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# *GUERNEA IPILYA* AND *G. YAMMINYE*, NEW SPECIES (CRUSTACEA: AMPHIPODA: DEXAMINIDAE), FROM THE GREAT BARRIER REEF, AUSTRALIA

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**Abstract**

Thomas, J.D. and Barnard, J.L., 1991. *Guernea ipilya* and *G. yamminye*, new species (Crustacea: Amphipoda: Dexaminidae), from the Great Barrier Reef, Australia. *Memoirs of the Museum of Victoria* 52: 299–310.

A modern diagnosis of *Guernea* is given, its species listed with their biogeographical distributions based on Barnard and Barnard (1983). Two species, *Guernea ipilya* and *G. yamminye*, are described from rubble in shallow water on the Great Barrier Reef. *Guernea ipilya* differs from its sympatriot, *G. endota*, in: lack of mid-dorsal spines on the urosome, with the side spines smaller; spinose telson; much longer and denser setae on article 2 of pereopod 5; larger posterior lobe of coxa 5; shorter anterior lobe of coxa 6; stouter antennae; lack of hump on urosomite 1; short pereopod 6; lack of major posterior spines on article 6 of pereopods 3–4; and lack of spines on rami of female uropod 3. *Guernea yamminye* differs from *G. reticulatus* in the lack of serrations on article 2 of pereopod 7 and the weaker envelopment of article 6 by article 5 on pereopod 7.

## Introduction

Two new species, *Guernea ipilya* and *G. yamminye*, are described from rubble in shallow-water on the Great Barrier Reef. Information about *Guernea* is updated, with a list of species and their important references, their distribution, including codes of distribution found in Barnard and Barnard (1983).

### Dexaminidae Leach

### Prophliantinae Nicholls

### Guernea Chevreux

*Helleria* Norman, 1868: 418 [homonym, Isopoda] (type species, *Helleria coalita* Norman, 1868, monotypy).

*Guernea* Chevreux, 1887: 302 (replacement name).—Stebbing, 1906: 521 [in part].—Ledoyer, 1982: 346 [valid subgenus].

*Prinassus* Hansen, 1888: 82 (type species *Prinassus nordenskioldi* Hansen, 1888, original designation) [valid subgenus].

*Dexamonica* J.L. Barnard, 1958: 130 (type species, *Dexamonica reduncans* J.L. Barnard, 1958, monotypy) [subgeneric synonym of *Prinassus*].

*Haustoriopsis* Schellenberg, 1938a: 12 (type species *Haustoriopsis reticulatus* Schellenberg, 1938a, monotypy) [subgeneric synonym of *Guernea*].

*Diagnosis.* Only urosomites 2–3 coalesced. Article 5 of pereopod 7 normally rectangular. Article 4 of pereopod 5 not asymmetrically expanded. Uropod 2 shortened.

*Description.* Cephalic lobes rounded. Eyes present. Molar weakly to scarcely triturative; rakers weak, sparse or absent; mandibular palp absent; maxillae poorly setose, though inner plate often with medial setae; inner plate of maxilliped small to ordinary, palp slightly reduced, 4-articulate. Gnathopods ordinary though palms occasionally subtransverse. Pereopods simple, pereopods 5–7 typical of subfamily. Uropod 2 short; uropod 3 small, rami lanceolate. Telson deeply cleft. Gills narrow, ovate or elliptical, on coxae 2–6; oostegites slender.

*Sexual dimorphism.* Body of male thinner and more streamlined than in female, pleon enlarged, anterior coxae compacted; eyes enlarged; flagellum of antenna 2 elongate, multiarticulate; article 1 of antenna 1, article 4 of antenna 2 often swollen and brushy and often rugose; uropod 3 setose (only spinose in female). Mouthparts occasionally degenerate in varying degree.

*Remarks.* Ledoyer (1982) noted that the differences between *Guernea* and *Haustoriopsis* were bridged by species described since 1938 and therefore reduced *Haustoriopsis* to subgeneric level under *Guernea*. We now judge the differences between the two subgenera to be so insub-

stantial that *Haustoriopsis* must be submerged totally.

Identifying species in this genus is very difficult. Many are poorly described and lack detail about both sexes. Minor differences between sexes are probably important and should be illustrated. For example, the mouthparts of males in well known species differ from those of females but often male mouthparts are overlooked. Some of the coxae are unknown for most species. The precise microscopic appearance of the dorsal surface of the urosome is unknown for many species. Almost nothing has been published on intraspecific variation.

*Variables.* The following significant variations occur in the genus: palp of maxilla 1 uniarticulate (*G. endota*, etc.) or biarticulate (normal); inner plate of maxilla 2 very short (*G. timaru*); inner plate of maxilliped short (*G. gelane*). or long (*G. endota*); article 4 of pereopod 5 dilated (*G. latipes*) or not (*G. reticulatus*); article 5 of pereopod 7 strongly (*G. reticulatus*) or scarcely (type and *G. latipes*) enveloping article 6; inner rami of uropods 1–2 reduced (*G. gelane*, *G. tumulosa*); spines on uropods 1–2 shortened (*G. rhomba*, *G. tumulosa*).

*Distribution.* Marine, cosmopolitan except for Antarctica, 0–255 m, 25 species.

*Species.* See J.L. Barnard (1966a, b, 1970); Barnard and Barnard (1983) for explanation of geographic codes cited in brackets; Bulycheva (1957); Fage (1933); Gurjanova (1951); Karaman (1973); Shoemaker (1930, 1955).

*Guernea* (*Guernea*) *brevispinis* Ledoyer, 1982, Madagascar [698].

