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Mecaderochondria pilgrimi gen. et spec. nov., a chondracanthid copepod parasitic on a New Zealand marine fish, *Kathetostoma giganteum* Haast (Teleostei: Uranoscopidae)

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Abstract A new form of parasitic copepod, *Mecaderochondria pilgrimi* gen. et spec. nov., recovered from the oral cavity of an uranoscopid fish, *Kathetostoma giganteum*, at Kaikoura, New Zealand, is described. The female of the new genus is characterised by a long neck consisting of the first and second pedigers, and two pairs of modified but uninflated legs with much reduced protopods. The pygmy male has an atrophied antennal tip on the second antenna.

Keywords Copepoda; Chondracanthidae; *Mecaderochondria pilgrimi*; taxonomy; *Kathetostoma giganteum*; New Zealand

INTRODUCTION

Copepods of the family Chondracanthidae are very highly modified parasites of marine demersal fishes. They are found predominantly in the oral and branchial cavities of their hosts. A pair of strong, uncinuate second antennae are used by most of these parasites to attach to their hosts. This paper describes a new form of chondracanthid which is unusual in attaching to its host by imbedding its greatly elongated neck into tissues.

This unusual copepod was provided for study by Prof. R. L. C. Pilgrim, Department of Zoology, University of Canterbury in Christchurch. The type specimens have been deposited in the National Museum of New Zealand, Wellington.

SYSTEMATICS

Family CHONDRACANTHIDAE Milne Edwards, 1840

Genus *Mecaderochondria* gen. nov.

Diagnosis

FEMALE Head small, consisting of cephalosome only. Neck greatly elongated, consisting of first and second pedigers. Trunk inflated, with only a pair of posterior processes. Genito-abdomen and caudal ramus of *Acanthochondria*-form. Egg sac cylindrical; eggs multiserially arranged. First antenna modified, digitiform, and compound. Second antenna uncinuate, without atrophied tip of antenna. Oral appendages of typical chondracanthid form. Legs 1 and 2 modified, bilobate; protopod indistinct; rami small, uninflated lobes.

MALE Cephalosome fused with first pediger, globose, and much larger than remaining parts of body, which is indistinctly segmented. Abdomen largely fused with genital somite. Caudal ramus as in female. First antenna slender, cylindrical. Second antenna uncinuate, bearing atrophied tip of antenna. Oral appendages basically as in female. Legs 1 and 2 modified, with sac-like protopod carrying a long outer seta; exopod represented by a tiny setiferous knob, but endopod almost imperceptible.

Type species *Mecaderochondria pilgrimi* spec. nov.

Etymology The generic name is a combination of the Greek words *meca* (= long), *dero* (= neck), and *chondria* (= cartilage, used as suffix in many genera of Chondracanthidae). Gender feminine.

Mecaderochondria pilgrimi spec. nov.

Fig. 1-31

Material examined From floor of buccal cavity of *Kathetostoma giganteum* Haast collected at Kaikoura, New Zealand, on 8 May 1986: 1 female holotype (NMNZ Cr. 4639) with attached male; 2 females (1 female without head and neck) with attached males; and 2 females (with neck embedded in host tissues) (1 selected as paratype, NMNZ Cr. 4640) with attached males.

