

Polychelidae from the southern and western Pacific (Decapoda, Polychelida)

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ABSTRACT

Deep-sea blind lobsters (Polychelidae) from Fiji, Tonga, the Solomon Islands, and Austral Islands are studied. We report the first records of Polychelidae from Tonga, the Solomon and Austral islands, and the first records from Fiji since the *Challenger* expedition in 1874. Fourteen species in two genera are reported: two species of *Pentacheles* Bate, 1878 and 12 species of *Polycheles* Heller, 1862. *Polycheles alis* n. sp., from the Austral Islands, closely resembles *P. ceratus* (Alcock, 1894) from Indonesia and the Andaman Sea. The new species differs from *P. ceratus* chiefly in having a small and blunt instead of massive, sharp, antorse spine on the fifth abdominal tergite. *Polycheles martini* Ahyong & Brown, 2002, previously known only from Australia, is reported from Tonga.

KEY WORDS

Crustacea,
Decapoda,
Polychelidae,
Polycheles alis n. sp.,
Pacific Ocean,
Austral,
Solomon,
Fiji,
Tonga,
new species.

RÉSUMÉ

Polychelidae du sud-ouest et de l'ouest Pacifique (Decapoda, Polychelida).

Les langoustes aveugles d'eaux profondes (Polychalidae) de Fiji, Tonga, des Îles Salomon et des Îles Australes sont étudiées. Nous signalons les premières mentions de Polychelidae pour les Tonga, les Îles Salomon et les Îles Australes, et la première mention des Fiji depuis l'expédition du *Challenger* en 1874. Quatorze espèces appartenant à deux genres sont signalées : deux espèces de *Pentacheles* Bate, 1878 et 12 espèces de *Polycheles* Heller, 1862. *Polycheles alis* n. sp., des Îles Australes, ressemble beaucoup à *P. ceratus* (Alcock, 1894) d'Indonésie et de la mer d'Andaman. La nouvelle espèce diffère de *P. ceratus* principalement car elle possède sur le cinquième tergite abdominal une épine petite et émoussée au lieu de massive, aiguë et antrorse. *Polycheles martini* Ahyong & Brown, 2002, qui était seulement connue d'Australie, est mentionnée des Tonga.

MOTS CLÉS

Crustacea,
Decapoda,
Polychelidae,
Polycheles alis n. sp.,
océan Pacifique,
Australes,
Salomon,
Fiji,
Tonga,
espèce nouvelle.

INTRODUCTION

The worldwide Polychelidae were recently reviewed by Galil (2000) who recognised a total of 32 species. Four additional species were recognised by Ahyong & Brown (2002) and Ahyong & Chan (2004) on the basis of two new species and two removed from synonymy of *P. enthrix* (Bate, 1878). Therefore, a total of 36 species of Polychelidae were recognised prior to the present study. Over the past several years, additional polychelid collections were made by French deep water expeditions at various Pacific localities: MUSORSTOM 10 (1998) and BORDAU 1 (1999) to Fiji and Tonga; SALOMON 1 (2001) to the Solomon Islands; and BENTHAUS (2002) to the Austral Islands. The collection, comprising 14 species in two genera, is significant for including a species new to science and the first records of polychelids from the Austral and Solomon Islands. Prior to the MUSORSTOM 10 and BORDAU 1 expeditions (Richer de Forges *et al.* 2000a, b), the only polychelids known from the Fiji were the nine specimens collected by the *Challenger* expedition in 1874 (Bate 1888). Of the six species collected by the French expeditions, two are newly recorded from Fiji.

All specimens are deposited in the Muséum national d'Histoire naturelle, Paris (MNHN). Morphological terminology follows Galil (2000) and Ahyong & Brown (2002). Measurements of specimens are in mm. Carapace length (cl) is

measured along the mid-line from the apices of the rostral spines to the posterior margin. Extensive synonymies are provided by Galil (2000). Therefore, synonymies in the present study are restricted to primary works, Galil (2000), and polychelid studies published after 2000.

SYSTEMATICS

Infraorder POLYCHELIDA Wood-Mason, 1874

Family POLYCHELIDAE Wood-Mason, 1874

Genus *Pentacheles* Bate, 1878

Pentacheles laevis Bate, 1878

Pentacheles laevis Bate, 1878a: 278 (type locality: Moluccas, Indonesia, 4°33'N, 127°06'E). — Galil 2000: 291 (key), 301-305, fig. 7. — Ahyong & Brown 2002: 54-56, fig. 1A, B. — Ahyong & Chan 2004: 171-173, figs 1A-C, 4A.

Pentacheles gracilis Bate, 1878b: 279 (type locality: off Fiji, 19°07.50'S, 178°19.35'E).

Polycheles granulatus Faxon, 1893: 197 (type locality: off Panama, 4°03'N, 81°31'E).

Pentacheles beaumontii Alcock, 1894: 236 (type locality: off Colombo, Sri Lanka).

Polycheles dubius Bouvier, 1905a: 480 (type locality: off the Azores, 44°04'N, 9°81'W).

Polycheles eryoniformis Bouvier, 1905b: 644 (type locality: Madeira).

