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Su-Ching Chang
Institute of Marine Biology, National Taiwan Ocean University, Keelung, Taiwan, R.O.C.

Shane T. Ahyong
Australian Museum, Sydney, NSW 2010, Australia., shane.ahyong@austmus.gov.au

Tin-Yam Chan
Institute of Marine Biology, National Taiwan Ocean University, Keelung, Taiwan, R.O.C. Center of Excellence for the Oceans, National Taiwan Ocean University, Keelung, Taiwan, R.O.C.

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NEW RECORDS OF DEEP-SEA BLIND LOBSTERS (CRUSTACEA: DECAPODA: POLYCHELIDAE) FROM TAIWAN

Su-Ching Chang[1], Shane T. Ahyong[2], and Tin-Yam Chan[1, 3]

Key words: Polychelidae, new record, Taiwan.

ABSTRACT

The deep-sea lobster family, Polychelidae Wood-Mason, 1875, contains six genera and 38 species worldwide, of which nine species in three genera have been reported from Taiwan. Herein we present four new records of Polychelidae from Taiwan, namely *Pentacheles validus* A. Milne-Edwards, 1880, *Stereomastis surda* (Galil, 2000), *Willemoesia forceps* A. Milne-Edwards, 1880, and *W. leptodactyla* (Thomson, 1873). A total of 13 species in four genera of Polychelidae are now known from Taiwan; a key to the species is provided.

I. INTRODUCTION

The deep-sea lobster family, Polychelidae Wood-Mason, 1875, contains six genera and 38 species worldwide [16]. Polychelid lobsters have been reported from Taiwan since the late 1980s (*Polycheles typhlops* Heller, 1862, *P. baccatus* Bate, 1878 in [17]; *P. enthrix* (Bate, 1878) in [18]; *P. coccifer* Galil, 2000, *P. enthrix* and *P. typhlops* in [20]). The most recent study recognized nine species in two genera from Taiwan: *Pentacheles laevis* Bate 1878, *Polycheles aculeatus* Galil, 2000, *P. auriculatus* Bate, 1878, *P. galil* Ahyong & Brown, 2002, *P. helleri* Bate, 1878, *P. sculptus* Smith, 1880, *P. typhlops*, *P. amemiyai* Yokoya, 1933, and *P. coccifer* Galil, 2000 [5].

Historically, generic concepts in the Polychelidae have been controversial. Galil (2000) revised the Polychelidae and recognized five genera (*Cardus* Galil, 2000; *Pentacheles* Bate, 1878; *Homeryon* Galil 2000; *Polycheles* Heller, 1862, and *Willemoesia* Grote, 1873) but regarded the genus *Stereomastis* Bate, 1888 as a synonym of *Polycheles*. However, morphological phylogenetic analysis of the polychelid lobsters showed that *Stereomastis* is monophyletic and independent of *Polycheles* sensu stricto [2]. Morphological characters distinguishing *Stereomastis* from *Polycheles* include U-shaped dorsal orbital sinuses in the frontal margin of the carapace and reduced epipods on pereopods 1-5. With recognition of *Stereomastis*, five of the known species from Taiwan (*Polycheles aculeata*, *P. auriculata*, *P. galil*, *P. helleri*, *P. sculpta*) have been transferred to *Stereomastis*. To date, nine species in four genera of Polychelidae have thus been recognized from Taiwan.

Since 2004, more polychelid specimens have been collected by various commercial and research vessels from Taiwan, including four new records. Here, we report on these specimens and provide an updated key to the Taiwanese polychelids.

Specimens are deposited in the collections of the National Taiwan Ocean University, Keelung (NTOU); carapace length (cl) is measured dorsally along the midline, from the base of the rostrum to the posterior margin of the carapace. The station (stn) designation are preceded by a prefix indicating the actual type of collecting equipment as follows: 4 m French beam trawl (CP), 2.5 m French beam trawl (PCP), 3 m ORE beam trawl (OCP), Warén dredge (DW) and the Le Drézén type solo hard bottom 12.4 m otter trawl (CD). Morphological terminology follows Galil (2000) and Ahyong & Chan (2004). Synonymies are restricted to primary synonyms, studies published after 2000, and regional works. Pre-2000 synonymies are provided by Galil (2000).

