

# A new pontoniine shrimp from Tahiti, French Polynesia (Crustacea, Decapoda, Palaemonidae)

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## ABSTRACT

**KEY WORDS**  
Crustacea,  
Decapoda,  
Pontoniinae,  
*Epipontonia tahitiensis* n. sp.,  
French Polynesia,  
Tahiti,  
identification key,  
new species.

A new species of pontoniine shrimp, *Epipontonia tahitiensis* n. sp., from Tahiti, French Polynesia, is described and illustrated. The new species is readily distinguished from the three other species of the genus by the presence of a well developed incisor process on the mandible and an epipod on the second maxilliped, features that require a modification of the generic diagnosis. The species is one of the smallest pontoniine shrimps known and its host, presumed to be a sponge, has not been identified.

## RÉSUMÉ

**MOTS CLÉS**  
Crustacea,  
Decapoda,  
Pontoniinae,  
*Epipontonia tahitiensis* n. sp.,  
Polynésie française,  
Tahiti,  
clé d'identification,  
nouvelle espèce.

*Une nouvelle espèce de crevette pontoniine de Tahiti, Polynésie française (Crustacea, Decapoda, Palaemonidae).*

Une nouvelle espèce de crevette pontoniine, *Epipontonia tahitiensis* n. sp., de Tahiti en Polynésie française, est décrite et illustrée. La nouvelle espèce est facilement distinguée des trois autres espèces de ce genre par la présence d'un processus incisivoire de la mandibule bien développé et d'un épipode sur le deuxième maxillipède, caractères qui nécessitent une modification de la diagnose du genre. L'espèce est une des crevettes pontoniines les plus petites connues et son hôte, présumé être une éponge, n'a pas été identifié.

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## INTRODUCTION

The pontoniine shrimp fauna of Tahiti has so far attracted little detailed study. Poupin (1999) listed the presence of only 36 species from the whole of French Polynesia. Surrounded by extensive coral reefs, it is certain that many common species remain to be added to this list. It would be surprising if the Society Islands alone did not support the presence of well over 100 species (cf. Heron Island, Bruce 1981). The discovery of a new species, collected 20 years ago, of the small and little known genus *Epipontonia* Bruce, 1977, is a small augmentation of this list and suggests that additional new species are likely to be found on further search.

The single specimen is deposited in the collections of the Muséum national d'Histoire naturelle, Paris (MNHN).

### ABBREVIATIONS

AM	Australian Museum, Sydney;
BMNH	The Natural History Museum, London;
CL	post-orbital carapace length;
IOCAS	Institute of Oceanology, Chinese Academy of Sciences, Qingdao;
MNHN	Muséum national d'Histoire naturelle, Paris;
RMNH	Nationaal Natuurhistorisch Museum, Leiden.

## SYSTEMATICS

Family PALAEMONIDAE Rafinesque, 1815

Subfamily PONTONIINAE Kingsley, 1878

Genus *Epipontonia* Bruce, 1977

*Epipontonia tahitiensis* n. sp.  
(Figs 1-4)

HOLOTYPE. — French Polynesia. Tahiti, stn S(?) 11, 1982, coll. O. Odinetz, 1 ovig. ♀ (MNHN Na. 15021).

ETYMOLOGY. — Named after the locality of discovery: Tahiti.

DIAGNOSIS. — Rostral dentition 6/1, supraorbital or paraorbital spines absent, incisor process of mandible well developed with numerous small teeth, second maxilliped with epipod, second pereopods similar, unequal, third ambulatory dactyl biunguiculate, corpus and unguis ventrally denticulate.

## DESCRIPTION

Small sized pontoniine shrimp of subcylindrical body form, in general closely resembling previously described species of the genus.

Rostrum (Fig. 1B) compressed, about 0.44 of CL, 7 times longer than deep, slightly depressed, reaching to level of distal segment of antennular peduncle, with six small acute dorsal teeth, with one to three interdental setae, ventral border straight, non-setose, with single small preterminal ventral tooth.

Carapace (Fig. 1A) smooth, glabrous, without epigastric, supraorbital and hepatic spines, orbit feebly developed, antennal spine well developed, submarginal, overlying small inferior orbital angle, anteroventral margin of branchiostegite produced, rounded.

Abdomen without special features, pleura rounded, sixth segment (Fig. 1I) strongly depressed, with small posterolateral process with acute upper tooth, ventrolateral process broadly expanded, posterolaterally acute.

