

An unusual new *Periclimenes* (Crustacea, Decapoda, Palaemonidae) from New Caledonia

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KEY WORDS

Crustacea,
Decapoda,
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acanthimerus n. sp.,
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new species.

ABSTRACT

A new species of pontoniine shrimp, *Periclimenes acanthimerus* n. sp., from Loyalty Islands, New Caledonia, is described and illustrated. The species differs from all other species of the genus *Periclimenes* Costa, 1844 in the unique spinulate tubercles present on the ventral surface of the carpus, merus and ischium of the second pereiopod. The single specimen was collected from the Loyalty Islands, from a depth of 174 m, the host is unknown.

RÉSUMÉ

Une nouvelle espèce peu ordinaire de Periclimenes (Crustacea, Decapoda, Palaemonidae) de Nouvelle-Calédonie.

MOTS CLÉS
Crustacea,
Decapoda,
Pontoniinae,
Periclimenes
acanthimerus n. sp.,
Nouvelle-Calédonie,
espèce nouvelle.

Une nouvelle espèce de crevette pontoniine, *Periclimenes acanthimerus* n. sp., des Îles Loyauté, Nouvelle-Calédonie, est décrite et illustrée. La nouvelle espèce diffère des autres espèces de *Periclimenes* Costa, 1844 par la présence de tubercules épineux sur la surface ventrale des carpus, mérus et ischium du deuxième péréiopode, un caractère unique chez les Pontoniinae. Le seul spécimen provient des Îles Loyauté à une profondeur de 174 m, l'hôte est inconnu.

INTRODUCTION

The genus *Periclimenes* Costa, 1844 is the most speciose pontoniine genus. In its recently restricted form (Bruce 2004) it includes some 178 species, found principally in the warmer waters of the Atlantic, Pacific and Indian oceans. The type species of the genus *Periclimenes* is *Alpheus amethysteus* Risso, 1826, an eastern Atlantic and Mediterranean species. Its general morphology is illustrated by Holthuis (1993: fig. 155) and d'Udekem d'Acoz (1999: 360). Most of its mouthparts have been illustrated by Holthuis (1952). In most of the species included in this genus the second pereiopod chelae are smooth or at the most very finely minutely tuberculate. The carpus, merus and ischium are devoid of tuberculations. The discovery of a new species of *Periclimenes*, in relatively deep water off the Loyalty Islands, in which the carpus, merus and ischium are distinctly tuberculate is therefore of special interest as this feature is unique in the genus. The tuberculations are also of a unique character, not noted elsewhere in the subfamily Pontoniinae. The single specimen is deposited in the collection of the Muséum national d'Histoire naturelle, Paris.

ABBREVIATIONS

CL postorbital carapace length;
MNHN Muséum national d'Histoire naturelle, Paris.

SYSTEMATICS

Family PALAEMONIDAE Rafinesque, 1815

Subfamily PONTONIINAE Kingsley, 1878

Genus *Periclimenes* Costa, 1844

Periclimenes acanthimerus n. sp.

(Figs 1-6)

HOLOTYPE. — New Caledonia. BATHUS 1, NO *Alis*, stn DW 640, 21°52.3'S, 166°47.9'E, 174 m, 10.III.1993, coll. B. Richer de Forges, 1 ♂ (MNHN-Na 14949).

ETYMOLOGY. — From *acanthus* (Greek), a spine or thorn, and *merus* (Greek), femur.

DIAGNOSIS. — Rostrum slightly decurved, dentition 7/1, inferior orbital angle without reflected inner flange, not

strongly produced; supraocular teeth and supraorbital spines absent; antennal spine marginal, hepatic spine present; without distinct *bec ocellaire*; third abdominal segment not strongly posterodorsally produced; cornea globular, fourth thoracic sternite without median process; first pereiopods with fingers of chelae slender, distally subspatulate, rounded and feebly pectinate distally; major second pereiopod with fingers distally entire, dactyl of second pereiopod without lateral flange, carpus equal to about 0.2 of palm length, merus of second pereiopod without distoventral tooth, ventral margin with spinulate tubercles; dactyl of ambulatory pereiopod simply biunguiculate, propods ventrally spinulate, lacking transverse rows of long setae distally; telson with two pairs of dorsal spines.

DESCRIPTION

Medium sized pontoniine shrimp (Fig. 1) of sub-cylindrical body form, closely resembling several of the deep water *Periclimenes* species.

Rostrum (Fig. 2A) moderately deep, about four times as long as central depth, 0.65 of CL (estimated, extreme rostral tip missing), compressed, reaching to middle of distal segment of antennular peduncle, dorsal carina well developed, extending onto anterior fifth of carapace, margin convex, with seven small acute teeth, size diminishing slightly distally, posterior tooth situated on carapace, with two or three short plumose interdental seta between most teeth; lateral carinae (Fig. 2B) feebly developed; ventral carina distinct on distal half of rostrum, convex, with single small acute tooth at about 0.7 of length from posterior orbital margin.