II. TAXONAMIC ACCOUNT

Family Polychelidae Wood-Mason, 1875
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, 301-305, fig. 7. — Ahyong & Brown, 2002: 54-56, figs. 1A, B. — Ahyong & Chan, 2004: 171-173, figs. 1A-C, 4A. — Poore, 2004: 152, 154, fig. 39A. — Ahyong & Galil, 2006:

Paper submitted 12/05/13; revised 12/15/13; accepted 12/19/13. Author for correspondence: Shane T. Ahyong (e-mail: shane.ahyong@austmus.gov.au).
[1] *Institute of Marine Biology, National Taiwan Ocean University, Keelung, Taiwan, R.O.C.*
[2] *Australian Museum, Sydney, NSW 2010, Australia.*
[3] *Center of Excellence for the Oceans, National Taiwan Ocean University, Keelung, Taiwan, R.O.C.*

758. — Boyko, 2006: 39-40, figs. 1B, 2. — Ahyong, 2007: 47-49, fig. 24B. — Ahyong & Chan, 2008: 64, fig. 1A. — Poore *et al*., 2008: 91. — Ahyong, 2009: 383, figs. 2E, 3E. — Chan, 2010: 162, fig. 6E. — Ahyong, 2012: 1-2.

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. TAIWAN 2005, stn CD 322, 19 August 2005, 20°44.707'N, 117°39.230'E, 1098-1226 m: 1 male cl 17.0 mm (NTOU M01753). — TAIWAN 2006, stn CP 362, 23 August 2006, 22°15.594'N, 120°02.1564'E, 945-1052 m: 1 female cl 35.2 mm (NTOU M01754).

Distribution. Worldwide, from the Indo-West Pacific, Eastern Pacific, Western and Eastern Atlantic; 212-2505 m.

Remarks. Ahyong & Chan (2004) first reported *P. laevis* from Taiwan.

Pentacheles validus A. Milne-Edwards, 1880
(Figs. 1a-b, 3a)

Pentacheles validus A. Milne-Edwards, 1880: 65 [type locality: off Bequia, Windward Islands, Antilles]. — Galil, 2000: 291 (key), 308-311, fig. 10. — Ahyong & Brown, 2002: 49. — Boyko, 2006: 40-41, fig. 3A. — Ahyong, 2009: 383. — Chan, 2010: 162.

Pentacheles debilis Smith, 1884: 360 [type locality: off New England, United States of America].

Pentacheles debilis var. *armatus* Bouvier, 1905c: 4 [type locality: off Canary Islands].

Polycheles demani Stebbing, 1917: 28 [type locality: off Cape Point Lighthouse, South Africa].

Polycheles chilensis Sund, 1920: 226 [type locality: off Juan Fernandez Islands].

Material. TAIWAN 2005, stn CD 324, 20 August 2005, 20°40.807'N, 117°45.539'E, 1293-1499 m: 1 female cl. 18.0 mm (NTOU M01755).

Diagnosis. Carapace rostral spine directed upward; branchial carina absent. Inner angle of dorsal orbital sinuses with 1 spine; lateral carapace spination 11-12: 2-4: 20-30. Outer proximal margin of basal antennular segment with 1 or 2 spines. Abdominal tergites 2-4 with oblique groove obsolescent; median carinae of tergites 1-5 forming a blunt rounded prominence, without antrorse spine; tergite 6 with median carina forming a weak prominence.

Coloration. Body pale-pink. Internal organs visible through carapace giving anterior half of carapace orange-red appearance. Distal half of uropod colorless.

Distribution. Worldwide, from the Atlantic, Indo-West Pacific, and Eastern Pacific; 914-3365 m [4, 15, 20].

Remarks. The present material was collected near Pratas (or Dongsha). The specimen is not in good condition but still can be distinguished from the only other congener known from Taiwan, *Pentacheles laevis*, by having abdominal tergites 1-3 with only a blunt rounded median prominence instead of an antrorse spine in *P. laevis*. Although this Taiwanese specimen does not show the typical coloration of adults (see [15]: fig. 3A; [1]: fig. 24A), the characters agree with Galil (2000) except in the lateral carapace spination (11-12: 2-4: 20-30 in Taiwanese specimen, compared to 7-9: 3-5: 20-32 reported by Galil (2000), Ahyong & Brown (2002), and Ahyong (2007)).