MATERIAL EXAMINED. — **Austral Islands.** BENTHAUS, stn CP 1891, E of Rapa, 27°37.1'S, 144°15.4'W, 800-850 m, 7.XI.2002, 1 ♀ cl 23.5 mm. — Stn CP 1909, E of Rapa, 27°38.6'S, 144°15.6'W, 783-1000 m, 10.XI.2002, 3 ♂♂ cl 22.5-35.1 mm, 2 ♀♀ cl 19.1-23.5 mm. — Stn CP 1892, E of Rapa, 27°38.8'S, 144°15.6'W, 742-1000 m, 7.XI.2002, 6 ♂♂ cl 18.8-28.3 mm, 1 ♀ cl 24.1 mm. — Stn CP 1910, E of Rapa, 27°38.2'S, 144°15.4'W, 840-1200 m, 10.XI.2002, 7 ♂♂ cl 18.9-45.0 mm, 1 ♀ cl 17.5 mm. — Stn CP 1911, E of Rapa, 27°37.9'S, 144°15.2'W, 900-1300 m, 10.XI.2002, 7 ♂♂ cl 16.5-31.0 mm, 1 ♀ cl 22.4 mm. — Stn CP 1966, Tubuai, 23°21.3'S, 149°34'W, 636-1200 m, 19.XI.2002, 1 ♂ cl 36.2 mm, 1 ♀ cl 35.8 mm. — Stn DW 1956, Tubuai, 23°18.4'S, 149°27'W, 600-990 m, 18.XI.2002, 1 ♂ cl 18.5 mm. — Stn CP 1965, Tubuai, 23°21.3'S, 149°33.9'W, 500-1200 m, 19.XI.2002, 4 ♂♂ cl 18.0-43.3 mm. — Stn CP 1967, Tubuai, 23°21.4'S, 149°34.2'W, 600-1200 m, 19.XI.2002, 2 ♀♀ cl 18.8-19.3 mm. — Stn DW 1995, Rurutu, Avera, 22°29'S, 151°21.8'W, 212-450 m, 23.XI.2002, 1 ♂ cl 18.3 mm. — Stn DW 2010, S coast of Rurutu, 22°32.4'S, 151°20.8'W, 520-950 m, 24.XI.2002, 1 ♂ cl 44.0 mm.

DISTRIBUTION. — Worldwide, from the Indo-West Pacific, eastern Pacific, western and eastern Atlantic; 212-2505 m (Galil 2000; this study); a new record for the Austral Islands.

REMARKS

Lateral carapace spination of the present series, 8-9:3:13-15, is within the reported range (Galil 2000; Ah Yong & Brown 2002).

Pentacheles snyderi (Rathbun, 1906)
(Fig. 1)

Polycheles snyderi Rathbun, 1906: 898, pl. 24, fig. 9 (type locality: Hawaiian Islands).

Pentacheles snyderi – Galil 2000: 306-308, fig. 9.

MATERIAL EXAMINED. — **Austral Islands.** BENTHAUS, stn CP 1911, E of Rapa, 27°37.9'S, 144°15.2'W, 900-1300 m, 10.XI.2002, 1 ♀ cl 40.9 mm.

DISTRIBUTION. — Hawaii, the Indian Ocean Ridge and the Bay of Biscay; 900-2245 m.

REMARKS

The specimen agrees in most respects with published accounts of the species (Rathbun 1906; Galil 2000). The lateral carapace spination of 8-9:5:29-30 is

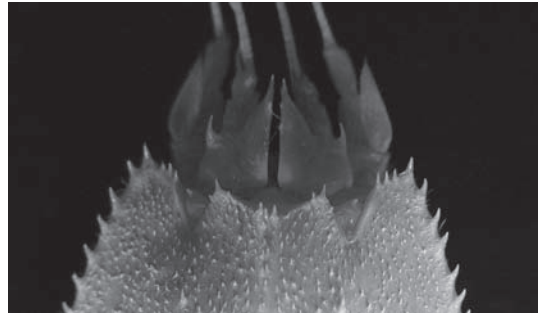


FIG. 1. — *Pentacheles snyderi* (Rathbun, 1906), ♀ cl 40.9 mm, E of Rapa, BENTHAUS CP 1911, anterior region.

similar to that reported by Galil (2000) as 9-10:5-8:30-35. As in material studied by Galil (2000), the outer orbital angle is trispinose but the inner orbital angle bears three spines (some of which have broken apices) instead of one.

Genus *Polycheles* Heller, 1862

Polycheles aculeatus Galil, 2000

Polycheles aculeatus Galil, 2000: 312-315, fig. 11 (type locality: New Caledonia, 22°35.6'S, 166°26.2'E). — Ah Yong & Chan 2004: 173, figs 3D, 4B.

MATERIAL EXAMINED. — **Solomon Islands.** SALOMON 1, stn CP 1806, 9°37.9'S, 160°49.7'E, 621-708 m, 2.X.2001, 1 ♂ cl 21.1 mm.

DISTRIBUTION. — Vanuatu, New Caledonia, Lifou, Indonesia, Western and Eastern Australia, the East China Sea, Taiwan and for the first time from the Solomon Islands; 144-1053 m.

REMARKS

Polycheles aculeatus is reported for the first time from the Solomon Islands. The single specimen agrees well with the type description.

Polycheles alis n. sp. (Figs 2; 3)

TYPE MATERIAL. — **Austral Islands.** BENTHAUS, stn CP 1911, E of Rapa, 27°37.9'S, 144°15.2'W, 900-

1300 m, 10.XI.2002, ovigerous ♀ holotype cl 34.7 mm (MNHN-Pa 1799).

ETYMOLOGY. — Named for the RV *Alis*, from which the holotype was collected; noun in apposition.

DISTRIBUTION. — Known only from the type locality, east of Rapa, at 900-1300 m depth.

