

A NEW GENUS AND TWO NEW SPECIES OF  
DEEP-WATER HERMIT CRABS  
(DECAPODA: ANOMURA: PAGURIDAE)  
FROM THE SOUTHERN OCEAN

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*Abstract.* — A diagnosis of the new genus, *Bathypaguropsis*, is provided, together with descriptions and illustrations of the new species *B. yaldwyni* from New Zealand and *B. marionensis* from Australia. Both new species are inhabitants of depths in excess of 250 m.

During ongoing studies of the hermit crab fauna in the collections of the National Museum of New Zealand, Wellington, numerous lots of a very distinctive species were observed. In having 13 pairs of trichobranchiate gills and a massive operculate right cheliped with obliquely articulating dactyl, they appeared at first assignable to the genus *Pylopaguropsis* Alcock, 1905. However, upon closer examination, it was found that females lacked the paired first pleopods modified as gonopods, that are characteristic of *Pylopaguropsis* species. Additionally, males are provided with four, albeit rather reduced, unpaired pleopods on the left side. Males of *Pylopaguropsis* have only three unpaired left pleopods (Alcock 1905, McLaughlin & Haig 1989). It became apparent that these specimens represented not only a new species, but a new genus. More recently, one lot of specimens from the Northern Territories Museum of Arts and Sciences, Darwin, Australia, was found to represent a second new species assignable to this new genus.

The specimens have been collected during the Northern Prawn Cruise (NPC), and cruises of the F.V. *Chiyo Maru* (CM), R/V *James Cook* (JC), R/V *Tangaroa* (New Zealand Oceanographic Institute; NZOI), F.R.V. *Soela*, (Commonwealth Scientific, Industrial and Research Organization, CSIRO). With the exception of two specimens

of *Bathypaguropsis yaldwyni*, new species, and one specimen of *B. marionensis*, new species, that have been deposited in the collections of the National Museum of Natural History, Smithsonian Institution, Washington, D.C. (USNM), all other materials remain deposited in their respective institutions, *B. yaldwyni* in the National Museum of New Zealand (NMNZ), and *B. marionensis* in the Northern Territories Museum (NTM). Shield length (SL), measured from the tip of the rostrum to the midpoint of the posterior margin of the shield provides an indication of specimen size; ♀♀ indicates ovigerous females.

*Bathypaguropsis*, new genus

Fig. 1

*Type species.* — *Bathypaguropsis yaldwyni*, new species.

*Diagnosis.* — Cephalothoracic shield (Fig. 1A, B) with central dorsal surface sometimes only weakly calcified; rostrum well developed. Cardiac sulci (cf. Morgan & Forrest 1991) extending more than half length of posterior carapace; area between cardiac sulci and sulci cardiobranchialis at least partially chitinous or weakly calcified anteriorly. Thirteen pairs of trichobranchiae. Ocular acicles triangular, dorsal surface flattened or slightly convex. Antennal peduncle with supernumerary segmentation;

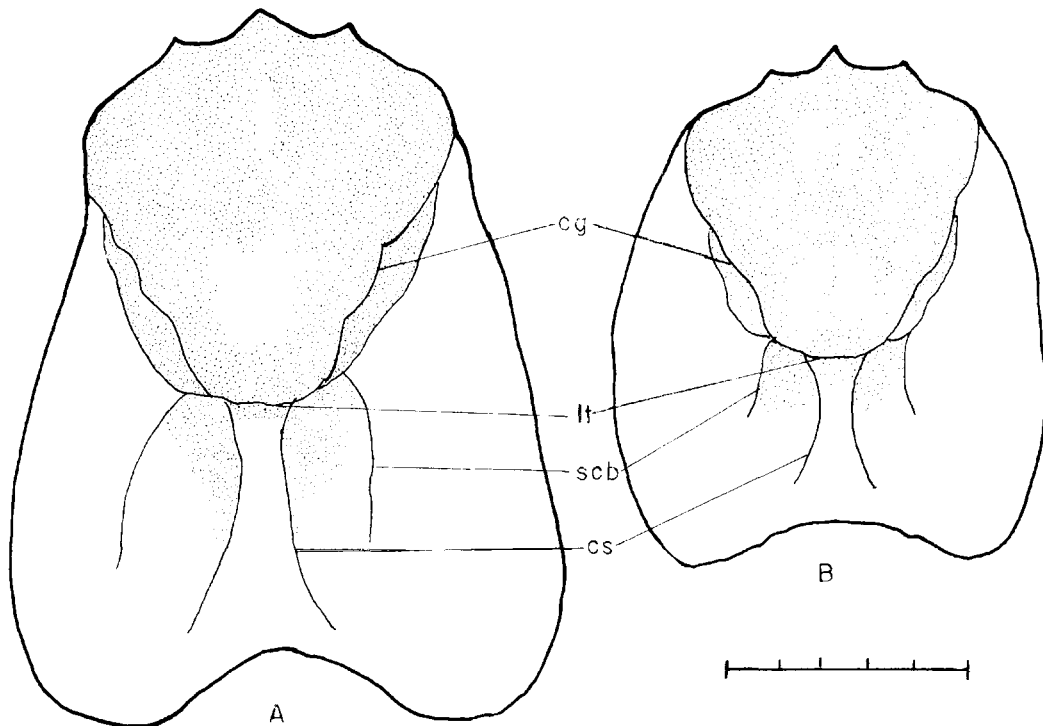


Fig. 1. Diagrammatic cephalothorax with stippling depicting areas of chitinization and/or calcification: cg—cervical groove; lt—linea transversalis; scb—sulcus cardiobranchialis; cs—cardiac sulcus. A, *Bathypaguropsis yaldwyni*, new species; B, *Bathypaguropsis marionensis*, new species. Scale equals 5 mm.

acicle tapering; flagellum with scattered setae.

Maxillule with 1 strong bristle on internal lobe of endopod; external lobe articulated, not recurved. Maxilla with distal lobe of scaphognathite subtriangular. Ischium of third maxilliped with well developed crista dentata and 1 accessory tooth. Sternite of third maxilliped unarmed.

