ANNALS OF THE SOUTH AFRICAN MUSEUM
ANNALE VAN DIE SUID-AFRIKAANSE MUSEUM

Volume **101** Band
March **1992** Maart
Part **6** Deel

FOUR NEW SPECIES OF THE GENUS *PARAMELITA* (AMPHIPODA, CRANGONYCTOIDEA) FROM SOUTH AFRICA.

By
BARBARA A. STEWART
&
CHARLES L. GRIFFITHS

Cape Town Kaapstad

INSTRUCTIONS TO AUTHORS

1. MATERIAL should be original and not published elsewhere, in whole or in part.

2. LAYOUT should be as follows:

(a) *Centred masthead to consist of*
Title: informative but concise, without abbreviations and not including the names of new genera or species
Author's(s') name(s)
Address(es) of author(s) (institution where work was carried out)
Number of illustrations (figures, enumerated maps and tables, in this order)
(b) *Abstract* of not more than 200 words, intelligible to the reader without reference to the text
(c) *Table of contents* giving hierarchy of headings and subheadings
(d) *Introduction*
(e) *Subject-matter* of the paper, divided into sections to correspond with those given in table of contents
(f) *Summary*, if paper is lengthy
(g) *Acknowledgements*
(h) *References*
(i) *Abbreviations*, where these are numerous.

3. MANUSCRIPT, to be submitted in triplicate, should be typewritten and neat, double spaced with 3 cm margins all round. First lines of paragraphs should be indented. Tables and a list of captions for illustrations should be typed separately, their positions indicated in the text. All pages should be numbered consecutively.

Major headings of the paper are centred capitals; first subheadings are shouldered small capitals; second subheadings are shouldered italics; third subheadings are indented, shouldered italics. Further subdivisions should be avoided, as also enumeration (never roman numerals) of headings and abbreviations.

Footnotes should be avoided unless they are short and essential.

Only generic and specific names should be underlined to indicate italics; all other marking up should be left to editor and publisher.

4. ILLUSTRATIONS should be reducible to a size not exceeding 12×18 cm (19 cm including caption); the reduction or enlargement required should be indicated (and preferably uniform); originals larger than 35×47 cm should not be submitted; photographs should be rectangular in shape and final size. A metric scale should appear with all illustrations, otherwise magnification or reduction should be given in the caption; if the latter, then the final reduction or enlargement should be taken into consideration.

All illustrations, whether line drawings or photographs, should be termed figures (plates are not printed; half-tones will appear in their proper place in the text) and numbered in a single series. Items of composite figures should be designated by capital letters; lettering of figures is not set in type and should be in lower-case letters. If Letraset is used authors are requested to use Helvetica-style lettering, if possible.

The number of the figure should be lightly marked in pencil on the back of each illustration.

5. REFERENCES cited in text and synonymies should all be included in the list at the end of the paper, using the Harvard System (*ibid., idem, loc. cit., op. cit.* are not acceptable):

(a) Author's name and year of publication given in text, e.g.:

'Smith (1969) describes . . .'
'Smith (1969: 36, fig. 16) describes . . .'
'As described (Smith 1969*a*, 1969*b*; Jones 1971)'
'As described (Haughton & Broom 1927) . . .'
'As described (Haughton *et al.* 1927) . . .'

Note: no comma separating name and year
pagination indicated by colon, not p.
names of joint authors connected by ampersand
et al. in text for more than two joint authors, but names of all authors given in list of references.

(b) Full references at the end of the paper, arranged alphabetically by names, chronologically within each name, with suffixes *a*, *b*, etc., to the year for more than one paper by the same author in that year, e.g. Smith (1969*a*, 1969*b*) and not Smith (1969, 1969*a*).

For books give title in italics, edition, volume number, place of publication, publisher.
For journal article give title of article, title of journal in italics (according to the *World list of scientific periodicals*. 4th ed. London: Butterworths, 1963), series in parentheses, volume number, part number in parentheses, pagination (first and last pages of article).

Examples (note capitalization and punctuation)

Bullough, W. S. 1960. *Practical invertebrate anatomy*. 2nd ed. London: Macmillan.
Fischer, P. H. 1948. Données sur la résistance et de la vitalité des mollusques. *Journal de conchyliologie* **88** (3): 100–140.
Fischer, P. H., Duval, M. & Raffy, A. 1933. Études sur les échanges respiratoires des littorines. *Archives de zoologie expérimentale et générale* **74** (33): 627–634.
Kohn, A. J. 1960*a*. Ecological notes on *Conus* (Mollusca: Gastropoda) in the Trincomalee region of Ceylon. *Annals and Magazine of Natural History* (13) **2** (17): 309–320.
Kohn, A. J. 1960*b*. Spawning behaviour, egg masses and larval development in *Conus* from the Indian Ocean. *Bulletin of the Bingham Oceanographic Collection, Yale University* **17** (4): 1–51.
Thiele, J. 1910. Mollusca. B. Polyplacophora, Gastropoda marina, Bivalvia. *In:* Schultze, L. *Zoologische und anthropologische Ergebnisse einer Forschungsreise im westlichen und zentralen Süd-Afrika ausgeführt in den Jahren 1903–1905* **4** (15). *Denkschriften der medizinisch-naturwissenschaftlichen Gesellschaft zu Jena* **16**: 269–270.

(continued inside back cover)

ANNALS OF THE SOUTH AFRICAN MUSEUM
ANNALE VAN DIE SUID-AFRIKAANSE MUSEUM

Volume **101** Band
March **1992** Maart
Part **6** Deel

FOUR NEW SPECIES OF THE GENUS *PARAMELITA* (AMPHIPODA, CRANGONYCTOIDEA) FROM SOUTH AFRICA.

By
BARBARA A. STEWART
&
CHARLES L. GRIFFITHS

Cape Town Kaapstad

The ANNALS OF THE SOUTH AFRICAN MUSEUM

are issued in parts at irregular intervals as material becomes available

Obtainable from the South African Museum, P.O. Box 61, Cape Town 8000

Die ANNALE VAN DIE SUID-AFRIKAANSE MUSEUM

word uitgegee in dele op ongereelde tye na gelang van die beskikbaarheid van stof

Verkrygbaar van die Suid-Afrikaanse Museum, Posbus 61, Kaapstad 8000

OUT OF PRINT/UIT DRUK

1, 2(1–3, 5–8), 3(1–2, 4–5, 8, t.–p.i.), 5(1–3, 5, 7–9), 6(1, t.–p.i.), 7(1–4), 8, 9(1–2, 7), 10(1–3), 11(1–2, 5, 7, t.–p.i.), 14(1–2), 15(4–5), 24(2, 5), 27, 31(1–3), 32(5), 33, 36(2), 43(1), 45(1), 67(5), 84(2)

ISBN 0 86813 129 6

Printed in South Africa by The Rustica Press, Pty., Ltd., Old Mill Road, Ndabeni, Cape

In Suid-Afrika gedruk deur Die Rustica-pers, Edms., Bpk., Old Mill-weg, Ndabeni, Kaap

D1054

FOUR NEW SPECIES OF THE GENUS *PARAMELITA* (AMPHIPODA, CRANGONYCTOIDEA) FROM SOUTH AFRICA

By

BARBARA A. STEWART* & CHARLES L. GRIFFITHS
Zoology Department, University of Cape Town, Rondebosch, South Africa

(With 8 figures)

[*MS accepted 11 December 1990*]

ABSTRACT

Four new species of the endemic South African freshwater amphipod genus *Paramelita* are described from material collected in the south-western Cape Province. Males of all four species exhibit enlargement and thickening of the second antenna and various modifications of pereopod 3, with two of the four having this limb fully subchelate. Morphological similarities between the four new species (*P. pinnicornis*, *P. magnicornis*, *P. andronyx*, and *P. platypus*) and the 12 previously known species of *Paramelita* are discussed.