Genus *Polycheles* Heller, 1862

Polycheles coccifer Galil, 2000

Polycheles coccifer Galil, 2000: 292, 320-322, fig. 15 [type locality: Philippines, 11°59'N, 121°13'E]. — Ahyong & Chan, 2004: 176-181, figs. 1G-H, 4E. — Ahyong & Chan, 2008: 64, fig. 1B. — Chan, 2010: 162, fig. 6F.

Material. Nanfang-ao fishing port, Yilan County, commercial trawler, 5 May 2005: 1 male cl 34.9 mm (NTOU M01756). — Donggang fishing port, Pingtung County, commercial trawler, 30 March 2012: 1 male cl 36.3 mm, 1 ovigerous female cl 43.1 mm (NTOU M01757).

Distribution. Western Pacific from Japan, Taiwan to the Philippines, Bohol and Sulu Seas, Indonesia, New Caledonia and Vanuatu, at depth from 155-679 m (perhaps 99-740 m; see [7] and [20]).

Remarks. The specimens agreed well with the original description; carapace spination (6-8: 3-5: 17-25) is closer to the reported range (6-8: 3-4: 18-25) by Galil (2000). Previous records of *Polycheles baccatus* from Taiwan actually referred to *Polycheles coccifer* [5, 20].

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. — Ahyong & Galil, 2006: 765-766. — Ahyong & Chan, 2008: 64, fig. 1C. — Chan, 2010: 162.

Material. Dasi fishing port, Yilan County, commercial trawler, 12 December 2006: 1 female cl 47.6 mm (NTOU M01778).

Distribution. Worldwide throughout both side of the Atlantic and the Indo-West Pacific; 77-2055 m [20].

Remarks. Ahyong & Chan (2004) first reported *Polycheles typhlops* from Taiwan. The present specimen agrees with Ahyong & Chan (2004) in having more granular abdominal

tergites and submedian carinae of telson distinctly granulated. The Tawainese specimens are so far referred to *Polycheles typhlops* until more specimens from various regions are collected to assess the species complex in *Polycheles typhlops* (see [5]).

Genus *Stereomastis* Bate, 1888
Stereomastis galil (Ahyong & Brown, 2002)

Polycheles phosphorus Galil, 2000: 336-339, fig. 22 [part, not *Polycheles phosphorus* Alcock, 1894].
Polycheles galil Ahyong & Brown, 2002: 56-60, figs. 2, 3.
Stereomastis galil. — Ahyong & Chan, 2004: 176, figs. 3J, K, 4F. — Ahyong & Galil, 2006: 764. — Ahyong, 2009: 384-385. — Chan, 2010: 162.

Material. TAIWAN 2006, stn PCP 338, 7 March 2006, 22°10.435'N, 120°20.826'E, 534-615 m: 1 male cl 34.5 mm (NTOU M01758).

Distribution. Western Pacific from Northwestern Australia, Fiji, Vantuatu, New Caledonia, and the Solomon Islands, to the Philippines, Japan and Taiwan; 200-1354 m [4].

Remarks. The Taiwan record was first reported by Ahyong & Chan (2004).

Stereomastis 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. — Ahyong & Galil, 2006: 764.
Stereomastis helleri. — Ahyong, 2009: 384-385. — Chan, 2010: 162. — Ahyong, 2012: 3.

