

***Mexicope sushara* sp. nov., the first New Zealand record of the isopod crustacean family Acanthaspidiidae (Asellota)**

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Abstract

Mexicope sushara sp. nov. is recorded from southeastern New Zealand coastal waters, the first record of the genus from the Pacific and the first record of the Acanthaspidiidae from New Zealand. The species is from the continental shelf, taken in association with a bryozoan colony at a depth of 80 metres on the Otago Shelf, southeastern South Island. The distinguishing characters are a rostral spine and prominent and acute pre-ocular lobes; these characters in conjunction with stalked eyes separate the species from all others in the family.

Key words: Asellota, Acanthaspidiidae, *Mexicope*, New Zealand, southwest Pacific

Introduction

The Acanthaspidiidae is a primarily deep-water Southern Hemisphere family with apparent high representation in the Southern Ocean and Antarctic waters (Brandt 1991, 1994, 2001; Just 2001). The family contains three genera, *Acanthaspidia* Stebbing, 1893, *Ianthopsis* Beddard, 1886, and the more recently described *Mexicope* Hooker, 1985 which was known only from the Caribbean until the description of a second species, *Mexicope westralia* Just, 2001, from southern Western Australia.

Just (2001) suggested that *Mexicope* would likely have had an ancestral Tethyan distribution, and that the genus 'should be looked for in tropical and subtropical waters of the Indo-West Pacific.' The discovery of the third species of *Mexicope* from the decidedly temperate waters off the southeastern coast of New Zealand's South Island is a considerable range extension for the genus, and reinforces the probable Southern Ocean and Gondwanan origins of this family. Of the described species of Acanthaspidiidae, 83% are known from the Southern Hemisphere, and 57% (Kensley *et al.* 2004) can be considered

as having a 'Gondwana distribution'. In contrast to the other genera of Acanthaspidiidae, *Mexicope* appears to be a shallow-water taxon.

Abbreviations and terminology

Type material is held in the Biological Collection of the National Institute of Water and Atmospheric Research (NIWA), Wellington, New Zealand. The term 'scale-setae' is used for long seta-like structures that are derived from cuticular scales (see Bruce 1994, p. 1079 for comments, and figure 8C, incorrectly referred to there as 'setules'). Abbreviations: RS — robust seta/setae.

Family Acanthaspidiidae Menzies, 1962

Remarks.— For discussion on the family see Brandt (1991), Just (2001) and Poore & Lew Ton (2002). Brandt (1991) provides details and a key to separate the genera *Acanthaspidia* and *Ianthopsis*. There are differing opinions as to the spelling of the family name. I am of the opinion that the stem is Acanthaspidi- (by removal of the feminine genitive ending of the type genus name), and therefore the spelling is Acanthaspidiidae. This is also the prevailing usage in recent years (Brandt 1991; Just 2001; Martin & Davis 2001; Poore & Lew Ton 2002).

Genus *Mexicope* Hooker, 1985

Restricted synonymy: Just, 2001: 913.

Type species: *Mexicope kensleyi* Hooker, 1985, original designation.

Remarks: Recent generic revisions have given restrictive diagnoses to the genera of the Acanthaspidiidae, including *Mexicope* (Just 2001) but have not identified possible or potential defining apomorphic character states. The new species described herein accords well with the generic diagnosis given by Just (2001) but two characters differ, notably in presence of a rostral process or spine, and the development of a pre-ocular spine on the head. The presence or absence of a rostral spine is considered to be a diagnostic character separating *Mexicope* from the genera *Acanthaspidia* and *Ianthopsis*.

Mexicope has been defined as lacking a rostrum or rostral spine. *Mexicope* is also diagnosed as having the eyes in a lateral position, on a short stalk, and preceded by a pre-ocular spine (Just 2001). In *Mexicope sushara* sp. nov. the eyes agree precisely with the diagnosis given by Just (2001) but the pre-ocular spine is more in the form of an extension

of the anterolateral angle of the head, a flat, acute pre-ocular lobe. The close correspondence of other defining characters, namely lateral projections on pereonites 2–4, dorsally and anteriorly directed setae on the lateral margins of pereonites 2, 3, 6 and 7, strongly prognathus mouthparts, tapering mandibular molar, short maxilliped epipod, shape of the male pleopod 1 and the coiled stylet all confirm that the new species described here is a species of *Mexicope*, and that the generic diagnosis should be modified to allow inclusion of species with or without a rostral spine.

