

The first record of the crustacean isopod genus *Pseudarachna* Sars, 1897 (Isopoda: Asellota: Munnopsidae) from the Southern Hemisphere, with description of a new species from New Zealand

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Abstract

Pseudarachna nohinohi n. sp. from the Challenger Plateau, New Zealand is described. A further two undescribed species are recorded from Australian waters in the Tasman Sea, showing that this formerly monotypic North Atlantic genus is more widely distributed than previously thought. A revised diagnosis of the genus is presented.

Key words: Isopoda, Munnopsidae, *Pseudarachna*, Pacific, taxonomy, Tasman Sea

Introduction

The munnopsid genus *Pseudarachna* was erected by Sars to account for the “anomalous form” (Sars 1897: 142) of the then *Ilyarachna hirsuta* Sars, 1864. The genus has since remained monotypic with a distribution from western Ireland to Denmark (Wolff 1962) and a depth range of 50–478 metres (Svavarsson *et al.* 1993). Material collected from various localities in the Tasman Sea by NIWA, the Australian Museum (Sydney) and by Museum Victoria (Melbourne) has revealed that this genus is present in the Southern Hemisphere.

Material and methods

The holotype and dissected paratypes were used in the preparation of the description and illustrations and are indicated in the figure captions. Specimens were drawn using a Nikon

Optiphot-2 and a Zeiss Stemi SV 11 dissecting microscope both fitted with a camera lucida. These specimens are derived from material collected by Roger Lincoln while on sabbatical.

Species descriptions were prepared in the computer program DELTA (Dallwitz *et al.* 2000). Unless otherwise stated in text, all ratios were calculated using the maximum lengths and widths of segments.

Abbreviations used in text: AM — Australian Museum, Sydney; NIWA — National Institute for Water and Atmospheric Research, Wellington; NMV — Museum Victoria, Melbourne.

Taxonomy

Munnopsidae Lilljeborg, 1864

Pseudarachna Sars, 1897

Mesostenus Sars, 1864: partim: 9 (preoccupied).

Pseudarachna. — Sars, 1897: 142.— Nierstrasz & Schuurmans-Stekhoven, 1930: 129.— Kusakin, 2003: 261.

Not *Pseudarachna*. — Schultz, 1976: 13.

Type species: *Mesostenus hirsutus* Sars, 1864; by monotypy.

Diagnosis

Cephalic frons enlarged, broad, semi-circular, without defined ridge around antennae; cephalon anterior flanges absent. Pereonites 1–4 not short or compact, dorsal spines present, apical setae present. Pereonite 2 largest; pereonites 5–7, lateral margins not narrow, natasome not reduced. Pleon anterolateral margins rounded, without spine. Antennae positioned widely apart; antenna 1 small, article 1 with lateral flange; antenna 2 article 1 with no anterolateral spine. Mandible lacinia mobilis, spine row and palp all absent; mandibular fossa angular, sub-horizontal across mandible. Pereopod 2 elongate, robust; ischium compact, wider than other articles; pereopods 5 and 6 ischium superior margin with plumose setae; carpus paddle shaped; carpus and propodus with marginal plumose setae; pereopod 7 more ambulatory, with setation similar to that of pereopods 5 and 6; dactyli of natatory pereopods flattened, slightly broadened. Pleopod 4 exopod with more than 1 plumose seta. Pleon triangular, domed in centre. Operculum partially vaulted, with small medial keel. Pleopod 5 simple lobe. Uropods flat, uniramous.

Remarks

Pseudarachna has many unique apomorphies, the most notable being the enlarged, semi-circular shaped cephalic frons, the widely spaced antennae, the small antenna 1,

enlarged pereonite 2 and a robust and enlarged pereopod 2 with a wide, compact ischium. *Pseudarachna* is easily distinguished by these characters from other closely related genera such as *Ilyarachna* Sars, 1870 and *Echinozoe* Sars, 1897.

Males are not known for this genus, and thus there is no data specific on sexual dimorphism.

