PROC. BIOL. SOC. WASH.
104(1), 1991, pp. 101–137

COPEPODA ASSOCIATED WITH THE SCLERACTINIAN CORAL GENUS *MONTIPORA* IN THE INDO-PACIFIC

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Abstract.—Six new species and 2 new genera, *Hetairosyna* and *Tychomyzon,* are added to the 14 species of copepods already known to be associated with various species of the hard coral genus *Montipora* in the Indo-Pacific. The new species include the cyclopoid *Euryte bellatula,* the asterocherid siphonostomatoids *Hetairosyna terpna, Hetairosyna laciniata, Hetairosyna sororia,* and *Tychomyzon petalum,* and the lichomolgid poecilostomatoid *Haplomolgus incolumis.* New host and locality records for the lichomolgids *Haplomolgus montiporae* Humes & Ho, 1968, and *Odontomolgus forhani* Humes, 1978, are given. A list of all copepods known to be associated with *Montipora* is provided.

The acroporid scleractinian coral genus *Montipora* is widespread in shallow waters of the tropical Indo-Pacific Ocean, from Madagascar and the Red Sea to Japan, Australia, Hawaii, and the Marquesas (Veron 1986). Two hundred and eleven nominal species are known, but the number of true species is unknown, with 38 true species reported from Australia (Veron 1986). Copepods are associated with species of *Montipora* in Madagascar (Humes & Ho 1968a, 1968b; Humes & Dojiri 1982, 1983), Mauritius (Stock 1966); India (Sebastian & Pillai 1974); the Moluccas (Humes 1978, Humes & Dojiri 1982); northeastern Australia (Humes 1978, 1984; Humes & Dojiri 1982), New Caledonia (Humes 1978, Humes & Dojiri 1982); and Hawaii (Humes 1984).

In this work a new species of copepod is reported from *Montipora* at Enewetak Atoll in the Marshall Islands. Other new species, representing two new genera, are described from Madagascar, the Moluccas, northeastern Australia, and New Caledonia. New host and distribution records are recorded for certain species. The number of species of copepods living with members of this large coral genus is now increased from 14 to 20. A list of the corals and their associated copepods is provided.

Materials and Methods

The collection of the copepods covered a span of 19 years, from 1963–1982. Since the colonies of *Montipora* were often too large to be collected whole, fragments were isolated in plastic bags in sea water. In the laboratory, the corals were soaked for several hours in sea water with sufficient ethyl alcohol added to make a solution of approximately 5%. After rinsing the corals, the water was passed through a fine net (120 holes per 2.5 cm, each hole approximately 120 μm square). The copepods were then removed from the sediment retained in the net.

The copepods were measured and dissected in lactic acid, using the wooden slide technique described by Humes & Gooding (1964). All figures were drawn with the aid of a camera lucida. The letter after the explanation of each figure refers to the scale at which it was drawn. The body length does not include the setae on the caudal rami. The lengths of the segments of the first an-

tennae were measured along their posterior nonsetiferous margins. In the formulas for the armature of legs 1–4 the Roman numerals indicate spines, the Arabic numerals represent setae.

The abbreviations used are: R = rostrum, A_1 = first antenna, A_2 = second antenna, S = siphon, MD = mandible, P = paragnath, MX_1 = first maxilla, MX_2 = second maxilla, MXPD = maxilliped, and P_1 = leg 1.

Order Cyclopoida Burmeister, 1834
Family Cyclopidae Dana, 1853
Genus *Euryte* Philippi, 1843

Euryte bellatula, new species
Figs. 1, 2, 3

Type material.—4 ♀, 2 ♂ from *Montipora compressa* (Esper), in 2 m, Natsepa, Ambon, Moluccas, 03°37′05″S, 128°17′00″E, 28 May 1975. Holotype ♀ (USNM 254456), allotype (USNM 254457), and 3 paratypes (2 ♀, 1 ♂) (USNM 254458) deposited in the National Museum of Natural History, Smithsonian Institution, Washington, D.C. One female paratype (dissected) in the collection of the author.

Other specimens.—6 ♀ from *Montipora lobulata* Bernard, in 0.5 m, Rocher à la Voile, Noumea, New Caledonia, 22°18′24″S, 166°25′50″E, 17 Jun 1971 (1 ♀ dissected); 4 ♀, 1 ♂ from *Montipora caliculata* (Dana), in 1.5 m, Ricaudy Reef, near Noumea, 22°19′05″S, 166°26′28″E, 25 Jun 1971; 1 ♀ from *Montipora ramosa* Bernard, in 2 m, north of Isle Maître, near Noumea, 22°19′30″S, 166°24′35″E, 13 Jul 1971; 1 ♀, 1 ♂ from *Montipora prolifera* Brueggemann, in 3 m, southern shore of Goenoeng Api, Banda Islands, Moluccas, 04°32′05″S, 129°52′30″E, 26 Apr 1975 (♂ dissected); 2 ♀ from *Montipora verrilli* Vaughan, in 3 m, Mermaid Cove, Lizard Island, northeastern Australia, 14°39′50″S, 145°27′00″E, 27 Oct 1982.

Female.—Body (Fig. 1a) slender and elongate. Length 0.83 mm (0.80–0.87 mm) and greatest width 0.31 mm (0.30–0.32 mm), based on 10 specimens. Greatest dorsoventral thickness 0.22 mm. Epimera of segment bearing leg 1 pointed posteriorly, those of segments bearing legs 2 and 3 subtruncate, and those of segment bearing leg 4 rounded. Ratio of length to width of prosome 1.52:1. Ratio of length of prosome to that of urosome 1.25:1.

Segment bearing leg 5 (Fig. 1b) 47 × 161 μm in dorsal view, pointed posterolaterally. Genital segment in dorsal view (Fig. 1c) elongate, 107 μm long, 86 μm in greatest width, and 58 μm in least width. Lateral spiniform process (Fig. 1c, d) present on both sides almost midway on segment. Genital areas located dorsolaterally near widest part of segment (Fig. 1c), both areas connected by duct to single midventral pore (Fig. 1d, e). Each area with 2 small hyaline setae approximately 20 μm (Fig. 1d). Three postgenital segments from anterior to posterior 39 × 55, 31 × 52, and 44 × 47 μm.

Caudal ramus (Fig. 1f) elongate, unornamented, 73 × 18 μm, ratio 4.06:1. Outer lateral seta short, 15 μm, dorsal seta 28 μm, both smooth. Outermost terminal seta 52 μm, innermost terminal seta 96 μm, and 2 long median terminal setae 210 μm (outer) and 340 μm (inner), all with lateral setules.

Body surface without visible ornamentation.

Egg sac (seen on only 1 female) (Fig. 1g) containing 2 eggs 125 × 125 μm and 146 × 120 μm.

Rostrum (Fig. 2a, b) linguiform. First antenna (Fig. 2c) 273 μm long, 21-segmented. Lengths of segments: 28 (53 μm along anterior margin), 20, 11, 7.5, 6.5, 6.5, 6.5, 6.5, 11, 12, 13, 10, 9, 9, 11, 9, 9, 9, 12, 12, and 20 μm, respectively. Armature: 8, 3, 2, 2, 2, 2, 2, 2, 2, 1, 1, 1, 1, 0, 1, 1, 1, 1, 2, 2, and 8. All setae smooth.

Second antenna (Fig. 2d) 4-segmented, 160 μm long without setae. Armature: 3, 1, 5, and 6, with 4 terminal setae slightly geniculate. Fourth segment with row of inner marginal setules.

Labrum (Fig. 2a, e) with median denticles

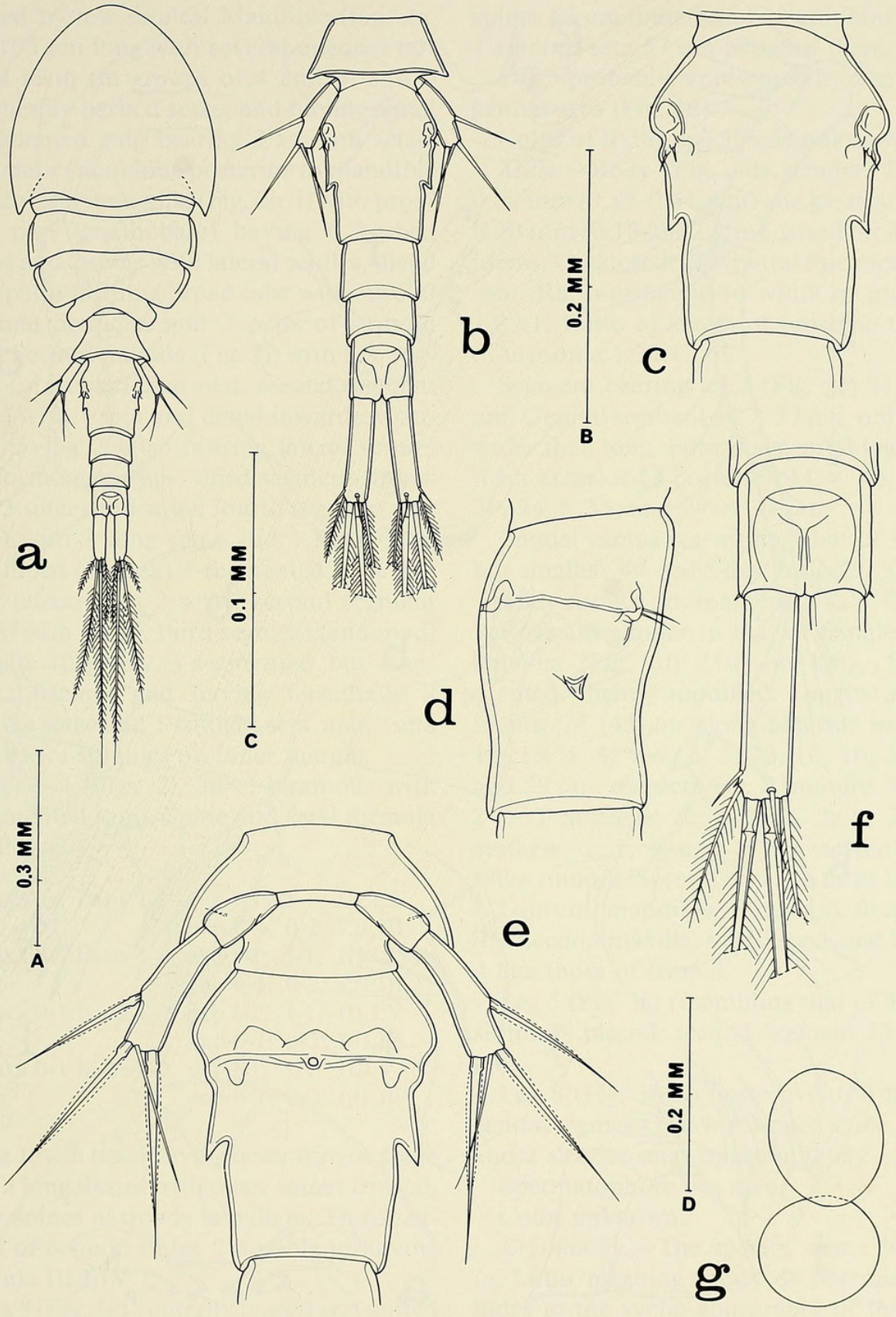

Fig. 1. *Euryte bellatula,* female. a, Dorsal (scale A); b, Urosome, dorsal (B); c, Genital segment, dorsal (C); d, Genital segment, lateral (C); e, Segment bearing leg 5 and genital segment, ventral (C); f, Anal segment and caudal ramus, dorsal (C); g, Egg sac, ventral (D).

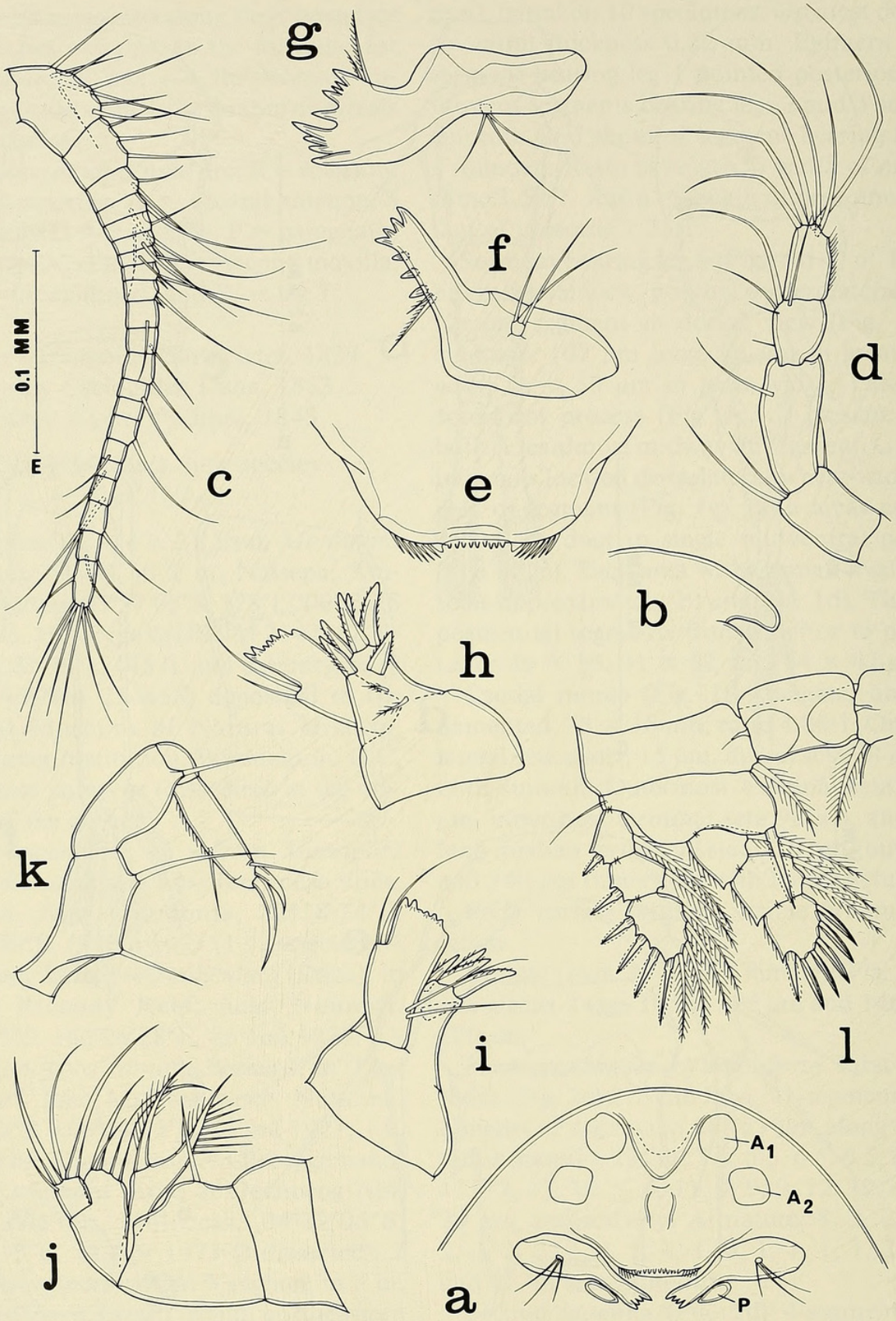

Fig. 2. *Euryte bellatula,* female. a, Rostrum, labrum, mandibles, and paragnaths, ventral (scale B); b, Outline of rostrum, lateral (B); c, First antenna, anterodorsal (E); d, Second antenna, postero-inner (E); e, Labrum, ventral (C); f, Mandible, ventral (C); g, Mandible, flat inner view (C); h, First maxilla, inner (C); i, First maxilla, outer (C); j, Second maxilla, inner (C); k, Maxilliped, inner (C); l, Leg 1 and intercoxal plate, anterior (E).

flanked by few setules. Mandible (Fig. 2a, f, g) 105 μm long with several unequal terminal teeth (in groups of 4 and 5) and 2 unilaterally barbed setae, and having small 1-segmented palp bearing 3 smooth setae. Paragnath small lobe posterior to mandible (Fig. 2a). First maxilla (Fig. 2h, i) with proximal part (gnathobase) having 6 barbed spines and 2 setae with lateral setules, distal part (palp) forming broad lobe with several terminal denticles and 2 pairs of smooth setae. Second maxilla (Fig. 2j) with first segment (praecoxa) unarmed, second segment (coxa) with 1 seta and distal inward expansion having 2 setae bearing lateral setules and forming forceps, third segment (basis) with 3 setae, and small fourth segment (exopod) with 3 long setae and 1 short seta. Maxilliped (Fig. 2k) 3-segmented, first segment (coxa) with 2 setae, second segment (basis) with 1 seta, third segment (endopod) elongate (possibly 3-segmented but divisions obscure) and having terminally 2 clawlike setae and 1 straight seta, and 1 seta and row of spinules on inner margin.

Legs 1–4 (Figs. 2l, 3a–c) biramous with 3-segmented rami. Spine and setal formula as follows:

P_1 coxa 0-1 basis 1-I	exp I-1;	I-1;	III,I,4
	enp 0-1;	0-2;	I,II,III
P_2 coxa 0-1 basis 1-0	exp I-1;	I-1;	III,I,IV,1
	enp 0-1;	0-2;	I,II,III
P_3 coxa 0-1 basis 1-0	exp I-1;	I-1;	III,I,V
	enp 0-1;	0-2;	I,II,III
P_4 coxa 0-1 basis 1-0	exp I-1;	I-1;	II,I,V
	enp 0-1;	0-2;	I,II,II

Leg 1 with basis having inner fringed spine 39 μm long. Rami with outer spines fringed, inner spines narrowly lamellate. Third segment of exopod of leg 2 notable in having formula III,I,IV,1.

Leg 5 (Fig. 1e) ventrally placed and united midventrally by narrow sclerite. First segment 26 × 15 μm with 1 short dorsal seta. Second segment elongate, 49 × 13 μm, unornamented, with 1 outer lateral fringed spine 52 μm, and terminally with 2 fringed spines 65 μm (outer) and 78 μm (inner) and 1 smooth seta 57 μm between them.

Leg 6 probably represented by 2 setae on genital area (Fig. 1d).

Color of living specimens unknown.

Male.—Body (Fig. 3d) slender. Length 0.59 mm (0.55–0.61 mm) and greatest width 0.20 mm (0.18–0.22 mm), based on 4 specimens. Greatest dorsoventral thickness 0.16 mm. Ratio of length to width of prosome 1.89:1. Ratio of length of prosome to that of urosome 1.32:1.