CONTENTS

INTRODUCTION

The first records of the freshwater amphipod genus *Paramelita* were those of Barnard (1916), who described four species collected from streams on Table Mountain, originally placing them in the genus *Gammarus*. Barnard (1927) added another six species to this list and, in 1937, Schellenberg transferred all of these species to the genus *Paramelita*. Two other species have subsequently been recognized by Thurston (1973), who described specimens collected from a cave on the Cape Peninsula, and Griffiths (1981), who described a new species from the Palmiet River near Grabouw.

In 1989, a research project was initiated to investigate the distribution patterns and phylogenetic relationships of the *Paramelita* species. Accordingly, an extensive sampling programme was undertaken to record distributions and to collect samples for the purposes of constructing a phylogenetic tree based on morphological and isozyme variation. This sampling programme has resulted in range extensions for many of the known species, and has also revealed several

* Present address: Department of Marine Biology, South African Museum, Cape Town.

Ann. S. Afr. Mus. **101** (6), 1992: 139–158, 8 figs.

new undescribed forms. Some of these could be linked to existing species complexes, and will be discussed elsewhere. However, the relationships of four of the newly discovered taxa were not immediately evident, and are described below.

SYSTEMATICS

Superfamily CRANGONYCTOIDEA Bousfield, 1973
Family **Paramelitidae** Bousfield, 1977
Paramelita Schellenberg, 1926

Paramelita pinnicornis sp. nov.

Figs 1–2

Material examined

Holotype. SAM–A40004, male, 13,5 mm, from a tributary of the Burgersbos River (34°01′S 18°25′E) crossing Rhodes Drive, Constantia, on the Cape Peninsula. Collected by B. A. Stewart and Y. Dempster on 9 August 1989.

Paratypes. SAM–A40005, 14 males, 20 ovigerous females, from the same sample as the type specimen.

Other material. SAM–A40006, 52 specimens, collected 12 August 1990, and SAM–A40007, 5 specimens, collected 12 August 1990, from two adjacent streams flowing into Koeëlbaai in the Cape Hangklip area on the east coast of False Bay. SAM–A40008, 83 specimens (13 July 1988), from Kenilworth Race Course on the Cape Peninsula.

Etymology

From the Latin *pinna* (feather or plume) and *cornis* (horn), an allusion to the fin, or wing-like projections that are present on article 5 of the second antenna.

Description (of holotype, male, 13,5 mm)

Body colour when alive grey tinged with pink. Head slightly shorter than pereon segments 1 and 2 combined, anteroventral margin excavate to accommodate inflated article 1 of antenna 2, eyes glistening white when alive, difficult to discern in preserved material. Antenna 1 0,6 times length of body, setation sparse, articles 1 and 2 of peduncle subequal, each twice length of article 3, flagellum twice length of peduncle, 31-articulate, accessory flagellum 6-articulate, reaching past article 4 of primary flagellum. Antenna 2 approximately the same length as antenna 1, but considerably stouter, peduncle sparsely to moderately setose, article 4 and 5 each about 2,7 times length of article 3, outer margin and tip of article 5 extended into an elongate triangular flange, flagellum 0,6 times length of enlarged peduncle, 16-articulate, sparsely setose.

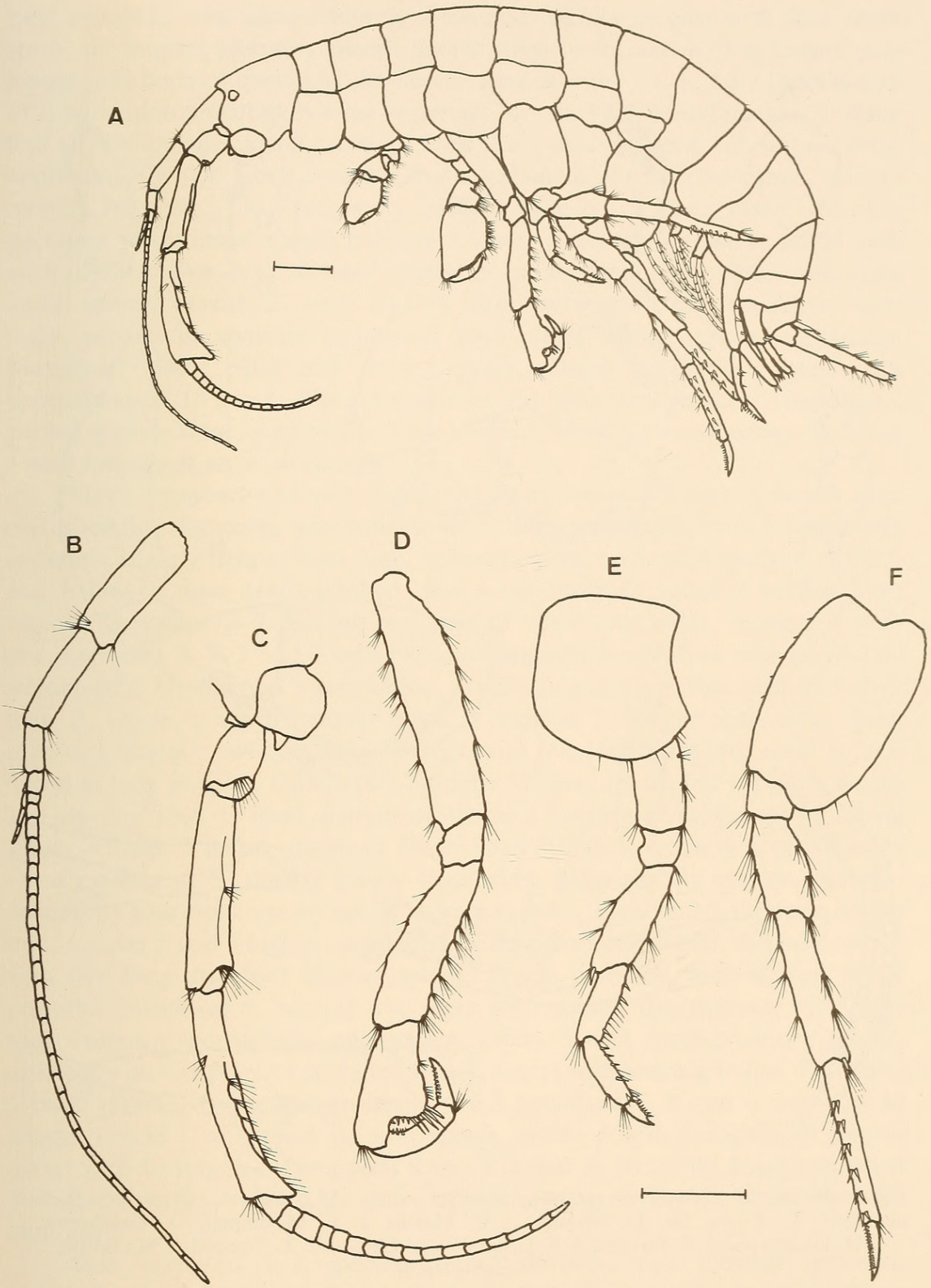

Fig. 1. *Paramelita pinnicornis* sp. nov., holotype, male, 13,5 mm. A. Lateral aspect. B. Antenna 1. C. Antenna 2. D. Pereopod 3. E. Coxa 4 and pereopod 4. F. Pereopod 7. Scales = 1 mm.

