

Description of *Heteromysis (Olivemysis) ningaloo* new species and interesting records of *H. (Gnathomysis) harpaxoides* Băcescu and Bruce (Crustacea: Mysida: Mysidae) from Australian coral reefs

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ABSTRACT – A new mysid species *Heteromysis (Olivemysis) ningaloo* sp. nov. (Mysidae: Heteromysinae) is described from Ningaloo Reef in Western Australia. The species differs from the most closely related Australian species, *H. (O.) abrucei* Băcescu, 1979, *H. (O.) macrophthalma* Băcescu, 1983, and *H. (O.) sexspinosa* Murano, 1988, by having a longer antennal scale that is about as long as the peduncle of antenna 1. It also differs from each of these species by a set of additional characters related to the carapace, telson and pereopods. With the inclusion of *H. (O.) ningaloo* sp. nov., the genus consists of 84 species, 20 of which are recorded in Australian waters. *Heteromysis (Gnathomysis) harpaxoides* Băcescu and Bruce, 1980, known only from Australia, is recorded for the second time since the original description, now some 1300 km north of the type locality, in the shallows of Lizard Island. Both species were collected in open habitats despite the prevailing view that *Heteromysis* species are commensal with corals, hermit crabs and other invertebrates. A key to all Australian subgenera and species of *Heteromysis* is presented.

KEYWORDS: Mysids, Heteromysinae, *Heteromysis (Olivemysis)*, *Heteromysis (Gnathomysis)*, Australia, Indo-Pacific, facultative commensalism

INTRODUCTION

The genus *Heteromysis* S. I. Smith, 1873 (Mysidae, Heteromysinae) consists of 83 species of minute (less than 11 mm, usually 3–5 mm) coral, hermit crab and other invertebrate commensal mysids, largely distributed in tropical and subtropical waters of the world. They are characterised by differentiation of pereopod endopods: a strongly modified, grasping, pereopod 1, resembling a maxilliped, and a variable number of carpopropodus segments of pereopods 2–6, which are, probably, a result of associations with other invertebrates; and uniramous pleopods of males. Due to their cryptic habits, *Heteromysis* species are rarely encountered, missing from epibenthic nets during daytime collecting and, hence remain poorly known (Wittmann 2008).

In this study, a new species of the genus, belonging to the subgenus *Olivemysis* Băcescu, 1968, *Heteromysis (Olivemysis) ningaloo* sp. nov., is described from the reefs of Ningaloo lagoon in Western Australia, collected using diving equipment. Additionally, *H. (Gnathomysis) harpaxoides* Băcescu and Bruce, 1980, previously known only from two records in Australia (including the

original description), is reported for the first time from the shallows of Heron and Lizard Islands.

Knowledge of *Heteromysis* species (and the order Mysida in general) from Australia is so far based on fragmentary collections. The first Australian heteromysids were recorded by W.M. Tattersall (1927). Later they were more intensively studied by Băcescu and Bruce (Băcescu 1979, 1983, 1986; Băcescu and Bruce 1980) and Murano (1988, 1998). Murano (1988) also composed a key to heteromysids of Australia, which requires an update, because two more species, including the new one described here, have subsequently been added. A very useful interactive identification system on the Australian mysids, including heteromysids, was compiled by Yerman and Lowry (2007). However, the descriptions of taxa require revision, as at times, important diagnostic characters have been omitted.

In the Australian shallows, the genus *Heteromysis* is represented by 20 species: *H. (Heteromysis) australica* Băcescu and Bruce, 1980, *H. (H.) communis* Băcescu, 1986, *H. (H.) heronensis* Băcescu, 1979, *H. (H.) gymnura* W.M. Tattersall, 1922, *H. (H.) spinosa* Băcescu, 1986,

H. (H.) tethysiana Băcescu, 1983, *H. (G.) harpaxoides*, *H. (G.) stellata* Băcescu and Bruce, 1980, *H. (O.) abrucei* Băcescu, 1979, *H. (O.) essingtonensis* Murano, 1988, *H. (O.) quadrispinosa* Murano, 1988, *H. (O.) macrophthalma* Băcescu, 1983, *H. (O.) maxima* Murano, 1998, *H. (O.) ningaloo* sp. nov., *H. (O.) sexspinosa* Murano, 1988, *H. (O.) tenuispina* Murano, 1988, *H. (O.) zeylanica* W.M. Tattersall, 1922, *H. gracilis* Murano, 1988, *H. tasmanica* W.M. Tattersall, 1927, and *H. waitei* W.M. Tattersall, 1927. The three latter species in this list have not been assigned to known subgenera of *Heteromysis*, and their taxonomic position requires further study.

MATERIAL AND METHODS

A female specimen of *H. (O.) ningaloo* sp. nov. collected during the CReefs survey of Ningaloo Reef in Western Australia, was sent to me by Arthur Anker (Florida Museum of Natural History, University of Florida, Gainesville, USA), who also arranged the loan of two samples of *H. (G.) harpaxoides* deposited in the same museum. The entire bodies of the *H. (O.) ningaloo* sp. nov. female and one specimen of *H. (G.) harpaxoides* were drawn before appendages were detached and put on temporary slides with glycerol to be drawn, and later transferred to permanent Canada balsam slides. The rest of the specimens were inspected without dissection. Body length was measured from the rostrum tip to the posterior margin of the telson (excluding the terminal spiniform setae). The holotype of *H. (O.) ningaloo* sp. nov. is deposited at the Western Australia Museum, Perth (WAM) and *H. (G.) harpaxoides* at the Florida Museum of Natural History (UF).

COMPARATIVE MATERIAL

Heteromysis (Olivemysis) sexspinosa, holotype, female (+originally dissected appendages in separate tube), Table Head, Port Essington, NT, 11°13.5'S, 132°11.5'E, 8 m, 07.08.1986 (Museum of Art and Gallery of Northern Territory, Australia, [NTM] Cr005501); female, 2 immature females, immature male, same label as for holotype (NTM, Cr012275).

SYSTEMATICS

Order Mysida Haworth, 1825

Family Mysidae Haworth, 1825

Subfamily Heteromysinae Norman, 1892

Genus *Heteromysis* S.I. Smith, 1873

Subgenus *Olivemysis* Băcescu, 1968

Heteromysis (Olivemysis) ningaloo sp. n.

urn:lsid:zoobank.org:pub:2A230B7F-6F5A-44B6-A31E-2207850305C1

Figures 1–26

TYPE MATERIAL

Female (ovigerous), 5.5 mm, Australia, Western Australia, Ningaloo Reef, st. NR10–001, AUST-7429, 22,67577°S, 113,6877°E, shallow lagoon off Ningaloo Station, CReefs camp, limestone covered by sand and algal beds, brown algae, 15.05.2010, coll. A. Fusaro, proc. A. Anker (WAM C49510).

