lateral rostral teeth (Dardeau 1980; Wicksten 1983). It is recommended to reassess the phylogenetic position of the latter two *Philocheras* species.

Pseudopontophilus serratus n. sp.
(Figs 1-6)

HOLOTYPE. — New Caledonia, SMIB 8, stn DW 148, Sponge Bank, Norfolk Ridge, 24°55.1'S, 168°21.6'E, 510 m, 27.I.1993, ♂ cl 5.6 mm (MNHN-Na 14186).

PARATYPES. — 32 specimens:

New Caledonia. MUSORSTOM 4, stn CP 153, 19°04.2'S, 163°21.2'E, 235 m, 14.IX.1985, 1 ♂ cl 6.0 mm (MNHN-Na 14179); stn CP 180, 18°56.8'S, 163°17.7'E, 440 m, 18.IX.1985, 1 cl ♂ 5.1 mm, 1 ♀ 5.3 mm, 1 ovig. ♀ cl 6.0 mm (MNHN-Na 14180).

MUSORSTOM 6, stn CP 467, Loyalty Islands, 21°05.13'S, 167°32.11'E, 575 m, 21.II.1989, 1 ♀ cl 5.2 mm (MNHN-Na 14181).

CHALCAL 2, stn DW 74, 24°40.36'S, 168°38.38'E, 650 m, 29.X.1986, 1 ♂ cl 5.4 mm, 1 ♀ cl 6.3 mm (photographed specimens; MNHN-Na 14182); stn DW 75, 24°39.31'S, 168°39.67'E, 600 m, 29.X.1986, 1 ♂ cl 6.0 mm, 1 ♀ cl 6.2 mm (MNHN-Na 14183).

BIOGEOCAL, stn DW 307, 20°35.38'S, 166°55.25'E, 470-480 m, V.1987, 1 ♀ cl 6.2 mm (MNHN-Na 14184).

SMIB 3, stn DW 6, 24°56'S, 168°21'E, 505 m, 21.III.1987, 1 ♀ cl 6.2 mm (MNHN-Na 14185).

SMIB 8, stn DW 148, Sponge Bank, Norfolk Ridge, 24°55.1'S, 168°21.6'E, 510 m, 27.I.1993, 1 ♂ cl 6.0 mm (MNHN-Na 14187).

BATHUS 4, stn DW 923, 18°51.51'S, 163°24.17'E, 502-470 m, 6.VIII.1994, 1 ♀ cl 6.1 mm (MNHN-Na 14188).

NORFOLK 1, stn DW 1684, Sponge Bank, Norfolk Ridge, 24°55'S, 168°22'E, 508-541 m, 23.VI.2001, 1 ♀ cl 5.3 mm (MNHN-Na 14189); stn CP 1690,

Sponge Bank, Norfolk Ridge, 24°54'S, 168°22'E, 23.VI.2001, 1 ♂ cl 5.7 mm (MNHN-Na 14190).

Vanuatu. MUSORSTOM 8, stn CP 980, 19°21.02'S, 169°25.22'E, 450-433 m, 22.IX.1994, 1 ♀ cl 6.1 mm (MNHN-Na 14191); stn CP 982, 19°21.80'S, 169°26.47'E, 408-410 m, 23.IX.1994, 1 ♀ cl 5.9 mm (MNHN-Na 14192).

Fiji. BORDAU 1, stn CP 1412, 16°06'S, 179°28'W, 400-407 m, 26.II.1999, 1 ovig. ♀ cl 7.0 mm (photographed specimen; MNHN-Na 14193).

Tonga. BORDAU 2, stn CP 1527, Eua Island, 21°16'S, 174°59'W, 483-509 m, 3.VI.2000, 3 ♂♂ cl 5.0-6.0 mm, 1 ovig. ♀ cl 6.0 mm (MNHN-Na 14194); stn DW 1617, 23°03'S, 175°53'W, 483-531 m, 17.VI.2000, 1 ♀ cl 5.2 mm (photographed specimen; MNHN-Na 14195).

ETYMOLOGY. — From the Latin *serratus* meaning toothed like a saw, referring to the series of median teeth on the anterior part of the carapace.

DISTRIBUTION. — Southwestern Pacific from New Caledonia, Vanuatu, Fiji and Tonga; at depths of 235-650 m.

DESCRIPTION

Body (Fig. 1) depressed dorsoventrally. Integument not very firm. Sparse tegumental scales found at least on gastric region of the carapace (Fig. 2B).