Distribution

In the North Atlantic, from western Ireland to Denmark (Wolff 1962) at depths between 50–478 metres (Svavarsson *et al.* 1993); off eastern Australia at approximately 36° south and, Bass Strait at 38° south off Point Hicks (both records of undescribed mancás) at depths between 960–1277 metres; and the Challenger Plateau, west of the South Island, New Zealand at depths between 1005–1463 metres.

Pseudarachna nohinohi n. sp.

(Figs 1–3)

Material examined — All Challenger Plateau, Tasman Sea, New Zealand. **Holotype.** Oviparous female (1.7 mm), stn P929, 40°42.8'S 167°56.0'E, 18 April 1980, epibenthic sled, 1029 m, RV *Tangaroa* (NIWA 23787). **Paratypes.** 2 females (2 mm [dissected], 2 mm), 1 fragment, stn P941, 41°15.2'S 167°07.2'E, 23 April 1980, epibenthic sled, 1463–1457 m, RV *Tangaroa* (NIWA 23788); 2 females (1.7 mm [dissected], 2 mm [dissected]), stn P927, 40°50.1'S 168°14.8'E, 18 April 1980, epibenthic sled, 1009–1005 m, RV *Tangaroa* (NIWA 23789).

Description Holotype

Body about 2.1 times as long as greatest width of pereonite 2; widest at pereonite 2; cuticle not highly calcified, lightly setose. Cephalon covered with many long setae, spines absent; posterolateral margins rounded. Pereonites 1–4 each with pair of anterior submarginal short spines. Pereonite 5 anterior margin smooth, anterolaterally square; anterolateral margins of pereonites 2–4 with pair of small spines, 6–7 rounded. Pereonite 7 ventrally with no ornamentation. Pleon as long as proximal width, dorsal surface sculptured, with rounded medial keel, posterior tip rounded, with scattered simple setae.

Paratypes

Antenna 1 of 7 articles; article 1 lateral flange reaching beyond article 2, 1.6 times as long as wide, lateral margin with 2 penicillate setae (on lateral flange), distal margin with 1 penicillate seta and 1 elongate sensillate robust seta; article 2 rectangular, 0.4 times as long article 1 and 2.2 times as long as wide, with 4 distal penicillate setae; article 6 with 1 distal aesthetasc; terminal article with 2 simple setae and distal aesthetasc. *Antenna 2* damaged; article 1 margins smooth; article 2 2.0 times as long as article 1, with 1 sensillate robust

seta and 1 simple seta; article 3 2.8 times as long as article 1, with 2 sensillate robust setae and 1 simple seta; article 4 elongate, 3.3 times as long as article 1, with no ornamentation; article 5 19.5 times as long as article 1, mesial margin with 12 sensillate robust setae, surface with 3 simple setae, lateral margin with 5 simple setae and 11 sensillate robust setae.

Mandible molar small, distally with 3 simple setae (on right molar, none on left). *Maxilla 1* lateral and mesial margins with fine simple setae; lateral lobe 2.1 times as wide as mesial lobe, distal margin with few fine simple setae, 5 robust setae, 3 dentate robust setae and 4 pectinate robust setae; mesial lobe terminated with 5 simple setae and 2 long pectinate setae. *Maxilla 2* lateral lobe margins with fine simple setae, distally with 4 long pectinate setae; middle lobe 1.1 times as wide as lateral lobe, distally with 4 long pectinate setae; mesial lobe 2.1 times as wide as lateral lobe, margins with fine simple setae, proximally, mesial margin with 3 elongate, lightly plumose setae, distally with 3 blunt simple setae, few fine simple setae, 1 toothed seta and 1 long pectinate seta. *Maxilliped* coxa rectangular, 1.1 times as long as wide and 0.5 times as long as basis (including endite); basis elongate, 2.4 times as long as wide (including endite); endite with 1 coupling hook (on right maxilliped, 2 on left), distally with 2 toothed setae, 5 fan setae and many fine simple setae; palp article 1 rectangular, 0.3 times as long as basal endite, cuticular scales present, with 1 simple seta each on distolateral and distomesial margin; article 2 3.7 times as long as and 1.3 as wide as article 1, 1.2 times as wide as basal endite, lateral margin with cuticular scales and 2 simple setae, mesial margin with 3 distally pappose setae and 1 simple seta; article 3 1.8 times as long as and 1.0 times as wide as article 1, lateral margin with 1 simple seta, mesial margin with 1 simple seta and 5 distally pappose setae; article 4 1.4 times as long as and 0.5 times as wide as article 1, distal margin with 3 simple setae (left maxilliped palp article 4 with 4 simple setae); article 5 with 4 terminal simple setae; left maxilliped palp article 5 0.8 times as long as and 0.5 times as wide as article 4, with 3 simple setae; epipod 2.2 times as long as wide, 1.4 times as long as basis, margins with many cuticular scales and 1 simple seta.