Telson (Fig. 1J) about 1.8 times sixth segment length, 0.55 of CL, 2 times longer than width, lateral margins convex, convergent, with two pairs of large submarginal dorsal spines (Fig. 1L), about 0.2 of telson length, at 0.2 and 0.5 of telson length, posterior margin (Fig. 1K) rounded, without median process, lateral spines small, 0.5 of dorsal spine length, intermediate spines robust, about 0.25 of telson length, submedian spines long, slender, non-setulose, slightly shorter than intermediate spines.

Antennule (Fig. 1C) with proximal segment (Fig. 1D) with medial length 1.7 times longer than width, medial margin straight, non-setose, lateral margin feebly concave, with large acute distolateral lobe reaching beyond level of proximal dorsal margin of second segment, stylocerite broad, acute, reaching to about 0.45 of segment length, statocyst well developed, without statolith, ventromedial border with small acute tooth at about 0.5 of length; intermediate and distal segments short, subequal, combined equal to about 0.5 of proximal segment length; upper flagellum biramous, proximal three segments of rami fused, shorter free ramus with

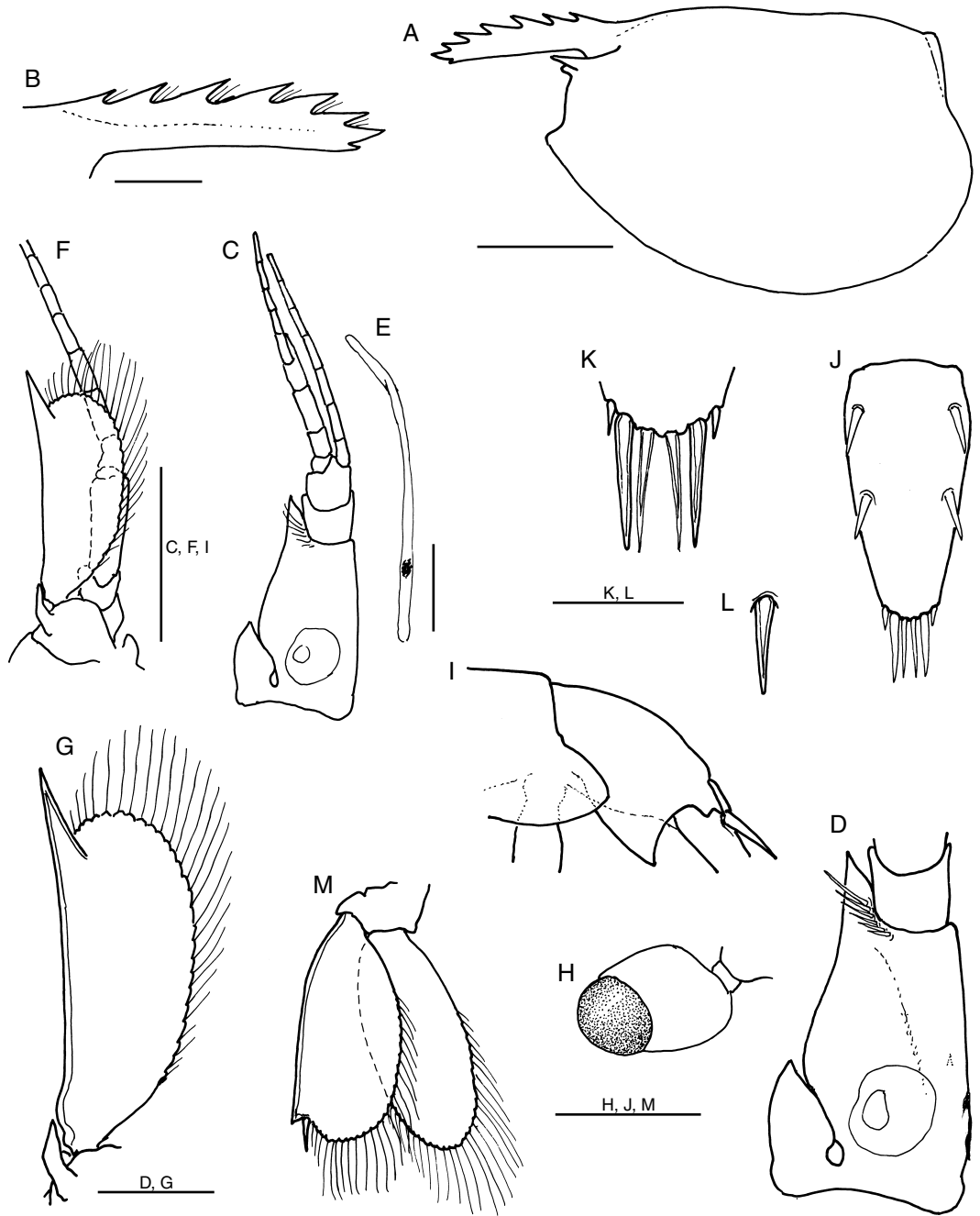


FIG. 1. — *Epipontonia tahitiensis* n. sp., ovigerous ♀ holotype (MNHN Na. 15021); **A**, carapace and rostrum; **B**, rostrum; **C**, antennule; **D**, same, proximal peduncular segment; **E**, same, aesthetasc; **F**, antenna; **G**, same, scaphocerite; **H**, eye; **I**, sixth abdominal somite, lateral; **J**, telson; **K**, same, posterior marginal spines; **L**, same, dorsal spine; **M**, uropod. Scale bars: A, C, F, H-J, M, 0.5 mm; B, D, G, K, L, 0.2 mm; E, 0.1 mm.

one segment, longer with five segments, with six groups of paired aesthetascs, each with a small black pigment spot (Fig. 1E) at about 0.2 of length; lower flagellum short with nine segments.

Antenna (Fig. 1F) with basicerite robust, with long acute distolateral tooth, ischiocerite and merocerite short; carpo-cerite about 3.4 times longer than central width, reaching to about 0.6 of lamellar length of scaphocerite; flagellum short; scaphocerite (Fig. 1G) well developed, reaching to level of end of antennular peduncle, lamella about 2.5 times longer than width, anterior margin broadly convex, lateral margin sub-linear with strong acute distolateral tooth, about 0.3 of lamella length, far exceeding lamellar margin.

Eye (Fig. 1H) with oblique globular cornea, without accessory pigment spot; stalk about as long as wide, tapering slightly distally.