DIAGNOSIS

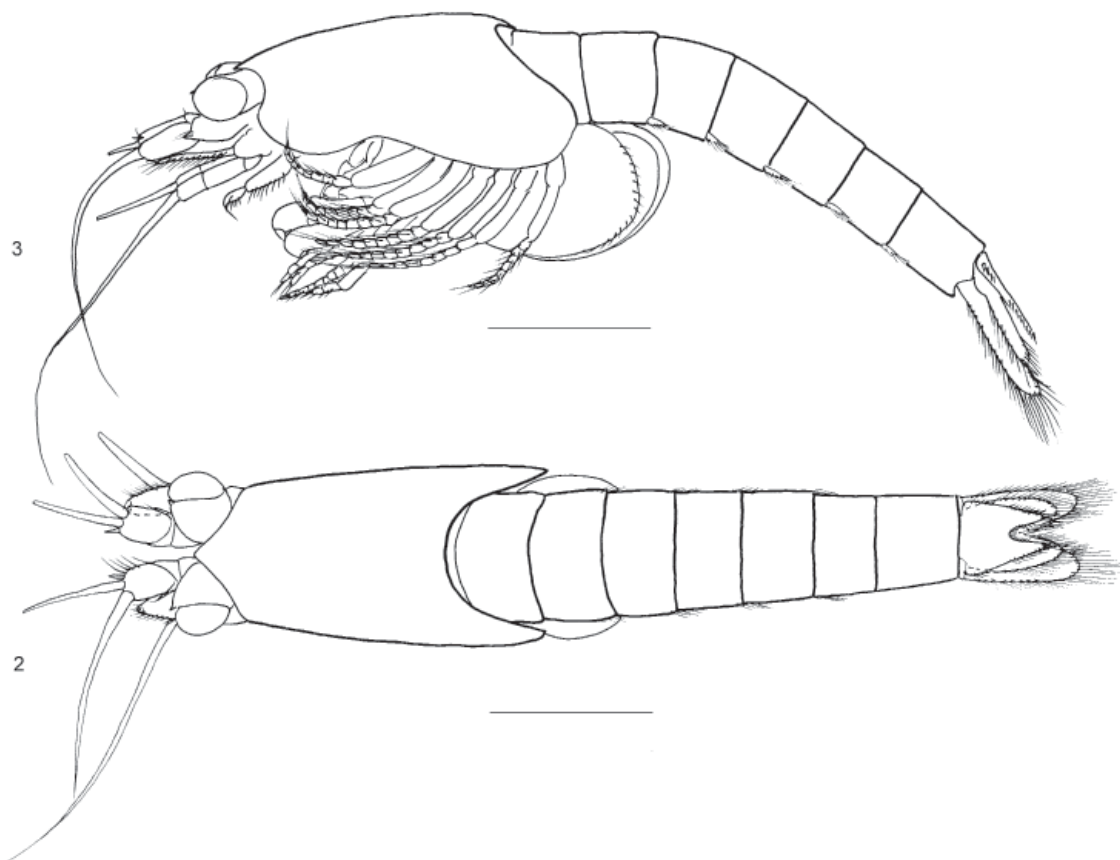
Rostral part of carapace with nearly straight lateral margins, covering proximal part of eyestalks, apically narrowly rounded (Figure 2). Telson cleft with 17 small spinules, occupying about half of cleft in anterior part (Figure 21). Lateral margins of telson with 7–8 anterior, 8–10 posterior and 2 terminal (17–20 lateral in total) spiniform setae, with gap between anterior and posterior groups. Antennal scale about as long as peduncle of antenna 1 and 3.1–3.2 times as long as wide (Figures 2, 3 and 6). Carpopropodus of pereopod 1 (subchela, or gnathopod) with 3 pairs of strong flagellate spiniform setae in distal half of medial margin, distally becoming shorter and stronger (Figure 16). Carpopropodus of pereopods 3–6 7-segmented (Figures 18, 22–24). Uropodal endopod with 3 proximal spiniform setae (Figure 20).

COMPARISON

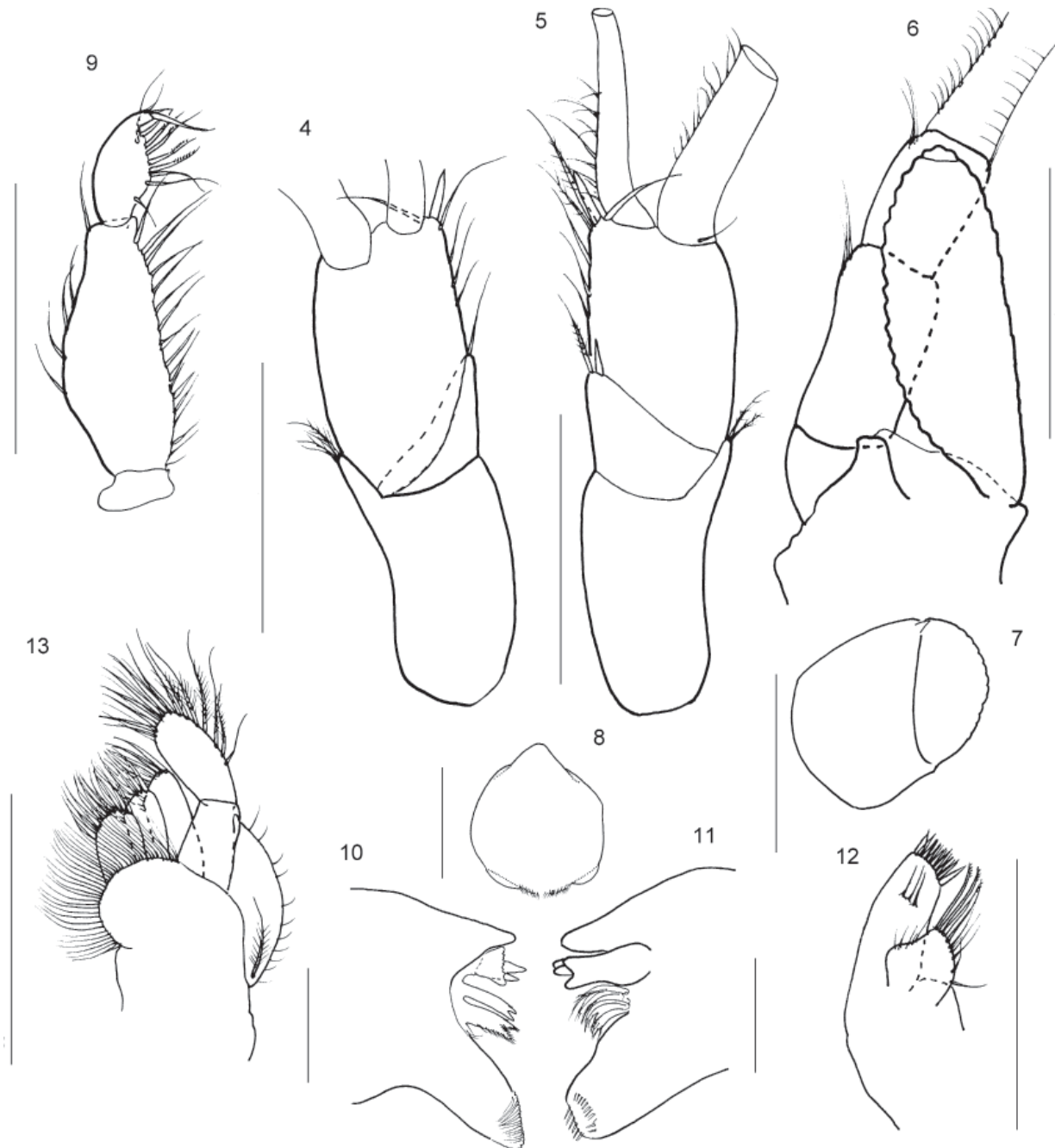
The new species most closely resembles *H. (O.) sexspinosa* from northern Australia, with the antennal scale 2.5 times as long as wide, extending only to half of segment 3 of antenna 1 peduncle, and the telson cleft with spinules occupying its entire length. The holotype of *H. (O.) sexspinosa* and three additional specimens from the type locality (NTM Cr005501, Cr012275) also differ from *H. (O.) ningaloo* sp. n. by having spiniform setae along the entire lateral margins of the telson. This difference is not considered diagnostic because an adult female of *H. (O.) sexspinosa* from the same sample as the holotype had a median gap on the lateral margins, similar to that of *H. (O.) ningaloo* sp. n. (also illustrated by Murano, 1988, figure 10I). The new species is also close to *H. (O.) macrophthalma* from north-east Australia which has, in addition to the characters mentioned for *H. (O.) sexspinosa*, slightly concave lateral margins of the rostral part of the carapace not covering the eyestalks, short spiniform setae on carpopropodus of pereopod 1 together with long ones, lateral margins of the telson with 5–7 anterior and 6–9 posterior spiniform setae, and 6-segmented carpopopodus of pereopods 3–6. *Heteromysis (O.) ningaloo* sp. nov. is also close to *H. (O.) abrucei*, known from east Australia and Somali (Băcescu and Müller, 1985), however in this species the rostral part of the carapace is apically pointed, the antennal scale is shorter than in the two previously mentioned species, barely reaching the peduncle segment 3 of antenna 1, the telson has spiniform setae along the entire lateral margins, and the eye-stalks are not covered by the rostral part of the carapace.



