

Epipontonia anceps n. sp., a Sponge-associated Pontoniine Shrimp from Heron Island, Queensland. (Crustacea: Decapoda: Palaemonidae)

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ABSTRACT. A second species of the pontoniine shrimp genus *Epipontonia* Bruce, 1977, is described and illustrated. *Epipontonia anceps* n. sp. is an associate of a sponge of the genus *Dysidea* found at Heron Island, Queensland at a depth of 18 m. *E. anceps* may be distinguished from *E. spongicola* Bruce, the only other species of the genus, by the absence of an antennal spine and the presence of large unequal chelae on the second pereiopods.

BRUCE, A.J., 1983. *Epipontonia anceps* n. sp., a sponge-associated pontoniine shrimp from Heron Island, Queensland. (Crustacea: Decapoda: Palaemonidae). Records of the Australian Museum 35(1): 19-28.

The pontoniine genus *Epipontonia* (Palaemonidae, Samouelle, 1819) is represented by a single species *E. spongicola*, described from a single specimen from Wasin Island, Kenya (Bruce, 1977), where it was found in association with a sponge at a depth of 12 m. There have been no subsequent records of this species in the literature. Recently several examples of a closely related species of shrimp were found in association with a sponge at Heron Island, in the Capricorn Islands, near the southern end of the Great Barrier Reef. These specimens differ from *E. spongicola* in several characteristic morphological features and they are now described as a new species.

SYSTEMATICS

Epipontonia anceps n. sp.

Figs 1-10

Material examined. 3 ovigerous ♀♀, 1 juvenile, Heron Island, Queensland 23° 28.0'S, 151°59.2'E, 18 m, 17 September 1979, coll. L. Owens and L. Thompson.

Holotype. Ovigerous female, Australian Museum registration number P31485, total length 10.0 mm (approx.); post-orbital carapace length 2.7 mm; length of major chela of second pereiopod 5.4 mm; length of minor chela of same 3.6 mm, length of ova 0.5 mm.

Paratypes. (i) Ovigerous female, Rijksmuseum van Natuurlijke Historie, registration number RMNH Crust. D.33340, total length 13.0 mm (approx.); post-orbital carapace length 3.4 mm; length of chela of major second pereiopod 5.5 mm, minor chela lacking. (ii) Ovigerous female, post-orbital

carapace length 2.6 mm; major second pereiopod lacking, length of chela of minor second pereiopod 2.4 mm. (iii) Female, post-orbital carapace length 1.2 mm; chela of major second pereiopod 2.0 mm; chela of minor second pereiopod 1.0 mm.

Description. A medium-sized pontoniine shrimp, of fairly slender and slightly compressed body form.

The carapace is smooth and with a well-developed rostrum that extends anteriorly to about the level of the distal margin of the lamina of the scaphocerite and slightly exceeds the intermediate segment of the antennular peduncle. The rostrum is acute, strongly compressed, horizontal or slightly depressed, with feebly-developed lateral carinae. The dorsal carina is deep with 6-7 long acute teeth, which increase in size distally to the fifth and then diminish in size; all are situated anteriorly to the level of the orbital notch. The ventral carina is also well developed, with a convex lower border bearing a single slender acute tooth at about 0.6 of its length. The orbit is obsolete. Supra-orbital and hepatic spines are absent. The inferior orbital angle is slightly produced, broadly rounded and almost obsolete, without an antennal spine. An acute para-orbital spine is situated slightly above the inferior orbital angle. The antero-lateral angle of the carapace is slightly produced and bluntly rounded.

The abdominal segments are smooth. The tergite of the first segment is without an antero-dorsal lobe and the third segment is not produced posteriorly. The fourth and fifth segments are about as long as the sixth segment, which is about 1.5 times longer than deep and

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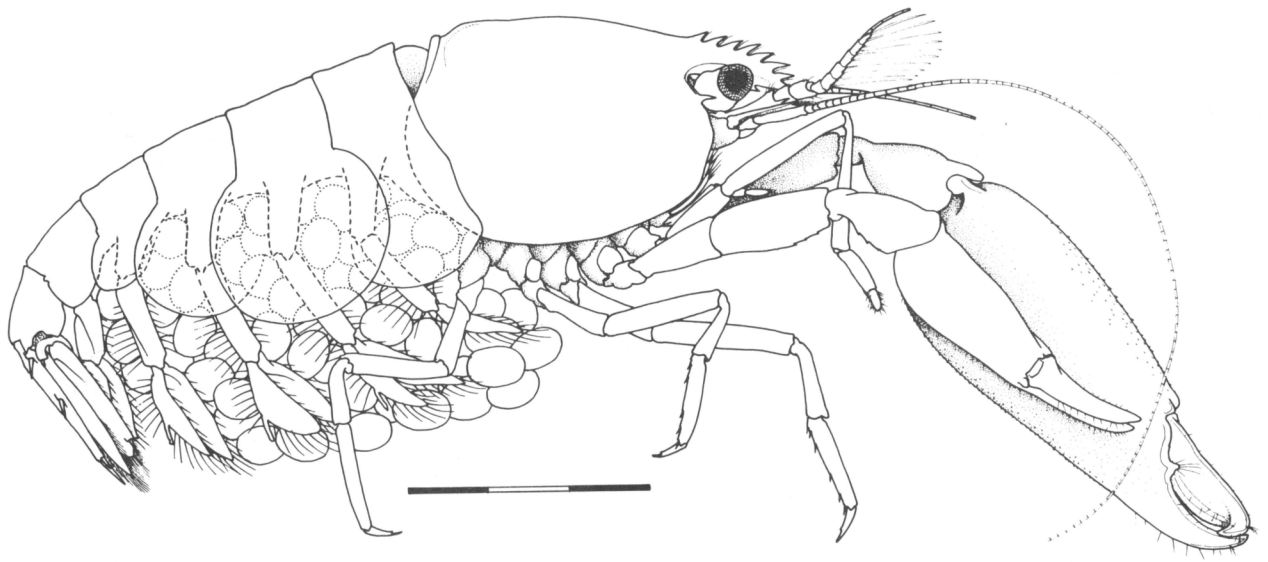


Fig. 1. *Epipontonia anceps* n.sp. Holotype, female, Heron Island, Queensland. Scale in mm.

