

A NEW SPECIES OF ECHINODILLO (ISOPODA, ONISCOIDEA, ARMADILLIDAE) FROM FLINDERS ISLAND, TASMANIA

By

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*Department of Zoology, University of Tasmania.***ABSTRACT.**

Examples of a new species of Armadillidae, found on Flinders Is., show striking similarities to *Echinodillo montanum* Jackson, the type species of *Echinodillo* Jackson, but in some respects they do not comply with the original diagnosis of this genus. After consideration of the differences, this diagnosis is emended to cover the new species. A detailed description of the species *E. cavaticus*, is given.

Genus **ECHINODILLO** Jackson, **nom. emend.***Echinodillo* Jackson, 1933, p. 159.Type Species, *Echinodillo montanum* Jackson, 1933, p. 159, figs. 4, 5.

Jackson (1933, p. 159) established *Echinodillo* for one species, *E. montanum*, from Uahuka, Marquesas Is. I have examples of a new species from Flinders Is., in the Furneaux Group (situated to the north of Tasmania), which I consider to be congeneric with *E. montanum*, as it has significant characters in common with the latter. However some characters of the Flinders Is. species conflict with Jackson's generic diagnosis of *Echinodillo*; these differences are as follows:—

(1) Jackson specified the presence of 3 spines on the posterior border of the cephalon and each segment of the pereion, and one median spine on each of the 3rd-5th segments of the pleon. In the Flinders Is. species the numbers of spines on the corresponding structures are 6 and 2 respectively, and not all of the spines on the segments of the pereion are situated along the posterior borders.

(2) Jackson described the terminal segment as having its posterior border drawn out into a long median spine. In the Flinders Is. species this median spine is short relative to the rest of the terminal segment.

I consider these differences to be of not more than specific value. There is striking similarity between the two species in the occurrence and form of the spines on the dorsal surface, epimera and pleura, and in the form of the terminal segment. In the knowledge of this similarity, Jackson's limits on the exact number and position of the dorsal spines and the relative length of the spine on the terminal segment, based as they are on the one species known at the time, appear unduly narrow. The presence of spines on the dorsal surface of the cephalon and all segments except the 1st and 2nd segments of the pleon, and the unusual form of the epimera, pleura and terminal segment, together with the form of the outer border of the

1st segment and the articulating lobes of the 1st and 2nd segments of the pereion, should be sufficient to characterize the genus.

One statement in Jackson's diagnosis is misleading. He noted that all of the free segments except the first of the pereion and the pleon are drawn out laterally into long recurved spines. Later, in his specific description of *E. montanum*, he (p. 159) stated that the 1st segment of the pleon is hidden under the 7th segment of the pereion. Thus in *E. montanum*, as in the Flinders Is. species, it is the 1st segment of the pereion and the 1st and 2nd segments of the pleon which are not drawn out laterally into long recurved spines; this is confirmed by Jackson's drawings (figs. 4a, 5f).

In the knowledge of the characters of this new species, I propose the following diagnosis of *Echinodillo*, which is emended from that given by Jackson (1933, p. 159) in the matters just discussed.

Generic diagnosis.

Frontal shield raised prominently from vertex, slightly produced in median line of margin. Side-plates of all segments, except 1st segment of pereion and 1st and 2nd segments of pleon, drawn out laterally into long recurved spines; anterior and posterior lateral angles absent. Cephalon and each segment of pereion with long, recurved, dorsal spines; fewer spines on each of 3rd-5th segments of pleon. Terminal segment coarctate, narrow; its posterior border drawn out into a median spine. Border of 1st segment of pereion thin and concave, not split; small articulating lappets placed well back from border of 1st and 2nd segments of pereion.

The wide geographic separation of the two known species of *Echinodillo* can probably be explained by the fact that knowledge of the oniscoid fauna of the Australian region is still far from complete, so that related, but as yet unrecorded, species may well exist in intervening places.

KEY TO SPECIES OF THE GENUS ECHINODILLO.

Number of dorsal spines 3 on cephalon and on each segment of pereion, one on each of 3rd-5th segments of pleon; protopodite of uropod not terminating in a spine *E. montanum*.
Number of dorsal spines 6 on cephalon and on each segment of pereion, 2 on each of 3rd-5th segments of pleon; protopodite of uropod terminating in a spine *E. cavaticus*, n. sp.

Echinodillo cavaticus, n. sp.

(Figs. 1-12).

Location of type specimens.—Holotype male and allotype female in the Australian Museum, Sydney. Paratype male and female in the Western Australian Museum, Perth. Paratype male and female in the Department of Zoology, University of Tasmania, Hobart.