Right cheliped massive; chela operculate or nearly so; propodal-carpal articulation approximately  $30^\circ$  from perpendicular; dactyl articulating obliquely with palm. Left cheliped moderately elongate, slender; propodal-carpal articulation approximately  $30\text{--}60^\circ$  counter-clockwise from perpendicular; dactyl and fixed finger opening obliquely.

Ambulatory legs with dactyls and propodi similar. Fourth pereopods not subche-

late, with propodal rasp consisting of 1 or more, sometimes incomplete, rows of scales.

Males with paired gonopores, each partially masked by tuft of stiff setae; no paired pleopods or sexual tubes. Four unpaired pleopods on left, with exopods only moderately well developed, endopods markedly reduced. Females with paired gonopores. No paired pleopods; left 2nd to 5th unpaired, 2nd to 4th with both rami well developed and egg-carrying, 5th reduced as in males.

Tergite of first abdominal somite with chitinous or weakly calcified short rectangular plate; tergites of somites 2–5 indicated by transverse bands of fibrils; tergite of sixth somite divided by deep transverse furrow in posterior third. Uropods asymmetrical. Telson with transverse suture; posterior lobes subtriangular; terminal margins oblique, unarmed or spinulose.

*Gender.* — Feminine.

*Etymology.* — From the Greek *bathys* meaning deep, and *pagouros* meaning crab, reflecting the deep-water habitat of this genus.

*Remarks.* — As alluded to previously, *Bathypaguropsis*, shares certain characters with *Pylopaguropsis*. These include 13 pairs of trichobranchiate gills; simple triangular ocular acicles; a moderately well developed, non-recurved external endopodal lobe on the maxillule; massive, operculate right cheliped; and small left cheliped with obliquely opening dactyl and fixed finger. *Bathypaguropsis* is immediately distinguished from *Pylopaguropsis* by the absence, in females, of paired first pleopods modified as gonopods, the presence in males of four unpaired pleopods, and the configuration of the dactyl and fixed finger of the right chela, the ventral surfaces of which are convex rather than concave. Although the external endopodal lobe of the maxillule in both genera is usually moderately well developed and not recurved, it is articulated in *Bathypaguropsis*, but not in *Pylopaguropsis*.

The cephalothoracic shields of both species of *Bathypaguropsis* usually exhibit some amount of reduced calcification; however, it is neither uniform in degree nor consistent in pattern. Analogously, the areas of the posterior carapace between the cardiac sulci and the sulci cardiobranchialis are typically chitinized or calcified, the extent appearing to increase with increased body size. Correspondingly, the tergite of the first abdominal somite is clearly delineated in specimens of all sizes, but noticeably better calcified in larger individuals.

In the two known species of *Bathypaguropsis*, the fifth pereopods appear somewhat longer than seen in most pagurids, and in the vast majority of the specimens examined, these appendages were preserved in a dorsally directed position above or along side the carapace such as depicted in species of *Dromia* or *Hypochoncha* (e.g., Rathbun

1937, pls. 8–11). Both species appear to be inhabitants of gastropod shells; however, it is not known at the present time whether this positioning is a special shell-use adaptation, or whether the modification is related to gill grooming.

*Bathypaguropsis yaldwyni*, new species

Figs. 1A, 2, 3

*Holotype.* — ♀ (SL 10.4 mm), Solander Trough, 46°30'S, 165°14.4'E, CM 149, 545–573 m, in shell of *Fusitriton* sp., 10 Sep 1987, coll. R. Stewart, NMNZ CR8067.

*Paratypes.* — 1 ♂ (SL 4.4 mm), N North Cape, 34°13.8'S, 173°02.9'E, JC JO6/048/81, 375–388 m, 22 Apr 1981, coll. D. S. Horning, NMNZ CR8087. — 2 ♂ (SL 5.4, 7.6), NE Bay of Islands, 35°05'S, 174°44'E, NPC T36, 457–481 m, 10 Jan 1969, NMNZ CR8027. — 1 ♂ (SL 6.2 mm), off Cape Brett Light, 35°07'S, 174°43'E, NPC, 402–439 m, 11 Jan 1969, NMNZ CR8214. — 1 ♂ (SL 5.8 mm), N of Gt. Barrier Island, 35°27'S, 175°06'E, NPC, 351–384 m, 10 Jan 1969, NMNZ CR8080. — 1 ♀ (SL 3.4 mm), Rangitira Knoll, 37°17.4'S, 176°53.6'E, NZOI O.588, 292–337 m, 23 Jan 1981, NMNZ CR8129. — 1 ♂ (SL 8.3 mm), E of Mayor Island, 37°20'S, 176°28.0'E, NZOI R.99, 22 Jan 1979, NMNZ CR8151. — 1 ♂, 2 ♀ (5.2–5.9 mm), 22 km east Alderman Island, 15 km north Mayor Island, 410–415 m, Jul, 1987, coll. R. Macgrath, NMNZ CR7523. — 1 ♂ (SL 8.5 mm), NW Westport, 41°24.8'S, 170°45'E, JC D4, 371 m, 24 Nov 1970, NMNZ CR8105. — 1 ♂ (SL 11.2 mm), off Puysegur Bank, 46°12.3'S, 165°55.4'E, CM, 388–454 m, in shell of *Fusitriton* sp., 11 Sep 1987, coll. R. Stewart, NMNZ CR7519. — 1 ♀♀ (SL 10.5 mm), Solander Trough, 46°30'S, 165°14.4'E, CM 149, 545–573 m, in shell of *Fusitriton* sp., 10 Sep 1987, coll. R. Stewart, NMNZ CR7516. — 1 ♀, 1 ?♀ (SL 9.5, 9.6 mm), Solander Trough, 46°31.9'S, 165°44.4'E, CM, 320–346 m, in shells of *Fusitriton* sp., 10 Sep 1987, coll. R. Stewart,

NMNZ CR7517, 7518.—2 ♂, 1 ♀, 1 ♀♀ (SL 8.2–10.0 mm), off Puysegur Bank, 46°35.6'S, 165°40.9'E, CM 145, 532–544 m, 10 Sep 1987, coll. R. Stewart, NMNZ CR8118, USNM 267573.—1 ♀♀ (SL 9.8 mm), Northern Campbell Plateau, 47°30.5'S, 169°14.7'E, CM, 506–529 m, in shell of *Fusitriton* sp., 13 Sep 1987, coll. R. Stewart, NMNZ CR7514.—2 ♂ (SL 9.4, 10.6 mm), Northern Campbell Plateau, 48°05.7'S, 168°32.5'E, CM, 396–406 m, in shells of *Iredalina* sp. and *Fusitriton* sp., 13 Sep 1987, coll. R. Stewart, NMNZ CR7513, 7515.