FIGURE 1 *Heteromysis (Olivemysis) ningaloo* sp. nov., female holotype, 5.5 mm, entire lateral view (photograph by A. Anker, with permission).



FIGURES 2–3 *Heteromysis (Olivemysis) ningaloo* sp. nov., female holotype: 2, entire dorsal view; 3, entire lateral view. Scale: 1 mm.



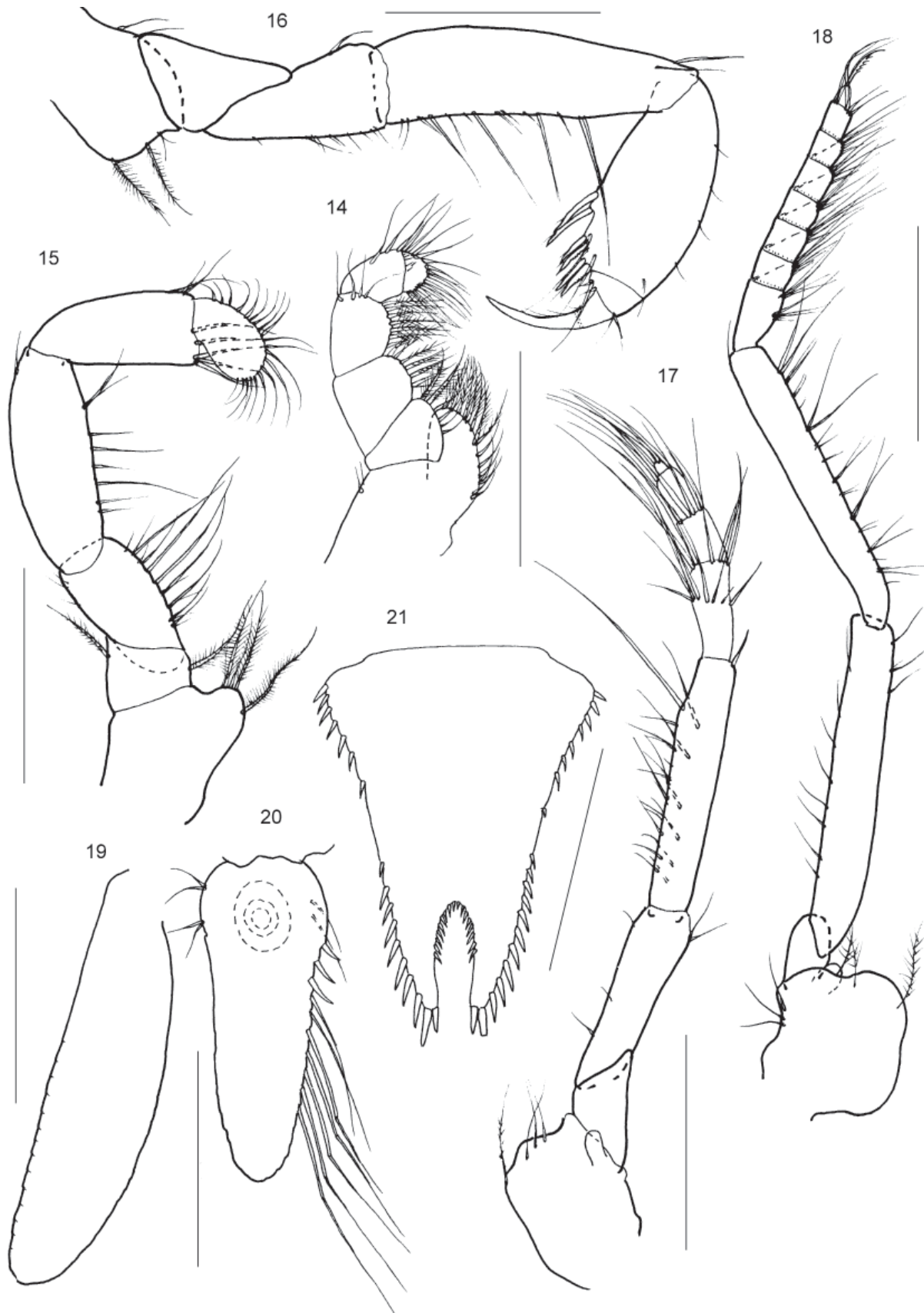
FIGURES 4–13 *Heteromysis (Olivemysis) ningaloo* sp. nov., female holotype: 4, peduncle of antenna 1, posterior view; 5, peduncle of antenna 1, anterior view; 6, antenna 2, peduncle of endopod and antennal scale, anterior view; 7, eye, dorsal view; 8, labrum; 9, mandibular palp, medial view; 10, right mandible, posterior view; 11, left mandible, posterior view; 12, maxilla 1, anterior view; 13, maxilla 2, posterior view. Scale lines: 4–7, 9, 12, 13, 0.25 mm; 8, 10, 11, 0.05 mm.