DIAGNOSIS. — Carapace gastro-orbital region with spines; frontal margin with two rostral spines; inner and outer angle of orbital sinus unarmed. Dorsal orbital sinus U-shaped. Lateral margins of carapace with spine formula 5-6:3:5; anterior two spines of posterior division separated from posterior three by long, smooth margin. Cervical and postcervical incisions with smooth margins. Postcervical groove with antrorse spine on posterior margin between median carina and branchial carina. Branchial carina unarmed and branchial groove unarmed. Median carina of tergites 2-5 with antrorse median spine. Antrorse median spine of tergite 5 short, slightly higher than those of tergites 2-4 but not overreaching anterior margin of tergite 4. Basal antennular segment with two spines on outer proximal margin.

DESCRIPTION

Carapace subrectangular, margins slightly convergent proximally; dorsal surface finely setose and sparsely granulate; gastro-orbital region with arcuate row of five spines; frontal margin with two rostral spines, not fused basally; inner and outer angle of orbital sinus unarmed (Fig. 2A, B). Frontal margin between rostral spines and inner orbital margin unarmed; lower anterior margin adjacent to antennal protopod blunt; lower lateral margin with two granulate carinae. Median submarginal tooth short, inconspicuous. Dorsal orbital sinus U-shaped, margins slightly divergent; external angle of orbital sinus produced anteriorly, margin unarmed. Lateral margins of carapace with evenly graded spines in anterior half; spine formula 5-6:3:5; anterior two spines of posterior division separated from posterior three by long, smooth margin. Cervical and postcervical incisions with smooth margins. Postcervical groove with antrorse spine on posterior margin between median carina and branchial carina. Median postrostral carina prominent, spine formula 1:1:2:1. Median postcervical carina prominent, spine formula 2:2. Postorbital carina absent. Branchial carina slightly sinuous, unarmed; branchial groove unarmed. Dorsal posterior border of carapace with pair of submedian spines.

Abdominal tergites with median carina (Fig. 2C). Anterior margin of tergite 1 with sublateral spine adjacent to articulation with carapace; median carina unarmed. Tergites 1-5 smooth and sparsely pitted, oblique grooves obsolete, barely evident. Median carina of tergites 2-5 with antrorse median spine. Antrorse median spine of tergite 5 short (apex broken in holotype), slightly higher than those of tergites 2-4 but not overreaching anterior margin of tergite 4. Tergite 6 with low U-shaped carina. Pleuron 2 rounded anteriorly, unarmed; surface smooth. Pleuron 3 unarmed, surface smooth. Pleura 4-5 with low crescent shaped carina. Pleuron 6 triangular, surface smooth. Telson with short proximal median carina and pair of low convergent carinae posteriorly. Uropodal protopod irregular but without tubercles or granules; endopod with blunt mid-rib, surface slightly wrinkled; exopod with median sulcus flanked by low carina, surface slightly wrinkled.

Eyestalk with small dorsal tubercle; apex subglobular, directed laterally.

Basal antennular segment produced anteriorly to a sharp point, mesial margin unarmed, apex extending beyond distal segment of antennular peduncle; outer proximal margin rounded, with two spines; distal segment of antennular peduncle without inner distal spine.

Distal and proximal segments of antennal peduncle unarmed (Fig. 2D); scaphocerite lanceolate, with distal spine, not extending anteriorly beyond distal segment; antennal protopod with small inner distal spine.

Maxilliped 3 segments setose; dactylus with spini-form, corneous apex; epipod rudimentary, about 0.15 ischium length (Fig. 3A).

Pereopod 1 unknown.

Pereopod 2 (Fig. 3B) with ischium and basis fused; merus and ischium articulating; carpus with dorsal distal spine; dactylus and pollex with curved apices, opposable margins minutely pectinate. Coxa unarmed.

Pereopods 3-5 (Fig. 3C) with ischium, basis and merus fused, with demarcation between ischium and basis indicated by indistinct groove; segments unarmed. Pereopod 3-4 similar; dactylus and pollex of pereopod 3-4 slightly arcuate, with opposable margins minutely pectinate; coxae unarmed.