Carapace smooth, glabrous, without epigastric and supraorbital spines, orbit feebly developed, inferior orbital angle (Fig. 2C) well developed, broad, acute in lateral view, antennal spine small, marginal, not exceeding inferior orbital angle, hepatic spine small, larger than antennal spine, at slightly lower level and anterior to level of posterior rostral tooth, anterolateral angle obtusely rounded.

Abdomen smooth, glabrous, third tergite slightly posteriorly produced, fifth segment about 0.65 of sixth segment length, sixth segment about 0.37 of CL, 1.37 times longer than deep, posterolateral angle acute, posteroventral angle subacute, pleura of segments 1-5 broadly rounded, unarmed, margins non-setose.

Telson about 3.3 times longer than anterior width, 0.6 of CL, lateral margins sublinear, slightly conver-

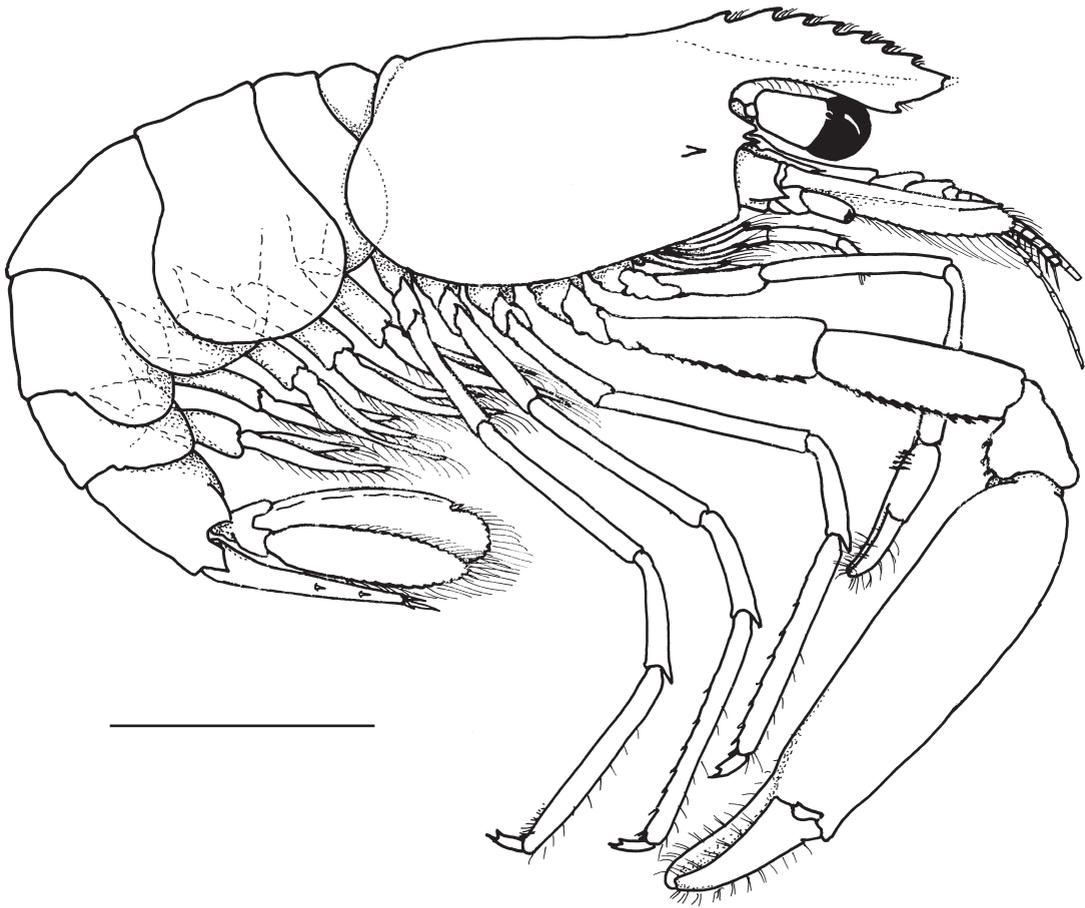


FIG. 1. — *Periclimenes acanthimerus* n. sp., holotype ♂ (MNHN-Na 14949). Scale bar: 3 mm.

gent, two pairs of small dorsal spines, about 0.05 of telson length, at 0.47 and 0.68 of telson length, posterior margin 0.4 of anterior margin width, angular, with minute median point, lateral spines similar to dorsal spines, intermediate spines well developed, about 0.22 of telson length, submedian spines slender, non-setulose, 0.5 of intermediate spine length, one on left, two on right.

Antennule (Fig. 2D) with peduncle slightly exceeding tip of rostrum, proximal segment about 1.6 times longer than broad, distolateral angle (Fig. 2E) strongly produced, setose, with well developed distolateral tooth reaching to level of proximal margin of distal segment, stylocerite acute, reaching to about half segment length, ventromedial margin with

small acute tooth, statocyst normal, with granular statolith, intermediate segment short, about 0.25 of proximal segment length, with three or four short plumose setae laterally, with long densely plumose seta distally, far exceeding distal end of peduncle, distal segment with similar shorter distolateral seta, upper flagellum biramous, with proximal five segments fused, short ramus incomplete, with 3(+) segments, longer with 16 segments, with about 18 groups of aesthetascs, upper flagellum slender, with 15+ segments.

