



A new species of *Achaeus* Leach, 1817 (Decapoda: Brachyura: Majoidea: Inachidae) from Easter Island

Peter K.L. Ng¹ and Christopher B. Boyko²

¹ Lee Kong Chian Natural History Museum, National University of Singapore, Kent Ridge, Singapore 119260, Republic of Singapore.

PKLN E-mail: peterng@nus.edu.sg

² Division of Invertebrate Zoology, American Museum of Natural History, Central Park West at 79th Street, New York, NY 10024.

CBB E-mail: cboyko@amnh.org

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ABSTRACT

In the present paper, a new species of *Achaeus* Leach, 1817, is described from Easter Island and dedicated to the memory of Michael Türkay. This record represents the first inachid spider crab and the sixth endemic brachyuran to be described from the island. It can be differentiated from congeners by its relatively short carapace, with the postorbital region not elongated, the arrangement and number of tubercles on the dorsal carapace surface, prominent hepatic lobe, presence of a large anterodistal lobe on the ocular peduncle, as well as structures of the third maxilliped and ambulatory legs.

KEY WORDS

Crustacea, Easter Island, endemic, southeastern Pacific, spider crab.

INTRODUCTION

Easter Island is a small volcanic landmass located approximately 3800 km from South America and 2200 km from Pitcairn Island (27°10'S 109°20'W). It is one of the most isolated inhabited islands on Earth (see Boyko, 2003) with a distinctive biogeographical province. Although a high degree of endemism in brachyuran species can be expected (Briggs and Bowen, 2012), to date only five endemic true crabs have been described (Garth, 1973; 1985) and none of these from the Majoidea. No species of the large majoid

CORRESPONDING AUTHOR

Peter K. L. Ng
peterng@nus.edu.sg

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family Inachidae, with 193 species in 35 genera (Ng *et al.*, 2008), has previously been recorded or described from Easter Island. The only inachids previously known from the vicinity of the island are two deep-water species, *Cyrtomaia platypes* Yokoya, 1933, and *Cyrtomaia danieli* Zarenkov, 1990, which were reported from the adjacent Sala y Gómez and Nazca Seamounts (Zarenkov, 1990; Parin *et al.*, 1997).

In 1998 and 1999, teams of researchers (including the second author in 1999) were assembled by Dr. John Tanacredi, then of the Gateway National Recreation Area, U.S. National Park Service, to form the Science Museum of Long Island - Easter Island Expedition of 1998–1999 in order to survey the near-shore marine environment. Recently, papers on the diversity of the island's portunoids (Boyko and Liguori, 2014), grapsoids and cryptochiroids (Boyko and Liguori, 2015) were published based, in large part, on material collected by this expedition. In the present paper, a new species of majoid belonging to the genus *Achaeus* Leach, 1817, is described and dedicated it to the memory of the late Michael Türkay.

MATERIAL AND METHODS

The holotype is deposited in the National Museum of Natural History (USNM), Smithsonian Institution, Washington D.C. The terminology used follows that in Ng & Richer de Forges (2015). Measurements provided, in millimeters, are of the maximum carapace length and width, respectively. The abbreviations P2–P5 are used for the second to fifth pereopods (first to fourth ambulatory legs), respectively.

SYSTEMATICS

Superfamily Majoidea Samouelle, 1819

Family Inachidae MacLeay, 1838

Genus *Achaeus* Leach, 1817

Remarks. *Achaeus* Leach, 1817, is a widely dispersed genus known from the eastern Atlantic, Mediterranean and Indo-West Pacific. The genus has 37 recognised species (Griffin & Tranter, 1986; Ng *et al.*, 2008), including the type species *Achaeus cranchii* Leach, 1817. The present specimen from Easter Island has a

combination of characters that make it different from all other *Achaeus* taxa and is described here as a new species.

Achaeus umu n. sp.