*Description.*—Shield (Figs. 1A, 2A) longer than broad; anterior margin between rostrum and lateral projections concave, anterolateral margins sloping; posterior margin truncate. Rostrum broadly triangular, acute, usually with tiny terminal spinule. Lateral projections obtusely triangular, unarmed or with small marginal spinule. Posterior carapace with area between cardiac sulci and sulci cardiobranchialis weakly calcified in anterior half; posteromedian plate frequently with transverse band of calcification adjacent to linea transversalis.

Ocular peduncles stout, short, half to  $\frac{2}{3}$  shield length, dorsomesial surface with row of stiff setae; corneae not dilated. Ocular acicles simple, triangular, usually with small marginal terminal spine; separated basally by width of rostrum, or approximately by  $\frac{1}{4}$  to  $\frac{1}{2}$  basal width of 1 acicle.

Antennular peduncles moderately long, overreaching ocular peduncles by slightly less to more than entire length of ultimate segment; basal segment with small acute spine on lateral surface distally; penultimate segment with few scattered setae dorsally and ventrally; ultimate segment with few tufts or with row of setae on dorsal surface; flagellum shorter to slightly longer than ultimate peduncular segment.

Antennal peduncles exceeding ocular peduncles by  $\frac{1}{2}$  to  $\frac{2}{3}$  length of ultimate segment, but reaching only to distal half of ultimate segment of antennular peduncle. Fifth and fourth segments with few scattered se-

tae; third segment with very strong spine at ventrodistal margin; second segment with dorsolateral distal angle strongly produced into broad, triangular process, terminating in acute simple or rarely bifid spine, mesial margin unarmed, lateral margin with 1 or 2 often widely-separated spines, dorsomesial distal angle with acute spine; first segment with small spine at laterodistal margin, ventral margin produced, with 2 or 3 spines laterally. Antennal acicle usually reaching at least to middle of ultimate peduncular segment, stout, slightly arcuate, with row of tufts of stiff setae on mesial margin and terminating in small spine. Antennal flagellum long, but not overreaching outstretched right cheliped, each article usually with 3 or 4 very short (< 1 article length) setae, and usually additional 2–4 longer setae at least on distal articles.

Maxillule (Fig. 2B) with 1 strong bristle on internal lobe of endopod, external lobe moderately well developed, articulated, not recurved. Maxilla (Fig. 2C) with endopod reaching to distal margin of scaphognathite; distal lobe of latter roundly triangular. First maxilliped (Fig. 2D) with basal segment of exopod generally subrectangular. Third maxilliped with very small spine at distal margin of merus.

Right cheliped (Fig. 3A, B) massive, operculate. Dactyl broad, slightly shorter to slightly longer than palm; cutting edge with calcareous margin faintly cusped, terminating in very small corneous claw and occasionally with few adjacent minute corneous teeth; dorsal surface slightly elevated in the midline proximally, smooth, slightly pitted, or with scattered low tubercles, granules or short transverse ridges, dorsomesial margin faintly or weakly crenulated and with 1 large, blunt tubercle proximally, mesial and ventral surfaces with very low, flattened, frequently corneous-capped, blister-like tubercles. Palm with maximum breadth greater than length, exceeding carpus by  $\frac{1}{4}$  to  $\frac{1}{3}$  own length, dorsomesial distal angle markedly produced and armed with prom-