Mandible (Fig. 2A) slender, without palp; incisor process (Fig. 4B) distally convex, with 12 small acute teeth, of decreasing size proximally; molar process (Fig. 4C) subcylindrical, distally truncate, with large acute tooth ventrally, dorsally carinate with upper and lower simple spines. Maxillula (Fig. 2B) normal, with bilobed palp (Fig. 4D), upper lobe small, lower lobe elongate, with small simple seta distally; upper lacinia broad, with 10 short stout serrulate spines and simple setae distally; lower lacinia short, subcylindrical, with numerous setae distally and ventrally. Maxilla (Fig. 2C) with elongate palp, with distal seta, with few short proximolateral setae; basal endite bilobed, lobes short, broad, each with about 14 simple setae distally, coxal endite obsolete, medial margin convex; scaphognathite broad, 2.5 times longer than central width. First maxilliped (Fig. 2D) with subcylindrical non-setose palp, basal and coxal endites fused, broad, medial margin straight with numerous slender simple setae, exopod with well developed small caridean lobe, slender flagellum, with four plumose terminal setae, with small feebly bilobed epipod laterally. Second maxilliped (Fig. 2E) of normal form, dactylar segment narrow, with numerous slender spiniform setae

medially; exopod normal with four plumose terminal setae, coxa produced medially, with two slender setae; with small rounded epipod laterally, without podobranch. Third maxilliped (Fig. 2F) with endopod normal, ischiomerus and basis feebly separated, combined segment about 4.2 times longer than central width, tapering slightly distally, sparsely provided with slender simple setae medially, intermediate segment about half of combined antepenultimate segment length, subcylindrical, 3.3 times longer than width, medial margin with few robust spiniform setae; terminal segment about 0.66 of preterminal segment length, tapering distally, 3 times longer than proximal width, with long spiniform seta distally, subequal to segment length, with proximoventral serrulations, medial margin with numerous spiniform setae; exopod normal, with slender flagellum with four plumose terminal setae; coxa not medially produced, with rounded epipod laterally, without arthrobranch. Paragnaths (Fig. 2G) rounded, simple, deeply divided.

First pereopod (Fig. 3A) normal, extending beyond rostrum by distal third of merus, chela (Fig. 3B) with palm 3 times longer than deep, sub-oval in section, distal two thirds slightly tapering, fingers (Fig. 4E) 0.4 of palm length, sparsely setose, dactylus 4 times longer than proximal depth, subspatulate laterally, cutting edge entire, tips (Fig. 4F) bidentate, teeth simple, fixed finger similar; carpus 1.25 times chela length, 6.5 times longer than distal width, subcylindrical; merus 0.95 of carpal length, 5 times longer than central width; ischium subequal to chela length; basis and coxa normal, coxa with small setose medial process.