Antenna (Fig. 2F) robust, basicerite with acute distolateral tooth, ischiocerite and merocerite without special features, carpocerite short, about twice as long as wide, reaching to about 0.3 of scaphocer-

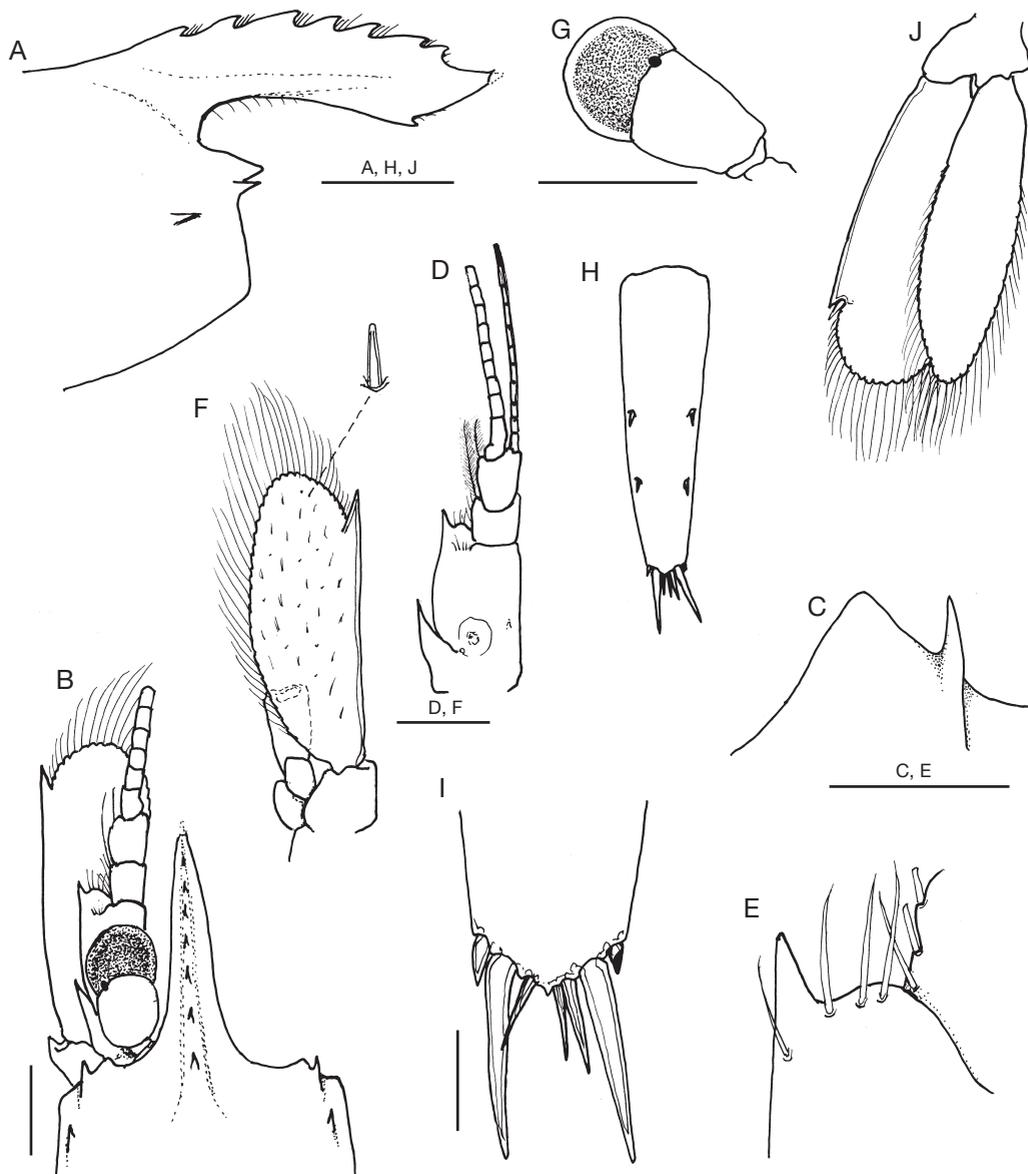


FIG. 2. — *Periclimenes acanthimerus* n. sp., holotype ♂ (MNHN-Na 14949): **A**, anterior carapace and rostrum, lateral; **B**, same, with left eye and antennae, dorsal; **C**, inferior orbital angle, dorsal; **D**, antennule; **E**, same, distolateral angle of proximal segment; **F**, antenna, inset dorsal spinule of scaphocerite; **G**, eye; **H**, telson; **I**, same, posterior spines; **J**, uropod. Scale bars: A, B, G, H, J, 1.0 mm; C-F, 0.5 mm; I, 0.2 mm.

ite length, flagella missing; scaphocerite broad, extending far beyond rostrum and antennular peduncle, 2.8 times longer than central width, distal margin broadly rounded, lateral margin straight,

with strong acute tooth at 0.8 of length, falling short of anterior margin of lamella, dorsal surface with numerous, sparse small spinules or setae about 0.01 mm long.