***Mexicope sushara* sp. nov. (Figs 1–5)**

Material examined.— **Holotype**. ♂ (2.3 mm), Otago Shelf, 45°46.498–615'S, 170°54.752'E, 27 March 2003, 80–81 m, on *Hippomenella vellicata*, coll. Anna Wood (NIWA 3297). **Paratypes**. ♀ (ovigerous 3.5 mm, dissected), same data as holotype (NIWA 3299). ♀ (2.1 mm, poor condition), Otago Shelf, 45°46.737'S, 170°54.578'E, 19 August 2003, 75 m, on *Cinctopora elegans*, coll. Anna Wood (NIWA 3298).

Diagnosis: Mandible palp present, articles 2 and 3 partially fused. Median rostral spine present; preocular spines large, flat. Pereonites 2–4 strongly bifurcate laterally. Dorsal segments each with pair of submedian glass-like RS. Pleotelson 1.2 times as wide as long.

Description of holotype: Body twice as long as wide. *Head* 3.4 times as wide as long (excluding rostral spine); inter-antennal margin convex, with short median rostral spine. *Pereonite* 1 anterolateral projections acute, curved, forwardly directed; pereonites 2–4 distinctly bifid, projections subequal in size; pereonites 5 and 6 lateral projections posteriorly directed, falcate; pereonite 7 lateral projection triangular; pereonites 2, 3, 6 and 7 each with group of anteriorly directed long dorsal setae, those on pereonites 2 and 3 on the posterior lateral lobe. *Mid-sternal* spine present on sternite 7 only. *Pleotelson* 1.2 times as wide as long, proximal one-quarter narrow, widening abruptly, curving smoothly to submedian concavities and weak apical lobe; lateral margins irregular, with 3 or 4 posteriorly curved RS.

Antennule peduncle articles 1 and 2 of subequal length, article 1 2.3 times as long as wide, article 2 3.2 times as long as wide, article 3 0.3 times as long as article 2; flagellum of 6 articles, article 1 short, articles 2 and 3 of subequal length, each twice as long as wide, articles 5–6 becoming progressively shorter. *Antenna* peduncle scale about 1.5 times as long as article 4, with 3 apical and 1 sub-apical setae; peduncle article 5 4.3 times as long as wide, article 6 4.6 times as long as wide, 6 slightly longer (1.08) than 5, both with numerous long simple setae, dorsodistal angle of article 6 with distinct triangular lobe; flagellum with conjoint article 1 as long as remaining 12 articles, articles provided with transverse rows of long simple setae.

