



## ***Eupontonia oahu* sp. nov., a second species of the genus *Eupontonia* Bruce, 1971, (Crustacea: Decapoda: Pontoniinae) from Oahu, Hawai'ian Islands\***

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### **Abstract**

A new species of the pontoniine shrimp genus *Eupontonia* Bruce, 1971. *E. oahu* sp. nov., from the Hawai'ian island of Oahu, is described and illustrated. *Eupontonia oahu* is the second species of the genus and was found in association with *Pocillopora meandrina* L., confirming the association of this genus with scleractinian corals.

**Key words:** *Eupontonia oahu* sp. nov., Crustacea, Decapoda, Pontoniinae, Oahu, Hawai'i, taxonomy

### **Introduction**

The genus *Eupontonia* Bruce, 1971, was described on the basis of a single ovigerous female specimen from 0.3m on a coral reef on Mahé, Seychelle Islands (Bruce 1971). It has since been reported only from Jinyin Isand, Xisha Islands, in the South China Sea (Li 1997), again from a single ovigerous female found among corals in the island lagoon, indicating a wide but sparse distribution. Intensive studies of the pontoniine shrimp fauna of scleractinian corals has failed to produce any further specimens (Bruce 1998).

The present specimens were collected in the course of a survey of the fauna associated with scleractinian coral heads in shallow waters around Oahu, in the course of a study by S.L. Coles for the Environmental Department of the Hawaiian Electric Company. (A. Fielding, S.L. Coles, pers. com.) and reported upon by Coles (1980). Forty six specimens were collected, unfortunately all in a rather damaged condition with almost all pereopods detached. One specimen has a single second pereopod still attached and two detached second pereopods were preserved. Thus a full description can still be prepared. Initially thought to represent an undescribed genus, the specimens were found to be a second species of the genus *Eupontonia*.

The specimens are deposited in the collections of the Bishop Museum, Honolulu (BPBM), with two specimens in the Queensland Museum, Brisbane (QM). The numbers, 6B#3, etc., identify the coral colonies from which the specimens were obtained.

Abbreviations: CL = carapace length; R (rostrum) = dorsal teeth/ventral teeth; P = pereopod,

### **Systematics**

#### **Palaemonidae Rafinesque, 1815**

#### **Pontoniinae Kingsley, 1879**

#### ***Eupontonia* Bruce, 1971**

***Eupontonia oahu* sp. nov.**

(Figs. 1–5)

Pontoniinae, new genus A, sp. B. Coles, 1980: 284, tab. 2.

**Material examined.** 46 specimens, Kahe Point, Oahu, Hawai'an Islands, 15 June 1976 – 5 August 1977, coll. S. Coles, det. A. Fielding, BPBM Acc. No. 1977.554: (i), 6B#3, 15 June 1976, 1 specimen. BPBM-S15189; (ii), 10C#1, 22 June 1976, 1 specimen. BPBM-S15190; (iii), 6B#3, 13 July 1977, 12 specimens, BPBM-S15191; (iv), 6B#2, 13 July 1977, 1 paratype male, dissected, BPBM-S15192; (v), 10C#3, 22 July 1977, 1 male, BPBM-S15193; (vi), 7C#1, 22 July 1977, 1 specimen, BPBM-S15194; (vii), 7C#3, 22 July 1977, 2 spms. QM W28982; (viii), 7C#6, 5 August 1977, 1 male, 1 ?, BPBM-S15195; (ix), 7C#4, 5 August 1977, 12 specimens, 1 ovig. female, BPBM-S15196; (x), 7C#5, 5 August 1977, 4 specimens, BPBM-S15197; (xi), 6B#5, 5 August 1977, 4 specimens: 1 ovig. female, **holotype**, 1 paratype female, 2 paratype specimens, BPBM-S15198; (xii), 6B#5, 5 August 1977, 1 ad., BPBM-S15199; (xiii), 6B#1, 13 July 1977, 1 male, 1 juvenile. BPBM-S15200; (xiv), 6B#1, 13 July 1977, 1 specimen, BPBM-S15201; (xv), 7C#3, 14 April 1977, 1 ovigerous female, BPBM-S15202; (xvi), 5B#2, 13 July 1977, 1 specimen, BPBM-S15203; (xvii), 7C#5, 5 August 1977, 1 ovig. female, BPBM-S15204.

**Diagnosis.** A species of *Eupontonia* Bruce lacking supraorbital teeth and with dentate fingers on the second pereopods.

**Description.** A small pontoniine shrimp of subcylindrical body form. Rostrum (Figs. 1A–C, 3A) well developed, short acute, about 0.5 of CL, reaching to about middle of intermediate segment of antennular peduncle, dorsal carina well developed, low, with 4–5 small acute teeth, interdental setae sparse, distal tooth small, lateral carinae poorly developed, expanded slightly posteriorly, confluent with well developed supraorbital ridges, ventral carina obsolete, margin concave, sparsely setose, with single small acute distal tooth.