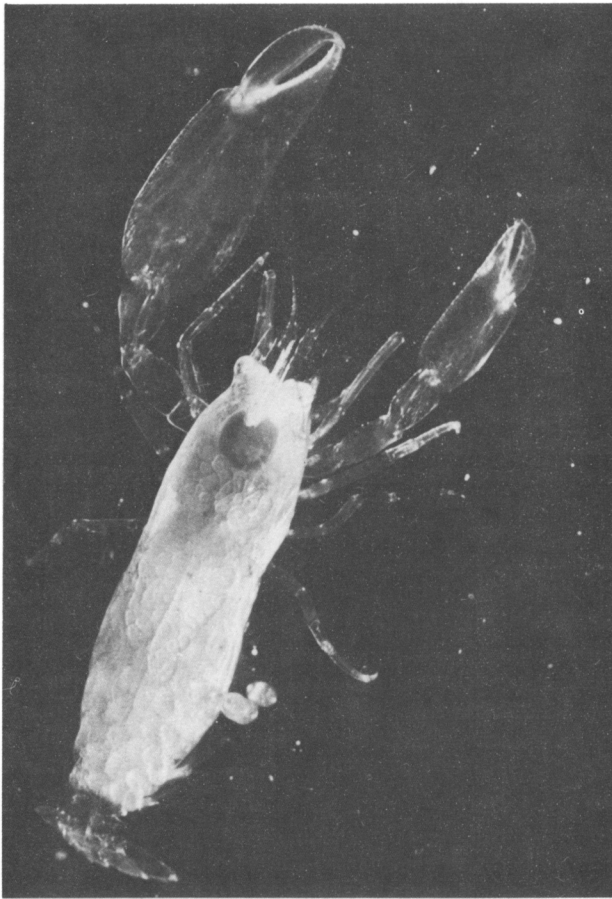


Fig. 2. *Epipontonia anceps* n. sp., ovigerous female, holotype, Heron Island, Queensland.

broadened, about 1.8 times wider than long. The postero-lateral angle is small and acute and the postero-ventral angle is expanded and acute. The pleura of the

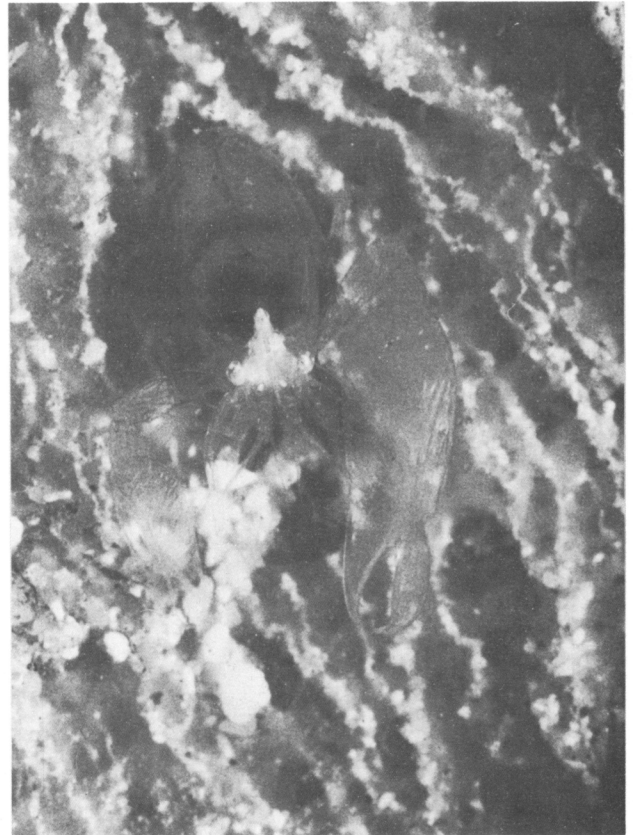


Fig. 3. *Epipontonia anceps* n. sp., ovigerous female *in situ* in host sponge.

first three segments are large and broadly rounded. The fourth and fifth pleura are progressively smaller and also broadly rounded.

The telson is about twice the length of the sixth abdominal segment, 2.1 times longer than wide with