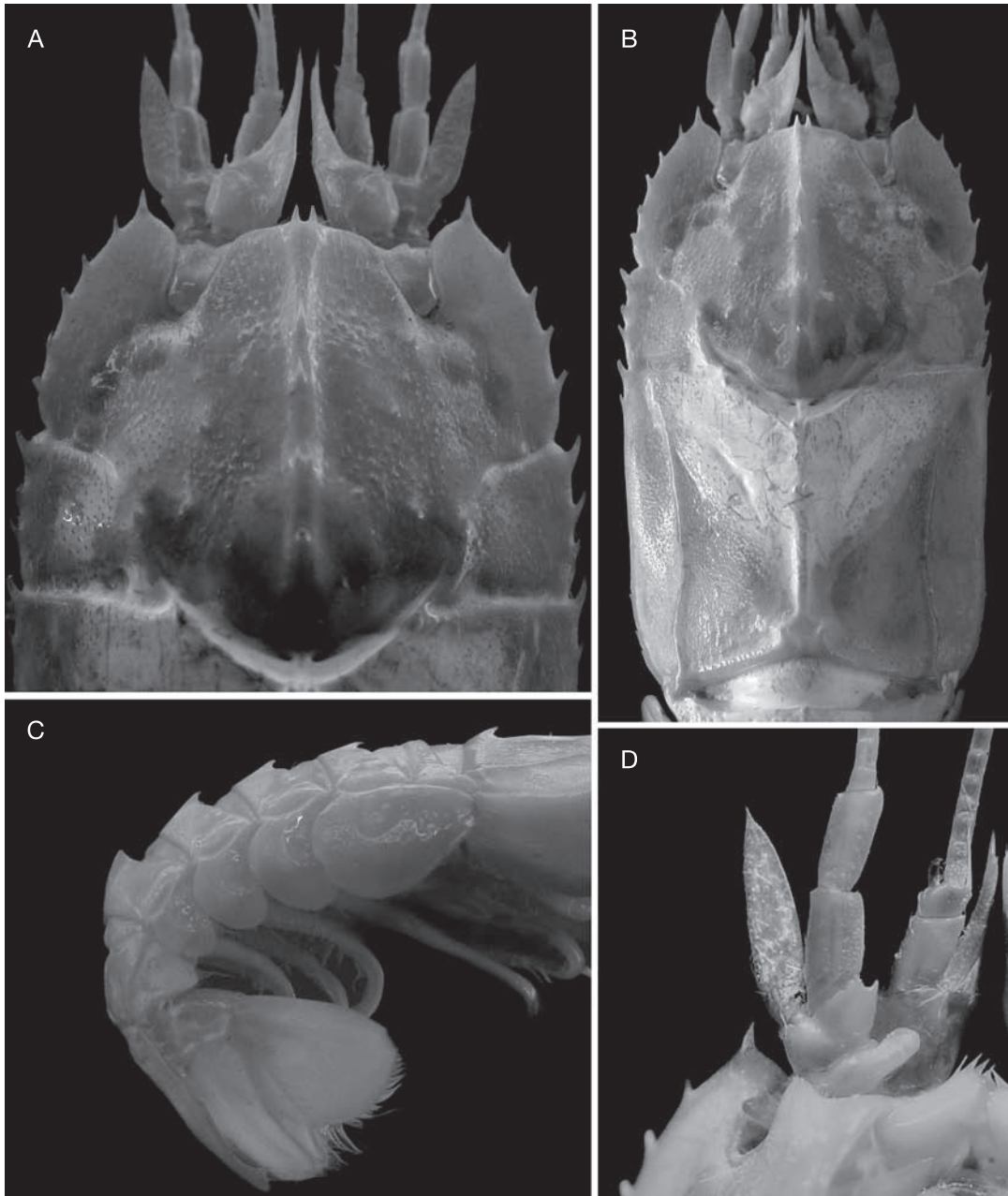


FIG. 2. — *Polycheles alis* n. sp., ovigerous ♀ holotype cl 34.7 mm, E of Rapa, BENTHAUS CP 1911: **A**, anterior; **B**, dorsal carapace; **C**, abdomen; **D**, antenna, antennule and anterolateral portion of carapace, right ventral view.

Pereopod 5 (Fig. 3D) with opposable margins dentate; anterior surfaces of dactylus and pollex “hollowed”.

REMARKS

Polycheles alis n. sp. is most similar to *P. ceratus* (Alcock, 1894) from Indonesia and the Andaman

Sea in sharing unarmed branchial carinae and in having the lateral carapace spines of the posterior division divided into two groups separated by a long, smooth margin. *Polycheles alis* n. sp. is readily distinguished from *P. ceratus* in having a low short antrorse spine on the fifth abdominal somite and in having a series of gastric spines on the carapace. In *P. ceratus*, the gastric region is smooth (Galil 2000: fig. 14a) and the antrorse spine of abdominal somite 5 is massive, overreaching the anterior margin of abdominal somite 4 (Galil 2000: fig. 14b). Unfortunately, the major chelae are missing from the single known specimen of *P. alis* n. sp.

Polycheles auriculatus (Bate, 1878)

Pentacheles auriculatus Bate, 1878a: 280 (type locality: off Kandavu Island, Fiji, 19°07.50'S, 178°19.35'E); 1878b: 484; 1878c: 563.

Stereomastis auriculata – Bate 1888: 159.

Pentacheles auriculata – Bate 1888: pl. 16, figs 3, 4.

Polycheles auriculatus – Galil 2000: 293, 315-317, fig. 12. — Ahyong & Chan 2004: 176, figs 3A-C, 4D.

MATERIAL EXAMINED. — **Solomon Islands.** SALOMON 1, stn CP 1755, 8°58.2'S, 159°41.6'E, 1288-1313 m, 26.IX.2001, 1 ♂ cl 15.5 mm. — Stn CP 1751, 9°10.4'S, 159°53'E, 749-799 m, 25.IX.2001, 2 ♀♀ cl 60.0-62.2 mm. — Stn CP 1754, 9°00.1'S, 159°49.0'E, 1169-1203 m, 26.IX.2001, 3 ♂♂ cl 15.7-19.3 mm, 1 ♀ cl 16.0 mm. — Stn CP 1764, 8°36.6'S, 160°07.4'E, 1327-1598 m, 27.IX.2001, 2 ♀♀ cl 16.4-16.5 mm. — Stn CP 1781, 8°31.2'S, 160°37.7'E, 1036-1138 m, 29.IX.2001, 2 ♂♂ (not measured), 2 ♀♀ (not measured). — Stn CP 1807, 9°42.2'S, 160°52.8'E, 1077-1135 m, 2.X.2001, 5 ♂♂ cl 16.5-38.6 mm, 5 ♀♀ cl 16.6-25.9 mm. — Stn CP 1858, 9°37.0'S, 160°41.7'E, 435-461 m, 7.X.2001, 1 ♀ cl 24.9 mm.