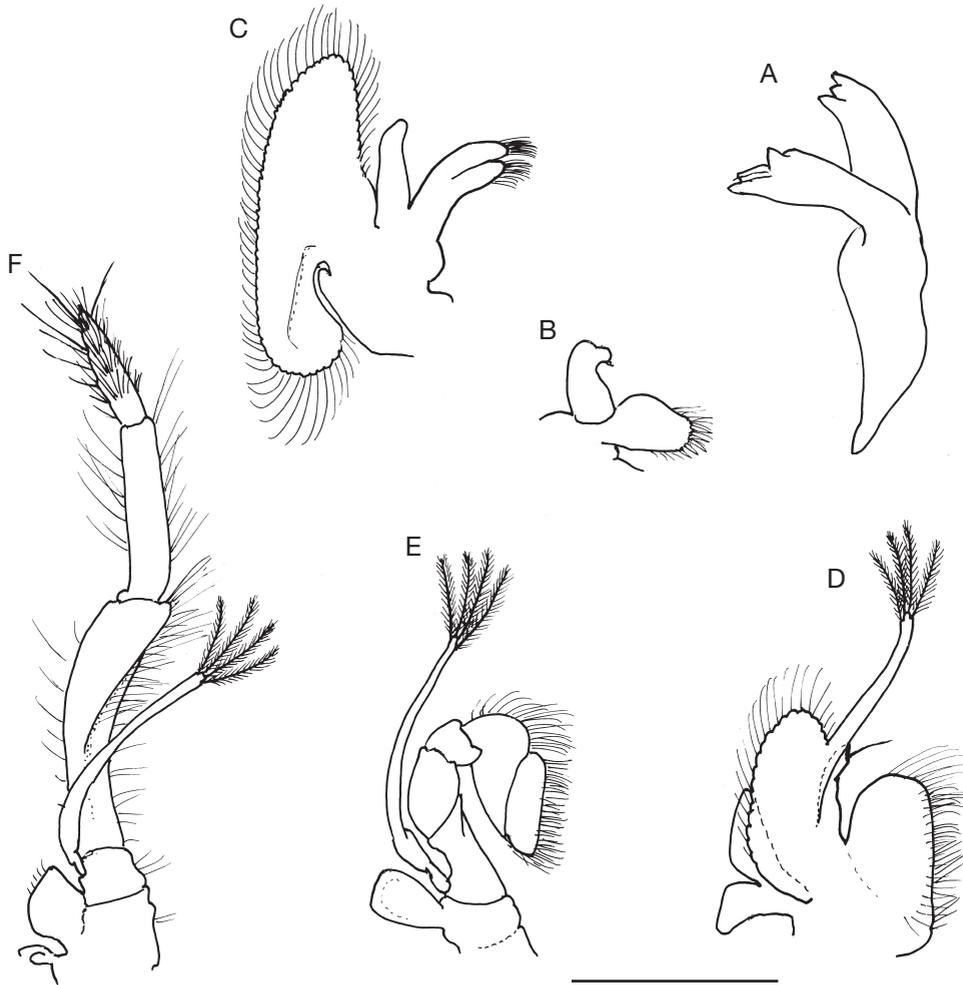


FIG. 3. — *Periclimenes acanthimerus* n. sp., holotype ♂ (MNHN-Na 14949): **A**, mandible; **B**, maxillula (lower lacinia missing); **C**, maxilla; **D**, first maxilliped; **E**, second maxilliped; **F**, third maxilliped. Scale bar: 1.0 mm.

Ophthalmic somite without dorsal process.

Eye (Fig. 2G) with well pigmented globular cornea, diameter about 0.18 of CL, stalk about 1.2 times corneal diameter, 1.3 times longer than distal width, tapering proximally.

Epistome unarmed.

Mandible (Fig. 3A) with corpus robust, without palp, molar process (Fig. 5A) stout, subcylindrical, expanding distally, with three large blunt processes, two smaller setose processes intervening, incisor process (Fig. 5B) well developed, tapering distally,

distally oblique with large medial and lateral teeth, smaller intermediate tooth.

Maxillula (Fig. 3B) with bilobed palp (Fig. 5C), larger lower lobe with small distoventral tubercle, minute hooked seta, upper lacinia (Fig. 5D) broader proximally, tapering distally to transverse distal margin with about seven short simple spines distally, with numerous short simple setae, some spiniform. Lower lacinia lost in dissection.

Maxilla (Fig. 3C) with palp well developed, about three times longer than basal width, tapering slightly

distally, terminally rounded, two short plumose setae proximolaterally, basal endite deeply bilobed, upper lobe with about 12 slender simple distal setae, lower lobe slightly shorter, with 12 distal setae, coxal endite obsolete, medial margin convex, non-setose; scaphognathite normal, about 2.6 times longer than central width, anterior lobe about 1.4 times longer than basal width, medial margin slightly concave.

First maxilliped (Fig. 3D) with slender tapering palp, about 3.5 times longer than basal width, with short simple preterminal seta medially, basal endite well developed, broad, distally rounded, medial margin straight, with numerous simple long marginal and short submarginal setae, coxal endite feebly separated from basal, medial margin convex with sparser similar setae; exopod with well developed flagellum with four plumose terminal setae, caridean lobe large, with numerous plumose marginal setae; epipod triangular deeply bilobed, distal lobe markedly larger than proximal.