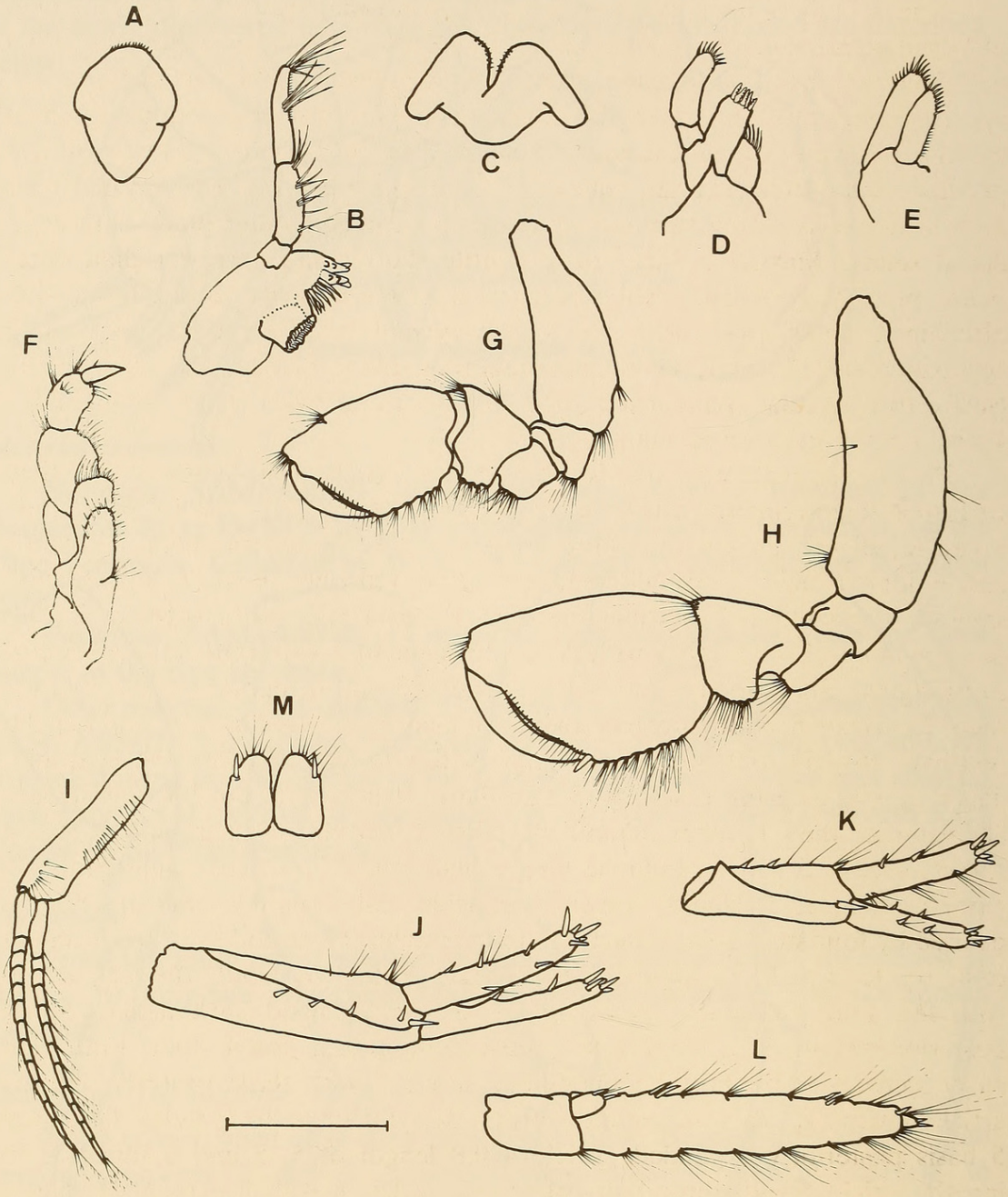

Fig. 2. *Paramelita pinnicornis* sp. nov., holotype, male, 13,5 mm. A. Upper lip. B. Left mandible. C. Lower lip. D. Maxilla 1. E. Maxilla 2. F. Maxilliped. G. Gnathopod 1. H. Gnathopod 2. I. Pleopod 3. J. Uropod 1. K. Uropod 2. L. Uropod 3. M. Telson. Scale = 1 mm.

Left mandible with incisor bluntly 4-toothed, lacinia mobilis with four blunt teeth, six spinose accessory blades, molar strongly triturative, 3-articulate palp longer than body of mandible, article 1 as long as wide, article 2 3,5 times length of 1, with approximately 16 setae anteriorly, article 3 1,2 times length of 2, distal half lined with many short setae, six long apical setae present, tuft of four setae approximately 0,7 along length. Right mandible, incisor 3-toothed, lacinia mobilis bifurcate, three accessory blades. Maxilla 1, inner plate with five pectinate setae, inner margin pubescent, outer plate bearing two terminal rows each of about five stout serrated spines, palp exceeding outer plate, with eight apical spines. Maxilla 2, inner plate a little shorter and narrower than outer plate, proximally sparsely pubescent, both plates strongly setose terminally. Maxilliped, inner plate with many curved spinose setae, outer plate with approximately 10 stout, blunt spine-teeth on inner margin and 10 terminal curved spinose setae, palp article 2 the longest, 2 and 3 densely setose medially, 4 with four short setae on margin.

Pereon segments with very few dorsal setae, coxae 1–3 slightly deeper than corresponding segments, quadrate, sparsely setose ventrally, coxa 4 posteriorly excavate, slightly deeper than long, sparsely setose on ventral margin, coxae 5 and 6 longer than deep, bilobed, few setae ventrally, coxa 7 semicircular, smooth, segments 2–7 bearing one pair of coxal gills each, segment 2 with one, segments 3, 4, 5 and 7 with two, and segment 6 with four sausage-shaped sternal gills. Gnathopod 1 subchelate, articles 5 and 6 together slightly longer than 2, article 6 approximately twice as long as 5, longer than wide, palm relatively straight, oblique, palmar angle with two long and three short spines, dactyl as long as palm. Gnathopod 2 similar in structure to, but 1,4 times length and sturdier than 1, inner margin of article 2 bearing seven groups of strong spines, articles 5 and 6 combined longer than article 2, article 6 approximately twice as long as 5, slightly longer than wide, palm slightly convex, oblique, defined by four stout spines, dactyl as long as palm. Pereopod 3 1,4 times length of 4, articles 5 and 6 highly modified, 5 being posteriorly lobed, the lobe armed with five long and four shorter spines, article 6 folded back against lobed posterior margin of 5, bearing five short stout spines, dactyl stout, with eight short spinules. Pereopod 4 unmodified, article 5 with three posterior spines, article 6 with five pairs of posterior spines, dactyl with seven spinules. Pereopod 5 basis posteriorly expanded, article 4 0,8 length of 5, 5 and 6 subequal in length, article 5 with three pairs of spines, article 6 with five pairs of spines, dactyl with 10 spinules. Pereopods 6 and 7 similar in structure, bases expanded posteriorly, article 6 with six pairs of spines, dactyls each with 14 spinules anteriorly.