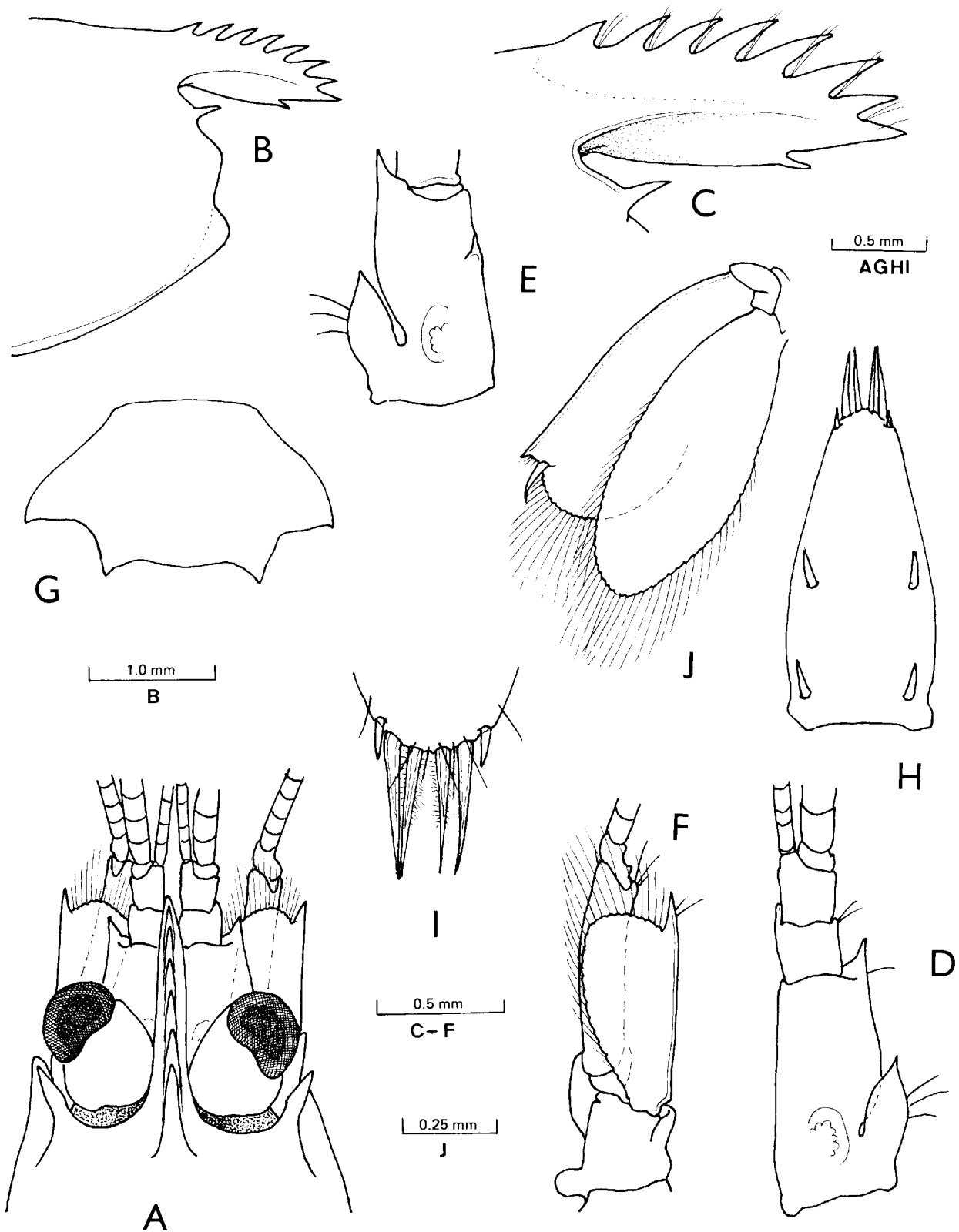


Fig. 4. *Epipontonia anceps* n.sp. Ovigerous female paratype. **A**, anterior carapace, rostrum and antennae, dorsal. **B**, anterior carapace and rostrum, lateral. **C**, rostrum. **D**, antennule, dorsal. **E**, antennule, ventral. **F**, antenna, **G**, sixth abdominal segment. **H**, telson. **I**, posterior telson spines. **J**, uropod.

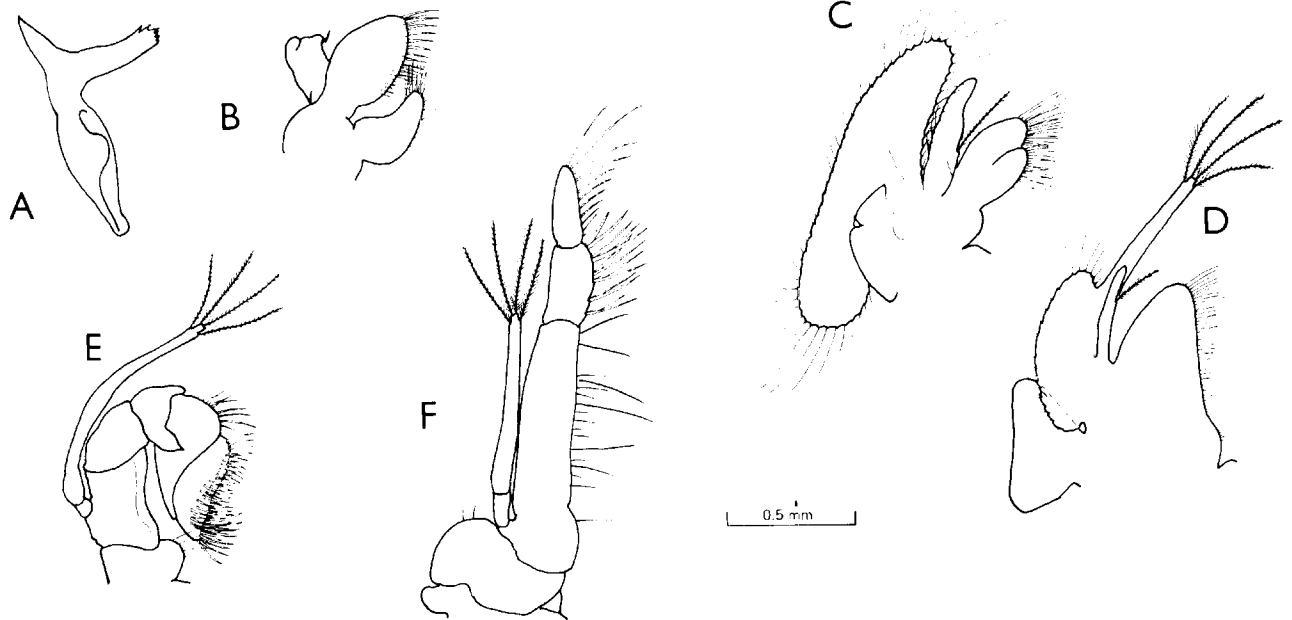


Fig. 5. *Epipontonia anceps* n.sp. Ovigerous female paratype. A, mandible. B, maxillula. C, maxilla. D, first maxilliped. E, second maxilliped. F, third maxilliped.

convex, posteriorly convergent lateral borders; width greatest at one third of length. The dorsal surface bears two subequal pairs of spines, equal to about 0.15 of the telson length, situated remote from the lateral edges at 0.08 and 0.45 of its length. The posterior margin of the telson is rounded, without a medium point, its width equal to 0.4 of the greatest telson width. The lateral spines are small, a little more than half the length of the dorsal spines. The intermediate spines are long, slender and uniformly tapering, about 1.6 times the length of the dorsal spines. The submedian spines are slightly shorter than the intermediates, more slender and finely setulose proximally.

The eyes are well developed, with the cornea globular, situated obliquely on a short stout stalk, which is wider than the diameter of the cornea and rather swollen proximally. No accessory pigment spot is discernible.

