Chacella mclaughlinae n. sp., a new pontoniine shrimp from Clipperton Island (Crustacea, Caridea, Palaemonidae)

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ABSTRACT
A new species of pontoniine shrimp, *Chacella mclaughlinae* n. sp., is described and illustrated on the basis of specimens collected from Clipperton Island, eastern tropical Pacific. The new species is most similar to *C. tricornuta* Hendrickx, 1990, and it can be distinguished from the latter by the number and position of horn-like abdominal teeth and proximal segment of antennular peduncle with acute ventromedial tooth. A key to distinguish the three known species of the genus is given.

KEY WORDS
Crustacea,
Decapoda,
Palaemonidae,
Pontoniinae,
Clipperton Island,
new species.

RÉSUMÉ
Chacella mclaughlinae *n. sp., une crevette Pontoniinae nouvelle de l'île Clipperton (Crustacea, Caridea, Palaemonidae).*
Une espèce nouvelle de crevette Pontoniinae, *Chacella mclaughlinae* n. sp., est décrite et figurée d'après des spécimens récoltés à l'île Clipperton dans le Pacifique tropical oriental. Cette espèce nouvelle est très proche de *C. tricornuta* Hendrickx, 1990 ; elle peut en être distinguée par le nombre et la position des dents abdominales en forme de corne et le segment basal du pédoncule antennulaire qui présente une dent ventromédiane aiguë. Une clé permettant de séparer les trois espèces connues du genre est proposée.

MOTS CLÉS
Crustacea,
Decapoda,
Palaemonidae,
Pontoniinae,
île Clipperton,
espèce nouvelle.

INTRODUCTION

The study of some interesting pontoniine shrimp specimens of the genus *Chacella* Bruce, 1986 collected from Clipperton Island, in the tropical eastern Pacific, revealed that they represent a new species. This new species, the third in the genus, is described herein. The other *Chacella* species are: *C. kestitchi* (Wicksten, 1983), and *C. tricornuta* Hendrickx, 1990 (see Li 2000). A key for the identification of the three species is provided.

The specimens are deposited in the Muséum national d'Histoire naturelle, Paris (MNHN). The carapace length (cl) refers to the length from the posterior orbital margin to the level of posterodorsal margin.

SYSTEMATICS

Family PALAEMONIDAE Rafinesque, 1815
Subfamily PONTONIINAE Kingsley, 1878
Genus *Chacella* Bruce, 1986

Chacella mclaughlinae n. sp.
(Figs 1-4)

TYPE MATERIAL. — **Clipperton Island.** EXPÉDITION JEAN-LOUIS ÉTIENNE, stn 16, 10°19.22'N, 109°13.38'W, 55 m, 10.I.2005, coll. J.-M. Bouchard, L. Albenga, L. Dugrais, 1 ♀ holotype (MNHN-Na 15990); 1 ♂ paratype (MNHN-Na 15991); 5 ♀♀ (3 ovig.) paratypes (MNHN-Na 15992). — Same data, stn 1, 10°18.03'N, 109°13.77'W, 54 m, outer slope, live coral, 6.I.2005, 1 ovig. ♀ paratype (MNHN-Na 15978).

ETYMOLOGY. — The specific name is given in recognition of the honoree for this issue, the renowned carcinologist Dr Patsy A. McLaughlin.

DISTRIBUTION. — Known only from the type locality, Clipperton Island; 54-55 m.

MEASUREMENTS (mm). — Holotype female (MNHN-Na 15990): cl, 1.55; first pereiopod palm, 0.41; major second pereiopod palm, 1.35; minor second pereiopod palm, 0.59; third pereiopod propodus, 0.69. Paratype male (MNHN-Na 15991): cl, 1.54; major second pereiopod palm, 2.33. Paratypes females (MNHN-Na 15992): cl, 1.24-1.91; paratype female (MNHN-Na 15978): cl, 1.30.

HOST. — Unknown. The ovigerous female from station 1 (MNHN-Na 15978) was collected from the outer reef slope with live corals, although it could not be determined with certainty if the specimens were associated with live coral.