Second pereopods similar, unequal. Major second pereopod (Fig. 3C) with chela (Fig. 3E) about 1.3 of CL, palm compressed curved dorsally (Fig. 3D), generally smooth, with small acute denticles along ventral margin, glabrous, 1.7 times longer than central depth, dactylus (Fig. 4G) about 0.4 of palm length, 2.7 times longer than deep, dorsal margin strongly convex, tip broadly acute, cutting edge sharp, entire, feebly convex, fixed finger similar, slightly shorter,

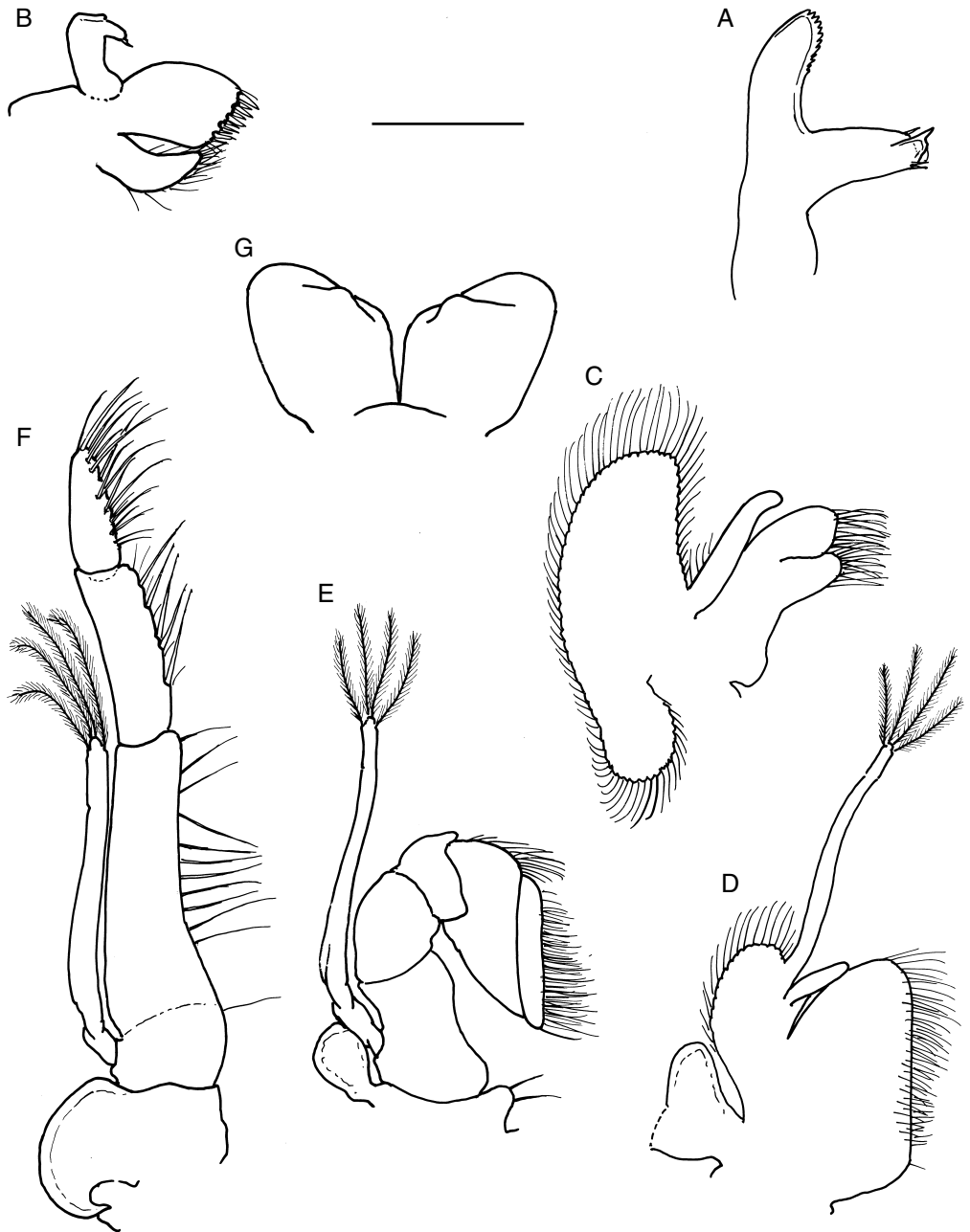


FIG. 2. — *Epipontonia tahitiensis* n. sp., ovigerous ♀ holotype (MNHN Na. 15021); **A**, mandible; **B**, maxillula; **C**, maxilla; **D**, first maxilliped; **E**, second maxilliped; **F**, third maxilliped; **G**, paragnaths. Scale bar: 0.2 mm.

