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New records of pea crabs of the genus *Pinnixa* from Peru

(Crustacea, Decapoda, Brachyura, Pinnotheridae)

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During research activities on commercial benthic invertebrates carried out by IMARPE's Coastal Laboratory of Camana, some *Pinnixa* specimens were collected. *P. bahamondei* specimens were collected in the course of a *Concholepas concholepas* survey, and *P. valdiviensis* specimens were collected in the course of a *Mesodema donacium* survey. *P. bahamondei* is recorded for the first time at Peruvian sea, its geographic range is extended northward to Islay, Perú. On the other hand, *P. valdiviensis* is recorded for the first time at Arequipa. Morphologic and morphometric data are provided for both species as well as ecological comments.

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Introduction

The family Pinnotheridae comprises small crabs well known, in most cases, for their symbiotic relationship with bivalves, gastropods, holothurians, echinoids, polychaetes and ascidians (Grove & Woodin 1996).

Fifty-one species had been placed in *Pinnixa* prior to the study by Palacios Theil & Felder (2020), which redefined the genus and placed many species in new genera. *Pinnixa* sensu stricto currently contains 32 species (Poore & Ahyong 2023).

There are four species of genus *Pinnixa* along the south American Pacific Ocean: *P. darwini* Garth, 1960, exclusively known from Galapagos Islands (Garth 1960), *P. paitensis* Rathbun, 1935, only known from Peru (Campos 2017), *P. valdiviensis* Rathbun, 1907, known from Peru and Chile (Moscoso 2012, Campos 2017), *P. bahamondei* Garth, 1957 and *P. chiloensis* Garth, 1957, both only from Chile (Garth 1957, Campos 2017).

We report herein the presence of *P. bahamondei*, previously recorded only from Chile (Garth 1957), in southern Peru and *P. valdiviensis*, previously recorded from Chile and central Peru (Garth 1957), in southern Peru.