DESCRIPTION

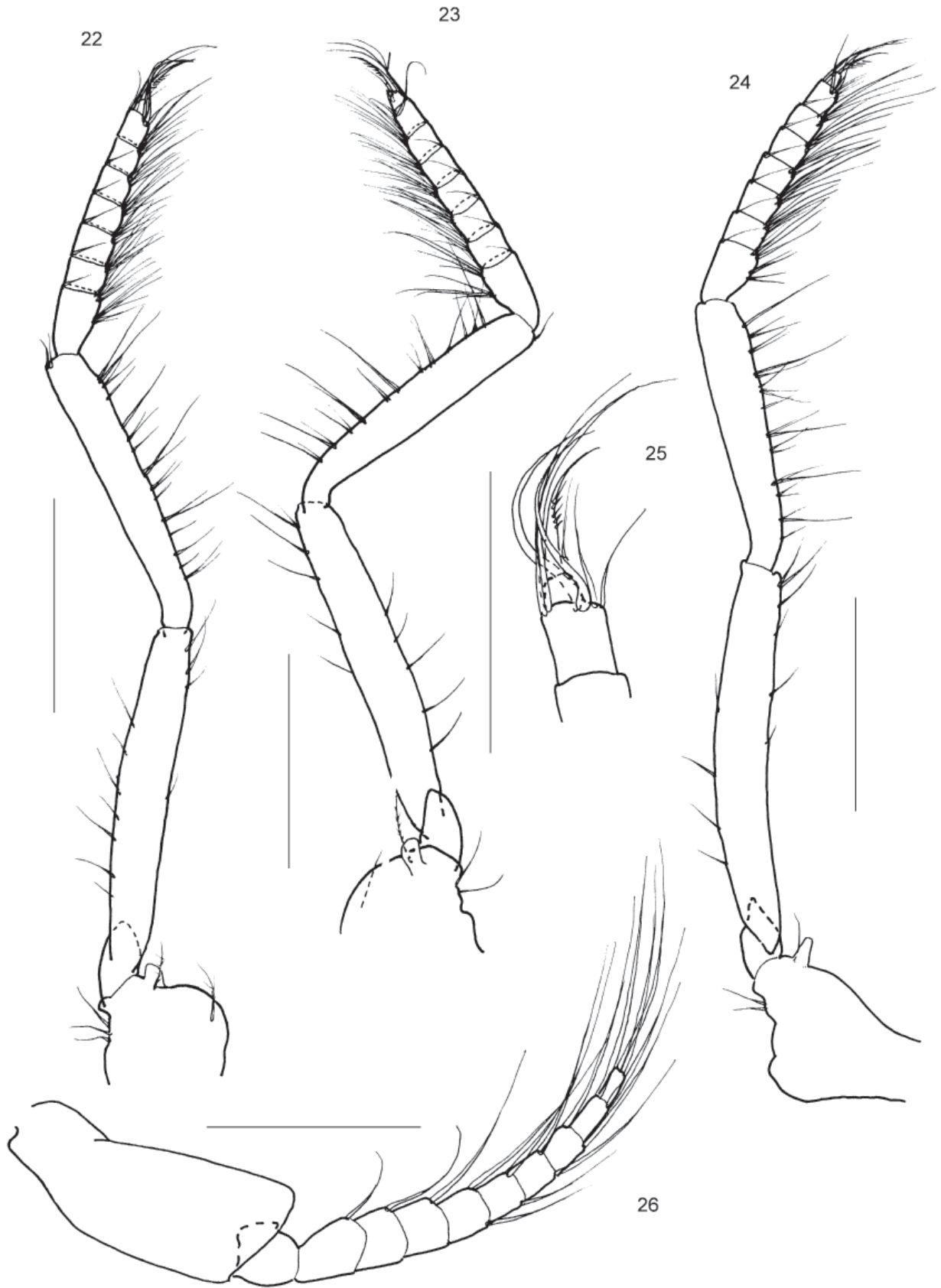
Body stout (Figures 1–3). Head with a spine between antennae 1. Abdomen flattened dorsoventrally. Rostral part of carapace triangular, apically narrowly rounded, extending anteriorly to midlength of antenna 1 peduncle segment 1; lateral margins nearly straight, covering proximal part of eyestalks. Anterolateral margins of carapace rounded. Posterior margin of carapace not covering last 2 thoracic somites. Eyes oval (Figures 2 and 7), 1.2–1.3 times as long as wide and about half as long as head width. Eye cornea hemispherical, slightly

narrower than basal part of stalk; stalk with small dorsal distomedial spine. Telson (Figures 2, 3 and 21) slightly longer than last abdominal somite, tapering posteriorly, 1.4 times as long as wide anteriorly and 0.2 times as wide posteriorly as anteriorly; lateral margins with 7–8 anterior, 8–10 posterior and 2 terminal (17–20 lateral in total) spiniform setae; inner terminal spiniform seta about half as long as outer; cleft deep, with parallel sides, 0.3 times as deep as telson length, with 17 small spinules, occupying about half of cleft in anterior part.

Antennae about as long as half of body length



FIGURES 14–21 *Heteromysis (Olivemysis) ningaloo* sp. nov., female holotype: 14, maxilliped 1 endopod, posterior view; 15, maxilliped 2 endopod, posterior view; 16, pereopod 1 (gnathopod) endopod, posterior view; 17, pereopod 2 endopod, anterior view; 18, pereopod 3 endopod, posterior view; 19, uropodal exopod; 20, uropodal endopod, anterior view; 21, telson. Scale: 0.25 mm.



FIGURES 22–26 *Heteromysis (Olivemysis) ningaloo* sp. nov., female holotype: 22, pereopod 4 endopod, posterior view; 23, pereopod 5 endopod, anterior view; 24, pereopod 6 endopod, posterior view; 25, dactylus of pereopod 6 endopod, posterior view; 26, pereopod 6 exopod. Scale: 22–24, 26, 0.25 mm; 25, 0.1 mm.

(Figures 2 and 3). Peduncle of antenna 1 (Figures 2, 3, 4 and 5) slightly longer than peduncle of antenna 2, robust; peduncle segment 1 with distolateral lobe, bearing plumose setae; segment 2 with distomedial seta and spiniform seta; segment 3 with 5 medial setae, distomedial flagellate spiniform seta and simple seta. Antennal scale (Figures 2, 3 and 6) elongate elliptical, slightly longer than peduncle of antenna 2 and about as long as peduncle of antenna 1, 3.1–3.2 times as long as wide (maximum width), with setae around all margins; distal segment well established, with 5 setae.

Labrum (Figure 8) with blunt triangular process. Right mandible (Figure 10): pars incisivus with 3 teeth; lacinia mobilis strong, truncated, with many small teeth; pars centralis with 2 bifurcated teeth, posterior with many setules. Left mandible (Figure 11): pars incisivus with 1 tooth; lacinia mobilis with 4 teeth; pars centralis with many stout bifurcated plumose setae. Mandibular palp (Figure 9) segment 2 with many long setae; segment 3 0.4 times as long as segment 2. Maxilla 1 (Figure 12): endite with short lateral and long medial setae, distally serrated; outer ramus with 3 posterior setae and many distal robust setae. Maxilla 2 (Figure 13): exopod rather thin, with 11–12 short thin setae; distal segment of endopod with 7 long plumose lateral setae.

