

## POLYCHELIDAE FROM THE BOHOL AND SULU SEAS COLLECTED BY PANGLAO 2005 (CRUSTACEA: DECAPODA: POLYCHELIDAE)

**Shane T. Ahyong**

*Marine Biosecurity & Biodiversity, National Institute of Water and Atmosphere, Private Bag 14901,*

*Kilbirnie, Wellington, New Zealand*

*Email: s.ahyong@niwa.co.nz*

**Tin-Yam Chan**

*Institute of Marine Biology, National Taiwan Ocean University, Keelung 20224, Taiwan Republic of China*

*Email:tychan@mail.ntou.edu.tw (Corresponding author)*

**ABSTRACT.** – The Polychelidae from the Philippine PANGLAO 2005 expedition to the Bohol and Sulu Seas are reported. Four species in three genera are represented, namely *Pentacheles laevis* Bate, 1878, *Polycheles coccifer* Galil, 2000, *Polycheles typhlops* Heller, 1862, and *Stereomastis panglao*, new species. Both species of *Polycheles* are newly recorded from the region. The new species, *Stereomastis panglao*, most closely resembles *S. politus* Galil, 2000, also known from the Philippines, but differs chiefly by the presence of an antrorse spine on the fifth abdominal tergite.

**KEY WORDS.** – Crustacea, Decapoda, Polychelidae, *Pentacheles*, *Polycheles*, *Stereomastis panglao*, new species, Philippines, Panglao.

---

### INTRODUCTION

Galil (2000) recognized nine species in two genera of blind deep-sea lobsters, Polychelidae Wood-Mason, 1874, from the Philippines: *Pentacheles laevis* Bate, 1878, *Polycheles auriculatus* (Bate, 1878), *P. baccatus* Bate, 1878, *P. coccifer* Galil, 2000, *P. galil* Ahyong & Brown, 2002 [as *P. phosphorus* (Alcock, 1894)], *P. nanus* (Smith, 1884), *P. politus* Galil, 2000, *P. sculptus* Smith, 1880, and *P. typhlops* Heller, 1862. Of these, only *Pentacheles laevis* and *Polycheles politus* were recorded from the Sulu Sea region of the Philippines and none from the Bohol Sea.

In her worldwide revision of Polychelidae, Galil (2000) synonymized *Stereomastis* Bate, 1888, with *Polycheles* Heller, 1862. Recent phylogenetic analyses, however, show that both genera should be recognized as distinct, and that all species currently placed in *Polycheles* having a U- rather than V-shaped dorsal orbital sinus belong in *Stereomastis* (see Ahyong, in press). Thus, of the known Philippine polychelids, *Polycheles auriculatus* (Bate, 1878), *P. galil* Ahyong & Brown, 2002, *P. nanus* (Smith, 1884), *P. politus* Galil, 2000, and *P. sculptus* Smith, 1880, all belong in *Stereomastis*.

The PANGLAO 2005 expedition, organized chiefly by the Muséum national d'Histoire naturelle, Paris, to the Bohol Sea and the eastern Sulu Sea margin resulted in the present collection of polychelids comprising four species, one of *Pentacheles*, two of *Polycheles* and an undescribed species of *Stereomastis*.

### MATERIALS AND METHODS

Descriptive terminology follows Galil (2000) and Ahyong & Brown (2002). Synonymies include primary references and studies subsequent to, and including, Galil (2000). Measurements of specimens are in millimetres (mm) and refer to carapace length, measured along the midline from the tip of the rostral spines to the posterior margin of the carapace. Specimens examined are deposited in the collections of National Museum of the Philippines, Manila (NMCR), the National Taiwan Ocean University, Keelung (NTOU), the National Institute of Water and Atmosphere, Wellington, New Zealand (NIWA), and the Raffles Museum of Biodiversity Research, National University of Singapore (ZRC). The abbreviation CP refers to the 4.2 m French beam trawl.

**SYSTEMATICS**

**Polychelida Wood-Mason, 1874**

**Polychelidae Wood-Mason, 1874**

***Pentacheles* Bate, 1878**

***Pentacheles laevis* Bate, 1878**

(Fig. 1A)

*Pentacheles laevis* Bate, 1878: 278 [type locality: Moluccas, Indonesia, 4°33'N 127°06'E]. – Galil, 2000: 291 (key), 301–305, Fig. 7. – Ahyong & Brown, 2002: 54–56, 75, Figs. 1A, B. – Ahyong & Chan, 2004: 171–73, Figs. 1A–C, 4A. – Ahyong & Galil, 2006: 758–759. – Boyko, 2006: 39–40, Figs. 1B, 2.

*Pentacheles gracilis* Bate, 1878: 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'W].

*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.** – Stn CP2355, 9°25.9'N 124°8.9'E, 1,775–1,764 m, 25 May 2005, 1 female (28.7 mm) (NTOU); Stn CP2386, 8°49.6'N 123°2.6'E, 2,120–2,149 m, 29 May 2005, 1 male (33.8 mm) (NTOU); Stn CP2387, 8°51.3'N 122°59.7'E, 2,323–2,307 m, 29 May 2005, 1 female (52.2 mm) (NTOU).