Fiji. MUSORSTOM 10, stn CP 1353, Viti Levu, 17°30.9'S, 178°53.3'E, 879-897 m, 12.VIII.1998, 2 ♂♂ cl 20.7-23.4 mm, 3 ♀♀ cl 20.9-24.4 mm (MNHN-Pa 1784). — Stn CP 1354, Viti Levu, 17°42.6'S, 178°55'E, 959-963 m, 12.VIII.1998, 1 ♂ cl 25.5 mm, 2 juveniles (MNHN-Pa 1783). — Stn CP 1361, Viti Levu, 18°00'S, 178°53.7'E, 1058-1091 m, 13.VIII.1998, 1 ♂ cl 20.2 mm (MNHN-Pa 1782).

DISTRIBUTION. — Marquesas archipelago, Fiji, Vanuatu, New Caledonia, Australia, Philippines, Taiwan, and now the Solomon Islands; 435-1598 m (Galil 2000; this study).

REMARKS

The specimens agree well in almost all respects with Galil (2000). Lateral carapace spination (5-7:3:7-8) agrees with the reported range (Galil 2000; Ahyong & Chan 2004) and the branchial carina spination ranges from 5 to 10, in correlation with size. A feature of most specimens of *P. auriculatus*, but not mentioned by Galil (2000), is noteworthy. The anterior margin of the second abdominal pleuron usually bears one or two small spines or acute tubercles (smaller or obsolete in females). The anterior margin of the second pleuron of *Polycheles aculeatus* Galil, 2000 is also armed and thus could be confused with *P. auriculatus*. The two species are readily distinguished, however, by the presence of a single spine (*P. aculeatus*) instead of several (*P. auriculatus*) on the cervical groove between the mid-line and carapace margin, and in the deep and distinct (*P. auriculatus*) instead of shallow and obsolete (*P. aculeatus*) diagonal grooves on the dorsum of the second to fifth abdominal tergites.

Polycheles baccatus Bate, 1878

Polycheles baccatus Bate, 1878a: 278 (type locality: off Matuku Island, Fiji); 1878b: 484; 1878c: 563. — Galil 2000: 317-319. — Ahyong & Brown 2002: 60, figs 4, 6.

Polycheles baccata – Bate 1888: 131, pl. 14, fig. 1.

MATERIAL EXAMINED. — **Solomon Islands.** SALOMON 1, stn CP 1833, 10°11.8'S, 161°18.7'E, 367-533 m, 5.X.2001, 1 ♀ cl 23.4 mm.

Fiji. BORDAU 1, stn CP 1461, 18°09'S, 178°48'E, 560 m, 6.III.1999, 1 ♀ cl 41.8 mm (MNHN-Pa 1781).

Tonga. BORDAU 2, stn CP 1556, Nomuka, 20°11'S, 174°45'W, 589-591 m, 7.VI.2000, 4 ♂♂ cl 25.9-34.0 mm, 4 ♀♀ cl 22.9-33.0 mm (MNHN-Pa 1780). — Stn CP 1637, Tongatapu, 21°05'S, 175°23'W, 464-507 m, 21.VI.2000, 1 ♂ cl 22.3 mm, 1 juvenile (MNHN-Pa 1779). — Stn CP 1638, Tongatapu, 21°05'S, 175°23'W, 469-520 m, 21.VI.2000, 1 ♂ cl 30.0 mm (MNHN-Pa 1778). — Stn CP 1640, Tongatapu, 21°09'S, 175°24'W, 564-569 m, 21.VI.2000, 2 ♂♂ cl 34.6-35.1 mm (MNHN-Pa 1777). — Stn CP 1642, Tongatapu, 21°05'S, 175°23'W, 532 m, 21.VI.2000, 3 ♂♂ cl 32.0-34.4 mm, 2 ♀♀ cl 24.0-35.2 mm, 2 juveniles (MNHN-Pa 1776).

DISTRIBUTION. — Wallis and Futuna Islands, Fiji, Vanuatu, New Caledonia, Australia, Philippines, Indonesia; 300-1250 m (Galil 2000).