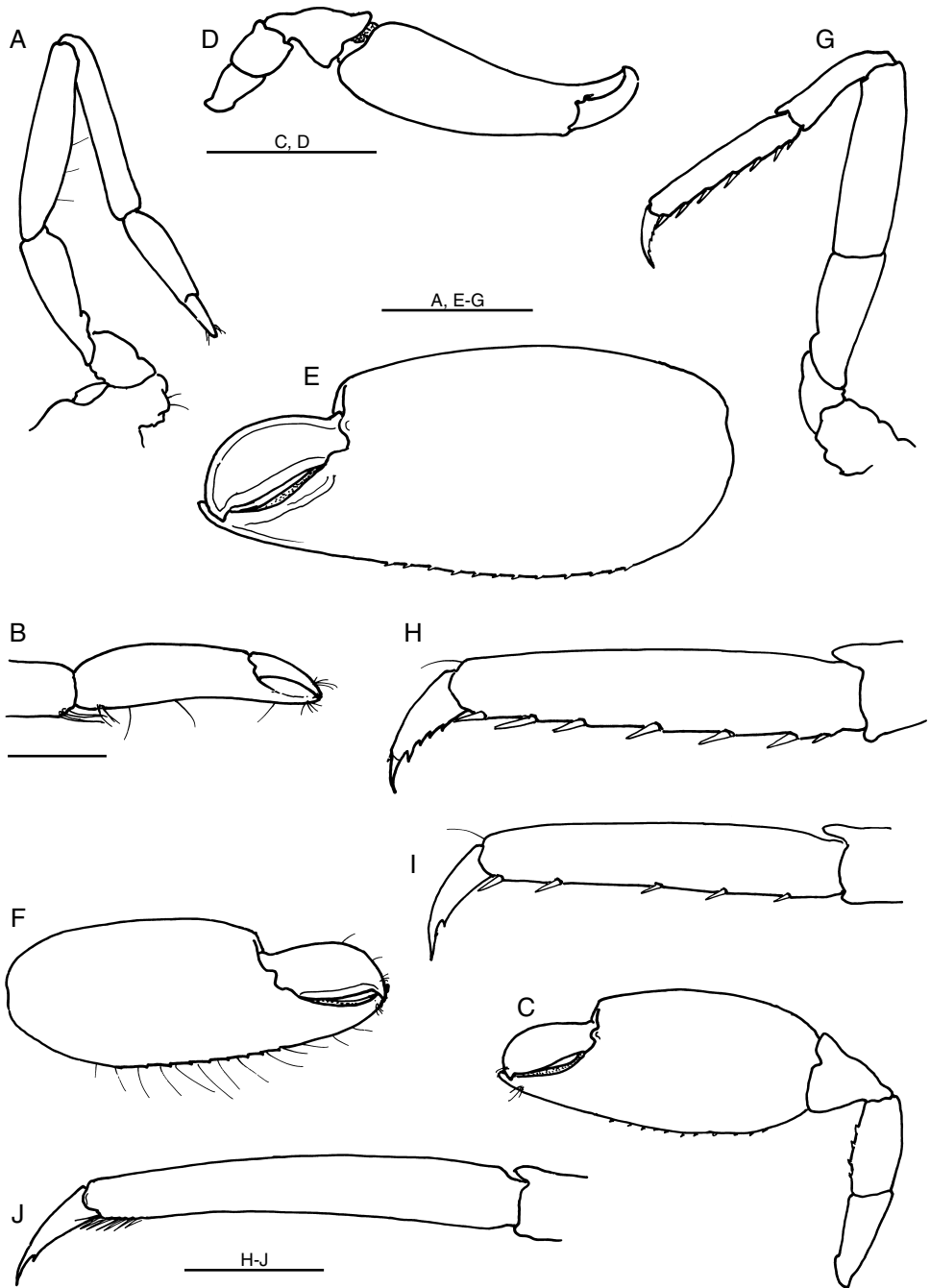


FIG. 3. — *Epipontonia tahitiensis* n. sp., ovigerous ♀ holotype (MNHN Na. 15021); **A**, first pereiopod; **B**, same, chela; **C**, major second pereiopod; **D**, same, lateral; **E**, same, chela; **F**, minor second pereiopod, chela; **G**, third pereiopod; **H**, same, dactyl and propod; **I**, fourth pereiopod, dactyl and propod; **J**, fifth pereiopod, dactyl and chela. Scale bars: A, E-G, 0.5 mm; B, H-J, 0.2 mm; C, D, 1.0 mm.