*Guernea* (*Guernea*) *coalita* (Norman, 1968) (= *laevis* Chevreux 1887) (Chevreux and Fage, 1925) (Lincoln, 1979) (Bellan-Santini, 1982) warm E. Atlantic, Mediterranean [352].

*Guernea* (*Guernea*) *endota* J.L. Barnard, 1972a, SW Australia [787].

*Guernea* (*Guernea*) *gelane* J.L. Barnard, 1972a, SE Australia [781].

*Guernea* (*Guernea*) *ipilya* Thomas and Barnard, herein, NE tropical Australia [633].

*Guernea* (*Guernea*) *latipes* Ledoyer, 1979 (= *petalocera* ID of Ledoyer, 1973), Madagascar [698].

*Guernea* (*Guernea*) *longicornis* Ledoyer, 1982, Madagascar [698].

*Guernea* (*Guernea*) *magnaphilostoma* Hirayama, 1985, S. Japan [395].

*Guernea* (*Guernea*) *melape* J.L. Barnard, 1972a, southern Australia [780].

*Guernea* (*Prianassus*) *nordenskioldi* (Hansen, 1888) (J.L. Barnard, 1970) (Just, 1980), amphi-Atlantic and Mediterranean [354+].

*Guernea* (*Prianassus*) *nullispina* Hirayama, 1985, S. Japan [395].

*Guernea* (*Guernea*) *petalocera* Ruffo, 1959, Red Sea [677].

*Guernea* (*Guernea*) *quadrispinosa* Stephensen, 1944 (Bulycheva, 1957), Sea of Japan [391].

*Guernea* (*Prianassus*) *rectocephala* Hirayama, 1985, S. Japan [395].

*Guernea* (*Prianassus*) *reduncans* (J.L. Barnard, 1958, 1970), warm-temperate California [373].

*Guernea* (*Guernea*) *reticulatus* (Schellenberg, 1938), Bismarck Archipelago [595].

Guernea (*Guernea*) *rhomba* Griffiths, 1974, 1975, southern Africa [743].

*Guernea* (*Guernea*) *spinicornis* Ledoyer, 1982, Madagascar [698].

*Guernea* (*Guernea*) *tenuipes* Ledoyer, 1979, Madagascar [698].

*Guernea* (*Prianassus*) *terelamina* Hirayama, 1985, S. Japan [395].

*Guernea* (*Guernea*) *timaru* J.L. Barnard, 1972b, NE New Zealand [773].

*Guernea* (*Prianassus*) *tomiokaensis* Hirayama, 1985, S. Japan [395].

*Guernea* (*Guernea*) *tumulosa* Griffiths, 1976, southern Africa, inquilinous [743I].

*Guernea* (*Guernea*) *unchalka* J. L. Barnard, 1972a, SW Australia [787].

*Guernea* (*Guernea*) *yamminye* Thomas and Barnard, herein, NE tropical Australia [633].

*Guernea* species, *laevis* ID of Walker, 1904, Ceylon [665].

**Key to subgenera of *Guernea***

Urosomite 1 with weak dorsal hump in both sexes ..... *Guernea*
Urosomite 1 with retrorse dorsal process in female, high keel in male .....
..... *Prinassus*

**Guernea (Guernea) ipilya** sp. nov.

Figures 1–4 (part)

*Material examined.* 1 male, 2 females, 1 juvenile.

Holotype: Australia, Queensland, Lizard Island, 2.5 m, rubble sample near Lizard Head, J.D. Thomas and J. Clark, 31 Jan 1989, Museum of Victoria (NMV) J20494 (female "w" with 8 eggs, 1.99 mm).

Paratypes: Type locality, NMV J20495 (juvenile "y", 1.67 mm); USNM 253716 (female "x", 2.30 mm).

Additional material: Lizard Island, North Point, 13 m, 28 Jan 1989, rubble sample from vertical cliff and unconsolidated bottom, J.D. Thomas, 2 specimens. Lizard Island, Mermaid Island, 1–2 m, 26 Jan 1989, formalin wash of rubble, J.D. Thomas, 1 female.

*Diagnosis.* Accessory flagellum absent; antenna 2 unlobed but thick; mandibular incisors with 2–3 (right) or 3–4 (left) very weak teeth, spine row absent on right, with 1 large, 1 vestigial spine on left, molar with seta; inner lobes of lower lip large, fleshy and separate; palp of maxilla 1 reaching apex of outer plate, uniarticulate, apex with 1 spout and 2 setae; inner plate of maxilla 2 much shorter and broader than outer plate, bearing 3 apicomedial marginal setae, outer plate with medium, subtruncate apex, palp with 9 setae; inner plate of maxilliped small, outer plate reaching middle of palp article 3; gnathopod 2 as broad as but longer than gnathopod 1; coxa 5 with very large, lobuliform, rounded posterior lobe, anterior lobe on coxa 6 vestigial; anterior setae on article 2 of pereopod 5 well developed, article 6 elongate, articles 4–5 of pereopod 7 of broad form, article 5 not enveloping article 6, dactyl large; inner rami of uropods 1–2 as long as outer, peduncle of uropod 2 with 2 dorsal spines, apical spines of rami on uropods 1–2 of short form (in context of genus); telson only 1.1 times as long as broad; epimeron 3 with posteroventral margin smoothly rounded; urosomite 1 with weak rugose double dorsal crest, urosomites 2–3 (fused) of medium height, almost evenly rounded and sloping posteriorwards, bearing about 8–15 weak setules each; apical spines on rami of uropods 1–2 of short form (in context of genus); cuticle (light microscopy, 1000×) with arcuate or semicircular scale-serrations in lines, variable.

