



## A new species of hermit crab of the genus *Pagurus* Fabricius, 1775 (Crustacea: Anomura: Paguridae) from the southern Caribbean off Venezuela

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### Abstract

A male specimen of a new species of the heterogeneous genus *Pagurus* Fabricius, 1775, collected in 1968 off the Caribbean coast of Venezuela, was discovered among the vast crustacean collections of the Smithsonian Institution. This new species herein described and illustrated is named *P. scopaopsis*, and is characterized primarily by the presence of: a brush-like setation pattern on the dactyl of the left third pereopod, dense small tubercles on the dorsal surfaces of the dactyl and fixed finger of the right chela, and a raised longitudinal ridge armed with spines on the palm and fixed finger of the left chela.

**Key words:** Crustacea, Decapoda Anomura, Paguridae, new species, *Pagurus scopaopsis*, Caribbean Sea

### Introduction

The genus *Pagurus* Fabricius, 1775, which currently includes approximately 278 nominal species, has, in practice, been used as the catch-all for any pagurid with eleven pairs of phyllobranchiate gills and lacking any secondary sexual modifications or similar exclusive characters (McLaughlin 1997, 2003; WoRMS Editorial Board 2016). Species assigned to this genus are known to occur throughout the world oceans and are most frequently found in a variety of habitats ranging from shallow water to continental shelf depths. While examining the numerous samples of pagurids in the collections of the National Museum of Natural History, Smithsonian Institution Washington DC (USNM), we encountered a male specimen collected in the southern Caribbean region off the coast of Venezuela, that clearly did not match any of the species of *Pagurus* known from the western Atlantic, including the Gulf of Mexico or Caribbean regions. While only a single specimen was discovered, the morphology is sufficiently distinct, in particular the unique setation on the dactyl of the third left pereopod, to consider the specimen as a new species. This new species is herein fully described and illustrated.

General terminology follows McLaughlin (2003), except for the term *linea d*, used as defined by Tudge et al. (2012). Shield length was measured in millimeters (mm) from midpoint of rostral lobe to midpoint of posterior margin of the shield. Drawings were made using a Wild M-5 stereomicroscope equipped with a camera lucida and digitized for publication using the software Adobe Illustrator CS6™. The figures of chelipeds were manually enhanced to show setation and armature.

### Systematics

#### Family Paguridae Latreille, 1802

#### Genus *Pagurus* Fabricius, 1775

*Pagurus scopopsis* n. sp.