**Remarks.** – The specimens agree well with published accounts. The inner and outer orbital margins are armed in all specimens. Carapace spination (8–9: 3: 14–15) is similar to the range reported by Ahyong & Brown (2002) (7–10: 3–4: 12–17).

**Distribution.** – Worldwide, from the Indo-West Pacific, Eastern Pacific, Western and Eastern Atlantic; 347–2,505 m (Ahyong & Chan, 2004); Galil (2000) reported *P. laevis* from the northern Sulu Sea.

***Polycheles* Heller, 1862**

***Polycheles coccifer* Galil, 2000**

(Fig. 1B)

*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.

**Material examined.** – Stn CP2359, 8°49.9'N, 123°34.9'E, 437–443 m, 26 May 2005; 1 female (17.1 mm) (NTOU); Stn 2360, 8°48.9'N 123°37.6'E, 357–372 m, 26 May 2005, 1 female (17.6 mm) (NTOU); Stn CP2363, 8°55.6'N 123°33.1'E, 740–679 m, 26 May 2005, 1 male (34.0 mm), 2 females (35.1–42.0 mm) (NTOU); Stn CP2383, 8°44.0'N 123°18.7'E, 338–351 m, 29 May 2005, 1 female (22.8 mm) (NTOU); Stn CP2393, 9°30.8'N 123°42.0'E, 356–396 m, 30 May 2005, 1 male (17.6 mm) (NTOU); Stn CP2395, 9°36.2'N

123°43.8'E, 434–532 m, 31 May 2005, 1 male (21.5 mm) (NIWA 39049).

**Remarks.** – The present specimens agree well with previous reports of the species (Galil, 2000; Ahyong & Chan, 2004). Carapace spination (6–9: 4: 18–23) is within the reported range (6–8: 3–4: 18–25) and the outer orbital margin bears 2–4 spines.

**Distribution.** – Western Pacific Ocean from Taiwan and Japan to the Philippines, Indonesia, New Caledonia and Vanuatu at depths between 155–679 m (perhaps 99–740 m; see Galil, 2000 and the depth ranges of the present material); a new record for the Bohol and Sulu Seas.

***Polycheles typhlops* Heller, 1862**

(Fig. 1C)

*Polycheles typhlops* Heller, 1862: 392, pl. 1 Figs. 1–6 [type locality: off Sicily]. – Galil, 2000: 354–359, Fig. 30. – Ahyong & Chan, 2004: 179–181, Figs. 1D–F, 4H, 5A–B. – Ahyong & Galil, 2000: 765–766. – Boyko, 2006: 44.

*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.** – Stn CP2333, 9°48.3'N 123°43.8'E, 584–596 m, 22 May 2005, 1 female (41.5 mm) (NTOU); Stn CP2341, 9°24.9'N 123°49.3'E, 544–712 m, 23 May 2005, 2 males (28.2–33.4 mm), 3 females (17.9–28.4 mm) (NIWA 42013); Stn CP2390, 9°27.4'N 123°43.4'E, 613–627 m, 30 May 2005, male 29.4 mm (NTOU); Stn CP2404, 9°36.6'N 123°42.4'E, 505–481 m, 1 Jun.2005, 3 males (17.3–23.7 mm), 7 females (17.7–40.1 mm) (NTOU).

**Remarks.** – Carapace spination (6–7: 4–5: 19–25) is close to the reported range (7–9: 4–5: 17–20) (Galil, 2000). The Philippine specimens of *P. typhlops* agree with Taiwanese material and differ from Mediterranean material in having more strongly granular abdominal tergites (Ahyong & Chan, 2004). An unusual feature of the present specimens, not previously reported for *P. typhlops* from other regions, is a pair of black patches in front of and behind the cervical groove, with the former more diffuse than the latter. Oddly, the paired dark patches are not subcuticular pigmentation, instead being deposited on the surface of the cuticle. The symmetry and presence of these patches in all the present specimens suggests that they are not random 'stains' derived from the habitat, but may be associated with the biology of the species.

**Distribution.** – Worldwide. The species has already been reported from various Philippine localities, but the present specimens constitute the first record for the Bohol and Sulu Seas; 77–2,055 m (Galil, 2000).

*Stereomastis* Bate, 1888*Stereomastis panglao*, new species

(Figs. 1D, 2–4)

**Material examined.** – HOLOTYPE: Stn CP2351, 9°31.1'N 124°2.3'E, 812–810 m, 24 May 2005, female (38.7 mm) (NMCR). PARATYPES: Stn CP2351, 9°31.1'N 124°2.3'E, 812–810 m, 24 May 2005, 1 male (22.4 mm), 4 females (19.0–46.3 mm) (NTOU); Stn CP2353, 9°25.6'N 124°0.4'E, 1,750–1,767 m, 25 May 2005, 2 males (19.0–23.9 mm), 3 females (15.9–28.4 mm) (NTOU); Stn CP2354, 9°26.6'N 124°4.5'E, 1,769–1,773 m, 25 May 2005, 1 male (18.4 mm), 1 female (24.5 mm) (NTOU); Stn CP2355, 9°25.9'N 124°8.9'E, 1,775–1,764 m, 25 May 2005, 3 males (18.9–22.4 mm), 3 females (15.1–28.0 mm) (NTOU); Stn CP2356, 9°21.8'N 124°10.1'E, 1,764–1,764 m, 25 May 2005, 1 male (19.6 mm), 2 females (19.5–51.4 mm) (NTOU); Stn CP2384, 8°46.2'N 123°16.14'E, 613–647 m, 29 May 2005, 1 male (30.5 mm) (NTOU); Stn CP2389, 9°27.4'N 123°37.6'E, 786–784 m, 30 May 2005, 1 male (30.9 mm), 1 female (24.2 mm) (NIWA 44804); 1 male (27.8 mm), 1 female (22.9 mm) (ZRC).