DESCRIPTION

Holotype female

Body size small, subcylindrical, with large horn-like teeth on carapace and abdomen (Figs 1; 2A, B). Rostrum (Fig. 2A, B) short, depressed, broad and squarely truncate distally, unarmed, with thin but distinct dorsal carina; lateral carina extending posteroventrally on carapace to postorbital region, forming orbital floor. Carapace (Figs 1; 2A, B) smooth, dorsal surface with three subconical, prominent, horn-like teeth, highest and largest tooth dorsomedially on carapace, somewhat curved anteriorly, laterally compressed; two smaller dorsal teeth, about half height of highest tooth, much thinner and placed dorsolaterally and symmetrically at about mid-length of carapace; orbit (Figs 1; 2A) well developed dorsally, orbital floor formed by posteroventrally extended lateral rostral carina (Fig. 2B), infraorbital angle indistinct, suture under infraorbital angle extending posteriorly to base of lateral horn-like tooth; anterolateral margin of carapace strongly produced anteriorly, rounded; posterodorsal margin strongly concave, forming semicircle (in dorsal view) (Fig. 2A). Epigastric, supraorbital, antennal and hepatic spines absent. Branchiostegal carina distinct (Figs 1; 2B).

Abdominal segments (Figs 1; 2A) smooth, posteroventral angles rounded. Four prominent conical teeth present on dorsal surface of abdomen: one on anterodorsal surface of first segment, just inside gap of posterodorsal margin of carapace, more slender and higher than largest carapace tooth, more weakly calcified than other teeth; with pair of symmetrical dorsolateral teeth on second segment similar in shape to, but slightly more robust and longer than lateral pair on carapace; with single tooth on posterodorsal surface of third segment, just anterior to posterior margin, slightly compressed laterally, more robust but shorter than teeth on second abdominal segment. Fourth to sixth abdominal segments distinctly more slender than first three segments; sixth abdominal segment subcylindrical,

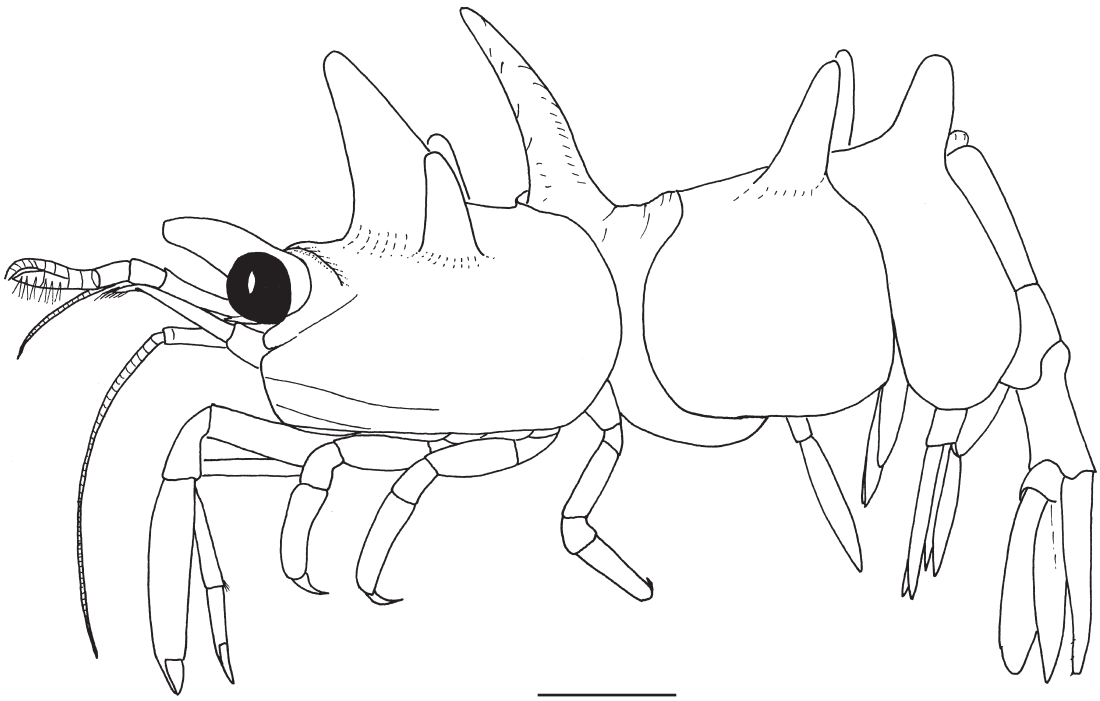

FIG. 1. — *Chacella mclaughlinae* n. sp., holotype ♀, Clipperton Island (MNHN-Na 15990), body, lateral view. Scale bar: 1 mm.

about 2.4 times as long as high, about 0.6 as long as telson, and with posterior and posteroventral angles rounded. Telson (Fig. 2C) 3.15 times as long as width of anterodorsal margins, latter about 2.7 times as wide as posterior margin; lateral margins nearly straight, with two small marginal spines at about 0.54 and 0.83 of telson length on left margin, and three marginal spines at about 0.63, 0.83 and 0.91 on right margin; posterior margin rounded, with one pair of small lateral spines similar to those on lateral margin.