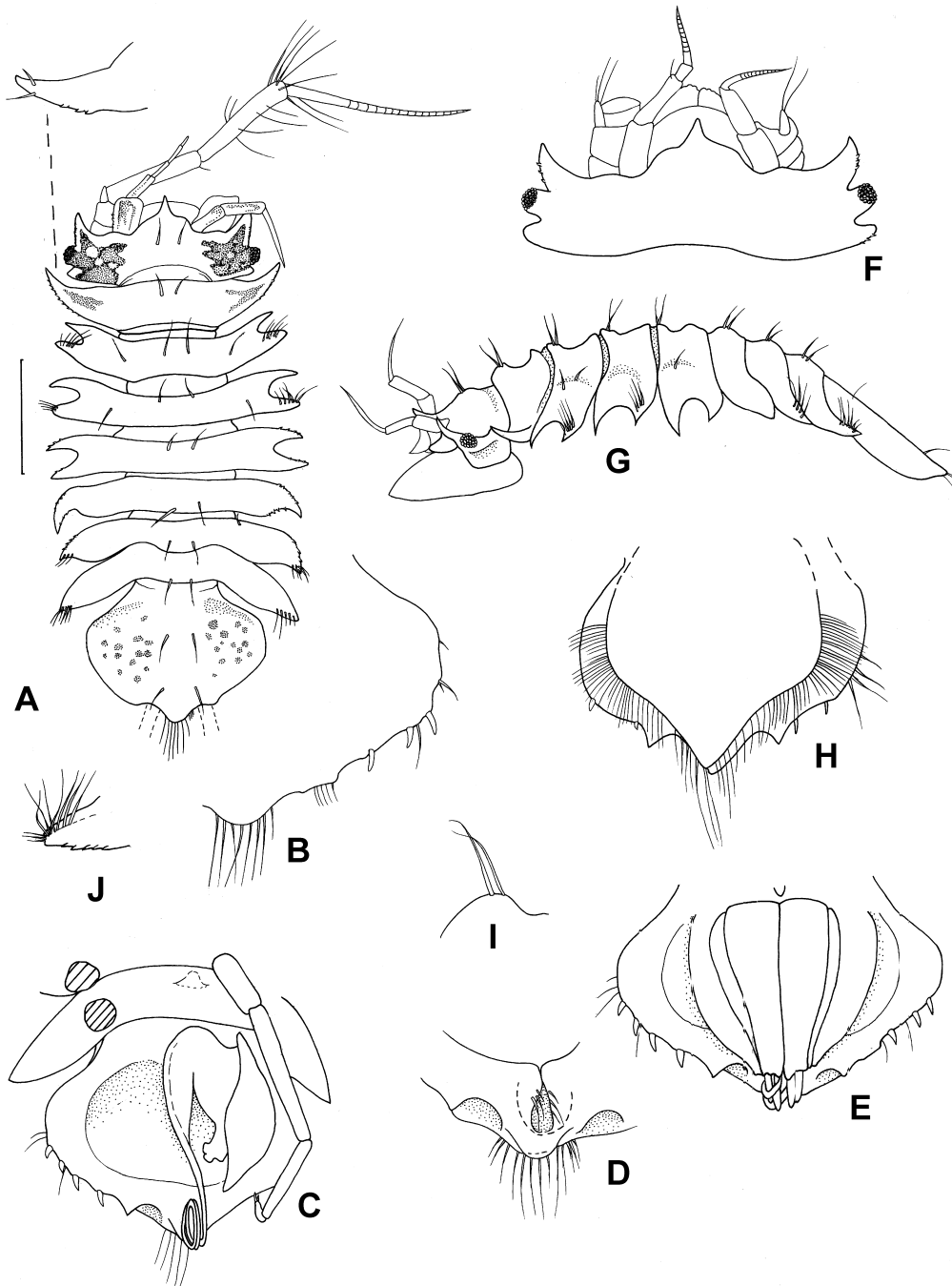


FIGURE 1. *Mexicope sushara* sp. nov. Holotype, except F–H, paratype (NIWA 3299). A, dorsal view; B, pleotelson, lateral margin; C, pleotelson, ventral view, post dissection; D, anal aperture; E, pleotelson, ventral view, pre-dissection; F, head; G, lateral view; H, pleotelson, ventral view, female paratype; I, setae from mid-dorsum, pereonite 2; J, posterior lobe, lateral margin, pereonite 2. Scale line = 0.5 mm.