Carapace (Figs. 1A, 3A) smooth, glabrous, epigastric and hepatic spines absent, supraorbital ridges well developed, unarmed, inferior orbital angle obsolescent, antennal spine (Fig. 1D) well developed, slightly postmarginal, anterolateral angle of branchiostegite produced, rounded.

Abdomen (Fig. 1K) smooth, third tergite not posteriorly produced or carinate, sixth segment (Fig. 5A) about 1.4 times longer than deep, 0.42 of CL, 1.6 times length of fifth segment, posterolateral angle produced, acute, posteroventral angle small, acute, pleura of segments 1–4 rounded, margins non-setose, fifth segment pleuron with small posteroventral tooth.

Telson (Figs. 1L, M) about 9.57 of CL, 2.0 times longer than anterior width, lateral margins straight, posteriorly convergent, posterior margin angular, with small acute median process, with two pairs of well developed subequal submarginal dorsal spines, about 0.16 of telson length, posterior margin with lateral spines about 0.7 of dorsal spine length, intermediate spines long, almost half telson length, submedial spines setulose, about 0.5 of intermediate spine length.

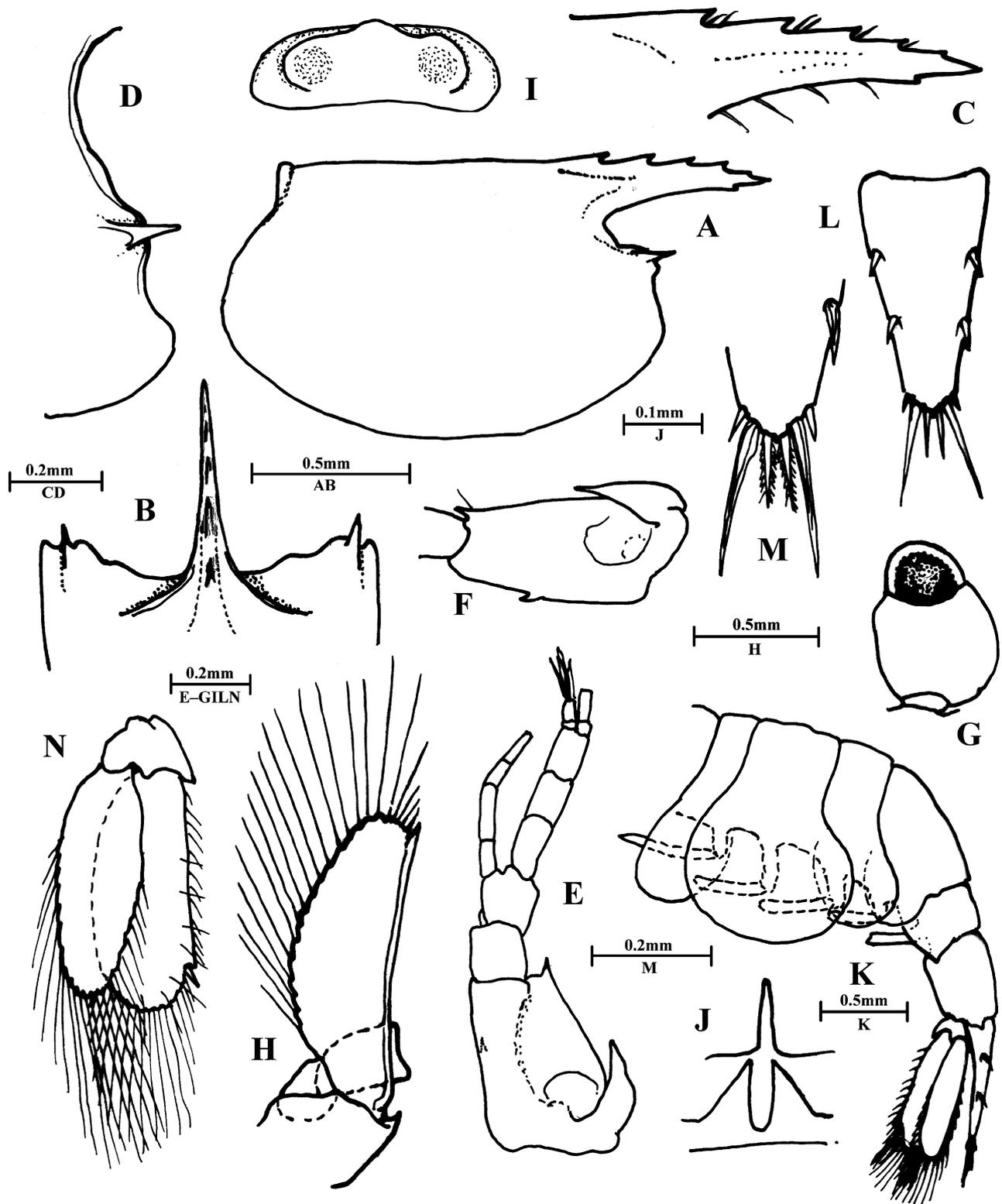
Eye (Fig. 1G) with well pigmented globular cornea, diameter about 0.3 of CL, 0.6 of stalk width, stalk 1.2 times wider than long, Ophthalmic somite without median process or pigment spot.