Rostrum (Fig. 2A, C) narrow triangular with acute or subacute tip in dorsal view, directed forward, not reaching anterior margin of eye, about 0.15 times as long as carapace, somewhat flattened; dorsal surface very slightly concave; dorso-lateral margins with a pair of tiny lateral tooth; ventral blade becoming deeper proximally. Carapace (Figs 1; 2A, C, D) longer than wide postorbitally (length/width 1.50-1.60); median carina distinct, extending from just posterior to rostral base to 0.85-0.90 of carapace length, armed with three to seven small spines (including gastric spine) in anterior 0.55-0.60 of carapace length, gastric spine sharp, arising from 0.22-0.25 of carapace length, remaining two to six spines closely set with each other and thus somewhat remote from gastric spine in any case. Orbital margin concave, with deep orbital fissure, bearing small spine just dorsomesial to antennal spine. Antennal spine moderately small, directed forward. Anterolateral margin somewhat produced anteriorly, terminating anteriorly in

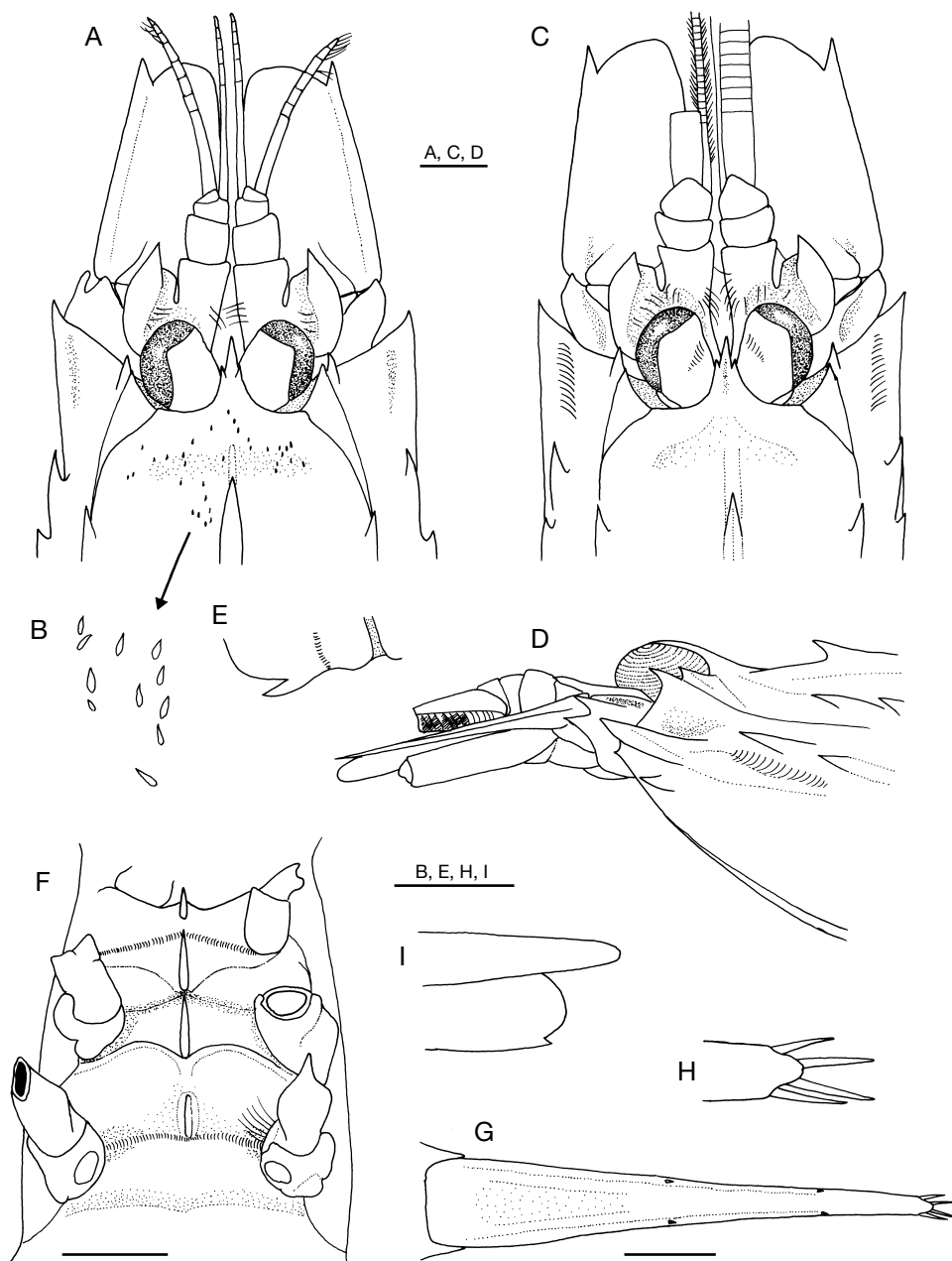


FIG. 2. — *Pseudopontophilus serratus* n. gen., n. sp.: **A, C**, anterior part of carapace and cephalic appendages, dorsal (marginal setae on antennal scale omitted, left antennular flagellum broken in holotype male); **B**, tegumental scales; **D**, anterior part of carapace and cephalic appendages, lateral (setae omitted); **E**, ventral part of basal segment of antennular peduncle, lateral; **F**, sixth to eighth thoracic sternites, ventral (setae omitted); **G**, telson, dorsal; **H**, terminal part of telson, dorsal; **I**, posterior part of left uropod, dorsal (setae omitted); **A, B**, paratype ovigerous ♀ cl 7.0 mm, Fiji, BORDAU 1, stn CP 1412 (MNHN-Na 14193); **C-I**, holotype ♂ cl 5.6 mm, New Caledonia, SMIB 8, stn DW 148 (MNHN-Na 14186). Scale bars: A, C, D, F, G, 1 mm; B, E, H, I, 0.5 mm.

moderately large branchiostegal spine supported by short, rather blunt branchiostegal carina, slightly overreaching anterior end of cornea of eye. Pterygostomial spine tiny. Three lateral carinae (postorbital, branchial and branchiostegal) present; postorbital carina low, rather obsolete, originating from dorsolateral margin of rostrum, extending nearly to level of posterodorsal margin of carapace, forming light angle at orbital fissure, armed with three epibranchial spines (first spine arising from same level as gastric spine); hepatic spine moderately large, accompanied by shallow hepatic groove; branchial carina low, but distinct, extending from posterior to base of hepatic spine to level of posterodorsal margin of carapace, terminating anteriorly in small spine (= post-hepatic spine). One small submarginal spine inferior to branchiostegal carina. Postorbital suture beginning from just superior to base of antennal spine, and extending at least to level of first epibranchial spine along postantennal carina.