(Figs. 1–3)

Type material. Holotype female (1.9 × 2.7 mm) (USNM 1253231), Motu Iti, 158 feet (= 48.2 m), coll. H. Tonnemacher, 28 August 1999.

Etymology. This species is named in memory of our friend, Prof. Dr. Michael Türkay (1948–2015) to honour his great love of gastronomy. *Umu*, memorably experienced first-hand by the second author during his visit in 1999, is a traditional and delicious Easter Island meal consisting of a mixture of meat, fish, vegetables and fruit wrapped in banana leaves and roasted in an earth oven (*umu pae*).

Diagnosis. Carapace short, anterior part not elongated; pseudorostrum short, lobes rounded, smooth, with broad V-shaped hiatus; submedian granule present on supraorbital eave; gastric, cardiac and branchial regions with 4, 2 and 6 tubercles, respectively; very short postorbital region not prominently constricted, hepatic lobe broad, triangular; ocular peduncle with large anterodistal lobe; basal antennal article with 1 low tubercle; ischium of third maxilliped with 2 longitudinal rows of spinules and merus with 1 large basal tubercle; P2 longest, dactylus very long, almost straight with curved distal part, unarmed; P4 and P5 dactylus semilunate, ventral margin lined with 5–7 sharp teeth.

Description of female holotype. Carapace short, maximum length 1.4 times maximum carapace width (Figs. 1A, 2A). Dorsal surface with 14 rounded granules or tubercles, otherwise smooth; gastric, branchial and cardiac regions clearly demarcated by broad grooves; surface and margins with long and short straight, plumose and curved setae which do not obscure surface (Figs. 1A, 2A). Pseudorostrum short, bilobed, each lobe triangular with rounded tip, separated by distinct broad V-shaped hiatus (Figs. 1A, 2A, B). Supraorbital eave wide, outer margin gently convex, edges rounded, surface with 1 low, submedian