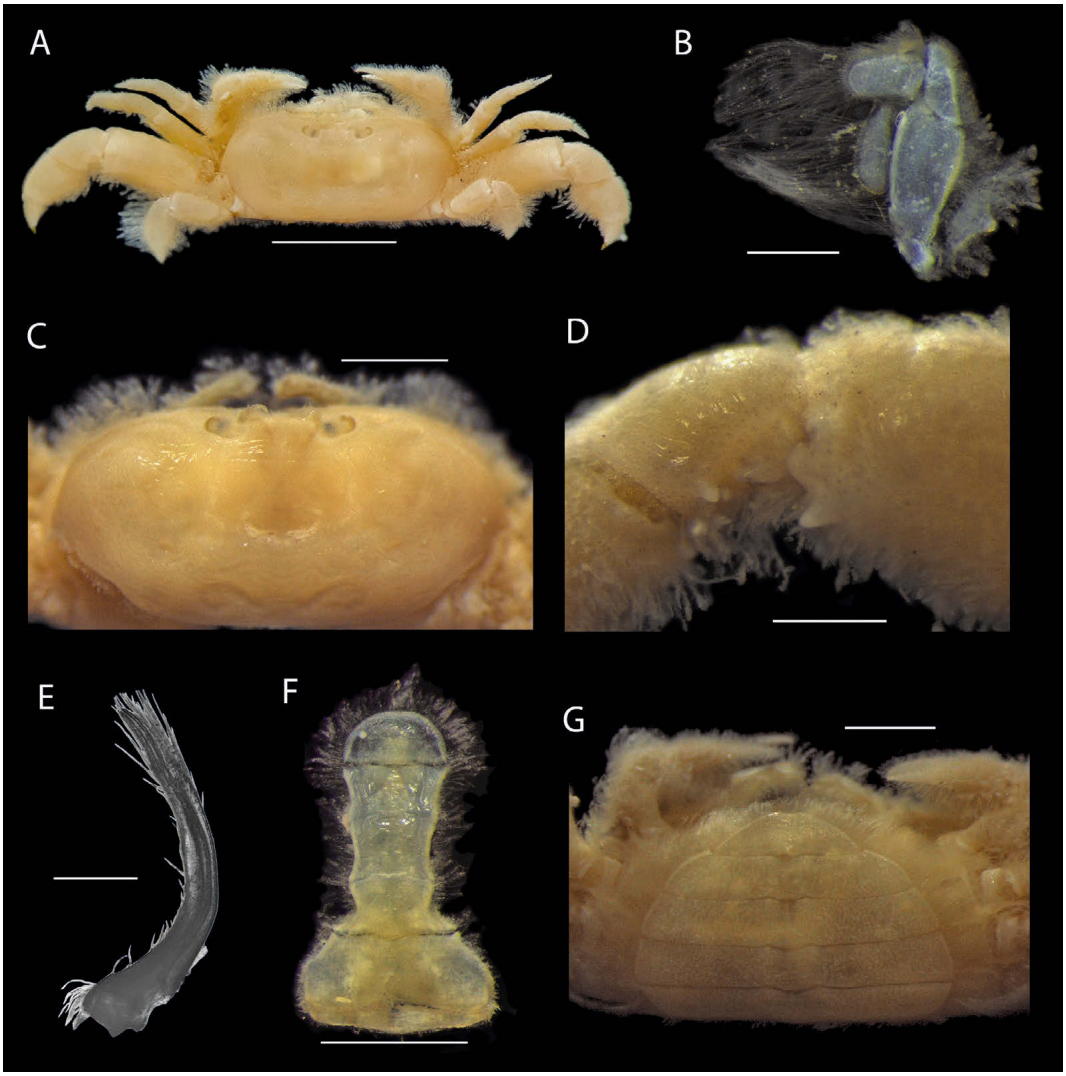

Fig. 1. *Pinnixa bahamondei* Garth, 1957, Male: **A.** dorsal view; **B.** third maxilliped; **C.** caparace; **D.** leg 3 (propodus, carpus, merus); **E.** first pleopod; **F.** abdomen. Female: **G.** abdomen. Scale bars: 1 mm (A, C, G); 500 µm (B, D, E, F). Photo: Sarita Campos-León.

Materials and methods

Morphology and measurements terms follow Rathbun (1918) and Garth (1957). Measurements are in millimeters (mm). Carapace length (CL) is measured from the anterior median margin of the front to the median posterior margin of the carapace. Carapace width (CW) is the greatest width of carapace. The specimens became part of the Scientific Collection of IMARPE (Spanish acronym for Peruvian Marine Research Institute), Callao, Peru.

Results

Pinnotheridae De Haan, 1833
***Pinnixa bahamondei* Garth, 1957**
Fig. 1

Pinnixa bahamondei Garth, 1957: 75, figs 5A–F; Retamal & Yáñez, 1972: 103, pl. 1, figs A–F; Ng et al. 2008: 247.