Segment bearing leg 5 (Fig. 3e) 31 × 67 μm. Genital segment 44 × 57 μm, only little wider than long. Four postgenital segments from anterior to posterior 34 × 42, 30 × 39, 24 × 35, and 29 × 34 μm.

Caudal ramus resembling that of female but smaller, 44 × 15 μm, ratio 2.93:1.

Body surface unornamented as in female.

Rostrum similar to that of female. First antenna (Fig. 3f) 210 μm long, 15-segmented, slightly modified. Lengths of segments: 26 (43 μm along anterior margin), 16, 15, 5, 4, 4, 9, 8, 3, 23, 10, 10, 21, 23, and 29 μm, respectively. Armature: 8, 3, 2, 2 + 1 aesthete, 2, 2, 2, 2, 2, 1, 2 + 1 aesthete, 2, 1, 3, and 8 + 1 aesthete. All setae smooth. Second antenna as in female.

Labrum, mandible, paragnath, first maxilla, second maxilla, maxilliped, and legs 1–4 like those of female.

Leg 5 (Fig. 3g) resembling that of female, similarly placed, second segment 33 × 12 μm.

Leg 6 (Fig. 3h, i) posteroventral flap on genital segment bearing fringed spine 15 μm and 2 slender setae approximately 11 μm.

Spermatophore not seen.

Color unknown.

Etymology.—The specific name *bellatula,* Latin meaning pretty or charming, alludes to the svelte appearance of this species.

Remarks.—Vervoort (1964:39) listed six nominal species, one variety and one undetermined species in the genus *Euryte,* and described one new species, *Euryte pseudo-*

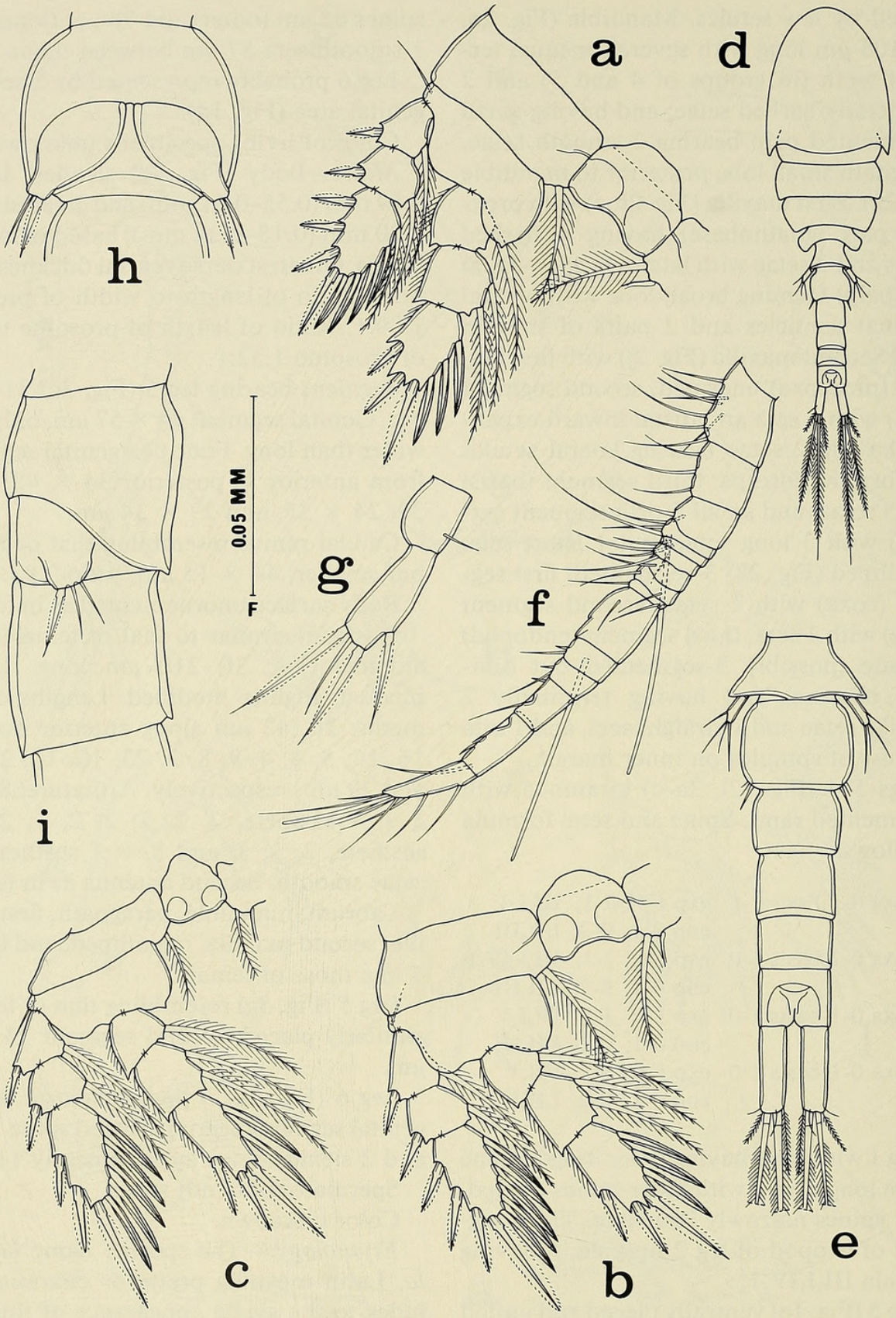

Fig. 3. *Euryte bellatula.* Female. a, Leg 2 and intercoxal plate, anterior (scale E); b, Leg 3 and intercoxal plate, anterior (E); c, Leg 4 and intercoxal plate, anterior (E). Male: d, Dorsal (A); e, Urosome, dorsal (E); f, First antenna, dorsal (C); g, Leg 5, lateral (F); h, Genital segment with leg 6, ventral (F); i, Genital segment and first postgenital segment, lateral (F).

robusta. Ummerkutty (1970) listed eight species and one variety. As far as can be determined, no new species have been added in recent years, and the number of congeners remains at eight or nine, depending upon whether varieties are treated as species.

Euryte bellatula differs from all previously described species in the genus. The formula III,I,IV,1 for the third segment of the exopod of leg 2 distinguishes the new species from *Euryte robusta* Giesbrecht, 1900 (length of the female 1.20–1.40 mm, Sars 1913), *E. curticornis* Sars, 1913 (short first antenna, Sars 1913, pl. XIV), and *E. pseudorobusta* Vervoort, 1964 (short caudal ramus, 2:1, Vervoort 1964), all of which have the formula III,I,V for the third segment of the exopod of leg 2. *Euryte brevicauda* Sewell, 1949, has a caudal ramus about 1.5:1 (Sewell 1949:35). *Euryte similis* T. Scott, 1912, has a more robust distal segment in leg 5 of the female, and has the formula I,II,III for the third segment of the endopod of leg 4 (T. Scott 1912, pl. 1, 21, 22). *Euryte longicauda* Philippi, 1843, has long caudal rami, about 9:1 (Sars 1913, pl. XII).

Order Poecilostomatoida Thorell, 1859
Family Lichomolgidae Kossmann, 1877
Genus *Haplomolgus* Humes & Ho, 1968
Haplomolgus incolumis, new species
Figs. 4, 5, 6

Type material.—128 ♀, 51 ♂ from *Montipora caliculata* (Dana), in 1.5 m, Ricaudy Reef, near Noumea, New Caledonia, 22°19′00″S, 166°27′18″E, 25 Jun 1971. Holotype ♀ (USNM 254471), allotype (USNM 254470), and 167 paratypes (122 ♀, 45 ♂) (USNM 254469) deposited in the National Museum of Natural History, Smithsonian Institution, Washington, D.C. Remaining paratypes in the collection of the author.

Female.—Body (Fig. 4a) elongate, prosome moderately broad. Length 1.19 mm (1.11–1.24 mm) and greatest width 0.43 mm (0.41–0.44 mm), based on 10 specimens. Greatest dorsoventral thickness 0.35 mm. Epimera of segments bearing legs 1–4 rounded. Segment bearing leg 1 fused with cephalosome. Ratio of length to width of prosome 1.68:1. Ratio of length of prosome to that of urosome 1.26:1.

Segment bearing leg 5 (Fig. 4b) 104 × 221 μm. Genital segment in dorsal view subquadrate, 138 × 151 μm, little wider than long, in lateral view notched dorsally (Fig. 4c). Genital areas situated dorsolaterally in anterior half of segment and connected by transverse, very broadly U-shaped bar. Each area with 2 minute setae approximately 5 μm (Fig. 4c). Three postgenital segments from anterior to posterior 78 × 104, 81 × 99, and 52 × 65 μm.

Caudal ramus (Fig. 4d) elongate, 117 × 21 μm, width taken at middle, ratio 5.57:1. Outer lateral seta 57 μm, dorsal seta 73 μm, outermost terminal seta 52 μm, innermost terminal seta 92 μm, and 2 median terminal seta 185 μm (outer) and 220 μm (inner). All setae smooth.

Egg sac containing 1 egg 153 × 125 μm (Fig. 4e), 135 × 122 μm (Fig. 4f), 187 × 135 μm (Fig. 4g), 2 eggs 159 × 140 μm (Fig. 4h), 3 eggs (Fig. 4i), or 4 eggs (Fig. 4j).

Rostrum (Fig. 4k) moderately elongate, linguiform. First antenna (Fig. 4l) 280 μm long. Lengths of its 7 segments: 24 (55 μm along anterior margin), 88, 23, 26, 40, 27, and 21 μm, respectively. Armature: 4, 13, 6, 3, 4 + 1 aesthete, 2 + 1 aesthete, and 7 + 1 aesthete. All setae smooth.

Second antenna (Fig. 4m) 4-segmented, 185 μm long and moderately robust, second segment 49 μm wide. Armature: 1, 1, 3, and 1 terminal claw 30 μm (Fig. 4n).

Labrum (Fig. 5a) triangular with widely separated ventrolateral lobes. Mandible (Fig. 5b) with slender recurved basal part leading to inner lobe with row of slender setules and to outer scalelike area with few small spinules joined to prominent hyaline posteriorly directed process. Lash long and barbed.

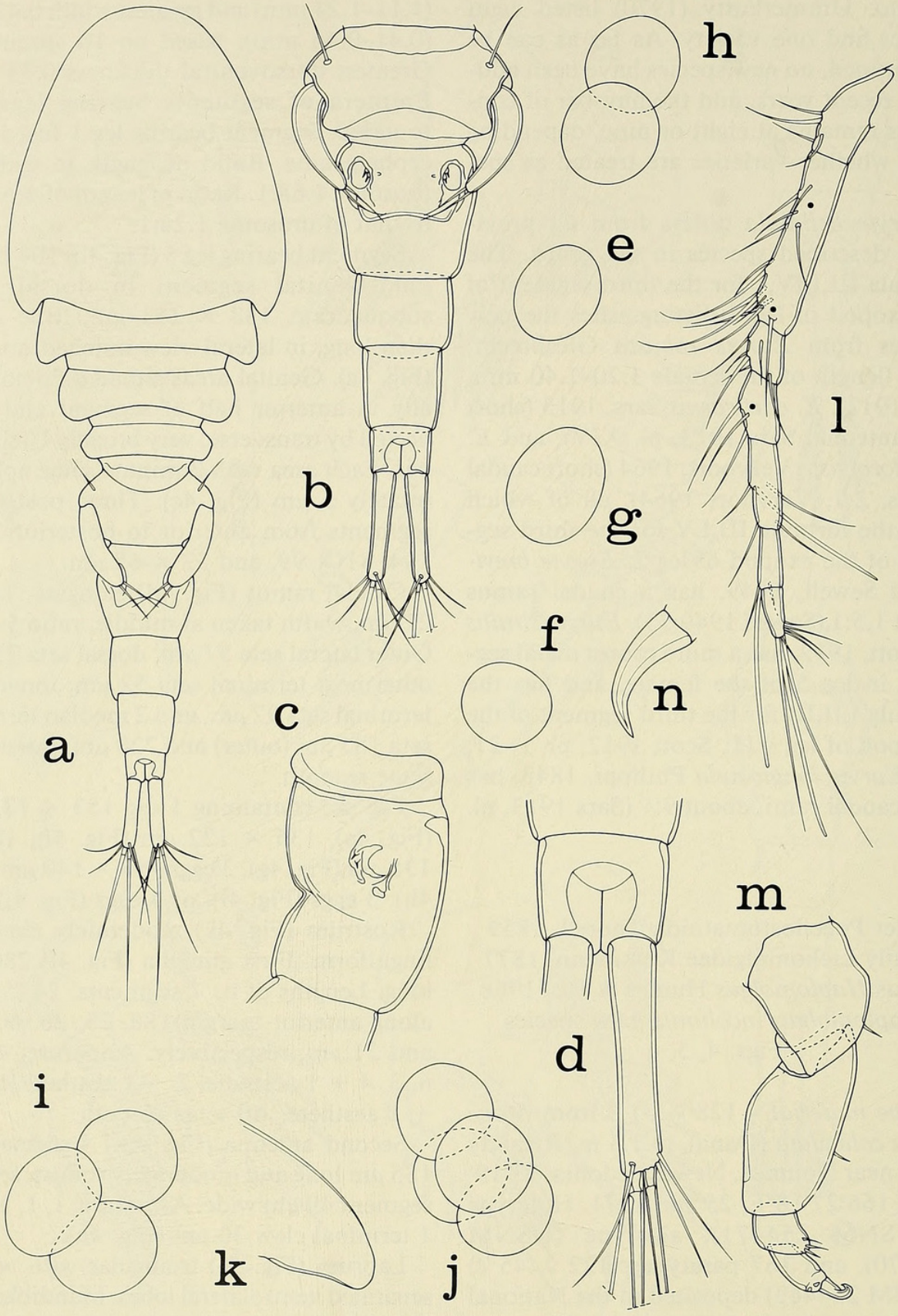

Fig. 4. *Haplomolgus incolumis,* female. a, Dorsal (scale A); b, Urosome, dorsal (D); c, Genital segment, lateral (B); d, Anal segment and caudal ramus, dorsal (E); e, Egg sac, ventral (A); f, Egg sac, ventral (A); g, Egg sac, ventrolateral (A); h, Egg sac, ventral (A); i, Egg sac, ventral (A); j, Egg sac, ventral (A); k, Outline of rostrum, lateral (E); l, First antenna, with 3 dots showing positions of aesthetes added in male, dorsal (E); m, Second antenna, dorsal (E); n, Claw of second antenna, flat view (F).

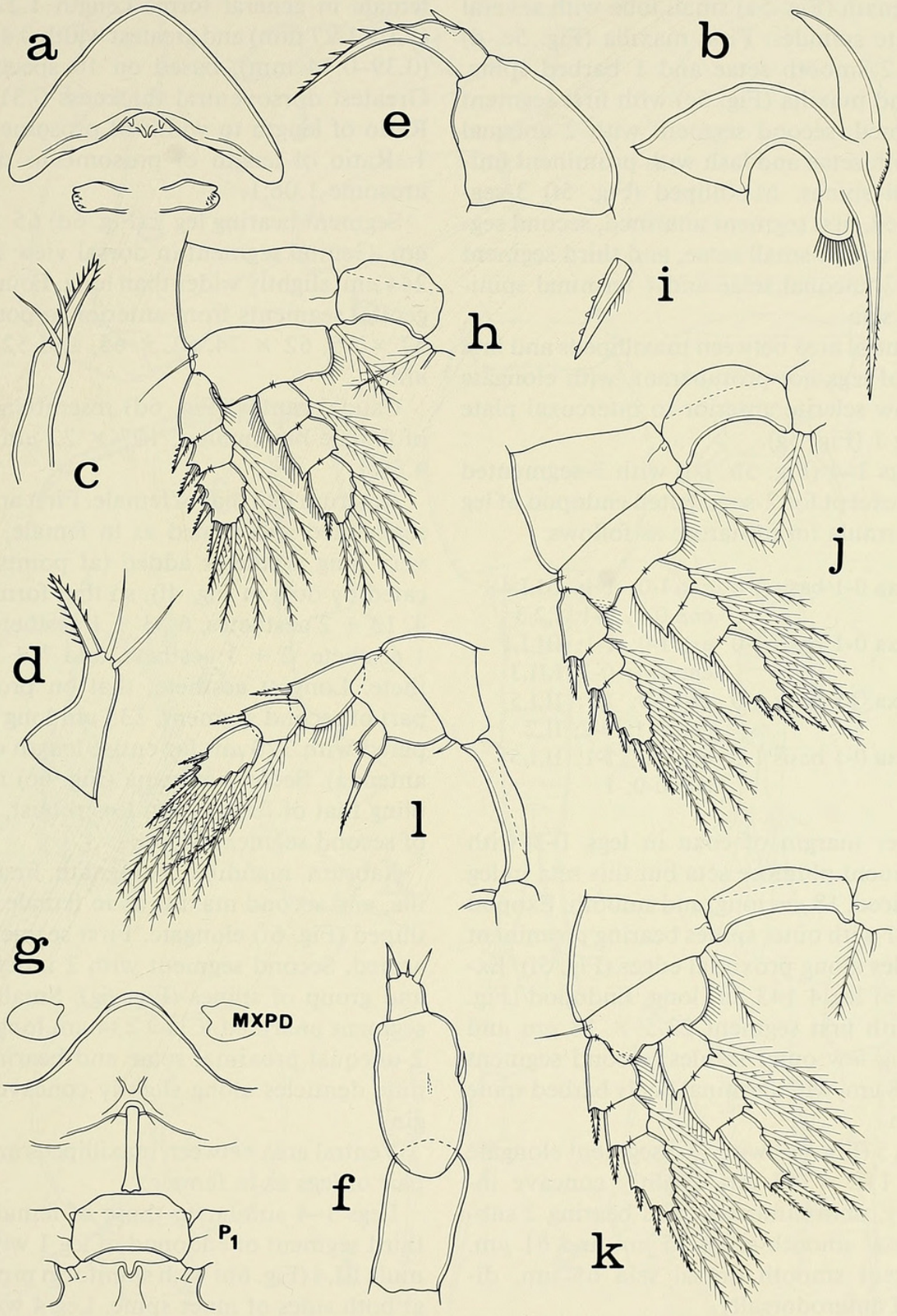

Fig. 5. *Haplomolgus incolumis,* female. a, Labrum and paragnaths, ventral (scale E); b, Mandible, posterior (F); c, First maxilla, outer (F); d, First maxilla, posterior (F); e, Second maxilla, antero-inner (C); f, Maxilliped, postero-outer (C); g, Region between maxillipeds and leg 1, ventral (B); h, Leg 1 and intercoxal plate, anterior (B); i, Outer spine on first segment of exopod of leg 1, anterior (C); j, Leg 2 and intercoxal plate, anterior (B); k, Leg 3 and intercoxal plate, anterior (B); l, Leg 4 and intercoxal plate, anterior (B).