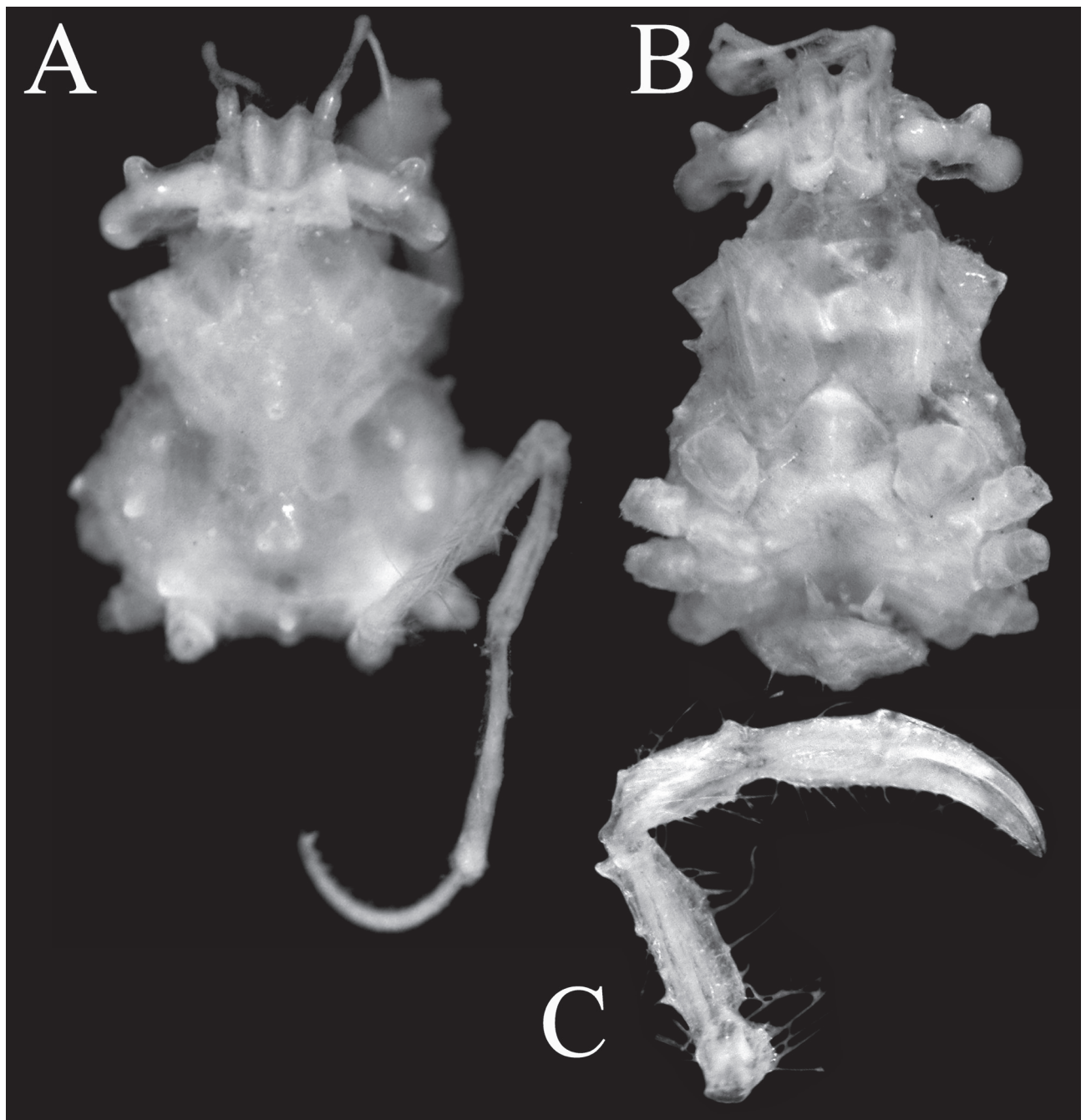


Figure 1. *Achaeus umu* n. sp., holotype female (1.9 × 2.7 mm) (USNM 1253231), Easter Island. A, dorsal view of carapace; B, ventral view of cephalothorax showing buccal cavity and anterior thoracic sternum; C, dorsal view of left cheliped.

granule (Fig. 2A). Eye relatively short, stout; ocular peduncle with prominent projection on anterodistal edge just before cornea peduncle; cornea large, round, positioned obliquely backwards from peduncle (Figs. 1A, B, 2A, B). Postorbital region between supraorbital cave and hepatic region very short, not prominently constricted (Figs. 1A, 2A). Hepatic region distinctly inflated, triangular in dorsal view, with 1 large tubercle and small, low granule on anterior margin; separated from branchial region by wide concavity (Fig. 2A).

Pterygostomian region with 1 prominent, anteriorly directed tubercle midway along margin, visible in dorsal view behind hepatic region; 1 smaller tubercle posterior to it, 1 small granule posterior to this, not clearly visible in dorsal view (Fig. 2A, B). Gastric regions gently convex; epigastric region prominent, unarmed; protogastric region with 1 submedian rounded tubercle; mesogastric region with 1 small median rounded tubercle, positioned anterior to 2 protogastric tubercles; metogastric region with 1 large