Abdomen moderately wide in males (Fig. 1) and non-spawning females, more widened in spawning females (particularly second and third somites). Anterior five somites rounded dorsally. No distinct median notch on posterodorsal margins of second and fifth somites; posterodorsal margin of third abdominal somite slightly produced posteriorly. Pleura of anterior four somites broadly rounded ventrally, that of fifth somite with large posteroventral tooth directed slightly ventrally. Sixth somite elongate, 2.30-2.40 times as long as anterior width; dorsal surface somewhat flattened, with no submedian carinae; posterolateral process moderately large, terminating in small acute spine; posteroventral corner terminating in minute spine. Telson (Fig. 2D) narrow, gradually tapering to blunt tip, 0.85-0.92 times as long as carapace and 1.70-1.75 times as long as sixth abdominal somite; dorsal surface almost flat, with two pairs of minute dorsolateral spines (anterior pair arising from 0.45 of telson length, posterior pair about 0.85 length); two pairs of terminal spines present (Fig. 2H).

Thoracic sternites in males (Fig. 2F) and non-spawning females widened posteriorly, transverse sutures separating fifth to eighth somites clearly

discernible; fifth to eighth sternites each with median keel, anterior three terminating anteriorly in small, sharp spine, that on eighth short, terminating anteriorly in blunt point; sixth sternite with obliquely transverse ridge on either side of midline. In spawning females, thoracic sternite somewhat depressed below, sculpture and armature greatly reduced, and suture separating somites hardly discernible. Abdominal sternites similar between males and non-spawning females, and females, devoid of median spine; only fifth somite with sclerotized blunt median ridge.

Eye (Fig. 2A, C, D) well developed; cornea somewhat depressed dorsoventrally, its maximal diameter 0.17-0.18 of carapace length; ocular peduncle somewhat extended as broadly triangular lobe on dorsal surface, lacking dorsal tubercle. Antennular peduncle (Fig. 2A, C) falling slightly short of midlength of antennal scaphocerite; basal segment much longer than distal two segments combined, deeply excavate dorsally to accommodate eye, ventral surface armed with two spines (one large, forwardly directed spine arising from middle of basal segment (Fig. 2E) and one smaller spine arising from base of stylocerite (not illustrated); stylocerite subovate in general shape, terminating distally in acute spine reaching distal margin of basal segment, dorsal surface concave with lateral part somewhat thickened, distomesial lobe distinct. Distal two segments and flagella sexually dimorphic. In males, distal two segments very stout and somewhat depressed dorsoventrally; penultimate segment widened distally and distinctly wider than long, wider than basal segment, dorsodistal margin slightly concave; ultimate segment subtriangular in shape in dorsal view; outer flagellum overreaching distal margin of scaphocerite by half length, with proximal aesthetasc-bearing portion noticeably thickened, composed of 16 articles and short distal part composed of four to six articles (proximal most article longest, occupying 0.15-0.20 length of whole flagellum); inner flagellum slightly longer than outer flagellum, arising ventromesial to base of outer flagellum, proximal one third not articulated with two rows of setae ventrally, distal two