Paragnath (Fig. 5a) small lobe with several minute spinules. First maxilla (Fig. 5c, d) with 2 smooth setae and 1 barbed spine. Second maxilla (Fig. 5e) with first segment unarmed, second segment with 2 unequal smooth setae and lash with prominent unilateral spines. Maxilliped (Fig. 5f) 3-segmented, first segment unarmed, second segment with 2 small setae, and third segment with 2 unequal setae and 1 terminal spiniform seta.

Ventral area between maxillipeds and first pair of legs not protuberant, with elongate narrow sclerite anterior to intercoxal plate of leg 1 (Fig. 5g).

Legs 1–4 (Fig. 5h, j–l) with 3-segmented rami except for 2-segmented endopod of leg 4. Formula for armature as follows:

P_1 coxa 0-1 basis 1-0	exp I-0;	I-1;	III,I,4
	enp 0-1;	0-1;	I,2,3
P_2 coxa 0-1 basis 1-0	exp I-0;	I-1;	III,I,5
	enp 0-1;	0-2;	I,II,3
P_3 coxa 0-1 basis 1-0	exp I-0;	I-1;	II,I,5
	enp 0-1;	0-2;	II,2
P_4 coxa 0-1 basis 1-0	exp I-0;	I-1;	II,I,5
	enp 0-0;		I

Inner margin of coxa in legs 1–3 with prominent plumose seta but this seta in leg 4 reduced, 18 μm long, and smooth. Exopod of leg 1 with outer spines bearing prominent spinules along proximal edges (Fig. 5i). Exopod of leg 4 143 μm long. Endopod (Fig. 6a) with first segment 23.5 × 18 μm and bearing few outer setules; second segment 21 × 8 μm, with terminal finely barbed spine 39 μm.

Leg 5 (Fig. 6b) with free segment elongate oval, 112 × 47 μm, slightly concave inwardly, unornamented, and bearing 2 subterminal smooth setae 55 μm and 61 μm. Adjacent smooth dorsal seta 65 μm, directed anterodorsally.

Leg 6 represented by 2 minute setae on genital area (Fig. 4c).

Color of living specimens slightly opaque gray, eye red.

Male.—Body (Fig. 6c) resembling that of female in general form. Length 1.22 mm (1.16–1.27 mm) and greatest width 0.41 mm (0.39–0.44 mm), based on 10 specimens. Greatest dorsoventral thickness 0.31 mm. Ratio of length to width of prosome 1.45:1. Ratio of length of prosome to that of urosome 1.06:1.

Segment bearing leg 5 (Fig. 6d) 65 × 164 μm. Genital segment in dorsal view 226 × 244 μm, slightly wider than long. Four postgenital segments from anterior to posterior 57 × 75, 62 × 74, 81 × 65, and 52 × 62 μm.

Caudal ramus (Fig. 6d) resembling that of female but smaller, 107 × 22 μm, ratio 4.86:1.

Rostrum like that of female. First antenna segmented and armed as in female, but 3 very long aesthetes added (at points indicated by dots in Fig. 4l), so that formula is 4, 13 + 2 aesthetes, 6 , 3 + 1 aesthete, 4 + 1 aesthete, 2 + 1 aesthete, and 7 + 1 aesthete. Longest aesthete, that on proximal part of second segment, 235 μm long (compared with 320 μm for entire length of first antenna). Second antenna (Fig. 6e) resembling that of female, but less robust, width of second segment 39 μm.

Labrum, mandible, paragnath, first maxilla, and second maxilla as in female. Maxilliped (Fig. 6f) elongate. First segment unarmed. Second segment with 2 inner setae and group of spines (Fig. 6g). Small third segment unarmed. Claw 234 μm long, with 2 unequal proximal setae and bearing minute denticles along slightly concave margin.

Ventral area between maxillipeds and first pair of legs as in female.

Legs 1–4 similar to those of female, but third segment of endopod of leg 1 with formula I,I,4 (Fig. 6h) with spiniform processes at both sides of inner spine. Leg 4 with endopod like that of female, but in 1 male right endopod with narrow second segment (Fig. 6i) and in another male right endopod with formula 0-0; 0 and left endopod with 0-1; I (Fig. 6j).

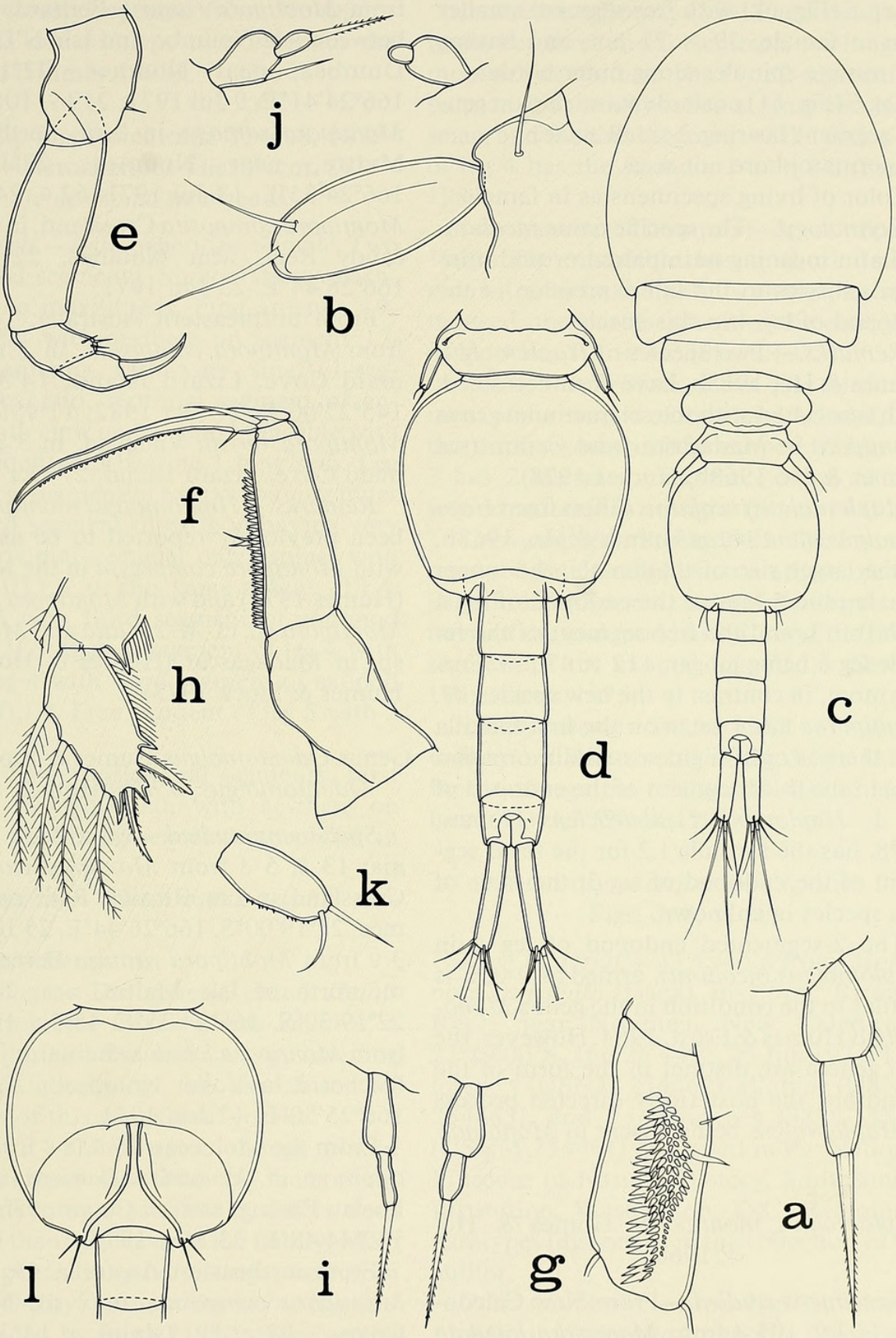

Fig. 6. *Haplomolgus incolumis.* Female: a, Endopod of leg 4, anterior (scale F); b, Leg 5, dorsal (E). Male: c, Dorsal (A); d, Urosome, dorsal (D); e, Second antenna, dorsal (E); f, Maxilliped, postero-inner (B); g, Second segment of maxilliped, inner (E); h, Third segment of endopod of leg 1, anterior (C); i, Pair of abnormal endopods of leg 4, ventral (C); j, Pair of abnormal endopods of leg 4, ventral (C); k, Free segment of leg 5, dorsal (C); l, Genital and first postgenital segments, ventral (D).

Leg 5 (Fig. 6k) with free segment smaller than in female, 39 × 21 μm, and having few minute spinules along outer border.

Leg 6 (Fig. 6l) posteroventral flap on genital segment bearing 2 small setae.

Spermatophore not seen.

Color of living specimens as in female.

Etymology.—The specific name *incolumis,* Latin meaning unimpaired or undiminished, alludes to the full expression of the endopod of leg 4 in this species.

Remarks.—Two species of *Haplomolgus* Humes & Ho, 1968b, have been described, both associated with the scleractinian genus *Montipora* in Madagascar and Ceram (see Humes & Ho 1968b, Humes 1978).

Haplomolgus incolumis differs from *Haplomolgus montiporae* Humes & Ho, 1968b, in the larger size of the female, the longer female caudal ramus, the endopod of leg 4 with 0-0; I, and the free segment of the female leg 5 being longer, 112 × 47 μm. Furthermore, in contrast to the new species, *H. montiporae* has 4 setae on the first maxilla and there is only slight sexual dimorphism (I,5) in the third segment of the endopod of leg 1. *Haplomolgus subdeficiens* Humes, 1978, has the formula I,2 for the third segment of the endopod of leg 3; the male of this species is unknown.

The 2-segmented endopod of leg 4 in *Haplomolgus incolumis,* armed as 0-0; I, is similar to the condition in the genus *Monomolgus* Humes & Frost, 1964. However, the two genera are distinct in the form of the mandible, the posteriorly directed process in *Haplomolgus* being absent in *Monomolgus.*

Haplomolgus montiporae Humes & Ho, 1968

Specimens studied.—From New Caledonia: 607 ♀, 105 ♂ from *Montipora lobulata* Bernard, in 0.5 m, Rocher à la Voile, Noumea, 22°18′24″S, 166°25′50″E, 17 Jun 1971; 4 ♀, 1 ♂ from *Montipora lobulata,* in 0.5 m, Rocher à la Voile, Noumea; 136 ♀, 129 ♂ from *Montipora ramosa* Bernard, in 2 m, between Isle Noumbo and Isle N'Die, Baie Dumbea, near Noumea, 22°12′47″S, 166°24′41″E, 9 Jul 1971; 219 ♀, 105 ♂ from *Montipora ramosa,* in 2 m, north of Isle Maître, near Noumea, 22°19′30″S, 166°24′35″E, 13 Jul 1971; 62 ♀, 24 ♂ from *Montipora composita* Crossland, in 2 m, Ricaudy Reef, near Noumea, 22°19′00″S, 166°26′44″E, 25 Jun 1971.

From northeastern Australia: 16 ♀, 5 ♂ from *Montipora composita,* in 2 m, Mermaid Cove, Lizard Island, 14°39′50″S, 145°27′00″E, 27 Oct 1982; 11 ♀, 9 ♂ from *Montipora verrilli* Vaughan, in 3 m, Mermaid Cove, Lizard Island, 27 Oct 1982.

Remarks.—*Haplomolgus montiporae* has been previously reported to be associated with *Montipora compressa* in the Moluccas (Humes 1978) and with *Montipora sinensis, Montipora* sp. cf. *M. stellata* and *Montipora* sp. in Madagascar (Humes & Ho 1968b, Humes & Stock 1973).

Genus *Odontomolgus* Humes & Stock, 1972

Odontomolgus forhani Humes, 1978

Specimens studied.—From New Caledonia: 13 ♀, 5 ♂ from *Montipora composita* Crossland, in 2 m, Ricaudy Reef, near Noumea, 22°19′00″S, 166°26′44″E, 25 Jun 1971; 3 ♀ from *Montipora ramosa* Bernard, in 2 m, north of Isle Maître, near Noumea, 22°19′30″S, 166°24′35″E, 13 Jul 1971; 1 ♀ from *Montipora lobulata* Bernard, in 0.5 m, Rocher à la Voile, Noumea, 22°18′24″S, 166°25′50″E, 17 Jun 1971.

From the Moluccas: 17 ♀, 8 ♂ from *Montipora* sp. cf. *M. undata* Bernard, in 10 m, Poelau Parang, eastern Ceram, 03°17′00″S, 130°44′48″E, 23 May 1975.

From northeastern Australia: 4 ♀, 1 ♂ from *Montipora composita,* in 2 m, Mermaid Cove, Lizard Island, 14°39′50″S, 145°27′00″E, 27 Oct 1982; 1 ♀ from *Montipora verrilli* Vaughan, in 3 m, Mermaid Cove, Lizard Island, 27 Oct 1982.

Remarks.—*Odontomolgus forhani* has

been previously reported from *Montipora compressa* and *Montipora prolifera* in the Moluccas (Humes 1978).

Order Siphonostomatoida Thorell, 1859
Family Asterocheridae Giesbrecht, 1899
Hetairosyna, new genus

Diagnosis.—Asterocheridae. Female: Two postgenital segments. Siphon short, reaching only to maxillipeds. First antenna 19-segmented, with aesthete on segment 17. Second antenna with very small 1-segmented exopod, terminal segment of endopod with claw and 1 seta. Mandible with 1-segmented palp bearing 1 long seta. Leg 1 with first segment of exopod having inner seta, third segment of exopod having very small proximal vestigial outer spine, with formula III,I,4, or this spine absent, II,I,4. Legs 1–3 with third segment of endopod having I,II,3, that of segment of leg 4 with I,II,2. Leg 4 with third segment of exopod having III,I,4. Free segment of leg 5 with 3 setae.

Male: Three postgenital segments. First antenna 16-segmented, with aesthete on segment 15. Strong sexual dimorphism in endopod of leg 3.

Type species.—*Hetairosyna terpna,* new species.

Gender.—Feminine.

Etymology.—The generic name *Hetairosyna,* from the Greek words *hetairos,* a companion, and the suffix *-syne,* meaning condition, alludes to the association of members of this genus with corals.

Remarks.—*Hetairosyna,* though placed in the Asterocheridae following the brief diagnosis given by Stock (1987), differs from the more than 30 genera in the family. Most of these genera may be distinguished from *Hetairosyna* by means of the key to the genera provided by Stock (1987). Five genera need special attention, however, to distinguish them from the new genus. The salient characters separating them from *Hetairosyna* are as follows:

Asterocheres Boeck, 1859. The second antenna has three distal elements, the longest more or less setiform; the 1- or 2-segmented palp on the mandible has at least two long setae; and the third segment of the endopod of leg 4 has the formula 1-1 + I-2 (Stock 1987).

Asteropontius Thompson & A. Scott, 1903. The mandible has a short 1-segmented palp or the palp is absent, its seta reduced; the third segment of the endopod of leg 4 has 1-1 + I-2 (Stock 1975).

Asteropontella Stock, 1989. The third segment of the exopod of leg 4 has I,I,3 or II,I,3; the third segment of the exopod of legs 1–3 has 2 lateral spines; the exopod of the second antenna is vestigial (Stock 1989).

Asteropontoides Stock, 1975. The first antenna of the female has an aesthete on the penultimate segment; in leg 4 the third segment of the endopod has 1,I,2 and the third segment of the exopod has III,I,3 (Sewell 1949, Stock 1975).

Asteropontopsis Stock, 1987. The third segment of the exopod of leg 3 has II,I,4; the third segment of the endopod of leg 3 has 1,1 + I,3 (Stock 1987).

Hetairosyna terpna new species
Figs. 7, 8, 9, 10

Type material.—43 ♀, 40 ♂ from *Montipora caliculata* (Dana), in 1.5 m, Ricaudy Reef, near Noumea, New Caledonia, 22°19′00″S, 166°26′44″E, 25 Jun 1971. Holotype ♀ (USNM 254462), allotype (USNM 254463), and 75 paratypes (38 ♀, 37 ♂) (USNM 254461) deposited in the National Museum of Natural History, Smithsonian Institution, Washington, D.C. Remaining paratypes (dissected) in the collection of the author.

Other specimens.—From New Caledonia: 11 ♀ from *Montipora composita* Crossland, in 2 m, Ricaudy Reef, near Noumea, 25 Jun 1971; 3 ♀ from *Montipora ramosa* Bernard, in 2 m, north of Isle Maître, near Noumea, 22°19′30″S, 166°24′35″E, 13 Jul 1971; 30

♀, 13 ♂ from *Montipora lobulata* Bernard, in 0.5 m, Rocher à la Voile, Noumea, 22°18′24″S, 166°25′50″E, 17 Jun 1971; 93 ♀ from *Montipora* sp. cf. *M. efflorescens* Bernard, in 1 m, east of Isle N'Die, Baie Dumbea, near Noumea, 22°13′15″S, 166°24′26″E, 6 Jul 1971.

From the Moluccas: 14 ♀ from *Montipora compressa* (Esper), in 2 m, Natsepa, Ambon, 03°37′05″S, 128°17′00″E, 28 May 1975; 3 ♀ from *Montipora prolifera* Brueggemann, in 3 m, southern shore of Goenoeng Api, Banda Islands, 04°32′05″S, 129°52′30″E, 26 Apr 1975.

From Enewetak Atoll, Marshall Islands: 17 ♀ from *Montipora ambigua* Bernard, in 3 m, south of Parry Island, 9 Jul 1969; 12 ♀ from *Montipora patula* Bernard, in 2 m, western end of Bogen Island, 23 Jun 1969.

From northeastern Australia: 8 ♀, 6 ♂ from *Montipora composita,* in 2 m, Mermaid Cove, Lizard Island, 14°39′50″S, 145°27′00″E, 27 Oct 1982.