Material. TAIWAN 2005, stn CP 278, 14 June 2005, 24°23.63'N, 122°14.13'E, 1222-1239 m: 1 male cl 20.0 mm (NTOU M01759); stn CP 280, 14 June 2005, 24°23.71'N, 122°14.22'E, 1213-1261 m: 1 female cl 20.1 mm (NTOU M01760); stn CP 281, 15 June 2005, 24°24.08'N, 122°14.06'E, 1173-1248 m: 1 male cl 22.5 mm (NTOU M01761); stn OCP 282, 15 June 2005, 24°16.34'N, 122°11.67'E, 2220-2424 m: 2 males cl 19.9-23.6 mm (NTOU M01762). — TAIWAN 2006, stn PCP 352, 2 June 2006, 22°26.78'N, 121°05.57'E, 1182-1200 m: 1 female cl 20.1 mm (NTOU M01763); stn CP 355, 3 June 2006, 22°17.04'N, 121°05.23'E, 1190-1193 m: 1 female cl 20.5 mm (NTOU M01764); stn CP 364, 24 August 2006, 22°06.33'N, 121°08.22'E, 1260-1275 m: 1 ovigerous female cl 46.7 mm (NTOU M01765); stn CP 365, 24 August 2006, 22°04.32'N, 121°09.20'E, 1291-1295 m: 1 female cl 25.3 mm (NTOU M01766); stn CP 366, 24 August 2006, 22°02.87'N, 121°10.08'E, 1301-1302 m: 1 male cl 19.7 mm, 1 female cl 31.0 mm (NTOU M01767). — TAIWAN 2008, stn CP 443, 13 July 2008, 22°10.13'N, 121°04.86'E, 1162-1190 m: 2 males cl 22.7-30.6 mm (NTOU M01768). — TAIWAN 2013, stn CP 4092, 28 May 2013, 22°21.02'N, 121°07.01'E, 1107-1170 m: 1 female cl 32.0 mm (NTOU M01769); stn DW 4098, 30 May 2013, 21°45.08'N, 120°39.37'E, 891-953 m: 2 females cl 30.0-32.2 mm (NTOU M01770).

Distribution. Western Indian Ocean to Western Pacific including Australia, Indonesia, New Guinea, New Caledonia, the Solomon Islands, Japan, and Taiwan; 797-2947 m [5].

Remarks. The present specimens agree well with previous accounts in spination of the lateral carapace margins (6-7: 3-4: 7-10) and branchial carinae (5-6) [5, 20]. Ahyong & Chan (2004) first recorded *S. helleri* from Taiwan (as *Polycheles helleri*).

Stereomastis sculpta (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. — Poore, 2004: 156, fig. 40E. — Boyko, 2006: 42.
Pentacheles spinosus A. Milne Edwards, 1880: 66 [type locality: W of Tortugas, off Dominica].
Stereomastis sculpta. — Ahyong, 2009: 384, 385, fig. 2B. — Chan, 2010: 163.

Material. TAIWAN 2005, stn CP 299, 11 August 2005, 22°19.33'N, 120°03.46'E, 806-835 m: 1 male cl 27.6 mm (NTOU M01771); stn CP300, 11 August 2005, 22°17.16'N, 119°59.96'E, 960-972 m: 1 male cl 23.9 mm (NTOU M01772). — TAIWAN 2006, stn PCP 342, 8 March 2006, 22°16.648'N, 119°59.960'E, 988-1010 m: 1 female cl 24.5 mm (NTOU M01773).

Distribution. Worldwide: both sides of the Atlantic Ocean and widely distributed in the Indo-West Pacific including Taiwan; 200-4000 m [5, 20].

Remarks. *Stereomastis sculpta* was first reported from Taiwan by Ahyong & Chan (2004). Spination of the lateral carapace margins (6-7: 3: 6-8) and branchial carinae (4 or 5) are closer to the reported range [5, 20].

Stereomastis surda (Galil, 2000)
(Figs. 1c-d, 3b)

Polycheles surdus Galil, 2000: 347-349, fig. 26 [type locality: off Mozambique, 18°14'S, 37°31'E]. — Ahyong & Brown, 2002: 75-76. — Poore, 2004: 156, figs. 40G, 41G. — Ahyong & Galil, 2006: 765.
Stereomastis surda. — Ahyong, 2009: 384-385. — Chan, 2010: 163.

Material. Nanfang-ao fishing port, Yilan County, commercial trawler, 29 June 2004: 1 female cl. 28.0 mm (NTOU M01774).