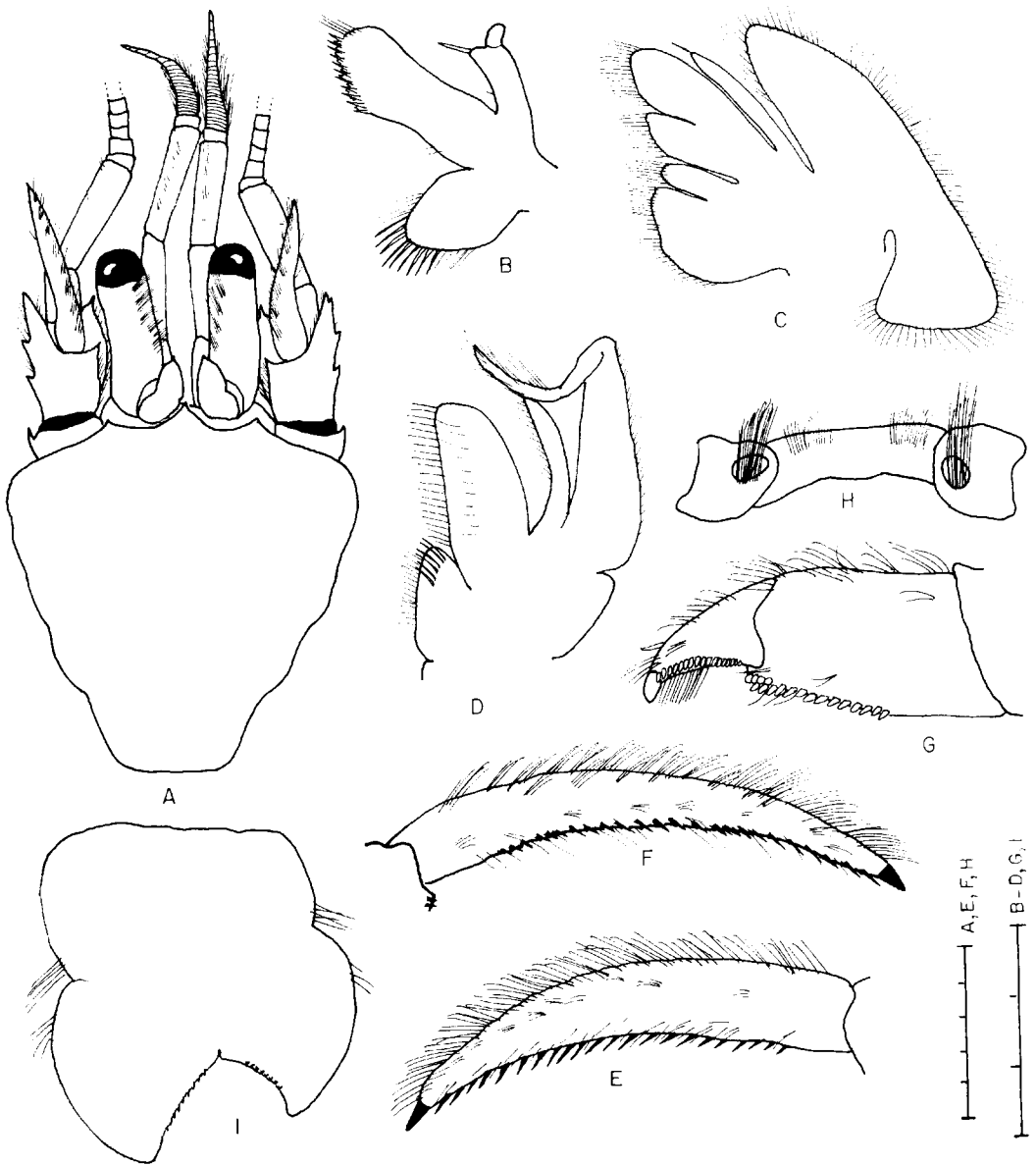


Fig. 2. *Bathypaguropsis yaldwyni*, new species, ♂ paratype (SL 10.0 mm), NMNZ CR8118. A, shield and cephalic appendages; B, left maxillule (external view); C, left maxilla (external view); D, left first maxilliped (external view); E, dactyl of right second pereopod (mesial view); F, dactyl of left third pereopod (mesial view); G, dactyl and propodus of left fourth pereopod (lateral view); H, sternite of male fifth pereopods; I, telson. Scales equal 5 mm (A, E, F, H) and 3 mm (B-D, G, I).

inent simple or multifid spine; dorsomesial margin with irregular row of 4 (rarely 2 or 3) blunt, tuberculate spines, frequently interspersed with smaller spines and/or tu-

bercles, dorsal surface convex, smooth, faintly pitted, or covered with flattened granules and small tubercles, with 1 or 2 prominent tubercles at proximal margin;

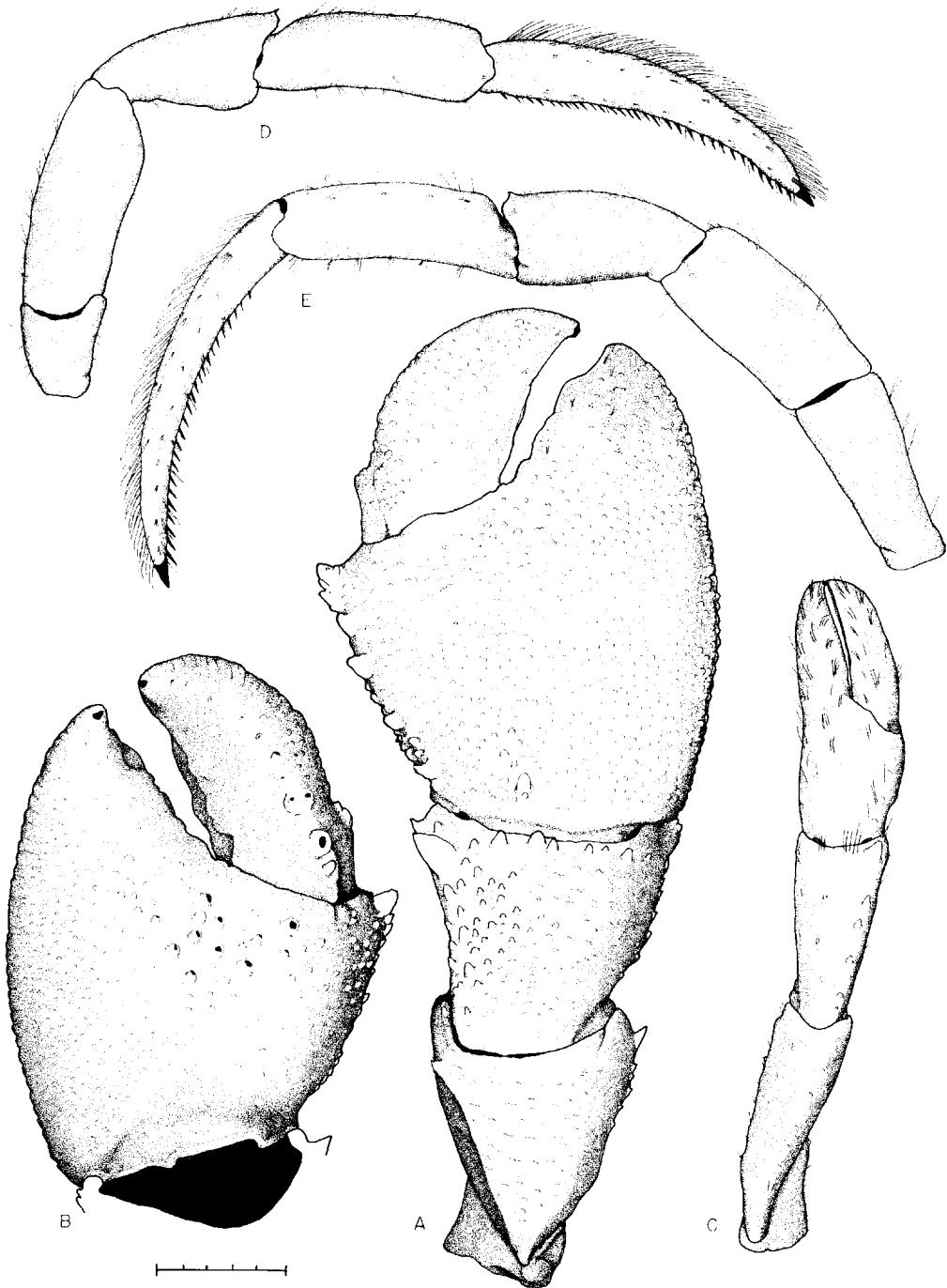


Fig. 3. *Bathypaguropsis yaldwyni*, new species, ♂ paratype (SL 10.0 mm), NMNZ CR8118. A, right cheliped (dorsal view); B, right chela (ventral view); C, left cheliped (dorsal view); D, right second pereopod (lateral view); E, left third pereopod (lateral view). Scale equals 5 mm.