From Madagascar: 41 ♀, 4 ♂ from *Montipora* sp., west of Pte de Tafondro, Nosy Bé, 3 Dec 1963; 3 ♀ from *Montipora sinensis* Bernard, in 1 m, Nosy Taolankena, near Nosy Bé, 15 Nov 1963; 12 ♀, 2 ♂ from *Montipora* sp. cf. *M. stellata* Bernard, in 2 m, off Ampombilava, Nosy Bé, 26 Sept 1964.

Female.—Body (Fig. 7a) with broad prosome covered with minute hyaline scales. Length 0.92 mm (0.88–1.01 mm) and greatest width 0.49 mm (0.47–0.52 mm), based on 10 specimens. Greatest dorsoventral thickness 0.33 mm. Epimera of segments bearing legs 1–4 rounded in dorsal view, weakly pointed in lateral view. Dorsal part of segment bearing leg 3 partly covering segment bearing leg 4. Segment bearing leg 1 not separated dorsally from cephalosome. Ratio of length to width of prosome 1.29:1. Ratio of length of prosome to that of urosome 2.09:1.

Segment bearing leg 5 (Fig. 7b) 60 × 152 μm. Genital segment slightly expanded in anterior third, 153 × 127 μm in greatest dimensions in dorsal view, 91 μm wide in posterior third. Genital areas located dorsolaterally in anterior third. Each area (Fig. 7b–d) with 2 very small setae. Surfaces of all urosomal segments covered with minute hyaline scales (Fig. 7b–d). Genital segment with row of long setules laterally posterior to expansion (Fig. 7d). Two postgenital segments, first segment 62 × 78 μm, second segment 50 × 75 μm.

Caudal ramus (Fig. 7e) short, trapezoidal, wider than long, 29 μm along outer edge, 18 μm along inner edge, and 36 μm in greatest width. Outer lateral seta placed dorsally, 107 μm, dorsal seta 72 μm, both smooth. Outermost terminal seta 156 μm, innermost terminal seta 195 μm, and 2 median terminal setae 273 μm (outer) and 330 μm (inner), swollen proximally. Ramus bearing few outer scales as on urosomal segments.

Dorsal surface of body without visible sensilla, but with minute scales.

Egg sac (Fig. 7f) 252 × 190 μm, containing 5 eggs, each about 135–140 μm in maximum diameter.

Rostral area weakly developed (Fig. 8a). First antenna (Fig. 8b) 418 μm long, 19-segmented. Length of segments: 23 (47 μm along anterior margin), 13, 10, 10, 10, 10, 11, 13, 10, 15.5, 26, 25, 29, 27, 29, 34, 37, 14, and 26 μm, respectively. Formula for armature: 1, 2, 2, 2, 2, 2, 2, 2, 6, 1 + 1 small spine, 2, 2, 2, 2, 2, 2, 2 + 1 aesthete, 3, and 7. All setae smooth.

Second antenna (Fig. 8c) 5-segmented, 257 μm long including claw. Coxa and basis unarmed. Exopod minute, 7 × 4 μm. Endopod with first segment elongate and unarmed, second segment with 1 seta, third segment with terminal claw 57 μm, 1 adjacent seta, and outer row of setules.

Siphon (Fig. 8d) short, approximately 165 μm long. Mandible (Fig. 8e) with long slender blade 143 μm, its tip dentate inwardly and expanded outwardly (Fig. 8f); palp 1-segmented with long slender seta, palp and seta together 91 μm. Both mandibles lying along sides of siphon (Fig. 8d). First maxilla (Fig. 8g) with 2 lobes, shorter outer lobe

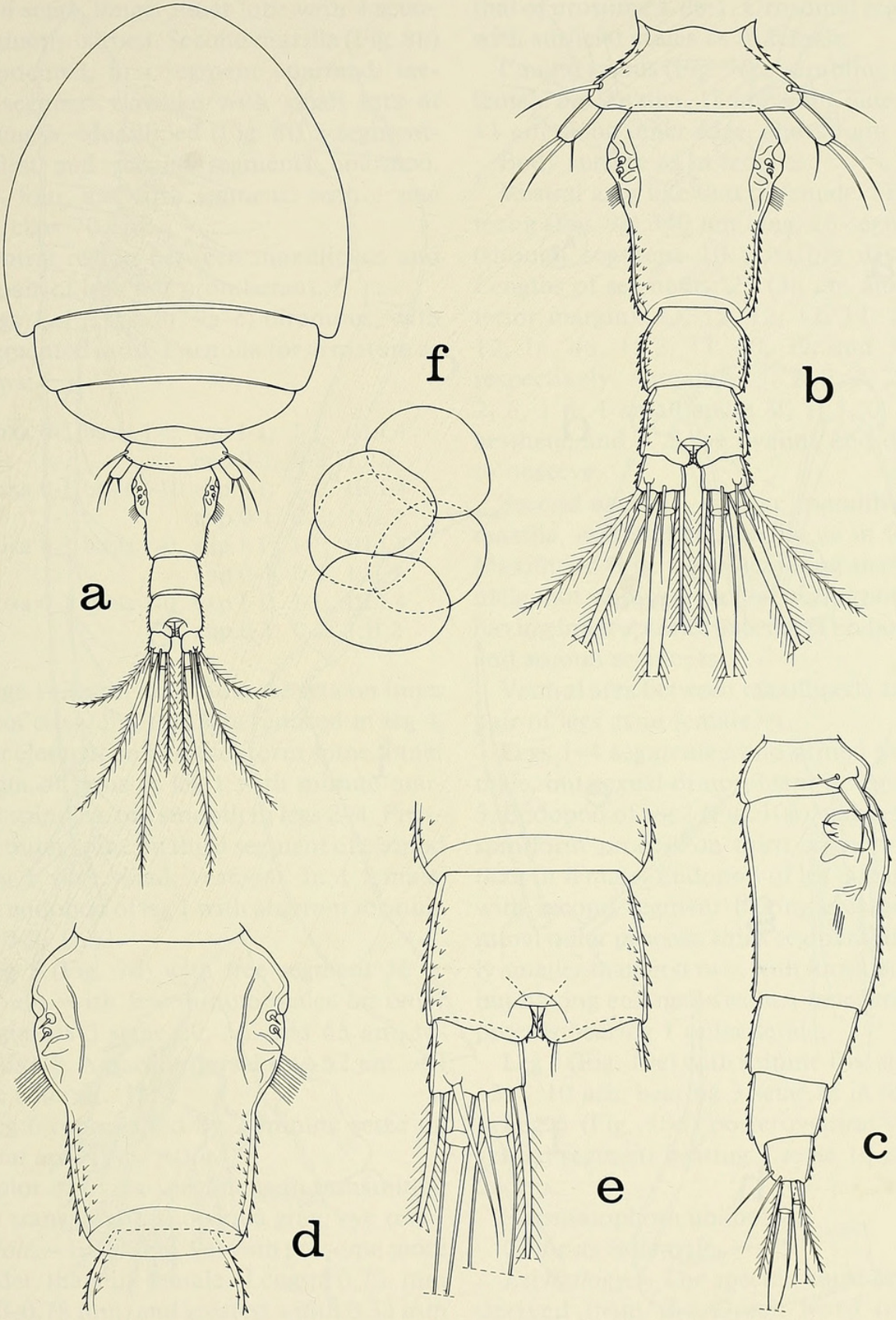

Fig. 7. *Hetairosyna terpna,* female. a, Dorsal (scale A); b, Urosome, dorsal (B); c, Urosome, lateral (B); d, Genital segment, dorsal (E); e, Anal segment and caudal ramus, dorsal (C); f, Egg sac, ventral (D). (In a–e scales not shown over entire surface.)

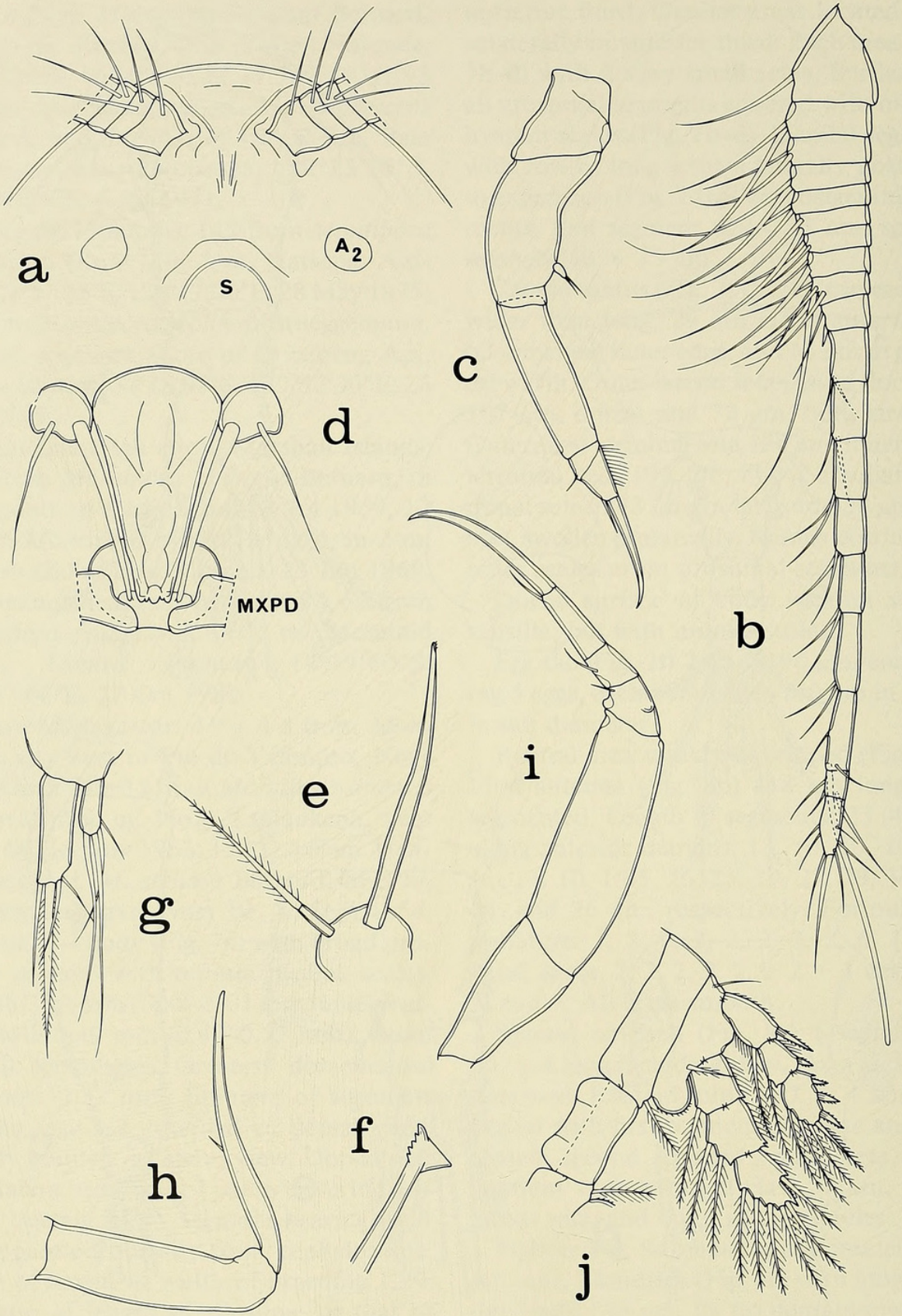

Fig. 8. *Hetairosyna terpna,* female. a, Rostral area, ventral (scale B); b, First antenna, anterodorsal (E); c, Second antenna (E); d, Siphon and mandibles, ventral (B); e, Mandible, anterior (E); f, Tip of mandible, postero-inner (F); g, First maxilla, posterior (E); h, Second maxilla, inner (E); i, Maxilliped, posterior (E); j, Leg 1 and intercoxal plate, anterior (B).

with 4 setae, longer inner lobe with 4 setae, 1 distinctly barbed. Second maxilla (Fig. 8h) 2-segmented, first segment unarmed, second segment clawlike with small seta at midlength. Maxilliped (Fig. 8i) 5-segmented, first and second segments unarmed, third, four, and fifth segments with 1 seta each, claw 70 μm.

Ventral region between maxillipeds and first pair of legs not protuberant.

Legs 1–4 (Figs. 8j, 9a–c) biramous, with 3-segmented rami. Formula for armature as follows:

P_1 coxa 0-1 basis 1-I	exp I-1;	I-1;	III,I,4
	enp 0-1;	0-2;	1,2,3
P_2 coxa 0-1 basis 1-0	exp I-1;	I-1;	III,I,4
	enp 0-1;	0-2;	1,II,3
P_3 coxa 0-1 basis 1-0	exp I-1;	I-1;	III,I,4
	enp 0-1;	0-2;	1,II,3
P_4 coxa 0-1 basis 1-0	exp I-1;	I-1;	III,I,4
	enp 0-1;	0-2;	1,II,2

Legs 1–3 with long plumose seta on inner side of coxa, but this seta reduced in leg 4. Inner element on basis setiform spine. Inner margin of basis in leg 1 with minute marginal spinules, but smooth in legs 2–4. Proximal outer spine on third segment of exopod of leg 1 very small, vestigial. In 1 female, right endopod of leg 1 with aberrant formula 0-2; 0-2; 1,2,3.

Leg 5 (Fig. 9d) with free segment 36 × 15.5 μm, with few minute scales on outer margin, its 3 setae 20, 55, and 65 μm, respectively. Adjacent dorsal seta 52 μm. All setae smooth.

Leg 6 represented by 2 minute setae on genital area (Fig. 7d).

Color of living specimens in transmitted light transparent to opaque gray, eye red.

Male.—Body (Fig. 9e) with prosome more slender than in female. Length 0.73 mm (0.70–0.78 mm) and greatest width 0.33 mm (0.31–0.35 mm), based on 10 specimens. Greatest dorsoventral thickness 0.25 mm. Epimeral areas slightly more pointed than in female. Ratio of length to width of prosome 1.49:1. Ratio of length of prosome to that of urosome 1.86:1. Urosomal segments with surficial scales as in female.

Caudal ramus (Fig. 9f) resembling that of female but smaller, 18 μm along outer edge, 11 μm along inner edge, and 26 μm wide.

Body surface as in female.

Rostral area like that of female. First antenna (Fig. 9g) 340 μm long, 16-segmented (though segment 10 possibly divided). Lengths of segments: 23 (38 μm along anterior margin), 13, 12, 12, 12, 12, 12, 12, 12, 16, 48, 15.5, 13, 40, 39, and 34 μm, respectively. Armature: 1, 2, 2, 2, 2, 2, 2, 2, 6, 1 + 1 small spine, 2, 1, 1, 0, 0 + 1 aesthete, and 7. Setae hyaline and difficult to observe.

Second antenna, siphon, mandible, first maxilla, and second maxilla as in female. Maxilliped (Fig. 9h) resembling that of female but showing sexual dimorphism in having inner spiniform process on both first and second segments.

Ventral area between maxillipeds and first pair of legs as in female.

Legs 1–4 segmented and armed as in female, but sexual dimorphism in legs 2 and 3. Endopod of leg 2 (Fig. 10a) with terminal spiniform process on third segment larger than in female. Endopod of leg 3 (Fig. 10b) with second segment having enlarged terminal outer process; third segment distinctly smaller than first two, with formula 1,II,3, but having enlarged swollen inner terminal process bearing 1 outer setule.

Leg 5 (Fig. 10c) with minute free segment 13 × 10 μm, bearing 3 setae as in female.

Leg 6 (Fig. 10d) posteroventral flap on genital segment bearing 2 setae 10 μm and 26 μm.

Spermatophore unknown.

Color as in female.

Etymology.—The specific name *terpna* is derived from the Greek word *terpnos,* meaning delightful, pleasing.

Remarks.—*Hetairosyna terpna* is associated with at least 11 species of *Montipora* from Madagascar to Enewetak Atoll to New Caledonia (Table 3).

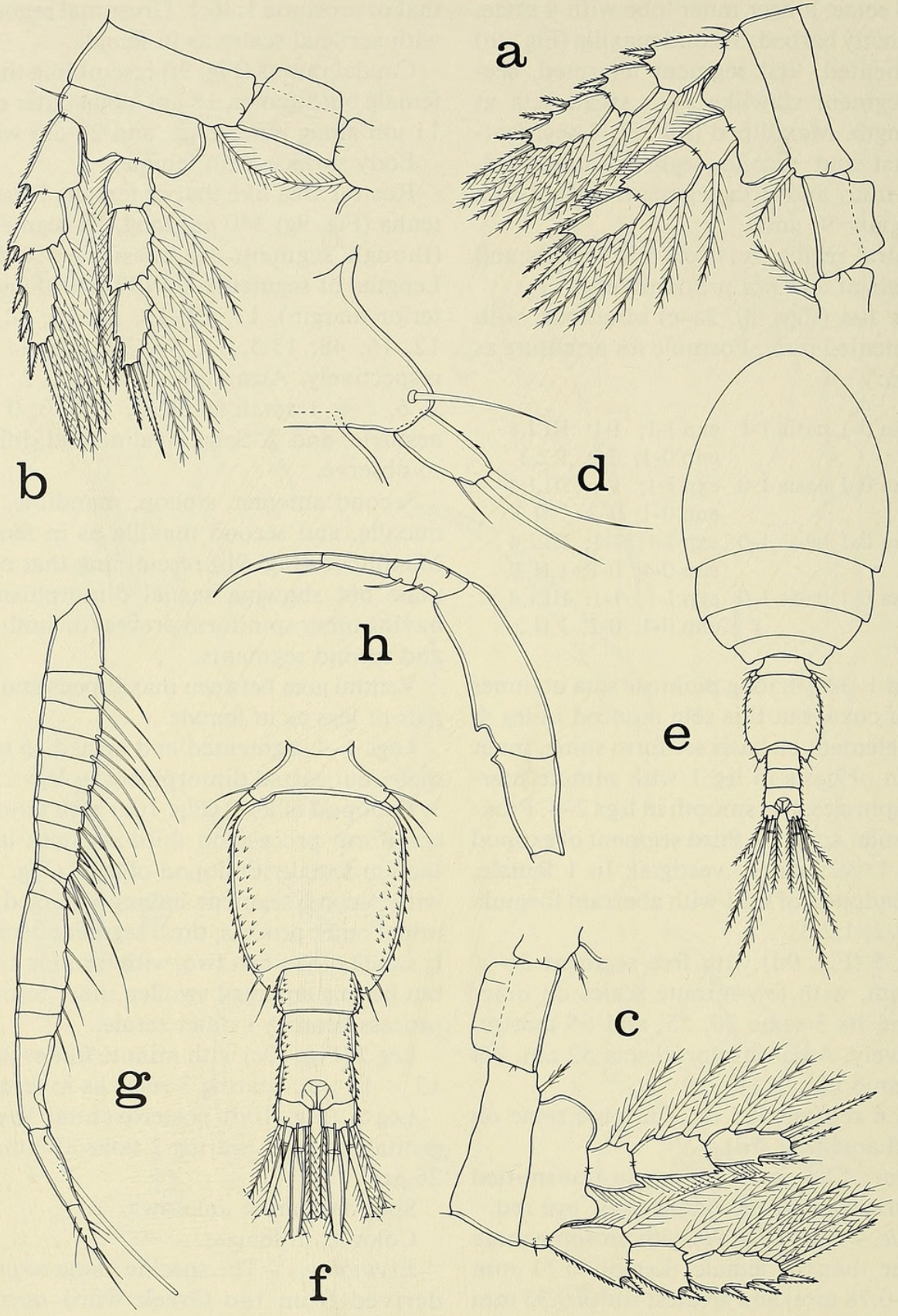

Fig. 9. *Hetairosyna terpna.* Female: a, Leg 2 and intercoxal plate, anterior (scale B); b, Leg 3 and intercoxal plate, anterior (B); c, Leg 4 and intercoxal plate, anterior (B); d, Leg 5, dorsal (C). Male: e, Dorsal (A); f, Urosome, lateral (B); g, First antenna, anterodorsal (E); h, Maxilliped, posterior (E).