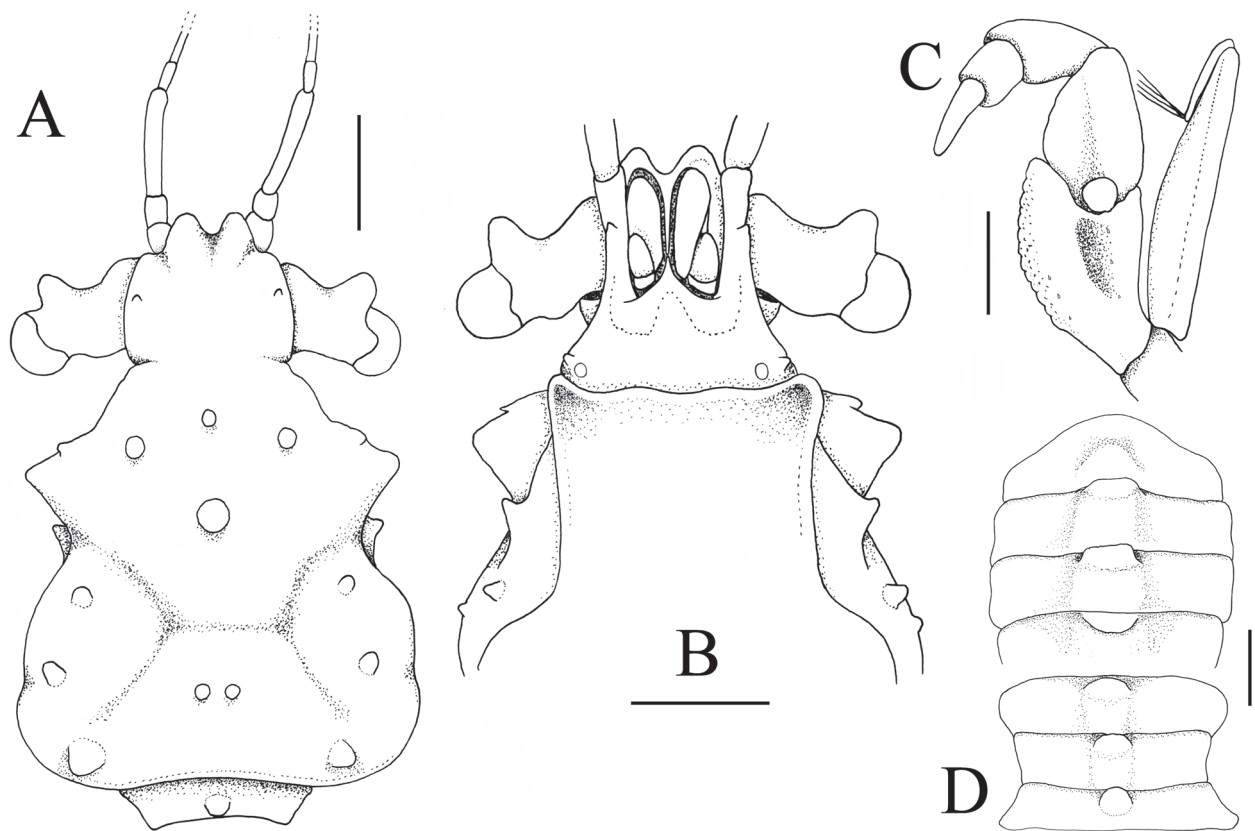


Figure 2. *Achaeus umu* n. sp., holotype female (1.9 × 2.7 mm) (USNM 1253231), Easter Island. A, dorsal carapace; B, ventral view showing buccal cavity, epistome, antennae, antennules and orbit; C, left third maxilliped; D, female abdomen. Setae not drawn on all structures. Scales: A, B, D = 0.5 mm; C = 0.25 mm.

median rounded tubercle (Figs. 1A, 2A). Cardiac region raised, with 2 small median rounded tubercles positioned side by side; intestinal region gently raised, unarmed (Fig. 2A). Branchial regions swollen, laterally with 3 prominent submarginal tubercles, posteriormost one largest (Fig. 2A). Posterior carapace margin gently concave (Fig. 2A). Antennular fossae large, longitudinally ovate; basal article unarmed (Figs. 1B, 2B). Interantennular septum (proepistome) narrow, compressed, not projecting outwards (Fig. 2B). Basal antennal article completely fused with epistome, almost smooth, with 1 low submedian tubercle; article 3 short, quadrate, article 4 elongate; flagellum long, about half carapace length (Figs. 1A, 2A, B). Epistome wider than long, with small tubercle just anterior of and lateral to green gland opening; posterior margin gently sinuous (Figs. 1B, 2B). Buccal cavity wide, with anterolateral edge rounded, reaching beyond edge of epistome (Figs. 1B, 2B).