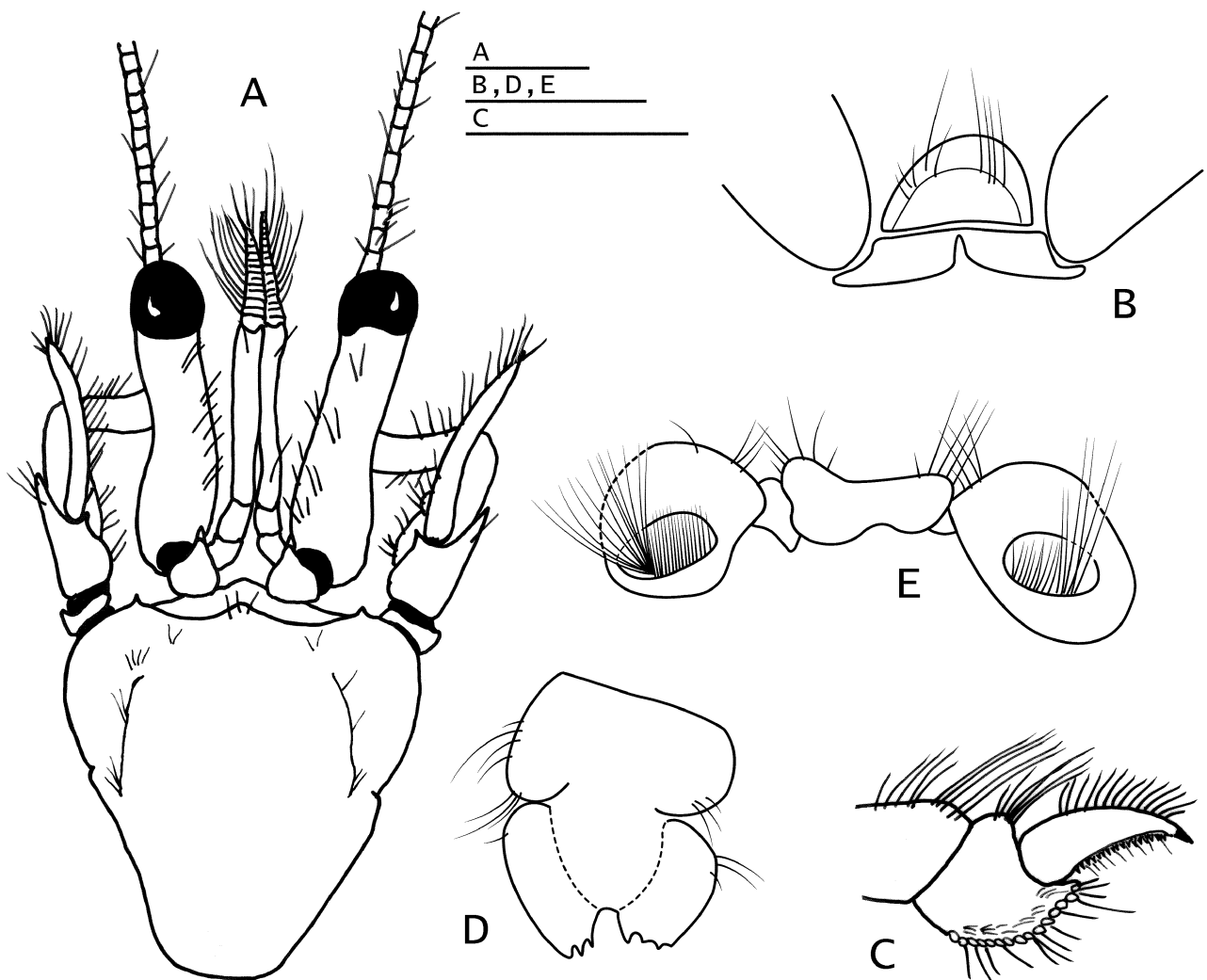
(Figs 1–3)

**Type material.** Holotype male, shield length 2.0 mm, E of La Guaira, Venezuela, Caribbean Sea, R/V Pillsbury, station 737, 10°44'N, 66°07'W, 60–73 m, 22 July 1968 (USNM 184269).