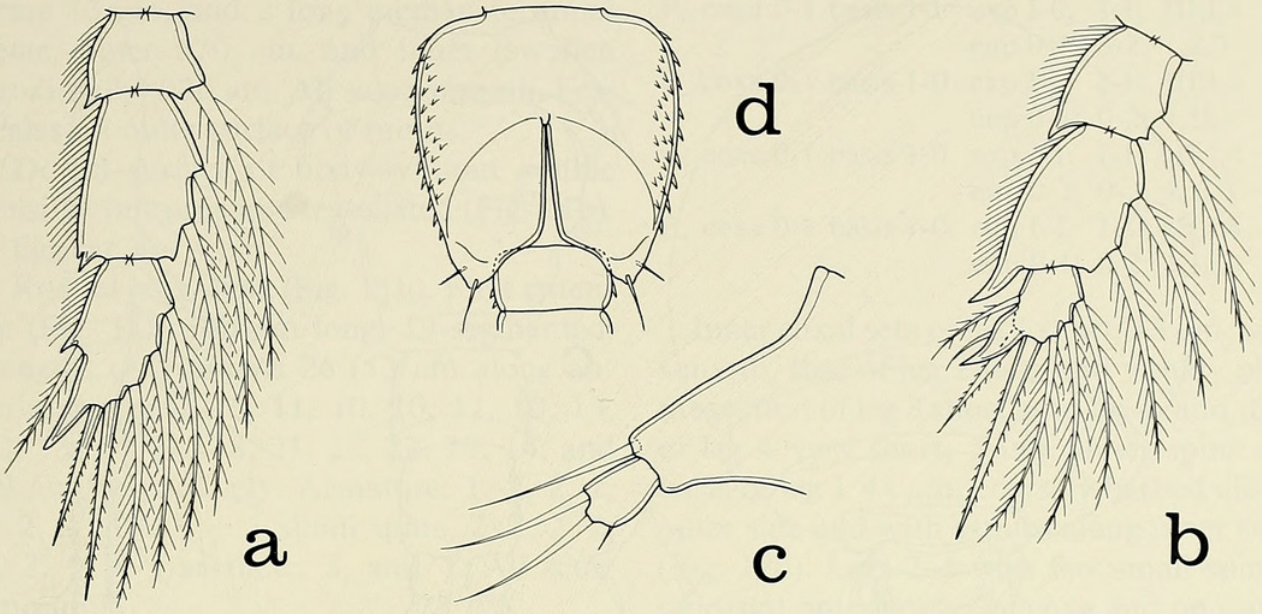

Fig. 10. *Hetairosyna terpna,* male. a, Endopod of leg 2, anterior (scale C); b, Endopod of leg 3, anterior (C); c, Leg 5, ventral (F); d, Genital segment, ventral (B).

Hetairosyna laciniata, new species
Figs. 11, 12, 13

Type material.—11 ♀, 6 ♂ from *Montipora caliculata* (Dana), in 1.5 m, Ricaudy Reef, near Noumea, New Caledonia, 22°19′00″S, 166°26′44″E, 25 Jun 1971. Holotype ♀ (USNM 254467), allotype (USNM 254468), and 11 paratypes (7 ♀, 4 ♂) (USNM 254466) deposited in the National Museum of Natural History, Smithsonian Institution, Washington, D.C. Remaining paratypes (dissected) in the collection of the author.

Other specimens.—From New Caledonia: 16 ♀, 5 ♂ from *Montipora composita,* in 2 m, Ricaudy Reef, near Noumea, 25 Jun 1971; 19 ♀, 17 ♂ from *Montipora ramosa* Bernard, in 2 m, north of Isle Maître, near Noumea, 22°19′30″S, 166°24′35″E, 13 Jul 1971; 27 ♀, 41 ♂ from *Montipora lobulata* Bernard, in 0.5 m, Rocher à la Voile, Noumea, 22°18′24″S, 166°25′50″E, 17 Jun 1971.

From Madagascar.—2 ♀, 2 ♂ from *Montipora sinensis* Bernard, in 1 m, Nosy Taolankena, near Nosy Bé, 15 Nov 1963.

Female.—Body (Fig. 11a) with unusually broad orbicular prosome. Length 0.87 mm (0.81–0.90 mm) and greatest width 0.58 mm (0.56–0.61 mm), based on 10 specimens. Greatest dorsoventral thickness 0.24 mm. Segment bearing leg 1 fused with cephalosome and finely serrate on lateral margins. Epimera of segments bearing legs 2–4 truncate and finely and irregularly serrate. Dorsal surface of prosome tessellated (Fig. 11b). Ratio of length to width of prosome 1.03:1. Ratio of length of prosome to that of urosome 1.86:1.

Segment bearing leg 5 (Fig. 11c) 73 × 150 μm. Genital segment 134 × 138 μm, nearly as long as wide in dorsal view, widest in anterior half. Row of several slender setules on both sides near middle of segment. Dorsal surface of segment with mostly crescentic sculpturing (Fig. 11d). Genital areas located dorsolaterally at expanded portion of segment. Each area with 2 minute setae and very small spinous process (Fig. 11d). Two postgenital segments, first segment 61 × 65 μm, second segment 55 × 57 μm, both with delicate minute scales laterally and continuing over dorsal surfaces.

Caudal ramus (Fig. 11e) short, 22 μm long on outer side, 19 μm long on inner side, and 24 μm wide. Outer lateral seta (placed dorsally) 20 μm, dorsal seta 20 μm, outermost terminal seta 44 μm, innermost terminal

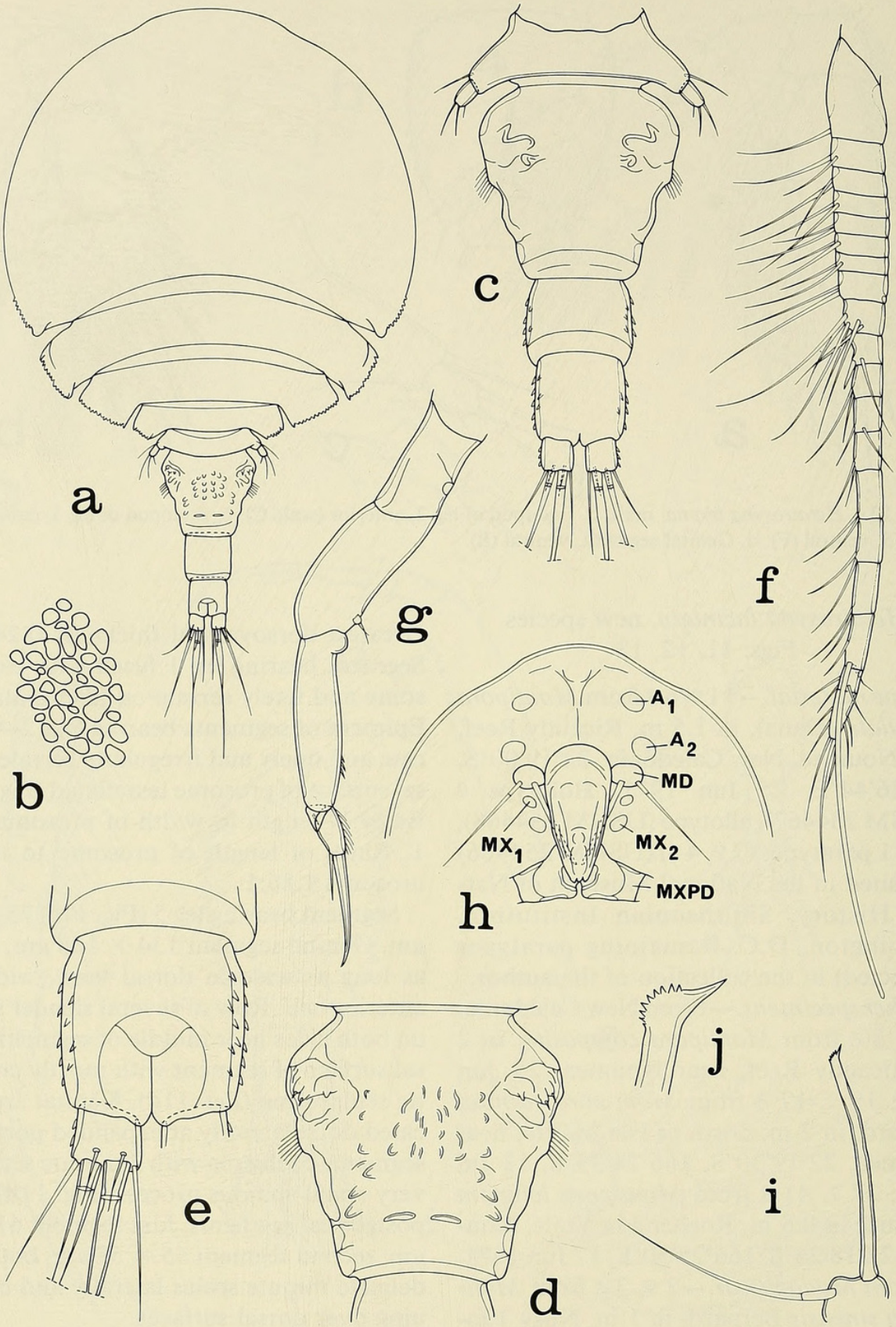

Fig. 11. *Hetairosyna laciniata,* female. a, Dorsal (scale A); b, Tessellations on surface of prosome, dorsal (E); c, Urosome, ventral (B); d, Genital segment, dorsal (B); e, Anal segment and caudal ramus, dorsal (C); f, First antenna, posteroventral (E); g, Second antenna, antero-outer (E); h, Rostral area and siphon, ventral (A); i, Mandible, anterior (B); j, Tip of mandible, flat view (C).

setae 73 μm, and 2 long median terminal setae, outer 570 μm, and inner (swollen proximally) 930 μm. All setae smooth. Few scales on outer surface of ramus.

Dorsal surface of body without visible sensilla, but prosome tessellated (Fig. 11b).

Egg sac not seen.

Rostral area weak (Fig. 11h). First antenna (Fig. 11f) 340 μm long, 19-segmented. Lengths of segments 26 (52 μm along anterior margin), 15, 11, 10, 10, 11, 10, 13, 13, 13, 14, 14, 18, 21, 22, 22, 28, 14, and 19 μm, respectively. Armature: 1, 2, 2, 2, 2, 2, 2, 2, 6, 1 + 1 small spine, 2, 2, 2, 2, 2, 2, 2 + 1 aesthete, 3, and 7. All setae smooth.

Second antenna (Fig. 11g) probably 5-segmented, though third segment of endopod obscure. Coxa and basis unarmed. Exopod minute, 2.5 × 2.5 μm, with 1 seta. Endopod with first segment elongate with small knob on proximal outer corner and with few distal outer setules. Second segment triangular. Third segment with terminal claw 56 μm, 1 adjacent seta, and outer marginal setules.

Siphon (Fig. 11h) short, reaching only to bases of maxillipeds. Mandible (Fig. 11i) with long slender blade 160 μm, its tip dentate and expanded inwardly (Fig. 11j). Palp 1-segmented with long smooth seta, palp and seta together 164 μm. First maxilla (Fig. 12a) with both lobes bearing 4 setae, 2 setae on longer inner lobe barbed. Second maxilla (Fig. 12b) 2-segmented, first segment unarmed, second slender recurved segment clawlike, with faint indication of division midway, at that point bearing 1 seta and few very small spinules. Maxilliped (Fig. 12c) 5-segmented, first and second segments unarmed, third, fourth, and fifth segments with 1 seta each, claw 60 μm, with abruptly slender tip preceded by 1 minute inner spinule.

Ventral region between maxillipeds and first pair of legs not protuberant.

Legs 1–4 (Fig. 12d, e, g, i) biramous, with 3-segmented rami. Formula for armature as follows:

P_1 coxa 0-1	basis 1-I	exp I-0;	I-1; III,I,4
		enp 0-1;	0-2; 1,2,3
P_2 coxa 0-1	basis 1-0	exp I-1;	I-1; III,I,4
		enp 0-1;	0-2; 1,II,3
P_3 coxa 0-1	basis 1-0	exp I-1;	I-1; III,I,4
		enp 0-1;	0-2; 1,II,3
P_4 coxa 0-1	basis 1-0	exp I-1;	I-1; III,I,4
		enp 0-1;	0-2; 1,II,2

Inner coxal seta of leg 1 short, 13 μm, and smooth, that of leg 2 long and weakly plumose, that of leg 3 short as in leg 1, and that of leg 4 very short, 5 μm. Inner spine on basis of leg 1 44 μm, coarsely barbed along outer side and with setules along inner side (Fig. 12d). Legs 2–4 with few small spines on distal outer corner of coxa and on outer margin of basis. Inner margin of basis in leg 1 with row of small spines, in legs 2–4 this margin smooth. First segment of exopod of leg 1 with outer spine long and recurved, inner seta absent; in legs 2–4 this spine shorter and not recurved. Leg 2 in 1 female with endopod having formula 0-1; 0-2; 1,II,2 (Fig. 12f). Leg 3 in 1 female with endopod having 0-1; 0-2; 1,II,2 (Fig. 12h).

Leg 5 (Fig. 13a) with small subrectangular unornamented free segment 18 × 10.5 μm, its 3 setae from outer to inner 27, 25, and 8 μm. Adjacent dorsal seta 30 μm.

Leg 6 represented by 2 minute setae on genital area (Fig. 11d).

Color of living specimens in transmitted light opaque gray, eye red.

Male.—Body (Fig. 13b) with broad prosome slightly less orbicular than in female. Length 0.71 mm (0.65–0.75 mm) and greatest width 0.43 mm (0.42–0.45 mm), based on 6 specimens. Greatest dorsoventral thickness 0.18 mm. Epimera of segments bearing legs 1–4 serrate as in female. Ratio of length to width of prosome 1.12:1. Ratio of length of prosome to that of urosome 1.90:1.

Segment bearing leg 5 (Fig. 13c) 21 × 116 μm. Genital segment 104 × 150 μm, much wider than long. Length including leg 6 109 μm. Segment rounded laterally and bearing small scales. Three postgenital segments

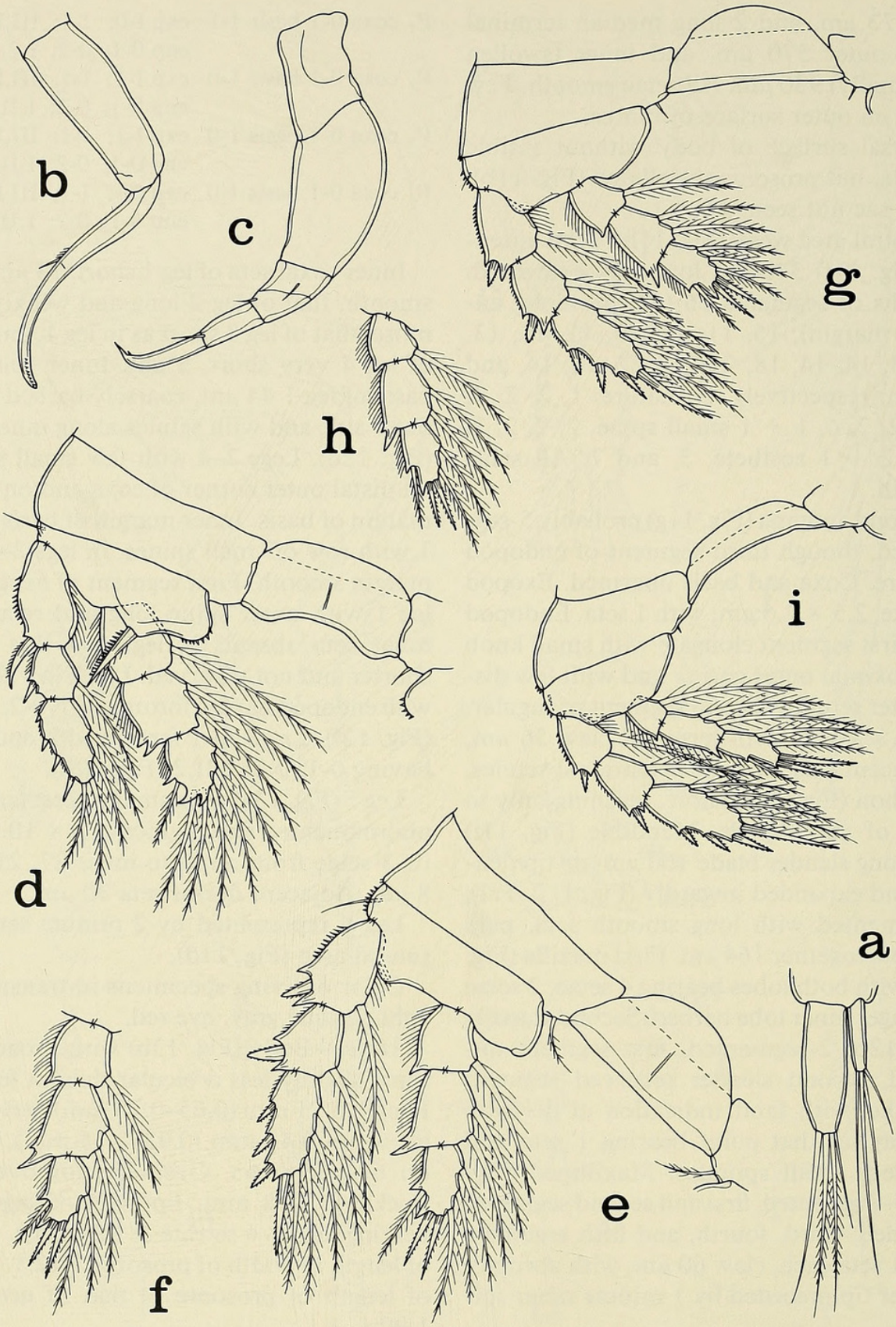

Fig. 12. *Hetairosyna laciniata,* female. a, First maxilla, posterior (scale E); b, Second maxilla, posterior (B); c, Maxilliped, posterior (B); d, Leg 1 and intercoxal plate, anterior (E); e, Leg 2 and intercoxal plate, anterior (E); f, Endopod of leg 2, anterior (E); g, Leg 3 and intercoxal plate, anterior (E); h, Endopod of leg 3, anterior (E); i, Leg 4 and intercoxal plate, anterior (E).