Pereopod 1 basis 6.0 times as long as wide, inferior margin with 2 weakly plumose setae, 4 simple setae (3 long) and 1 distal sensillate robust seta, superior margin with 2 simple setae, 1 penicillate seta and 1 long sensillate robust seta; ischium 6.8 times as long as wide, inferior margin with 2 simple setae, superior margin with 2 simple setae and 2 sensillate robust setae; merus 2.2 times as long as wide, inferior margin with 3 simple setae, distosuperior margin with 1 small simple seta; carpus 10.0 times as long as wide, inferior margin with 2 small simple setae, in proximal half; propodus 15.0 times as long as wide, distoinferior margin with 5 simple setae, distosuperior margin with 2 simple setae; dactylus 4.9 times as long as proximal width, superior margin with 3 small simple setae.

Pereopod 2 basis 4.1 times as long as wide, inferior margin with 9 simple setae, superior margin with 5 simple setae and 1 penicillate seta; ischium 1.2 times as long as wide, inferior margin with 2 sensillate robust setae and 1 simple seta, distally with 14

sensillate robust setae (8 on mesial side and 6 on lateral side), mesial surface with 4 simple setae (1 simple seta on lateral surface), superior margin with 2 simple setae and 1 sensillate robust seta; merus 1.4 times as long as wide, distoinferior margin with 4 sensillate robust setae, distosuperior margin with 2 simple setae; carpus 4.1 times as long as wide, inferior margin with 1 simple seta and 7 long sensillate robust setae, mesial surface with 1 penicillate seta and 3 simple setae, lateral surface with 10 sensillate robust setae, superior margin with 4 simple setae; propodus 3.8 times as long as wide, inferior margin with 4 sensillate robust setae, lateral surface with 3 sensillate robust setae, distosuperior margin with 1 sensillate robust seta and 1 simple seta; dactylus 5.2 times as long as proximal width, with 2 robust simple setae and 5 simple setae.

Pereopod 5 basis 4.8 times as long as wide, inferior margin with 9 simple setae, lateral surface with 1 penicillate seta, superior margin with 2 penicillate setae and 3 simple setae; ischium 2.9 times as long as wide, inferior margin with 8 simple setae; merus as long as wide, inferior margin with 2 simple setae, distosuperior margin with 1 simple seta and 1 small plumose seta; carpus 1.3 times as long as wide, distosuperior corner with 2 simple setae; propodus 2.8 times as long as wide, lateral surface with 1 simple seta, distosuperior corner with 1 simple seta; dactylus 4.0 times as long as proximal width, distosuperior margin with 1 simple seta.

Pereopod 6 basis 6.1 times as long as wide, inferior margin with 3 sparsely plumose setae and 3 simple setae, lateral surface with 1 sparsely plumose seta, 2 penicillate setae, mesial surface with 1 long simple seta, superior margin with 1 simple seta and 1 penicillate seta; ischium 3.3 times as long as wide, inferior margin with 5 simple setae, mesial surface with 2 simple setae; merus 1.5 times as long as wide, inferior margin with 5 simple setae, distosuperior margin with 2 simple setae; carpus 2.1 times as long as wide, lateral surface with 1 simple seta; propodus 3.5 times as long as wide, inferior margin also with 1 distal simple seta, superior margin with 1 distal simple seta and with 4 scale-like structures; dactylus 6.4 times as long as proximal width, distosuperior margin with 4 simple setae.