Eyes (Figs 1; 2A) well developed, cornea semispherical, width 0.30 times of carapace length, lacking accessory pigment spot; peduncle stout, subcylindrical, slightly increasing in width distally, as long as distal width, anterodorsal margin with strong subconical horn-like knob, similar to lateral horn-like tooth on carapace, as long as peduncle and directed anterodorsally and slightly laterally.

Antennular peduncle (Figs 2A; 3A) slightly exceeding distal end of scaphocerite; proximal segment 1.85 times as long as maximum width, outer margin distinctly concave, entire, without proximal tooth, margin of distolateral lobe reaching to mid-length of second segment, distolateral tooth sharp, reaching to 0.75 of second segment, with acute ventromedial tooth at about 0.46 of proximal segment length; stylocerite short, blunt, reaching to proximal 0.38 of proximal segment length. Second segment short, dorsal length 0.36 of proximal segment, slightly widening distally, 1.06 as long as distal width. Third segment slightly longer and narrower than second segment, 0.42 of proximal segment length, 1.32 as long as wide. Upper flagellum biramous, with two proximal articles fused, shorter ramus with one segment, shorter ramus 0.86 as long as proximal peduncle segment (including fused and free portion), with six groups of aesthetascs; longer ramus with 10 articles, proximal two articles broad, distal eight articles slender; lower flagellum slender, filiform, with about 20 articles.