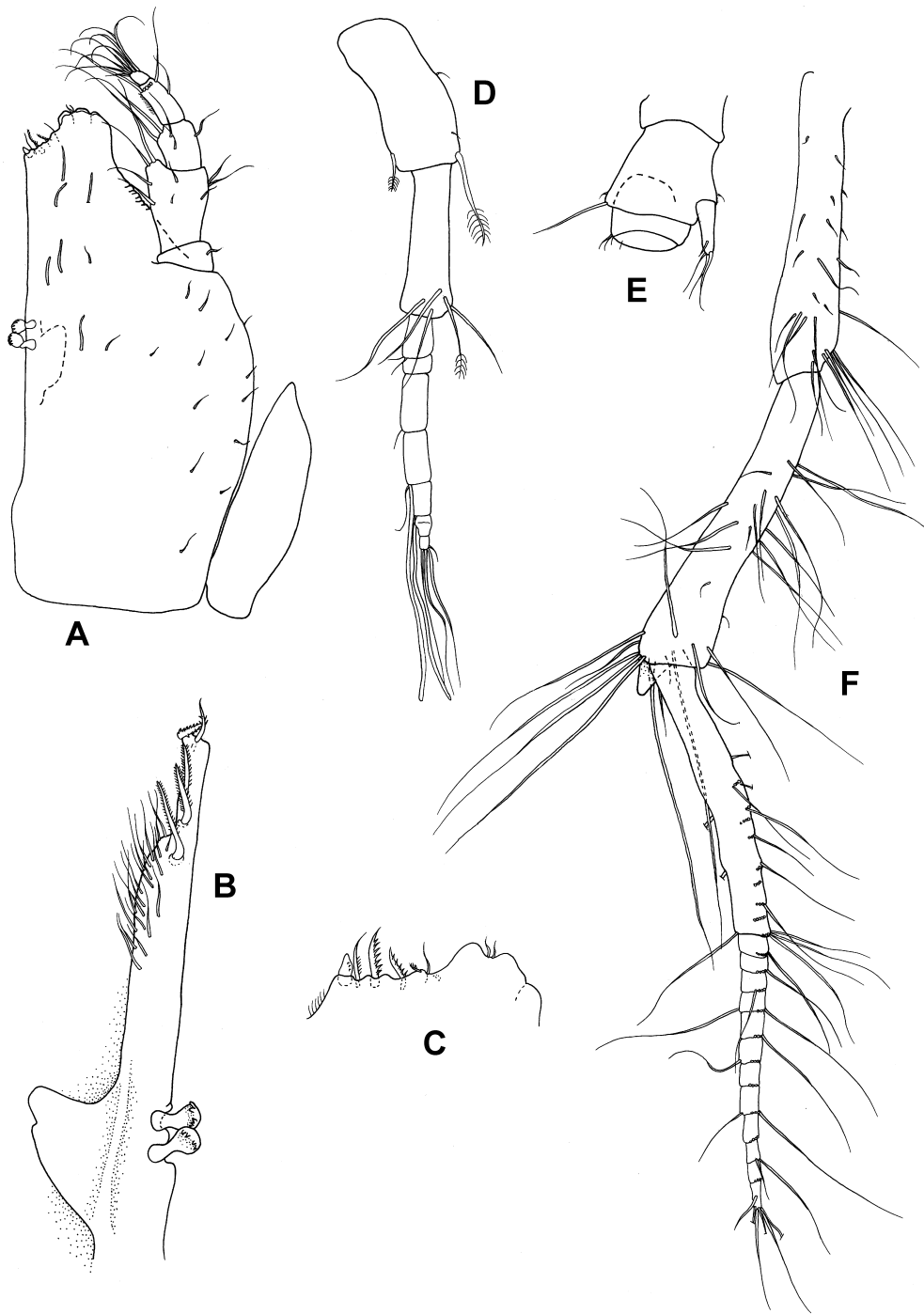


FIGURE 2. *Mexicope sushara* sp. nov. Holotype, except B, paratype (NIWA 3299). A, maxilliped; B, maxilliped endite, mesial margin, from dorsal view; C, maxilliped endite, distal margin; D, antennule; E, antenna, peduncle articles 2–4; F, antenna, peduncle articles 5, 6 and flagellum.