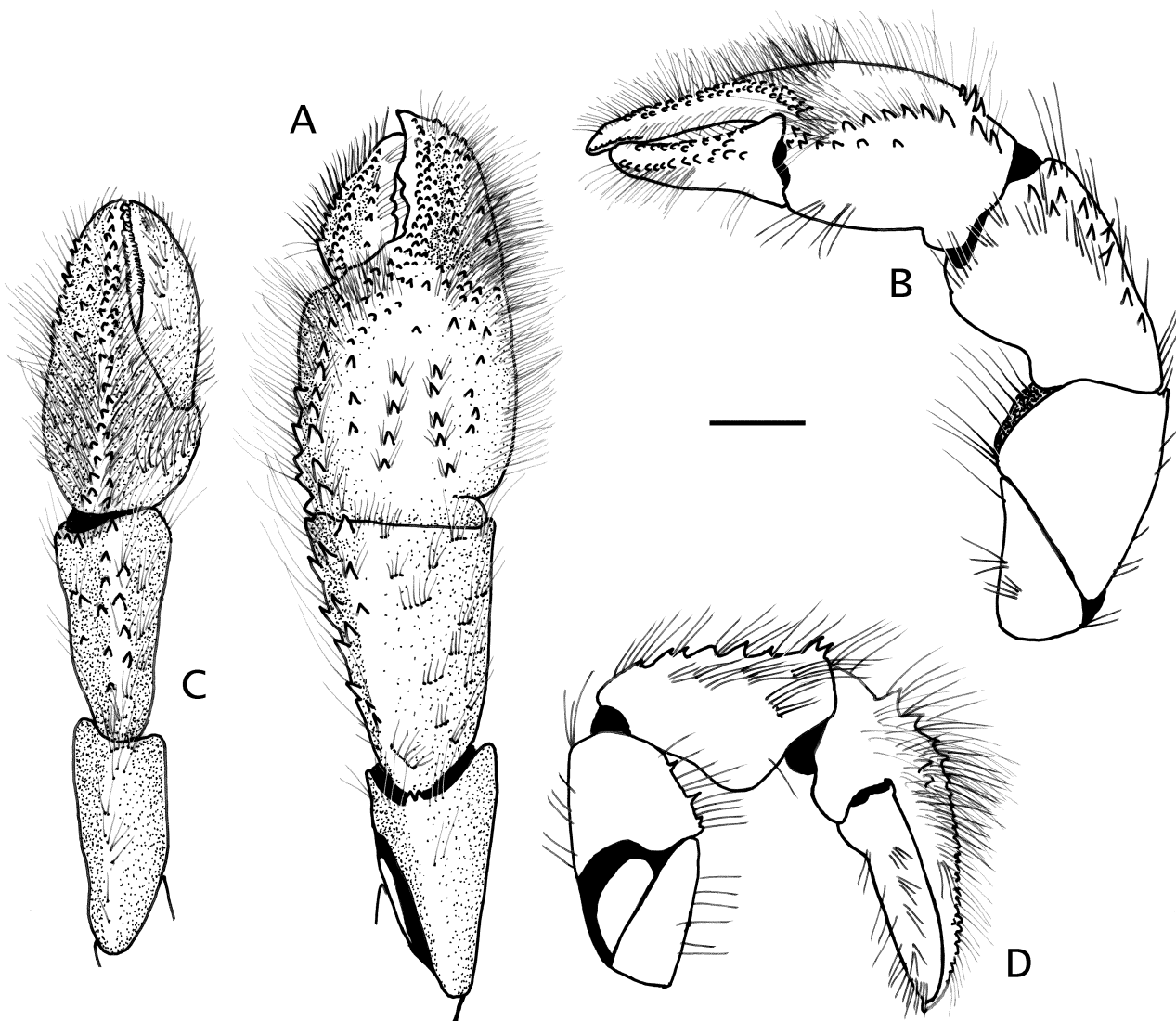
**Description.** Eleven pairs of biserial gills. Shield (Fig. 1A) slightly longer than broad; dorsal surface smooth, with scattered short tufts of setae, mainly along *linea d*. Anterolateral margins sloping. Anterior margins between rostrum and lateral projections weakly concave. Posterior margin truncate. Rostrum obtusely subtriangular, terminating in blunt apex lacking spine. Lateral projections broadly triangular, with small marginal spine. Posterior carapace membranous; posteromedian plate with transverse row of short setae, branchiostegite with scattered tuft of setae.

Ocular peduncles long, about 0.8 length of shield (excluding corneas), slightly inflated basally; corneas slightly dilated, dorsomesial surface with tufts of short setae. Ocular acicles subtriangular, with small sub-marginal spine, separated by about basal width of 1 acicle; distomesial margins with row of few setae.

Antennular peduncle reaching to about distal margin of corneas when fully extended. Ultimate segment with few scattered setae on dorsal surface, penultimate and basal segments glabrous. Basal segment with small spine on dorsolateral distal margin.



**FIGURE 1.** *Pagurus scopopsis* n. sp., holotype male, shield length 2.0 mm, E of La Guaira, Venezuela, Caribbean Sea (USNM 184269): A, shield and cephalic appendages, dorsal; B, thoracic sternite XII, ventral view; C, propodus and dactyl of right fourth pereopods, lateral; D, telson, dorsal; E, thoracic sternite XIV, and coxae of fifth pereopods, ventral. Scales equal 1 mm.