Diagnosis. Carapace oblong; rostral spine directed upward. Inner angle of dorsal orbital sinuses with 1 strong spine;

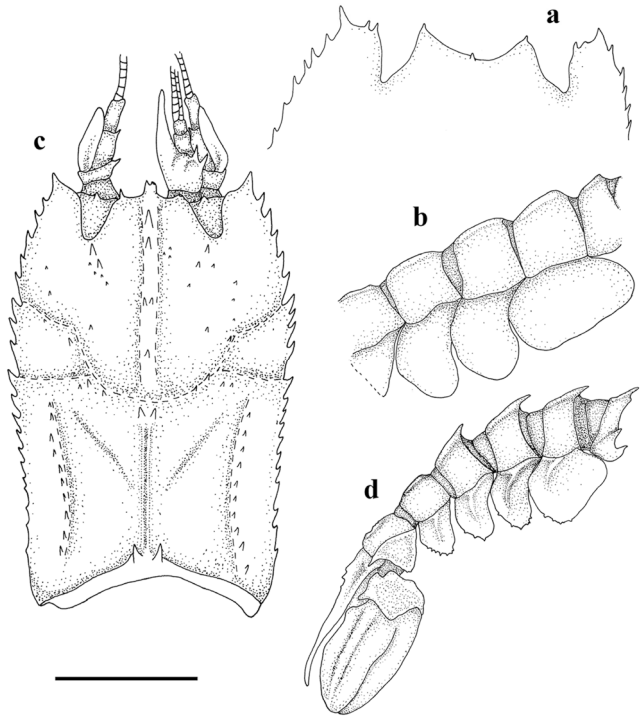

Fig. 1. (a-b) *Pentacheles validus*, stn CD 324, female cl 18.6 mm; (c-d) *Stereomastis surda*, Nanfang-ao fishing port, Yilan County, female cl 27.3 mm. (a) anterior carapace. (b, d) abdomen, lateral. (c) carapace, dorsal. Scale bar: 1 cm.

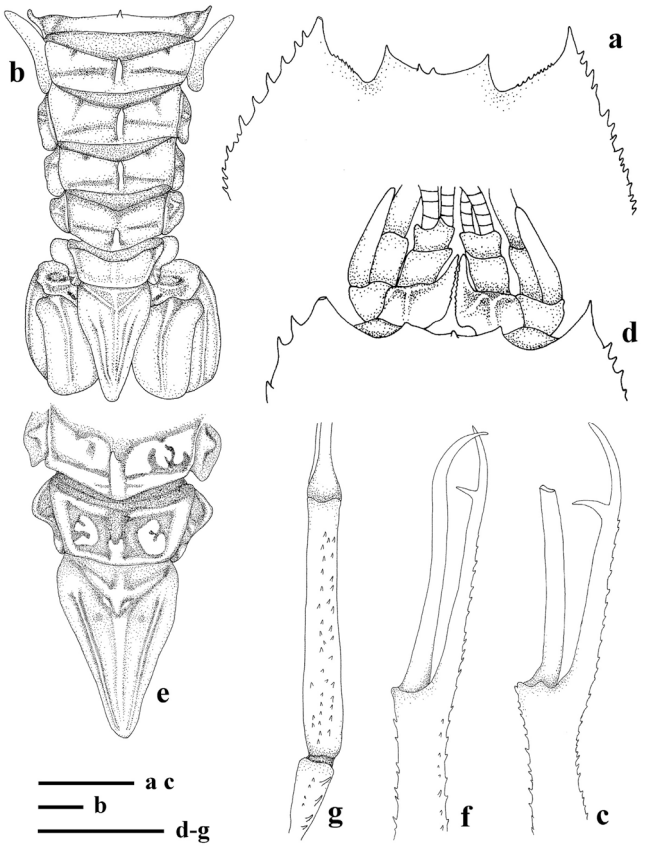

Fig. 2. (a-c) *Willemoesia forceps*, stn CP 284, male cl 63.7 mm; (d-g) *Willemoesia leptodactyla*, stn CP 294, male cl 47.6 mm. (a, d) anterior carapace. (b, e) abdomen, dorsal. (c, f) chela of left pereopod 1, mesial. (g) propodus of left pereopod 1, dorsal. Scale bars: 1 cm.

lateral carapace spination 6: 3-4: 11; posterior margin of cervical groove with 2 antrorse spines midway between median postcervical and branchial carinae; branchial groove unarmed. Outer proximal margin of basal antennular segment with 2 spines. Abdominal tergite with oblique groove obsolescent; pleuron 2 rounded or granulate anteriorly, without distinct spine; median carina of tergites 1-4 with distinct antrorse spines; tergites 5-6 without median antrorse spines; tergite 6 with median carina lyre-shaped.