**Diagnosis.** – Carapace surface nearly glabrous. Basal antennular segment with single spine on outer proximal margin. Carapace with branchial carina indicated only in posterior half, with 1–4 small, well-spaced spines; branchial groove unarmed. Median carina of abdominal tergites 1–5 with antrorse spine.

**Description.** – Carapace subrectangular, margins slightly convergent proximally; dorsal surface nearly glabrous; gastro-orbital region with arcuate row of 2–5 spines; frontal margin with 2 rostral spines and spine on internal angle of orbital sinus, unarmed between rostral spines and internal orbital spine; lower anterior margin produced to acute point adjacent to antennal protopod; lower lateral margin with 2 spinulate carinae. Median submarginal tooth short, inconspicuous. Dorsal orbital sinus broadly U-shaped; outer margin rounded. Lateral margins of carapace with evenly graded spines, slightly decreasing in size posteriorly; spine formula 6–7: 3–4 (usually 3): 6–8. 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, irregular, spine formula 2:2. Branchial carina indicated on posterior third to quarter of carapace, bearing 1–6 (usually 2) well-spaced spines, number decreasing with increasing size. Branchial groove unarmed. Dorsal posterior border of carapace smooth, with 2 antrorse submedian spines.

Abdominal tergites mesially carinate; tergites 1–5 with antrorse median tooth, that of tergite 3 largest; tergite 6 with denticulate U-shaped carina; tergite 1 with smooth dorsal surface, anterior margin with median spine and 2 antrorse