dorsolateral margin not delimited or marked by single or double row of low, rounded, tubercles; mesial face with scattered low spinules, tubercles or granules; lateral face continuous with ventral surface, with scattered granules, low tubercles and/or short transverse ridges, ventral surface and several large, flattened, blister-like tubercles, often with corneous surfaces; ventral surfaces of dactyl and fixed finger with scattered granules or very small flattened, frequently corneous-capped tubercles; cutting edge of fixed finger with 2 or 3 weakly delineated calcarious teeth, terminating in very small corneous claw. Carpus equaling or only slightly longer than merus, subquadrate when viewed dorsally; dorsomesial distal angle depressed and with small spine, dorsomesial surface with 1 very strong, usually blunt spine distally and frequently single or double row of much smaller spines or tubercles proximally, dorsal surface with scattered low blunt or spinulose tubercles in mesial half, very short, transverse ridges in lateral half, distal margin with few to several blunt spines; dorsolateral margin not delimited, lateral and mesial surfaces with scattered blunt or spinulose tubercles or granules, ventral surface with scattered low tubercles or granules, strongest in lateral half, ventrodistal margin unarmed or weakly tuberculate. Merus broadly rounded and subtriangular laterally, with mesial face almost perpendicular; dorsomesial margin unarmed or occasionally with 1 or 2 small spines distally, dorsolateral margin not delimited, dorsal surface with low transverse, weakly granular ridges, lateral face smooth, slightly pitted, or with short, transverse ridges dorsally and scattered tubercles ventrally, ventrolateral margin with 1 or 2 strong acute spines at distal angle and few smaller spines or tubercles proximally; ventromesial margin unarmed or with 1 or 2 smaller spines at distal angle; ventral surface with scattered granules or tubercles, 2 or 3 moderately large tubercles on somewhat pro-

duced lateral protuberance. Ischium unarmed.

Left cheliped (Fig. 3C) not reaching to base of dactyl of right, slender; propodal carpal articulation approximately 45° from perpendicular. Dactyl slightly to half again longer than palm; surfaces unarmed but with scattered tufts of short setae; cutting edges of dactyl and fixed finger each with row of small corneous teeth in distal half to  $\frac{2}{3}$ ; terminating in small corneous claws. Palm  $\frac{1}{2}$  to  $\frac{2}{3}$  length of carpus; dorsomesial margin with 1–3 low protuberances or tubercles; surfaces all unarmed, but with few scattered setae, particularly on fixed finger. Carpus slightly shorter than merus; dorsomesial margin with 1 strong, acute or blunt spine on dorsomesial margin distally, and row of 3–5 small blunt or subacute spines or tubercles on dorsomesial margin; dorsolateral margin not delimited. Merus with unarmed dorsal margin; ventrolateral margin unarmed or with row of very small acute, simple or bifid spinules, ventral surface sometimes with 1 or 2 very small spinules and usually 1 moderately prominent tubercle proximally near mesial margin; dorsal and ventral surfaces with scattered short setae. Ischium often with 1 well developed tubercle on ventromesial margin distally and frequently also with row of moderately long setae.

Ambulatory legs (Figs. 2E, F; 3D, E) similar, but with left second and third pereopods slightly longer than right. Dactyls 1 and  $\frac{1}{3}$  to nearly twice length of propodi; in dorsal view, straight or very faintly twisted in distal third; dorsal margins each with row tufts of long, stiff setae, mesial faces each with 2 or 3 sparse rows of tufts of short to moderately long setae, sometimes replaced by short, stiff and spiniform bristles in large individuals (SL 10.0 mm); lateral face with few tufts of short setae; ventral margins each with row of 15–31 corneous spines and few tufts of setae. Propodi slightly longer than carpi, each with few scattered setae on dor-

sal surface, ventrodorsal angles each with 1 or 2 small corneous spinules, ventral surfaces frequently with row of widely-spaced small corneous spinules, at least on second and with scattered setae. Carpi  $\frac{2}{3}$  to  $\frac{4}{5}$  length of meri; dorsodorsal angles each with small spine, dorsal surface with sparse row of setae. Meri and ischia with scattered setae on dorsal and ventral margins. Fourth pereopods (Fig. 2G) with propodal rasp consisting of 1 long row and 1 or rarely 2 very short to moderately long rows of corneous scales; dactyl with small terminal claw, no preungual process detected. Fifth pereopods moderately elongate, chelate; chela with dense tuft of long setae ventrally.

Anterior lobe of sternite of third pereopods subrectangular, with central semicircle fringed with short setae. Sternite of fifth pereopods (Fig. 2H) broadly rectangular, with 2 prominent tufts of setae. Telson (Fig. 2I) with posterior lobes asymmetrical, left largest, separated by moderate median cleft, terminal margins each with row of very small spinules.

*Habitat.*—Occupying shells of *Fusitriton* sp. and occasionally *Iredalina* sp.

*Distribution.*—New Zealand. Off North Island to the east from north of North Cape to north of Mayor Island, and to the west and south of South Island from northwest of Westport to the Solander Trough and Northern Campbell Plateau; 272–573 m.

*Etymology.*—The species is named in honor of Dr. John Yaldwyn, retired director of the National Museum of New Zealand, in recognition of his many contributions to the decapod faunas of Australia and New Zealand.

*Remarks.*—One specimen indicated in the material examined as “?♀” was parasitized by an unidentified rhizocephalan. Although this was an adult individual (SL 9.6 mm) with female appearing pleopods, neither male nor female gonopores were present.