The antennulae are rather short. The peduncle exceeds the tip of the spine of the scaphocerite by half the length of the distal segment, and exceeds the tip of the rostrum by most of the distal segment. The proximal segment is about 2.2 times longer than wide. The lateral border is slightly convergent distally and a large disto-lateral lobe is present with an acute lateral tooth reaching beyond the level of the middle of the intermediate segment. A large acute leaf-like stylocerite is present, reaching beyond half the segment length. The statocyst is normal, with a granular statolith. A medial ventral spine is also present at about 0.6 of the length. The intermediate and distal segments are simple, with the distal segment about 1.5 times the length of the intermediate, and slightly more slender, together equal to 0.6 of the length of the proximal segment. The upper

flagellum is biramous, with the 5 proximal segments fused. The short free flagellum consists of a single segment and the longer slender flagellum of five segments. About 12 groups of aesthetascs are present. The lower flagellum is slender and consists of 11-12 segments.

The antenna has a robust basicerite, laterally unarmed but with a large process medially. The ischiocerite and merocerite are normal. The carpuocerite is moderately robust, compressed, about 4.5 times longer than wide, slightly bowed and distinctly exceeding the spine of the scaphocerite. The scaphocerite has the lateral border almost straight, terminating distally in a large acute tooth that extends far beyond the anterior margin of the lamina, which is about 2.0 times longer than the maximum width, which lies at about 0.75 of its length; the anterior margin of the scaphocerite is rather truncate. The flagellum is slender, about 3.0 times the post-orbital carapace length.

The mouthparts are similar to those of the type species, differing significantly only in the following features. The incisor process of the mandible is provided with a minute accessory tooth, adjacent to the single acute terminal tooth. The palp of the maxillula has the lower lobe with a non-setiferous ventral tubercle. The palp of the maxilla is more elongate, with a plumose seta arising at one third of the length of the medial margin and the lobes of the endites are more deeply separated. The first maxilliped has a plumose seta on the medial margin of the palp. The second maxilliped has the disto-medial lobe of the carpal segment more acutely pointed. The third maxilliped bears a vestigial arthrobranch.

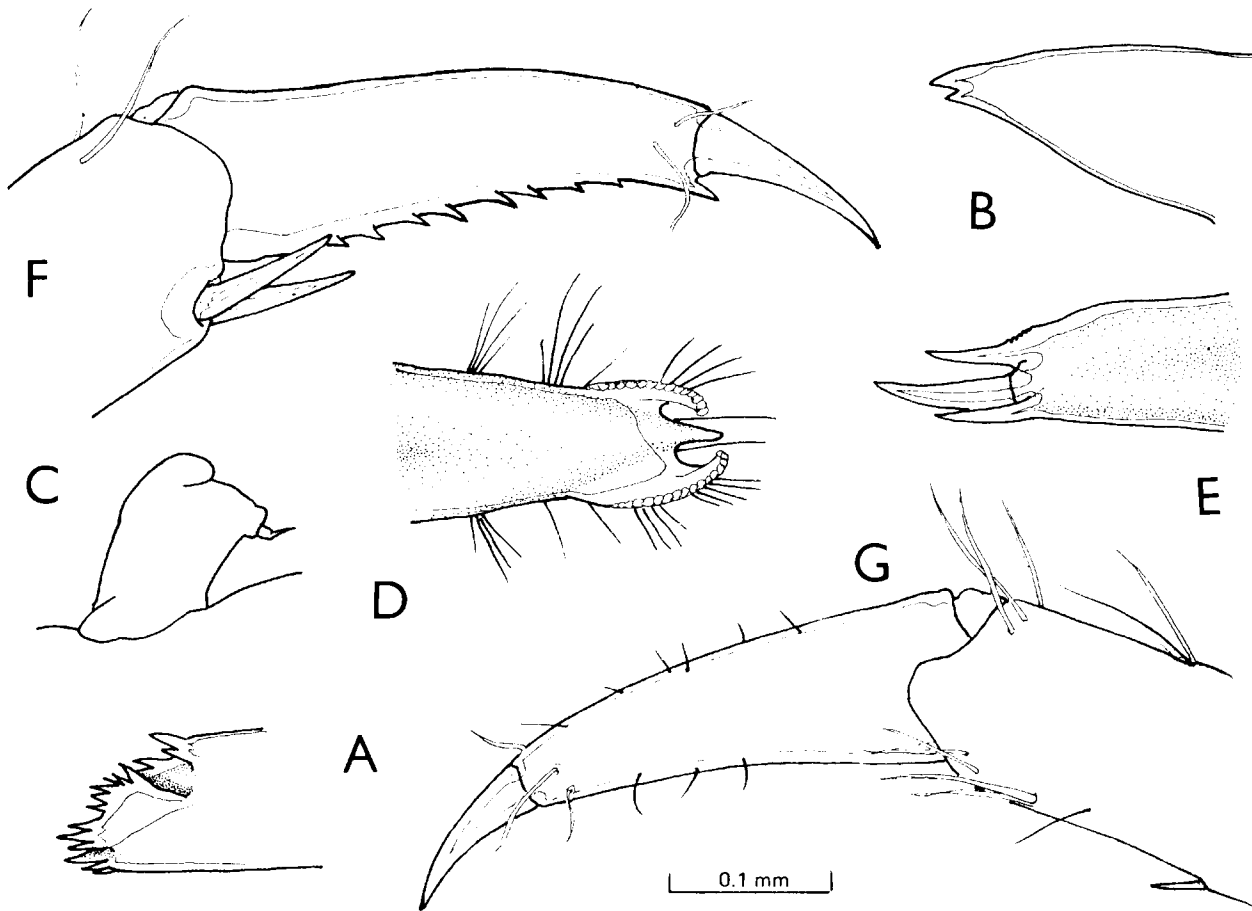


Fig. 6. *Epipontonia anceps* n. sp. A, major second pereiopod. B, chela of major second pereiopod, medial aspect. C, same, fingers, medial aspect. D, same, lateral aspect. E, chela of minor second pereiopod. F, same, fingers, lateral aspect. G, chela of minor second pereiopod. B-F, holotype; A, G, paratypes.

The fourth thoracic sternite is unarmed, and the following sternites are narrow.