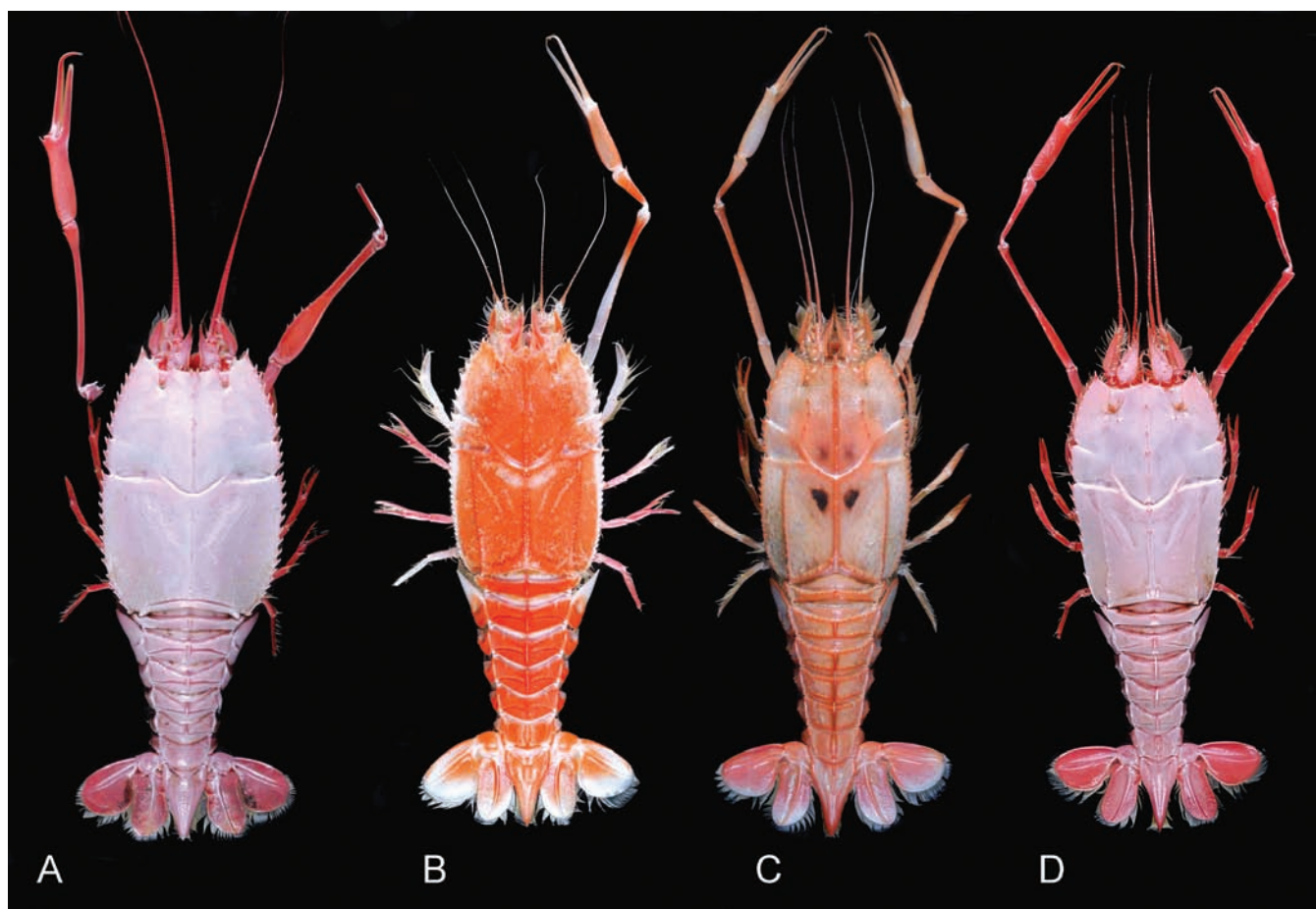


Fig. 1. A, *Pentacheles laevis* Bate, 1878, female (52.2 mm), Stn CP2387; B, *Polycheles coccifer* Galil, 2000, female (35.1 mm), Stn CP2363; C, *Polycheles typhlops* Heller, 1862, female (41.5 mm), Stn CP2333; D, *Stereomastis panglao*, new species, holotype female (38.7 mm), Stn CP2351.

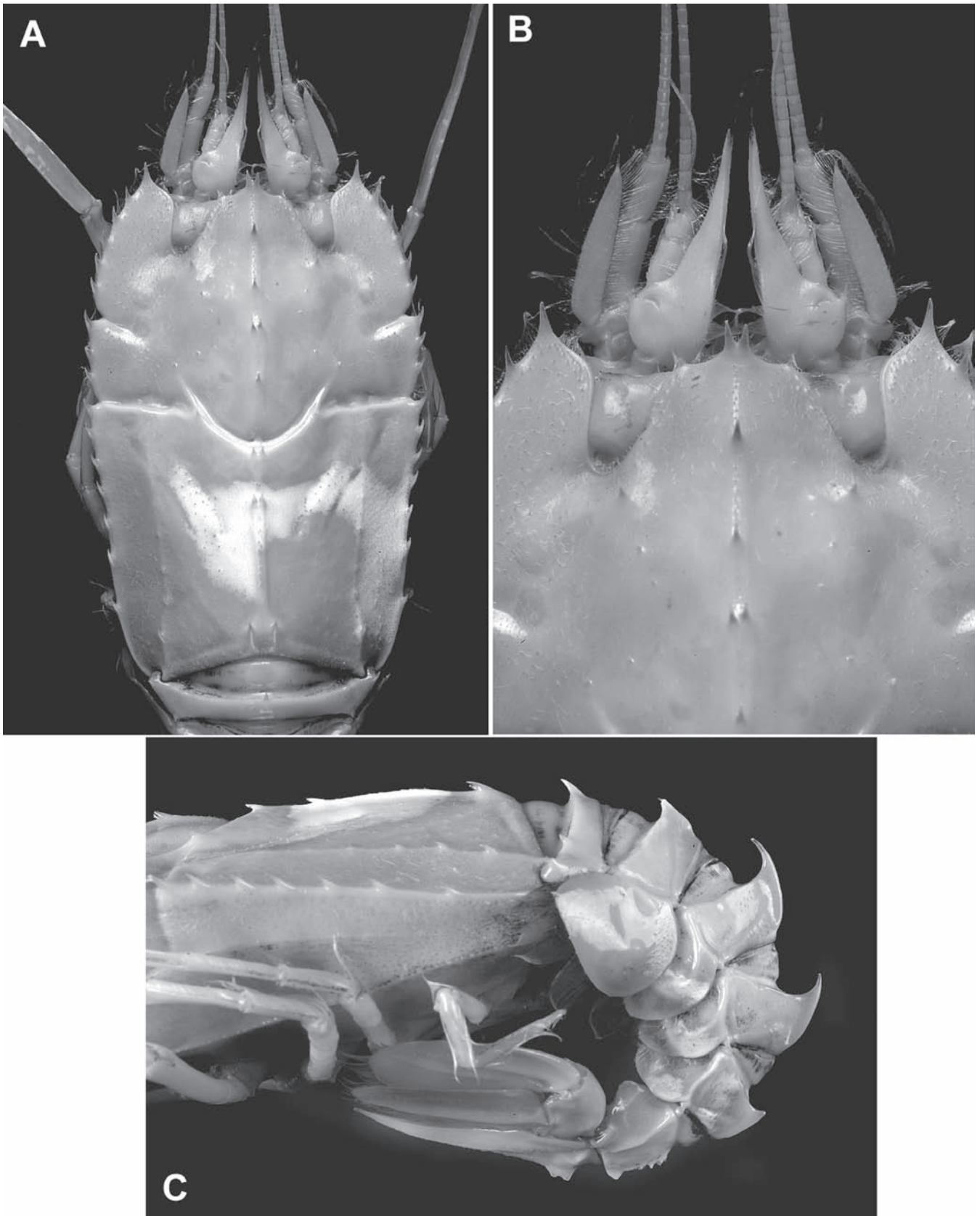


Fig. 2. *Stereomastis panglao*, new species, female holotype (38.7 mm), Stn CP2351: A, carapace; B, anterior cephalothorax; C, abdomen, left lateral view.

spines laterally; surface of tergites 2–5 with deep oblique grooves. Pleuron 2 rounded anteriorly, with 1 or 2 anterior spinules or granules; ventral margin smooth or with well-spaced granules; surface with low, crescent-shaped carina. Telson with short, bituberculate median carina proximally, and pair of low convergent carinae posteriorly. Pleura 3–6 becoming narrower posteriorly; margins with widely spaced granules; surface of pleura 3–4 with crescent shaped carina; surface of pleuron 5 with large, irregular tubercle; surface of pleuron 6 finely setose but smooth. Uropodal protopod irregular but without tubercles or granules, with small outer distal spine; endopod with blunt mid-rib, surface slightly wrinkled; exopod with median sulcus flanked by low carina, surface slightly wrinkled.