Pleon segments 1–3 sparsely setose dorsally, first pleonal epimeron rounded-quadrate, 2 and 3 quadrate, setose on posterior margin. Pleon segments 4–6 sparsely setose dorsally. Uropod 1 extending slightly beyond 2, 1,1 length of uropod 3, rami equal, 0,7 length of peduncle, each ending in five spines. Uropod 2 shorter, stouter than 1, rami subequal, each with five apical

spines. Uropod 3 exceeding 2 by 0,9 length of outer ramus, peduncle longer than broad, inner ramus reduced, 0,4 times length of peduncle, terminating in two spines and a few long setae, outer ramus three times length of peduncle, six groups of setae on inner and eight on outer margin, small second article ending in two spines. Telson as broad as long, deeply cleft, each lobe with one large subapical spine and several apical setae.

Remarks

Paramelita pinnicornis sp. nov. adult males are clearly distinguished from other *Paramelita* species by the fin-like projections on the peduncle of antenna 2 and the claw-like structure of the distal end of pereopod 3. Antenna 2 in females is slender and shorter than 1, and pereopod 3, like 4, is not modified. In most other respects, the females resemble the males. Although the fin-like projections of the second antenna in males are unique, a 'claw-like' pereopod 3 is also found in *P. auricularius* (Barnard, 1916), from Table Mountain, and in *P. andronyx* sp. nov. from Kasteelsberg. Despite their superficial similarity, however, these structures are not homologous, and therefore not evidence of close affinities between these three species. In *P. pinnicornis* sp. nov. the 'claw' is achieved by the folding back of article 6 against the lobed spiny posterior margin of article 5. In *P. andronyx* sp. nov., however, it is article 4 that is strongly protruded, with the right angle joint between articles 5 and 6 completing the claw. In *P. auricularius*, an elongated article 6 folds back against the lobed, swollen posterior margin of article 5, but this is of a quite different shape to the structure in *P. pinnicornis* sp. nov. Coxa 4 in the latter two species is either quadrangular, or gently concave posteriorly, whereas in *P. pinnicornis* sp. nov. it is distinctly excavate posteriorly.

Paramelita magnicornis sp. nov.

Figs 3–4

Material examined

Holotype. SAM–A40009, male, 15,0 mm, from a stream draining the Swartkop Mountains (34°14′S 18°29′E) near Millers Point on the southern Cape Peninsula. Collected by B. A. Stewart and C. L. Griffiths on 30 November 1989.

Paratypes. SAM–A40010, 13 males and eight females, from the same sample as the holotype.

Other material. SAM–A40013, numerous specimens, from the same stream as the holotype (date unrecorded). SAM–A40011, numerous specimens, collected 9 August 1989, and A40015, 3 specimens, collected 16 August 1990, a stream draining Chapman's Peak, Cape Peninsula. SAM–A40012, 10 specimens (date unrecorded), a stream draining the Kalk Bay Mountains near Clovelly, Cape Peninsula. SAM–A40014, 39 specimens, 30 November 1989, and A40016, 10 specimens (date unknown), Peck's Valley stream on Boyes Drive, Cape Peninsula.

Etymology

From the Latin *magnus* (large), alluding to the swollen and elongated second antenna.

Description (of holotype, male, 15,0 mm)

Body colour when alive off white. Head shorter than pereon segments 1 and 2 together, anteroventral margin excavate to accommodate inflated article 1 of antenna 2, eyes glistening white when alive, difficult to discern when preserved. Antenna 1 relatively short, 0,4 length of body, setation sparse, articles 1 and 2 subequal, each twice length of 3, flagellum 1,7 times length of peduncle, 30-articulate, accessory flagellum 6-articulate, reaching to end of article 4 of flagellum. Antenna 2 1,2 times length of 1 and considerably stouter, peduncle moderately setose posteriorly, article 4 1,9 length of article 3, distally inflated, article 5 slightly shorter than article 4, flagellum 0,8 times length of peduncle, 16-articulate, moderately setose posteriorly. Left mandible, incisor, bluntly 5-toothed, lacinia mobilis with 4 blunt teeth, four accessory blades, molar strongly triturative, palp longer than body of mandible, article 1 as long as wide, article 2 five times length of article 1, with 10 strong setae anteriorly, article 3 slightly shorter than 2, distal half with comb of short setae, six long apical setae, tuft of setae half-way along length. Right mandible, incisor 4-toothed, lacinia mobilis bifurcate, two accessory blades. Maxilla 1, inner plate with 7 setae, inner margin pubescent, outer plate terminating in nine stout serrated spines, palp exceeding outer plate, with eight stout apical setae. Maxilla 2, inner plate a little shorter and narrower than outer plate, proximally pubescent, both plates strongly setose terminally. Maxilliped, inner plate with many curved spinose setae, outer plate with approximately seven stout blunt spine-teeth on inner margin and eight terminal curved setae, palp article 2 the longest, inner margin with row of strong curved setae, article 3 densely setose.

Pereon segments dorsally smooth, coxae 1–3 deeper than corresponding segments, quadrate, moderately setose ventrally, coxa 4 excavate posteriorly, approximately as deep as long, moderately setose ventrally, coxa 5 and 6 longer than deep, bilobed, coxa 5 moderately setose ventrally, coxa 6 with a few short setae and spinules, coxa 7 semicircular, setose ventrally, segments 2–7 bearing one pair of coxal gills each, segments 2 with one, segments 3, 4, 5 and 7 with two, and segment 6 with four sausage-shaped sternal gills. Gnathopod 1 subchelate, article 2 bearing plumose setae on both anterior and posterior margins and two groups of spines on inner surface, articles 5 and 6 together longer than 2, article 6 1,7 times length of 5, longer than wide, palm gently convex, oblique, with five palmar spines, dactyl as long as palm. Gnathopod 2 similar to, but 1,2 length and sturdier than 1, article 2 with two groups of spines on inner margin and a few plumose setae on anterior margin, articles 5 and 6 together longer than article 2, article 6 1,7 times the length of 5, longer than wide, palm convex, distinctly oblique, defined by four stout spines, dactyl as long as palm. Pereopod 3 approximately the same length as 4, article 4 anteriorly lobed over 5 and