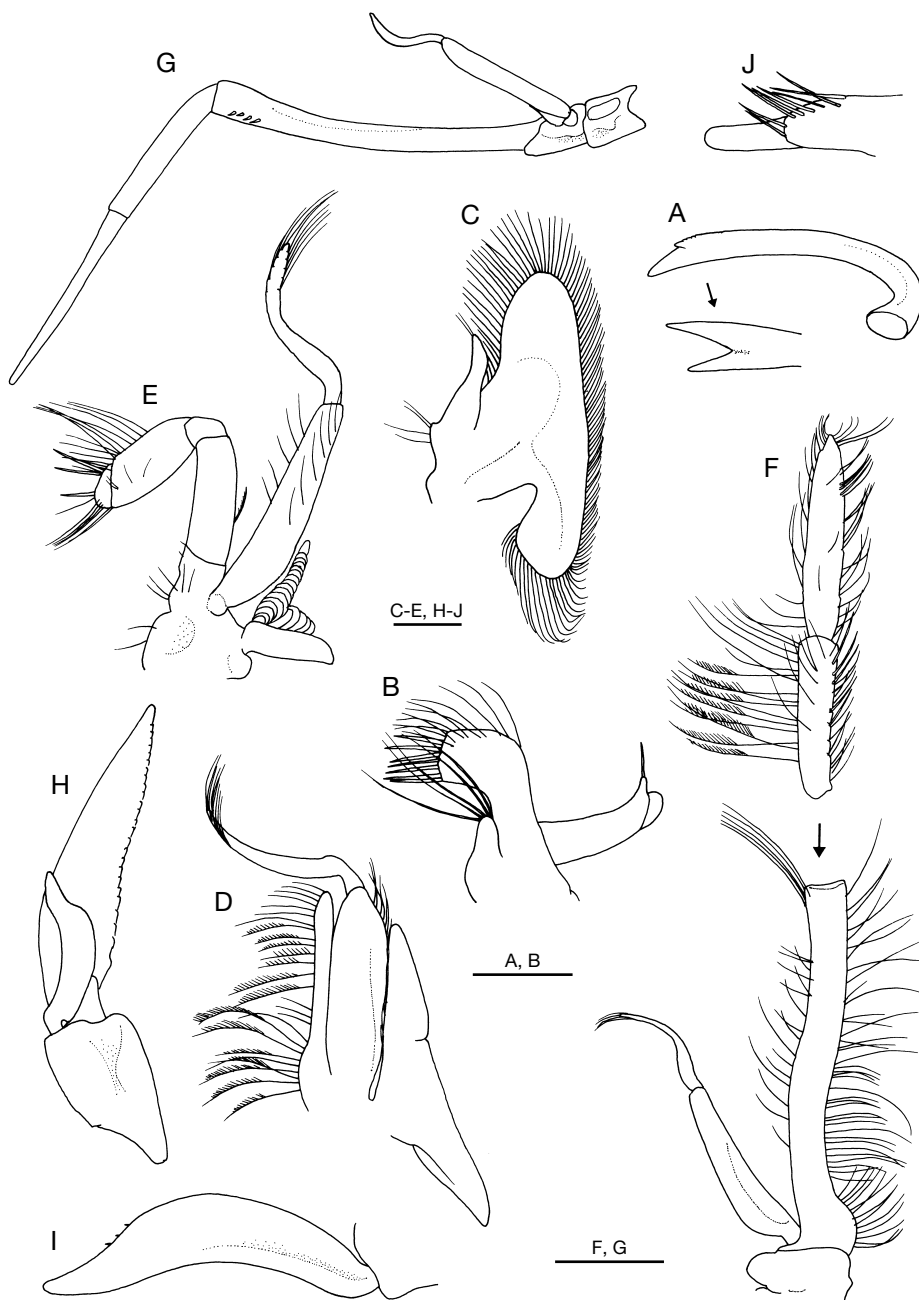


FIG. 3. — *Pseudopontophilus serratus* n. gen., n. sp., New Caledonia, SMIB 8, stn DW 148, holotype ♂ cl 5.6 mm (MNHN-Na 14186), left appendages; **A**, mandible, ventral, inset, distal part, posterior; **B**, maxillule, ventral; **C**, maxilla, ventral; **D**, first maxilliped, ventral; **E**, second maxilliped, ventral; **F**, third maxilliped, dorsal; **G**, same, lateral (setae omitted); **H**, first pleopod, ventral; **I**, endopod of first pleopod, ventral; **J**, appendix masculina and appendix interna of second pleopod, mesial. Scale bars: A-E, I, 0.5 mm; F-H, 1 mm; J, 0.25 mm.

thirds composed of more than 20 articles lacking ventral setae. In females, distal two segments much more slender; penultimate segment not widened distally and as wide as long or slightly wider than long, as wide as basal segment; ultimate segment relatively smaller than that of male; outer flagellum overreaching distal margin of scaphocerite by 0.10-0.15 length, composed of eight to 11 articles (proximalmost article occupying 0.35 length of whole flagellum; proximal three to five and terminal articles devoid of aesthetascs, but subdistal three to five articles bearing aesthetascs); inner flagellum about 1.2 times as long as outer flagellum, proximal two fifths not articulated, distal three-fifths composed of eight to 10 articles.

Antenna (Fig. 2A, C, D) with basal segment bearing one small spine mesial to antennal gland opening; Basicerite with dorsolateral distal lobe terminating in acute or subacute point, extending as far as ventrolateral distal spine. Carpocerite somewhat depressed dorsoventrally, reaching distal 0.20-0.25 of scaphocerite. Scaphocerite 0.50-0.55 times as long as carapace, 2.20-2.30 times as long as wide; lateral margin straight, terminating in moderately large distolateral spine; distal blade produced somewhat mesially, rounded, distinctly exceeding distolateral tooth; dorsal surface proximally with short, broad ridge extending mesially. Mandible (Fig. 3A) long, slender, primarily bidentate terminally; ventral tooth longer than dorsal tooth, its margin not denticulate, smooth, but basally with small tooth bearing minutely denticulate margin; dorsal tooth not denticulate on margins. Maxillule (Fig. 3B) with small, rounded coxal endite bearing very long setae; basal endite strongly curved