*Description.* Eyes with deep purple cores in alcohol; upper lip rounded-truncate below; right lacinia mobilis smaller and more weakly toothed (5 small, 2 large) than left (6 large); outer plate of maxilla 1 with 9 spines, palp apex with cusp-like spout and 2 setae; basis of gnathopod 1 s-shaped, palms of gnathopods smooth, medial faces of propodi with only 2–4 weak setae, dactyls bearing one large inner tooth; posterior margins on article 6 of pereopods 3–4 minutely ridged; pereopod 4 like 3 but article 5 with 1 less spine, article 4 with 1 less seta; epimeron 1 with enormous inward bending anteroventral lobe; uropod 2 with 2 basofacial setae in tandem; urosomite 1 naked ventrally. Oostegites: of coxa 2 half as long as basis of gnathopod 2, truncate apically, slender, subrectangular, with 2 apical setae, of coxae 3–4 similar but with additional posteroventral seta, of coxa 5 similar, with 4 setae. Gills of coxae 2–5 large sacs, of coxa 6 smaller, absent on coxa 7.

Pleopods: ratio of lengths of peduncle, outer and inner rami for pleopods 1–3 = 29:33:32, 25:28:28, and 26:28:26: articles of outer and inner rami for pleopods 1–3 = 7–7, 7–7, 7–7; coupling spines 2; each peduncle with 2 setae.

*Etymology.* From the Australian Aboriginal language, named after the giant lizard god creating monsoons and thunderstorms. Noun in apposition.

*Distribution.* Australia, Great Barrier Reef, Lizard Island, 1-3 m, rubble.

*Relationship. Guernea ipilya* differs from the Australian *G. endota* in: (1) lack of mid-dorsal spines on the urosome, with the side spines smaller; (2) spinose telson; (3) much longer and denser setae on article 2 of pereopod 5; (4) larger posterior lobe of coxa 5; (5) shorter anterior lobe of coxa 6; (6) stouter antennae; (7) lack of hump on urosomite 1; (8) short pereopod 6; (9) lack of major posterior spines on article 6 of pereopods 3-4; (10) lack of spines on rami of female uropod 3. There are also many differences in mandible, maxillae 1-2 and maxilliped.

It differs from the Australian *G. gelane* in points 2, 6, 8, 9, and 10 above, plus (11) long inner rami of uropods 1–2; and (12) the very spinulose rims of the urosome.

It differs from the Australian *G. melape* in points 1, 2, 4, 5, 6, 7, 9, 10 and 12.

We have compared our species to only those from other parts of the world which: (1) lack humps and large spines on the urosome; (2) lack cusps on antenna 2; (3) have coxa 5 with large well developed anterior lobe but a much larger rounded posterior lobe; (4) have equally extending rami of uropods 1–2; (5) have slightly oblique (versus transverse) palms on the gnathopods.

Our new species appears to be very close to the Madagascan *G. latipes* but differs mainly in the