Thoracopod exopods 9-segmented (Figure 26). Maxilliped 1 (Figure 14) basis endite longer than preischium and ischium endites; preischium and ischium endites equally short. Maxilliped 2 (Figure 15) merus 1.4 times as long as ischium and 2.8 times as long as wide; carpopropodus 0.7 times as long as merus; dactylus 0.6 times as long as carpopropodus, with numerous long setae around margins. Pereopod 1 (subchela, or gnathopod) (Figure 16) stronger than other pereopods; ischium 0.5 times as long as merus, with about 10 short medial and 1 lateral setae; merus 3.5 times as long as wide, slightly narrowing distally, with 5 medial groups of short and long setae bunches and 2 distolateral setae; carpopropodus 2-segmented, 2.4 times as long as wide and 0.9 times as long as merus, with 5 lateral short setae and 3 pairs of strong palmar spiniform setae, proximal longer than distal; dactylus with large, strong claw, 0.5 times as long as carpopropodus. Pereopod 2 (Figure 17) shorter than pereopods 3–6; basis with 4 medial setae and anteromedial tubercle; preischium longer than preischium of other pereopods, without setae; ischium 0.7 times as long as merus, with 3 medial and 2 distolateral setae; merus 5.5 times as long as wide, with multiple medial setae and one stout distolateral seta; carpopropodus 3-segmented, segment 1 about as long as segments 2 and 3 together, with 2 groups of long anteromedial setae; segments 2 and 3 of about equal length, with long setae; dactylus small, with long, smooth setae. Pereopods 3–6 (Figure 18, 22–25) thin and long; basis with 2–3 distal lateral setae and high distomedial tubercle with plumose seta at the base; preischium without setae; ischium with 4–8 lateral and 4–6 distomedial setae; merus 0.8–0.9 times as long as ischium and 5.5–7 times as long as wide, with 5 medial

groups of short and long setae bunches (about 12–15 bunches in total); carpopropodus 7-segmented; segment 1 about as long as segments 2 and 3 together, with 2 medial bunches of setae; segments of carpopropodus with 1 lateral seta and 1 medial bunch of long setae; paradactylar medial setae falcate, smooth; dactylus rather small; dactylar claw serrated. Marsupium with 2 pairs of oostegites.

Uropods wide (Figure 1–3, 19 and 20), with setae along margins. Uropodal exopod (Figure 19) 3.8 times as long as wide and 1.3 times as long as endopod. Uropodal endopod (Figure 20) 2.6 times as long as wide, with 3 proximal spiniform setae, slightly bent anteriorly.

COLOUR

Body generally transparent with sparse red dots. Eye cornea white. Marsupial area greenish (Figure 1).

DISTRIBUTION

Known only from Ningaloo Reef lagoon, Western Australia (type locality).

HABITAT

The species was found while washing limestone rocks covered with sand and brown algae; no association with other benthic invertebrates was noted in the field (A. Anker, pers. comm.).

REMARKS

The new species clearly belongs to the subgenus *Olivemysis*, in the recently updated sense (Price and Heard 2011), possessing a distomedial flagellated seta on segment 3 of antenna 1, a moderately robust endopod of pereopod 1, with enlarged carpopropodus, and uropodal endopod shorter than the exopod. The body colour of *H. (O.) ningaloo* sp. nov. is very similar not only to the closely related *H. (O.) abrucei* from the Indian Ocean (originally described), but also to the rather distant subtropical East Atlantic *H. (O.) dardani* Wittmann, 2008, and *H. (O.) wirtzi* Wittmann, 2008, for which colour descriptions and photographs of live specimens were provided (Wittman 2008). The colour pattern of these four species is different from the colouration of *H. (G.) harpaxoides* (see below), a representative of another subgenus.

ETYMOLOGY

The species name comes from the type locality, Ningaloo Reef, Western Australia.

***Heteromysis (Gnathomysis) harpaxoides* Băcescu and Bruce, 1980**

Figures 27–53

Heteromysis (Gnathomysis) harpaxoides Băcescu and Bruce, 1980: 68, figs 2M–N, 3A–H; Murano, 1988: 41.



FIGURE 27 *Heteromysis (Gnathomysis) harpaxoides* Băcescu and Bruce, 1980, male, 5 mm, entire lateral view, Lizard Island (photographed by Arthur Anker, with permission).

MATERIAL EXAMINED

Male, 4.5 mm, Australia, Queensland, Heron Island, 23°S, 152°E, Nov. 2009, AUST-5869, HI09–131 (UF 25481; slide UF 25481); male, 5 mm, female, 6 mm (ovigerous), Australia, Queensland, Lizard Island, Watson's Bay, 14,6652°S, 145,45°E, AUST-1347, AUST-ST-063, reef flat with sand and rubble, under rocks, in rubble, algae, etc., 1–2 m, coll. Michonneau and Lasley, 20.02.2009 (UF 17222).

COLOUR

Cephalic part of carapace (head) snow white. Thoracic part of carapace from pleurocervical fissures to the posterior margin blood red. Eyes with dorsal red stripe; cornea light brown. Abdomen and appendages not pigmented (Figure 27).

DISTRIBUTION

North-east Australia (Pacific): Great Barrier Reef, Wistari Reef (Băcescu and Bruce 1980; type locality), Heron Island, Lizard Island (current study); north-west Australia (Indian Ocean): Ashmore Reef (Murano 1988). This is a third record of the species including the original description and extends its distribution in north-east Australia to 1300 km north of the type locality.

HABITAT

In both previous reports, *H. (G.) harpaxoides* was

collected in the shells occupied by hermit crabs of the genus *Dardanus* Paulson, 1875. In the new location it was collected under rocks, in rubble, algae and other sediment on the surface of flat reefs, indicating that the species is not an obligatory (Wittmann 2008) but a facultative commensal.