**FIGURE 2.** *Pagurus scopaoopsis* n. sp., holotype male, shield length 2.0 mm, E of La Guaira, Venezuela, Caribbean Sea (USNM 184269): A, right cheliped, dorsal; B, same, mesial; C, left cheliped, dorsal; D, same, mesial. Scale equals 1 mm.

Antennal peduncle not exceeding distal margin of corneas. Fifth segment with scattered setae on dorsal and ventral surfaces. Fourth segment with scattered setae on lateral surface. Third segment with strong spine and tuft of setae on ventrodistal margin. Second segment with dorsolateral distal angle produced into strong acute projection terminating in bifid spine and 1 additional small spine subdistally on ventral margin; dorsomesial distal angle with small sharp spine, and short setae on mesial surface; first segment with small spine on lateral face. Antennal acicles reaching to about basal margin of corneas, broadly curved outward, terminating in acute spine with tufts of setae; mesial margin with row of long setae. Flagellum long, slightly overreaching right cheliped; with short and long setae 1 or 2 articles in length, longer setae arranged every 2 or 3 articles, setae diminishing in number and length distally.

Mouthparts not dissected. Third maxilliped ischium with well-developed crista dentata consisting of row of about 20 small subequal teeth, and strong accessory tooth.

Chelipeds unequal, right longer and stronger than left. Right cheliped (Fig. 2A, B) with dense setation on dorsolateral and dorsomesial surfaces of chela, setation decreasing somewhat proximally; dactyl slightly shorter than palm (measured on mesial margin). Fingers leaving narrow hiatus when closed, terminating in minute corneous claws crossed when closed, with fixed finger slightly overreaching dactyl, cutting edges with 2 or 3 unequal prominent calcareous teeth on proximal two-thirds, and distal row of small fused corneous teeth (dactyl) or small calcareous teeth (fixed finger); dorsal surface of dactyl and fixed finger with moderately raised longitudinal row of small dense tubercles; mesial margin of dactyl and lateral margin of fixed finger well delimited by row of

small spines or tubercles. Palm about 0.8 as long as carpus; dorsolateral margin rounded, dorsomesial margin with 2 rows of blunt or sharp spines; dorsal surface moderately setose, with 2 median rows of strong well-spaced spines or spinous tubercles, 2 irregular submedian rows of spines, and irregular rows of small tubercles distally near base of dactyl and extending onto fixed finger; ventral surface smooth, glabrous. Carpus slightly longer than merus, with moderately dense long setation on dorsomesial and mesial surfaces, and short transverse rows of setae on dorsal surface; dorsolateral surface rounded, dorsomesial margin with irregular row of strong spines; ventrolateral margin with 2 minute tubercles distally, ventromesial margin unarmed; ventral surface smooth, glabrous. Merus subtriangular; dorsal surface with scattered short setae; dorsodistal margin with 2 spines medially and row of setae; ventrolateral margin with 2 small spines distally and row of long setae; ventral surface with scattered setae. Ischium, unarmed, with scattered short setae on lateroventral margin.

Left cheliped (Fig. 2C, D) with fingers leaving narrow hiatus when closed, terminating in small corneous claws crossed when closed. Dactyl about twice as long as palm, surfaces with scattered short setae; cutting edge with distal row of small, fused corneous teeth; dorsal and ventral surfaces lacking spines or tubercles; lateral surface rounded. Fixed finger with dorsolateral row of small, mostly blunt spines, densely setose on dorsal surface proximally. Palm slightly less than half length of carpus; dorsal surface with moderately raised longitudinal ridge continued on fixed finger and armed with double row of small spines diminishing in size distally; dorsal surface with long dense setae; lateral surface rounded; ventral surface smooth, with scattered setae. Carpus as long as merus; armed with row of spines on dorsolateral and dorsomesial margins, and strong dorsodistal spine; lateral surface with scattered small tubercles or spines; dorsomesial margin with scattered long setae; ventral surface with scattered setae. Merus subtriangular; ventrolateral margin with row of 5 acute spines distally; dorsal surface with row of long setae; dorsodistal margin setose; ventromesial margin with 4 small spines and row of long setae; ventral surface with scattered setae. Ischium unarmed, with moderated long setae on mesial surface.