Epistome (Fig. 1I) about 3.0 times broader than long, with well developed hemispherical bosses laterally.

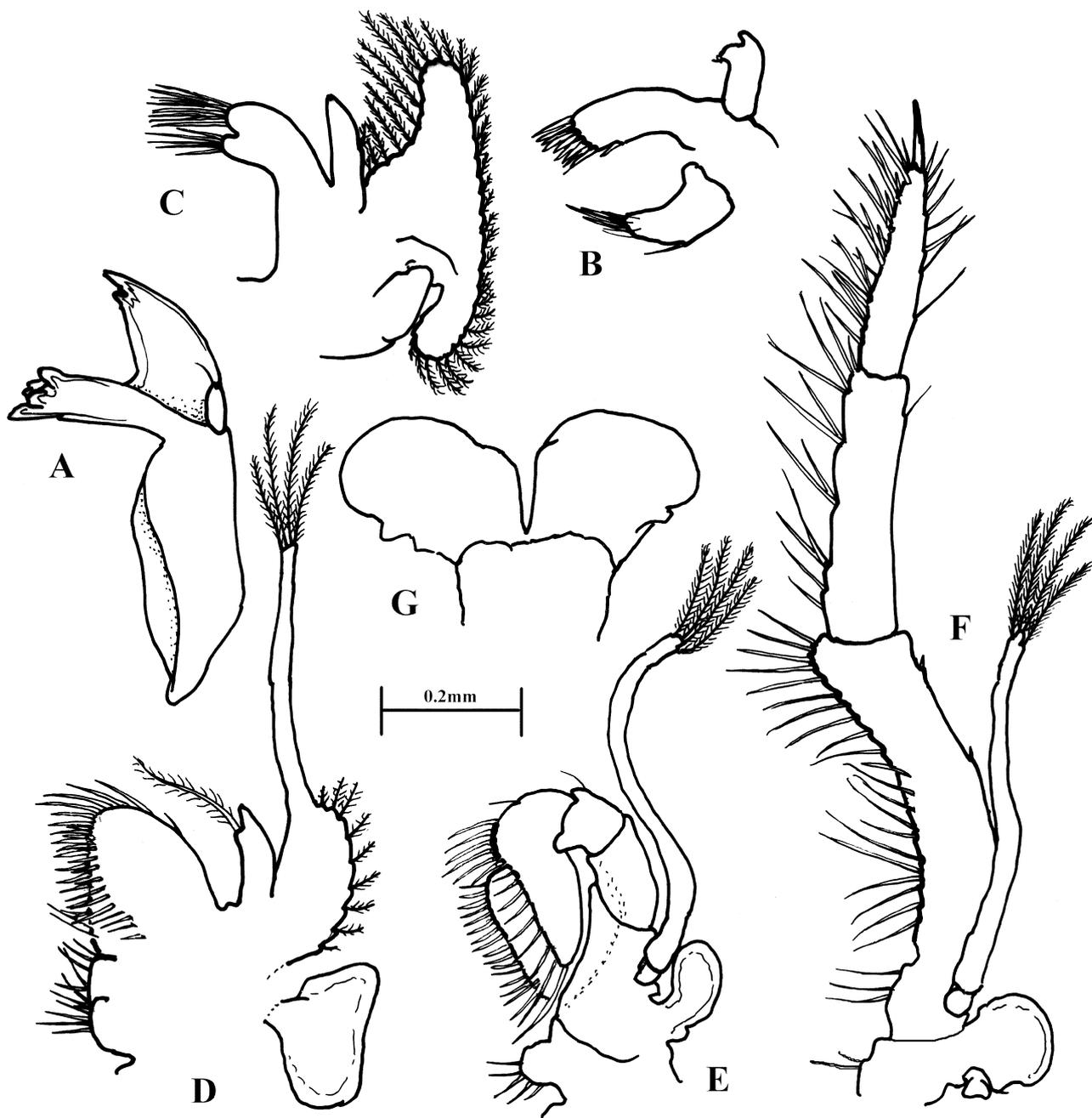
Antennule (Figs. 1E, F, 5B) with proximal segment of peduncle broad, about 1.25 times longer than wide, medial margin straight, non-setose, with small acute submarginal tooth ventrally at about half length, lateral margin convergent distally to small distolateral lobe with acute lateral tooth, sparsely setose, stylocerite acute reaching to half segment length, statocyst present, without statolith; intermediate and distal segments short, stout, subequal, as long as wide, together 0.66 of proximal segment length; upper flagellum biramous, rami with 3–4 proximal segments fused, shorter ramus with 1, sometimes obscurely 2, segments, 1–2 groups of aesthetascs, longer ramus with about 7 slender segments, lower flagellum slender, filiform, about 12 slender segments.