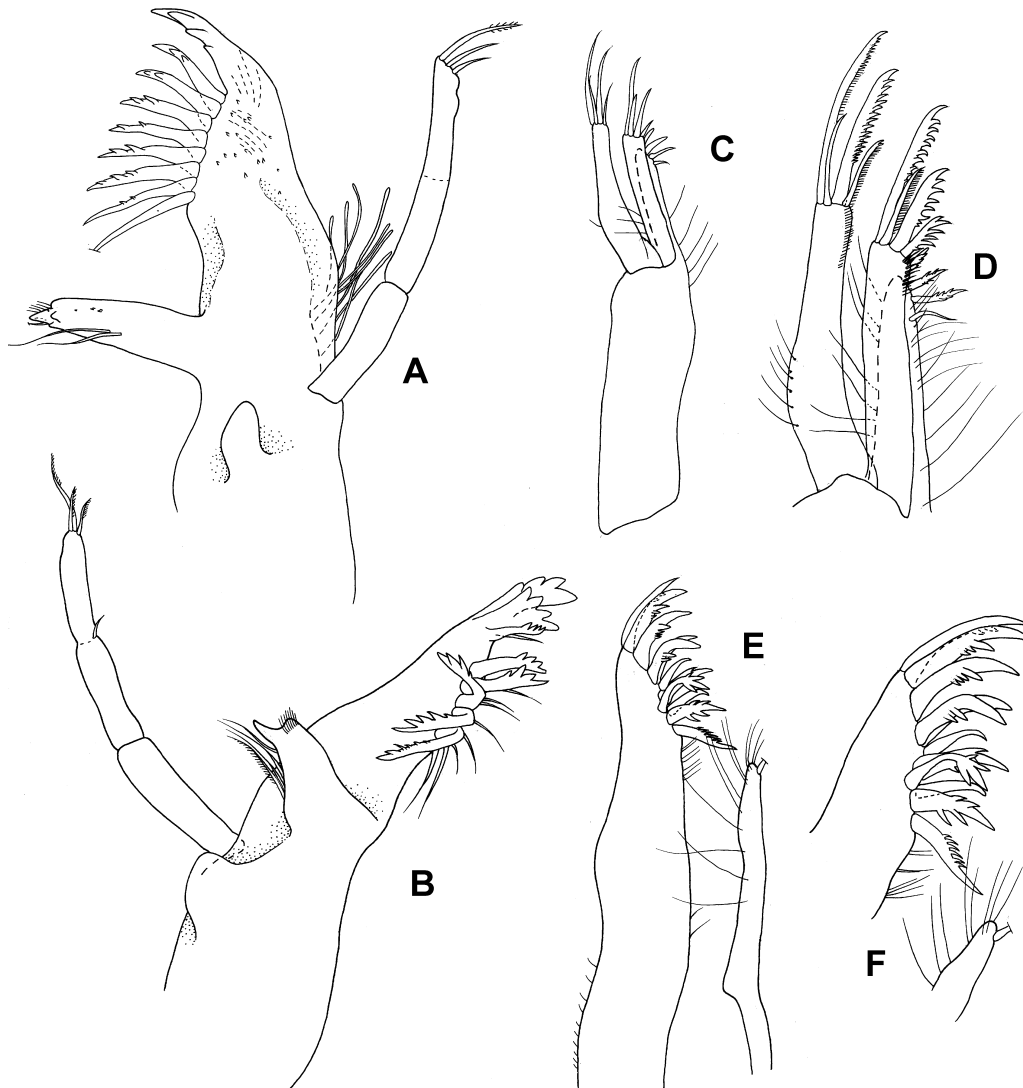


FIGURE 3. *Mexicope sushara* sp. nov. Holotype. A, right mandible; B, left mandible; C, maxilla (entire); D, maxilla, distal detail; E, maxillule (entire); F, maxillule, distal detail.

Mandible incisors both with 4 cusps; left lacinia mobilis with 4 cusps, basally with simple spine and robust distally serrate spine basally fused to body of lacinia mobilis; left spine row of 5 deeply-serrate spines and 8 simple setae, right spine row with 8 distally deeply-serrate spines; molar tapering, apex subtruncate with 2 long setae and small spines (right) or with ventral acute lobe and 4 long setae (left), both with apical fine setae; mandible palp articles 2 and 3 partly fused, article 3 with 3 serrate apical setae. *Maxillule* lateral lobe with 12 stout RS, most with few prominent serrations; mesial lobe simple, with 1 or 2 setae (broken in specimen) and numerous long scale-setae. *Maxilla* lateral and middle lobes each with 2 long and 2 short strongly serrate setae; mesial lobe with 4 sinuate circumplumose RS; all lobes basally with long scale-setae. *Maxilliped* basis 2.1 times as long

as greatest width, distal margin 1 simple and 3 serrate RS; epipod linguiform 0.5 times as long as basis; palp article 2 distomesial margin weakly lobate, with 3 simple setae, article 3 distomesial margin with 2 simple setae, article 4 2.5 times as long as wide with transverse row of 5 long simple setae, article 5 0.3 times as long as article 4 distal margin with 8 simple setae.