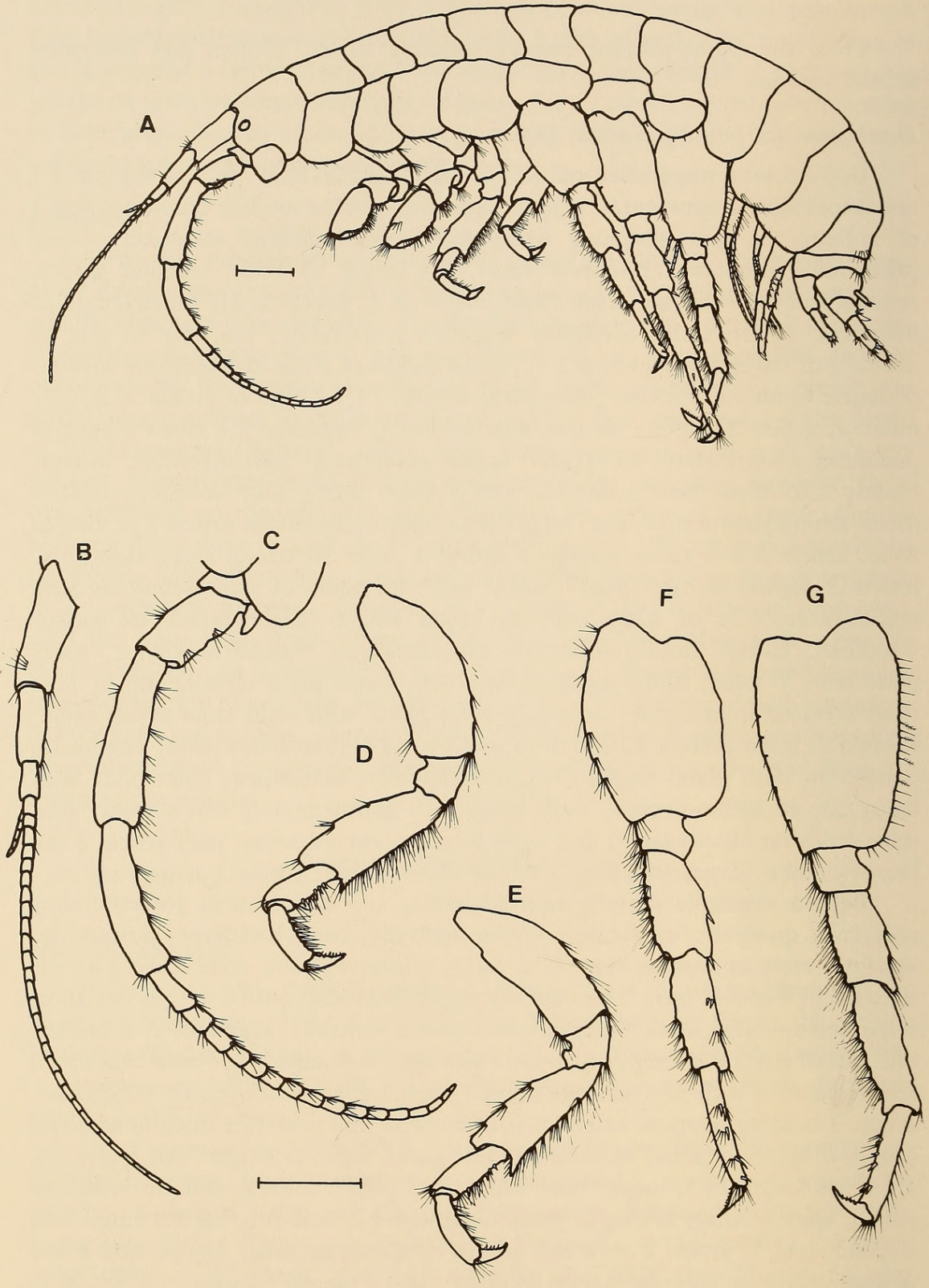

Fig. 3. *Paramelita magnicornis* sp. nov., holotype, male, 15,0 mm. A. Lateral aspect. B. Antenna 1. C. Antenna 2. D. Pereopod 3. E. Pereopod 4. F. Pereopod 5. G. Pereopod 7. Scales = 1 mm.

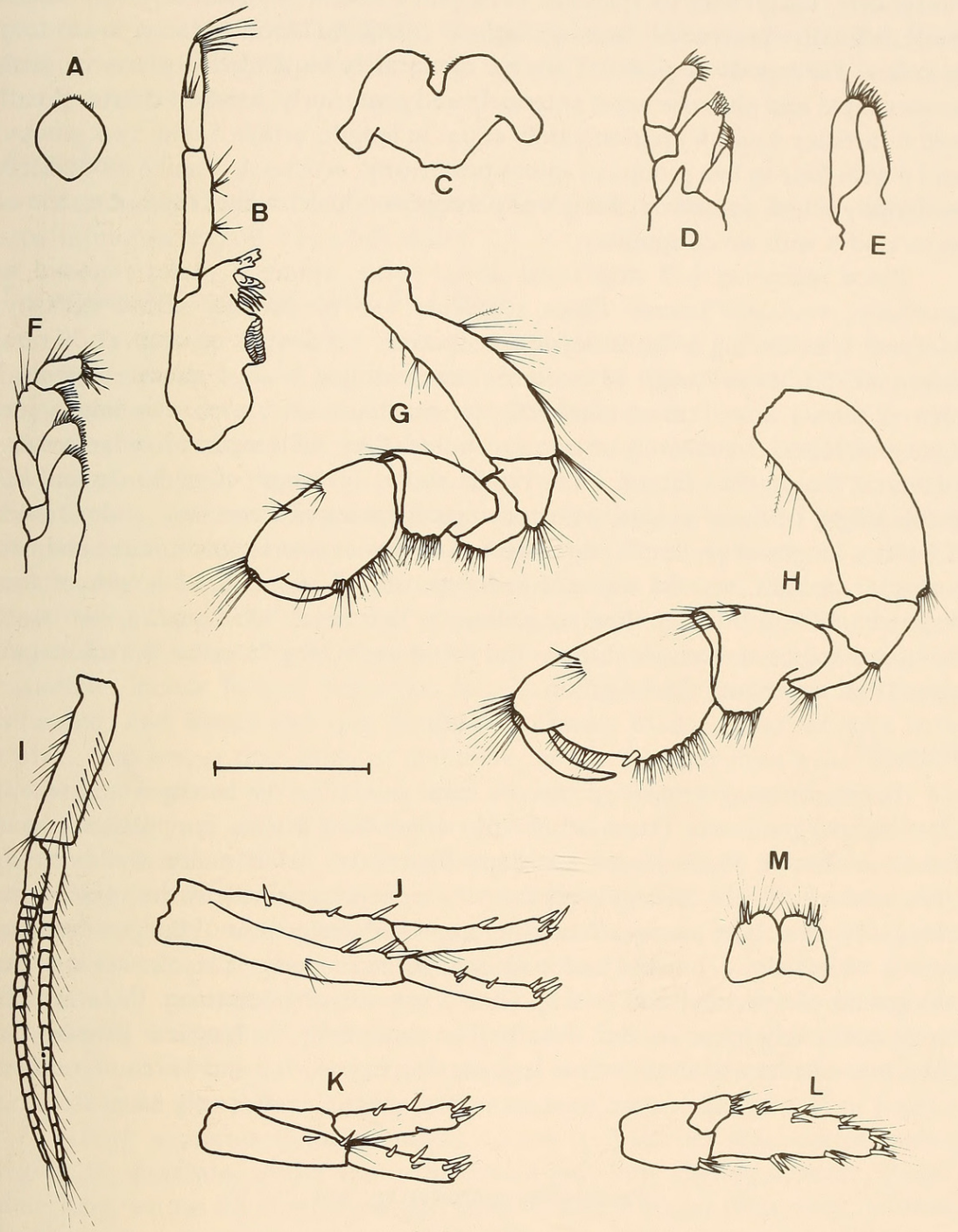

Fig. 4. *Paramelita magnicornis* sp. nov., holotype, male, 15,0 mm. A. Upper lip. B. Left mandible. C. Lower lip. D. Maxilla 1. E. Maxilla 2. F. Maxilliped. G. Gnathopod 1. H. Gnathopod 2. I. Pleopod 1. J. Uropod 1. K. Uropod 2. L. Uropod 3. M. Telson. Scale = 1 mm.

posterodistally protruded into a triangular tooth, articles 4, 5 and 6 densely setose posteriorly, dactyl with six spinules. Pereopod 4 similar in structure to 3, article 4 posterodistally protruded into a distinct triangular tooth, dactyl with four spinules. Pereopods 5, 6 and 7, bases moderately expanded posteriorly, with some simple and plumose setae anteriorly and posteriorly, article 4 shorter than 5 and 6, articles 5 and 6 approximately equal in length, article 5 with two groups, and 6 with four to five groups of spines posteriorly, articles 4, 5 and 6 moderately to densely setose anteriorly, dactyls of pereopods 5 and 7 with six spinules, and of pereopod 6 with seven spinules.