Antenna (Fig. 1H) with basicerite (Fig. 5C) with small acute distolateral tooth; coxicerite (Fig. 5C) with pair of small subacute disto-medial teeth ventrally, antennal gland protuberance well developed; merocerite and ischiocerite without special features; carpcocerite short, stout, subcylindrical, 1.4 times longer than wide,

about 0.27 of scaphocerite length; scaphocerite (Fig. 5D) well developed, reaching to end of antennular peduncle, medial margin slightly concave, about 3.0 times longer than central width, with small acute distal tooth (Fig. 5F) reaching to rounded distal margin of lamella in dissected female, exceeding lamella in male, plumose marginal setae well developed, robust, sparse, about 30; flagellum normal.



**FIGURE 1.** *Eupontonia oahu* sp. nov., non-ovigerous adult female. A, carapace and rostrum. B, same, anterior, dorsal. C, rostrum. D, carapace, anterior lateral region. E, antennule. F, same, proximal segment, oblique. G, eye, dorsal. H, antenna. I, epistome. J, fourth and fifth thoracic sternites. K, abdomen, lateral. L, telson. M, same, posterior spines (dorsal spine inset). N, uropod.



**FIGURE 2.** *Eupontonia oahu* sp. nov., non-ovigerous adult female. A, mandible. B, maxillula. C, maxilla. D, first maxilliped. E, second maxilliped. F, third maxilliped. G, paragnath.

Paragnath (Fig. 2G) with alae rounded, deeply separated, corpus short and broad, without special features.

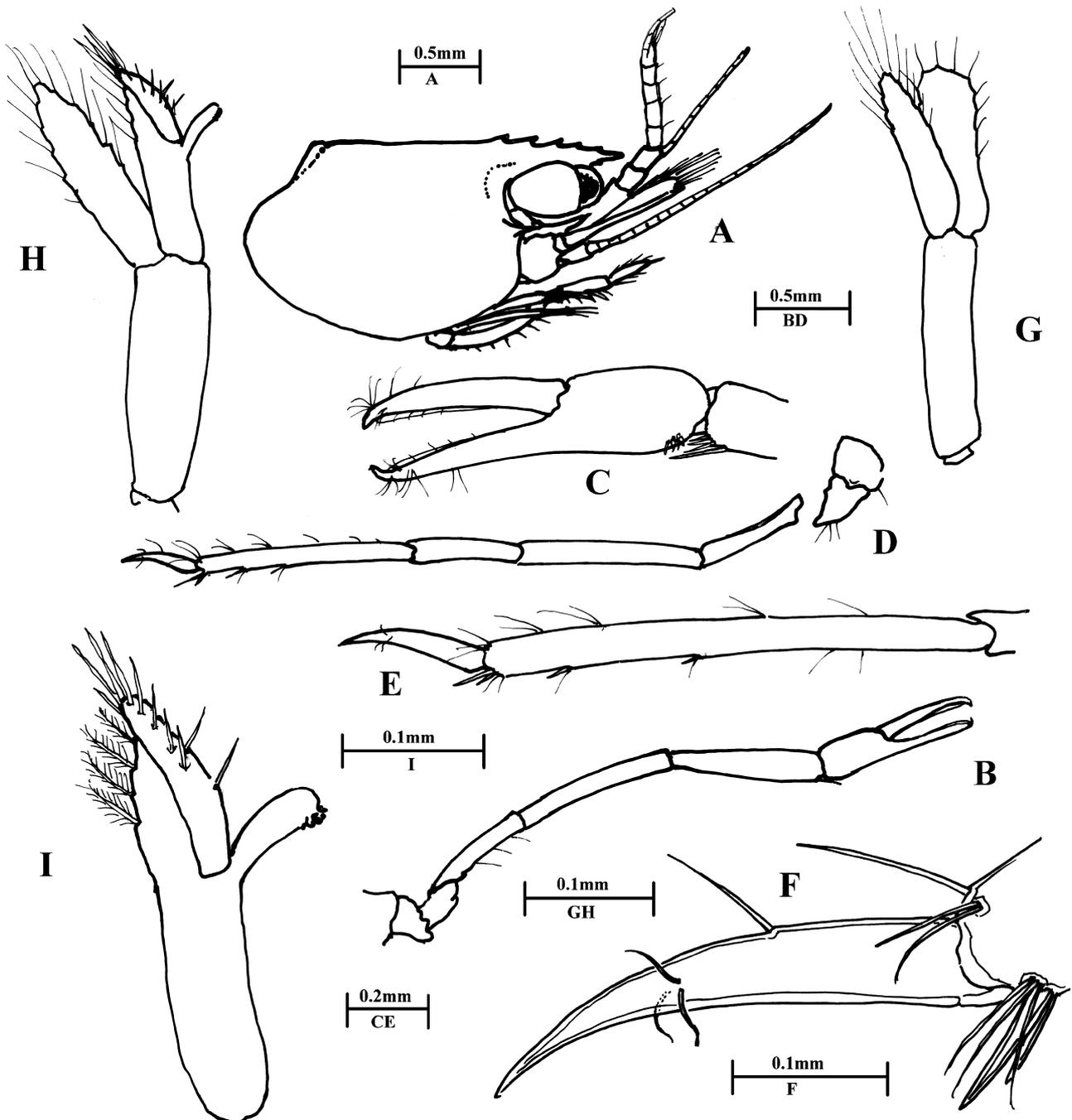
Mandible (Fig. 2A) with corpus robust, with small single segmented palp (Fig. 5H), about 2.5 times longer than wide, with single short simple terminal seta; molar processes (Fig. 5F) well developed, subcylindrical, expanding distally, each with 5 stout marginal teeth; incisor processes (Fig. 5G) broad proximally tapering distally, similar, distally truncate with 3 stout teeth.