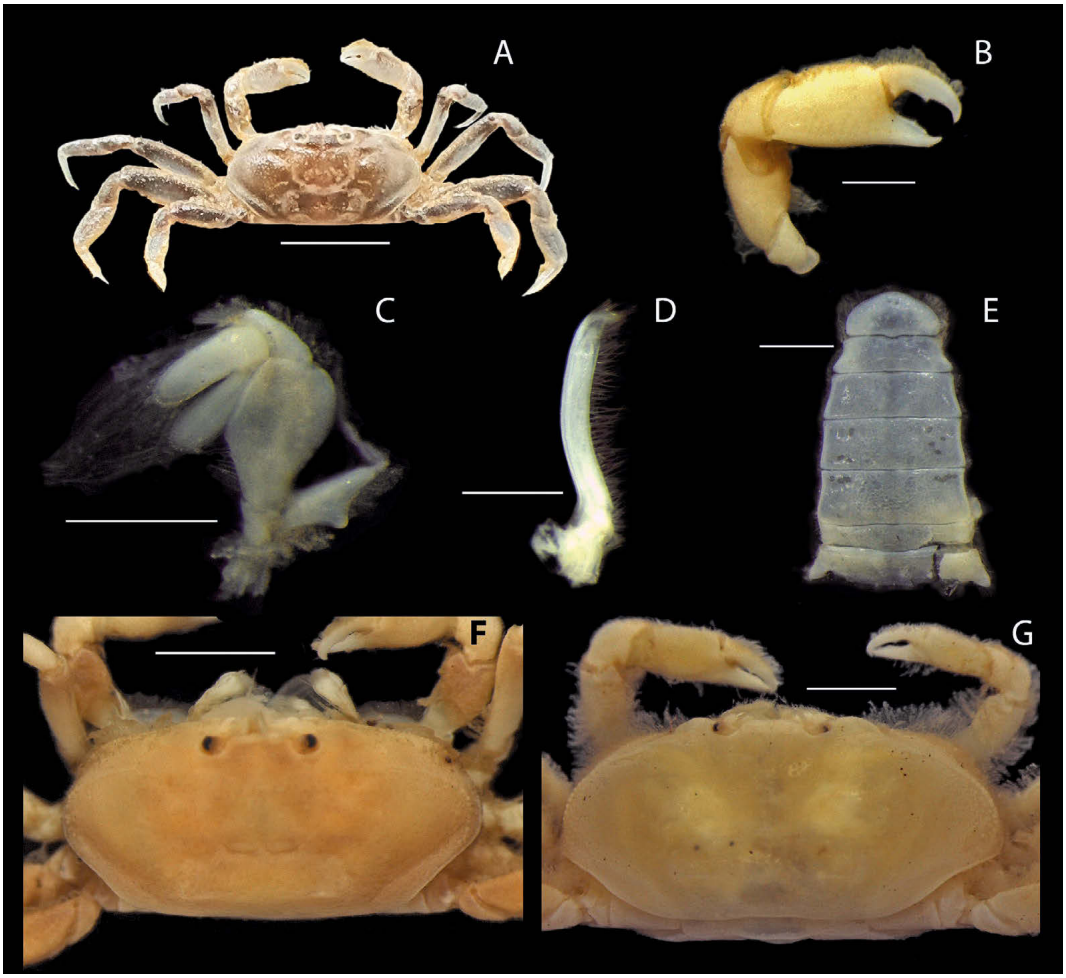

Fig. 2. *Pinnixa valdiviensis* Rathbun, 1907. Male: **A.** living specimen; **B.** right cheliped; **C.** third maxilliped; **D.** first pleopod; **E.** abdomen; **F.** carapace. Female: **G.** carapace. Scale bars: 5 mm (A); 1 mm (B–E); 2 mm (F,G). Photo: Sarita Campos-León.

Material examined: Islay, Arequipa, Peru, 16°54'13.536''S, 72°12'45.792''W, 8.5 m, 07 September 2015, 1 male (CL 1.99 mm, CW 4.28 mm), 1 female (CL 2.04 mm, CW 4.74 mm), IMARPE 02-001063.

Diagnosis. Carapace with no cardiac ridge, anterolateral margins crested. Dactyls of leg 1, walking legs 2, and 4 nearly straight. A stout spine at posterodistal angle of walking leg 3 merus, a stout spine on lower distal margin of walking leg 3 carpus. Chelae weak, granular. Third maxilliped palp as long as merus or longer. Abdomen of 6 free somites and telson, widest at somite 3, somites 4–6 narrow. Distal portion of somite 6 together with telson broadly rounded. Male first pleopod curved with concave margin distally channelled.

Coloration. Cream yellowish, similar to the coloration of alcohol preserved specimens.

Distribution. To date *P. bahamondei* has only been recorded from two Chilean localities: Seno Reloncavi (Garth 1957) and Concepcion (Retamal & Yáñez 1972); however, now the distribution range extends northern, to Islay, Arequipa, Peru; 8.5–25 m.