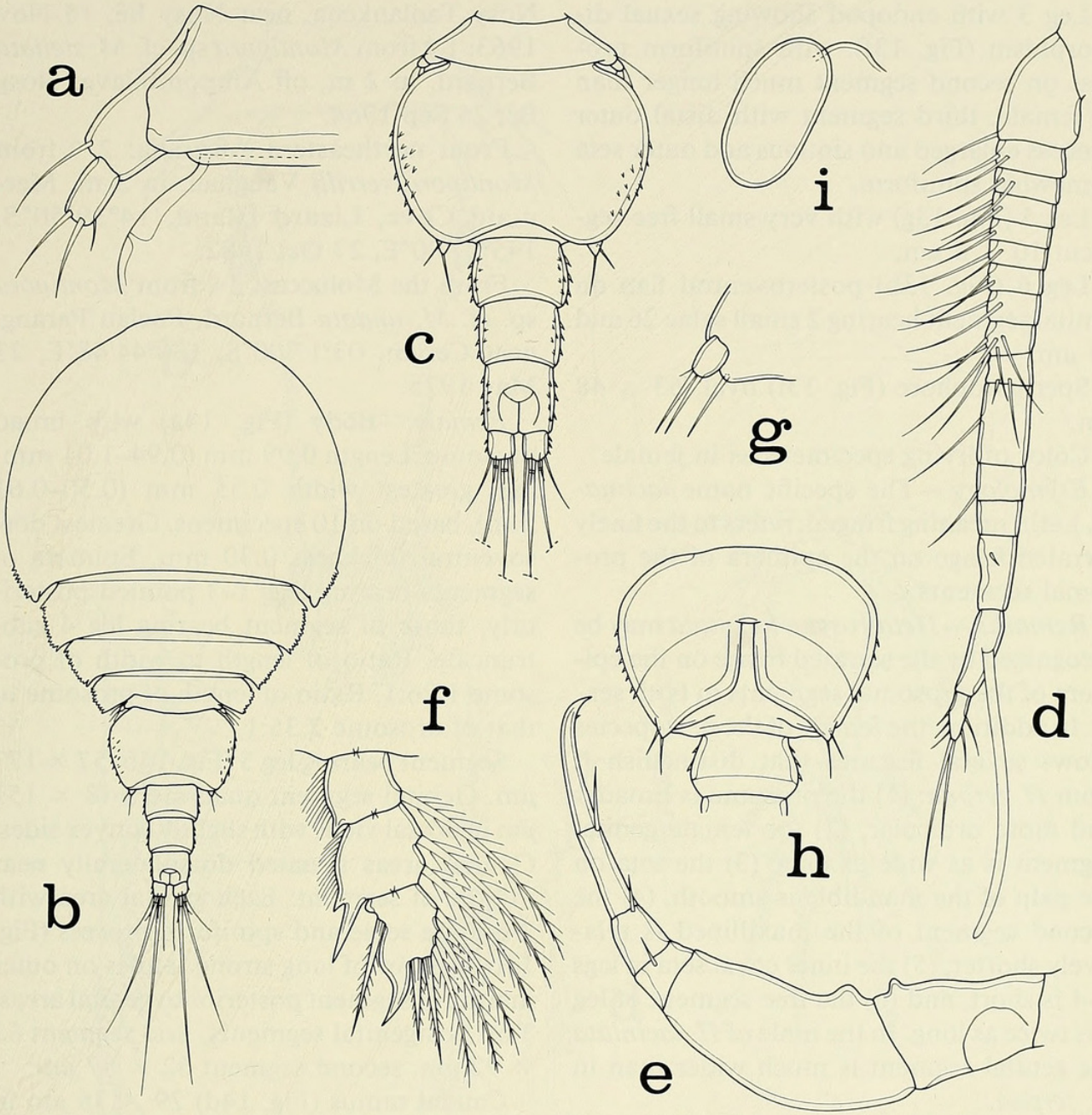

Fig. 13. *Hetairosyna laciniata.* Female: a, Leg 5, dorsal (scale C). Male: b, Dorsal (A); c, Urosome, dorsal (B); d, First antenna, anterodorsal (E); e, Maxilliped, posterior (E); f, Endopod of leg 3, anterior (C); g, Leg 5, ventral (F); h, Genital segment and first postgenital segment, ventral (B); i, Spermatophore, dorsal (E).

from anterior to posterior 34 × 65, 37 × 54, and 36 × 47 μm.

Caudal ramus similar to that of female but smaller, 16.5 × 18.5 μm, ratio 0.89:1.

Dorsal surface of body as in female; prosome tessellated as in that sex.

Rostral area as in female. First antenna (Fig. 13d) 280 μm long, 16-segmented. Lengths of segments: 23 (48 μm along anterior margin), 11, 8, 8, 8, 8, 9, 11, 10, 13, 30, 13, 11, 30, 36, and 17 μm, respectively. Armature: 1, 2, 2, 2, 2, 2, 2, 2, 6, 1 + 1 small spine, 1, 1, 0, 1, 0 + 1 aesthete, and 7. Setae hyaline and smooth. Second antenna, siphon, mandible, and first maxilla as in female. Maxilliped (Fig. 13e) similar to that of female but showing sexual dimorphism in having inner knob on both first and second segments. Postoral area like that of female.

Leg 3 with endopod showing sexual dimorphism (Fig. 13f), with spiniform process on second segment much longer than in female, third segment with distal outer process enlarged and sinuous and outer seta somewhat spiniform.

Leg 5 (Fig. 13g) with very small free segment 10 × 6 μm.

Leg 6 (Fig. 13h) posteroventral flap on genital segment bearing 2 small setae 26 and 17 μm.

Spermatophore (Fig. 13i) oval, 63 × 48 μm.

Color of living specimens as in female.

Etymology.—The specific name *laciniata,* Latin meaning fringed, refers to the finely serrated fringe on the epimera of the prosomal segments.

Remarks.—*Hetairosyna laciniata* may be recognized by the serrated fringe on the epimera of the prosomal segments in both sexes. In addition, the female of the new species shows several features that distinguish it from *H. terpna*: (1) the prosome is broader and more orbicular, (2) the female genital segment is as wide as long, (3) the seta on the palp of the mandible is smooth, (4) the second segment of the maxilliped is relatively shorter, (5) the inner coxal seta in legs 1–4 is short, and (6) the free segment of leg 5 is twice as long. In the male of *H. laciniata* the genital segment is much wider than in *H. terpna.*

Hetairosyna sororia, new species
Figs. 14, 15, 16

Type material.—10 ♀ from *Montipora ramosa* Bernard, in 2 m, north of Isle Maître, near Noumea, New Caledonia, 22°19′30″S, 166°24′35″E, 13 Jul 1971. Holotype (USNM 254436) and 7 paratypes (USNM 254437) deposited in the National Museum of Natural History, Smithsonian Institution, Washington, D.C. Remaining paratypes (dissected) in the collection of the author.

Other specimens.—From Madagascar, 1 ♀ from *Montipora sinensis* Bernard, in 1 m, Nosy Taolankena, near Nosy Bé, 15 Nov 1963; 1 ♀ from *Montipora* sp. cf. *M. stellata* Bernard, in 2 m, off Ampombilava, Nosy Bé, 26 Sep 1964.

From northeastern Australia: 2 ♀ from *Montipora verrilli* Vaughan, in 3 m, Mermaid Cove, Lizard Island, 14°39′50″S, 145°27′00″E, 27 Oct 1982.

From the Moluccas: 2 ♀ from *Montipora* sp. cf. *M. undata* Bernard, Poelau Parang, near Ceram, 03°17′00″S, 130°44′48″E, 23 May 1975.

Female.—Body (Fig. 14a) with broad prosome. Length 0.99 mm (0.94–1.01 mm) and greatest width 0.55 mm (0.50–0.61 mm), based on 10 specimens. Greatest dorsoventral thickness 0.30 mm. Epimera of segments bearing legs 1–3 pointed posteriorly, those of segment bearing leg 4 subtruncate. Ratio of length to width of prosome 1.26:1. Ratio of length of prosome to that of urosome 2.35:1.

Segment bearing leg 5 (Fig. 14b) 57 × 177 μm. Genital segment quadrate, 148 × 151 μm in dorsal view, with slightly convex sides. Genital areas situated dorsolaterally near middle of segment. Each genital area with 2 minute setae and spiniform process (Fig. 14b, c). Row of long strong setules on outer margin of segment posterior to genital areas. Two postgenital segments, first segment 62 × 92 μm, second segment 62 × 87 μm.

Caudal ramus (Fig. 14d) 29 × 36 μm in greatest dimensions, wider than long. Outer lateral seta, placed dorsally as in congeners, 107 μm, dorsal seta 65 μm, both smooth. Outermost terminal seta 165 μm, innermost terminal seta 195 μm, and 2 median terminal setae 330 μm (outer) and 380 μm (inner), swollen proximally, all with lateral setules.

Dorsal surface of prosome with extremely small scales. Urosome with more prominent scales (Fig. 14b) extending over dorsal and ventral surfaces (Fig. 14b,c) (all scales not illustrated). Caudal rami with few inner and outer scales (Fig. 14d).

Egg sac not seen.

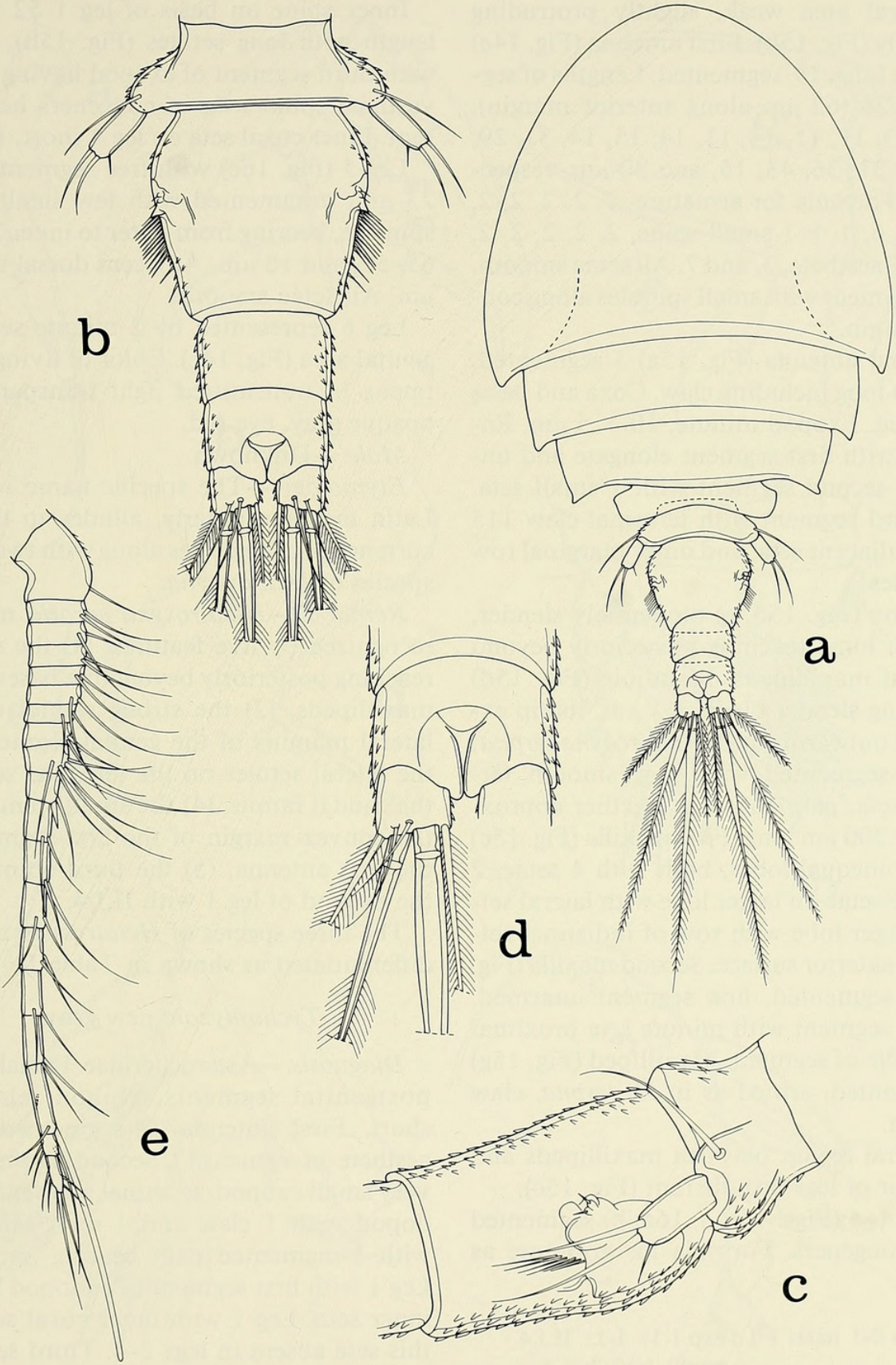

Fig. 14. *Hetairosyna sororia,* female. a, Dorsal (scale A); b, Urosome, dorsal (B); c, Segment bearing leg 5 and genital segment, lateral (B); d, Anal segment and caudal ramus, dorsal (E); e, First antenna, ventral (B). (In a–d scales not shown over entire surface.)

Rostral area weak, slightly protruding ventrally (Fig. 15b). First antenna (Fig. 14e) 460 μm long, 19-segmented. Lengths of segments: 26 (62 μm along anterior margin), 15.5, 13, 11, 11, 11, 11, 14, 15, 14, 31, 29, 31, 29, 31, 36, 43, 15, and 30 μm, respectively. Formula for armature: 1, 2, 2, 2, 2, 2, 2, 2, 6, 1 + 1 small spine, 2, 2, 2, 2, 2, 2, 2 + 1 aesthete, 3, and 7. All setae smooth. First segment with small spinules along convex margin.

Second antenna (Fig. 15a) 5-segmented, 352 μm long including claw. Coxa and basis unarmed. Exopod minute, 10 × 5 μm. Endopod with first segment elongate and unarmed, second segment with 1 small seta, and third segment with terminal claw 115 μm, 1 adjacent seta, and outer marginal row of setules.

Siphon (Fig. 15b, c) moderately slender, 180 μm long, reaching posteriorly beyond bases of maxillipeds. Mandible (Fig. 15d) with long slender blade 211 μm, its tip expanded outwardly as in *Hetairosyna terpna*; palp 1-segmented with long smooth terminal seta, palp and seta together approximately 200 μm long. First maxilla (Fig. 15e) with 2 unequal lobes, both with 4 setae, 2 of these setae on larger lobe with lateral setules; larger lobe with row of indistinct setules on anterior surface. Second maxilla (Fig. 15f) 2-segmented, first segment unarmed, second segment with minute seta proximal to middle of segment. Maxilliped (Fig. 15g) 5-segmented, armed as in *H. terpna,* claw 104 μm.

Ventral region between maxillipeds and first pair of legs protuberant (Fig. 15c).

Legs 1–4 (Figs. 15h, i, 16a, b) segmented as in congeners. Formula for armature as follows:

P_1 coxa 0-1 basis 1-I	exp I-1;	I-1;	II,I,4
	enp 0-1;	0-2;	1,5
P_2 coxa 0-1 basis 1-0	exp I-1;	I-1;	III,I,4
	enp 0-1;	0-2;	1,II,3
P_3 coxa 0-1 basis 1-0	exp I-1;	I-1;	III,I,4
	enp 0-1;	0-2;	1,II,3
P_4 coxa 0-1 basis 1-0	exp I-1;	I-1;	III,I,4
	enp 0-1;	0-2;	1,II,2

Inner spine on basis of leg 1 52 μm in length with long setules (Fig. 15h). Leg 1 with third segment of exopod having II,I,4, vestigial spine seen in congeners here absent. Inner coxal seta on leg 4 short, 16 μm.

Leg 5 (Fig. 16c) with free segment 47 × 23 μm, ornamented with few small outer spinules, bearing from outer to inner 3 setae 65, 55, and 18 μm. Adjacent dorsal seta 78 μm. All setae smooth.

Leg 6 represented by 2 minute setae on genital area (Fig. 14c). Color of living specimens in transmitted light transparent to opaque gray, eye red.

Male.—Unknown.

Etymology.—The specific name *sororia,* Latin meaning sisterly, alludes to the occurrence of this species along with two other species of *Hetairosyna.*

Remarks.—*Hetairosyna sororia* may be recognized by five features: (1) the siphon reaching posteriorly beyond the bases of the maxillipeds, (2) the strong setules on the lateral margins of the genital segment, (3) the lateral setules on the terminal setae of the caudal ramus, (4) the small spinules on the convex margin of the first segment of the first antenna, (5) the third segment of the exopod of leg 1 with II,I,4.

The three species of *Hetairosyna* may be differentiated as shown in Table 1.