Antennal basicerite robust, with small acute

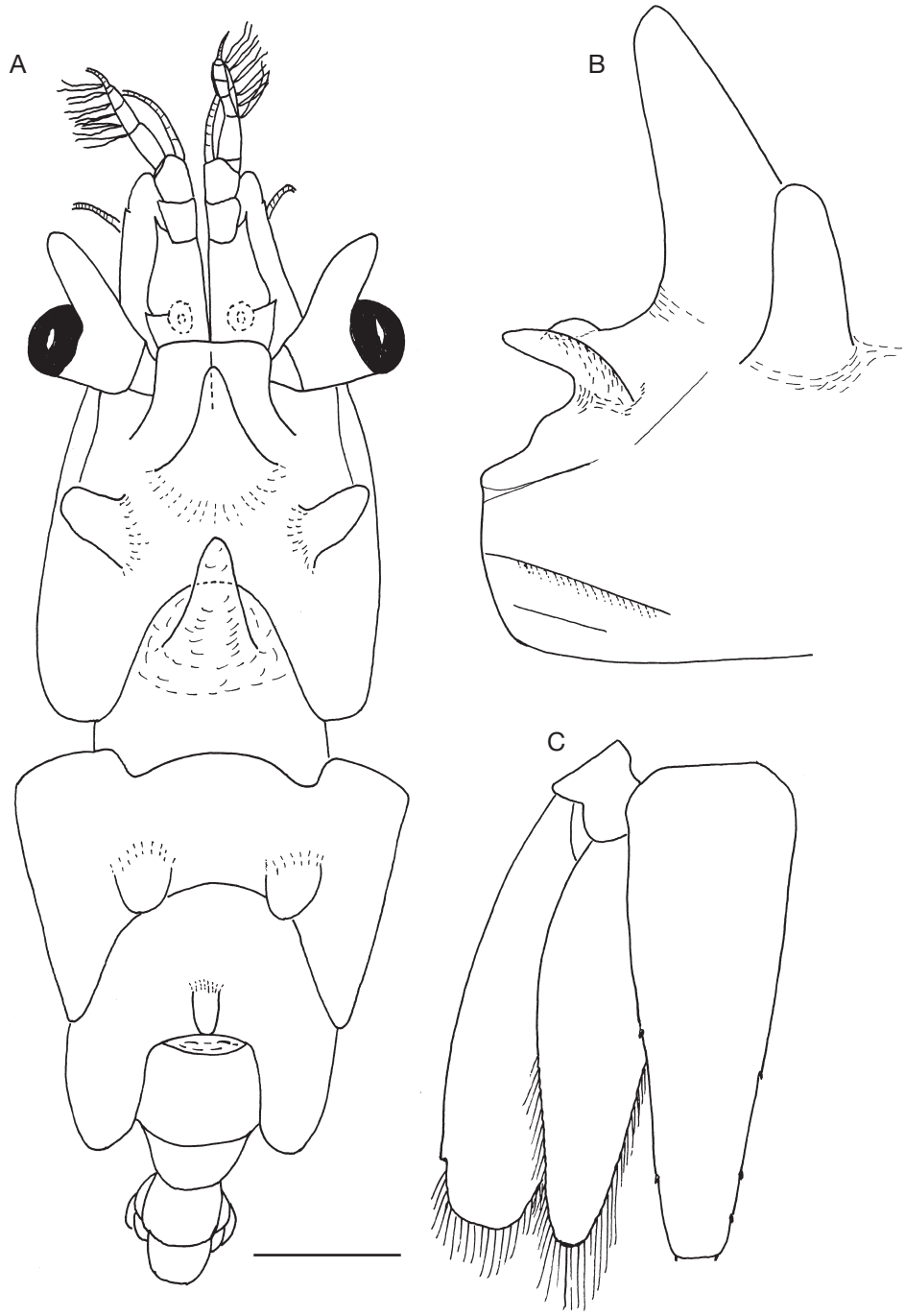

FIG. 2. — *Chacella mclaughlinae* n. sp., holotype ♀, Clipperton Island (MNHN-Na 15990): **A**, carapace, cephalic appendages, and abdomen, dorsal view; **B**, rostrum and anterior part of carapace, lateral view; **C**, telson, and left uropods, dorsal view. Scale bar: A, 1 mm; B, 0.62 mm; C, 0.44 mm.