Pereopod 7 basis 5.0 times as long as wide, inferior margin with 3 plumose setae and 2 simple setae, lateral surface with 2 simple setae, superior margin with 3 penicillate setae; ischium 3.9 times as long as wide, inferior margin with 4 simple setae, lateral surface with 1 simple seta; merus 1.8 times as long as wide, inferior margin with 4 simple setae, distosuperior margin with 1 simple seta; carpus 3.1 times as long as wide, mesial surface with 1 simple seta; propodus 11.0 times as long as wide, distoinferior corner with 1 simple seta, superior margin with 6 sub-marginal simple setae and scale-like structures in proximal half, plumose setae absent; dactylus 7.0 times as long as proximal width, distosuperior margin with 5 simple setae.

Operculum 2.1 times as long as proximal width, median keel wide, somewhat flattened with long lightly plumose setae on both sides, surface with numerous lightly plumose setae, distally with pair of simple setae, 8 heavily plumose setae, medial excision and veined lamellar extension. *Pleopod 3* exopod 1.4 times length of endopod, distally

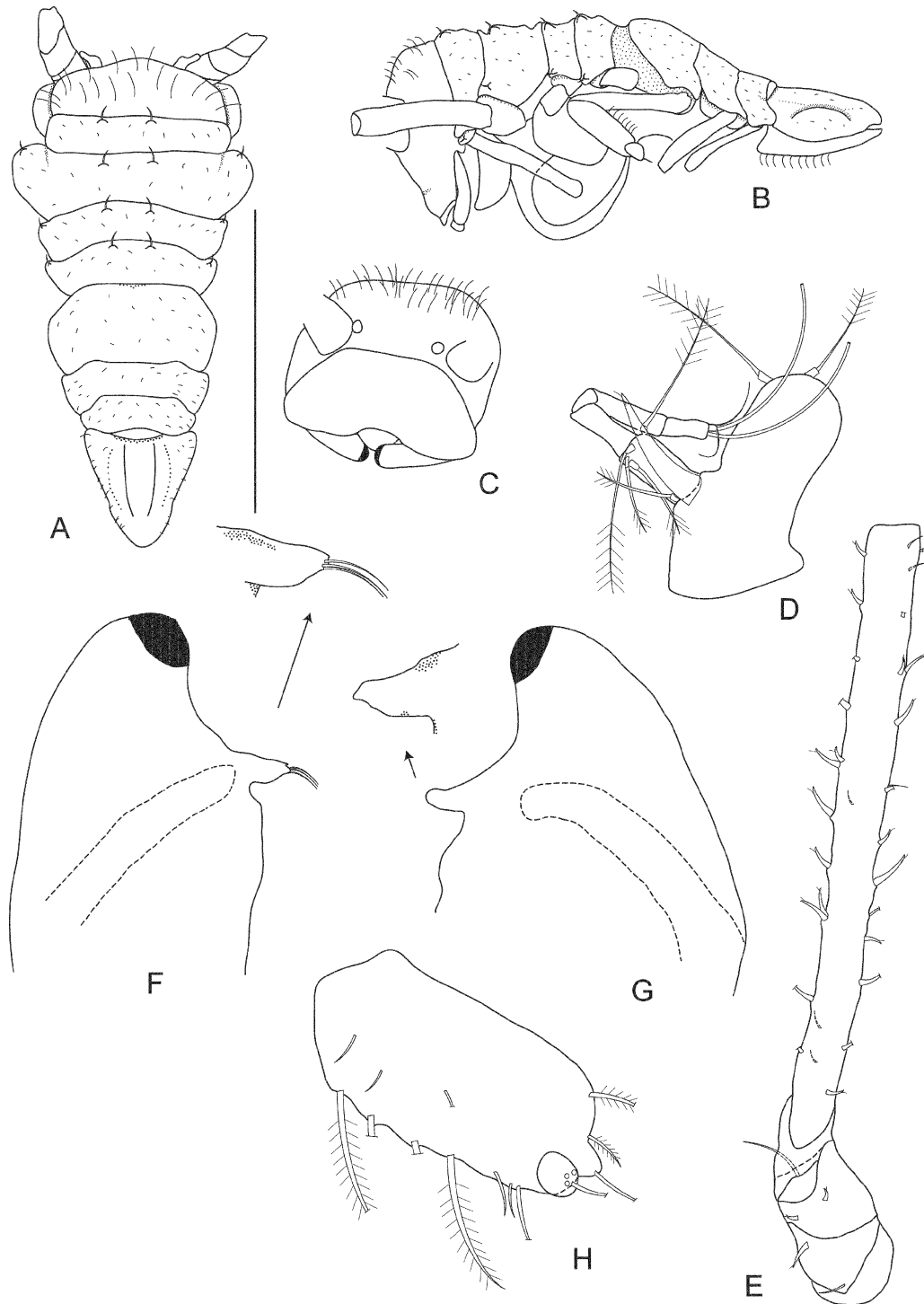


FIGURE 1. *Pseudarachna nohinohi* n. sp. A–C, female holotype, 1.7 mm (NIWA 23787); D, E, female paratype, 2 mm (NIWA 23788); F–H, female paratype, 1.7 mm (NIWA 23789). A, dorsal view; B, lateral view; C, cephalon; D, right antenna 1; E, right antenna 2; F, right mandible; G, left mandible; H, left uropod. Scale bar = 1 mm, for dorsal and lateral view only.



FIGURE 2. *Pseudarachna nohinohi* n. sp. A–D, F, female paratype, 2 mm (NIWA 23788); E, G, female paratype, 1.7 mm (NIWA 23789). A, right maxilliped; B, left maxilliped palp, articles 4 and 5; C, right maxilla 1; D, right maxilla 2; E, left pereopod 1; F, left pereopod 2; G, left pereopod 7.