Eyestalk with small dorsal spine; tapering to rounded apex, recurved and bilobed anterolaterally.

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

Distal and proximal segments of antennal peduncle with small stout inner distal spine; scaphocerite lanceolate, margins

unarmed, not extending anteriorly beyond distal segment of peduncle; antennal protopod without outer spine.

Maxilliped 3 epipod rudimentary, about 0.1 ischium length.

Pereopod 1 (major cheliped) longer than body; when folded with merus not reaching posteriorly beyond abdominal somite 3. Ischium and basis fused. Merus dorsal margin with 1 distal and 2 or 3 proximal spines; ventral margin sparsely and minutely denticulate. Carpus 0.6–0.7 merus length; dorsal margin smooth except for distal spine; ventral margin smooth, distally with spinule and blunt projection mesially. Propodus with smooth dorsal margin and distal spine above articulation of dactylus; ventral margin with 2 blunt, parallel carinae, outer margin with row of widely spaced spinules. Dactylus smooth dorsally, longer than palm.

Pereopod 2 with basis, ischium and merus fused; demarcation between segments indicated by distinct groove; carpus with dorsal distal spine and smaller outer distal spine; dactylus and pollex with curved apices, opposable margins pectinate.

Pereopod 3 and 4 with basis, ischium and merus fused; demarcation between ischium and basis indicated by indistinct groove; segments unarmed, but with fine row of granules on