Coloration. Carapace and abdomen generally pale rose-pink. Uropod, pereopod 1 and cephalic appendages deep red.

Distribution. Western Indian Ocean to Australia, New Zealand, New Caledonia, Hawaii, French Polynesia, and the Nazca Ridge, southeast Pacific: 350-1525 m [4, 6, 20]. The most southerly distribution is reported from Victoria, Australia [4]. The present study represents the most northerly record and also the first record of the species in the northern hemisphere.

Remarks. The single specimen from Taiwan agrees well with type description [20] but the branchial carina bears 11 instead of 5-8 spines as shown by Galil (2000: fig. 26). The lateral carapace spination of the Taiwanese specimen (6: 3-4: 11) is within the reported range [20].

Genus *Willemoesia* Grote, 1873
Willemoesia forceps A. Milne-Edwards, 1880
(Figs. 2a-c, 3c)

Willemoesia forceps A. Milne-Edwards, 1880: 64 [type locality: Cuba]. — Galil, 2000: 361-362, fig. 31. — Ahyong, 2009: 386. — Chan, 2010: 163. — Ahyong, 2012: 4-5.

Material. TAIWAN 2005, stn CP 284, 16 June 2005, 24°16.34'N, 122°11.67'E, 2220-2424 m: 1 male cl. 66.2 mm (NTOU M01775).

Diagnosis. Carapace ovate, distinctly longer than wide, surface densely spinulate; rostral spine directed upward, somewhat followed by 1 distinct spine; orbital sinuses forming shallow concavities, with spinules medially; inner angle of orbital sinuses with a strong spine; spination on lateral margin of carapace 14-16: 12-13: 36-42. Outer proximal margin of basal antennular segment unarmed but dentate on mesial margin. Pereopods 1-5 with epipods well-developed; pereopod 1 long and slender; fixed finger bearing 1 distinct perpendicular long spine on inner margin; palm with irregular arranged spines on upper margin as well as 2 rows of spines on lower margin, carpus about 3/4 as long as merus. Abdomen generally smooth; tergites 1-5 with median dorsal surface ridged, those of tergites 1-3 forming distinct antrorse spines; oblique grooves of tergites 2-4 distinct; tergite 6 smooth,