Pinnixa valdiviensis Rathbun, 1907
Fig. 2

Pinnixa valdiviensis Rathbun, 1907: 45, lám. 3 figs 2–3, text-fig. 1; Rathbun, 1910: 588; Rathbun, 1918: 154, figs 95a–c, lám. 33 figs 1–2, lám. 34 figs 5–6; Chir-

ichigno, 1970: 59, fig. 140; Retamal & Trucco, 1973: 75; Retamal, 1981: 34, fig. 183; Kameya et al., 1998: 105; Torres, 2006: 175, fig. 2a–c; Ng et al., 2008: 248.

Material examined: Camana, Arequipa, Peru, 16°40'21.5"S, 72°34'46.06"W, 0 m, 23 November 2019, 1 male (CL 3.09 mm, CW 7.05 mm), 1 female (CL 4.43 mm, CW 9.97 mm), IMARPE 02-001064.

Diagnosis. Carapace with two cardiac ridges, sometimes absent in females; a transverse hepatic ridge; front widening anteriorly. Robust chelae, internally pubescent; two teeth on the pollex internal edge; a median tooth on the internal dactyl edge. Third maxilliped merus broad; narrow and similar length propodus and dactylus. Abdominal somite 6 shorter than somites 3–5, somites 3–6 sides concave. Male first pleopod stout, distally curved with corneous tip.

Coloration in life. Carapace anterolateral margins cream, dorsal surface tan, posterior margin light brown. Chelipeds and legs light brown and cream (Fig. 2A).

Distribution. Chincha Islands, Peru to the Strait of Magellan, Chile (Garth 1957) along the Pacific Ocean. It has also been recorded at Bahía San Julian, southern Argentina (Torres 2006) on the Atlantic Ocean. Camana is a new record of *P. valdiviensis* at Peru.

Discussion

The specimens found at Islay (Fig. 1) fit the diagnostic characteristics pointed out by Garth (1957) for *P. bahamondei*, with a small difference in the CW/CL ratio. Garth (1957) recorded a 2.50 CW/CL ratio in females and 2.30 CW/CL ratio in males, while we record a 2.15 and 2.32 CW/CL ratio for males and females, respectively. Additionally, Retamal & Yáñez (1972) recorded a 2.15 CW/CL ratio in a male specimen, identified with the support of Garth suggesting the existence of variations in the CW/CL ratio. Based on the CW and CL measurements provided by Garth (1957) and Retamal & Yáñez (1972), as well as the ones of the samples from this report, the average CW/CL ratio is 2.30 (2.15–2.28 in males; 2.32–2.52 in females). In addition, some differences found between the specimens described by Garth (1957) and the ones from Islay, were an elongated stria on the carapace and a faint depression on both sides of the cardiac region (Fig. 1C).

The Islay specimens were collected with 25 × 25 cm quadrats on a substrate of pebbles, shell fragments, tubes of an unknown chaetopterid polychaete and a colonial ascidian of the genus *Aplidium*. Garth (1957) pointed out that *P. bahamondei* is a commensal species in *Chaetopterus variegatus* tubes, and even if it has been reported alone (Retamal & Yáñez 1972), the commensal relationship with the polychaete shouldn't be ruled out since the specimens from Islay were collected along with tubes of a chaetopterid polychaete.

Camana specimens (Fig. 2) match most of the morphological features of *P. valdiviensis* specimens from Seno Reloncavi described by Garth (1957), except for the carapace front, which is not narrow distally. In addition, the Camana female examined has no cardiac crests, which fits the description made by Rathbun (1907).

Camana specimens CW/CL ratio was 2.28 for males and 2.25 for females; male CW/CL ratio matches the Valparaiso specimens examined by Garth (1957). However, CW/CL ratio is not constant, so considering the measurements presented by Rathbun (1907), Rathbun (1918), Garth (1957), Torres (2006) and the ones from this report: the mean CW/CL ratio of *P. valdiviensis* is 2.3 (1.84–2.28 in males; 2.21–2.25 in females).