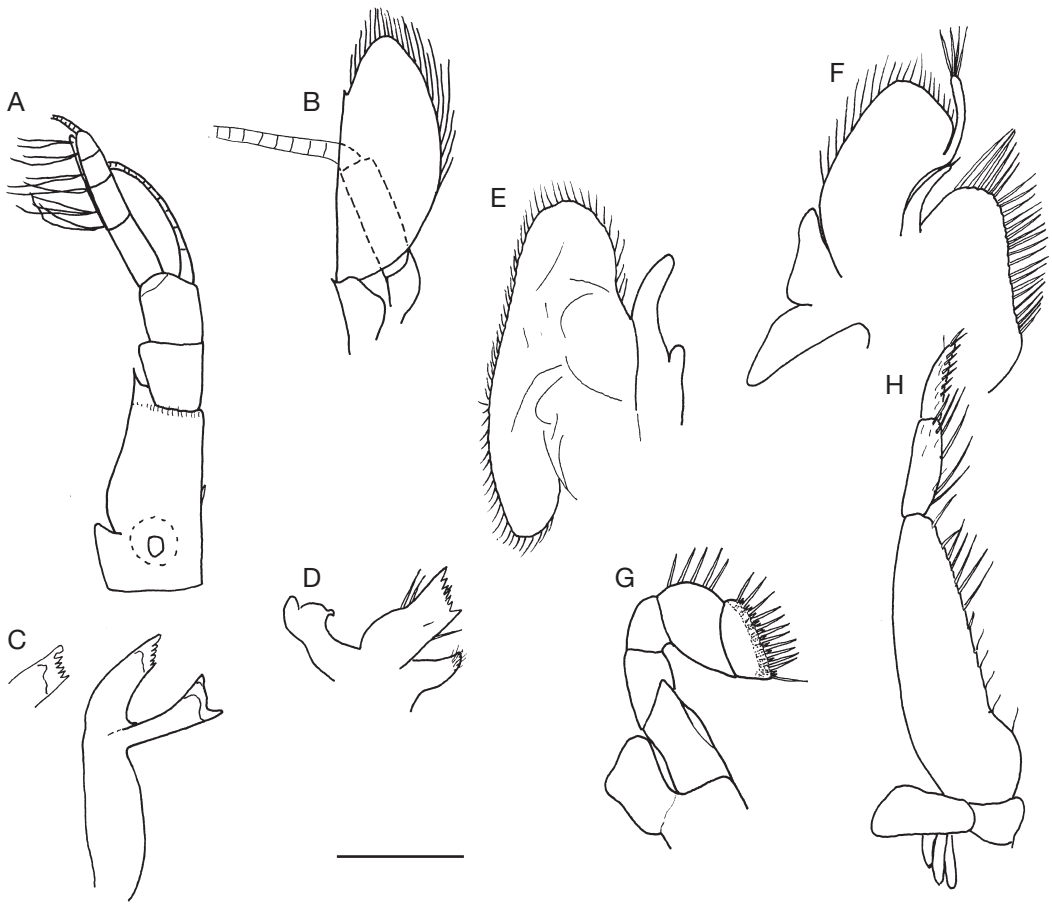

FIG. 3. — *Chacella mclaughlinae* n. sp., holotype ♀, Clipperton Island (MNHN-Na 15990): **A**, left antennule, dorsal view; **B**, left antenna, dorsal view; **C**, left mandible, dorsal view; **D**, left maxillula, dorsal view; **E**, left maxilla, dorsal view; **F**, left first maxilliped, dorsal view; **G**, left second maxilliped, dorsal view; **H**, left third maxilliped, dorsal view. Scale bar: A, B, 0.5 mm; C-H, 0.36 mm.

distolateral tooth; carpocerite about 0.41 of scaphocerite length, about 3.10 times longer than wide, subcylindrical, flagellum filiform, more than twice posterior orbital carapace length; scaphocerite well developed, about 2.40 times as long as wide, lateral margin nearly straight, with small distolateral tooth overreached by anteriorly produced lamella (Fig. 3B).

Epistome normal. Fourth to eighth thoracic sternites broad, unarmed.

Mandible (Fig. 3C) slender, without palp; incisor process with six teeth on distal margin; molar process slender, distal margin plate-like, with lateral tooth. Maxillula (Fig. 3D) with feebly bilobed, non setose palp, lower lobe with hooked seta; upper lacinia well developed, basally expanded, distally truncated, armed with seven terminal teeth and additional subterminal spine, upper margin with two long spiniform setae, lower margin with spiniform seta; lower lacinia robust, distally rounded, with simple setae. Maxilla (Fig. 3E) with short, non-setose palp, basal endite vestigial, without setae; scaphognathite well developed, about 4.50 times longer than median width.

First maxilliped (Fig. 3F) with slender, short, strap-like palp, with simple apical seta; basal endite

well developed, broad, with long spiniform setae along medial margin; caridean lobe well developed, large, broad, with numerous long setae; flagellum on median margin with four plumose setae distally; epipod large, triangular, bilobed. Second maxilliped (Fig. 3G) with normal endopod, dactyl with long marginal spiniform setae, and two rows of short submarginal serrulate spiniform setae on ventral surface along medial margin; propodus broad, subtriangular, distal margin with long spiniform setae; carpus and ischiomerus without special features; basis with distomedial angle acute, without exopod; coxa with a large subrectangular epipod, without podobranch. Third maxilliped (Fig. 3H) with short and robust endopod, ischiomerus and basis completely fused, ischiomerus and basis segments tapering distally, 3.13 times longer than maximum width, setose medially; penultimate segment slender, subuniform, about 0.33 as long as combined segment, 2.96 times as long as broad, with long medial setae; terminal segment slender, slightly tapering distally, about 0.28 as long as combined segment, 3.76 times longer than proximal width, with short setae along medial margin and tip; coxa with large suboval epipod, lamellar arthrobranch distinct; exopod absent.

First pereiopods (Fig. 4A) long and slender, exceeding distal margin of scaphocerite by length of chela; palm subcylindrical, about three times longer than wide; fingers 0.95 as long as palm, cutting edges entire, with hooked tips, outer margin with clusters of setae, ventral margin with cluster of cleaning setae at proximal 1/4; carpus 2.22 times as long as palm, slightly broadening distally, about 5.20 times as long as distal width, with a row of serrulate cleaning setae distoventrally; merus about 2.34 times as long as palm, compressed, 6.34 times as long as wide; ischium compressed, broad, slightly widening distally, about 0.92 of palm length and about twice width.