The first pereiopods are slender, exceeding the distal end of the antennular peduncle by the distal fourth of the merus. The chela has the palm subcylindrical, slightly compressed, uniform, about 3.0 times longer than deep, with a few cleaning setae proximally. The fingers are slender, equal to about 0.6 of the palm length. The dactylus is narrow, about 3.5 times longer than deep with a small hooked tooth distally, flanked by expansions of the cutting edges which are denticulate and only present over the distal fourth, both medially and laterally, and separated by deep notches. The fixed finger is also slender and tapering, ending in central spine flanked by two shorter teeth, of which one is finely ribbed proximally on the cutting side. The carpus is about 1.5 times the length of the chela, tapered proximally and about 6.5 times longer than its distal width. The merus is slightly longer than the carpus, about 7.5 times longer than its central width. The ischium, basis and coxa present no special features. The coxa is without a median ventral process.

The second pereiopods are well developed, with large, robust, unequal chelae. The major chela has the palm oval in section, tapering slightly distally, finely tuberculate, about 1.7 times longer than the greatest depth, equal to about 1.2 of the post-orbital carapace length. The fingers are compressed, tapering, equal to 1.8–2.0 of the palm length. The dactylus has a stout strongly hooked tip, about 3.1 times longer than deep, with a feebly convex cutting edge, entire except for a small rounded tooth proximally. The fixed finger is tapering, distally acute but less strongly hooked than the dactylus, with the cutting edge entire, concave and grooved proximally, and with a small rounded knob on the proximal lateral aspect of the groove. The carpus is short and stout, equal to a little less than half the length of the palm, about 1.7 times longer than the maximum width, non-tuberculate and distally unarmed. The merus is slightly longer than the carpus, about 0.45 of the palm length, 2.2 times longer than deep, with a blunt disto-ventral angle and sparsely provided with acute tubercles ventrally. The ischium is about 0.8 of the meral length, 2.2 times longer than wide and tapered

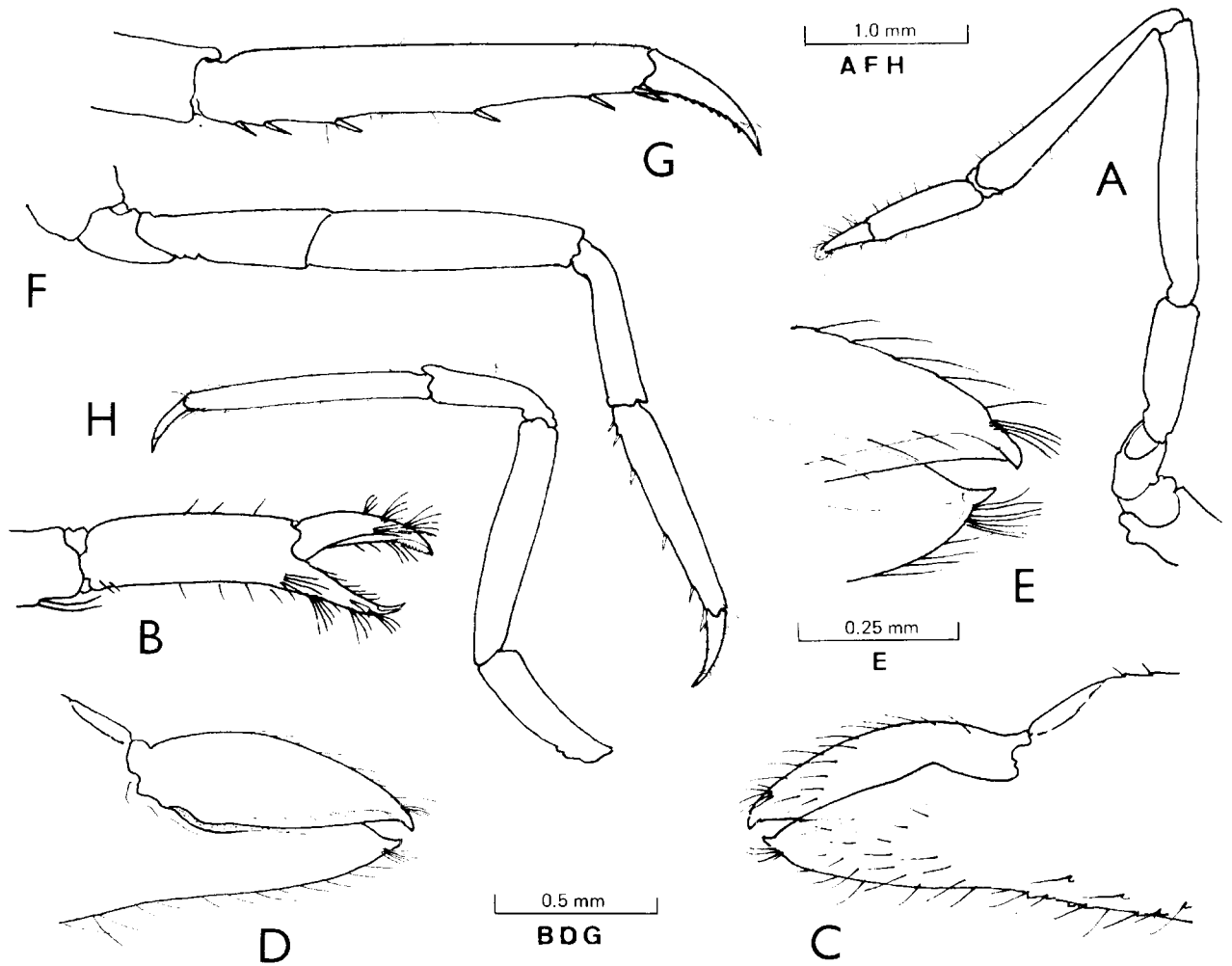


Fig. 7. *Epipontonia anceps* n. sp. Ovigerous female paratype. A, first pereiopod. B, chela of first pereiopod. C, fingers of minor second pereiopod, medial. D, same, lateral. E, finger tips of same. F, third pereiopod. G, propod and dactyl of third pereiopod. H, fifth pereiopod.

proximally. The basis and coxa are robust, without special features. The minor second pereiopod has the chela equal to about 0.6 of the length of the major chela. The palm of the chela is oval in section, feebly tapering distally, finely tuberculate, about 1.8 times longer than deep and equal to about 0.75 of the post-orbital carapace length. The fingers are compressed and tapering, with acute feebly-hooked tips, equal to about 0.7 of the palm length. The dactylus is about 3.0 times longer than deep, with the cutting edge mainly straight, unarmed, with a feeble blunt tooth proximally. The fixed finger is grooved through most of its length, with the medial border of the groove more strongly developed than the lateral and with a small rounded knob proximally. The carpus, merus and ischium are similar to those of the major chela but less robust.