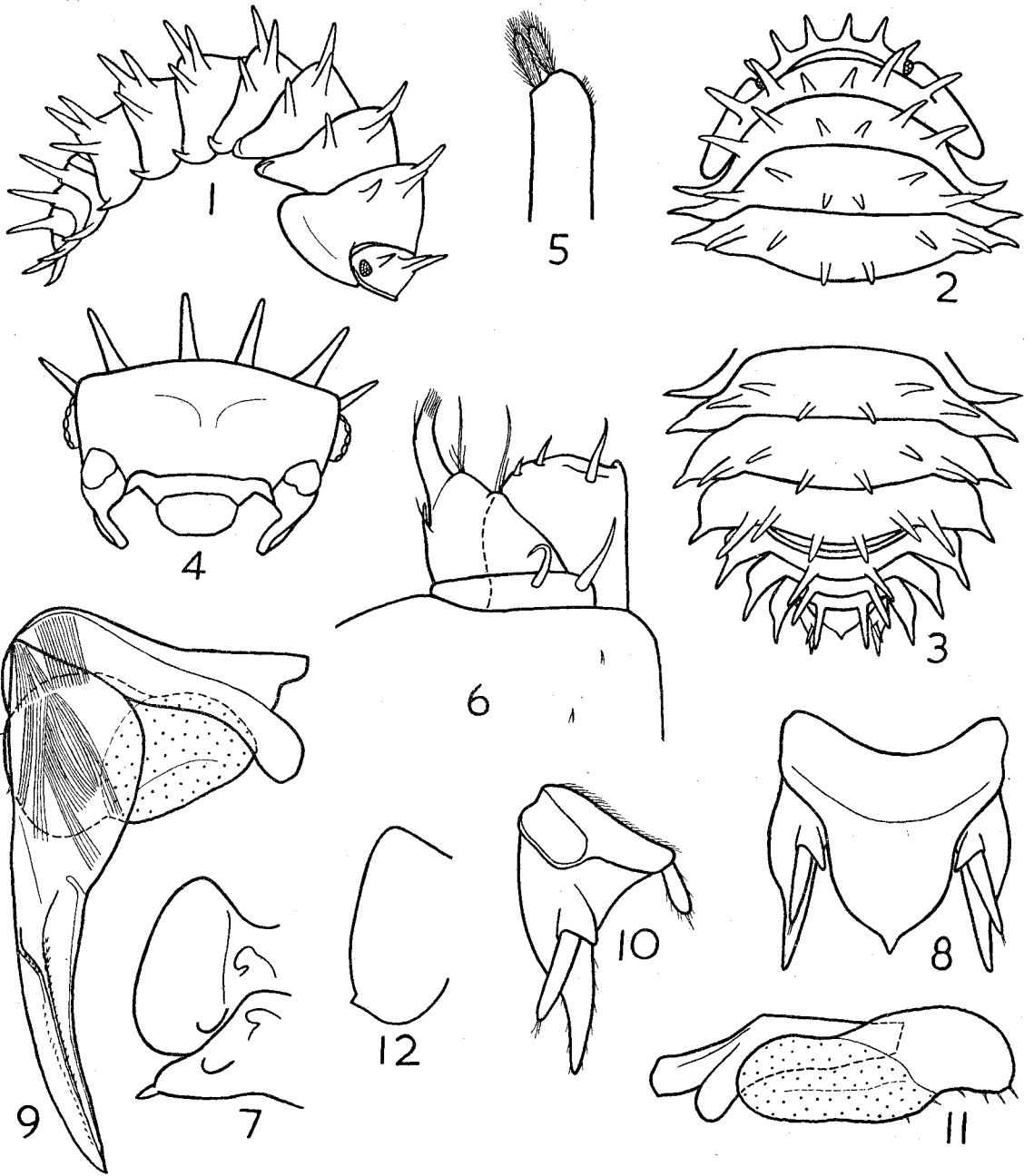


FIG. 1.—Cephalon, pereon and pleon, from right side. (Spines of left side, and appendages, have been omitted.)
 FIG. 2.—Cephalon, and 1st-4th segments of pereon, dorsal view.
 FIG. 3.—5th-7th segments of pereon, pleon and uropods, dorsal view.
 FIG. 4.—Cephalon, anterior view. (Antennae and mouthparts removed.)
 FIG. 5.—Distal part of inner lobe of left 1st maxilla, ventral view.

FIG. 6.—Distal part of right maxilliped, ventral view.
 FIG. 7.—Right epimera of 1st and 2nd segments of pereon, ventro-lateral view.
 FIG. 8.—Terminal segment and uropods, dorsal view.
 FIG. 9.—Right 1st pleopod of male, dorsal view.
 FIG. 10.—Left uropod, dorsal view.
 FIG. 11.—Right 1st pleopod of female, ventral view.
 FIG. 12.—Left 1st epimeron of a female, showing pointed projection on outer border, dorsal view.