Second maxilliped (Fig. 3E) of normal form, endopod with dactylar segment broad, about three times longer than central width, with numerous stout denticulate spines medially, propodal segment with distal margin broadly rounded with numerous spiniform marginal setae, carpus, merus and ischiomerus without special features; exopod with well developed flagellum with four long plumose terminal setae; coxa with medial margin not produced, non-setose, with small subrectangular epipod laterally, without podobranch.

Third maxilliped (Fig. 3F) with endopod moderately robust, reaching to about distal end of carapocerite; ischiomerus distinct from basis, about six times longer than proximal width, slightly expanded and twisted distally, medial and lateral margins with numerous simple setae distally, penultimate segment about 0.6 of ischiomerus, about four times longer than proximal width, tapering slightly distally, with numerous slender simple setae distomedially and laterally, terminal segment (Fig. 5E) about 0.8 of penultimate segment length, with numerous robust simple or finely setulose spiniform setae, four transverse rows ventrally, basis short, about 0.2 of ischiomerus length, exopod with flagellum well developed with four long terminal plumose setae, coxa without medial process, sparsely setose, with

well developed distally angular lateral plate; with small bi-lamellar arthrobranch.

Thoracic sternites: fourth without finger-like median process, with low transverse carina, fifth similar, with small median notch, posterior sternites unarmed.

Pleurobranchs normal.

First pereopod (Fig. 4A) exceeds antennular peduncle by carpus and chela; chela (Fig. 4B) with palm oval in section, twice as long as distal width, tapering slightly proximally, with four transverse rows of cleaning setae proximally, fingers slender, tapering distally, distally rounded (Fig. 4C), subequal to palm length, feebly spatulate, main cutting edge medial, finely pectinulate (Fig. 4D), with numerous tufts of short setae; carpus about 1.1 times chela length, 6.5 times longer than distal width, tapering gradually proximally, with several long cleaning setae distoventrally; merus about 1.1 times carpal length, 7.5 times longer than width, maximal width centrally; ischium 0.5 of meral length; basis and coxa without special features.

Second pereopod (left) (Fig. 4E) very well developed, exceeding scaphocerite by carpus and chela, with large stout chela (Fig. 4F); chela about 1.5 times CL, palm oval in section, about 3.1 times longer than central depth, tapering very slightly distally, minutely tuberculate, particularly ventrolaterally, tubercles anterovered, each with (generally) pair of minute spinules (many apparently lost by abrasion), fingers (Fig. 4G) robust, about 0.43 of palm length, dactylus 3.6 times longer than proximal depth, dorsal margin convex, with sparse acute tubercles and setae, tip stoutly hooked, blunt, cutting edge stout, concave entire over distal two thirds, with single stout blunt tooth proximally, fixed finger similar, cutting edge concave, with two stout blunt teeth on proximal third, ventral margin straight, feebly tuberculate, setose; carpus short, about 0.2 of palm length, expanded distally, width subequal to length, with few spinulose tubercles ventrally; merus about 0.5 of palm length, 3.5 times longer than depth, uniform, without distoventral tooth, ventral surface densely covered with small acute anterovered tubercles (Figs 5F; 6), each with (generally) pair of small spinules, ischium subequal to meral length, four times longer than distal width,