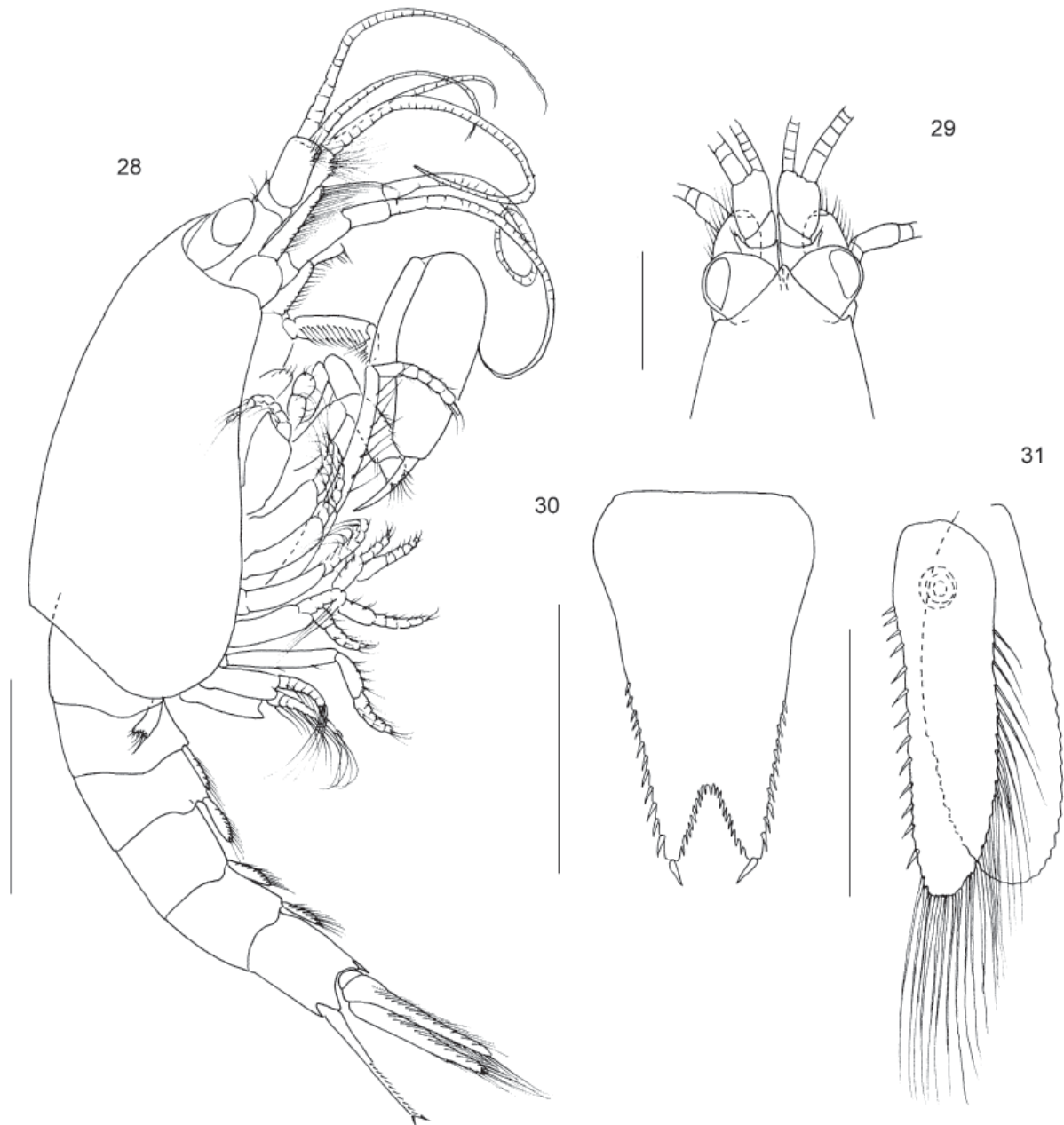
REMARKS

The specimens lack tubercles on the cephalic part of the carapace, which is the only character reported to distinguish *H. (G.) harpaxoides* from *H. (G.) stellata*. The studied specimens have characters of pereopod 1 endopod, typical for this pair of closely related species (Figure 44): medial margin of ischium serrated, with seta in each notch of crenulation; merus with medial concavity, bearing single median seta, antero- and posteromedial margins serrated, also with seta in notches of crenulations; capropodus strongly inflated, with 4 short strong distomedial spiniform setae, roughly serrated anteriorly, and 3–4 medial strong spiniform setae, distally finely serrated and with curved tips. Carpopodus of pereopod 2 (Figure 45) 5–6-segmented. Carpopodus of pereopods 3–6 (Figures 46–48) 4-segmented. Some characters broaden our knowledge of the morphological variation of the species: lateral margins of telson (Figure 30) with 11–12 spiniform setae (against 14 in the type material), with 1 or 2 terminal spiniform setae (inner shorter spiniform seta present in the type material

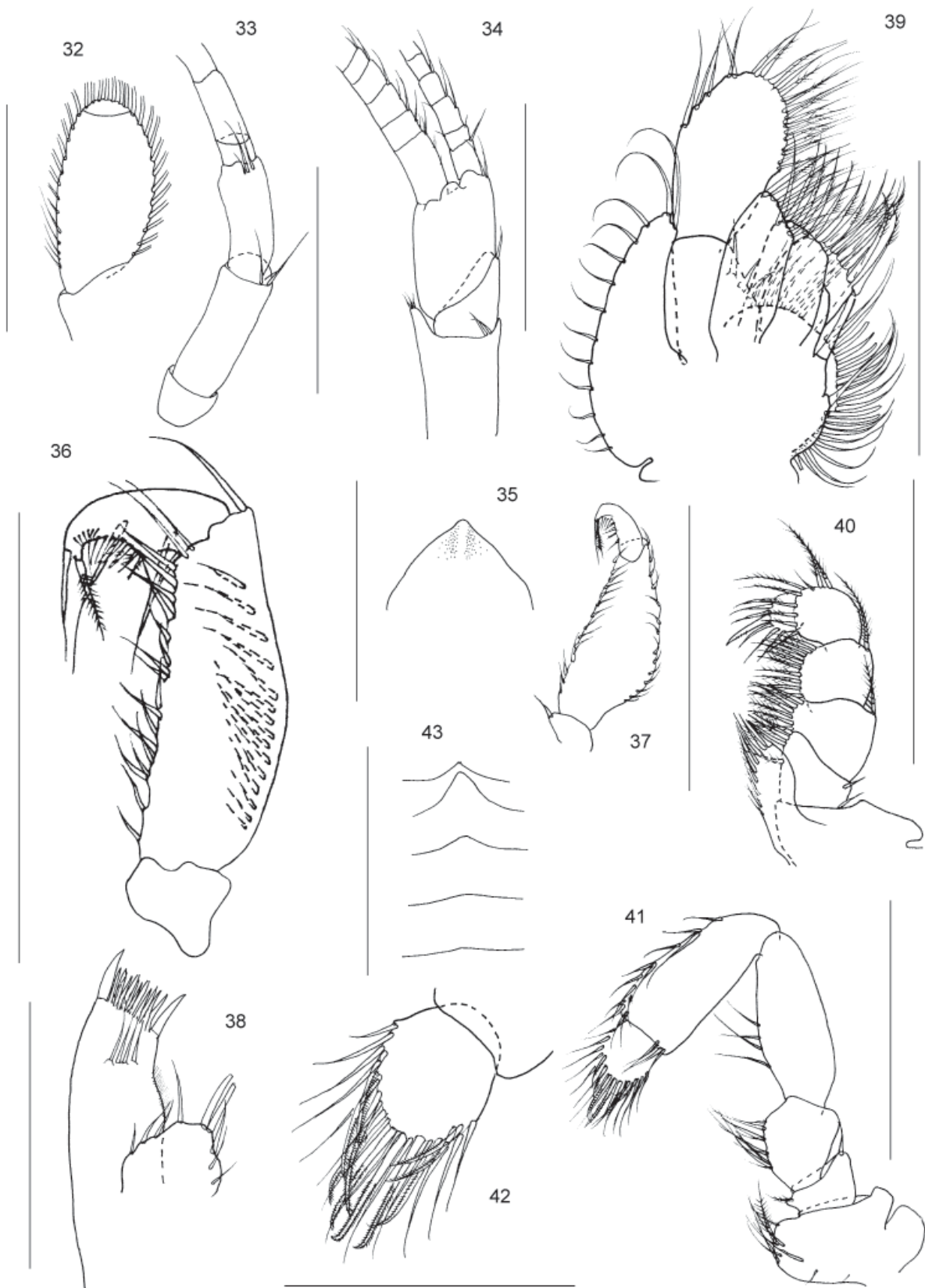
and most of our specimens); telson cleft with 17–21 spinules (against 34 in the type material).