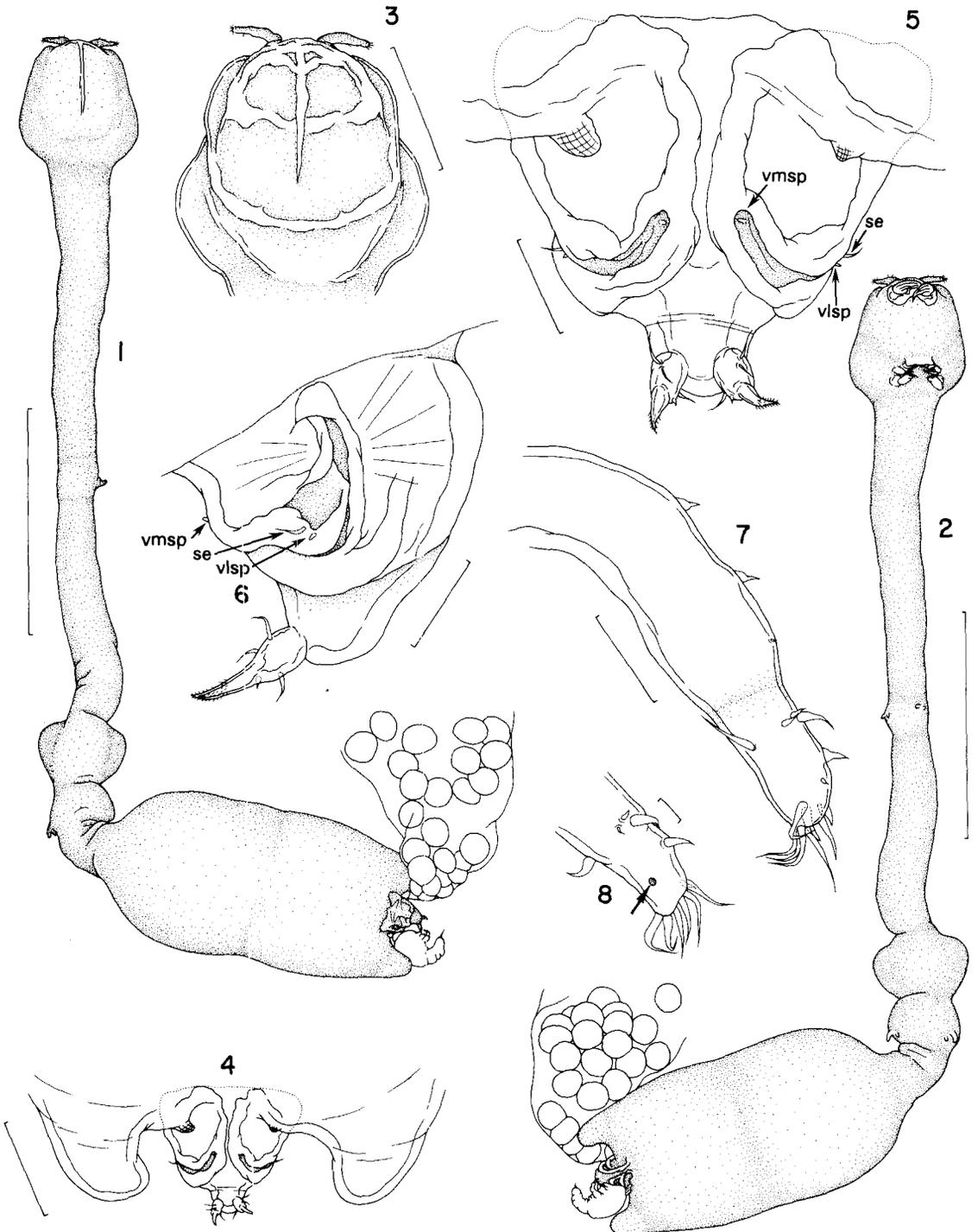


Fig. 1-8 *Mecaderochondria pilgrimi* gen. et spec. nov., female: 1, body, dorsal; 2, same, ventral; 3, cephalothorax, dorsal; 4, posterior end of trunk, ventral; 5, genito-abdomen, ventral; 6, same, lateral; 7, first antenna, ventral; 8, tip of first antenna, ventral (arrow indicates position of missing seta). Scales: 2 mm in 1, 2; 0.5 mm in 3; 0.3 mm in 4; 0.1 mm in 5, 6; 0.05 mm in 7; 0.01 mm in 8. Symbols: vmosp, ventromedial spiniform process; se, seta; vlsp, ventrolateral spiniform process.