MALE.

Size.—Length of largest specimen 6.8 mm., breadth 3.6 mm.

Colour (in alcohol).—Dorsal surface dark-grey, extensively mottled with irregular unpigmented patches.

Cephalon (Figs. 1, 2, 4).—Vertex bears 6 backwardly-directed spines. Innermost pair of spines is nearest posterior border, outermost pair of spines furthest from border; innermost and intermediate pairs subequal in length, outermost pair a little shorter. Frontal line forms a backwardly-directed ridge, with its middle third raised a little higher than the rest, and its lateral angles forming rounded right angles. Marginal line meets frontal ridge. Surface of frons very shallowly impressed on each side. Lateral processes of clypeus bluntly rounded. Eyes each composed of 12-16 ocelli.

First antenna.—Third article with apex obliquely truncate, bearing 4 aesthetascs.

Second antenna.—Length of peduncle 2.37 mm., length of articles of flagellum, 1st 0.12 mm., 2nd 0.50 mm.

Left mandible.—Incisor process has 3 teeth. Lacinia mobilis ends in 2 large teeth with smaller teeth between them. Two pencils of setae on setose lobe; one pencil behind lobe. Molar portion represented by a tuft of plumose setae set on a common basal process.

Right mandible.—Incisor process and molar portion as described for left mandible. Lacinia mobilis ends in 2 blunt teeth with spines between them. One pencil of setae on setose lobe; one pencil behind lobe.

First maxilla.—Outer lobe bears 4 broad outer teeth and 6 narrower inner teeth; all teeth simple. Inner lobe (Fig. 5) bears 2 moderately long, thick blunt pencils of setae. Outer apical angle of lobe has a fringe of setae, but no spine.

Second maxilla.—Apex divided into 2 subrectangular setose lobes; setae on outer lobe smaller than those on inner lobe.

Maxilliped (Fig. 6).—Ischion distinct; 2 long spines on its ventral surface. Division of remainder of endopodite into 2 articles indicated only by a faint, oblique suture line across its ventral surface. On inner border of first of these articles are 2 groups of setae, basal group consisting of one long and one shorter seta, distal group of one long seta and 3 shorter setae. There are 2 simple setae on outer border of endopodite; near lower one is a pencil-like process which lacks setae. Endopodite ends in a tuft of setae. Apex of endite truncate with inner angle slightly produced anteriorly and outer angle rounded; outer border of endite smoothly curved. On ventral surface near apex are 3 spines, which decrease in length from innermost to outermost. Ventral surface, anterior to innermost spine, shallowly indented.

Pereion (Figs. 1, 2, 3).—Epimera of all segments directed backwards. First epimeron with anterior angle sharply rounded, outer side of epimeron revolute, outer border thin and simple, not grooved, posterior angle bluntly rounded and not cleft. Second-4th epimera each narrowing towards outer side and ending in a recurved spine. Fifth-7th

epimera each with antero-lateral border bluntly rounded, and posterior angle produced into a recurved spine. On ventral surface of 1st epimeron (see Fig. 7), far removed from outer border, is a small, bluntly rounded lobe. Surface anterior to lobe raised into a blunt ridge. On ventral surface of 2nd epimeron (see Fig. 7), in line with lobe on 1st epimeron, is a small, bluntly rounded lobe not connected with epimeral border. Dorsal surface of each segment bears 6 backwardly-directed spines. In each segment innermost pair of spines is nearest posterior border, intermediate pair of spines furthest from border. Spines on any one segment are subequal; length of spines on different segments increases slightly from 1st-7th segment. (In Figs. 2 and 3 lengths of spines appear out of proportion due to the different angles of spines in relation to the viewer.) Tergites bear scattered setae and a covering of scales—rounded scales on general dorsal surface, triangular scales on spines (including spines on epimera), with an area of gradation between these two shapes at base of each spine. Pronotum occupies about $\frac{1}{4}$ length of entire tergite; lengths in 2nd segment, pronotum 0.17 mm., entire tergite 0.75 mm.

Pereiopods.—Spines on under surface of legs too sparse to appear as a brush.

Male organ.—Lanceolate in outline, with a dorsal flap, bilobed at its apex, projecting beyond pointed apex of main part of organ. The 2 ducts open separately on dorsal flap.