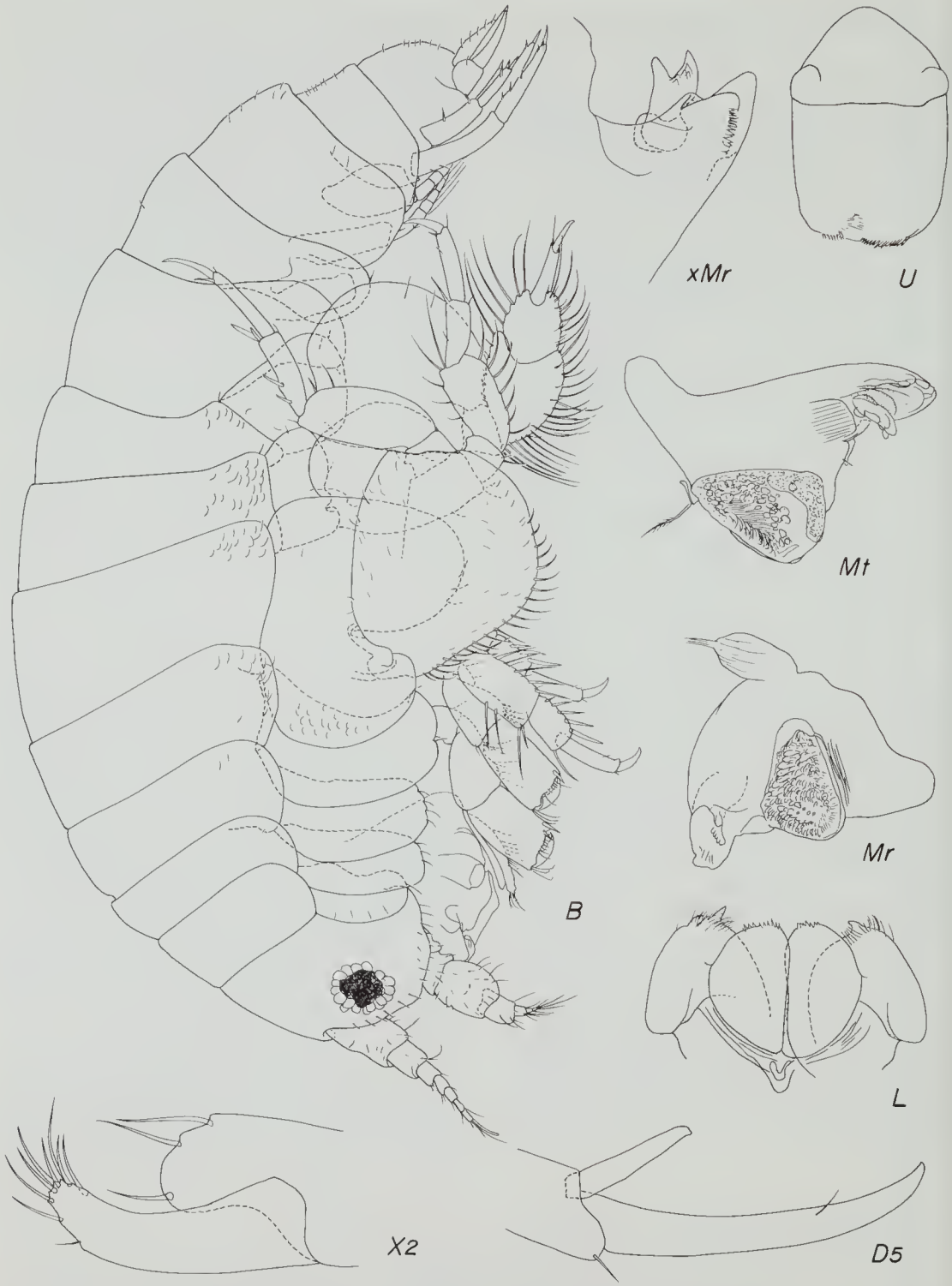


Figure 1. *Guernea ipilya*, unattributed figures = holotype female "w", 1.99 mm; x= female "x", 2.30 mm. Capital letters in figures refer to parts; lower case letters to left of capital letters refer to specimens and to the right refer to adjectives as described below; "unattributed" refers to main specimen for each figure lacking lower case letter to left of capital letter; abbreviations used in figures are: B, body; C, coxa; D, dactyl; G, gnathopod; H, head; I, inner plate or ramus; J, urosome; K, cuticle; L, labium; M, mandible; P, pereopod; R, uropod; S, maxilliped; T, telson; U, upper lip; W, pleon; X, maxilla; Y, gill; Z, oostegite; d, dorsal; f, flattened; m, medial; r, right; left. Right mandible (Mr) reduced to two-thirds of left (Mt).

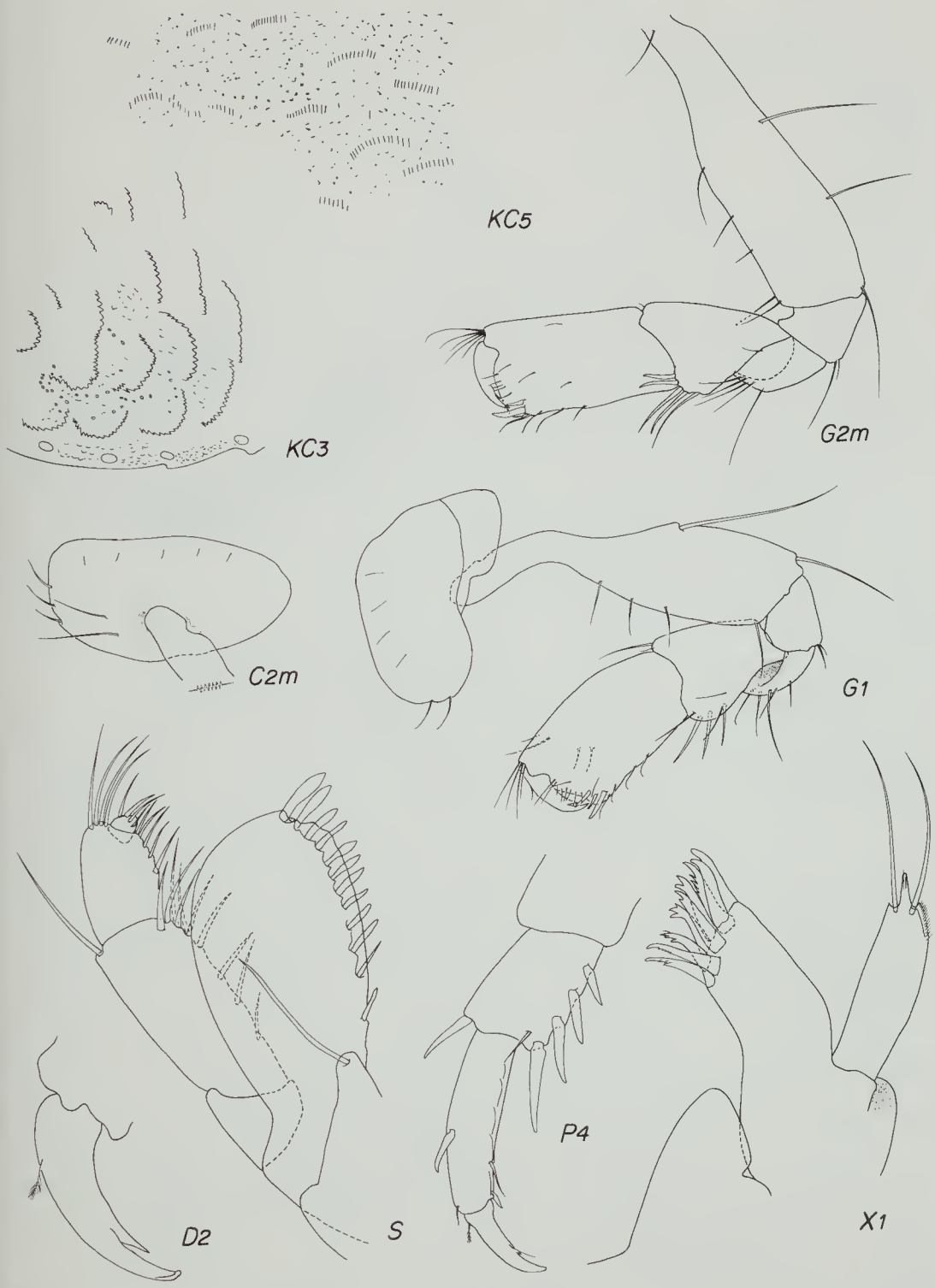


Figure 2. *Guernea ipilya*, holotype female "w", 1.99 mm.