Description

FEMALE BODY (Fig. 1, 2) with head, elongate slender neck, and trunk. Total length 9.67 mm (8.46–10.29 mm, measured from anteriormost portion of head to tip of genito-abdomen) based on 3 specimens. **HEAD** (Fig. 3) without processes, but inflated at posterolateral corners, about as long as wide, 0.96 mm (0.91–1.05 mm) \times 1.02 mm (0.93–1.07 mm) and bearing conspicuous, median, longitudinal sclerotised ridge. **NECK** long and slender, 6.00 mm (4.89–6.87 mm) \times 0.48 mm (0.42–0.54 mm). **LEG ONE** situated 2.58 mm (2.40–2.80 mm) posterior to head; legs 1 and 2 about 3.38 mm (3.05–3.57 mm) apart. **TRUNK** inflated, longer than wide, constricted at about midlength, 2.52 mm (2.36–2.68 mm) \times 1.51 mm (1.40–1.61 mm); posterior process not extending beyond distal limit of abdomen (Fig. 4). **GENITO-ABDOMEN** (Fig. 5, 6) wider than long, 0.35 mm (0.30–0.40 mm) \times 0.39 mm (0.37–0.40 mm); genital complex (Fig. 5, 6) with a pair of spiniform processes on ventromedial surface and 1 seta and 1 spiniform process on each ventrolateral margin; abdomen small, with rounded posterior margin. **CAUDAL RAMUS** (Fig. 6) longer than wide, 110 \times 41 μ m; bearing 3 setae, 1 small, acuminate, ventromedial seta, and spinulated tip. Pair of vermiform processes (Fig. 5) on posteroventral surface of trunk near genito-abdomen.

FIRST ANTENNA (Fig. 7) relatively slender, cylindrical with terminal portion more slender than base; basal portion with 2 stout setae and 1 minute seta; terminal portion with formula 4, 3, and 8 setae (another specimen with 4, 2, and 7 setae, see Fig. 8). **SECOND ANTENNA** (Fig. 9) 2-segmented; first segment heavily sclerotised, with 1 minute tubercle on dorsal surface; second segment a strongly curved claw. **LABRUM** (Fig. 10) with nearly straight posterior margin, only slightly incised at midline; each lateral margin with bilobed process. **MANDIBLE** (Fig. 11) with 41–48 teeth on convex side and 33–56 teeth arranged in 2 rows on concave side of terminal falcate segment. **PARAGNATH** (Fig. 12) with 2 rounded, spinulose lobes. **FIRST MAXILLA** (Fig. 13) with 2 large spinulated setae and 1 lateral patch of spinules; medial surface with either conspicuous lobe (Fig. 13) or small hyaline seta (Fig. 14). **SECOND MAXILLA** (Fig. 15) 2-segmented; first segment swollen and unarmed; terminal segment with 1 naked seta and 1 stout spinulated seta near base, and terminal process with 30–43 teeth along convex margin. **MAXILLIPED** (Fig. 16) 3-segmented; first segment inflated and bearing small hyaline process; second segment about as long as first and carrying large longitudinal patch of spinules on long protuberance; terminal segment a claw bearing a small accessory process (Fig. 17), but in one specimen a

rounded protrusion located near accessory process (Fig. 16). **LEG ONE** with protopodal seta; exopod a curved elongate lobe with 3 (Fig. 18) or 4 (Fig. 19) terminal setae and 1 subterminal seta; endopod a rounded, naked lobe. **LEG TWO** (Fig. 20) with protopodal seta (broken off in specimen figured); exopod bent medially near tip and bearing 3 minute setae; endopod naked with rounded tip, smaller than exopod. Both legs without prominent protopod.

MALE BODY (Fig. 21) 742–745 \times 226–263 μ m (measured from tip of second antenna to distal end of urosome, excluding caudal ramus); metamerism of body indistinct. **GENITAL SEGMENT** with pair of ventral ridges without setae (Fig. 22). **CAUDAL RAMUS** (Fig. 22) with 3 naked setae at base. **ROSTRUM** (Fig. 23) with small, median conical process in one specimen; process not present in other specimens examined. **FIRST ANTENNA** (Fig. 23) with formula 1, 1, 3, 3, 8 (1 terminal seta with bifurcate tip). **SECOND ANTENNA** (Fig. 23, 24) with hyaline seta on dorsomedial margin at base; claw with 1 dorsomedial, 1 ventral, and 1 medial setae and a hyaline lobe (atrophied antennal tip or accessory antennule) bearing 2 setiform elements. **MANDIBLE** (Fig. 25) with 19–20 teeth on convex side and 12–15 teeth arranged in 2 rows on concave side of terminal falcate process. **FIRST MAXILLA** (Fig. 26) with bilobed protuberance on medial surface. **SECOND MAXILLA** (Fig. 27) with terminal process carrying 4–6 teeth on convex margin. **LEG ONE** (Fig. 28) with lateral protopodal seta; exopod with 3 elements; endopod represented by naked lobe, other leg of same specimen (Fig. 29) with only 2 elements at tip (both specimens examined have this asymmetric armature). **LEG TWO** (Fig. 30) with small protrusion on medial surface (remnant of endopod?); terminal lobe (exopod) with 2 setiform elements; other side of same specimen (Fig. 31) with 1 terminal element with bifid tip (both specimens examined display this asymmetric armature).