Second and third pereopods or ambulatory legs (Fig. 3A–C) similar from left to right, except for distinctly different armature, setation and broader propodus and dactyl of left third pereopod; dactyls broadly curved, each terminating in sharp corneous claw. Dactyl (Fig. 3B, C) of left third pereopod about 1.2 times as long as propodus, ventral margin with long, dense, brush-like setae partially obscuring row of 14 strong corneous spinules; with dorsomesial row of 5 small corneous spinules. Other pereopods with dactyls about as long as propodi, with ventromesial row of 7–9 corneous spinules increasing in size distally, and row of moderately long and sparse setae dorsally and ventrally; propodi, carpi, meri and ischia with long setae on dorsal and ventral margins, and scattered short setae on lateral and mesial surfaces; carpi with small dorsodistal spine. Sternite XII (of third pereopod) divided in anterior and posterior lobes separated by thin membranous cleft (Fig. 1B); anterior lobe semisubcircular, with long setae on distal margin.

Fourth pereopod (Fig. 1C) semichelate. Dactyl broadly curved, slender, subtriangular, terminating in a sharp corneous claw, with ventrolateral row of minute, fused corneous teeth; dorsal margin with row of setae. Propodus with dorsodistal tuft of long setae; propodal rasp consisting of 1 row of ovate corneous scales, no apparent preungual process. Carpus with dense long setae on dorsal surface, mainly on distal margin; ventrodorsal surface with tuft of long setae. Merus with tuft of long setae on dorsodistal surface, and median tuft of short setae; ventral surface with scattered setae. Ischium with setae on ventral surface.

Fifth pereopod chelate. Dactyl with tuft of long setae on dorsodistal margin; Propodus with tuft of long setae on dorsodistal surface and long setae on ventral surface; propodal rasp occupying nearly half of lateral face of propodus. Carpus and merus with long setae on dorsal surface. Ischium with scattered long setae on ventral surface. Coxae (Fig. 1E) with gonopores partially obscured by tuft of long setae. Sternite XIV (of fifth pereopod), weakly subdivided into 2 slightly asymmetrical, setose lobes.