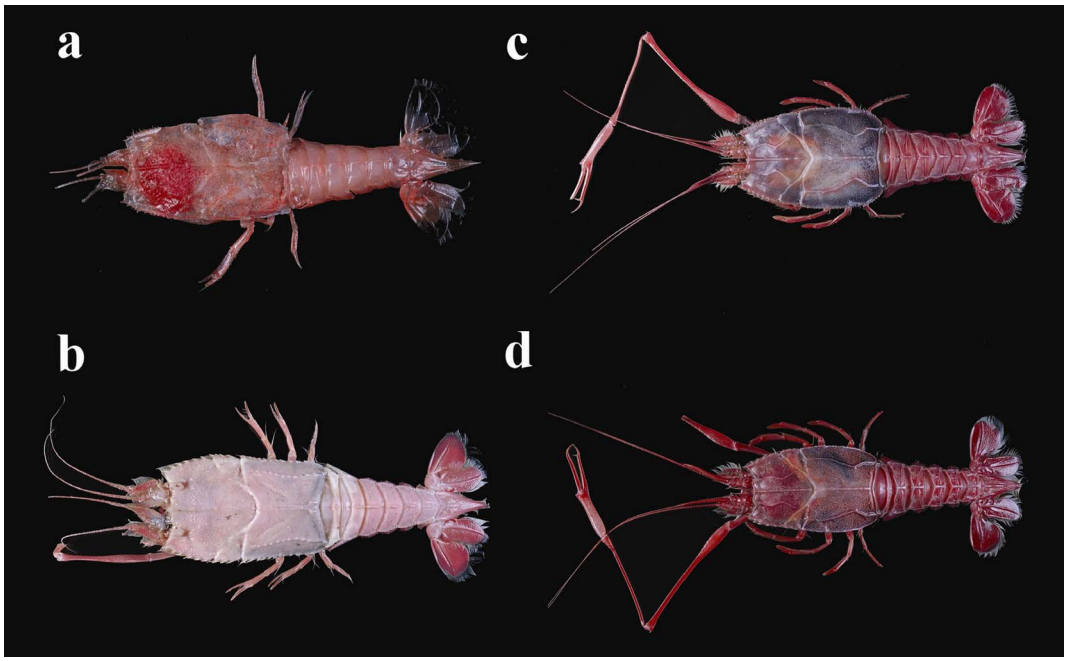

Fig. 3. (a) *Pentacheles validus* A. Milne-Edwards, 1880, stn CD 324, female cl 18.6 mm. (b) *Stereomastis surda* (Galil, 2000), Nanfang-ao fishing port, Yilan County, female cl 27.3 mm. (c) *Willemoesia forceps* A. Milne-Edwards, 1880, stn CP 284, male cl 63.7 mm. (d) *Willemoesia leptodactyla* (Thomson, 1873), stn CP 294, male cl 47.6 mm.

without median dorsal carina. Telson triangular, bearing pair of posteriorly diverging low ridges; distal margin rounded.

Coloration. Abdomen, uropod and appendages deep red. Internal organs visible through central anterior half of carapace as orangish; carapace edges blackened post-mortem.

Distribution. Presently known from West Indies, Caribbean Sea, Saragasso Sea, West Africa, eastern Australia (Queensland) and for the first time from Taiwan: 1473-4064 m [3, 20].

Remarks. Carapace spination (14-16: 12: 36-42) is close to the reported range (14-19: 13-15: 27-40) [3, 20]. The present Taiwanese material has the carpus of pereopod 1 about 3/4 as long as merus instead of 4/5 reported by Galil (2000). The distal extensor margin of the pereopod 1 propodus is armed with 2 curved spines.

Willemoesia leptodactyla (Thomson, 1873)

(Figs. 2d-g, 3d)

Deidamia leptodactyla Thomson, 1873: 51, 247, fig. 2 [type locality: NW Atlantic, 21°38'N, 44°39'W].
Willemoesia leptodactyla. — Galil, 2000: 364-367, fig. 33. — Ahyong, 2009: 386. — Chan, 2010: 163, fig. 6H.
Willemoesia indica Alcock, 1901: 178, pl. 1, figs. 1-la [type locality: Bay of Bengal, 11°58'N, 88°52'17"E].
Willemoesia secunda Sund, 1920: 223 [type locality: South Atlantic, 35°41'S, 20° 55'W].

Material. TAIWAN 2005, stn CP 294, 9 August 2005, 23°59.364'N, 122°20.762'E, 3564-3579 m: 1 male cl. 49.7 mm (NTOU M01776); stn CP 296, 10 August 2005, 22°15.081'N, 121°55.095'E, 4430-4455 m: 1 male cl 33.4 mm (NTOU M01777).

Diagnosis. Carapace ovate, dorsal surface densely spinulate; rostral spine directed upward; dorsal orbital sinuses shallowly concave, unarmed medially; inner angle of dorsal orbital sinuses with a spine; lateral carapace spination 6-7: 3-5: 16-17. Outer proximal margin of basal antennular segment unarmed but dentate on mesial margin. Pereopod 1 long and slender; fixed finger with 1 distinct perpendicular long spine on inner margin; palm with 2 rows of spines on both upper and lower margin; carpus about 4/5 as long as merus. Abdominal tergites 1-5 with median dorsal surface ridged, forming distinct antrorse spines; oblique grooves of tergites 2-4 distinct; tergite 6 strongly sculptured, without median dorsal carina. Telson triangular, bearing pair of posteriorly diverging low ridges; distally pointed.

Coloration. Deep brick-red overall. Carapace darkened laterally; yellow-orange of internal organs visible through carapace.