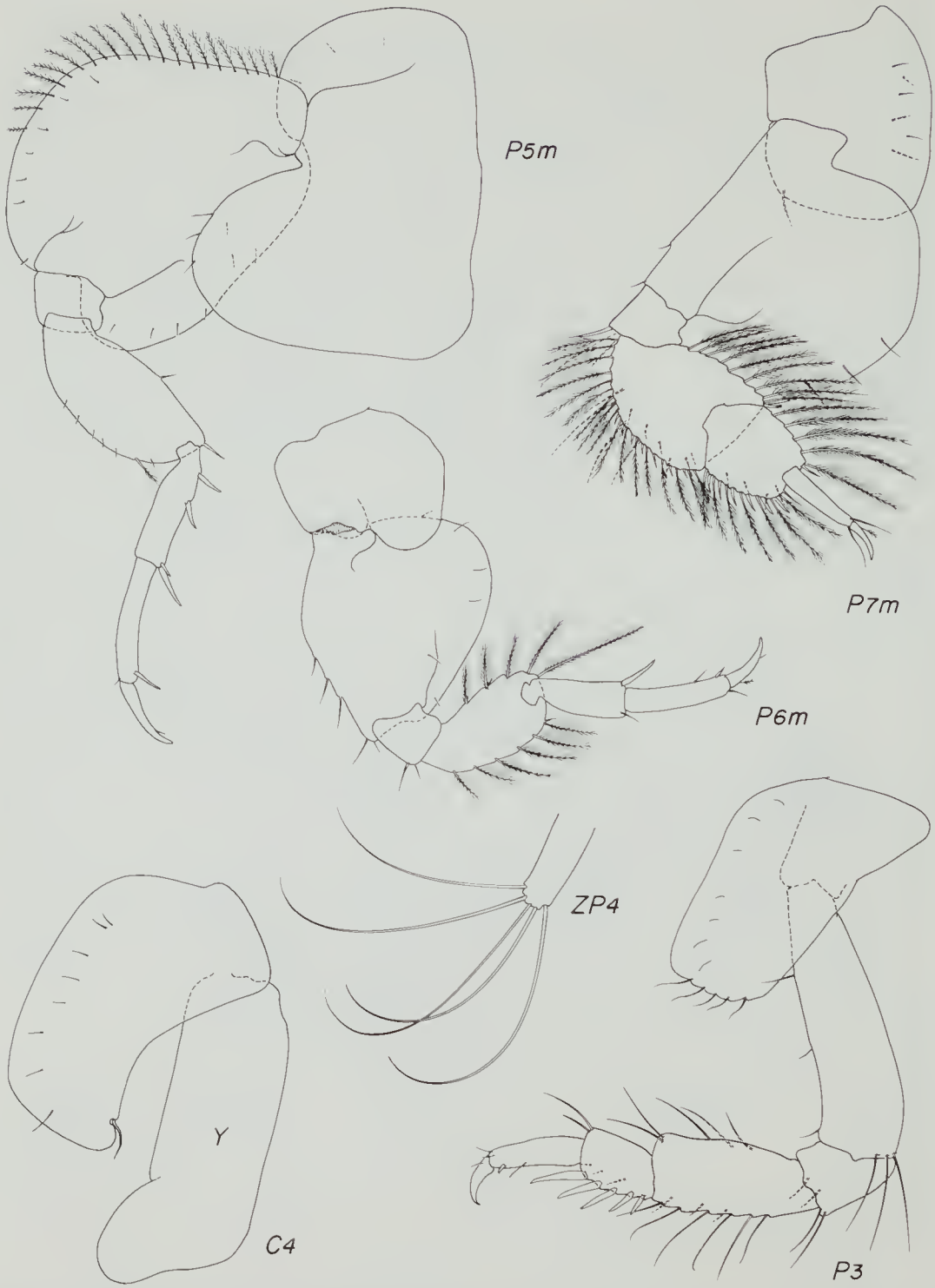


Figure 3. *Guernea ipilya*, holotype female "w", 1.99 mm.