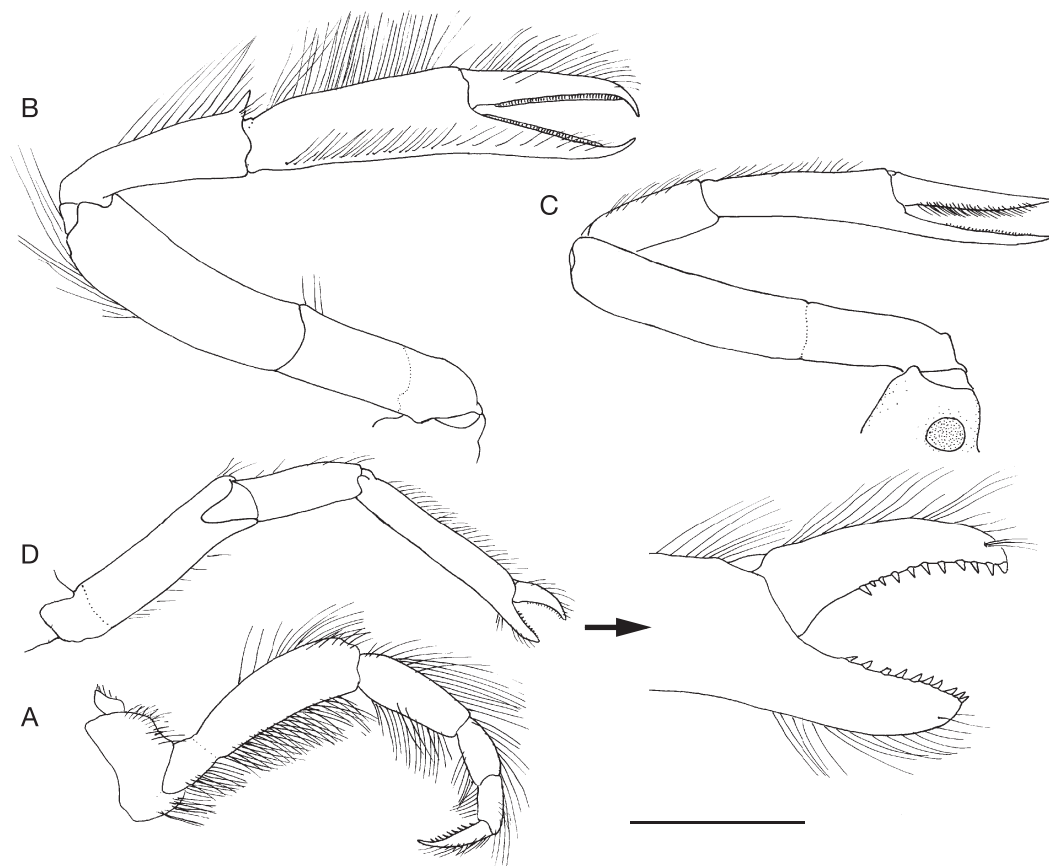


FIG. 3. — *Polycheles alis* n. sp., ovigerous ♀ holotype cl 34.7 mm, E of Rapa, BENTHAUS CP 1911: **A**, right third maxilliped; **B**, right pereopod 2; **C**, right pereopod 3; **D**, right pereopod 5. Scale bar: 5 mm.

REMARKS

The SALOMON 1 specimen of *P. baccatus* agrees with published accounts differing only in having a lower range of lateral carapace spines in the anterior division 8-9:5:22-25 vs. 10-12:4-6:25-26.

Polycheles enthrix (Bate, 1878)

Pentacheles enthrix Bate, 1878a: 280, pl. 13, figs 1-3 (type locality: off Matuku Island, Fiji, by lectotype designation [Ahyong & Brown 2002]); 1878b: 484; 1878c: 563.

Pentacheles euthrix (sic) – Bate 1888: 149.

Pentacheles enthrix – Bate 1888: pl. 17.

Polycheles enthrix – Galil 2000: 322-325, fig. 16 (part). — Ahyong & Brown 2002: 65-69, fig. 7C, D.

MATERIAL EXAMINED. — Fiji. BORDAU 1, stn CP 1490, 18°51'S, 178°32'E, 785-820 m, 11.III.1999, 1 ♂ cl 41.5 mm (MNHN-Pa 1775). — Stn CP 1491, 18°50'S, 178°27'E, 777-787 m, 11.III.1999, 1 ovigerous ♀ cl 56.9 mm (MNHN-Pa 1774).

Tonga. BORDAU 2, stn CP 1565, Tongatapu, 20°58'S, 175°16'W, 869-880 m, 9.VI.2000, 1 juvenile (MNHN-Pa 1773). — Stn CH 1620, Tongatapu, 24°18'S, 176°20'W, 572 m, 18.VI.2000, 1 ♂ cl 35.7 mm (MNHN-Pa 1772). — Stn CH 1621, Tongatapu, 24°19'S, 176°23'W, 570-573 m, 18.VI.2000, 1 ♂ cl 42.9 mm, 1 ovigerous ♀ cl 44.0 mm (MNHN-Pa 1771). — Stn CP 1625, Tongatapu, 23°28'S, 176°22'W, 824 m, 19.VI.2000, 2 ♂♂ cl 25.5-35.8 mm, 3 ♀♀ cl 30.2-49.4 mm, 4 juveniles (MNHN-Pa 1770). — Stn CP 1642, Tongatapu, 21°05'S, 175°23'W,

532 m, 21.VI.2000, 1 juvenile (MNHN-Pa 1769).

DISTRIBUTION. — Wallis and Futuna Islands, Fiji, New Caledonia, Chesterfield Islands, Kermadec Islands, New Zealand, Australia; 229-1152 m (Galil 2000).

REMARKS

Galil (2000) recognised a wide distribution for *P. enthrinx*, ranging from eastern Australia and New Zealand to Japan and the central Pacific. Ahyong & Brown (2002) and Ahyong & Chan (2004) showed that *Polycheles kermadecensis* (Sund, 1920) and *P. amemiyai* Yokoya, 1933 should be recognised as valid species, and thus removed both from the synonymy of *P. enthrinx*. *Polycheles enthrinx* has a central to western Pacific distribution, ranging from Fiji to eastern Australia. *Polycheles kermadecensis* has a southwestern Pacific distribution, ranging from the Kermadec Islands to eastern Australia, and *P. amemiyai* is a northwestern Pacific species from Japan and Taiwan.

Polycheles galil Ahyong & Brown, 2002

Polycheles phosphorus – Galil 2000: 336-339, fig. 22 (all except for Andaman Sea specimens; not *P. phosphorus* (Alcock, 1894)).

Polycheles galil Ahyong & Brown, 2002: 56-60, 75, figs 2, 3A, B (type locality: 258 km NW of Port Hedland, Western Australia, 18°42'S, 116°21'E). — Ahyong & Chan 2004: 176-177, figs 3J, K, 4F.