Pleon segments 1–3 with some dorsal setae, epimeral plates rounded to quadrate, ventrally setose. Pleon segments 4–6 moderately setose dorsally. Uropod 1 extending a little beyond uropod 2, 1,5 length of uropod 3, rami subequal, 0,6 times length of peduncle, each ending in four spines. Uropod 2 shorter than 1, inner ramus marginally longer than outer, each with four apical spines. Uropod 3 relatively short, exceeding 2 by 0,7 length of outer ramus, peduncle longer than broad, inner ramus short, 0,6 length of peduncle and 0,3 times length of outer ramus, with four apical spines and one seta, outer ramus 2,4 times length of peduncle, three groups of spines and setae on inner and two on outer margin, second segment reduced, only 5 per cent of length of first segment. Telson broader than long, deeply cleft, each lobe bearing two stout subapical spines, seven apical setae and two setae arising from the dorsal surface about half way along the length.

Remarks

Paramelita magnicornis sp. nov. is most similar to the common and widely distributed *P. capensis* (Barnard, 1916), with which it lives sympatrically in at least two known localities on the Cape Peninsula. Adult males of this newly described species are distinguished from *P. capensis* primarily by the swollen and elongate peduncle of antenna 2 and the 'spur-like' projections of the posterodistal apices of article 4 of the first and second pereopods. The thickening and elongation of articles 4 and 5 of antenna 2 are also characteristic, these articles being noticeably more swollen distally than proximally. In females, antenna 2 is relatively slender and shorter than 1; similarly, pereopods 3 and 4 are unmodified. Coxa 4 in *P. magnicornis* sp. nov., as in *P. capensis*, is distinctly excavate.

Paramelita andronyx sp. nov.

Figs 5–6

Material examined

Holotype. SAM–A40017, male, 16,1 mm, from a tributary of the Riebeek's River (33°22'S 18°50'E), above the farm Waterval, on the slopes of Kasteelsberg, in the Malmesbury district. Collected by B. A. Stewart and P. A. Cook in September 1989.

Paratypes. SAM–A40018, 10 males, three females, from the same locality as the type specimen.

Other material. SAM–A40019, 12 specimens, collected 24 September 1989, from a nearby farm, Wynkeldersberg. This is the only known other record of this species to date.

Etymology

From the Greek *aner* (man) and *onux* (claw), alluding to the claw-like structure of pereopod 3 in adult males.

Description (of holotype, male, 16,1 mm)

Body colour when alive whitish, tinged with pink. Head shorter than pereon segments 1 and 2 together, margin between eye lobe and post-antennal angle gently excavate to accommodate inflated article 1 of antenna 2, eyes glistening white when alive, invisible when preserved. Antenna 1 relatively long, 0,6 length of body, sparsely setose, flagellum 1,5 times length of peduncle, 29-articulate, accessory flagellum 3-articulate, reaching to article 3 of flagellum. Antenna 2 a little stouter and 0,8 times length of antenna 1, peduncle moderately setose, article 3 bearing a semicircular lobe posteriorly, article 4 three times length of 3, laterally swollen, article 5 0,8 times length of 4, flagellum 1,2 times length of peduncle, 17-articulate, moderately setose. Left mandible, incisor bluntly 5-toothed, lacinia mobilis with four blunt teeth, two bifurcate, one simple and one pectinate accessory blade, molar strongly triturative, palp longer than body of mandible, article 1 longer than wide, article 2 2,6 times length of 1, with nine setae anteriorly, article 3 approximately the same length as 2, distal half lined with short setae, nine long apical setae present, two tufts of setae about half-way along length. Right mandible, incisor 4-toothed, lacinia mobilis bifurcate, four accessory blades. Maxilla 1, inner plate setose terminally, outer plate bearing eight serrate spines, palp exceeding outer plate, with six apical spines and three apical setae. Maxilla 2, inner plate shorter than outer, proximally pubescent, both plates strongly setose terminally. Maxilliped, inner plate with three spines and five curved setae, outer plate with eight stout spines on inner margin and seven terminal curved setae, palp article 3 as long as article 2, both articles strongly setose medially.

Pereon segments dorsally smooth, coxae 1–3 deeper than corresponding segments, quadrate, setose ventrally, coxa 4 only very slightly concave, deeper than long, setose on ventral margin, coxae 5 and 6 longer than deep, bilobed, bearing setae and a few spinules ventrally, coxa 7 semicircular, bearing short stout setae ventrally, segments 2–7 bearing one pair of coxal gills each, segment 2 with one, segments 3, 4, 5 and 7 with two, and segment 6 with four sausage-shaped sternal gills. Gnathopod 1 subchelate, articles 5 and 6 together longer than article 2, inner posterior margin of article 2 with five stout spines, article 6 1,4 times length of article 5, longer than wide, palm slightly convex, gently oblique, with four palmar spines, dactyl as long as palm. Gnathopod 2 similar

