

A new bathyal myodocopine ostracode from New Zealand and a key to developmental stages of Sarsiellidae

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Abstract *Chelicopia tasmanensis* n.sp. is described from 4 specimens trawled at 531-768 m off the west coast of the South Island. The genus has not previously been recorded from the New Zealand region, nor from depths exceeding a few metres elsewhere. This material has revealed ontogenetic characters permitting formulation of a key to the developmental stages of Sarsiellidae.

Keywords Ostracoda; Myodocopina; Sarsiellidae; *Chelicopia tasmanensis*; new taxa; Tasman Sea; bathyal zone; developmental stages; key.

Family Sarsiellidae Brady & Norman, 1896

Studies by Kornicker (1969, p. 5) and Hiruta (1977, p. 58; 1978, p. 276) indicate that Sarsiellidae have 4 juvenile instars. The key given below must be considered tentative because only a few species have been studied and exceptions are to be expected. Because males of many species do not have 7th limbs, males are located in 2 different places in the key.

Key to developmental stages of Sarsiellidae

- 1 6th limb without bristles..... Instar I
-6th limb with 1 or more bristles 2
- 2 6th limb with 1 anterior bristle..... Instar II
-6th limb with many bristles 3
- 3 7th limb present 4
-7th limb absent 6
- 4 7th limb without bristles..... Instar III
-7th limb with bristles 5
- 5 7th limb with some or all bristles strongly tapering..... Instar IV (δ or η)
-7th limb with cylindrical bristles (not strongly tapering)..... Adult (δ or η)
- 6 Sensory bristle of 5th joint of 1st antenna without abundant filaments Instars III or IV (δ)
-Sensory bristle of 5th joint of 1st antenna with abundant filaments..... Adult (δ)

Genus *Chelicopia* Kornicker, 1958

Type-species *Chelicopia arostrata* Kornicker, 1958, by monotypy.

Species described to date are *C. arostrata* Kornicker (1958, p. 253) from the Bahama Bank at depths of 1-3 m; *C. kornickeri* McKenzie (1965, p. 69) from the Pacific coast of Baja California at a depth of about 7 m; and *C. rotunda* (Hartmann) (1959, p. 199), from the Pacific coast of El Salvador in the lower eulittoral zone. The interrelationships require additional study. Both Kornicker (1958, fig. 83C, D, and 84A-D) and Hartmann (1959, fig. 8-14) identified a juvenile male as a female.

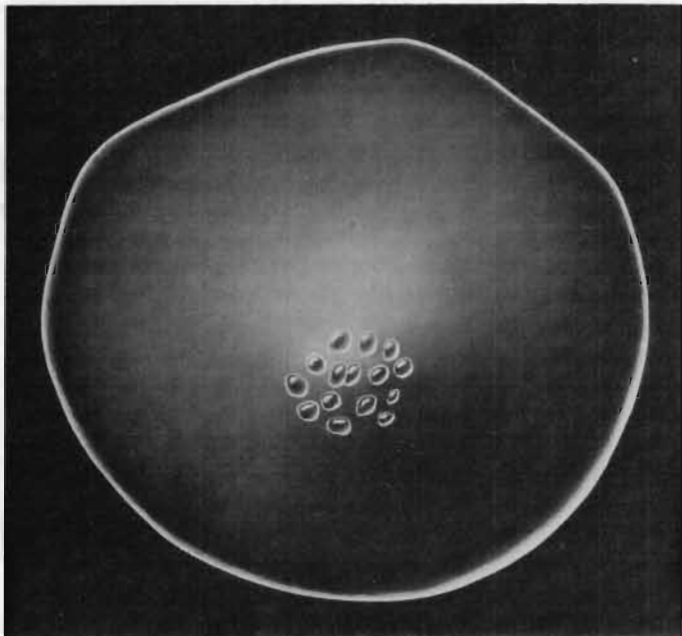


Fig. 1 *Chelicopia tasmanensis*, instar IV female, complete holotype specimen from right side, showing central adductor muscle attachments but not hairs. Carapace length 0.99 mm.

Chelicopia tasmanensis n.sp. (Fig. 1-3)

TYPE DATA. **Holotype** (NZOI H343): instar IV female, New Zealand, Tasman Sea off west coast of South Island (NZOI Stn P665, 42°47'12"S, 169°51'42"E), 531-768 m, 23 June 1979, box dredge + medium Agassiz trawl, J.M. Bradford (New Zealand Oceanographic Institute). **Paratypes**: 3, same data as holotype (USNM 158298 — instar IV female; NZOI P576 — 1 instar II and 1 instar III).