Băcescu and Bruce (1980) did not describe some of the structures of *H. (G.) harpaxoides*, and illustrations

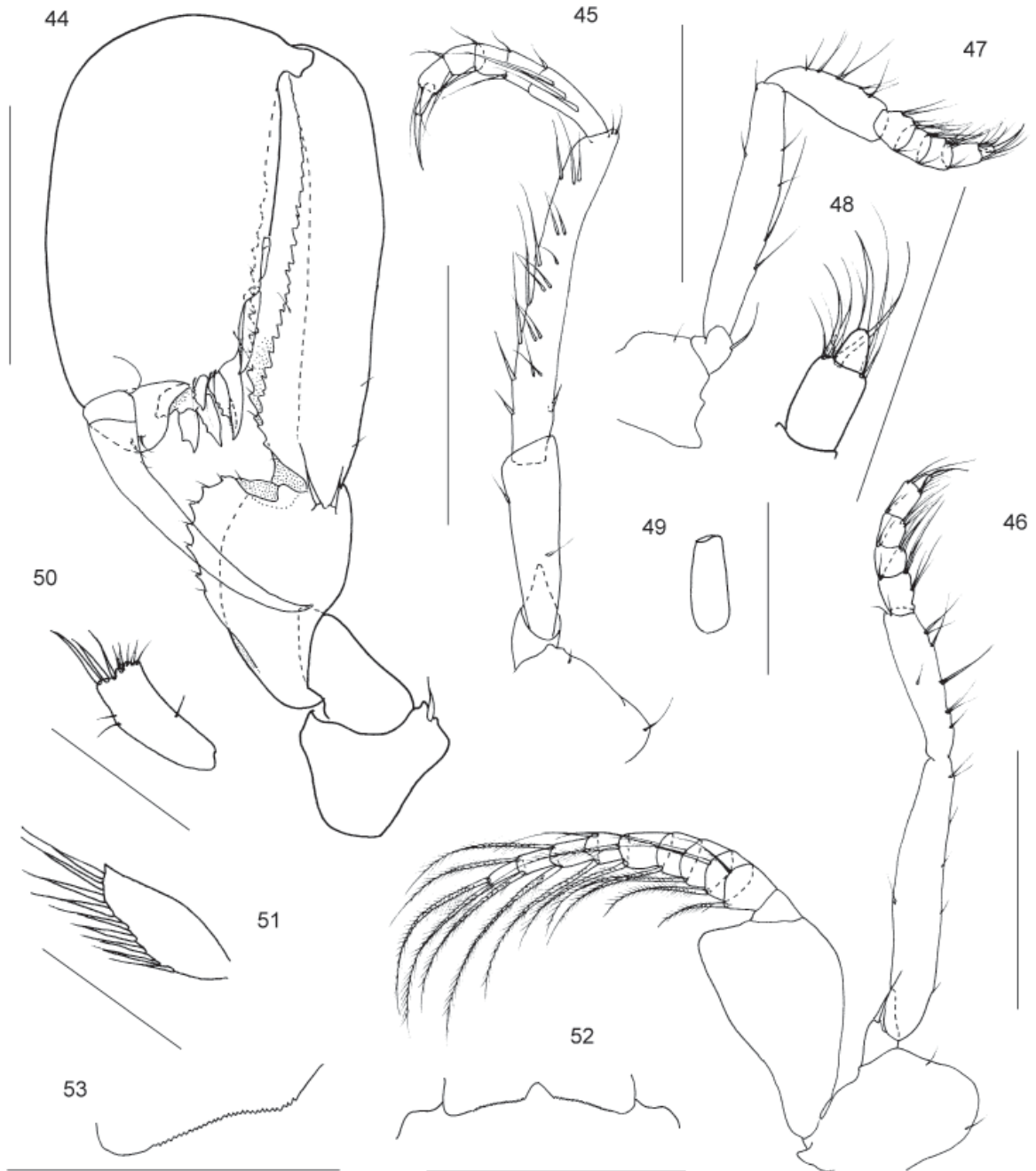
are provided here of mouthparts, maxillipeds, thoracic sternites, pleopods and other structures of a specimen collected close to the type locality, Heron Island (Figures 28–43).



FIGURES 28–31 *Heteromysis (Gnathomysis) harpaxoides* Băcescu and Bruce, 1980, male, 4.5 mm, Heron Island: 28, entire lateral view; 29, anterior part of body, dorsal view; 30, telson; 31, uropod, anterior view. Scale: 28, 1 mm; 29–31, 0.5 mm.



FIGURES 32–43 *Heteromysis (Gnathomysis) harpaxoides* Băcescu and Bruce, 1980, male, 4.5 mm, Heron Island: 32, antennal scale; 33, peduncle of antenna 2 endopod; 34, antenna 1 peduncle, anterior view; 35, labrum; 36, mandibular palp, medial view; 37, mandibular palp, posterior view; 38, maxilla 1, anterior view; 39, maxilla 2, anterior view; 40, maxilleped 1 endopod, anterior view; 41, maxilliped 2 endopod, anterior view; 42, dactylus of maxilliped 2, anterior view; 43, first to fifth thoracic sternites. Scale: 32–37, 40, 41, 43, 0.5 mm; 38, 39, 42, 0.25 mm.



FIGURES 44–53 *Heteromysis (Gnathomysis) harpaxoides* Băcescu and Bruce, 1980, male, 4.5 mm, Heron Island: 44, pereopod 1 endopod, posterior view; 45, pereopod 2 endopod, posterior view; 46, pereopod 3, anterior view; 47, pereopod 6 endopod, posterior view; 48, dactylus of pereopod 6, posterior view; 49, penis; 50, pleopod 1; 51, pleopod 4; 52, sixth abdominal sternite; 53, posterior margin of sixth abdominal sternite.

**KEY TO THE SUBGENERA OF THE GENUS
HETEROMYSIS FROM AUSTRALIA**

- 1 Peduncle segment 3 of antenna 1 with distomedial flagellate spiniform seta (Figures 4, 5). Eyestalk with distomedial spine (except for *H. (O.) essingtonensis*) (Figure 7). Telson with lateral spiniform setae along entire margins (except for *H. (O.) tenuispina*), sometimes with median gap (Figure 21).....
.....subgenus *Olivemysis* Băcescu, 1968
- 1' Peduncle segment 3 of antenna 1 without distomedial flagellate spiniform seta. Eyestalk without distomedial spine. Telson with lateral spiniform setae absent, at least, in anterior part.....2
- 2(1) Pereopod 1 ischium and merus with medial serration (Figure 44). Uropodal endopod as long as uropodal exopod (Figure 31)
..... subgenus *Gnathomysis* Bonnier and Perez, 1902
- 2' Pereopod 1 ischium and merus without medial serration. Uropodal endopod shorter than uropodal exopod
..... subgenus *Heteromysis* s. str.

**KEY TO SPECIES OF THE SUBGENUS
HETEROMYSIS S. STR. FROM AUSTRALIA**

- 1 Telson without lateral spiniform setae in anterior half or third.....2
- 1' Telson without lateral spiniform setae only in anterior part. Carpopropodus of pereopod 1 about as wide as and longer than merus
.....*H. gracilis* Murano, 1988 (See additional remarks below)
- 2(1) Uropodal endopod without spiniform setae3
- 2' Uropodal endopod with one or more medial spiniform setae4
- 3(2) Carpopropodus of pereopod 1 nearly as long as merus. Telson cleft with more than 40 spinules
..... *H. (H.) gymnura* W.M. Tattersall, 1922
- 3' Carpopropodus of pereopod 1 clearly shorter than merus. Telson cleft with about 10 spinules
.....*H. (H.) tethysiana* Băcescu, 1983
- 4(2') Carpopropodus of pereopod 1 as wide as or only slightly wider than merus. Uropodal endopod with at least two medial spiniform setae.....5
- 4' Pereopods 1 with asymmetric carpopropodi from the left and right sides of body, with right carpopropodus strongly inflated. Uropodal endopod with one proximal medial spiniform seta
..... *H. (H.) australica* Băcescu and Bruce, 1980
- 5(4) Cornea at the tip of eyestalk. Telson cleft with more than 10 spinules6
- 5' Cornea somewhat shifted to lateral side of eye, while eyestalk anteriorly inflated. Telson cleft with 3–6 spinules
..... *H. (H.) spinosa* Băcescu, 1986