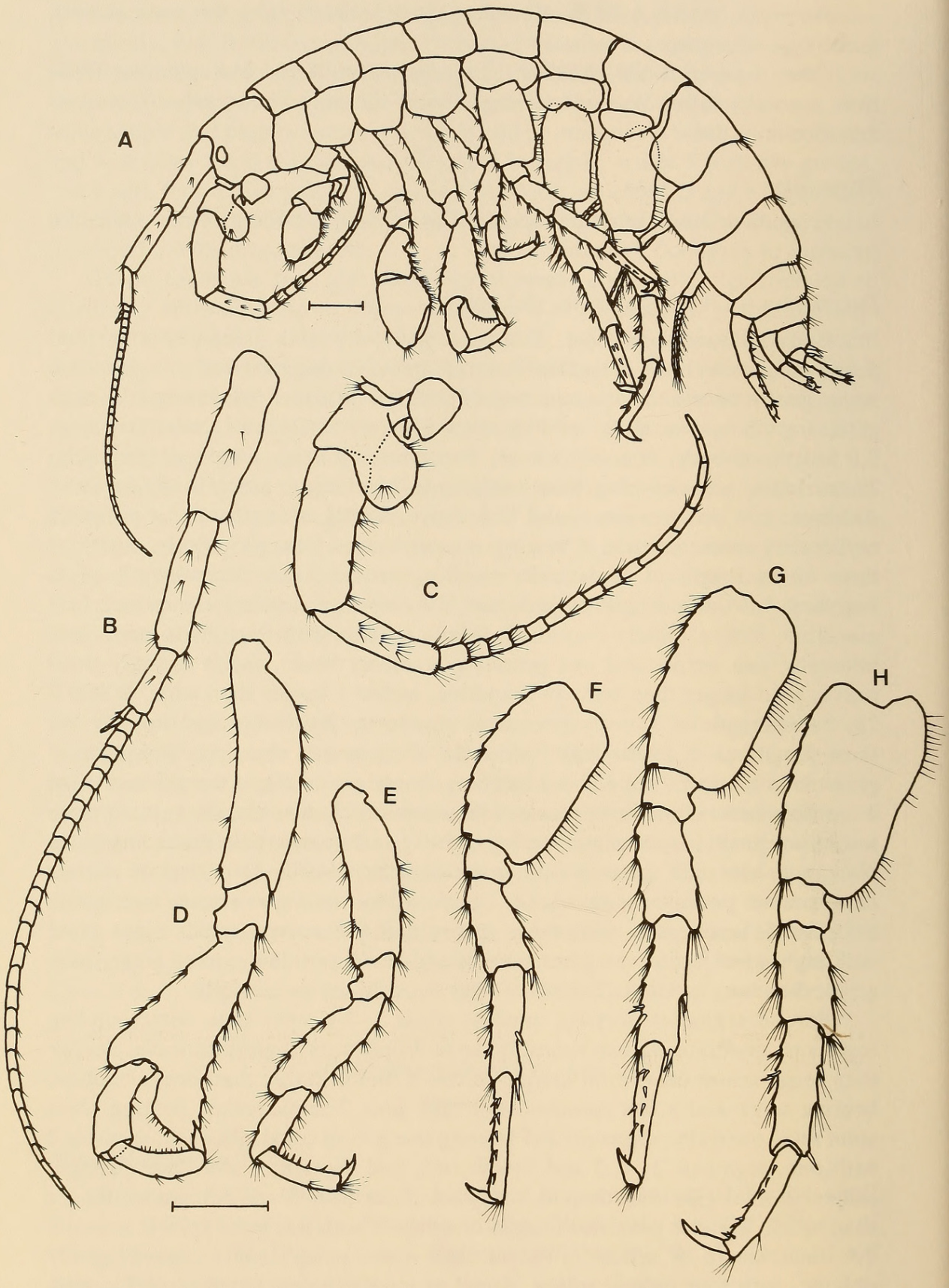

Fig. 5. *Paramelita andronyx* sp. nov., holotype, male, 16,1 mm. A. Lateral aspect. B. Antenna 1. C. Antenna 2. D. Pereopod 3. E. Pereopod 4. F. Pereopod 5. G. Pereopod 6. H. Pereopod 7. Scales = 1 mm.

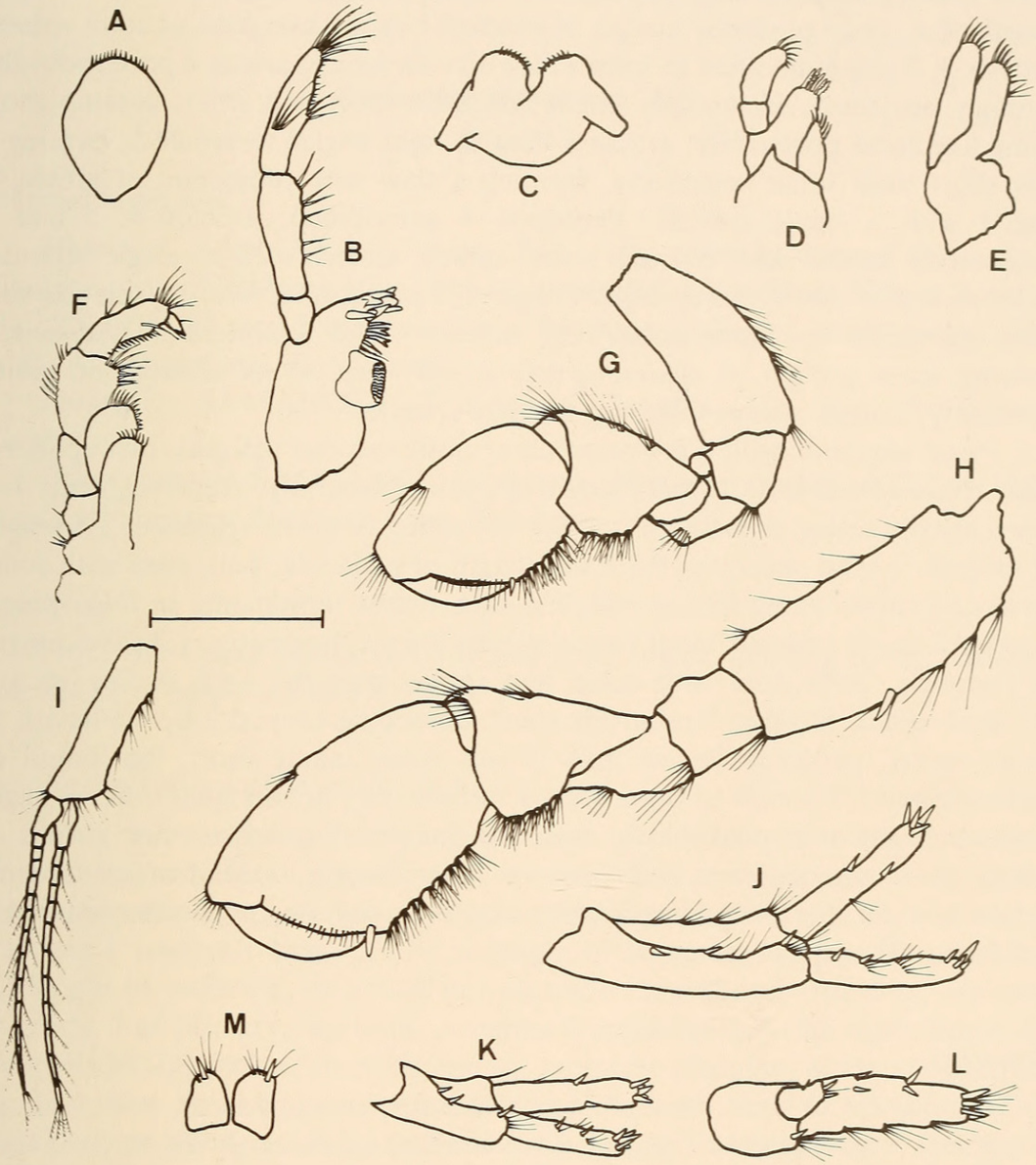

Fig. 6. *Paramelita andronyx* sp. nov., holotype, male, 16,1 mm. A. Upper lip. B. Left mandible. C. Lower lip. D. Maxilla 1. E. Maxilla 2. F. Maxilliped. G. Gnathopod 1. H. Gnathopod 2. I. Pleopod 3. J. Uropod 1. K. Uropod 2. L. Uropod 3. M. Telson. Scale = 1 mm.

to, but larger than, 1, articles 5 and 6 together longer than article 2, inner posterior margin of article 2 bearing five pairs of stout spines, article 6 1,6 times the length of 5, longer than wide, palm convex, slightly oblique, defined by four stout spines, dactyl as long as palm. Pereopod 3 highly modified and 1,3 times length of 4, inner posterior margin of article 2 bearing five pairs of stout spines, articles 4, 5 and 6 modified to form a claw-like structure, article 4 posterodistally strongly projected, moderately setose, article 5 short and stout, bearing short spine-like setae posteriorly, article 6 bent at right angles to article 5, bearing a few short stout setae posteriorly, forming a claw with projection of article 4, dactyl with a single spinule. Pereopod 4 unmodified, articles 4, 5 and 6 moderately setose and bearing some spines, dactyl with a single spinule. Pereopods 5, 6 and 7, bases slightly expanded posteriorly, bearing spinules and setae anteriorly and setae posteriorly, articles 4 and 5 moderately setose and bearing some groups of spines, article 6 with five or six clusters of spines anteriorly, dactyls always with only a single spinule.