MATERIAL EXAMINED. — **Solomon Islands.** SALOMON 1, stn CP 1750, 9°15.6'S, 159°54.6'E, 693-696 m, 25.IX.2001, 1 ♀ cl 22.5 mm. — Stn CP 1751, 9°10.4'S, 159°53'E, 749-799 m, 25.IX.2001, 1 ♀ cl 29.4 mm. — Stn CP 1752, 9°06.9'S, 159°53.2'E, 749-799 m, 25.IX.2001, 2 ♀♀ cl 18.1-18.8 mm. — Stn CP 1755, 8°58.2'S, 159°41.6'E, 1288-1313 m, 26.IX.2001, 1 ♂ cl 27.0 mm. **Fiji.** BORDAU 1, stn CP 1398, 16°22'S, 179°56'W, 907-912 m, 24.II.1999, 3 ♀♀ cl 37.5-53.2 mm, 6 juveniles (MNHN-Pa 1768). — Stn CP 1400, 16°28'S, 179°50'W, 1004-1012 m, 25.II.1999, 1 ♂ cl 36.2 mm, 2 ♀♀ cl 34.8-41.8 mm, 33 juveniles (MNHN-Pa 1767). — Stn CP 1401, 16°35'S, 179°41'W, 600-648 m, 25.II.1999, 1 ♂ cl 19.9 mm, 1 ♀ cl 24.9 mm, 1 juvenile (MNHN-Pa 1766).

DISTRIBUTION. — Northwestern Australia to Indonesia, New Caledonia, Vanuatu, the Philippines, Japan, Taiwan and for the first time from the Solomon Islands and Fiji; 200-1354 m (Ahyong & Brown 2002).

REMARKS

As indicated by Ahyong & Brown (2002), Pacific specimens reported as *P. phosphorus* (Alcock, 1894) by Galil (2000) are referable to *P. galil*. The present specimens, the first to be reported from the Fiji and the Solomon Islands, agree in almost all respects with the holotype. In the smallest specimens, the second row of spinules on the ventral surface of the palm of the first pereopod is poorly developed.

Polycheles helleri Bate, 1878

Polycheles helleri Bate, 1878a: 277 (type locality: N of New Guinea, 2°33'S, 144°04'E, by lectotype selection [Ahyong & Brown 2002]). — Galil 2000: 327-329, fig. 18. — Ahyong & Chan 2004: 179, figs 3H, I, 4G.

MATERIAL EXAMINED. — **Solomon Islands.** SALOMON 1, stn CP 1754, 9°00.1'S, 159°49.0'E, 1169-1203 m, 26.IX.2001, 1 ovigerous ♀ cl 34.5 mm. — Stn CP 1764, 8°36.6'S, 160°07.4'E, 1327-1598 m, 27.IX.2001, 3 ♂♂ cl 19.6-25.8 mm.

DISTRIBUTION. — Western Indian Ocean to Australia, Indonesia, New Guinea, New Caledonia, Japan, Taiwan and the Solomon Islands; 787-2947 m (Ahyong & Chan 2004).

REMARKS

The specimens agree closely with Galil's (2000) account of the species but exhibit a greater range in carapace spination (6:3:8-10) resembling that reported for Taiwanese specimens (Ahyong & Chan 2004).

Polycheles martini Ahyong & Brown, 2002

Polycheles martini Ahyong & Brown, 2002: 60-65, figs 4, 5 (type locality: NE of Sugarloaf Point, New South Wales, Australia, 32°22.17'S, 152°58.01'E).

MATERIAL EXAMINED. — **Tonga.** BORDAU 2, stn CH 1620, 24°18'S, 176°20'W, 572 m, 18.VI.2000, 1 ♂ cl 33.1 mm (MNHN-Pa 1786). — Stn CH 1621, 24°19'S, 176°23'W, 570-573 m, 18.VI.2000, 1 ♂ cl 27.0 mm, 1 ovigerous ♀ cl 40.5 mm, 1 juvenile (MNHN-Pa 1785). — Stn CH 1622, 24°20'S, 176°22'W, 569-573 m, 18.VI.2000, ♂ cl 33.6 mm (MNHN-Pa 1757).

DISTRIBUTION. — Eastern Australia and now from Tonga; 256-573 m (Ahyong & Brown 2002; this study).

REMARKS

The specimens of *P. martini* from Tonga agree well with the type material from Eastern Australia including carapace spination. The Australian specimens were collected between 256 and 477 m, so the capture of the Tongan specimens at 569-573 m extends the bathymetric range by almost 100 m.

Polycheles nanus (Smith, 1884)

Pentacheles nanus Smith, 1884: 359 (type locality: north-eastern United States of America, 38°44'N, 72°38'W).

Pentacheles andamanensis Alcock, 1894: 239 (type locality: off Cape Comorin, 7°04'N, 76°34'15"E).

Polycheles grimaldii Bouvier, 1905a: 481 (type locality: off Senegal, 17°16'N, 19°19'W).

Polycheles nanus—Galil 2000: 329-332, fig. 19. —Ahyong & Brown 2002: 71.

MATERIAL EXAMINED. — **Solomon Islands.** SALOMON 1, stn CP 1755, 8°58.2'S, 159°41.6'E, 1288-1313 m, 26.IX.2001, 1 ♀ cl 20.7 mm.

DISTRIBUTION. — Widely distributed throughout the Indo-West Pacific and Atlantic oceans at depths of 300-4000 m (Galil 2000); reported for the first time from the Solomon Islands.