Etymology The specific name refers to Prof. R. L. C. Pilgrim for providing the specimens of the new genus and species.

DISCUSSION

Two subfamilies are recognised in the Chondracanthidae, namely, Chondracanthinae and Lernentominae (Ho 1970). The latter subfamily consists of three genera (*Brachiochondrites*, *Jusheyhoea*, and *Lernentoma*) which are distinctive in having a long “cephalic neck”. In attachment, this neck is entirely buried in the host tissues with the oral appendages exposed just on the surface of the host skin.

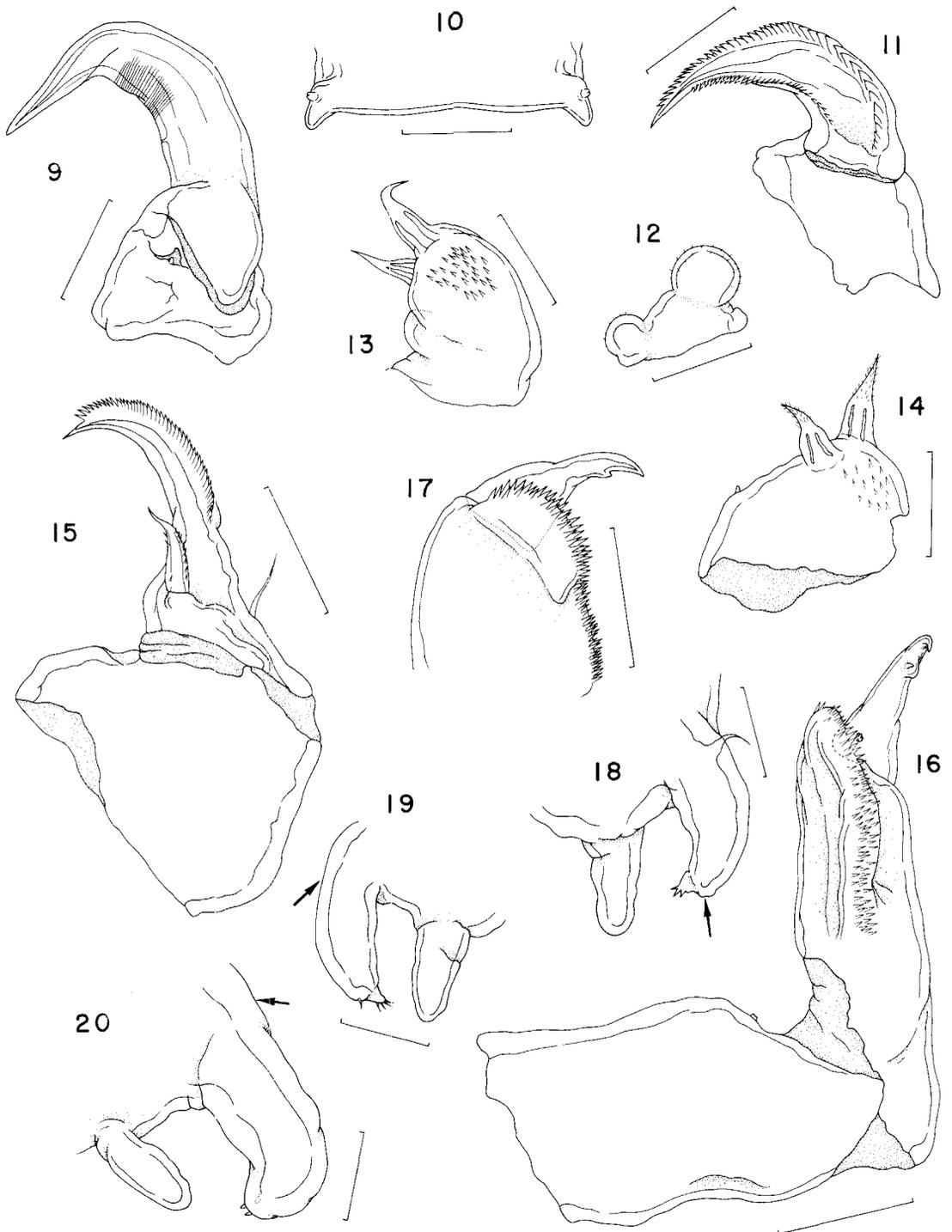


Fig. 9-20 *Mecaderocondria pilgrimi* gen. et spec. nov., female: 9, second antenna, dorsal; 10, labrum, ventral; 11, mandible, dorsal; 12, paragnath, ventral; 13, first maxilla, ventrolateral; 14, same, ventrolateral; 15, second maxilla, dorsal; 16, maxilliped, anterodorsal; 17, distal portion of maxilliped, medial; 18, leg 1, ventral; 19, same, ventral; 20, leg 2, ventral (arrows indicate position of broken setae) Scales: 0.1 mm in 9-11; 0.03 mm in 12-14; 0.05 mm in 15-20.