INSTAR IV FEMALE (Fig. 1, 3I-K). Carapace oval in lateral view; posterior three-fourths of dorsal margin linear (hinge area); incisur absent; caudal process indicated by a slight protuberance visible only in medial view; anteroventral curvature more broadly rounded than posteroventral curvature (Fig. 1, 2A).

Ornamentation (Fig. 2A, B). Surface appearing smooth but with minute pointed pustules visible at about $\times 400$ magnification; gelatinous coating absent; margin with numerous long, pointed bristles, many of them with a broad, annulate proximal part (Fig. 2A, B); similar bristles scattered on lateral surface, especially in posterior region (Fig. 2A).

Infold (Fig. 2B-D). Anterior infold with a minute bristle just below middle of valve (Fig. 2B); posterior infold with 4 bristles anterior to minute caudal process; posterior margin dorsal to caudal process with 2 setal bristles (Fig. 2C, D); 2 small

bristles dorsal to setal bristles; 2 or 3 minute bristles present on inner edge of infold along posterior-posteroventral margin of valve.

Selvage. Broad lamellar prolongation with smooth outer edge present along anterior and ventral margins.

Central adductor muscle attachments (Fig. 1, 2A) consisting of 15-19 individual ovoid scars. Position of attachments of furcal muscles and head (medial eye) muscles indicated in Fig. 2A.

Dimensions (mm). Holotype length 0.99, height 0.91; paratype USNM 158298, length 1.00, height 0.96.

First antenna (Fig. 2E). 1st joint bare. 2nd joint with dorsal bristle bearing long proximal and short distal spines. Short 3rd and long 4th joints fused, both with 2 bristles (1 ventral, 1 dorsal). 5th joint long, with sensory bristle bearing terminal spine. 6th joint minute, fused with 5th, bearing a small medial bristle. 7th joint: a-bristle about $3\times$ as long as bristle of 6th joint; b-bristle faint, only slightly longer than a-bristle; c-bristle as long as sensory bristle of 5th joint, with a terminal spine. 8th joint: d- and e-bristles bare with blunt tips (bristles not reaching tip of c-bristle); f-bristle shorter than d-bristle; g-bristle about same length as e-bristle; f- and g-bristles both with a minute proximal filament and terminal spine.

Second antenna (Fig. 2F, G). Protopodite bare. Endopodite 2-jointed: 1st joint with 2 short,