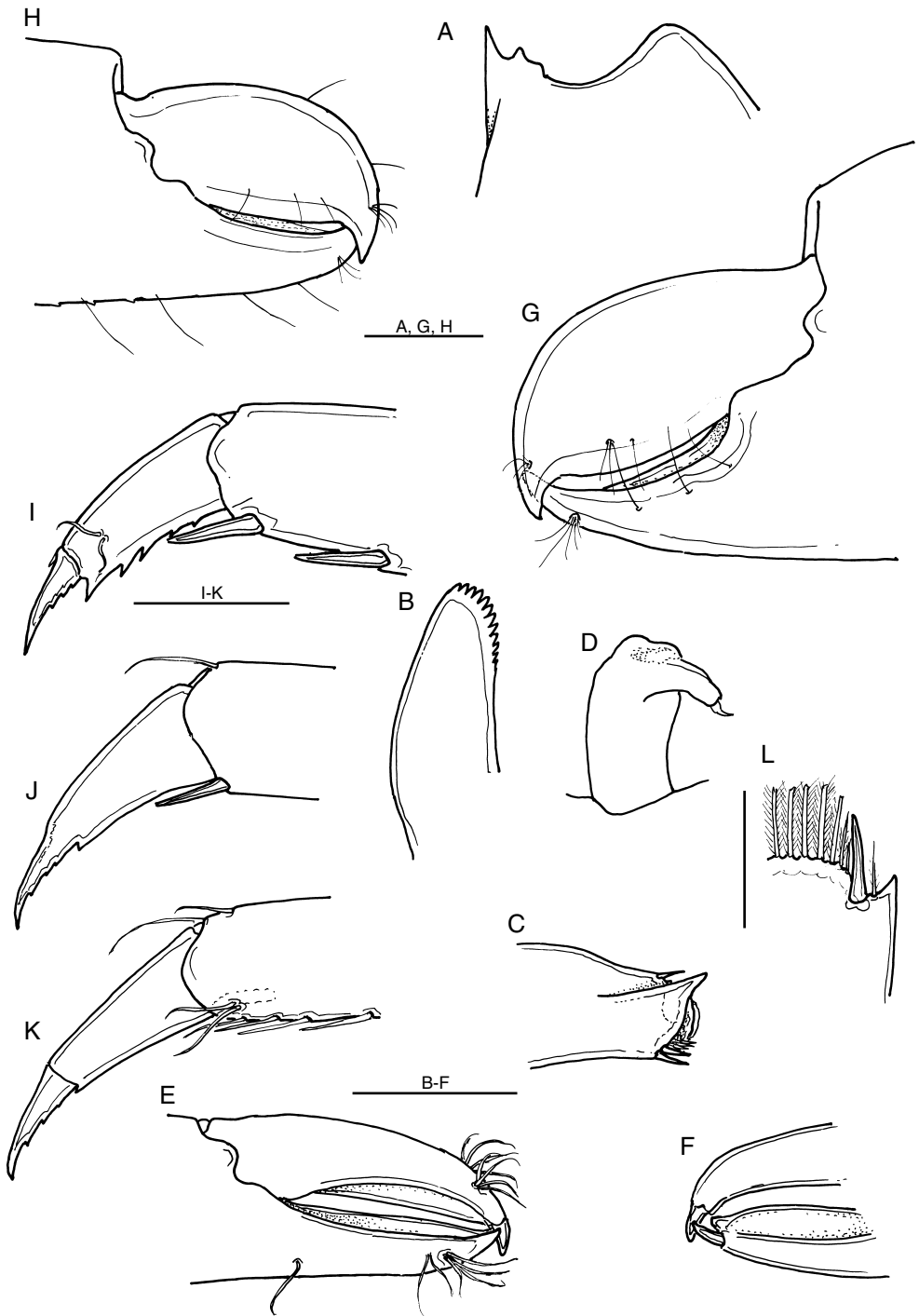


FIG. 4. — *Epipontonia tahitiensis* n. sp., ovigerous ♀ holotype (MNHN Na. 15021); **A**, antennal spine, inferior orbital angle and anterolateral branchiostegite, ventrolateral aspect; **B**, mandible, incisor process; **C**, same, molar process; **D**, maxillula, palp; **E**, first pereiopod, fingers; **F**, same, tips of fingers, lateral; **G**, major second pereiopod, fingers; **H**, minor second pereiopod, fingers; **I**, third pereiopod, distal propod and dactyl; **J**, fourth pereiopod, distal propod and dactyl; **K**, fifth pereiopod, distal propod and dactyl; **L**, uropod, distolateral exopod. Scale bars: A, G, H, L, 0.2 mm; B-F, I-K, 0.1 mm.