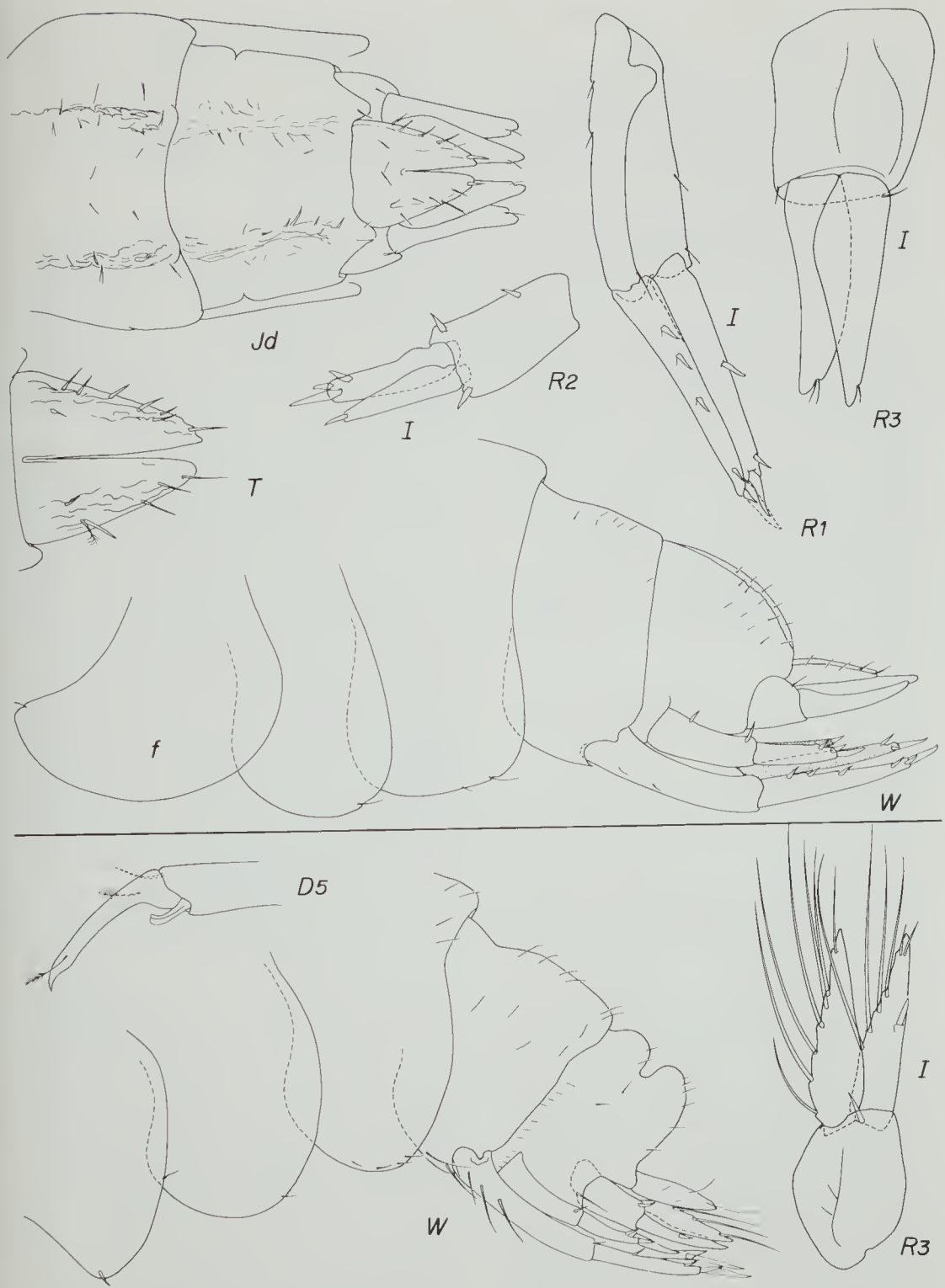


Figure 4. Upper, *Guernea ipilya*, holotype female "w", 1.99 mm.
Lower, *Guernea yamminye*, holotype, male "a", 1.82 mm. View of epimera (W) showing anterior lobe of epimeron 1 bent outward and flattened.

short apical spines on the rami of uropods 1–2.

It differs from *G. longicornis* in the short apical spines on the rami of uropods 1–2, the thick and short antenna 2, and the lack of the weak humping on urosomites 2–3 (so weak in *G. longicornis* that we included it for comparison despite item 1 above).

It differs from *G. coalita* in the short apical spines on the rami of uropods 1–2, thicker antenna 2, much broader article 2 of pereopod 6 and the lack of double hump on urosomites 2–3.

It differs from *G. tenuipes* in the thicker antenna 2, lack of marginal spines on the outer ramus of uropod 2, presence of marginal spines on the outer ramus of uropod 1, and the broadly expanded articles 4–5 of pereopod 7.

It differs from *G. timaru* in the short apical spines on the outer rami of uropods 1–2, broader articles 4–5 of pereopod 7, basally broader article 2 of pereopod 6, denser setae on article 2 of pereopod 5, more transversely arranged palms of the gnathopods, lack of a spine on the inner ramus of uropod 3, much more armamented telson, broader inner plate of maxilla 2, and lack of a thick spine-seta on the lateral margin of maxilla 2.

### **Guernea (Guernea) yamminye** sp. nov.

Figures 4–6 (part)

*Material examined.* 1 male.

Holotype: Lizard Island, near Mermaid Beach, 1–2 m, rubble wash on extensive rubble plain, J.D. Thomas and J. Clark, 26 Jan 1989, NMV J20496 (male "a", 1.82 mm).

Additional material: Lizard Island, North Point, 25 m, sediment plain next to forereef, coral-algal mud with *Halimeda* flakes overlain by fine flocculent layer, J.D. Thomas, 26 Jan 1989, USNM 253723 (1 male).

*Diagnosis.* Accessory flagellum absent; antenna 2 unlobed but article 4 moderately thick; mandibular incisors with 4 weak teeth, spine row absent, molar without seta; inner lobes of lower lip large, fleshy and separate; palp of maxilla 1 degenerate, not reaching apex of outer plate, uniarticulate, lacking setae; inner plate of maxilla 2 much shorter and broader than outer plate, bearing 1 apicomedial seta, outer plate with medium subtruncate apex bearing 8 setae; inner plate of maxilliped small, narrow, outer plate reaching middle of palp article 3, most medial spines blunt; gnathopod 2 narrower but longer than gnathopod 1; coxa 5 with very large, lobuliform, rounded posterior lobe, anterior lobe weak and ragged; anterior lobe on coxa 6 weak; anterior setae on article 2 of pereopod 5 weak, article 6 moderately elongate; articles 4–5 of pereopod 7 of broad form (in context of genus), article 5 weakly enveloping article 6, dactyl large; inner rami of uropods 1–2 as long as outer, peduncle of uropod 2 with 2 dorsal spines; apical spines on rami of uropods 1–2 of elongate form (in context of genus); telson about 1.75 times as long as broad; epimeron 3 with posteroventral margin smoothly rounded; urosomite 1 with weak rugose, setulose double dorsal crest, urosomites 2–3 (fused) tall, with 2 almost evenly rounded dorsal humps, then sloping downward sharply posteriorwards, bearing about 1–7 setules each; cuticle (light microscopy, 1000×) with arcuate or semicircular scale-serrations in lines, variable.