As is apparent from the description, *B. yaldwyni* exhibits considerable variability,

particularly in chela morphology. In contrast to many pagurids where the strength of chela armature decreases with increasing animal size, tubercles and spines in *B. yaldwyni* increased in strength and number in large specimens of both sexes. Similarly, the number of spines on the ventral margins of the pereopodal dactyls increased from 15–18 in animals with shield lengths of 5 to 6 mm, to 25–31 in animals with shield length over 9.5 mm.

*Bathypaguropsis marionensis*, new species  
Figs. 1B, 4, 5

*Holotype.*—♀ (SL 5.5 mm), Marion Plateau, Queensland, 19°32.85'S, 152°34.8'E, CSIRO sta 0685-30, 470–477 m, 23 Nov 1985, NTM CR006854.

*Paratypes.*—2 ♂ (SL 5.8; 4.7 mm), Marion Plateau, Queensland, 19°32.85'S, 152°34.8'E, CSIRO sta 0685-30, 470–477 m, 23 Nov 1985, NTM CR006854, USNM 267575.

*Description.*—Shield (Figs. 1B, 4A) subtriangular; as long or slightly longer than broad; anterior margin between rostrum and lateral projections somewhat concave; anterolateral margins slightly oblique; posterior margin truncate; dorsal surface with few tufts of setae. Rostrum long, reaching well beyond bases of ocular acicles, acute, with very small terminal spinule. Lateral projections triangular, usually with small terminal spinule.

Ocular peduncles stout, short,  $\frac{1}{2}$  to  $\frac{2}{3}$  shield length, dorsomesial surface with row of setae; corneae not dilated. Ocular acicles simple, triangular, unarmed or with tiny terminal spinule; separated basally by width of rostrum, or by half to  $\frac{2}{3}$  basal width of 1 acicle.

Antennular peduncles long, overreaching ocular peduncles by almost entire length of ultimate segment; basal segment with acute spine on lateral surface distally; penultimate segment with few scattered setae dorsally



and ventrally; ultimate segment with row of setae on dorsal surface; flagellum longer than ultimate peduncular segment.

Antennal peduncles exceeding ocular peduncles by half to  $\frac{2}{3}$  length of ultimate segment, but reaching only to distal half of ultimate segment of antennular peduncle. Fifth and fourth segments with few scattered setae; third segment with very strong spine at ventrodiscal margin; second segment with dorsolateral distal angle strongly produced into broad, triangular process, terminating in acute spine, usually 1 or 2 spines on mesial margin (absent in holotype) and 2–4 on lateral margin, dorsomesial distal angle with acute spine; first segment with small spine at laterodistal margin, ventral margin produced, with 1 or 2 spines laterally. Antennal acicle reaching slightly beyond proximal margin of ultimate peduncular segment, stout, slightly arcuate, with row of tufts of setae on mesial margin and terminating in small spine. Antennal flagellum long, but not overreaching outstretched right cheliped, each article usually with 3 or 4 very short ( $<1$  article length) setae and occasionally 1–4 somewhat longer.

Maxillule (Fig. 4B) with 1 strong bristle on internal lobe of endopod, external lobe moderately well developed, articulated, not recurved. Maxilla (Fig. 4C) with endopod reaching distal margin of scaphognathite; distal lobe of latter subtriangular. First maxilliped (Fig. 4D) with basal segment subrectangular. Third maxilliped with small spine at distal margin of merus.

Right cheliped (Fig. 5A, B) massive, operculate. Dactyl broad, shorter than palm; cutting edge with 1 large fused or 2 or 3 distinct calcareous teeth, terminating in very small corneous claw; dorsal surface slightly elevated in midline, and with row of low tubercles, dorsomesial margin with 1 or 2 tubercles proximally, weakly crenulate, tuberculate, or with transverse ridges distally, mesial and ventral surfaces with low, flattened, sometimes corneous-capped, blister-

like tubercles. Palm broader than long, exceeding length of carpus by  $\frac{1}{4}$  to  $\frac{1}{3}$  own length, dorsomesial distal angle markedly produced and armed with 2 or 3 prominent tuberculate spines; dorsomesial margin with single or irregular double row of blunt, tuberculate spines, sometimes interspersed with small tubercles, dorsal surface convex, covered with flattened granules and small tubercles, with 1 or 2 prominent tubercles at proximal margin; dorsolateral margin rounded, tuberculate, becoming more distinct and crenulated on fixed finger; mesial face with scattered low tubercles, lateral face continuous with ventral surface, with scattered granules and few flattened, frequently corneous-capped, blister-like tubercles distally near articulation of dactyl; ventral surfaces of dactyl and fixed finger with scattered granules or very small, flattened tubercles; cutting edge of fixed finger with 2 or 3 calcareous teeth, terminating in very small corneous claw. Carpus equaling or only slightly longer than merus, subquadrate when viewed dorsally; dorsomesial distal angle depressed and armed with spine or tubercle, margin with strong spine distally and 1 or 2 tubercles or blunt spines in distal half, occasionally with oblique row of 4 or 5 spines in distal half and few low spinulose tubercles or blunt spines on or near dorsomesial margin proximally, dorsal surface with scattered low blunt or spinulose tubercles, often most prominent in distal half and very short, transverse ridges; dorsolateral margin not delimited, lateral and mesial surfaces with scattered blunt or spinulose tubercles, strongest near distal margins, ventrodiscal margin with row of small, blunt or subacute spines or tubercles. Merus broadly and roundly triangular; dorsal margin not delimited, dorsal, mesial and lateral surfaces with low transverse, weakly granular ridges, ventromesial margin with 1 strong acute spine at distal angle and few low protuberances or tubercles proximally; ventrolateral margin with slightly smaller