Tychomyzon, new genus

Diagnosis.—Asterocheridae. Female: Two postgenital segments. Siphon relatively short. First antenna 18-segmented, with aesthete on segment 17. Second antenna with very small exopod, terminal segment of endopod with 1 claw and 1 seta. Mandible with 1-segmented palp bearing long seta. Leg 1 with first segment of endopod having inner seta. Leg 1 with inner coxal seta but this seta absent in legs 2–4. Third segment of endopod in legs 1–3 with formula 1,2,3, but in leg 4 with 1,2,1. Leg 4 with third segment of exopod having II,I,4. Leg 5 with minute free segment bearing 3 setae.

Male: Three postgenital segments. First antenna 16-segmented with aesthete on seg-

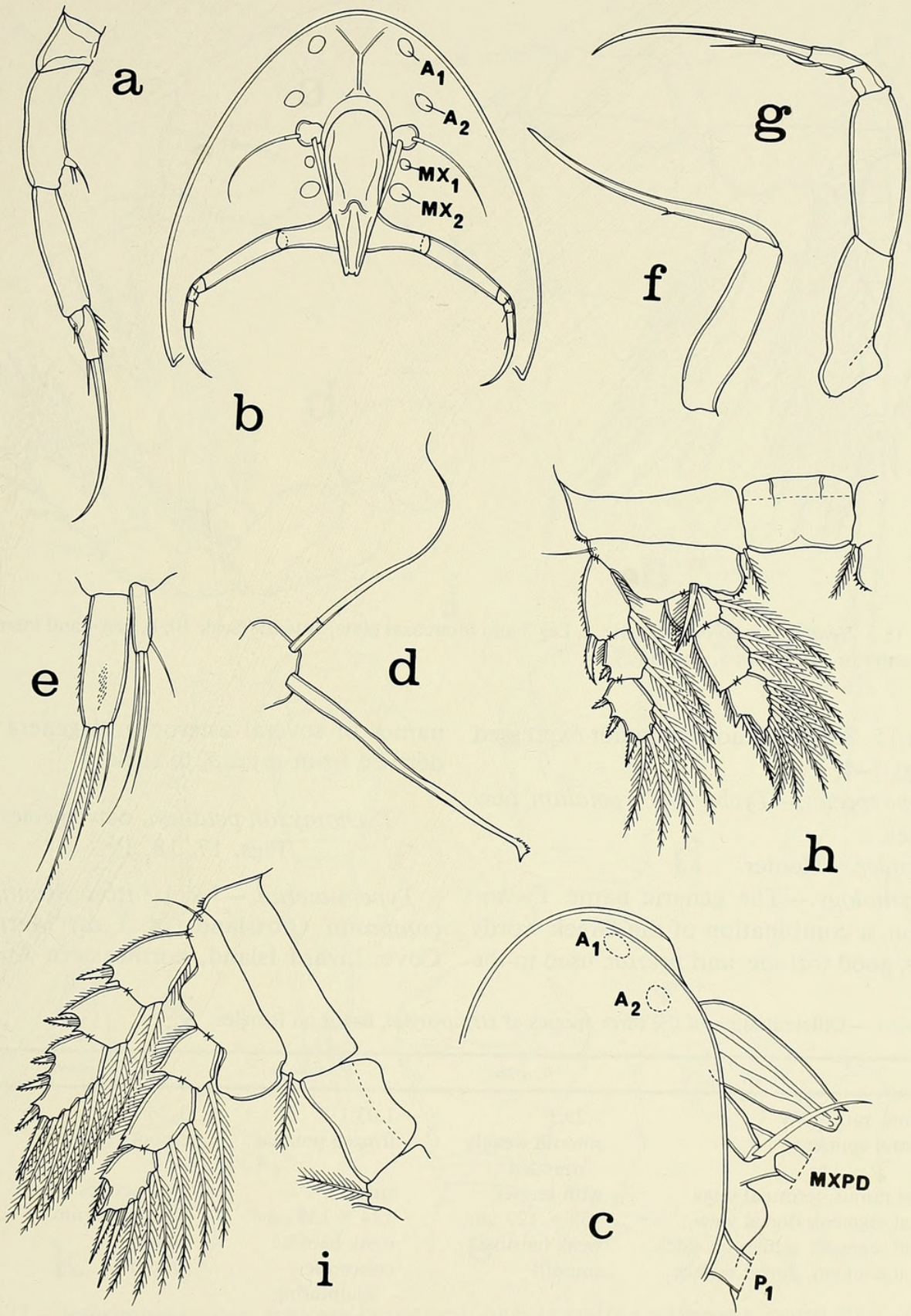

Fig. 15. *Hetairosyna sororia,* female. a, Second antenna, antero-outer (scale B); b, Cephalosome, ventral (A); c, Part of cephalosome, lateral (D); d, Mandible, anterior (B); e, First maxilla, posterior (E); f, Second maxilla, inner (B); g, Maxilliped, posterior (B); h, Leg 1 and intercoxal plate, anterior (B); i, Leg 2 and intercoxal plate, anterior (B).

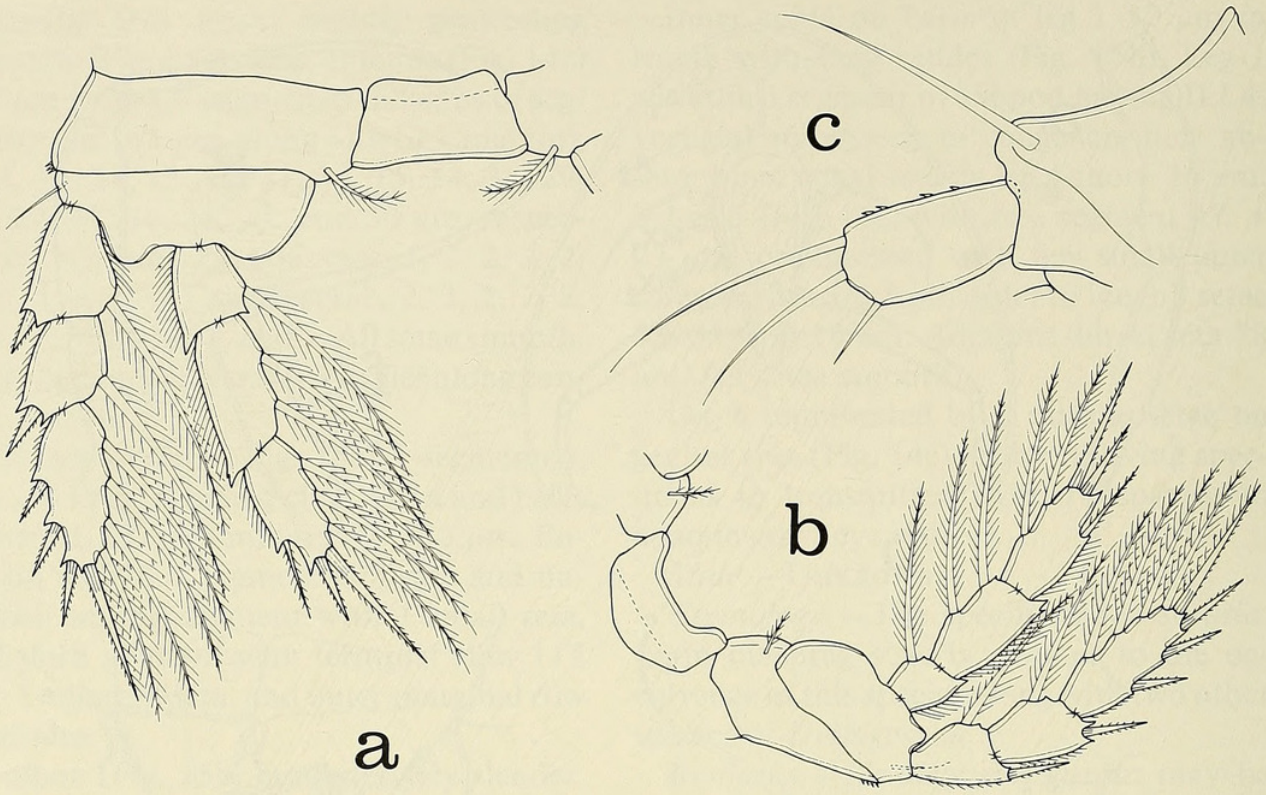

Fig. 16. *Hetairosyna sororia,* female. a, Leg 3 and intercoxal plate, anterior (scale B); b, Leg 4 and intercoxal plate, anterior (B); c, Leg 5, dorsal (C).

ment 15. Sexual dimorphism not expressed in legs 1–4.

Type species.—*Tychomyzon petalum,* new species.

Gender.—Neuter.

Etymology.—The generic name *Tychomyzon,* a combination of the Greek words *tyche,* good fortune, and *myzon,* used in the names of several asterocherid genera and derived from *myzao,* to suck.

Tychomyzon petalum, new species
Figs. 17, 18, 19

Type material.—7 ♀, 1 ♂ from *Montipora composita* Crossland, in 3 m, Mermaid Cove, Lizard Island, northeastern Austra-

Table 1.—Differentiation of the three species of *Hetairosyna,* based on females.

	H. terpna	*H. laciniata*	*H. sororia*
Prosome, ratio L/W	1.29:1	1.03:1	1.26:1
Prosomal epimera	smooth weakly rounded	fringed pointed	smooth pointed
Caudal ramus, terminal setae	with setules	smooth	with setules
Genital segment, dorsal view	153 × 127 μm	134 × 138 μm	148 × 151 μm
Genital segment, setules on sides	weak hairlike	weak hairlike	strong
Genital segment, dorsal surface	smooth	crescentic sculpturing	smooth
First antenna, anterior margin of first segment	smooth	smooth	with spinules
Siphon	reaches bases of maxillipeds	reaches bases of maxillipeds	reaches posterior to bases of maxillipeds
Leg 1 exopod, third segment	III,I,4	III,I,4	II,I,4
Leg 5, free segment	36 × 15.5 μm	18 × 10.5 μm	47 × 23 μm

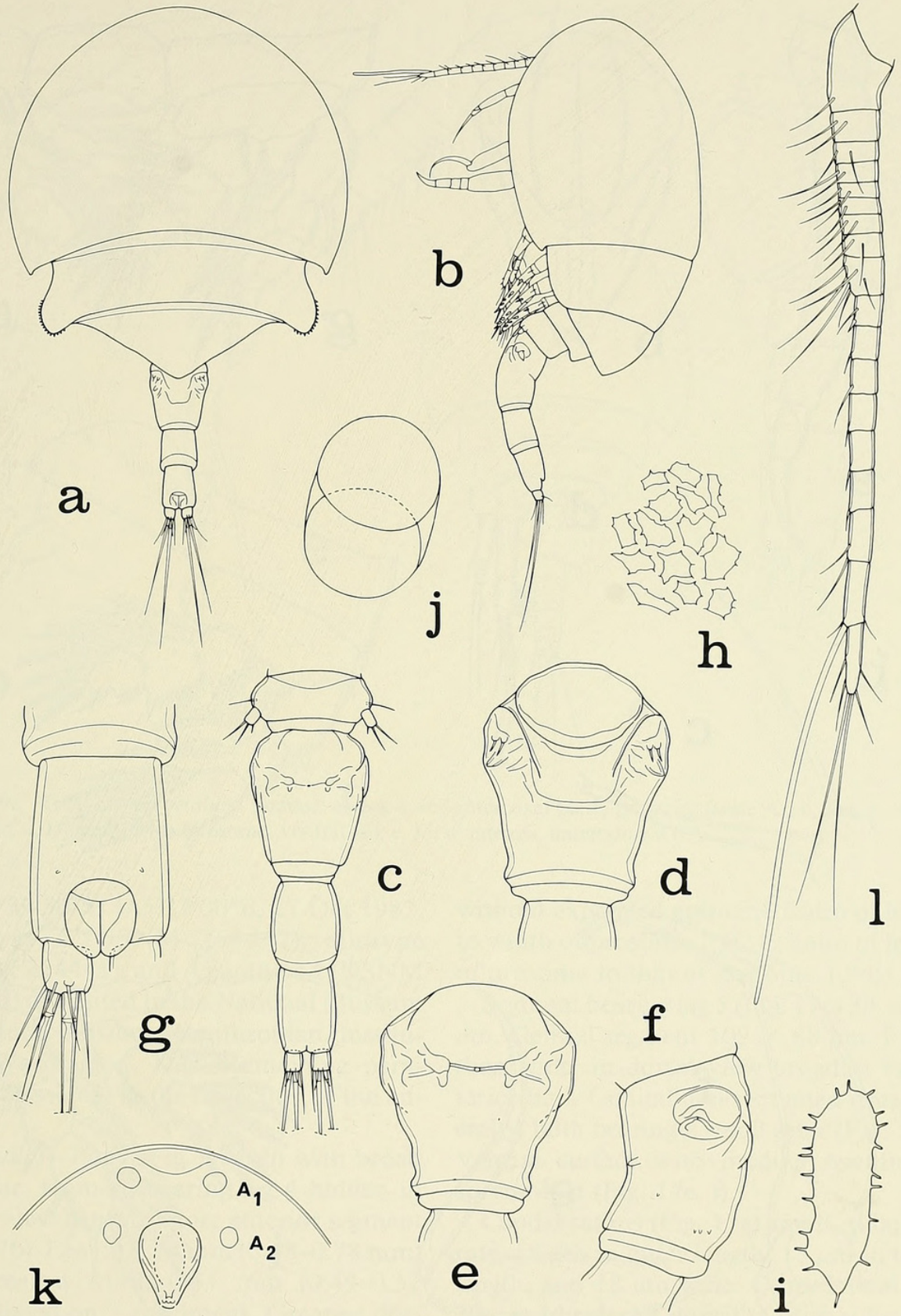

Fig. 17. *Tychomyzon petalum,* female. a, Dorsal (scale A); b, Lateral (A); c, Urosome, ventral (B); d, Genital segment, dorsal (D); e, Genital segment, ventral (D); f, Genital segment, lateral (D); g, Anal segment and caudal ramus, dorsal (C); h, Tesselations on dorsal surface of cephalosome, dorsal (E); i, Detail of tessellation on dorsal surface of cephalosome, dorsal (F); j, Egg sac, ventral (D); k, Rostral area and siphon, ventral (B); l, First antenna, posteroventral (C).

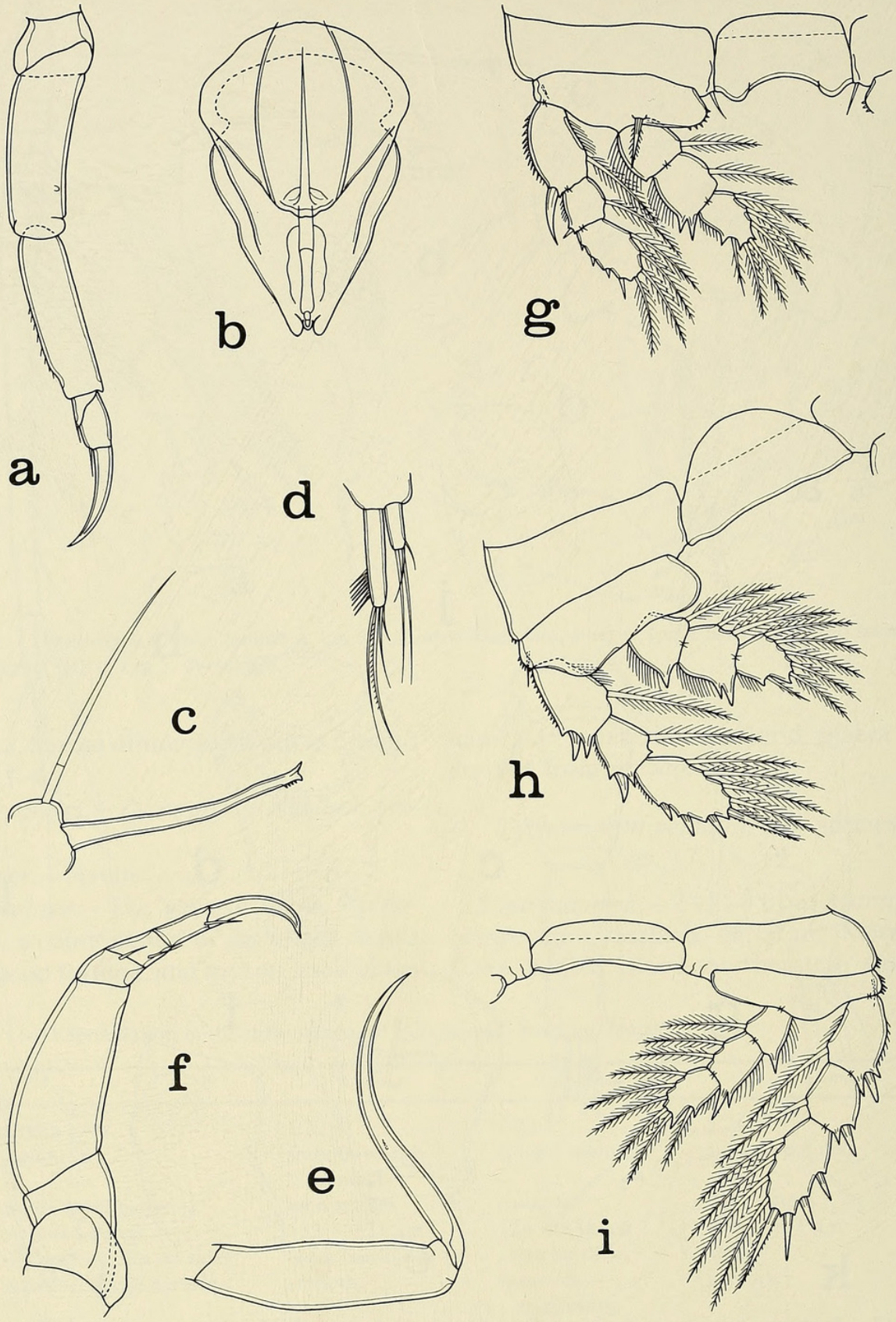

Fig. 18. *Tychomyzon petalum,* female: a, Second antenna, antero-outer (scale C); b, Siphon, dorsal (E); c, Mandible, anterior (E); d, First maxilla, anterior (E); e, Second maxilla, anterior (E); f, Maxilliped, posterior (E); g, Leg 1 and intercoxal plate, anterior (E); h, Leg 2 and intercoxal plate, anterior (E); i, Leg 3 and intercoxal plate, anterior (E).