REMARKS

The single specimen agrees well with the most recent published accounts (Galil 2000; Ahyong & Brown 2002). Lateral carapace spination (6:3:6) is within the reported range (5-6:3:6-7).

Polycheles sculptus Smith, 1880

Polycheles sculptus Smith, 1880: 346, pl. 7, figs 1-6 (type locality: off Nova Scotia, Canada, 43°10'N, 61°20'W). — Galil 2000: 292, 340-344, fig. 24. — Ahyong & Chan 2004: 179, fig. 3E-G.

Pentacheles spinosus A. Milne-Edwards, 1880: 66 (type locality: W of Tortugas, off Dominica).

MATERIAL EXAMINED. — **Fiji.** MUSORSTOM 10, stn CP 1353, Viti Levu, 17°30.9'S, 178°53.3'E, 879-897 m, 12.VIII.1998, 1 ♂ cl 39.4 mm (MNHN-Pa 1765).

DISTRIBUTION. — Worldwide, in the Pacific Ocean known from New Caledonia, Vanuatu, Australia, New Zealand, Tasman Sea, Japan, China Sea, Taiwan, Philippines, Indonesia, Malay Archipelago at 200-4000 m depth (Galil 2000; Ahyong & Brown 2002; Ahyong & Chan 2004); a new record for Fiji.

Polycheles surdus Galil, 2000

Polycheles surdus Galil, 2000: 347-349, fig. 26 (type locality: off Mozambique, 18°14'S, 37°31'E). — Ahyong & Brown 2002: 75-76.

MATERIAL EXAMINED. — **Austral Islands.** BENTHAUS, stn CP 1891, E of Rapa, 27°37.1'S, 144°15.4'W, 800-850 m, 7.XI.2002, 1 ♂ cl 44.3 mm. — Stn CP 1892, E of Rapa, 27°38.8'S, 144°15.6'W, 742-1000 m, 7.XI.2002, 1 ♀ cl 23.1 mm. — Stn CP 1967, Tubuai, 23°21.4'S, 149°34.2'W, 600-1200 m, 19.XI.2002, 2 ♀♀ cl 19.2-24.0 mm.

DISTRIBUTION. — Western Indian Ocean to Australia, New Zealand, New Caledonia, Hawaii, the Nazca Ridge, French Polynesia, and for the first time from the Austral Islands; 350-1525 m (Galil 2000).

REMARKS

The lateral carapace spination of the present series, 6:3-4:11-12, is within the reported range (Galil 2000). *Polycheles surdus* from the Marquesas archipelago, French Polynesia, is figured in colour at http://biomar.free.fr/polycheles_auriculatus.html.

Polycheles typhlops Heller, 1862

Polycheles typhlops Heller, 1862: 392, pl. 1, figs 1-6 (type locality: off Sicily). — Galil 2000: 354, fig. 30. — Ahyong & Chan 2004: 179-181, figs 1D-F, 4H, 5A, B.

Pentacheles agassizii A. Milne-Edwards, 1880: 65 (type locality: off Grenada).

Polycheles doderleini Riggio, 1885: 103, pl. 3, figs 1-5 (type locality: Palermo).

Pentacheles hextii Alcock, 1894: 237 (type locality: Andaman Sea).

Polycheles intermedius Balss, 1914: 599 (type locality: between Iceland and the Hebrides).

MATERIAL EXAMINED. — **Solomon Islands.** SALOMON 1, stn CP 1859, 9°32.6'S, 160°37.3'E, 283-305 m, 7.X.2001, 1 ♂ cl 27.7 mm.

Fiji. MUSORSTOM 10, stn CP 1332, Bligh Water, 16°56.2'S, 178°07.9'E, 640-687 m, 8.VIII.1998, 1 ♂ cl 21.6 mm (MNHN-Pa 1764). — Stn CP 1335, Bligh Water, 16°52.8'S, 178°03'E, 729-753 m, 9.VIII.1998, 2 juveniles (MNHN-Pa 1763). — Stn CC 1337, Bligh Water, 17°03.4'S, 177°47.2'E, 635-670 m, 9.VIII.1998, 4 ♂♂ cl 26.9-39.2 mm, 1 ♀ cl 43.2 mm, 1 juvenile (MNHN-Pa 1762).

Tonga. BORDAU 2, stn CP 1556, Nomuka, 20°11'S, 174°45'W, 589-591 m, 7.VI.2000, 3 ♂♂ cl 32.1-40.5 mm (MNHN-Pa 1761). — Stn CP 1637, Tongatapu, 21°05'S, 175°23'W, 464-507 m, 21.VI.2000, 1 ♀ cl 35.0 mm (MNHN-Pa 1760). — Stn CP 1642, Tongatapu, 21°05'S, 175°23'W, 532 m, 21.VI.2000, 1 ♂ cl 50.7 mm, 1 juvenile (MNHN-Pa 1759). — Stn CP 1644, Tongatapu, 21°05'S, 175°23'W, 501 m, 22.VI.2000, 1 ♀ cl 35.6 mm (MNHN-Pa 1758).

DISTRIBUTION. — Widespread throughout the Indo-West Pacific and both sides of the Atlantic; 77-2055 m (Galil 2000).

REMARKS

As in specimens from Taiwan and Australia (Ahyong & Chan 2004), the present specimens of *P. typhlops* all have distinctly granulate abdominal tergites. The present specimens of *P. typhlops* represent the first records of the species from the Solomon Islands, Fiji and Tonga.

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