mesially, mesial margin truncate, bearing row of long spines and setae; palp long, curved at distal part, inner lobe produced in slender projection, bearing one apical bristle, outer lobe flattened, rounded. Maxilla (Fig. 3C) with greatly reduced endites; endopod moderately stout, slightly curved mesially, with two apical bristles; posterior lobe of scaphognathite not elongate, rounded, fringed posteriorly with moderately long setae. First maxilliped (Fig. 3D) with greatly reduced endite represented by slight

convexity on proximomesial margin; endopod reaching to distal end of exopod, flattened, with long plumose setae on mesial margin; exopod accompanied by narrow caridean lobe fringed by setae; exopodal lash well developed; epipod elongate, distal part extending nearly to distal end of exopod. Second maxilliped (Fig. 3E) with five-segmented endopod; coxa, basis and ischium completely fused, with few setae; merus moderately slender, with one plumose setae at midlength on lateral margin; carpus very short; propodus long, subequal in length to merus, with long setae in distal half on mesial margin; dactylus small, obliquely articulated to propodus, with two spines near articulation to propodus and one remote spine, and tuft of long setae on margin; exopod long, extending beyond distal end of merus, with two rows of stiff setae on ventral surface; lash well developed; epipod elongate subrectangular, bearing well developed, bi-lobed podobranch. Third maxilliped (Fig. 3F, G) overreaching distal margin of scaphocerite by half length of ultimate segment; coxa with rounded process (possibly originated from epipod) on lateral face; antepenultimate segment composed of basis, ischium and merus fused, somewhat flattened, sinuously curved in dorsal view, with short row of three to five spinules on lateral surface distally, and with row of numerous long setae on mesial margin, sparse shorter setae on lateral margin, and tuft of long setae at dorsodistal angle; distal two segments spatulate; carpus with sparse long plumose setae on lateral margin and numerous transverse tracts of stiff setae on mesial face; ultimate segment 1.25-1.30 times as long as carpus, 4.80 times as long as wide, tapering to blunt point, lateral margin with sparse long setae, mesial margin with more numerous setae sometimes forming tufts; exopod well developed, bearing lash.