Distribution. Worldwide distributed in East Atlantic and West Atlantic, from Jamaica to Venezuela, and the Indo-West Pacific (Tasman Sea, Philippines, Bay of Bengal, Madagascar, South Africa and Taiwan), at depths of 2396-5124 m [20].

Remarks. Carapace spination 6-7: 3-5: 16-17; the reported spine formula anterior to postcervical groove is closer between *Willemoesia leptodactyla* and *W. inornata* Faxon, 1893 (8-10: 5-7: 15-25 and 5-8: 2-4: 10-12, respectively; [20]). However, the present specimens have 16-17 lateral spines on the carapace posterior to postcervical incision, which can identify the only Taiwanese specimen as *W. leptodactyla*. Moreover, it can

also be distinguished from *W. inornata* by the chela of pereopod 1 with 2 rows instead of 1 row of spines dorsally.

III. KEY TO POLYCHELIDAE OF TAIWAN

1. Dorsal orbital sinuses weakly concave. Pollex of pereopod 1 with perpendicular spine on inner margin. Anterolateral margin of basal antennular segment unarmed ·· 2
– Dorsal orbital sinuses deep, slit-like, U- or V-shaped. Pollex of pereopod 1 without perpendicular spine on inner margin. Anterolateral margin of basal antennular segment with at least 1 spine ····· 3
2. Abdominal tergite 6 almost smooth. Lateral margin of carapace with more than 20 spines posterior to postcervical incision ····· *Willemoesia forceps*
– Abdominal tergite 6 sculptured. Lateral margin of carapace with less than 20 spines posterior to postcervical incision ····· *W. leptodactyla*
3. Dorsal orbital sinus deep U-shaped. Pereopods 1-5 with epipod reduced, shorter than coxal width ····· 4
– Dorsal orbital sinus deep V-shaped or slit-like. Epipods of pereopods 1-5 well- developed, longer than coxal width ····· 9
4. Abdominal tergite 5 with antrorse spine on median carina ····· 5
– Abdominal tergite 5 without antrorse spine on median carina ····· 7
5. Inner angle of dorsal orbital sinus rounded, unarmed ····· ····· *Stereomastis helleri*
– Inner angle of dorsal orbital sinus with a spine ····· 6
6. Outer proximal margin of basal antennular segment with 1 spine ····· *S. galil*
– Outer proximal margin of basal antennular segment with 2 spines ····· *S. sculpta*
7. Posterior margin of cervical groove with single antrorse spine midway between median postcervical and branchial carinae. Frontal submarginal tooth prominent, visible in dorsal view ····· *S. aculeata*
– Posterior margin of cervical groove with 3 or 4 antrorse spines midway between median postcervical and branchial carinae. Frontal submarginal tooth small ····· 8
8. Lateral margin of carapace posterior to postcervical incision with 7 or 8 spines; abdominal tergites 2-5 with deeply marked oblique groove. Lyre-shaped carina on tergite 6 prominent ····· *S. auriculata*
– Lateral margins of carapace posterior to postcervical incision with 10-14 spines. Abdominal tergites 2-5 with oblique groove obsolescent. Lyre-shaped carina on tergite 6 obsolescent ····· *S. surda*
9. Basal antennular segment with quadrate anterolateral margin. Maxilliped 3 epipod well-developed ····· 10
– Basal antennular segment with rounded anterolateral margin. Maxilliped 3 epipod reduced ····· 11
10. Abdominal tergites 1-3 each with distinct antrorse tooth ····· *Pentacheles laevis*
– Abdominal tergites 1-3 each without antrorse tooth, at most with blunt rounded prominence ····· *Pe. validus*
11. One rostral spine; dorsal orbital sinus subdivided into two by interlocking spines lining the margin of the orbit ····· ····· *Polycheles typhlops*
– Two rostral spines. Dorsal orbital sinus a simple V-shape, not subdivided ····· 12
12. Outer margin of dorsal orbit spinose. Branchial carina coarsely tuberculate. Dorsum of abdomen tuberculate ···· ····· *P. coccifer*
– Outer margin of dorsal orbit unarmed. Branchial carina obsolete, unarmed. Dorsum of abdomen smooth ····· ····· *P. amemiyai*

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