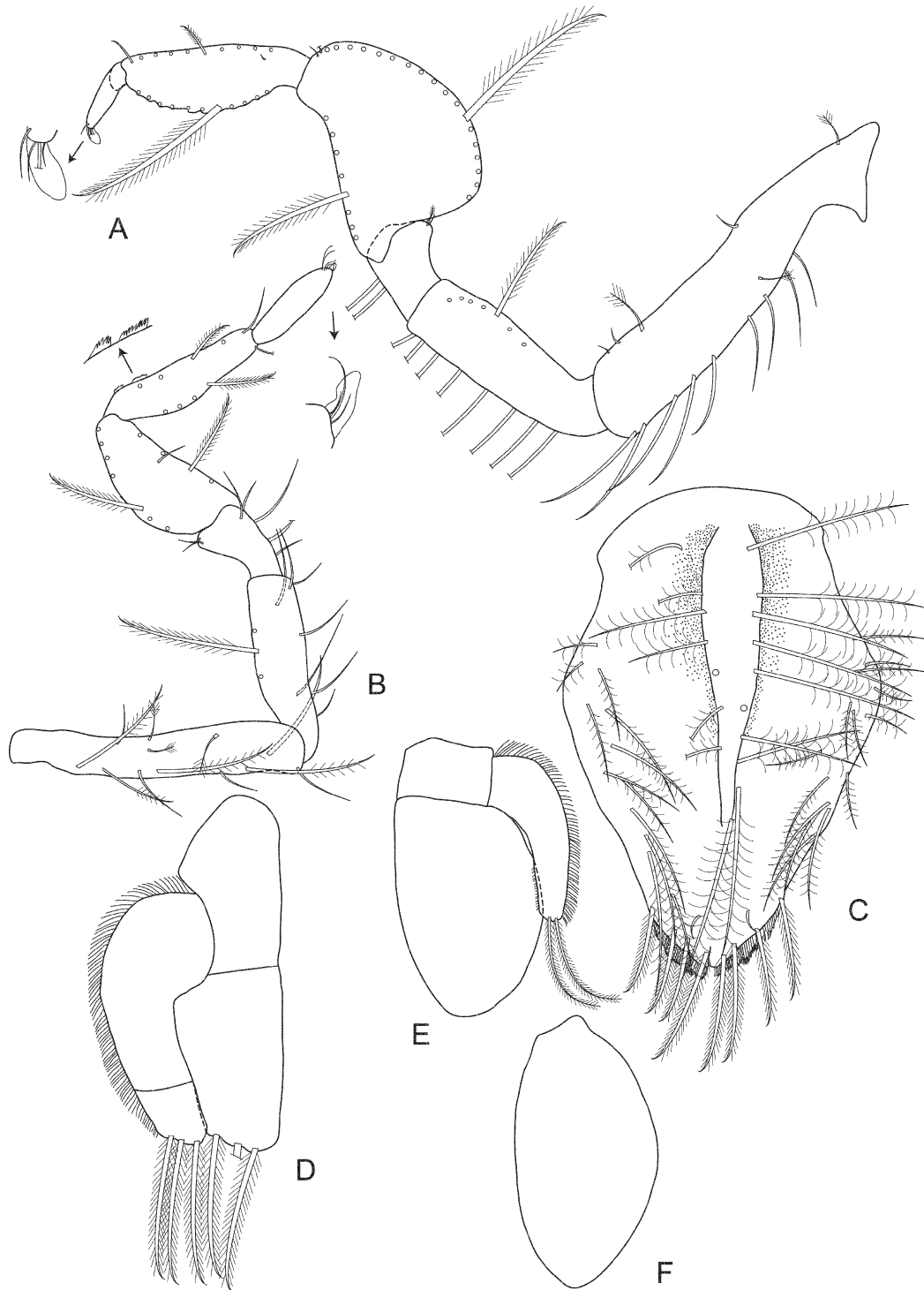


FIGURE 3. *Pseudarachna nohinohi* n. sp. A, female paratype, 2 mm (NIWA 23789); B, female paratype, 1.7 mm (NIWA 23789); C–F, female paratype, 2 mm (NIWA 23788). A, right pereopod 5; B, left pereopod 6; C, operculum; D, right pleopod 3; E, left pleopod 4; F, left pleopod 5.

with 3 long plumose setae; endopod 1.7 times as long as wide, with 3 long plumose setae. *Pleopod 4* exopod distally with 2 long plumose setae; endopod oval, 1.5 times as long as wide. *Pleopod 5* 1.9 times as long as wide.

Uropod protopod 2.2 times as long as wide, oval, distal bulb with 1 simple seta, lateral margin with 4 plumose setae and 3 simple setae, distal margin with 2 plumose setae and surface with 3 simple setae; endopod 0.1 times as long as protopod, with at least 1 simple seta (3 sockets also present).

Remarks

Pseudarachna nohinohi n. sp. can be distinguished from the only other species in this genus, *P. hirsuta*, by the carpus and propodus of pereopod 2 being more setose in *P. nohinohi* than in *P. hirsuta*; the lateral flange of antenna 1 article 1 is round (square in *P. hirsuta*) and reaches beyond article 2 (does not reach beyond article 2); and the uropod is less elongate (2.1 times as long as wide versus 2.8 times as long as wide in *P. hirsuta*), is less setose on margins and has a distal bulb (absent).

Distribution

Known from the Challenger Plateau, Tasman Sea, off the west coast of New Zealand; at depths between 1029–1463 m.

Etymology

Nohinohi is a Māori word meaning little or small; noun in apposition.

Pseudarachna spp.

Manca (1.7 mm), Tasman Sea, off eastern Australia, 36°57.95'S 150°22.0'E, 960–1050 m, P. A. Hutchings, 12 December 1986, RV *Franklin*, thick grey mud with hard clay lumps (AM P62620). Manca (1.2 mm), stn SLOPE 67, 67 km south of Point Hicks, from 38°23.95–78'S 149°17.02–15.24'E, 1277–1119 m, G. C. B. Poore *et al.*, 25 October 1988, RV *Franklin*, fine mud (NMV J18885).

Remarks

Although these species, both distinct, are not described, these records provide additional distribution data for the genus, indicating that at least three species occur in the south-western Pacific region.

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