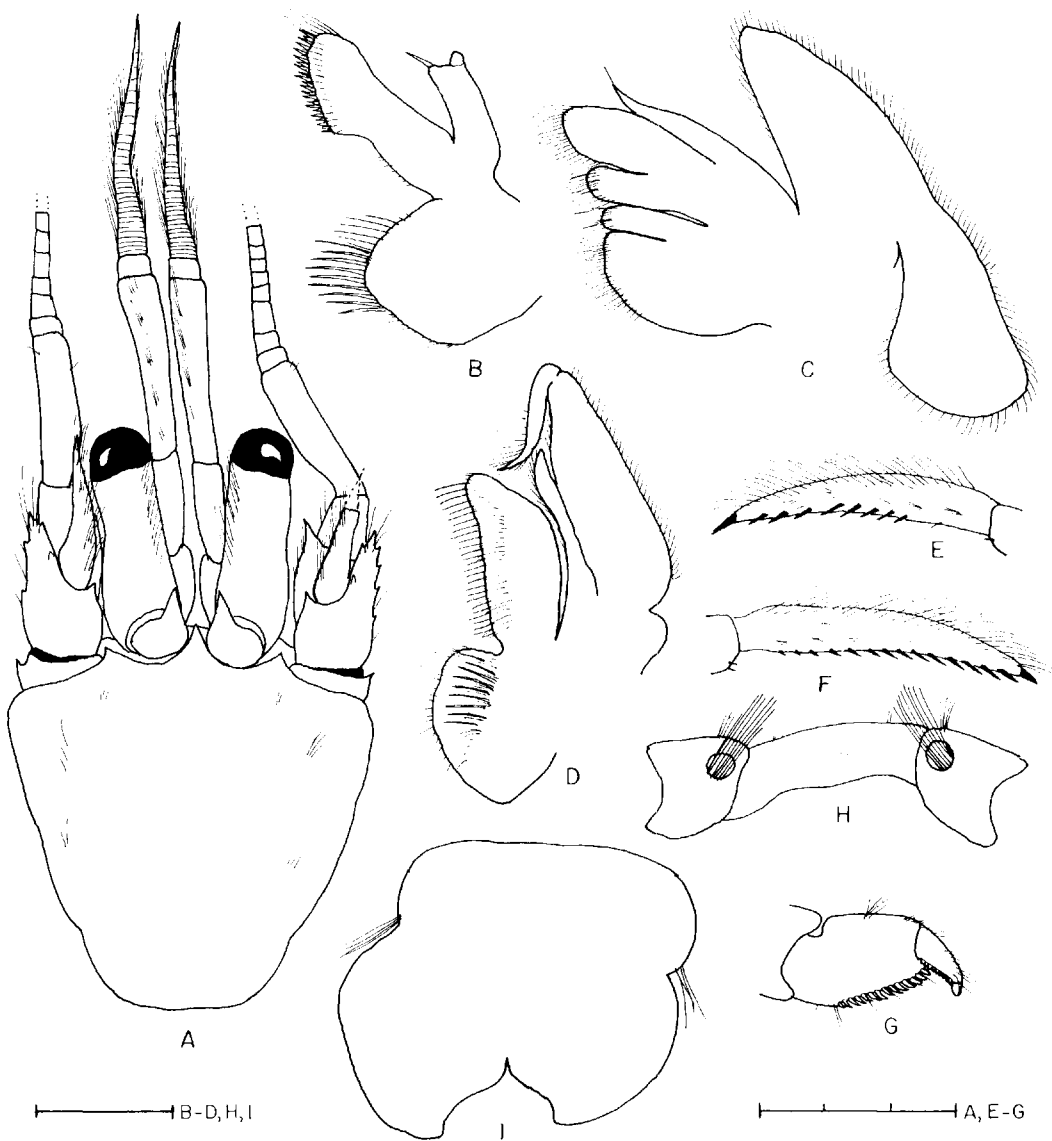


Fig. 4. *Bathypaguropsis marionensis*, new species, ♂ paratype (SL 5.8 mm), USNM 267575. A, shield and cephalic appendages; B, left maxillule (external view); C, left maxilla (external view); D, left first maxilliped (external view); E, dactyl of right second pereopod (mesial view); F, dactyl of left third pereopod (mesial view); G, dactyl and propodus of right fourth pereopod (lateral view); H, sternite of male fifth pereopods; I, telson. Scales equal 3 mm (A, E-G) and 1 mm (B-D, H, I).

spine near distal angle and few spinulose tubercles proximally; ventral surface with scattered granules or tubercles, 2 or 3 moderately large tubercles on somewhat produced mesial half. Ischium with few minute granules on ventromesial margin.

Left cheliped (Fig. 5C) not reaching to base of dactyl of right, slender; propodal-carpal articulation approximately 45° from perpendicular. Dactyl shorter to slightly longer than palm; surfaces unarmed or with 1 or 2 minute tubercles on dorsal surface