The smallest ovigerous female bears only the minor chela, which differs slightly from the above description. The palm is about 1.85 times longer than wide, with the greatest width centrally rather than proximally, and with the fingers equal to about 0.6 of the palm length. The

dactylus is 3.0 times longer than deep, with the greatest depth at half the length rather than proximally, with the tip less robust and feebly hooked and the cutting edge deeply channelled with the medial border broadly expanded to form a shearing blade working in opposition to the cutting edge of the dactyl. The fingers are also more abundantly provided with long setae than in the other ovigerous female.

The juvenile female has both second pereiopods. The larger chela has the palm stout, about 1.6 times longer than deep, widest at about one third of its length and tapering moderately distally. The dactyl is about 2.6 times longer than deep, with a strongly hooked tip and a sinuous cutting edge with an acute tooth proximally. The fixed finger is very short and deep, with its length about 0.9 of its basal width. The cutting edge is grooved proximally with the ventral lip strongly concave and the dorsal distinct only proximally with an acute tooth. The minor chela is about 0.55 of the length of the major chela and resembles that of the female described above, with the fingers closing with a shearing action.

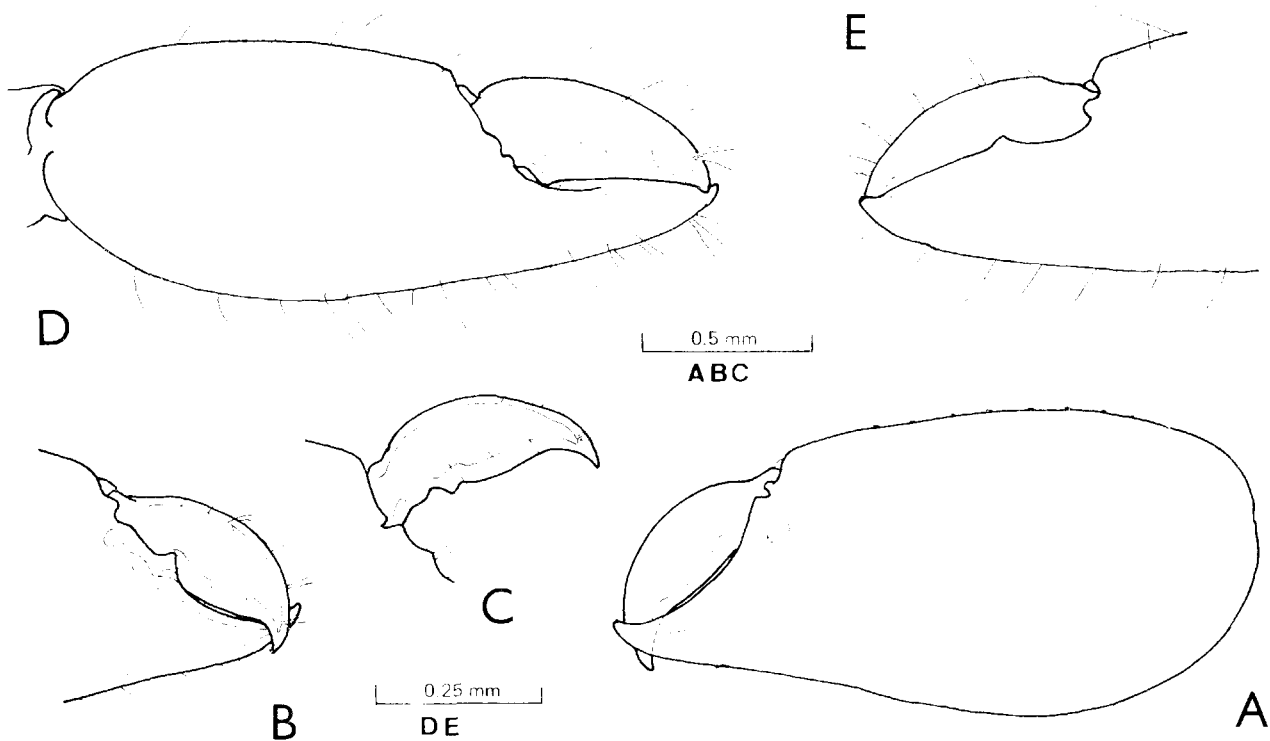


Fig. 8. *Epipontonia anceps* n. sp. Juvenile female. **A**, chela of major second pereiopod. **B**, fingers of same, medial aspect. **C**, dactylus of same. **D**, chela of minor second pereiopod. **E**, fingers of same, medial aspect.

The ambulatory pereiopods are slender. The third pereiopod extends anteriorly to exceed the carapocerite by the length of the propod and dactyl. The dactyl is slender, tapering, about 4.5 times longer than deep. The unguis is distinct, simple, acute, about 0.38 of the corpus length and 3.3 times longer than wide. The corpus is 3.4 times longer than wide with an acute disto-ventral accessory tooth and a series of 8 similar but slightly smaller spines distributed along the ventral border. The propod is 3.0 times the length of the dactyl, about 6.3 times longer than deep, tapering slightly distally with a pair of disto-ventral spines and five ventral spines. The carpus is 0.75 of the length of the propod, about 5.0 times longer than wide, uniform and unarmed. The merus is about 1.2 times the propod length, 4.5 times longer than deep, slightly tapered distally and unarmed. The ischium is about 0.85 of the propod length, broadening distally, unarmed and about 3.0 times longer than the distal width. The basis and coxa are normal. The fourth and fifth pereiopods are similar but progressively more slender. The dactylus of the fourth pereiopod has a small distal accessory spine on the corpus but the ventral border is devoid of denticles. The propod has a pair of disto-ventral spines and 1–2 ventral spines only. The fifth pereiopod has the dactylus simple. The propod is slightly longer than that of the third pereiopod, but only 9 times longer than wide, with a single disto-ventral spine only.