Maxillula (Fig. 2B) with palp bilobed (Fig. 5I), lobes slightly acute, similar in size, lower lobe with small distal setiferous tubercle; upper lacinia (Fig. 5J) robust, subcylindrical, distally truncate, with 10 stout simple spines in double rows, with sparse slender setulose spines; lower lacinia tapering distally with 4–5 slender terminal spines.

Maxilla (Fig. 2C) with simple tapering palp, not exceeding basicerite lobes, with single short seta on lateral margin; basal endite feebly bilobed, lobes similar, each with about 9 and 5 slender, simple, terminal

setae; coxal endite not produced, margin straight, non-setose; scaphognathite small, slightly exceeding palp, 2.4 times longer than wide, anterior lobe 1.3 times longer than wide, distally narrow, medial margin strongly concave, posterior lobe small, rounded, 2.0 times longer than basal width.

First maxilliped (Fig. 2D) with palp short, not exceeding distal margin of basal endite, about 3.0 times longer than basal width, with well developed preterminal plumose seta medially; basal endite broad, anterolaterally convex, medial margin straight, with long simple spines distally, merging to shorter coarsely denticulate spines medially; coxal endite feebly bilobed, larger distal lobe quadrate with numerous feebly serrulate spines, proximal lobe rounded with 3 spines; endopod with well developed slender flagellum with 4 long plumose terminal setae, caridean lobe small, with only 10 short plumose marginal setae, epipod subtriangular.



**FIGURE 3.** *Eupontonia oahu* sp. nov., male. A, carapace and rostrum, anterior appendages. B, first pereiopod. C, same, chela. D, third pereiopod. E, same, propod and dactyl. F, same, distal propod and dactyl. G, first pleopod. H, second pleopod. I, same, endopod and appendices.

Second maxilliped (Fig. 2E) with dactylar segment about 3.0 times longer than wide, medial margin straight, densely fringed with numerous robust serrulate spines, longest distally; propodal segment distomedially rounded, feebly produced with 6–7 slender simple spines, ventral margin with 7 slender simple spines; carpus short, unarmed, with small distoventral lobe; merus without special features; ischio-basis medially excavate, exopod with slender flagellum with 4 long plumose terminal setae; coxa medially produced, rounded, with 6 slender simple spines, epipod suboval, without podobranch.

Third maxilliped (Fig. 2F) endopod exceeding carpocerite by terminal segment and distal fifth of carpal segment, slender, pediform; ischiomerus and basis fully fused, junction indicated by medial notch, combined segment bowed, about 5.5 times longer than central width, slightly expanded distally, medial margin with numerous long slender simple spiniform setae, longest distally, lateral margin with 2 minute spinules, penultimate segment about 0.66 of proximal segment length, subcylindrical, 5.0 times longer than wide, medial margin with 5–6 groups of paired slender simple spines, terminal segment 0.8 of penultimate segment length, 5.0 times longer than proximal width, with strong feebly serrulate apical spine about 0.2 of segment length, medial margin with 6 groups of feebly serrulate spines; coxa with small rounded spiniferous medial process, with well developed rounded lateral plate, possibly with small rudimentary arthrobranch.

Thoracic sternites (Fig. 1J) narrow, fourth thoracic sternite with long acute finger-like median process, fifth sternite with pair of large acute submedian teeth, about as long as fourth median process, separated by deep notch, posterior sternites unarmed.

First pereopod (Figs. 3B–C) slender, exceeding third maxilliped endopod by carpus and chela; chela oval in section, about 1.8 times longer than deep, tapering slightly distally, fingers slender, about 1.45 times palm length, dactyl 6.0 times longer than proximal depth, with well developed hooked tip, with sparse groups of short setae, cutting edge straight, distal half laminar, entire, unarmed, fixed finger similar; carpus subequal to chela length, 4.5 times longer than distal width, tapering slightly proximally; merus subcylindrical, subequal to chela length, slightly longer than carpus, 7.5 times longer than wide; ischium 0.8 of meral length; coxa (Fig. 5K) with small distoventral process with 3 long simple spiniform terminal setae.