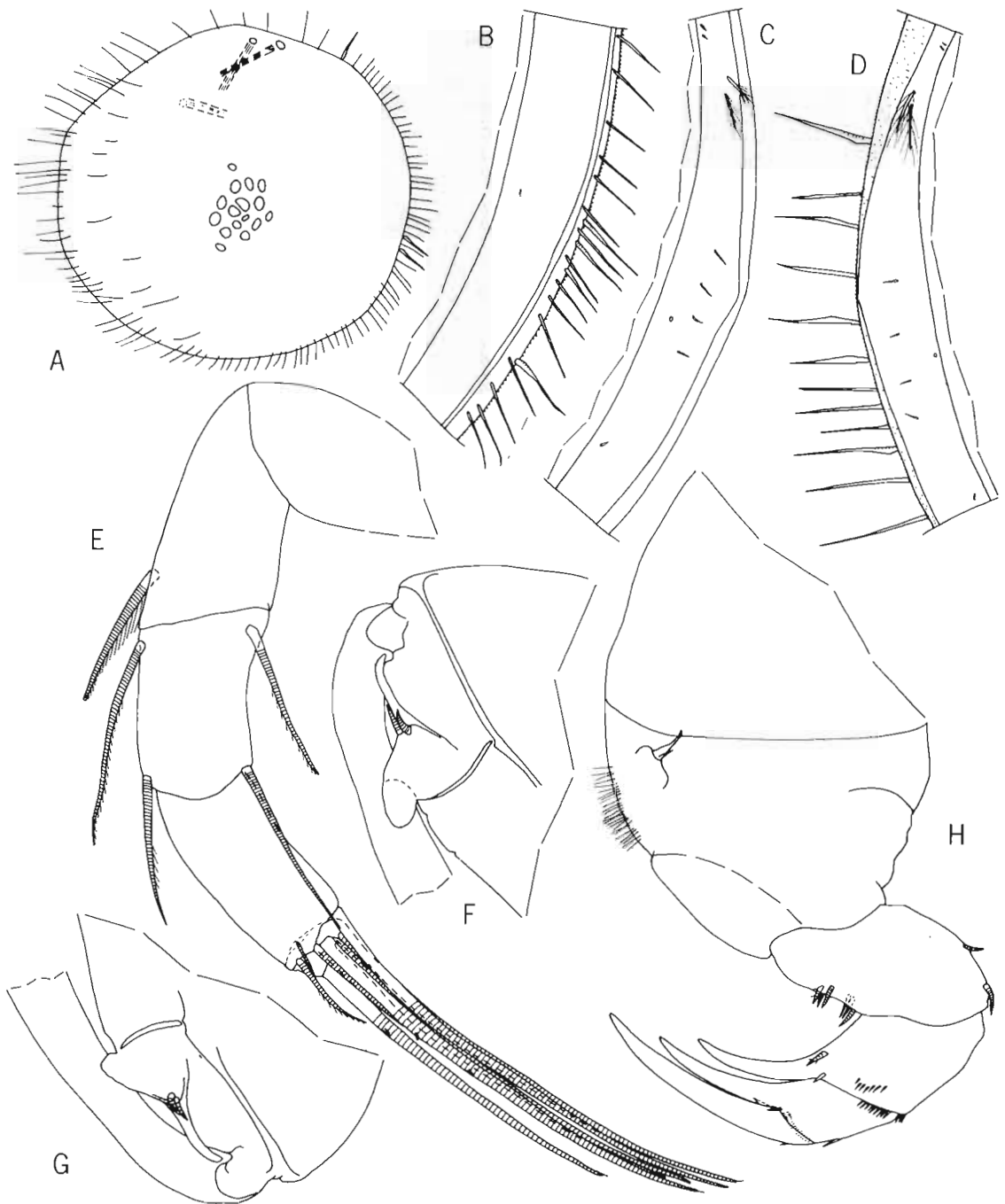


Fig. 2 *Chelicopia tasmanensis*, instar IV female paratype: **A**, complete specimen from right side showing central adductor muscle attachments, distal ends of muscles attached to medial eye and furca, and some surface hairs (carapace length 1.00 mm); **B**, section of inside of anterior margin of left valve showing minute bristle on infold, bristles along anterior margin, and surface denticulations; **C**, **D**, sections of inside of posterior margin of right and left valves (peripheral bristles omitted from **C**); **E**, right 1st antenna, medial view; **F**, **G**, right and left 2nd antennae, medial views, showing endopodite, distal parts of protopodite, and proximal part of exopodite; **H**, left mandible, medial view.

proximal, anterior bristles; 2nd joint small, bare. Exopodite: elongate 1st joint with minute, terminal, medial bristle; bristle of 2nd joint long, with slender, widely spaced, proximal, ventral spines and distal natatory hairs; bristles of joints 3-8 long, with natatory hairs, some also with slender, proximal, ventral spines; 9th joint with 2 bristles (1 long, with slender, proximal, ventral spines and distal natatory hairs).

Mandible (Fig. 2H). Coxale endite consisting of stout spine with smaller spine projecting from base. Coxale with long hairs along ventral margin. Basale: dorsal margin with 2 or 3 short bristles (1 near middle, 1 or 2 subterminal); ventral margin bearing 4 small bristles with bases medially or on ventral margin, and 2 small bristles with bases laterally. Exopodite absent. 1st endopodial joint: medial surface with distal spines forming rows; dorsal margin with terminal spines; ventral margin with a stout, pointed, terminal claw bearing minute spines in a row proximally along dorsal margin, and with 2 medial bristles (the larger with faint marginal spines) near base. 2nd endopodial joint: dorsal margin with a small subterminal bristle; ventral margin with a stout, pointed, terminal claw; lateral surface with a row of spines along distal margin. End joint with a stout, pointed, terminal claw and 2 small bristles (1 ventral, 1 dorsal) near base of claw.

Maxilla (Fig. 3A, B). Endites 3, with a total of about 13 pectinate claws and bristles. Exopodite with 3 bristles, either 2 long and 1 short (Fig. 3A) or 1 long and 2 short (Fig. 3B). Coxale with a short dorsal bristle bearing short, faint, marginal spines. Basale with a short, slender bristle near base of endite I. Coxale and basale with a dorsal fringe of long hairs. 1 endopodial joint with pectinate α - and β -bristles. 2nd endopodial joint with 2 short, slender, spinous a-bristles, 1 bare c-bristle, and 5 pectinate end bristles.

Fifth limb (Fig. 3C). Single endite with 1 short, bare bristle. Exopodial joints fused: 1st joint with 2 spinous bristles; 2nd joint with 2 or 3 spinous bristles; 3rd joint inner lobe with 1 small spinous bristle, outer lobe with 2 short, bare bristles; 4th and 5th joints with a total of 5 bristles (4 long, spinous, 1 short, bare); part of limb containing joints 2-5 hirsute; 4th and 5th joints separated by a small depression in margin.