*Description.* Eyes very large, lacking deep purple cores in alcohol; upper lip rounded-truncate below (as in *G. ipilya*); right lacinia mobilis smaller and more weakly toothed (4 small) than left (6 large); outer plate of maxilla 1 with 7 spines; basis of gnathopod 1 s-shaped, palms of gnathopods weakly serrate, medial faces of propodi with only 2–4 weak setae, dactyls bearing one large inner tooth; posterior margins on article 6 of pereopods 3–4 not minutely ridged; pereopod 4 like 3 but article 5 with 1 less spine, article 4 with 1 less seta; epimeron 1 with medium-small inward bending anteroventral lobe; uropod 1 with 3 basofacial setae in tandem; urosomite 1 with 2 setae ventrally. Gills of coxae 2–5 large sacs, of coxa 6 smaller, absent on coxa 7.

Pleopods: ratio of lengths of peduncle, outer and inner rami for pleopods 1–3 = 27:29:30, 27:26:26, and 25:27:28; articles of outer and inner rami for pleopods 1–3 = 6–6, 6–6, 6–5; coupling spines 2; each peduncle with 2 setae.

*Summary of typical male dimorphic distinctions.* Smaller head with bulging eye lobes and enlarged eye, elongate male-like antennae 1–2 with male setular tufts on articles 4–5 of antenna 2; some mouthparts degenerating, for example, right lacinia mobilis weak, outer plate of maxilla 1 with only 7 spines, palp obsolescent, maxilla 2 poorly setose, maxilliped reduced, spines on outer plate shorter and blunter; anterior coxae smaller relative to coxa 5; gnathopods slender; anterior setae on article 2 of pereopod 5 weak, posterior margin straight; pleonites 1–3 and pleopods more dominant; lobe on epimeron 1 weak; body rugose posterodorsally, urosomite 1 with 2 ventral setae; uropod 1 with long

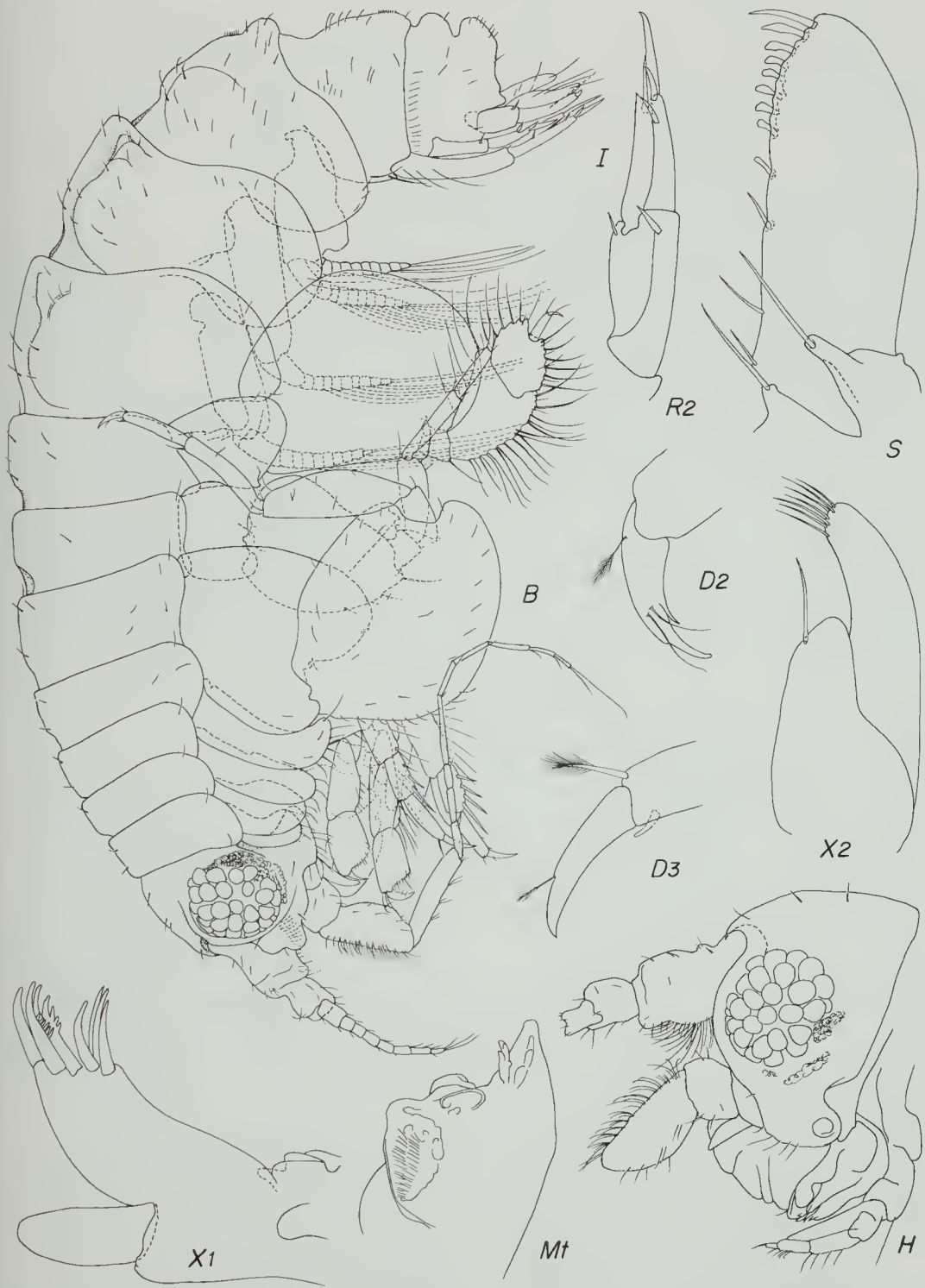


Figure 5. *Guernea yamminye*, holotype, male "a", 1.82 mm.