Pleon segments with a few setae along posterodorsal margins, first epimeral plate rounded-quadrate, 2 and 3 quadrate, setose ventrally. Pleon segments 4–6 more heavily setose dorsally. Uropod 1 extending to tip of uropod 2, 1,5 length of uropod 3, rami subequal, 0,8 times length of peduncle, both rami with some setae and spines along lateral margins, each ramus terminating in four spines. Uropod 2 shorter than 1, inner ramus slightly longer than outer, 1,2 times length of peduncle, both rami with setae and spines laterally, each ending in five terminal spines. Uropod 3 relatively short, exceeding uropod 2 by 0,6 length of outer ramus, peduncle longer than broad, inner ramus short, 0,6 length of peduncle and 0,3 length of outer ramus, terminating in two spines and a single seta, outer ramus approximately twice the length of peduncle, two groups of spines and setae on inner and three on outer margin, second article absent. Telson broader than long, deeply cleft, each lobe with one large subapical spine and four to five apical setae.

Remarks

In addition to their uniquely subchelate first pereopods, *P. andronyx* sp. nov. males from Kasteelsberg are easily identified by the large semicircular lobe on the posterior margin of article 3 of antenna 2. In adult females, antenna 2 is more slender and shorter than 1, article 3 is not lobed, and an unmodified pereopod 3 resembles pereopod 4 in structure. In other respects, females are similar to males. *Paramelita andronyx* sp. nov. males share a lobed article 3 (along with a distinctly swollen article 4) of antenna 2, with both *P. flexa* Griffiths, 1981, and *P. auricularius*, which also possesses a modified pereopod 3. The claw on pereopod 3 in *P. auricularius* is, however, formed from articles 5 and 6 only, not article 4. *Paramelita flexa* is clearly distinguished from *P. andronyx* sp. nov. both by the shape of antenna 2 and by its unmodified pereopod 3. In addition to the swelling of article 4 of the second antenna, other

features, such as the possession of only a single spinule on each dactyl, the poorly excavate coxa 4, and the loss of a second segment on the outer ramus of the third uropod, suggest that *P. andronyx* sp. nov. might have affinities with *P. crassicornis* (Barnard, 1916), and *P. tulbaghensis* (Barnard, 1927).

Paramelita platypus sp. nov.

Figs 7–8

Material examined

Holotype. SAM–A40020, male, 12,8 mm, from Fisherman's Kloof, a tributary of the Fernkloof River flowing through the Fernkloof Nature Reserve (34°24′S 19°14′E) near Hermanus, Cape Province. Collected in September 1989 by B. A. Stewart and P. A. Cook.

Paratypes. SAM–A40021, 8 males, 12 females, also from Fisherman's Kloof.

Other material. SAM–A40022, numerous specimens, collected 22 July 1990, from a stream near Stanford, Cape Province.

Etymology

From the Greek *platus* (broad) and *pous* (foot), alluding to the widened article 4 of pereopods 3 and 4.

Description (of holotype, male, 12,8 mm)

Body colour when alive orange to pink, eyes white when alive, invisible when preserved. Head considerably shorter than pereon segments 1 and 2 together, ventral margin excavate to accommodate inflated article 1 of antenna 2. Antenna 1 relatively long, 0,7 times length of body, setation sparse, flagellum 2,2 length of peduncle, 41-articulate, accessory flagellum 5-articulate, reaching to article 5 of primary flagellum. Antenna 2 approximately the same length as, but considerably stouter than, antenna 1, peduncle elongate, moderately setose, article 4 three times length of unmodified article 3, articles 4 and 5 equally long and relatively slender, lacking projections, flagellum 1,1 times length of enlarged peduncle, 22-articulate, sparsely setose. Left mandible, incisor with two blunt teeth, lacinia mobilis with four blunt teeth, three simple, and one bifurcate accessory blade, molar strongly triturative, palp longer than body of mandible, article 1 as long as wide, article 2 six times length of article 1, with approximately four groups of setae and one spine on anterior margin, article 3 1,3 times length of 2, distally lined with short setae and bearing six long apical setae, tuft of about four setae half way along length. Right mandible, incisor 3-toothed, lacinia mobilis bifurcate, three flattened spinose accessory blades. Maxilla 1, inner plate terminally setose, inner margin pubescent, outer plate terminating in about nine stout serrated spines, palp exceeding outer plate, with

eight stout apical setae. Maxilla 2, inner plate shorter and narrower than outer plate, proximally pubescent, both plates strongly setose terminally. Maxilliped, inner plate with many curved spinose setae, outer plate with about nine stout spine-teeth on inner margin and six terminal spinose setae, palp article 2 the longest, articles 2 and 3 densely setose medially.

Pereon segments with a few setae dorsally, coxae 1–3 slightly deeper than corresponding segments, quadrate, setose ventrally, coxa 4 virtually quadrate, only very slightly concave posteriorly, height and length subequal, setose ventrally, coxa 5 and 6 longer than deep, bilobed, setose ventrally, coxa 7 semicircular, setose ventrally, segments 2–7 bearing one pair of coxal gills each, segments 4, 5 and 7 with two, and segment 6 with four sternal gills. Gnathopod 1 subchelate, articles 5 and 6 together longer than 2, article 6 1,6 times length of 5, longer than wide, palm slightly convex, palmar angle with two long and three short spines, dactyl as long as palm. Gnathopod 2 similar in structure but larger than 1, articles 5 and 6 combined a little longer than 2, two pairs of short spines on inside of article 2, article 6 1,7 times length of 5, longer than wide, palm strongly convex, transverse, defining angle rectangular, bearing four strong spines, dactyl as long as palm. Pereopod 3 enlarged, 1,2 times length of 4, article 2 with seven spinules on anterior, and eight spinules on posterior margin, article 4 greatly expanded laterally and lobed posteriorly, three spinules on anterior margin, articles 4, 5 and 6 densely setose posteriorly, dactyl with five spinules. Pereopod 4 article 2 with nine anterior and five posterior marginal spinules, article 4 laterally expanded, although not quite as pronounced as in pereopod 3, with two small spinules on anterior margin, articles 4, 5 and 6 again densely setose posteriorly, dactyl bearing five spinules. Pereopods 5, 6 and 7, article 2 moderately expanded posteriorly, with spinules and some setae anteriorly, setose posteriorly, article 4 shorter than 5 and 6, bearing three groups of spines posteriorly, articles 5 and 6 subequal in length, article 5 with three groups of spines and article 6 with five groups of spines posteriorly, both 4 and 5 densely setose anteriorly, 6 moderately setose, dactyl of pereopod 5 with seven spinules, those of pereopods 6 and 7 with 10 spinules each.

Pleon segments 1–3 sparsely setose dorsally, epimeral plates rounded-quadrate, ventrally setose. Pleon segments 4–6 moderately setose dorsally. Uropod 1 extending slightly beyond 2, 0,9 length of uropod 3, rami subequal, 0,8 times length of peduncle, each ending in four spines. Uropod 2 shorter than 1, inner ramus slightly longer than outer, each with one dorsal and four apical spines. Uropod 3 elongate, exceeding uropod 2 by 0,9 length of outer ramus, peduncle longer than broad, inner ramus short, 0,6 length of peduncle and only 0,2 length of outer ramus, with 3 apical spines, outer ramus about four times length of peduncle, six groups of spines and setae on each margin, second segment very reduced and only 4 per cent of length of first segment. Telson broader than long, deeply cleft, each lobe bearing one stout subapical spine, four apical setae, two subapical setae, and two small plumose setae about one third the way along the outer margin.