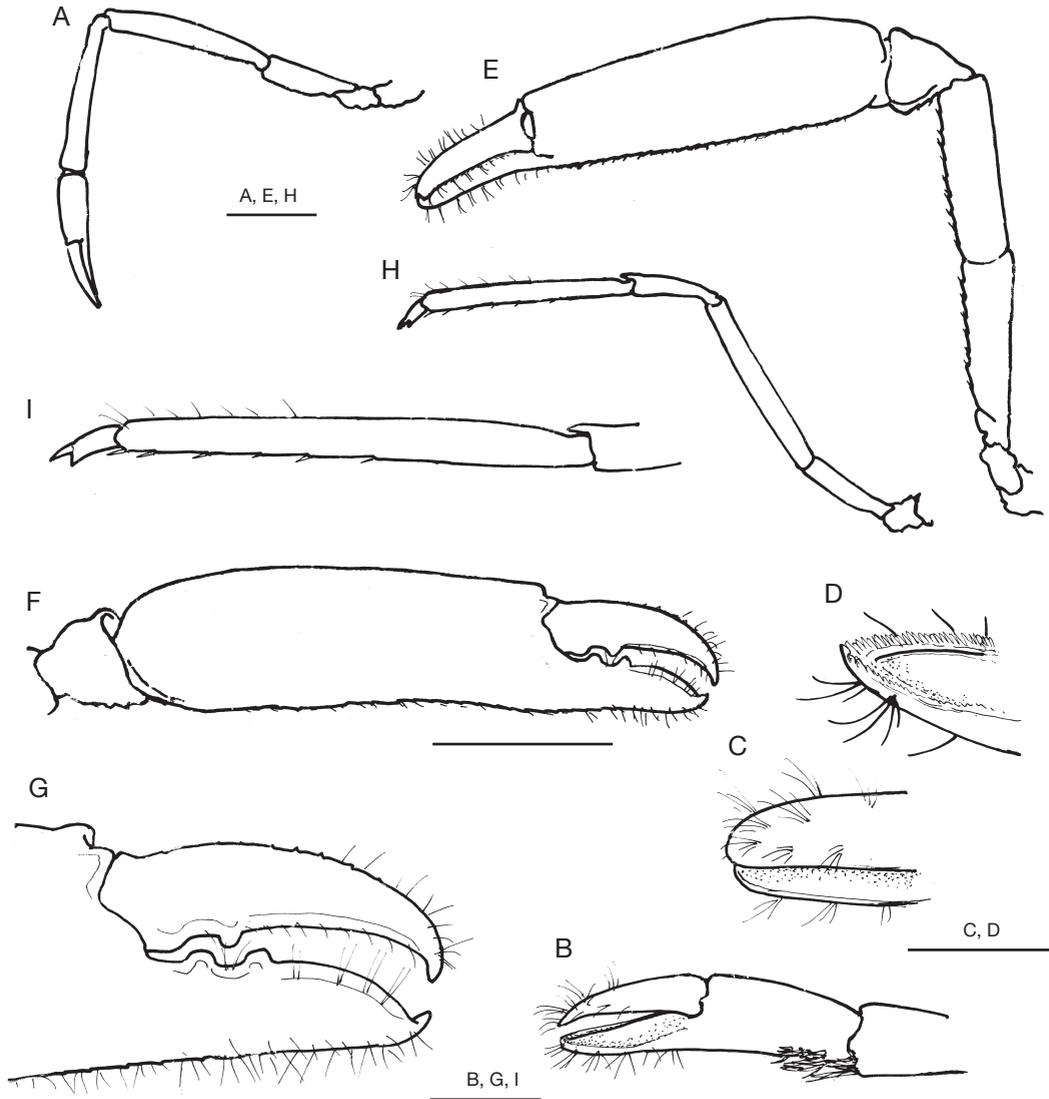


FIG. 4. — *Periclimenes acanthimerus* n. sp., holotype ♂ (MNHN-Na 14949): **A**, first pereiopod; **B**, same, chela; **C**, same, fingers, dorsal, dactyl uppermost; **D**, same, tip of fixed finger; **E**, major second pereiopod; **F**, same, chela; **G**, same, fingers; **H**, third pereiopod; **I**, same propod and dactyl. Scale bars: A, E, H, 1.0 mm; B, G, I, 0.5 mm; C, D, 0.2 mm; F, 2.0 mm.

tapering gradually proximally, ventral surface as in merus; basis and coxa without special features.

Third pereiopod (Fig. 4H) with dactylus (Fig. 5G) about 3.5 times longer than basal width; 0.16 of propod length, unguis well demarcated from corpus, 3.3 times longer than basal width, simple, curved, acute; corpus about two times longer than width

proximally, dorsal margin convex, non-setose, with well developed acute distoventral tooth, extending to about 0.3 of unguis length, ventral border sinuous, distally concave; propod (Fig. 4I) about 0.7 of CL, 11 times longer than proximal depth, tapering slightly distally, paired distoventral spines, about 0.3 of dactyl length, seven short spines spaced along ventral