First pereopod (Fig. 4A) overreaching distal margin of scaphocerite by 0.20-0.25 length of subchela. Basis with distinct short ridge on lateral surface dorsally. Ischium short, slightly widened distally. Merus notably widened distally in lateral view, dorsal margin terminating in large spine directed slightly dorsally; distolateral margin with

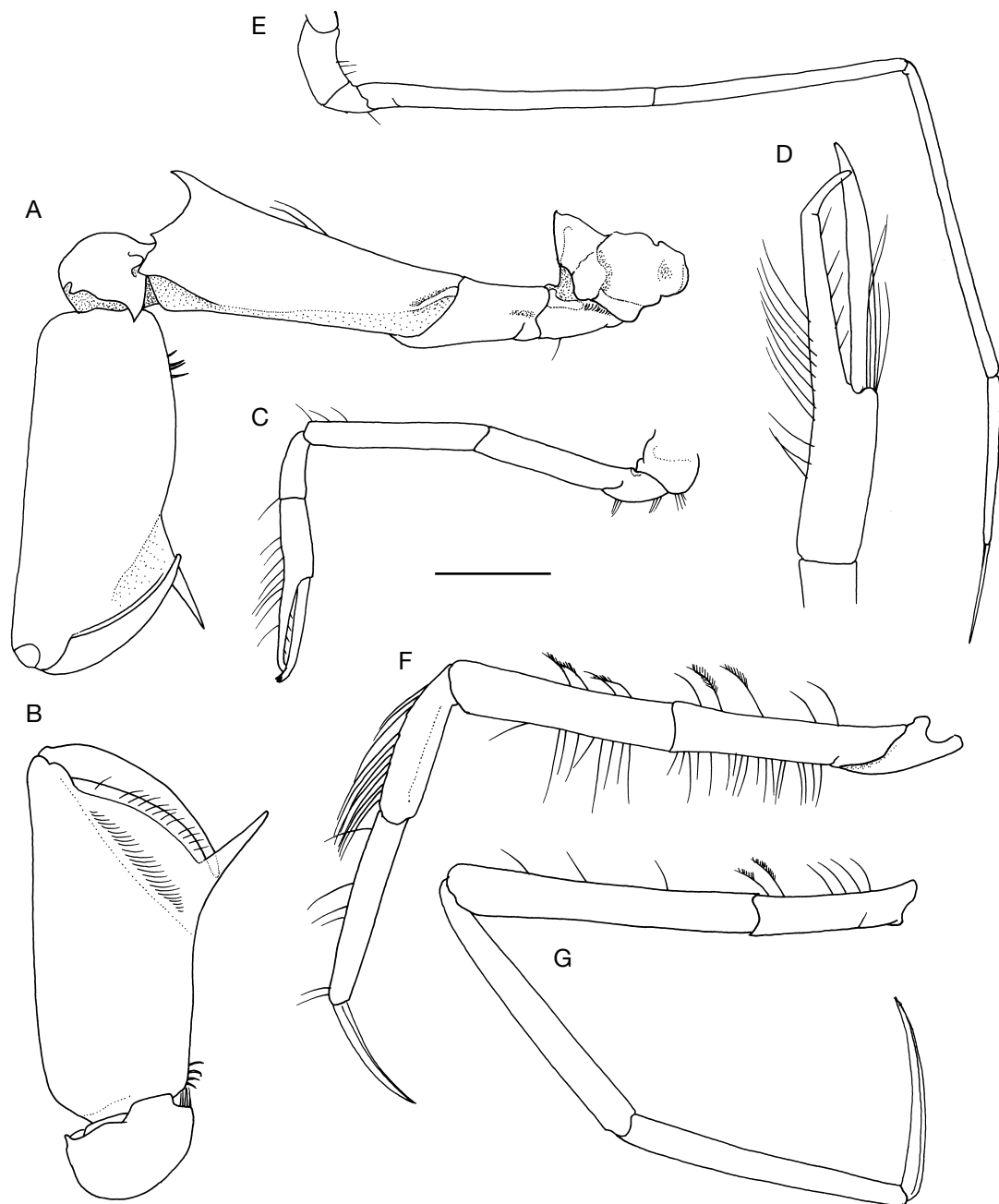


FIG. 4. — *Pseudopontophilus serratus* n. gen., n. sp., New Caledonia, SMIB 8, stn DW 148, holotype ♂ cl 5.6 mm (MNHN-Na 14186), left pereopods (only third pereopod from right); **A**, first pereopod, lateral; **B**, chela of first pereopod, dorsal; **C**, second pereopod, lateral; **D**, chela of second pereopod, mesial; **E**, third pereopod, lateral; **F**, fourth pereopod, lateral; **G**, fifth pereopod, lateral. Scale bar: A-C, E-G, 1 mm; D, 0.5 mm.