Third maxilliped elongate; ischium longitudinally subovate, submedian sulcus distinct, with

sublongitudinal row of 3 spinules on each side, mesial margin uneven, with small pits and granules; merus subtriangular, posterior margin with prominent median tubercle; carpus, propodus and dactylus unarmed; exopod long, smooth, reaching to beyond distal edge of merus (Fig. 2C).

Chelipeds slender, relatively long (Fig. 1C). Ischium subtrigonal, inner margin with low lamelliform ridge with subdentate margin; merus trigonal in cross-section, with 2 large subterminal tubercles on anterodistal part and 2 low sharp granules on dorsal margin; ventral margin uneven, margins with long straight and curved setae (Fig. 1C). Carpus with tubercles on dorsal margin; small granules ventrally; surface with curved setae (Figs. 1C, 3G). Chela with palm slightly longer than wide; surface smooth; fingers as long as palm, relatively stout; pollex almost straight, dactylus gently curved; cutting margins with low teeth (Figs. 1C, 3G).

Ambulatory legs very long, slender; surface covered with long and short straight, curved and plumose setae;

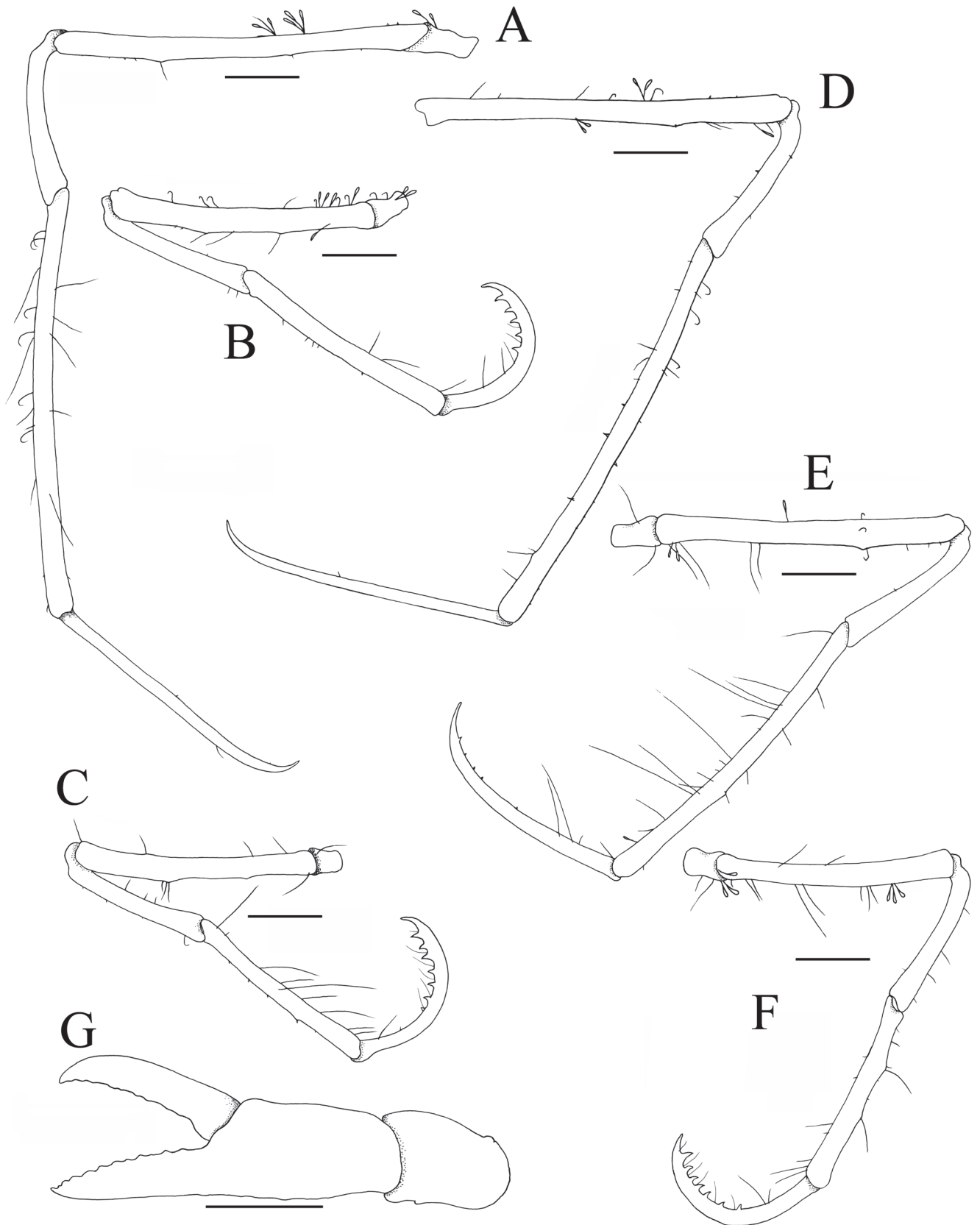


Figure 3. *Achaeus umu* n. sp., holotype female (1.9 × 2.7 mm) (USNM 1253231), Easter Island. A, left P2; B, left P4; C, left P5; D, right P2; E, right P3; F, right P5; G, outer view of left chela and carpus (denuded). Scales = 0.5 mm.

P2 longest, remaining legs decreasing regularly in length, fourth shortest (Fig. 3A–F); margins of merus uneven but not distinctly armed; P2 dactylus long, almost straight except for curved distal part, unarmed (Fig. 3A, D); P3 dactylus gently curved, distal half of ventral margin with 5 denticles, distalmost one largest (Fig. 3E); P4 dactylus prominently curved, semilunate, distal half of ventral margin with 5 sharp teeth, distalmost one largest (Fig. 3B); P5 positioned subdorsally, leg arching over dorsal surface of carapace; dactylus prominently curved, semilunate, distal half of ventral margin with 7 sharp teeth, distalmost one largest (Figs. 1A, 3C, F).