Pereopods all with similar setation, anterior pereopods (1–3) proportionally shorter than posterior pereopods (4–7), most of the additional length resulting from longer propodus. *Pereopod 1* basis 4.2 times as long as greatest width; ischium 0.5 times as long as basis, ventral margin with 3 simple setae and 2 short submarginal RS; merus 0.5 times as long as ischium, 1.6 times as long as wide, ventral margin with 4 simple setae, 2 short submarginal setae, dorsal distal angle with 1 long RS and 1 short simple seta; carpus 1.3 times as long as ischium, 3.8 times as long as wide, ventral margin with 5 RS, dorsal margin with 2 simple setae, dorsal distal angle with 3 simple setae; propodus weakly curved, 0.3 times as long as ischium, 3.2 times as long wide, ventral margin with 4 RS and 4 short submarginal simple setae, dorsal margin with 3 long simple setae, dorsal distal angle with 3 long simple setae; dactylus 0.8 times as long as propodus smoothly curved, dorsal unguis slight longer than ventral unguis, 2 setae set between ungui. *Pereopod 6* similar to pereopod 7, inferodistal angle of basis with 2 prominent acute RS. *Pereopod 7* 1.3 times longer than pereopod 1; basis 3.8 times as long as greatest width; ischium 0.7 as long as basis, 3.8 times as long as wide, ventral margin with 3 simple setae and 2 short submarginal setae; merus 0.6 times as long as ischium, 3.8 times as long as wide, ventral margin with 6 simple setae, dorsal distal angle with 2 long RS and 1 simple seta; carpus 1.2 times as long as ischium, 5.4 times as long as wide, ventral margin with 6 RS, dorsal margin with 1 RS, dorsal distal angle with 1 RS, 1 plumose and 1 long simple setae; propodus 1.5 times as long as ischium, 7.8 times as long as wide, ventral margin with 5 RS, dorsal margin with (from proximal to distal) 1 short simple setae, group of 3 long simple setae, 1 short simple setae, and distal angle with 2 slender and 1 plumose setae.

Pleopod 1 3.9 times as long as greatest width, widest at basal one-third, lateral margin narrowing abruptly at that point, tapering smoothly to bi-lobed apex; lateral margin basally with 7–9 sort simple setae, distally with 4 long simple setae, distal 2 more than twice as long as proximal 2; lateral lobe with 4–6 short simple setae, mesial lobe with 5 widely-spaced long simple marginal setae, ventral surfaces with scale-setae; stylet guide simple, weakly defined lateral sub-marginal groove. *Pleopod 2* basis 2.6 times as long as greatest width, later margin with middle half strongly convex, with continuous close-set simple setae, distal one-third concave, with widely-spaced feebly plumose setae, apex with 6 long simple and plumose setae; endopod (stylet) with long, coiled extension; exopod with bilobed apex. *Pleopod 3* exopod and endopod distal margins each with 6 plumose setae; exopod lateral margin with continuous fringe of scale-setae. *Pleopod 4* exopod about half as long as endopod, apically acute. *Pleopod 5* slightly (0.9) shorter than pleopod 4, lateral margin with basal lobe, mid-lateral margin with small lobe.