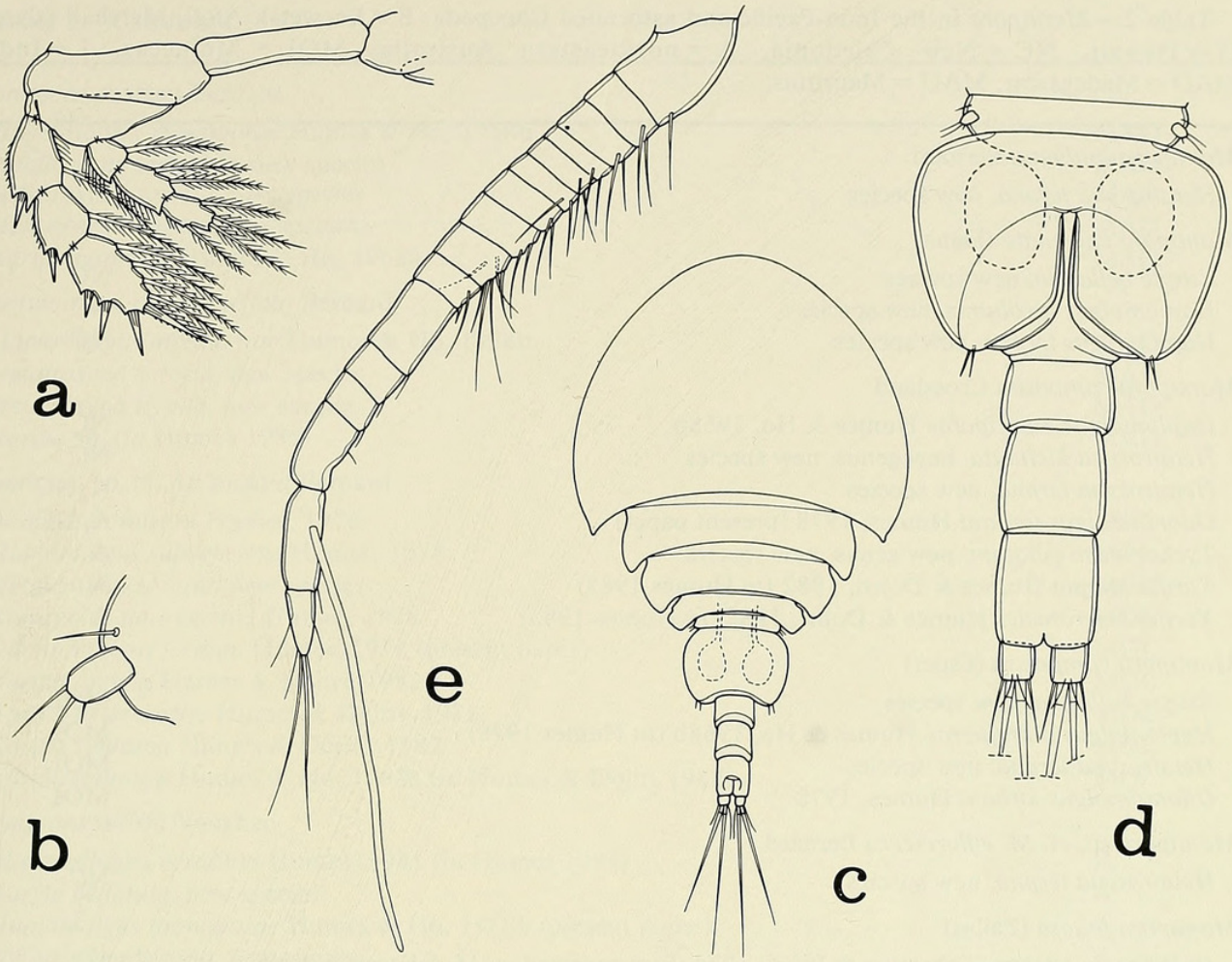

Fig. 19. *Tychomyzon petalum.* Female: a, Leg 4 and intercoxal plate, posterior (scale A); b, Leg 5, ventral (F). Male: c, Dorsal (A); d, Urosome, ventral (E); e, First antenna, anterodorsal (C).

lia, 14°39′50″S, 145°27′00″E, 27 Oct 1982. Holotype ♀ (USNM 254442), allotype (USNM 254441), and 4 paratype ♀ (USNM 254473) deposited in the National Museum of Natural History, Smithsonian Institution, Washington, D.C. Remaining paratypes (dissected) in the collection of the author.

Female.—Body (Fig. 17a, b) with broad prosome, segment bearing leg 4 hidden in dorsal view beneath more anterior segment (Fig. 17b). Length 0.74 mm (0.68–0.78 mm) and greatest width 0.51 mm (0.49–0.52 mm), based on 7 specimens. Greatest dorsoventral thickness 0.26 mm. Epimera of segment bearing leg 1 pointed, those of segment bearing leg 2 rounded and finely serrated. In dorsal view segment bearing leg 3 triangular and segment bearing leg 4 small, without expanded epimera. Ratio of length to width of prosome 1.19:1. Ratio of length of prosome to that of urosome 1.94:1.

Segment bearing leg 5 (Fig. 17c) 39 × 100 μm. Genital segment 109 × 88 μm, longer than wide, in dorsal view broadest in anterior half. Genital areas situated dorsolaterally, both bearing 2 small setae (Fig. 17d). Ventral surface with median opening of sperm duct (Fig. 17e, f).

Caudal ramus (Fig. 17g) small, subquadrate, 18 μm in outer length, 15 μm in inner length, and 18 μm wide. Outer lateral seta 20 μm (displaced dorsally), dorsal seta 22 μm, outermost terminal seta 38 μm, innermost terminal seta 30 μm, and 2 long median terminal setae 133 μm (outer) and 195 μm (inner). All setae smooth.

Dorsal surface of prosome with irregu-

Table 2.—*Montipora* in the Indo-Pacific and associated Copepoda. E = Enewetak Atoll, Marshall Islands, H = Hawaii, NC = New Caledonia, A = northeastern Australia, MOL = Moluccas, I = India, MAD = Madagascar, MAU = Mauritius.

Montipora ambigua Bernard	
Hetairosyna terpna, new species	E
Montipora caliculata (Dana)	
Euryte bellatula, new species	NC
Haplomolgus incolumis, new species	NC
Haplomolgus terpna, new species	NC
Montipora composita Crossland	
Haplomolgus montiporae Humes & Ho, 1968b	NC
Hetairosyna laciniata, new genus, new species	NC
Hetairosyna terpna, new species	A, NC
Odontomolgus forhani Humes, 1978 (present paper)	A, NC
Tychomyzon petalum, new genus, new species	A
Xarifia anopla Humes & Dojiri, 1982 (*in* Humes 1985)	A
Xarifia heteromeles Humes & Dojiri, 1982 (*in* Humes 1985)	A
Montipora compressa (Esper)	
Euryte bellatula, new species	MOL
Haplomolgus montiporae Humes & Ho, 1968b (*in* Humes 1978)	MOL
Hetairosyna terpna, new species	MOL
Odontomolgus forhani Humes, 1978	MOL
Montipora sp. cf. *M. efflorescens* Bernard	
Hetairosyna terpna, new species	NC
Montipora foliosa (Pallas)	
Indoclausia bacescui Sebastian & Pillai, 1974 (host reported as *M. foliacea,* but see Veron 1986:9–12)	I
Montipora lobulata Bernard	
Euryte bellatula, new species	NC
Haplomolgus montiporae Humes & Ho, 1968b (present paper)	NC
Hetairosyna laciniata, new species	NC
Hetairosyna terpna, new species	NC
Odontomolgus forhani Humes, 1978 (present paper)	NC
Montipora patula Verrill	
Hetairosyna terpna, new species	E
Montipora prolifera Brueggemann	
Euryte bellatula, new species	MOL
Hetairosyna terpna, new species	MOL
Odontomolgus forhani Humes, 1978	MOL
Montipora ramosa Bernard	
Euryte bellatula, new species	NC
Haplomolgus montiporae Humes & Ho, 1968b (present paper)	NC
Hetairosyna laciniata, new species	NC
Hetairosyna sororia, new species	NC
Hetairosyna terpna, new species	NC
Odontomolgus forhani Humes, 1978 (present paper)	NC
Xarifia pectinea Humes & Dojiri, 1982	NC
Xarifia temnura Humes & Ho, 1968a (*in* Humes & Dojiri 1982)	NC

Table 2.—Continued.

Montipora sinensis Bernard	
Haplomolgus montiporae Humes & Ho, 1968b	MAD
Hetairosyna laciniata, new species	MAD
Hetairosyna sororia, new species	MAD
Hetairosyna terpna, new species	MAD
Xarifia temnura Humes & Ho, 1968a	MAD
Montipora sp. cf. *M. stellata* Bernard	
Haplomolgus montiporae Humes & Ho, 1968b	MAD
Hetairosyna sororia, new species	MAD
Hetairosyna terpna, new species	MAD
Xarifia sp. (*in* Humes 1985)	MAD
Montipora sp. cf. *M. undata* Bernard	
Allopodion mirum Humes, 1978	MOL
Haplomolgus subdeficiens Humes, 1978	MOL
Hetairosyna sororia, new species	MOL
Kawanolus parangensis Humes, 1978	MOL
Odontomolgus forhani Humes, 1978 (present paper)	MOL
Xarifia anopla Humes & Dojiri, 1982	MOL
Xarifia heteromeles Humes & Dojiri, 1982	MOL
Xarifia syntoma Humes & Dojiri, 1982	MOL
Xarifia temnura Humes & Ho, 1968a (*in* Humes & Dojiri 1982)	MOL
Montipora verrilli Vaughan	
Alteuthellopsis corallina Humes, 1981 (*in* Humes 1984)	A
Euryte bellatula, new species	A
Haplomolgus montiporae Humes & Ho, 1968b (present paper)	A
Hetairosyna sororia, new species	A
Odontomolgus forhani Humes, 1978 (present paper)	A
Montipora verrucosa (Lamarck)	
Tegastes gemmeus Humes, 1984	H
Xarifia apertipes Humes & Dojiri, 1983	MAD
Montipora sp.	
Asteropontius corallophilus Stock, 1966	MAU
Haplomolgus montiporae Humes & Ho, 1968b (also *in* Humes & Stock 1973)	MAD
Hetairosyna terpna, new species	MAD
Xarifia anopla Humes & Dojiri, 1982	MAD
Xarifia extensa Humes & Dojiri, 1982	A, MAD

larly shaped tessellations having minute slender digitiform processes (Fig. 17h, i).

Egg sac (Fig. 17j) with 2 eggs, both approximately 130 × 117 μm.

Rostrum (Fig. 17k) small and inconspicuous. First antenna (Fig. 17l) 240 μm long, 18-segmented. Lengths of segments: 16 (32 μm along anterior margin), 11, 8, 8, 5, 5, 8, 10, 12, 10, 12, 12, 12, 12, 12, 16.5, 20, and 23 μm, respectively. Armature: 1, 2, 2, 2, 2, 2, 2, 2, 6, 1 + 1 small spine, 1, 1, 1, 1, 1, 2, 2 + 1 aesthete, and 6. All setae smooth and hyaline.

Second antenna (Fig. 18a) 5-segmented, 195 μm long. Coxa and basis unarmed. Exopod minute knob, 2 μm long, without visible setae. Endopod with elongate first segment bearing inner setules, short triangular

Table 3.—Copepoda associated with *Montipora* in the Indo-Pacific.

Allopodion mirum
Montipora sp. cf. *M. undata*
Alteuthellopsis corallina
Montipora verrilli
Asteropontius corallophilus
Montipora sp.
Euryte bellatula, new species
Montipora caliculata
Montipora compressa
Montipora lobulata
Montipora prolifera
Montipora ramosa
Montipora verrilli
Haplomolgus incolumis, new species
Montipora caliculata
Haplomolgus montiporae
Montipora composita
Montipora compressa
Montipora lobulata
Montipora ramosa
Montipora sp. cf. *M. stellata*
Montipora sinensis
Montipora verrilli
Montipora sp.
Haplomolgus subdeficiens
Montipora sp. cf. *M. undata*
Hetairosyna laciniata, new genus, new species
Montipora composita
Montipora lobulata
Montipora ramosa
Montipora sinensis
Hetairosyna sororia, new genus, new species
Montipora ramosa
Montipora sinensis
Montipora sp. cf. *M. undata*
Montipora verrilli
Hetairosyna terpna, new genus, new species
Montipora ambigua
Montipora caliculata
Montipora composita
Montipora compressa
Montipora sp. cf. *M. efflorescens*
Montipora lobulata
Montipora patula
Montipora prolifera
Montipora ramosa
Montipora sinensis
Montipora sp. cf. *M. stellata*
Montipora sp.
Odontomolgus forhani
Montipora composita
Montipora lobulata
Montipora ramosa
Montipora sp. cf. *M. undata*
Montipora verrilli
Tegastes gemmeus
Montipora verrucosa
Tychomyzon petalum, new genus, new species
Montipora composita
Xarifia anopla
Montipora composita
Montipora sp. cf. *M. undata*
Montipora sp.
Xarifia apertipes
Montipora verrucosa
Xarifia extensa
Montipora sp.
Xarifia heteromeles
Montipora composita
Montipora sp. cf. *M. undata*
Xarifia pectinea
Montipora ramosa
Xarifia syntoma
Montipora sp. cf. *M. undata*
Xarifia temnura
Montipora ramosa
Montipora sinensis
Montipora sp. cf. *M. undata*
Xarifia sp.
Montipora sp. cf. *M. stellata*

second segment with 1 seta, and third segment bearing terminally 1 claw 34 μm long and 1 seta.

Siphon (Figs. 17k, 18b) 150 μm long. Mandible (Fig. 18c) with long slender blade 109 μm, its tip inwardly dentate and expanded outwardly. Palp 1-segmented with long smooth seta, palp and seta together 117 μm long. First maxilla (Fig. 18d) with 2 unequal lobes, longer inner lobe with inner margin having setules and bearing 4 terminal setae, one of them unilaterally with setules; shorter outer lobe with 4 setae, one of them subterminal. Second maxilla (Fig. 18e) 2-segmented, first segment unarmed, second segment recurved with 1 minute seta midway on posterior surface. Maxilliped (Fig. 18f) 5-segmented, first 2 segments unarmed, last 3 segments with 1 seta each, terminal claw 47 μm with beaklike tip.

Legs 1–4 (Figs. 18g–i, 19a) biramous and 3-segmented. Formula for armature as follows:

P_1 coxa 0-1 basis 1-I	exp I-1;	I-1;	III,I,4
	enp 0-1;	0-1;	1,2,3
P_2 coxa 0-0 basis 1-0	exp I-1;	I-1;	III,I,4
	enp 0-1;	0-2;	1,2,3
P_3 coxa 0-0 basis 1-0	exp I-1;	I-1;	III,I,4
	enp 0-1;	0-2;	1,2,3
P_4 coxa 0-0 basis 1-0	exp I-1;	I-1;	III,I,4
	enp 0-1;	0-2;	1,2,1

Leg 1 with inner coxal seta, but this seta absent in legs 2–4. Basis of leg 1 having inner barbed spine 26 μm long, inner expansion of basis with row of small denticles on margin. Outer spine on first segment of exopod of leg 1 enlarged, recurved, 31 μm long. Leg 4 with third segment of endopod having 1,2,1.

Leg 5 (Figs. 17c, 19b) minute, free segment 13 × 9 μm, unornamented and inserted slightly ventrally. Free segment armed with 3 setae.

Leg 6 represented by 2 small setae on genital segment (Fig. 17d).

Color of living specimens in transmitted light opaque gray, eye red.

Male.—Body (Fig. 19c) with broad prosome. Length 0.51 mm, greatest width 0.40 mm, based on allotype. Segment bearing leg 4 not covered in dorsal view by segment bearing leg 3. Ratio of length to width of prosome 1:1. Ratio of length of prosome to that of urosome 1.53:1.

Segment bearing leg 5 (Fig. 19d) 31 × 90 μm. Genital segment 80 × 120 μm, wider than long, widest in anterior third. Three postgenital segments from anterior to posterior 28 × 46, 37 × 39, and 39 × 37 μm.

Caudal ramus like that of female but smaller, 13 × 13 μm.

Dorsal surface of prosome not tessellated as in female.

Rostrum similar to that of female. First antenna (Fig. 19e) 195 μm long, 16-segmented, slightly modified. Lengths of segments: 13 (33 μm along anterior margin), 10, 9, 4, 5, 6, 8, 9, 10, 10, 19, 9, 9, 21, 24, and 14 μm, respectively. Armature: 1, 2, 2, 2, 2, 2, 2, 2, 6, 1 + 1 small spine, 1, 1, 1, 1, 1 + 1 aesthete, and 6. Setae smooth and hyaline.

Second antenna, siphon, mandible, first maxilla, second maxilla, maxilliped, and legs 1–4 resembling those of female.

Leg 5 (Fig. 19d) with minute free segment approximately 8 × 6 μm.

Leg 6 (Fig. 19d) posteroventral flap on genital segment bearing 2 small setae.

Extruded spermatophore not seen.

Color as in female.

Etymology.—The specific name *petalum,* Greek *petalos,* broad, outspread, alludes to the unusually broad prosome.

Relatively few species of *Montipora* have been examined for copepod associates. The 15 species of *Montipora* recorded as hosts in Table 2 constitute less than half of the 38 species known from Australia listed by Veron (1986), and only a small fraction of the 211 nominal species. Ten species of *Montipora* have three or more species of copepod associates, with the greatest number being nine in the case of *Montipora* sp. cf. *M. undata* in the Moluccas. With 20 species of copepods already known to live with *Montipora* (Table 3), it seems certain that further studies will reveal many more copepods associated with this large and abundant coral genus.

Acknowledgments

I thank several individuals who have given much assistance and encouragement: Dr. Michel Angot, Director of the Centre ORSTOM de Nosy Bé, Madagascar, for making my work during more than two years at Nosy Bé pleasant and productive; Dr. Michel Pichon, James Cook University, Townsville, Australia, for arranging a diving trip to the Great Barrier Reef; Pierre Laboute, diver at the Centre ORSTOM de Nosy Bé, my companion on many SCUBA dives; Dr. Geoffrey A. Boxshall, British Museum (Natural

History) for helpful comments during the preparation of the manuscript; Dr. Thomas E. Bowman, National Museum of Natural History, Smithsonian Institution, for bibliographic information; and Dr. John H. Wells, Cornell University, for the identification of many of the corals.

Support from the following is gratefully acknowledged: the National Science Foundation (in Madagascar, 1963–1964, 1967; New Caledonia, 1971; the Moluccas, 1975; Hawaii and Australia, 1982) and the Enewetak Marine Biological Laboratory (at Enewetak Atoll, Marshall Islands, 1969).

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