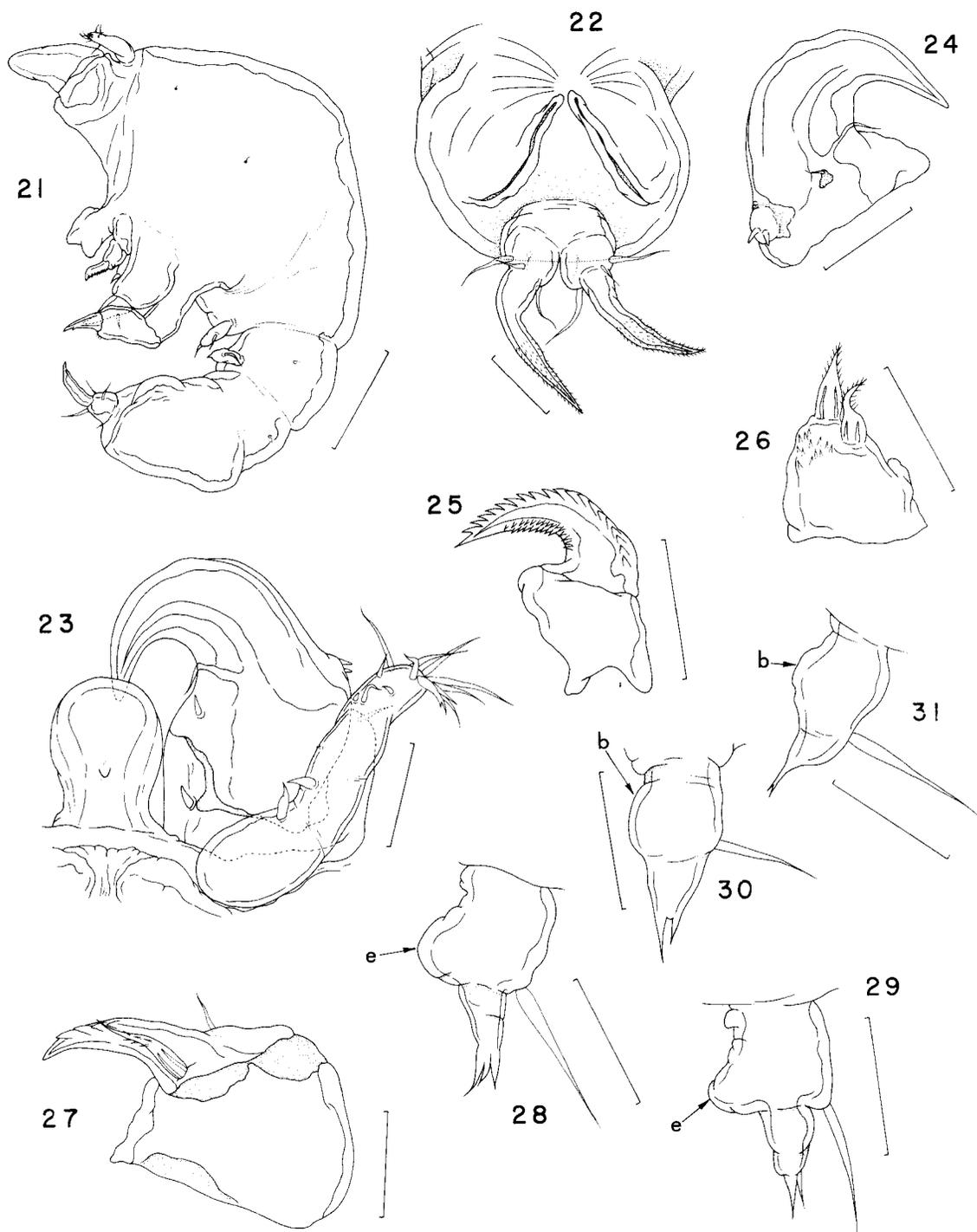


Fig. 21-31 *Mecaderochondria pilgrimi* gen. et spec. nov., male: 21, body, lateral; 22, posterior end of urosome, ventral; 23, rostrum and first and second antennae, dorsal; 24, claw of second antenna, ventral; 25, mandible, dorsal; 26, first maxilla, ventrolateral; 27, second maxilla, dorsal; 28, leg 1, anterior; 29, same, anterior; 30, leg 2, anterior; 31, same, anterior. Scales: 0.1 mm in 21; 0.03 mm in 22-31. Symbols: e, endopod; b, bulge.

Although *Mecaderochondria pilgrimi* is a burying-type of chondracanthid, it can not be placed in this subfamily, since its long neck is the result of an elongation of the first two pedigers and not the cephalosome (between the antennal and the oral regions) as in the members of the Lernentominae.

Chondracanthinae is a much larger subfamily consisting of 33 genera. Six genera in the Chondracanthinae are characterised by an elongate neck (Table 1). There are at least two ways this long neck can be formed: by elongation of the interpodal region between the first and second legs (as in *Auchenochondria*), or by elongation of both first and second pedigers (as in *Pterochondria*). Since legs are missing in the neck and trunk regions of *Markevitchielinus*, *Medesicaste*, *Scheherazade*, and *Strabax*, it is impossible to determine the components of their elongate necks.