Second pereiopods similar, unequal. Major second pereiopod (Fig. 4B, D) (left in all examined specimens) long and robust, exceeding end of scaphocerite with fingers and distal 1/3 of palm, covered with short setae; palm cylindrical, 0.9 times posterior orbital carapace length, slightly curved medially, very slightly swollen on proximal 1/3, about four times as long as wide, covered with small tubercles with short distal setae, fingers short, 0.23 of palm length, cutting edges entire, with hooked tips, dactyl about 2.9 times as long as proximal width, somewhat stronger than fixed finger; carpus short, 0.32 as long as palm, 1.6 times as long as wide, depressed dorsoventrally, deepened distally in lateral view, flexor margin flat; merus 0.68 as long as palm, subcylindrical distally, and gradually compressed proximolaterally, 3.3 times longer than maximum height, distal flexor margin flat, corresponding to flat flexor margin of carpus, distoventral margin unarmed; ischium compressed laterally, tapering proximally, 0.41 as long as palm, 2.16 times longer than distal height; basis and coxa without special features. Minor second pereiopod (Fig. 4F) (right in all examined specimens) similar in shape to, but much shorter and more slender than major second pereiopod, exceeding carpocerite by length of fingers, failing to reach distal end of scaphocerite, covered with short setae; palm cylindrical, 0.45 as long as major palm, 3.8 times longer than proximal width; fingers short and stout, 0.27 as long as palm, cutting edges entire, with hooked tips; carpus 0.59 as long as palm, two times longer than distal width; merus robust, 1.24 times as long as palm, 2.7 times longer than maximum depth at proximal 1/3, distoventral margin unarmed; ischium robust, 0.67 times as long as palm, 2.2 times longer than distal depth.

Ambulatory pereiopods (Fig. 4G) robust, slightly compressed laterally. Third pereiopod exceeding basicerite, dactyl long, about 0.54 as long as propod length, 2.7 times as long as proximal depth, stout, strongly hooked, simple, unguis indistinct, ventral margin sinuous, with distal 2/3 concave, proximal fourth convex; propodus robust, slightly curved ventrally, slightly compressed laterally, covered with sparse setae, without spines on ventral margin, 0.41 as long as carapace length, 2.8 times longer than proximal depth; carpus short, unarmed, 0.48 as long as propodus, 1.41 times longer than distal depth; merus robust, unarmed, slightly compressed laterally, 1.03 as long as propodus, 2.49 times longer than maximum depth; ischium short, 0.43 as long as propodus, 1.2 times longer than distal depth. Fourth and fifth pereiopods similar to