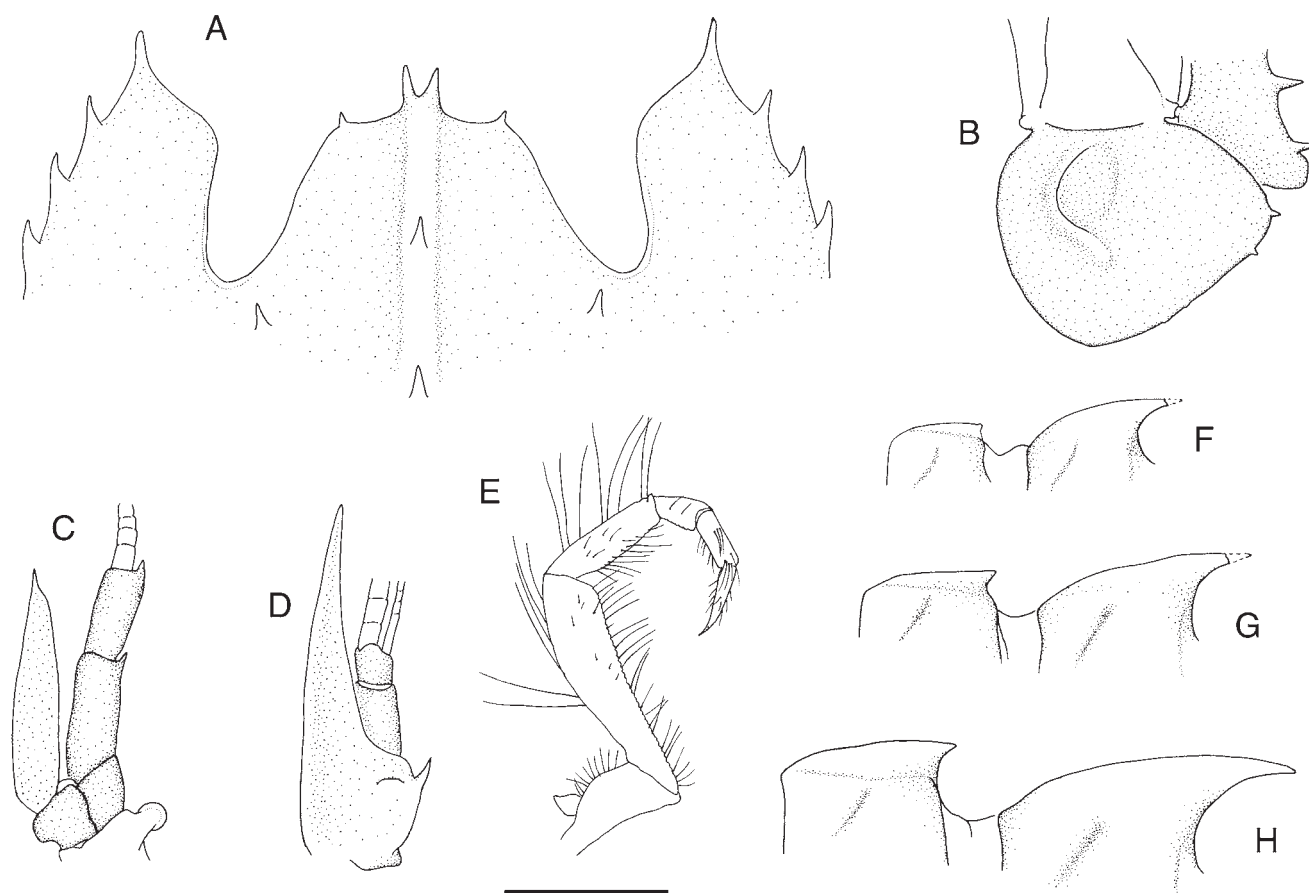


Fig. 3. *Stereomastis panglao*, new species: A–E female holotype (38.7 mm), Stn CP2351; F, female paratype (15.1 mm), Stn CP2355; G, male paratype (18.4 mm), Stn CP2354; H, female paratype (24.5 mm), Stn CP2354. A, anterior carapace; B, right first tergite lateral margin and second abdominal pleuron; C, right antenna, ventral view; D, right antennule, dorsal view; E, right third maxilliped; F–H, antorse median spine of fourth and fifth abdominal tergites, right lateral view. Scale bar: A–E = 5.0 mm; F–H = 2.0 mm.

dorsal margin of propodus and carpus; dactylus and pollex straight, opposable margins pectinate.

Pereopod 5 with basis, ischium and merus fused, demarcation between ischium and basis not indicated; males with dactylus slightly longer than pollex; females with dactylus and pollex of equal length; both sexes with anterior surfaces of dactylus and pollex slightly 'hollowed'.

Pleopod 1 of male uniramous, forming copulatory structure comprising distal and proximal segments; proximal segment (basis) shorter than distal segment, outer margin setose; distal segment elongate, flattened, with appendix interna on inner subdistal margin, not distinctly projecting; inner proximal margin setose.

**Colour in life.** – (Fig. 1D) Carapace and abdomen pale rose-pink. Cephalic appendages, antennal and antennular flagella, pereopods, uropods and carapace spines deep red.

**Etymology.** – Named *panglao*, after the expedition name; used as a noun in apposition.

**Remarks.** – *Stereomastis panglao*, new species, closely resembles *S. phosphorus* (Alcock, 1894), *S. politus* (Galil, 2000) and *S. galil* (Ahyong & Brown, 2002) in sharing a single spine on the outer proximal margin of the basal antennal segment and U-shaped dorsal orbital sinuses. The new species resembles *S. politus* and differs from *S. phosphorus* and *S. galil* in lacking spines on the branchial groove and in the reduced branchial carina. The branchial carina in *S. phosphorus* and *S. galil* is spinose from the postcervical groove to the posterior carapace margin, but in *S. panglao*, new species, and *S. politus* is spinose only in its posterior half. *Stereomastis panglao*, new species, is readily distinguished from *S. politus* by the presence of an antrorse tooth on abdominal tergites 1–5 instead of only on abdominal tergites 1–4 and in having a nearly glabrous rather than finely setose carapace surface. *Stereomastis panglao*,