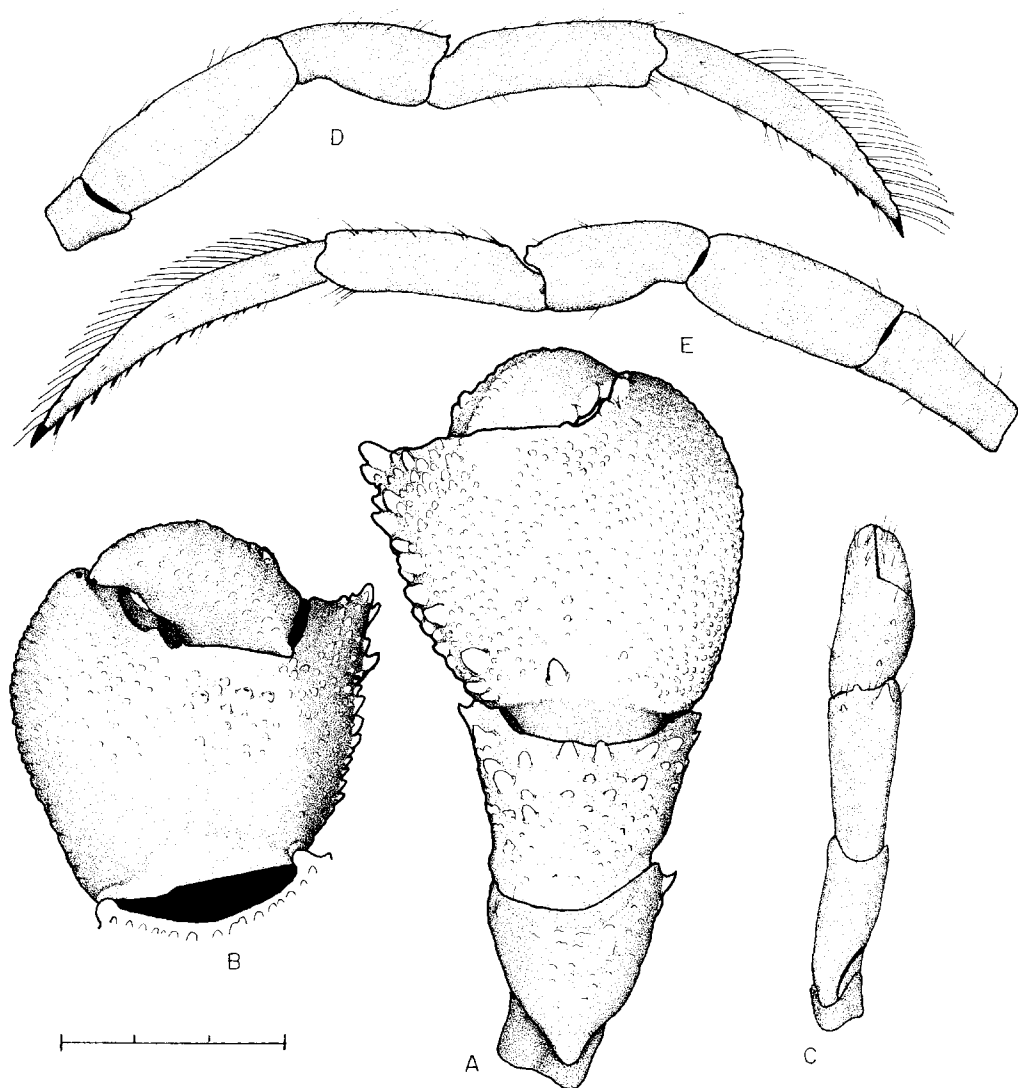


Fig. 5. *Bathypaguropsis marionensis*, new species, ♂ paratype (SL 5.8 mm), USNM 267575. A, right cheliped (dorsal view); B, right chela (ventral view); C, left cheliped (dorsal view); D, right second pereopod (lateral view); E, left third pereopod (lateral view). Scale equals 3 mm.

proximally, but with scattered tufts of setae; cutting edges of dactyl and fixed finger each with row of small corneous teeth; terminating in small corneous claws. Palm half to  $\frac{2}{3}$  length of carpus; dorsomesial margin with 2–4 small, acute or blunt spines, usually strongest proximally; surfaces all unarmed, but with few scattered setae, particularly on fixed finger. Carpus slightly longer

than propodus; dorsomesial margin with 1 or 2 strong, acute or blunt spines on dorsomesial margin distally and also 2 or 3 spinules or low tubercles proximally, sometimes 1 small blunt spine on dorsodistal margin and 1 still smaller spine on dorsolateral surface distally; dorsolateral margin not delimited. Merus with few very small spines, tubercles or short transverse gran-

ular ridges on ventromesial and ventrolateral margins. Ischium unarmed or with 2 or 3 small tubercles on ventromesial margin.

Ambulatory legs (Figs. 4E, F; 5D, E) similar, but left second and third pereopods slightly longer than right. Dactyls longer than propodi by  $\frac{1}{3}$  to  $\frac{1}{2}$  own length; in dorsal view faintly twisted in distal third; dorsal margins each with row of long, stiff bristles; mesial faces each with row of tufts of setae and also frequently few corneous spinules dorsally in distal half; lateral face with few tufts of short setae, and occasionally faint indication of longitudinal sulcus; ventral margins each with row of 8–14 corneous spines, fewest usually on second pereopod. Propodi slightly longer than carpi, each with 1 or 2 small corneous spinules on ventrodiscal margin; dorsal and ventral surfaces with scattered setae. Carpi  $\frac{1}{2}$  to  $\frac{4}{5}$  length of meri; dorsodistal angles each with small spine, dorsal and ventral surfaces with few setae. Meri and ischia with scattered setae on dorsal and ventral margins. Fourth pereopods (Fig. 4G) with 1 row of curved acute corneous scales on propodal rasp, sometimes second row of 2 or 3 scales distally; dactyl with small terminal claw, no preungual process detected. Fifth pereopods moderately elongate, chelate; chelae with fringe of long setae ventrally.

Sternite of third pereopods with anterior lobe subrectangular and central semicircle with short marginal setae. Sternite of fifth pereopods (Fig. 4H) broadly rectangular, with anterior marginal setae. Telson (Fig. 4I) with posterior lobes asymmetrical, left largest, separated by prominent median cleft, terminal margins unarmed or with very few minute tubercles.

*Habitat.*—The holotype occupied an unidentified gastropod shell.

*Distribution.*—At present known only from the type locality, off Queensland, Australia; 470–477 m.

*Etymology.*—The specific name is derived from the type locality, the Marion Plateau.

*Remarks.*—At first glance, *B. marionensis* and *B. yaldwyni* are extremely similar in overall morphology, and given the range of size-correlated variation that has been observed in *B. yaldwyni*, no single character can unequivocally assure accurate identification. For example, *B. marionensis* has only 8–14 corneous spines on the ventral margins of the ambulatory dactyls, whereas most specimens of *B. yaldwyni* are readily recognized by the larger number (22–31). However, in small specimens of this latter species (SL 5 to 6 mm) the number closely approximates that of *B. marionensis*. As *B. marionensis* is presently known from only three relatively small, albeit mature specimens; growth influenced variations cannot be adequately assessed. Nonetheless, when *B. marionensis* is compared with small representatives with *B. yaldwyni* it is immediately apparent that cheliped armature is appreciably stronger in the former species. Even in small specimens of *B. yaldwyni* the sternite of the fifth pereopods is marked by two moderately distinct tufts of setae, while there is only an anterior marginal fringe of setae in *B. marionensis*. The dorsolateral distal angle of the second antennal segment is broadly triangular in both species, but in *B. marionensis* the mesial margin may be unarmed or carry one or two small spines; the lateral margin is armed with two to four spines. In *B. yaldwyni* the mesial margin is consistently unarmed and the lateral margin has only one or two spines. Even though it may be necessary to utilize a suite of characters to distinguish between the taxa, there is amply morphological evidence to justify recognition of two distinct species.

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