P. valdiviensis has previously been reported by Garth (1957) in sandy beaches associated sometimes with chaetopterid polychaete tubes. Camana specimens were collected in a sandy beach infralittoral zone using a 0.5 cm opening sieve bag.

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References

Campos, E. 2017. Taxonomy of *Pinnotheres bipunctatus* Nicolet, 1849 with a distributional checklist of the Pinnotheridae of Chile and Peru, and a list of the Crustacea described by Hercule Nicolet in the Atlas of the Physical and Political History of Chile. Latin American Journal of Aquatic Research 45 (2): 379–390.

Chirichigno, N. 1970. Lista de Crustáceos del Perú (Decápodos y Stomatopoda) con datos de su distribución. Informe Instituto del Mar del Perú 35: 1–95.

Garth, J. S. 1957. Reports of the Lund University Chile Expedition 1948–49. 29. The crustacea Decapoda Brachyura of Chile. Lunds Universitets Årsskrift, N.S. 53 (7): 1–129, pls 1–4.

Garth, J. 1960. *Pinnixa darwini*, a new species of pinnotherid crustacean from the Galapagos Islands. Pacific Science 14: 39–42.

Grove, M. W. & Woodin, S. A. 1996. Conspecific recognition and host choice in a pea crab, *Pinnixa chaetopterana* (Brachyura: Pinnotheridae). The Biological Bulletin 190 (3): 359–366.

Moscoso, V. 2012. Catálogo de crustáceos decápodos y estomatópodos del Perú. Boletín Instituto del Mar del Perú 27: 1–209.

Kameya, A., Moscoso, V. & Lellish, M. 1998. Los crustáceos decápodos y estomatópodos del Perú. Informe Instituto del Mar del Perú 136: 80–109.

Ng, P. K. L., Guinot, D. & Davie, P. J. F. 2008. Systema Brachyurorum: Part I. An annotated checklist of extant brachyuran crabs of the world. The Raffles Bulletin of Zoology 17: 1–208.

Palacios Theil, E. & Felder, D. L. 2020. Phylogeny of the genus *Pinnixa* White, 1846 (Crustacea, Brachyura, Pinnotheridae) and allies inferred from mitochondrial and nuclear molecular markers, with generic reassignment of twenty-one species. Zoosystema 42: 85–103. https://doi.org/10.5252/zoosystema-2020v42a6

Poore, G. C. B. & Ahyong, S. T. 2023. Marine Decapod Crustacea: a guide to families and genera of the world. xii + 916 pp., Clayton South (CSIRO Publishing).

Rathbun, M. J. 1907. South American Crustacea. Revista Chilena de Historia Natural 11: 45–50, pls 2, 3.

– – 1910. The stalk-eyed Crustacea of Peru and the adjacent coast. Proceedings of the United States National Museum 38: 531–620. https://doi.org/10.5479/si.00963801.38-1766.351

– – 1918. The grapsoid crabs of America. Bulletin of the United States National Museum 97: 1–461. https://doi.org/10.5479/si.03629236.97.i

Retamal, M. A. 1981. Catálogo ilustrado de los crustáceos decápodos de Chile. Gayana Zoologia 44: 1–110.

– – & Trucco, R. 1973. *Pinnixa valdiviensis* Rathbun (Decapoda, Pinnotheridae) comensal de *Urechis chilensis* (Müller) Echiuroida: registro de un nuevo hospedador. Boletín de la Sociedad de Biología de Concepción 46: 75–79.

– – & Yáñez, L. A. 1972. Nuevo registro de *Pinnixa bahamondei* Garth, 1957 en Chile (Crustacea, Decapoda, Pinnotheridae). Boletín de la Sociedad de Biología de Concepción 44: 103–107.

Torres, E. R. 2006. Primer registro para Argentina de *Pinnixa valdiviensis* Rathbun, 1907 (Decapoda, Pinnotheridae). Investigaciones Marinas 34 (2): 175–179. http://dx.doi.org/10.4067/S0717-71782006000200017