stout broad acute tip, cutting edge deeply channeled, medial and lateral edges concave, entire; carpus about 0.35 of palm length, broadly expanded distally, smooth, unarmed; merus 0.45 of palm length, 2.1 times longer than central width, slightly expanded centrally, ventral margin with four small acute teeth, ischium subequal to meral length, 2.6 times longer than distal width, tapering proximally, ventral margin unarmed; basis and coxa without special features. Minor second pereiopod with chela (Fig. 3F) subequal to CL, 0.7 of major chela length, palm 1.9 times longer than deep, compressed, ventral border with numerous small acute denticles and long simple setae, fingers (Fig. 4H) about 0.47 of palm length, dactylus 2.3 times longer than central depth; proximal segments as in major chela, slightly smaller.

Third pereiopod (Fig. 3G) normal, dactyl (Fig. 4I) compressed, unguis distinctly demarcated, 3 times longer than oblique basal width, with single small spinule proximodorsally, curved, ventral border concave with three small acute denticles; corpus twice as long as proximal depth, with pairs of sensory setae distally, biunguiculate with large acute distoventral tooth, ventral margin slightly concave with four smaller acute teeth; propod (Fig. 3H) about 0.43 of CL, subuniform, compressed, about 5 times longer than wide, with single stout distoventral spine, subequal to basal width of corpus, five similar equally spaced ventral spines and single smaller proximal ventral spine; carpus 0.66 of propod length, unarmed; ischium 1.16 of propod length, 3.4 times longer than wide, unarmed; ischium 0.77 of propod length, unarmed; basis and coxa without special features.

Fourth pereiopod similar to third pereiopod; dactyl (Fig. 4J) distally damaged(?), unguis without dorsal spinule, not clearly demarcated, otherwise similar, corpus biunguiculate with single small acute distoventral tooth only; propod (Fig. 3I) about 0.9 of third propod length, 5.4 times longer than deep, with single more slender distoventral spine, four ventral spines of diminishing size proximally; other segments without special features.

Fifth pereiopod similar to third pereiopod; dactyl (Fig. 4K) with clearly demarcated unguis without dorsal spinule, ventral margin with three denticles; corpus biunguiculate, with very small acute distoventral tooth only; propod (Fig. 3J) 1.06 of third propod length, 6.7 times longer than proximal depth, without spines, with numerous slender distoventral setae; other segments without special features.

Uropod (Fig. 1M) with protopodite posterolaterally unarmed; exopod 0.9 of telson length, 2.2 times longer than broad, lateral margin nonsetose, convex proximally, distally straight, with strong distolateral tooth (Fig. 4L), with robust spine medially, diaeresis obsolete; endopod subequal to exopod length, 2.4 times longer than width.

Ova normal, 13.

#### *Measurements (in mm)*

Total body length, *c.* 5.9; postorbital carapace length, 1.45; carapace and rostrum, 2.2; major second pereiopod, chela, 1.9; minor second pereiopod, chela, 1.4; length of ovum, 0.5.

#### *Coloration and host*

No data.

#### *Systematic position*

*Epipontonia tahitiensis* n. sp. is not closely related to the three previously described species of the genus, differing from all three in possessing an unreduced mandibular incisor process and an epipod on the second maxilliped, although the mandible of *E. hainanensis* Li, 1999 has not yet been illustrated in detail. In all other features it conforms closely to the generic description.

#### REMARKS

*Epipontonia tahitiensis* n. sp. is completely without the remarkably ornate first pereiopod finger tips found in *E. anceps* Bruce, 1983. In this species the finger tips are provided with long slender serrulate terminal spines flanked by denticulate medial and lateral expansions. These are also lacking in *E. anceps* and *E. hainanensis*.



## DISCUSSION

The small genus *Epipontonia* now contains four species only, each known only from the type material. Two species, *E. anceps* and *E. spongicola* Bruce, 1977, are known to be associates of sponges and, while the hosts of *E. hainanensis* and *E. tahitiensis* n. sp. are still unknown with certainty, it is likely that they have similar associations. *Epipontonia tahitiensis* n. sp. is one of the smallest pontoniine shrimps known, with the adult female having a carapace length of only 1.4 mm. *Epipontonia hainanensis* has a carapace length of 2.17 mm, *E. anceps* of 2.4 mm and *E. spongicola* of 2.7-3.4 mm. The relatively small size of these shrimps and their cryptic associations with sponges probably accounts for their apparent rarity in crustacean collections.