Pleon (Figs. 1, 3).—First and 2nd segments both visible except at sides. Pleura of 3rd-5th segments strongly directed backwards; each pleuron with antero-lateral border bluntly rounded and posterior angle produced into a recurved spine. No lobes on ventral surface of 3rd-5th pleura. Dorsal surface of each of 3rd-5th segments bears 2 backwardly-directed spines, situated near posterior border. All spines subequal in length. Terminal segment (Fig. 8):—Lateral borders of segment incurved at about middle of its length; maximum breadth of anterior part 0.88 mm., breadth across region of greatest incurvature 0.50 mm. No increase in breadth of segment posterior to central incurvature. In posterior part, lateral and posterior borders continuous and evenly curved to base of a short, recurved, terminal spine. Length of segment to base of spine 0.68 mm., length of spine 0.10 mm. Dorsal surface of anterior part of segment strongly convex. Tergites bear setae and scales like those on pereion (with triangular scales on spine of terminal segment as well as on other spines).

First pleopod (Fig. 9).—Exopodite subtriangular with anterior and posterior borders both indented and inner posterior angle bluntly rounded. Tracheal part forms outer half of exopodite. Spines present on ventral surface near inner and posterior borders of laminar part. Endopodite styliform; its distal half curved outwards with a narrow chitinous thickening down outer edge. Dorsal surface of distal half indented by an oblique groove; outer border of groove edged with scales. A row of spinules on dorsal surface to inner side of groove.

Second pleopod.—Exopodite subtriangular with outer border indented, indentation marking division between outer tracheal part and inner laminar part; the latter greatly produced posteriorly into a long

narrow lobe, sharply rounded at apex. On ventral surface, spines occur near outer border of lobe, and an area covered by fine setae extends forwards from apex. Endopodite has 1st article quadrangular in outline; 2nd article styliform, with a chitinous thickening down inner edge of its basal 2/3 while distal 1/3 is very narrow and flagelliform. Length of articles, 1st 0.22 mm., 2nd 1.17 mm.; length of flagelliform part of 2nd article 0.43 mm.

Third pleopod.—Exopodite subtriangular, with outer border deeply incurved thus dividing exopodite into 2 lobes. Tracheal part forms outer lobe; inner lobe greatly produced posteriorly with apex sharply rounded. Laminar part has spines on ventral surface near outer border and comb-setae on inner border. On dorsal surface, near inner anterior angle, is a short ridge edged with scales.

Fourth and fifth pleopods.—Exopodites with pseudotracheae.

Uropod (Figs. 8, 10).—Basal surface of protopodite oblique, visible in dorsal view of uropod; it occupies approximately $\frac{1}{4}$ length of entire protopodite. Length of basal surface 0.22 mm., breadth of basal surface 0.46 mm., length of entire protopodite 0.85 mm. Free lobe of protopodite has inner border curved inwards, outer border shallowly curved outwards; posteriorly lobe tapers into a recurved spine which projects beyond terminal segment when uropod is attached. Exopodite inserted on dorsal surface of protopodite, away from its inner border; it is conical and elongated, but does not reach to end of spine. Area of protopodite around base of exopodite raised above rest of dorsal surface; sharp inner angle of this prominence overlaps inner border of protopodite. Endopodite inserted on ventral surface, near inner border, at base of protopodite; it is subcylindrical with apex bluntly rounded, terminating far in front of terminal segment. Length of rami; exopodite 0.27 mm., endopodite 0.17 mm.

FEMALE.

Size.—Length of largest specimen 8.7 mm., breadth 4.4 mm.

Female differs from male in the following structures:—

First pleopod (Fig. 11).—Exopodite an elongated oval in shape, with an incurvature in both anterior and posterior borders. Laminar part almost as large

as tracheal part. Spines present on inner part of posterior border. Endopodite not developed.

Second pleopod.—Exopodite subrectangular, with inner part of posterior border deeply incurved and inner posterior angle sharply rounded, scarcely produced backwards. Laminar part a little larger than tracheal part. Spines present on ventral surface near inner posterior angle and on incurved part of posterior border. A conical process projecting back from inner side of protopodite probably represents endopodite.

Third pleopod.—Exopodite subrectangular, with posterior border shallowly incurved and inner posterior angle sharply rounded, scarcely produced backwards. No scaly ridge on dorsal surface.

HABITAT.

Type locality.—Description is based on specimens collected by Mr. J. A. Thomson from a limestone cave near Whitemark, Flinders Is. (Furneaux Group, Bass Strait), in March, 1960; 10 males and 13 females obtained.

VARIATIONS.

In some specimens outer border of one or both of 1st segments of pereion, instead of being evenly curved, exhibits a very small outward projection, situated a little in front of posterior angle of epimeron. Outline of projecting part varies from a blunt curve to a sharp angle (see Fig. 12).

In one specimen one of the outermost spines on the 7th segment of the pereion is bifurcated. This appears to be due to abnormal growth following a partial fracture of the spine.

ACKNOWLEDGMENTS.

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REFERENCE.

JACKSON, H. G. (1933).—Marquesan terrestrial Isopoda. *Bull. Bishop Mus., Honolulu* 114: 145-162. (Issued separately in 1933.)