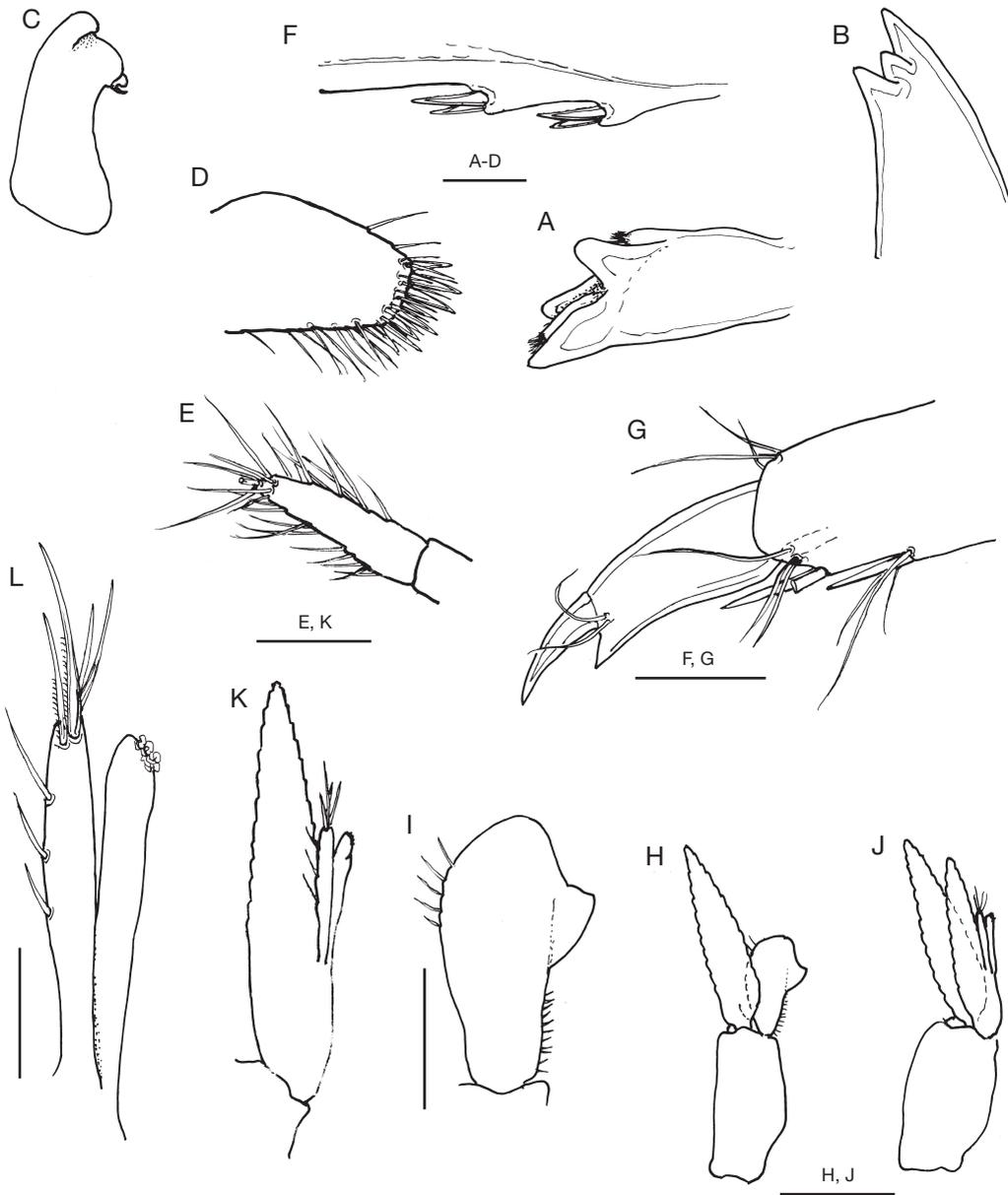


FIG. 5. — *Periclimenes acanthimerus* n. sp., holotype σ (MNHN-Na 14949): **A**, mandible, molar process; **B**, same, incisor process; **C**, maxillula, palp; **D**, same, upper lacinia; **E**, third maxilliped, terminal segment of endopod; **F**, major second pereiopod, ventral spinulation of merus; **G**, third pereiopod, dactyl and distal propod; **H**, first pleopod; **I**, same, endopod; **J**, second pleopod; **K**, same, endopod; **L**, same, appendices. Scale bars: A-D, F, G, L, 0.2 mm; E, I, K, 0.5 mm; H, J, 0.1 mm.

margin; carpus, merus and ischium without special features, ventrally non-tuberculate, carpus about 0.5 of propod length, merus about 0.85 of propod length,

ischium subequal to carpus. Fourth and fifth similar to third pereiopod. Fifth pereiopod propod without spines, with numerous distolateral setae.