Abdomen relatively wide, all somites and telson free (Fig. 2D); median surface of all somites with prominent large median tubercle, appearing subtruncate on somites 5 and 6; median part of telson with low tubercle (Fig. 2D); somite 1 trapezoidal, reaching coxae of last pair of ambulatory legs (Figs. 1B, 2A, D); somite 2 longer than somite 1, subtrapezoidal, lateral margins gently concave; somite 3 with lateral margins distinctly convex; somites 4–6 rectangular, lateral margins sinuous; telson subtriangular, broad, lateral margin convex along anterior part, becoming gently concave posteriorly with tip rounded (Fig. 2D); pleopods finger-like (Fig. 1B).

Thoracic sternum with surfaces smooth; sternites 1 and 2 fused, sloping inwards towards buccal cavity, separated from sternite 3 by convex ridge; sternites 3 and 4 completely fused, surface gently concave (Fig. 1B). Vulva small, round, on submedian part of sternite 6.

Remarks. With regards to the short and rounded pseudorostrum, broad and prominent hepatic lobe and structure of the last ambulatory legs, *A. umu* n. sp. most resembles the Indo-West Pacific *Achaeus lacertosus* Stimpson, 1858. The latter species, however, has a smooth carapace without any tubercles (cf. Sakai, 1976: text fig. 82), unlike that of *A. umu* n. sp. (Figs. 1A, 2A). *Achaeus umu* n. sp. is also similar to *Achaeus spinosus* Miers, 1879 (Persian Gulf to Japan) but the postorbital region of the new species is short (vs. postorbital region distinctly longer in *A. spinosus*), the hepatic region has only one small granule in addition to the lobe (vs. the hepatic region with two or more granules in addition to the lobe in *A. spinosus*) and the branchial region only has three tubercles (vs. the lobe and the branchial

region only has one tubercle in *A. spinosus*) (cf. Sakai, 1976: text fig. 85).

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