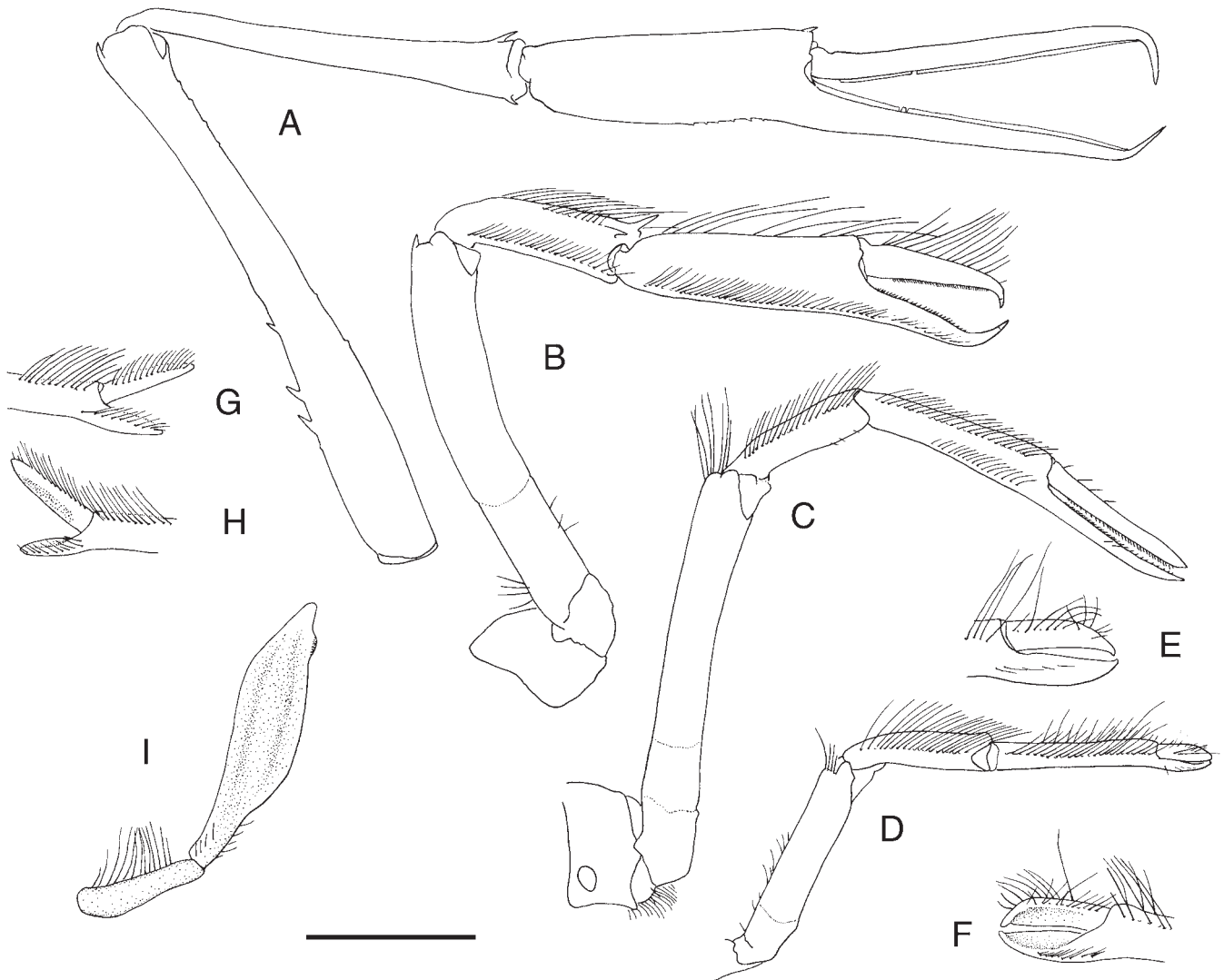


Fig. 4. *Stereomastis panglao*, new species: A–F female holotype (38.7 mm), Stn CP2351; G–I, male paratype (30.9 mm), Stn CP2389 (NIWA 44804). A, right pereopod 1; B, right pereopod 2; C, right pereopod 3; D, right pereopod 5; E, F, right pereopod 5 chela of female, posterior and anterior view; G, H, right pereopod 5 chela of male, posterior and anterior view; I, right male pleopod 1. Scale bar: A–D, I = 5.0 mm; E–H = 2.5 mm.

new species, and *S. politus* appear to reach a similar size; the former reaching at least 51.4 mm cl. and the latter 49.6 mm cl. (Galil, 2000).

Spination of the gastric region, branchial carina of the carapace, and the size of the dorsal abdominal antrorse spines in *S. panglao*, new species, exhibit a degree of allometric variation. The gastric region in most specimens bears an arcuate row of 5 spines in which the anterior 3 are minute. In the largest specimen (51.4 mm), the third and fourth gastric spines are obsolete, reduced to a minute granule. In smaller specimens, the anterior and posterior spines are present, with one or more of the medially positioned spines obsolete or absent. Similarly, the branchial carina is armed with 1–5 spines, with the number of spines decreasing with body size. The antrorse median spines on abdominal tergites 1–5 are best developed in the largest specimens. In the smallest specimens (15.1 mm cl.), the antrorse tooth on tergite 5 is less pronounced than in larger specimens (Fig. 3F–H) leading to the potential for juveniles of *S. politus* and *S. panglao*, new species, to be mistaken. Note, however, that even in the smallest specimens of *S. panglao*, new species, the dorsal margin of the median carina of abdominal tergite 5 is raised and angled dorsally with a distinctly angular apex (Fig. 3F) rather than horizontal and apically obsolete as in *S. politus* (see Galil, 2000: Fig. 23b). Specimens of *S. panglao*, new species, of similar size to the holotype of *S. politus* (25.1 mm) already have a prominent antrorse spine on tergite 5 (Fig. 3G, H). *Stereomastis politus* could also be confused with *S. galil*, particularly juveniles in which the branchial carapace spines are less prominent: both species have an antrorse spine on the first five abdominal tergites, have a single outer spine on the basal antennular segment and a similar colour-in-life. Features distinguishing the two species, namely the spination of the branchial groove and branchial carina, are often obscured by sediment, so the carapace surface of specimens should be well cleaned for accurate identification.

*Stereomastis phosphorus* is presently known only from the eastern Indian Ocean, but both *S. politus* and *S. galil* occur in the Philippines. *Stereomastis politus* ranges from the Moluccas to the Gulf of Thailand and the northern Philippines including the northern Sulu Sea (Galil, 2000).

**Distribution.** – Presently known only from the Bohol and Sulu Seas; 784–1,773 m.

#### ACKNOWLEDGEMENTS

The PANGLAO 2005 deep-sea expedition on board the research vessel M/V DA-BRAR was a collaboration between the Muséum national d'Histoire naturelle, Paris (Principal Investigator, P. Bouchet), the National Fisheries Research and Development Institute (Principal Investigator, Ludivina Labe), the Philippines Bureau of Fisheries and Aquatic Resources (BFAR), the National University of Singapore (P. K. L. Ng), the University of San Carlos (USC) and the National Taiwan Ocean University (NTOU). This cruise

was affiliated with the Continental Margin Ecosystems (COMARGE) component of the Census of Marine Life (CoML), and we acknowledge funding from the French Ministry of Foreign Affairs and the Total (Philippines) Corporation. Malcolm Sarmiento, Director of BFAR, kindly made MV DA-BRAR available, and Noel Saguil (USC Associate) organized the logistics. We thank two anonymous reviewers for careful reading of the manuscript. This first author was supported by the NIWA Capability Fund and the New Zealand Foundation for Research, Science and Technology (BBBI091) and second author by research grants from the National Science Council, Taiwan, Republic of China and Center for Marine Bioscience and Biotechnology of the National Taiwan Ocean University.