Sixth limb (Fig. 3D) hirsute; hairs especially long along posterior margin. Single endite with 3 short bristles. End joint with a total of 14-16 bristles (anterior 12-14 slender, with small marginal spines; posterior 2 stout, hirsute).

Seventh limb (Fig. 3E). All bristles strongly tapering (juvenile character). 3 or 4 bristles in a proximal group, 2 on one side, 1 or 2 on the other, each with 2 or 3 bells; 4 bristles in a terminal group,

each with 3 or 4 bells. Terminus with 3 small, recurved teeth opposite 1 small, pointed tooth.

Furca (Fig. 3F). Each lamella with 6 claws; claws 1, 2, and 4 stout, primary, fused to lamella; claws 3, 5, and 6 secondary, separated from lamella by a suture; all claws with large and small teeth along posterior margin; long hairs present along margin of lamella following claw 6.

Eyes. Lateral eyes small, unpigmented, each with 3 minute ommatidia (Fig. 3G, H). Medial eye bare, unpigmented (Fig. 3H, K).

Bellonci organ (Fig. 3H, K) elongate, with 2-4 weak sutures near middle; tip rounded.

Upper lip (Fig. 3H, K) simple, with a small anteroventral projection; no spines.

Y-sclerite (Fig. 3F). Shape typical of family.

INSTAR III (Fig. 3L, M). Carapace shape similar to that of instar IV; valves transparent.

Size. Single specimen, length 0.83 mm, height 0.81 mm.

Endopodite of 2nd antenna small, similar in shape to that of instar IV.

Sixth limb with many bristles.

Seventh limb (Fig. 3L) present but without bristle or terminal teeth.

Furca (Fig. 3M). Each lamella with 6 claws; claws 1, 2, and 4 primary, fused to lamella; claws 3, 5, and 6 secondary, separated from lamella by a suture.

INSTAR II (Fig. 3N-P). Carapace shape similar to that of instar IV; valves transparent.

Dimensions. Single specimen with fragment missing, length 0.73 mm.

Endopodite of 2nd antenna small, similar in shape to that of instar IV.

Sixth limb (Fig. 3N) with a single anterior bristle; end joint fringed with hairs.

Seventh limb (Fig. 3O) bare, shorter than that of instar III.

Furca (Fig. 3P). Each lamella with 5 claws; claws 1, 2, and 3 primary, fused to lamella; claws 4 and 5 secondary, separated from lamella by a suture.

REMARKS. The single specimens of instars II and III in the collection have transparent valves. The descriptions and illustrations of some of the appendages are based on their appearance when viewed through the valves using transmitted light and a compound microscope. Neither specimen was opened. Because adult males of previously described species of *Chelicopia* have elongate 3-jointed endopodites on the second antennae, the A-1 instars described here, which have small endopodites, are interpreted as female.

Both A-1 females of *C. tasmanensis* have 2 secondary claws after primary claw 4 on each lamella of the caudal furca. The juvenile male of *C. rotunda* figured by Hartmann (1959, fig. 20) bears 3 secondary claws in that location, and the juvenile



Fig. 3 *Chelicopia tasmanensis*. A-H, instar IV female paratype: A, lateral view of right maxilla, and B, medial view of left maxilla (not all bristles shown); C, 5th limb (epipodial bristles not shown); D, 6th limb with aberrant thumb-like process; F, posterior of body showing left lamella of furca and left Y-sclerite; G, lateral eyes; H, anterior of body showing right lateral eye, medial eye and Bellonci organ, upper lip, and slit of mouth. I-K, instar IV female holotype: I, J, endites and exopodite of maxilla; K, anterior of body showing medial eye and Bellonci organ, and upper lip. L, M, instar III: L, 7th limb; M, right lamella of furca. N-P, instar II: N, left 6th limb; O, 7th limb; P, left lamella of furca.

male of *C. arostrata* illustrated by Kornicker (1958, fig. 84B) bears 4 secondary claws. I have examined the endopodite of the 2nd antenna of the adult female holotype (USNM 110912) of *C. kornickeri* McKenzie and find it to be single-jointed with 2 small, proximal, anterior bristles and 1 slightly smaller terminal bristle. It does not have the bare second joint present on the A-1 female of *C. tasmanensis*, and it is very unlikely that the adult female of *C. tasmanensis* would have an endopodite similar to that of the adult female of *C. kornickeri*.

ACKNOWLEDGMENTS

I thank Dr Janet Bradford for the opportunity to study the specimens and for criticising the manuscript, Mrs Carolyn Gast for rendering the shaded drawing of the carapace, Mrs Kathryn Schroeder for making the initial drawings of some of the appendages, and Mrs Anne Cohen for criticising the manuscript.

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