Mecaderochondria can be distinguished from *Auchenochondria* and *Scheherazade* by the exclusion of the first pediger from the head region (Table 1). It differs from *Markevitchielinus*, *Pterochondria*, and *Strabax* in lacking processes in the head region. *Medesicaste* can not be separated from the new genus by the information given in Table 1, but based on Ho's (1970) report they can be distinguished by the males. The male of *Medesicaste* is much more reduced than that of *Mecaderochondria*; it lacks the first pair of antennae and has a very small posterior part of the body (behind the second pediger).

The legs of *Mecaderochondria* are characteristic. In the male the endopods are almost completely reduced and in the female the rami are modified but uninflated and the protopods are almost imperceptible.

Table 1 Morphology of the head and neck in females of Chondracanthinae with an elongate neck. (Compiled from Dojiri & Perkins 1979; Ho 1970, 1973; Kabata 1979.) C, cephalosome; L1, leg 1; L2, leg 2; P1, first pediger; P2, second pediger.

Genera	Head	Cephalic process	Neck
<i>Auchenochondria</i>	C + P1	present	L1 - L2
<i>Markevitchielinus</i>	C	present	?
<i>Mecaderochondria</i>	C	absent	P1 + P2
<i>Medesicaste</i>	C	absent	P1 + ?
<i>Pterochondria</i>	C	present	P1 + P2
<i>Scheherazade</i>	C + P1	absent	?
<i>Strabax</i>	C	present	?

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