#### LITERATURE CITED

- Ahyong, S. T., in press. The polychelidan lobsters: phylogeny and systematics (Polychelida: Polychelidae). In: J. W. Martin, K. A. Crandall & D. F. Felder (eds.), *Decapod Crustacean Phylogenetics*, CRC Press.
- Ahyong, S. T. & D. E. Brown, 2002. New species and new records of Polychelidae from Australia (Crustacea: Decapoda). *Raffles Bulletin of Zoology*, **50**(1): 53–79.
- Ahyong S. T. & T.-Y. Chan 2004. Polychelid lobsters of Taiwan (Decapoda: Polychelidae). *Raffles Bulletin of Zoology*, **52**(1): 171–182.
- Ahyong, S. T. & B. S. Galil, 2006. Polychelidae from the southern and western Pacific (Decapoda: Polychelida). *Zoosystema*, **28**(3): 757–767.
- Alcock, A., 1894. Natural History notes from H. M. Indian marine survey steamer Investigator, Commander R. F. Hoskyn, R. N., commanding. Series II, number 1. On the results of deep-sea dredging during the season 1890–91. *Annals and Magazine of Natural History*, (6) **13**: 225–245.
- Balss, H., 1914. Diagnosen neuer Macruren der Valdivia – Expedition. *Zoologischer Anzeiger, Leipzig*, **44**: 592–599.
- Bate, C. S., 1878. XXXII. On the *Willemoesia* group of Crustacea. *Annals and Magazine of Natural History*, London, **5**(2): 273–283, pl. 13.
- Bate, C. S., 1888. Report on the Crustacea Macrura dredged by H.M.S. *Challenger* during the years 1873–1876. *Report on the Scientific Results of the Voyage of H.M.S. Challenger during the years 1873–76, Zoology*, **24**: 1–942, pls. 1–154.
- Bouvier, E. L., 1905a. Sur les Palinurides et les Eryonides recueillis dans l'Atlantique orientale par les expéditions françaises et monégasques. *Comptes Rendus des Séances de l'Académie des Sciences*, Paris, **140**: 479–482.
- Bouvier, E. L., 1905b. Sur les Crustacés Décapodes (abstraction faite des Carides) recueillis par le yacht *Princesse Alice* au cours de la campagne de 1905. *Comptes rendus des Séances de l'Académie des Sciences*, Paris, **141**: 644–647.
- Boyko, C. B., 2006. New and historical records of polychelid lobsters (Crustacea: Decapoda: Polychelidae) from the Yale Peabody Museum collections. *Bulletin of the Peabody Museum of Natural History*, **47**: 37–46.
- Faxon, W., 1893. Reports on the dredging operations off the west coast of Central America to the Galapagos, to the west coast of Mexico, and in the Gulf of California, in charge of Alexander Agassiz, carried out by the U.S. Fish Commission steamer

- “Albatross” during 1891, Lieut.-Commander Z.L. Tanner, U.S.N., commanding. VI. Preliminary descriptions of new species of Crustacea. *Bulletin of the Museum of Comparative Zoology of Harvard College*, Cambridge, Massachusetts, **24**: 149–220.
- Galil, B. S., 2000. Crustacea Decapoda: Review of the genera and species of the family Polychelidae Wood-Mason, 1874. In: A. Crosnier (ed.), *Résultats des Campagnes Musorstom*, Volume. 21. *Mémoires du Muséum national d’Histoire naturelle*, 184: 285–387.
- Heller, C., 1862. Beiträge zur näheren Kenntnis der Macrouren. *Sitzungsberichte der Akademie der Wissenschaften in Wien, mathematisch-physikalische Klasse*, 45(1): 389–426.
- Milne-Edwards, A., 1880. No. 1. Reports on the results of dredging, under the supervision of Alexander Agassiz, in the Gulf of Mexico, and in the Caribbean Sea, 1877, ’78, ’79, by the US coast survey steamer *Blake*, Lieut.-Commander C.D. Sigsbee, U.S.N., and Commander J.R. Bartlett, U.S.N., Commanding. VIII. Études préliminaires sur les Crustacés. *Bulletin of the Museum of Comparative Zoology of Harvard College*, Cambridge, Massachusetts, 8(1): 1–68, pls 1–2.
- Riggio, G., 1885. Appunti di Carcinologia Siciliana. Sul *Polycheles doederleini* Riggio ex Heller. *Il Naturalista Siciliano, Palermo*, 4: 99–104, 140–146, pl.3.
- Smith, S. I., 1880. Notice of a new species of the “*Willemoesia* Group of Crustacea”, recent Eryontidae. *Proceedings of the United States National Museum*, 2: 345–353, pl. 7.
- Smith, S. I., 1884. XV. Report on the Decapod Crustacea of the *Albatross* Dredgings off the East-coast of the United States in 1883. *Report of the United States Fish Commission*, 10(1882): 345–426, pls. 1–10.
- Wood-Mason J., 1874. On blind crustaceans. *Proceedings of the Asiatic Society of Bengal, Calcutta*, 1874: 180–181.