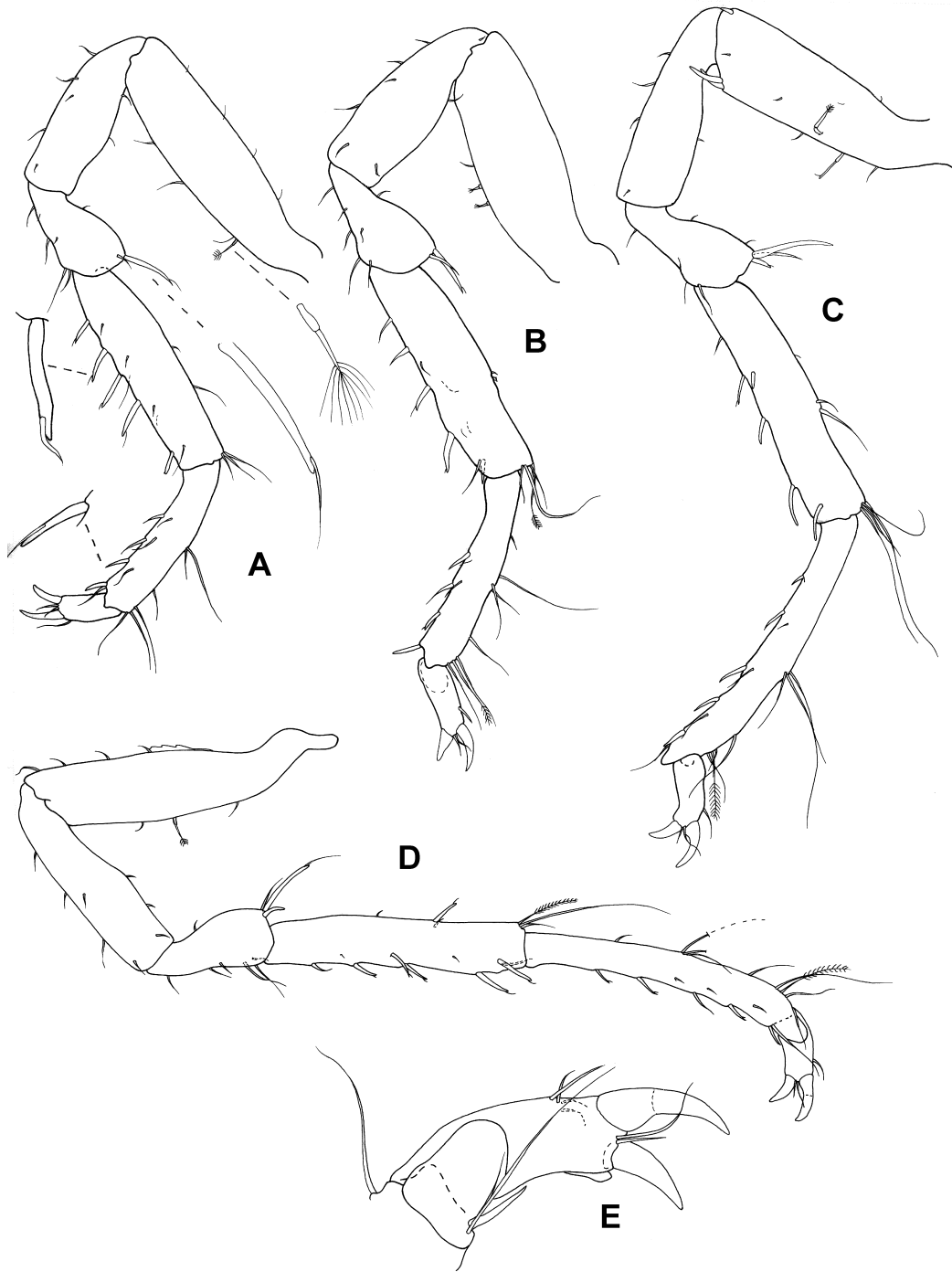


FIGURE 4. *Mexicope sushara* sp. nov. Holotype. A–D, pereopods 1, 2, 6 and 7 respectively; E, pereopod 7 dactylus.