one spinule near articulating knob; ventral surface nearly flat, lacking spine. Carpus very short, cup-shaped, with two small spines on distolateral margin; dorsomesial distal angle weakly produced in broadly rounded lobe. Palm (Fig. 4B) large, somewhat flattened dorsoventrally, slightly widened distally, 2.25-2.35 times as long as width at proximal to base of thumb; cutting edge moderately oblique, weakly convex, forming thin, corneous plate bordered by submarginal row of setae arising from ventral surface; distomesial spine (= thumb) not basally articulated, very long, directed rather mesially. Dactylus slightly curved, 0.57-0.60 times as long as palm, not exceeding base of thumb when closed. Exopod completely reduced.

Second pereopod (Fig. 4C) chelate, reaching or slightly overreaching distal end of merus of forwardly extended first pereopod. Coxa contiguous for each other. Basis and ischium partially fused. Merus 1.20-1.25 times as long as ischium. Carpus short, slightly widened distally in lateral view, 0.39 times as long as merus. Chela (Fig. 4D) subequal in length to merus; palm longer than carpus, with row of stiff setae on dorsal margin; both fingers terminating in simple, acuminate point, each with row of sparse bristle on cutting edge; dactylus 1.35-1.40 times as long as palm.

Third pereopod (Fig. 4E) very slender, filiform, overreaching distal margin of scaphocerite by length of dactylus and half of propodus. Coxa curved anteriorly. Basis very short. Merus 0.87 times as long as ischium. Ischium and merus combined slightly longer than distal three segments combined. Carpus longest, 0.80-0.85 times as long as distal two segments combined. Propodus slightly narrowed distally. Dactylus 0.60-0.65 times as long as propodus, terminating in simple acuminate point.

Fourth (Fig. 4F) pereopod moderately stout, slightly falling short of distal margin of scaphocerite. Coxa and basis without distinctive feature. Ischium and merus with sparse setae on dorsal margin, more numerous setae on ventral margin, length of two segments nearly equal. Carpus 0.80-0.85 times as long as propodus, with row of

stiff setae on slightly protuberant dorsal margin. Propodus slightly narrowed distally, with few setae on dorsal margin. Dactylus 0.60-0.65 times as long as propodus, slightly flattened dorsoventrally, ventral surface bluntly ridged medially, thus cross section trigonal; terminating in simple acuminate point, but with few subapical filaments.

Fifth pereopod (Fig. 4G) somewhat longer than fourth pereopod, overreaching distal margin of scaphocerite by distal part of dactylus. Ischium much shorter than merus, 0.55 times as long; no setae on ventral margin of ischium and merus. Carpus elongate, 1.09-1.10 times as long as propodus, naked. Propodus not narrowed distally, naked. Dactylus 0.68-0.75 times as long as propodus, similar to that of fourth pereopod in structure.

One well developed arthrobranch above base of third maxilliped. Pleurobranches on fourth to eighth thoracic somites slightly increasing in size posteriorly, each with anteriorly directed dorsal apex.

Pleopods (Fig. 1) decreasing in size posteriorly (second pleopod longest); protopods somewhat flattened dorsoventrally, moderately stout. Endopod of first pleopod in males (Fig. 3H, I) about half length of exopod, sinuously curved, tapering to rounded tip, with few minute spinules subdistally on mesial margin; endopod of first pleopod in females slender, very slightly curved, elongate in spawning molt, attaining 0.70-0.75 length of exopod. Second to fifth pleopods each with well developed endopod (about 0.70 length of exopod in respective pleopod) and appendix interna (0.50-0.60 length of endopod) in both sexes. Appendix masculina on male second pleopod (Fig. 3J) much shorter but broader than appendix interna, bearing eight to 10 bristles along dorsal margin.

Uropod (Fig. 1) with protopod bearing small posterolateral spine. Both exopod and endopod not reaching posterior end of telson; exopod not tapering posteriorly, lacking suture (Fig. 2I), lateral margin nearly straight bearing fringe of numerous setae and terminating posteriorly in tiny tooth, posterior margin broadly rounded; endo-

pod slightly longer than exopod, gradually tapering to rounded posterior margin (Fig. 2I).