The genus *Epipontonia* is closely related to *Periclimenaeus* Borradaile, 1915, most species of which are also sponge associates. *Epipontonia* differs from *Periclimenaeus* principally in the lack of a molar process and fossa on the fingers of the major second pereopod, capable of sound production in some species, and considered a diag-

nostic character of the genus *Periclimenaeus* Borradaile, 1915. The major second pereopod dactylus in *E. tahitiensis* n. sp. opposes into a deep groove along the fixed finger, deepening proximally, and it would only require the thickening of the proximal end of the dactylus and the further deepening of the proximal end of the groove on the fixed finger to develop a mechanism similar to that found in *Periclimenaeus*.

*Epipontonia hainanensis* is described as having a supraorbital spine (Li 1999) and *E. spongicola* as having a paraorbital spine (Bruce 1977). These are considered homologous although differing slightly in position, the former more dorsal, the latter more lateral. The inferior orbital angle is much reduced in all species but is present and distinct at least in *E. tahitiensis* n. sp., medial to the distinct antennal spine, and in *E. anceps*.

*Epipontonia tahitiensis* n. sp. differs from the other species of the genus in two characters that require amendment to the generic definition (Bruce 1995). The incisor process of the mandible may be reduced and toothless, feebly bidentate to well developed, expanded with numerous small teeth, and the second maxilliped may be with or without an epipod.

KEY TO THE SPECIES OF THE GENUS *EPIPONTONIA* BRUCE, 1977

1. Supraorbital spines present; rostral dentition 9/1 ..... *E. hainanensis*  
— Supraorbital spines absent ..... 2
2. Incisor process of mandible distally rounded, multidentate; second maxilliped with epipod; rostral dentition 6/1 ..... *E. tahitiensis* n. sp.  
— Incisor process of mandible reduced, acute, 0-2 teeth; second maxilliped without epipod ..... 3
3. Antennal spine present; first pereopods with fixed finger with central spine flanked by medial and lateral serrated flanges; second pereopods unequal, dissimilar; rostral dentition 6-7/1 ..... *E. anceps*  
— Antennal and paraorbital spines present; first pereopods with fixed finger serrated tooth and spine only; second pereopods subequal, similar; rostral dentition 9/1 .....  
..... *E. spongicola*

TABLE 1. — Comparison of morphological characters of *Epipontonia* Bruce, 1977.

Character	<i>E. spongicola</i> Bruce, 1977	<i>E. anceps</i> Bruce, 1983	<i>E. hainanensis</i> Li, 1999	<i>E. tahitiensis</i> n. sp.
Rostral dentition	9/1	6-7/1	9/1	6/1
Supra-/para-orbital spine	Present	Absent	Present	Absent
Incisor process of mandible	Reduced, unidentate	Reduced, bidentate	Reduced	Normal, multidentate
Second maxilliped epipod	Absent	Absent	Absent	Present
First pereiopod, fingers of chela	Tips ornate	Tips ornate	Tips simple	Tips simple
Second pereiopod chelae	Similar, subequal	Dissimilar, unequal	Similar, subequal	Similar, unequal
Third pereiopod dactyl, unguis	Simple	Simple	Denticulate	Denticulate
Third pereiopod dactyl, corpus	6 denticles proximally	8 denticles	"Numerous"	4 denticles
Third pereiopod propod	2 distoventral spines	2 distoventral spines	1 distoventral spine	1 distoventral spine

### *Epipontonia anceps* Bruce, 1983

*Epipontonia anceps* Bruce, 1983: 19-28, figs 1-10. — Li 2000: 47, fig. 48. — Davie 2002: 310.

Known from the type locality only, Heron Island, Capricorn Islands, Queensland, Australia, 18 m, in *Dysidea* sp. (Porifera), holotype ♂ (BMNH 1975: 165).

### *Epipontonia hainanensis* Li, 1999

*Epipontonia hainanensis* Li, 1999: 357-362, figs 1-3. — Li 2000: 47, 48, fig. 49.

Known from the type locality only, Yezhu Island, Yalong Bay, Hainan Island, China, 6-9 m, holotype specimen ♀ (IOCAS 90C-387).

### *Epipontonia spongicola* Bruce, 1977

*Epipontonia spongicola* Bruce, 1977: 308-315, figs 1-5. — Li 2000: 48, fig. 50.

Known from the type locality only, Wasin Channel, Kenya, 12 m, in *Reniera* sp. (Porifera), holotype ovig. ♀ (AM P31485); paratype ovig. ♀ (RMNH D 33340).

### Acknowledgements

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