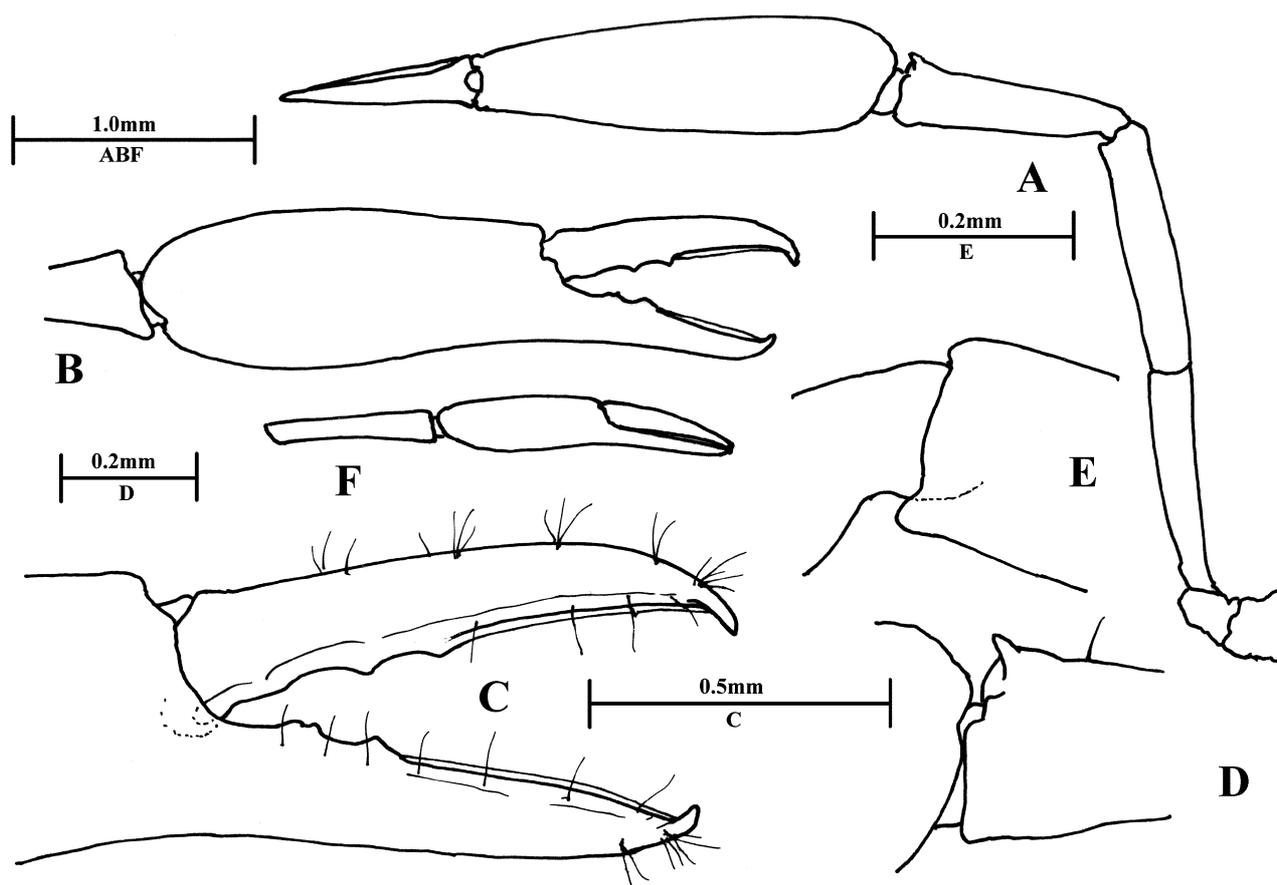
Second pereopods (Figs. 4A–F) mainly missing. One major pereopod attached, with 5 smaller unattributable detached second pereopods, possibly from females or juveniles.

Major second pereopod (Fig. 4A–E) with chela about 1.3 times CL, palm smooth, oval in section, about 2.5 times longer than deep, maximum depth at 0.33 of length, tapering distally, distal depth 0.7 of maximal depth, dactyl 0.62 of palm length, 5.6 times longer than proximal depth, with stout hooked tip, cutting edge (Fig. 4C) with 2 low acute teeth distally on proximal half, distal half laminar, entire, fixed finger similar, with 2 proximal teeth, distal tooth subacute, proximal tooth bicuspid; carpus 0.56 of palm length, 3.75 times longer than distal width, tapering proximally, feebly expanded distally with small acute dorsomedial tooth (Fig. 4D); merus 0.61 of palm length, slightly longer than carpus, 4.8 times longer than wide, sub-uniform, with small blunt distoventral tooth (Fig. 4E); ischium 0.56 of palm length, about 0.88 of meral length, 5.5 times longer than distal width, tapering slightly proximally, unarmed; basis and coxa without special features.

Minor or juvenile second pereopod (Fig. 4F) with chela about 0.75 of major chela palm length, fingers 0.8 of palm length, slender, unarmed; carpus subequal to palm length, unarmed.

Third pereopod (Figs. 3D) slender, exceeding scaphocerite by about half propod length; dactyl (Fig. 3F) about 0.28 of propod length, slender, unguis completely fused with corpus, moderately curved, about 5.4 times longer than basal width, dorsal margin with single rigid simple seta at 0.3 of length, 0.25 of dactyl length, ventral margin smoothly concave, unarmed, corpus with three short simple setae at 0.6 of length; propod (Fig. 3E) 0.95 of CL, 14.0 times longer than depth, with paired distoventral spines, longer spine 0.3, shorter spine about 0.15 of dactyl length, subequal to distal propod width, with shorter spine at 0.85, second ventral spine, even shorter, at 0.56 of ventral length, dorsal margin with sparse simple setae; carpus 0.5 of propod length, 4.5 times longer than wide. Fourth and fifth pereopods similar.