The protopodite of the uropod is short and laterally unarmed. The exopod has a convex lateral margin, unarmed but terminating distally in a small acute tooth,

with a large mobile spine situated rather remotely medially. The distal lamina is short, not exceeding the tip of the spine and the length is about 2.3 times the width. The endopod is 2.6 times longer than wide, of similar width to the exopod but distinctly longer.

The ova are numerous and small.

Coloration. Mainly transparent, with a dorsal white stripe outlined by red on the eyestalk. The ophthalmic somite and epistomal region to the first thoracic sternite, the coxa and basis of the first pereiopod and the cutting edges of the fingers of the second pereiopods are all white. The ovary is a translucent white, the stomach rusty red and the hepatopancreas purple.

Host. *Dysidea* sp. (Porifera).

Associated fauna. Four specimens of the alpheid shrimp *Synalpheus neomeris* (De Man) and a single example of the pontoniine shrimp *Typton wasini* Bruce were found on the same host sponge.

The Systematic Position of *Epipontonia anceps*

The genus *Epipontonia* contains only one other species, *E. spongicola* Bruce, 1977, which is closely related to the present species. *E. anceps* may be distinguished from *E. spongicola* by two morphological characteristics in particular: (i) the absence of any antennal spine, and (ii) the presence of three terminal spines on the fixed finger of the chela of the first pereiopod and the expanded, serrated cutting edges, extending forwards on either side of the terminal tooth

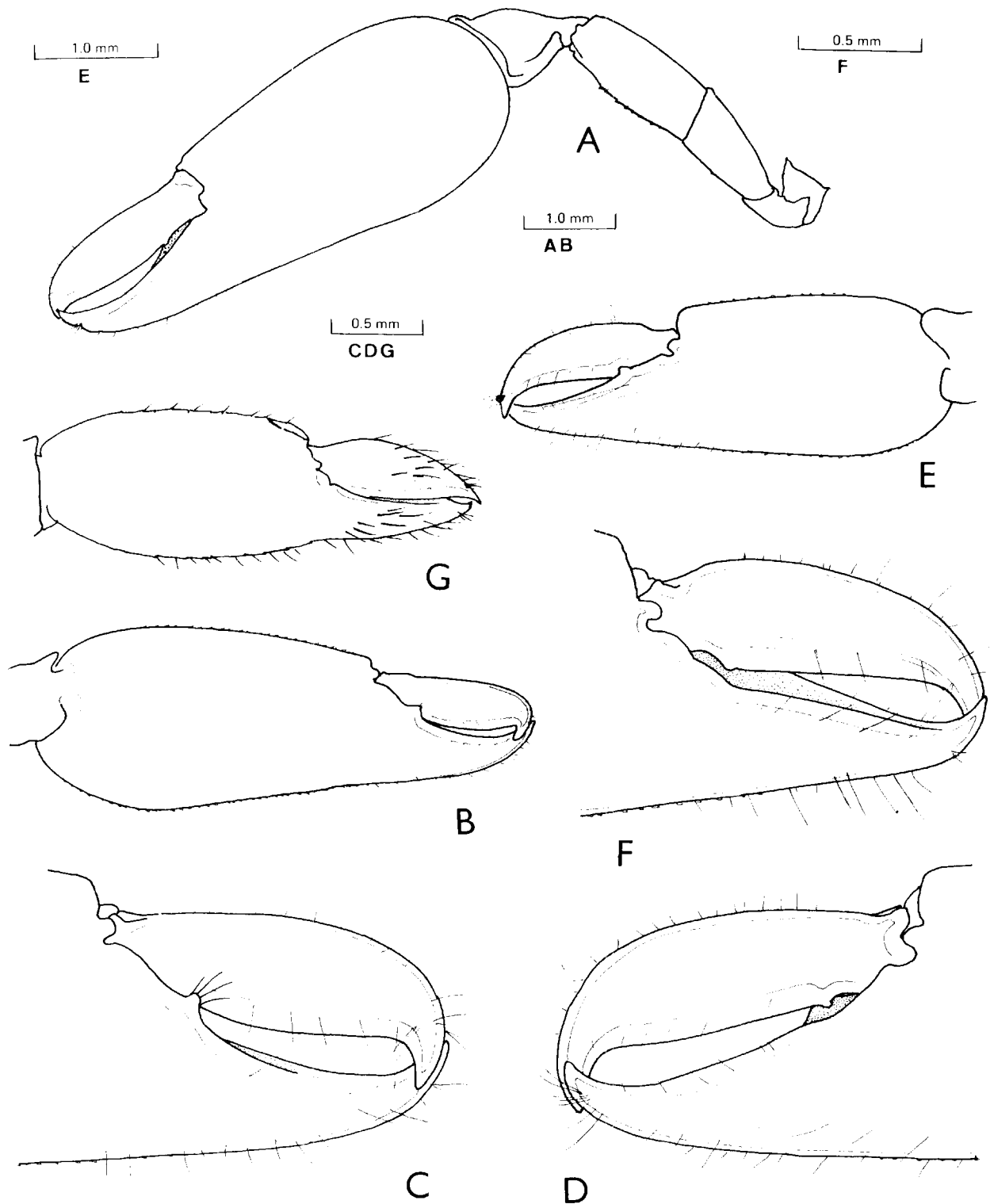


Fig. 9. *Epipontonia anceps* n. sp. Ovigerous female paratype. A, molar process of mandible. B, incisor process. C, palp of maxillula. D, tip of dactyl of first pereiopod. E, tip of fixed finger of first pereiopod. F, dactyl of third pereiopod. G, dactyl of fifth pereiopod.

on the dactylus. Other differences are that the rostral dentition is 6-7/1 compared with 9/1; that the second pereiopods are large and unequal, rather than small and

subequal, and that the corpus of the dactyl of the third pereiopod is denticulate throughout its length, instead of only along the proximal half.