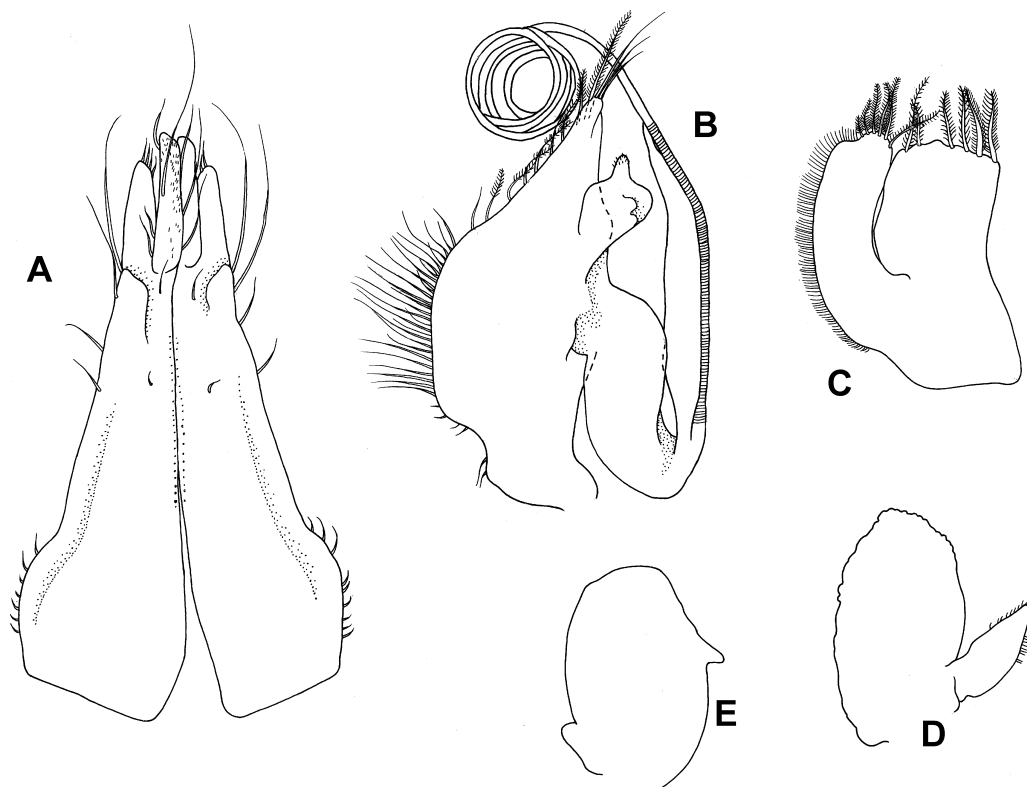


FIGURE 5. *Mexicope sushara* sp. nov. Holotype. A–D, pleopods 1–5 respectively.

Uropods not known, missing from all specimens.

Female: Similar to male with the exception of sexual characters and larger body size. Pleopod 2 about as long (1.13) as wide, lateral margins strongly convex, posteriorly with distinct apical lobe; margins fringed with long setae along distal two-thirds of margins; distal setae more widely spaced.

Colour: The male with dark brown chromatophores as figured, those on the pleotelson pale orange in colour in the preserved specimen; with small chromatophores on the lateral margin of pereonites. Pereopods of both sexes with prominent and separate chromatophores giving a distinctive irregular banded appearance. Chromatophores not apparent on the pleotelson of the female.

Remarks: *Mexicope sushara* sp. nov. is readily identified by the short rostral point, stalked eyes, and prominent pre-ocular spines or lateral projections. These characters also serve to distinguish the species from all other Acanthaspidiidae.

Associated isopod fauna: Several samples (13 in all), all from bryozoans, were examined. The most abundant species were a species of *Schottea* Serov & Wilson, 1999 (Pseudojaniridae) and a species of *Iathrippa* Bovallius, 1866 [see Wilson & Wägele

(1994) for a recent account] (Janiridae). There was a single specimen of one other isopod, provisionally assigned to Paramunnidae.

Etymology: The epithet combines the Latin words *sus* (pig) and *hara* (pen, coop or sty) and alludes to the ability of these preserved specimens to collect adherent detritus; referring to the character 'Pigpen' in the famous comic strip *Peanuts*, who gathered dirt no matter what.

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Note added in proof

One ♀ (ovigerous 3.5 mm; 6 mm including antennae and uropods), off eastern coast of Kapiti Island, North Island, 40°52.20'S, 174°55.25'E, 31 March 2004, 11 metres, coralline algae rodolith and cobble bed, coll. A. Hill, J. Forman and K. Neill [for project ZBD200105] (NIWA 3306).

The uropods are essentially similar to those of *Mexicope westralia* Just, 2001. The range extends to the southwestern coast of the North Island. The habitat suggests that the species is not an associate of bryozoans but uses any suitable refugia.