Male first pleopod (Fig. 3G) with basicerite 5.0 times longer than wide, exopod 0.75 of basipodite length, 4.5 times longer than wide; endopod subequal to exopod length, slightly expanded distally, without median accessory lobe, about 3.0 times longer than distal width, with short sparse plumose marginal setae.



**FIGURE 4.** *Eupontonia oahu* sp. nov., adult female. A, major second pereiopod. B, same, chela. C, same, fingers. D, same, distodorsal carpus. E, same, distoventral merus. F, minor or juvenile second pereiopod, carpus and chela.

Male second pleopod (Fig. 3H) with basipodite subequal to first pleopod basipodite length, 3.2 times longer than wide, exopod 0.95 of basipodite length, 1.3 times first pleopod exopod length, endopod (Fig. 3I) subequal to exopod length, with appendices at 0.6 of medial margin length, appendix masculina subcylindrical, about 0.6 of endopod length, with ventral row of 6 simple spines over distal half length, length increasing distally, three longer simple terminal spines, about 0.45 of corpus length, medial margin with two similar simple spines at 0.4 and 0.6 of length; appendix interna subcylindrical, slightly swollen, 0.45 of interna corpus length, with few distal cincinnuli.

Uropod (Fig. 1N) with protopod posteriorly acute; exopod subequal to telson length, 2.4 times longer than broad, lateral margin straight, with numerous submarginal setae ventrally, with small acute distolateral tooth (Fig. 5L), with longer mobile tooth; endopod subequal to endopod length, 2.75 times longer than wide.

**Measurements.** (mm) Holotype, ovigerous female, CL 1.05; carapace and rostrum, 1.6; total body length (approx.) 5.0; length of ovum, 0.4.

**Colouration.** No data.

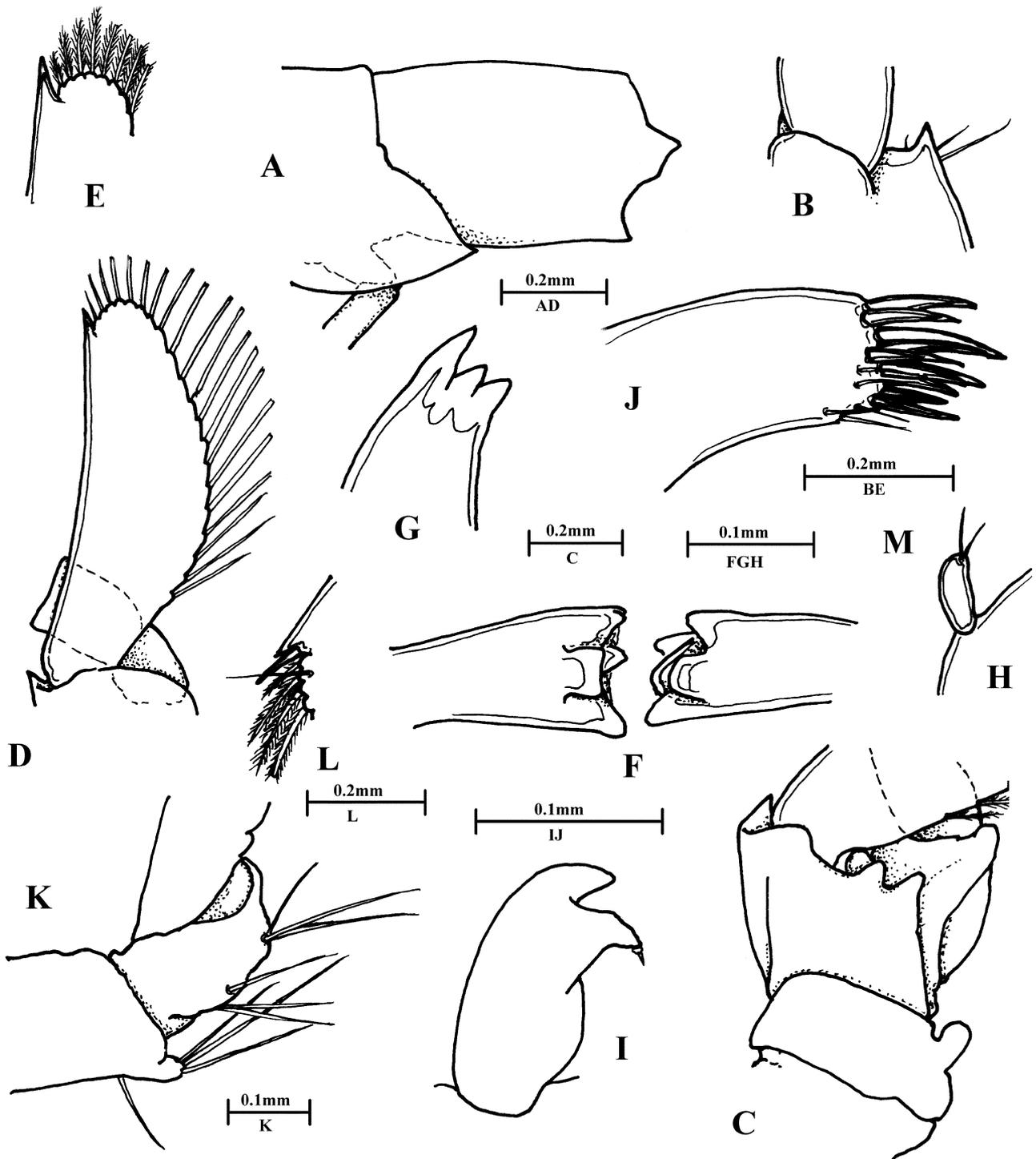
**Host.** *Pocillopora meandrina* Dana, 1846 [Pocilloporidae: Scleractinia].