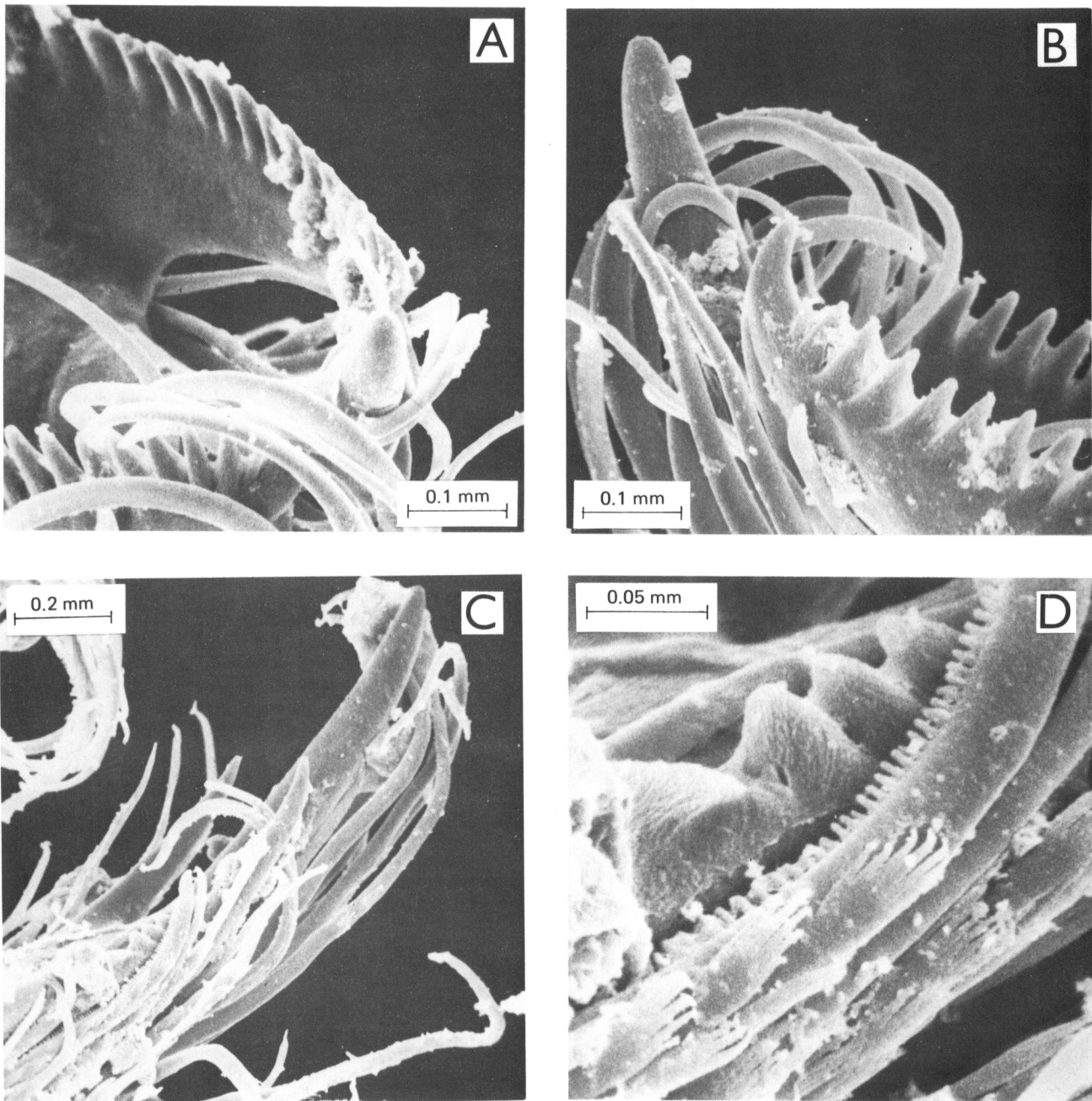


Fig. 10. *Epipontonia anceps* n. sp., paratype female. **A**, tip of dactyl of first pereiopods, view from the occlusal aspect, showing the strongly dentate lateral expansions, separated by a deep notch from the stout hooked terminal tooth. **B**, same, oblique lateral aspect. **C**, tip of fixed finger of chela of first pereiopod, showing slender accessory teeth adjacent to the slender, feebly-curved distal tooth. **D**, same, detail of small denticles on the base of the accessory spine, and the adjacent setae, showing pectinate inner border with palmate scales laterally.

Discussion

The single known example of *Epipontonia spongicola*, from Wasin Island, Kenya, was found in association with a sponge of the genus *Reniera* (Demospongida, Monaxonida). The present specimens of *E. anceps* were found in association with a sponge of a different subclass, of the genus *Dysidea* (Demospongida, Keratosa). Sponges of the genus

Dysidea have also been found to host three other pontoniine shrimps, *Typton wasini* Bruce, *Periclimenaeus bidentatus* Bruce and *P. rastrifer* Bruce.

The homology of the spine present over the lateral aspect of the orbit in *E. anceps* presents some difficulty in interpretation, as also occurs in the cases of several other pontoniine shrimps. The small spine present approximately over the upper edge of the basicerite in *E. spongicola* is considered to represent an antennal

spine and the larger spine situated at a more dorsal position at the level of the basiophthalmite, in both *E. spongicola* and *E. anceps*, is treated as a para-orbital spine, and homologous with the spines found in this situation in many of the species of the genus *Typton* Costa. A similar spine is also present in some species of *Onyccaris* Nobili, e.g. *O. longirostris*, but is absent in others such as *O. amakusensis* and *O. callyspongiae* (Bruce, 1980; Fujino & Miyake, 1969).

The occurrence of large and unequal chelae on the second pereopods in *E. anceps*, in contrast to the small and subequal chelae in *E. spongicola*, increases the resemblance of the genus to *Periclimenaeus* Borradaile but the present specimens are primarily distinguishable from species of that genus by the absence of a sound producing pit and hammer mechanism on the fingers of the major chela. The fingers of the minor chela do not generally oppose with a shearing action in *Periclimenaeus* and the second maxilliped is also

provided with a normally-developed epipod (Holthuis, 1952), which is absent in both species of *Epipontonia*.

ACKNOWLEDGEMENT. I am indebted to Dr J. Vacelet for the identification of the sponge host.

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Accepted 26 March 1981