Coloration

From color slides. Carapace generally light brown, mottled with irregular pattern; gastric region sometimes with tinge of red. First to anterior part of fourth abdominal somites and sixth abdominal somite and telson white, and remaining posterior part of fourth and fifth somites brown. Cornea of eye light gray. Palm of first pereopod with dark brown spot on lateral surface distally. Fourth and fifth pereopods with ischia and meri reddish brown and carpi to dactyli white.

Size

Males 5.1–6.0 mm; females 5.3–7.0 mm, ovigerous females 6.0–7.0 mm.

Variation

It is remarkable that the number of the median spines on the carapace is considerably variable in this new species, as the armature on the carapace is usually stable in other crangonid species (cf. de Man 1920; Christoffersen 1988; Chan 1996; Komai 1997). The number of the median spines ranges from three to seven, most frequently four (Figs 5; 6). The position of the anteriormost (= gastric) and posteriormost spines is stable, and thus it is considered that the presence of the intermediate spines are variable. Additionally, the size of the gastric spine varies in certain degree (Fig. 5).

This new species shows sexual dimorphism in the development of the antennular flagella and the morphology of the thoracic and abdominal sternites (see above description), like other crangonids (cf. Komai 1995, 1997; Chan 1996; Hayashi & Kim 1999; Kim & Hayashi 2000).

REMARKS

The presence of scale-like structures on the carapace in this new species is remarkable. In crangonids, similar condition is known only in two species of *Aegaeon* Agassiz, 1846, *A. lacazei* (Gourret, 1887) and *A. rathbuni* (De Man, 1918) (Komai 2000), although similarly shaped scale-like sensory organs has been reported in the

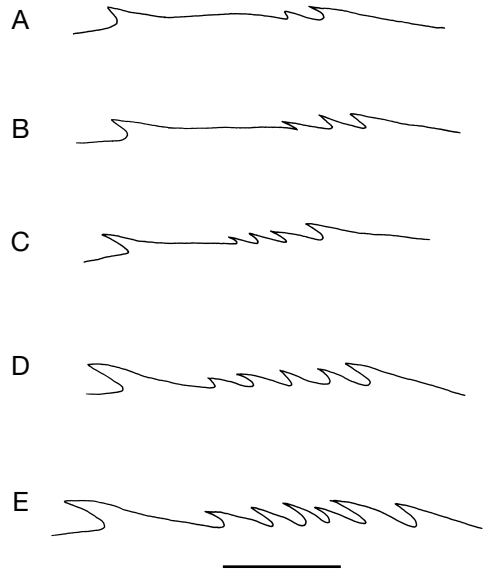


Fig. 5. — *Pseudopontophilus serratus* n. gen., n. sp., paratypes, variation in number of median spines on carapace; **A**, New Caledonia, MUSORSTOM 4, stn CP 180, ♂ cl 5.1 mm (MNHN-Na 14180); **B**, same station, ovig. ♀ cl 6.0 mm (MNHN-Na 14180); **C**, Tonga, BORDAU 2, stn CP 1527, ♂ cl 5.1 mm (MNHN-Na 14194); **D**, Vanuatu, MUSORSTOM 8, stn CP 982, ♀ cl 5.9 mm (MNHN-Na 14192); **E**, New Caledonia, SMIB 3, stn DW 6, ♀ cl 6.2 mm (MNHN-Na 14185). Scale bar: 1 mm.

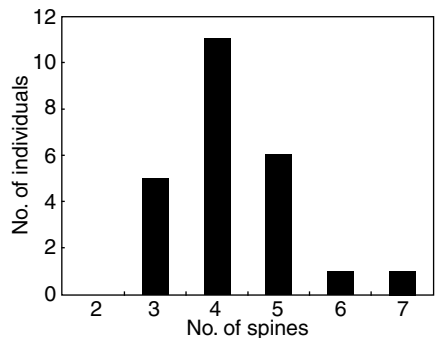


Fig. 6. — *Pseudopontophilus serratus* n. gen., n. sp., frequency of the numbers of median spines on the carapace.

Oplophoridae and Pandalidae (e.g., Mauchline *et al.* 1977; Chace 1985). Duris (1992) reported the presence of “swollen setae” on the carapace surface in *Vercoia gibbosa* Baker, 1904, which appear somewhat similar to the tegumental scales found in the present new species and the two

Aegaeon species. It appears that the development of the scale-like structure parallelly evolved in more than one lineage within the Crangonidae. It may be interesting to mention the homoplastic possession of the scale-like structure in typically pelagic or natant shrimp (Ophlophoridae Dana, 1852 and Pandalidae Haworth, 1825) and in burrowing benthic shrimp (Crangonidae).

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