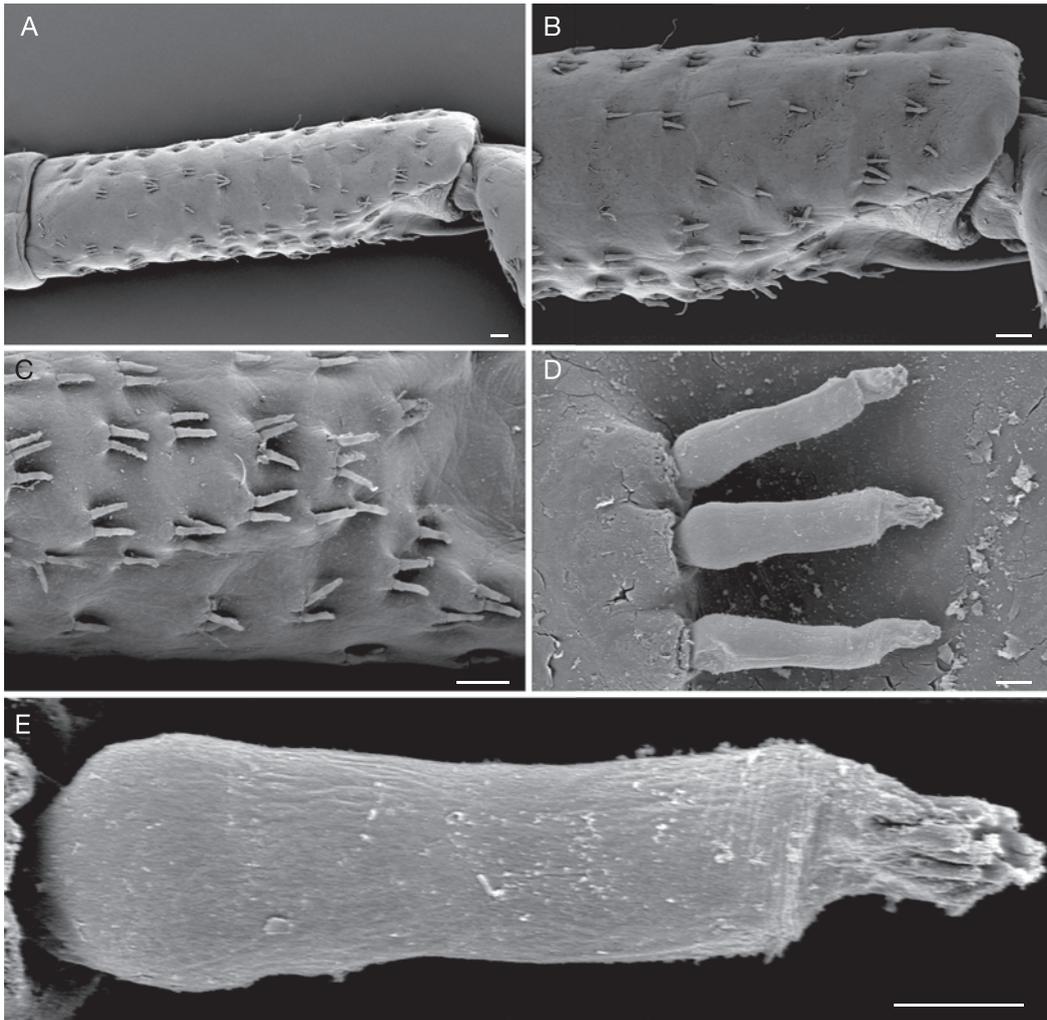


FIG. 6. — *Periclimenes acanthimerus* n. sp., holotype ♂ (MNHN-Na 14949), SEM photos, left second pereiopod: **A**, merus, lateral; **B**, same, distal lateral; **C**, same, ventral; **D**, same, single spine group; **E**, same, single spine. Scale bars: A-C, 100 µm; D, E, 10 µm.

First pleopod (Fig. 5H) with endopod (Fig. 5I) about 0.5 of exopod length, 2.4 times longer than distal width, distally expanded with well developed angular medial lobe, proximal half of medial margin with 11 small simple spinules, distolateral margin with five feebly plumose setae.

Second pleopod (Fig. 5J) with endopod (Fig. 5K) subequal to exopod length, about five times longer than proximal width, with appendices (Fig. 5L) at 0.33 of medial margin length, appendix masculina about 0.33 of endopod length, with four

terminal spines, longest about 0.5 of appendix length, ventral pair feebly spinulate, lateral margin with three shorter simple spines; appendix interna subequal to appendix masculina length, with few distal cincinnuli.

Uropod (Fig. 2I) normal, protopod unarmed; exopod about subequal to telson length, 2.6 times longer than broad, lateral margin feebly convex, with small acute distal tooth with mobile spine medially; endopod subequal to exopod length, about 3.8 times longer than broad.

Measurements (in mm)

Postorbital carapace, 4.0; carapace and rostrum, 6.3; total body length, 16.0 (approx.); second pereiopod chela, 6.5.

Coloration and host

No data.

SYSTEMATIC POSITION

Periclimenes acanthimerus n. sp. appears to be a typical species of the genus that is most closely related to several of the deep water *Periclimenes* species. It is immediately distinguished from all these, and all other species of the genus, by the dense ventral spinulose tuberculation of the carpus, merus and ischium of the major second pereiopod (the minor second pereiopod is missing but is likely to have been similar).

In its other features, particularly two pairs of small dorsal telson spines, *P. acanthimerus* n. sp. is closely related to a species group consisting of *P. parvispinatus* Bruce, 1990, *P. foveolatus* Bruce, 1981, *P. coriolis* Bruce, 1985, *P. latipollex* Kemp, 1922 and *P. lacadivensis* (Alcock & Anderson, 1894). *Periclimenes acanthimerus* n. sp. can be readily separated from the last two species by the deeper rostrum and lack of a lateral flange on the dactylus of the major second pereiopod, from *P. foveolatus* by the absence of foveolations on the carapace and abdomen and larger dorsal telson spines. From *P. parvispinatus* it differs in the normally sized, rather than much reduced, antennal and hepatic carapace spines. From *P. coriolis*, *P. acanthimerus* n. sp. may also be distinguished by the deeper rostrum with the first tooth situated above the posterior orbital margin, rather than well posteriorly, and a single well developed ventral tooth, rather than two very small acute teeth, the fingers of the first pereiopod chela are broad and denticulate, rather than narrow and entire, the third pereiopod dactyl bears a robust rather than a small slender accessory tooth and the pereiopods in *P. coriolis* are generally setose, as well as devoid of spinules.

REMARKS

It may be noted that *Periclimenes acanthimerus* n. sp. also differs from some of the related species in the feeble setation of the maxillipedal exopods. In *P. foveolatus*, for example, the distal ends of the

exopods are provided with about 14 densely plumose setae, and a well developed arthrobranch with about 12 lamellae is present on the third maxilliped. In these respects *Periclimenes acanthimerus* n. sp. is generally similar to *P. parvispinatus*; *P. coriolis* is intermediate in its morphology. The sparse setation on the dorsal surface of the scaphocerite appears to be an unusual feature, not previously reported in the Pontoniinae, but its presence in other species could well have been overlooked. These setae appear similar, but more slender, to the spinules that occur on the ventral tubercles of the second pereiopod. The latter may also occur as transverse rows of up to four spinules in the ventral surface of the palm of the chela.

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