**Etymology.** The species is named after the locality of capture, the Hawai'ian island of Oahu.

**Systematic position.** As the second species of the genus to be described, *E. oahu* sp. nov. is most closely related to the type species of the genus, *E. noctalbata* Bruce, 1971. It can be readily distinguished from that species by the lack of supraorbital teeth and the well developed dentition on the fingers of the second pereiopods. A number of additional smaller differences may also be noted.

The lateral rostral carinae are less well developed, the first segment of the antennular peduncle has less prominent distolateral and ventromedial teeth, the short flagellum is 1–2 segmented, *versus* 4 segmented; the scaphocerite has the lamella distally more rounded, rather than truncate, with the distolateral tooth smaller,

barely exceeding the lamella, *versus* a strong tooth that far exceeds the lamella, with also a more feeble lateral tooth on the basicerite.



**FIGURE 5.** *Eupontonia oahu* sp. nov., details. A, fifth and sixth abdominal segments. B, antennule, proximal segment, distolateral angle. C, antenna, basicerite and coxicerite, ventral. D, scaphocerite. E, same, distal lamella. F, mandibles, molar processes. G, same, incisor process. H, same, palp. I, maxillula, palp. J, same, upper lacinia. K, first pereopod, coxa. L, uropod, disto-lateral exopod. A–D, F–L, female; E, male.

**Remarks.** All specimens are in rather poor condition, damaged and with many (frequently all) appendages missing. The characteristic rostrum and carapace, lacking an hepatic tooth and supraorbital teeth, makes the damaged specimens readily recognisable.

The holotype of *E. noctalbata* was found in association with the coral *Galaxea fascicularis* (L.), so the collection of numerous specimens of *E. oahu* sp. nov. from a number of *Pocillopora* colonies confirms the status of the genus as a coral associate.

The original diagnosis of the genus (Bruce 1971) and the later definition (Bruce 1995) require emendation to include species without supraorbital teeth. With the elimination of supraorbital spines as a generic character, *Eupontonia* is seen to be more closely similar to *Vir* Holthuis, 1952 which presently includes 6 named species (Fransen & Holthuis 2007) and one un-named species (Bruce 1998). All known species of *Vir* are without supraorbital ridges, with or without spines, as found in *Eupontonia* species. In *V. smiti* Fransen & Holthuis, 2007, the fifth thoracic sternite is described as having “shallow lateral plates posteromedial of second pereopods” (Fransen & Holthuis 2007), contrasting strongly with large acute submedian teeth found in *E. oahu*. The condition of this sternite in *V. orientalis* Dana, 1852, the type species of the genus *Vir*, is unknown. *Vir philippinensis* Bruce & Svoboda, 1984, is reported to have the fifth sternite unarmed (Bruce & Svoboda 1984). The fifth sternite in *E. noctalbata* has also not been described, but is likely to be similar to *E. oahu*. The antennular flagella in *Eupontonia* are with the fused rami of three segments only and a short ramus of 1–4 segments only, both are much more numerous in *Vir*. The dorsal telson spines in both species of *Eupontonia* are well developed in contrast to *Vir* species, in which they are quite small. Similarly, the intermediate posterior spines are particularly long, almost half the telson length, as opposed to about 0.2 of the telson length in *Vir*. The key provided by Bruce (1995: 11) is erroneous and should now be emended to read as follows:

- 3a. Fourth thoracic sternite with finger-like median process ..... 4
- 3b. Fourth thoracic sternite unarmed ..... 5
- 4a. Hepatic spine present ..... *Palaemonella*
- 4b. Hepatic spine absent ..... 4c
- 4c. Without postorbital dorsal rostral teeth, supraorbital ridges present, maxillipedal exopods with 4 long plumose terminal setae, fourth thoracic sternite with large acute submedian tooth, ambulatory propods with ventral spines, dorsal telson spines large, posterior spines long ..... *Eupontonia*
- 4d. With postorbital dorsal rostral teeth, supraorbital ridges absent, maxillipedal exopods with numerous long plumose setae, fourth thoracic sternite unarmed, ambulatory propods without ventral spines, dorsal telson spines small, posterior spines short ..... *Vir*

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