- 6(5) Carpopropodus of pereopods 3–6 4-segmented. Uropodal endopod with 2–5 medial spiniform setae 7
- 6' Carpopropodus of pereopods 3–6 7-segmented. Uropodal endopod with about 16 medial spiniform setae
H. tasmanica W.M. Tattersall, 1927 (See additional remarks below)
- 7(5) Uropodal endopod with 3–5 medial spiniform setae
..... *H. (H.) communis* Băcescu, 1986
- 7' Uropodal endopod with 2 medial spiniform setae
..... *H. (H.) heronensis* Băcescu, 1979

REMARKS

Heteromysis gracilis and *H. tasmanica* are included in the key for the subgenus *Heteromysis* s. str. only for the convenience of identification. The subgeneric status of the two species is not defined here.

**KEY TO SPECIES OF THE SUBGENUS
GNATHOMYSIS FROM AUSTRALIA**

- 1 Anterior part of carapace with about 4 rows of minute tubercles.....
..... *H. (G.) stellata* Băcescu and Bruce, 1980
- 1' Anterior part of carapace smooth, without tubercles (Figures 27–29).....
.....*H. (G.) harpaxoides* Băcescu and Bruce, 1980

**KEY TO SPECIES OF THE SUBGENUS
OLIVEMYSIS FROM AUSTRALIA**

- 1(2) Eyestalk with dorsal distomedial spine2
- 1' Eyestalk without dorsal distomedial spine.....
H. (O.) essingtonensis Murano, 1988
- 2(1) Telson with lateral spiniform setae along entire margins (sometimes with median gap) 3
- 2' Telson with lateral spiniform setae only in posterior part*H. (O.) tenuispina* Murano, 1988
- 3(2) Uropodal endopod with 2–5 medial spiniform setae in proximal part4
- 3' Uropodal endopod with more than 10 medial spiniform setae along entire margin
.....*H. (O.) zeylanica* W.M. Tattersall, 1922
- 4(3) Telson cleft with spinules occupying at least 2/3 of its length 5
- 4' Telson cleft with spinules along less than 2/3 of its length9
- 5(4) Rostral part of carapace with rounded apex 6
- 5' Rostral part of carapace apically pointed or very narrowly rounded
..... *H. (O.) quadrispinosa* Murano, 1988

- 6(5) Carpopropodus of pereopod 1 with 6 and more posterodistal flagellate spiniform setae..... 7
- 6' Carpopropodus of pereopod 1 with 2–4 posterior flagellate spiniform setae.....
H. waitei W. M. Tattersall, 1927 (See additional remarks below)
- 7(6) Carpopropodus of pereopod 1 only with large flagellate spiniform setae 8
- 7' Carpopropodus of pereopod 1, in addition to large flagellate spiniform setae, also with small spiniform setae
 *H. (O.) macrophthalma* Băcescu, 1983
- 8(7) Rostral part of carapace apically narrowly rounded. Carpopropodus of pereopod 6 7–8-segmented
 *H. (O.) sexspinosa* Murano, 1988
- 8' Rostral part of carapace apically broadly rounded. Carpopropodus of pereopod 6 4-segmented
 *H. (O.) maxima* Murano, 1998
- 9(4') Rostral part of carapace apically pointed. Antennal scale barely reaching segment 3 of antenna 1 peduncle. Lateral spiniform setae of telson without median gap
 *H. (O.) abrucei* Băcescu, 1979
- 9' Rostral part of carapace apically narrowly rounded. Antennal scale nearly reaching distal margin of peduncle segment 3 of antenna 1. Lateral spiniform setae of telson with median gap
 *H. (O.) ningaloo* sp. nov.

REMARKS

Heteromysis waitei is included in the key for the subgenus *Olivemysis* only for the convenience of identification. The subgeneric status of the species is not defined here.

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REFERENCES

- Băcescu, M. (1968). Heteromysini nouveaux des eaux Cubaines: trois espèces nouvelles de *Heteromysis* et *Heteromysoides spongicola* n. g. n. sp. *Revue Roumaine de Biologie Serie de Zoologie* **13**: 221–237.
- Băcescu, M. (1979). A small contribution to the knowledge of the mysids from the north-eastern Great Barrier Reef in Australia. *Travaux du Muséum d'Histoire Naturelle "Grigore Antipa"* **20** (1): 143–147.
- Băcescu, M. (1983). New Heteromysini from the coral area near Heron Island (SE Queensland) – Australia. *Revue Roumaine de Biologie. Serie de Biologie Animale* **28** (1): 3–11.
- Băcescu, M. (1986). Two new species of *Heteromysis* from the coral reefs of the Northern Australia. *Travaux du Muséum d'Histoire Naturelle "Grigore Antipa"* **28**: 19–24.
- Băcescu, M. and Bruce, A.J. (1980). New contributions to the knowledge of the representatives of genus *Heteromysis* s.l. from the Australian coral reefs. *Travaux du Muséum d'Histoire Naturelle "Grigore Antipa"* **21** (1): 63–72.
- Băcescu, M. and Müller, G.I. (1985). *Heteromysoides berberae* n. sp. et autres Mysidacés dans les eaux littorales du NE de la Somalie. *Revue Roumaine de Biologie. Serie de Biologie Animale* **30** (1): 7–10.
- Bonnier, J. and Pérèz, C. (1902). Sur un crustacé commensal des pagures, *Gnathomysis Gerlachei*, nov. sp., type d'une famille, nouvelle de schizopodes. *Comptes Rendus Hebdomadaires des Séances de l'Académie des Sciences* **134**: 117–119.
- Murano, M. (1988). Heteromysids (Crustacea; Mysidacea) from Northern Australia with description of six new species. *The Beagle, Records of the Northern Territory Museum of Arts and Sciences* **5** (1): 27–50.
- Murano, M. (1998). Further study on Australian heteromysids (Crustacea: Mysidacea). *The Beagle, Records of the Museums and Art Galleries of the Northern Territory* **14**: 29–39.
- Price, W. and Heard, R. (2011). Two new species of *Heteromysis* (*Olivemysis*) (Mysida, Mysidae, Heteromysinae) from the tropical northwest Atlantic with diagnostics on the subgenus *Olivemysis* Băcescu, 1968. *Zootaxa* **2823**: 32–46.
- Tattersall, W.M. (1922). Indian Mysidacea. *Records of the Indian Museum* **24**: 445–504.
- Tattersall, W.M. (1927) Australian opossum shrimps (Mysidacea). *Records of the South Australian Museum* **3**: 235–257.
- Wittmann, K. (2008). Two new species of Heteromysini (Mysida, Mysidae) from the Island of Madeira (N.E. Atlantic), with notes on sea anemone and hermit crab commensalism in the genus *Heteromysis* S.I. Smith, 1873. *Crustaceana* **81** (3): 351–374.
- Yerman, M.N. and Lowry, J.K. (2007). *Australian Mysidacea*. Version 1 March 2007. <http://www.crustacea.net>