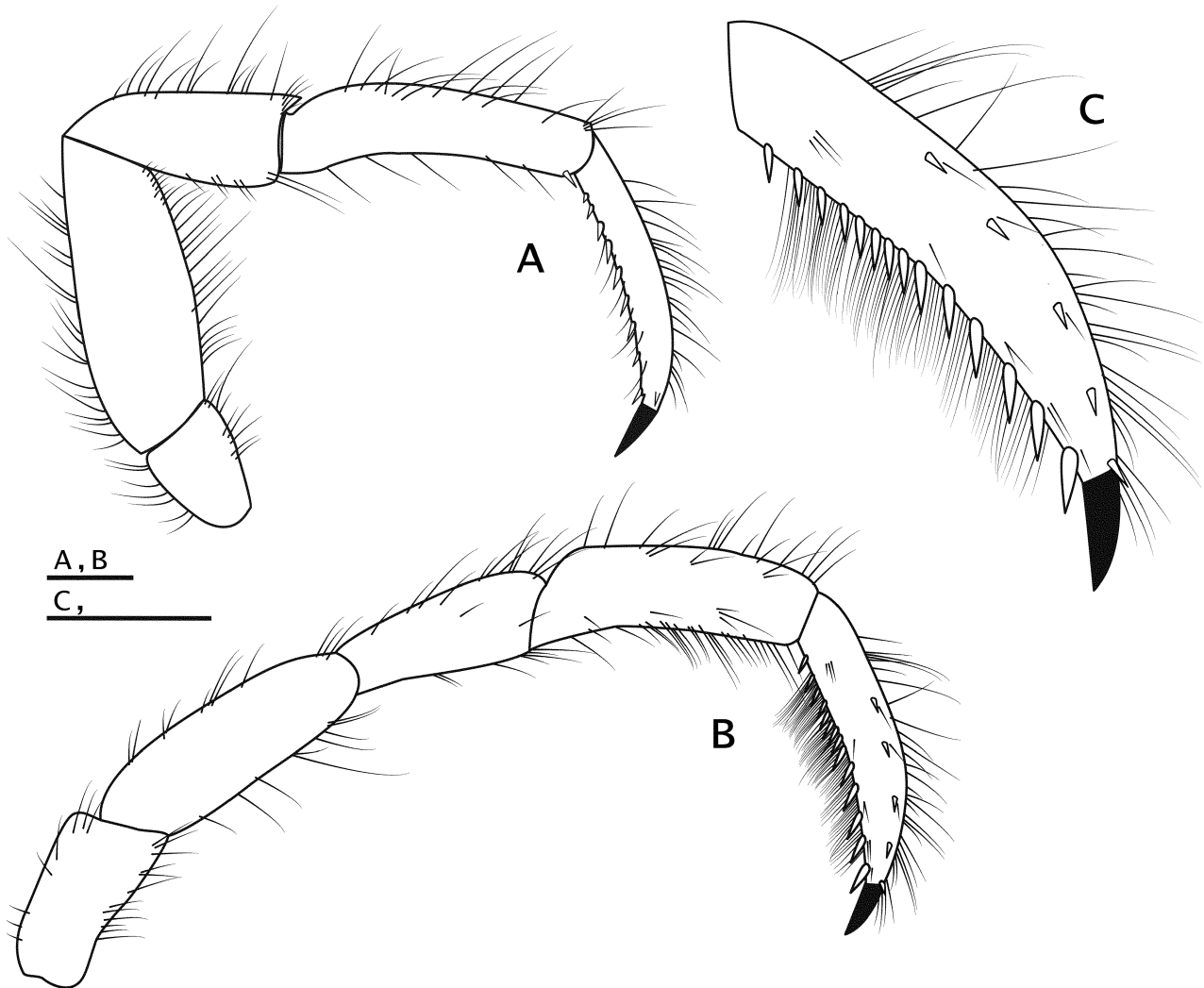
Uropods strongly asymmetrical, left largest. Telson (Fig. 1D) nearly symmetrical, with distinct transverse suture; posterior lobes separated by deep U-shaped median cleft, terminal margins slightly oblique, each armed with 3 or 4 small spines, lateral margins with scattered setae.

Male with unpaired left pleopods 3–5. Female unknown.

**Distribution.** So far known only from the southern Caribbean Sea, off the coast of Venezuela, East of La Guaira. Depth: 60–73 m.

**Etymology.** The specific name is derived from the Latin *scopa*, meaning broom, and the suffix *-opsis*, likeness, and makes reference to the characteristic broom or brush-like setation present on the dactyl of the left third pereopod of this new species.

**Remarks.** As previously mentioned, based on the characters of the holotype and only specimen known, this new species is placed in the catch-all genus *Pagurus*. This new species is clearly distinguishable from all other *Pagurus* from the tropical western Atlantic primarily by the unique presence of brush-like setation on the ventromesial margin of the dactyl of the left third pereopod, as well as the armature and dense setation on the dorsal surface of the palm and fixed finger of each of the left and right chelae. While a number of species of *Pagurus* distributed in the Indo-West Pacific region are known to have various degrees of setation on the dactyls of the ambulatory legs, none in the western Atlantic, except this new species, shows such dense setation and armature. We refrain from attempting to assign *P. scopaoopsis* n. sp. to any of the informal groups of *Pagurus* as it does not appear to fit within any of the currently defined groups and, furthermore, it is widely accepted by anomurologists that *Pagurus* is a heterogeneous assemblage that contains numerous species without group assignment.



**FIGURE 3.** *Pagurus scopaoopsis* n. sp., holotype male, shield length 2.0 mm, E of La Guaira, Venezuela, Caribbean Sea (USNM 184269): A, left second pereopod, mesial; B, left third pereopod, mesial; C, dactyl of same, mesial. Scales equal 1 mm.

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