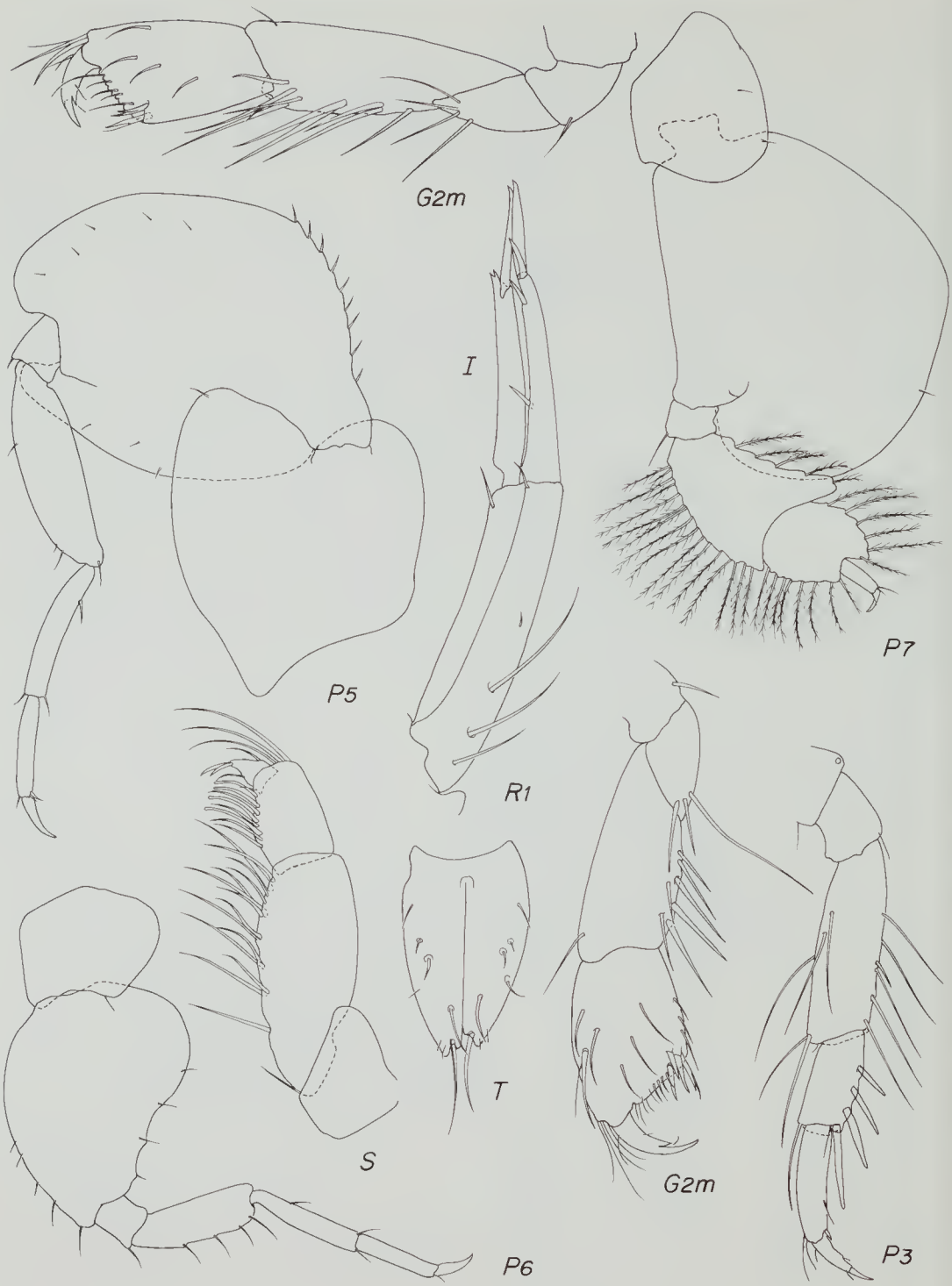


Figure 6. *Guernea yamminye*, holotype, male "a", 1.82 mm.

basofacial setae, uropods 1–2 with few spines, rami of uropod 3 setose; telson elongate and well armed.

*Etymology*. From an Australian Aboriginal word meaning "another", in reference to being "another" species from Lizard Island. Noun in apposition.

*Distribution*. Australia, Great Barrier Reef, Lizard Island, 1–2 m, rubble.

*Relationship*. This species is compared only to species with double humps on urosomites 1–2 and elongate apical spines on the rami of uropods 1–2.

It differs from *G. reticulata* in the lack of serrations on article 2 of pereopod 7 and in the weaker envelopment of article 6 by article 5 on pereopod 7. It differs from *G. coalita* in the broad formation of articles 4–5 on pereopod 7, with short article 6, the excavate posterior margin of article 2 on pereopod 6, and the more elongate carpi of gnathopods 1–2.

It differs from *G. longicornis* in the weak anterior lobe of coxa 5, shorter article 6 of pereopod 7 (possibly developmental), the concave posterior margin of article 2 on pereopod 6, and the presence on the outer ramus of uropod 1 of 1 marginal spine.

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