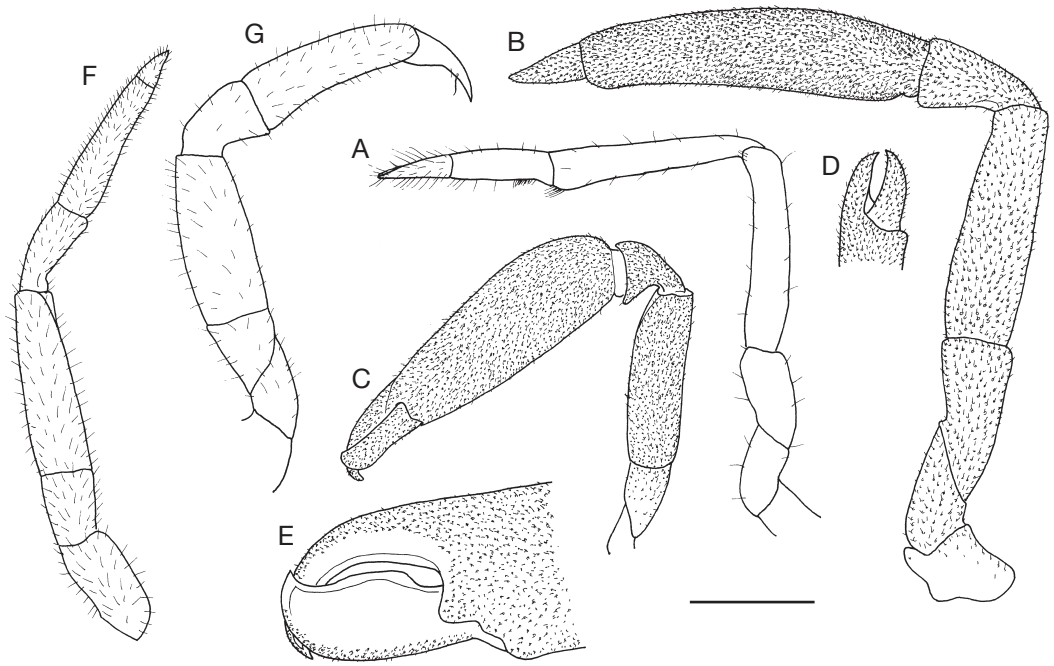

FIG. 4. — *Chacella mclaughlinae* n. sp.: **A**, **B**, **D**, **F**, **G**, holotype ♀, Clipperton Island (MNHN-Na 15990); **C**, **E**, paratype ♂, Clipperton Island (MNHN-Na 15991); **A**, left first pereiopod; **B**, **C**, major second pereiopod; **D**, **E**, same, fingers; **F**, minor second pereiopod; **G**, left third pereiopod. Scale bars: A, B, D-G, 0.5 mm; C, 1.14 mm.

third, fourth reaching to anterior carapace margin, fifth slender.

Uropod (Fig. 2C) with protopodite unarmed, posterolateral angle rounded. Exopod reaching posterior margin of telson, 2.8 times longer than maximum width, lateral margin convex, without distal tooth, with mobile spine medially, diaeresis indistinct; endopod slightly longer and distinctly narrower than exopod, 4.2 times longer than maximum width.

Paratype male

Similar to holotype female except for size and proportions of major second pereiopod (Fig. 4C, E), which is much stronger and covered with dense small tubercles on all surfaces of the pereiopods, setae on the tubercles very short; palm robust, swollen, 1.55 times as long as carapace length, 2.76 times longer than maximum width at proximal 1/3; fingers with tips crossing, dactyl compressed, plate-like, cutting edge with proximal 1/5 to 4/5 convex, 2.32 times longer than maximum width, tip hooked, fixed finger much more slender than dactyl, strongly curved, cutting edge entire; carpus cup-like, 0.22 as long as palm length, 0.9 as long as distal width; merus robust, 0.66 as long as palm, three times longer than width, unarmed distoventrally; ischium short and slender, tapering proximally, 0.19 as long as palm, 1.16 times longer than distal width. Endopod of first pleopod distally expanded, broadly rounded; endopod of second pleopod with appendix interna and appendix masculina arising at about proximal 0.30 of mesial margin of endopod, appendix interna slender, slightly longer than appendix masculina, appendix masculina slender, with several spiniform setae on distal half.

REMARKS

Chacella mclaughlinae n. sp. is most similar to *C. tricornuta*. Both have large horns on the abdominal surfaces, a carapace with three large horns, outer margin of proximal antennular segment without proximal tooth, and a scaphocerite with a distolateral tooth. The new species can be easily distinguished

from *C. tricornuta* by the single horn-like tooth on the first abdominal segment, whereas a pair of lateral teeth is present in *C. tricornuta*.

There are now three species recognized in *Chacella*: *C. kestitchi*, *C. tricornuta* and *C. mclaughlinae* n. sp. The former two are distributed in the Gulf of California, at 30-40 m depth, and are associated with gorgonian and antipatharian corals (Wicksten 1983, 1989; Bruce 1986, 1989; Hendrickx 1990; Wicksten & Hendrickx 1992; Wicksten & Hernandez 2000). The new species is known only from Clipperton Island, at 55 m depth, and thus is the first species of the genus known from outside the Gulf of California.

KEY TO SPECIES OF *CHACELLA* BRUCE, 1986

1. Abdomen without horn-like teeth; carapace with two large dorsomedian horn-like teeth on anterior 1/4, and small knob posterior to orbit; pleura of first three abdominal segments relatively small; lateral margin of proximal antennular segment with acute proximal tooth; lateral margin of scaphocerite without distolateral tooth ..... *C. kerstitchi*
— Abdomen with large horn-like teeth; carapace with three large horn-like teeth; lateral margin of proximal antennular segment without proximal tooth; lateral margin of scaphocerite with a small distolateral tooth 2

2. Abdomen with five horn-like teeth; pleura of first three abdominal segments large .... *C. tricornuta*
— Abdomen with four horn-like teeth; pleura of first three abdominal segments relatively small ..... *C. mclaughlinae* n. sp.

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