



A new genus and species of Apseudidae, and a new species of *Bunakenia* (Crustacea: Tanaidacea: Apseudomorpha) from the Northwest Atlantic and Gulf of Mexico

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Abstract

Examination of material from the Campeche region of the southern Gulf of Mexico revealed the presence of a new genus and species of Apseudidae that appears to be transitional between *Bunakenia* Guțu and *Apseudes* Leach *sensu lato*. This new taxon, *Pseudobunakenia anablesis* n. gen., n. sp. is found throughout the Gulf of Mexico (GOM) and Northwest Atlantic as far north as South Carolina. It is known in the literature under the designation “*Apseudes spinosa*” Sars *sensu* Dawson and “*Apseudes* sp. A” (Heard *et al.*). Also, *Bunakenia hamata* n. sp. is described from offshore Georgia and is distributed from the Florida Gulf Coast and the Northwest Atlantic as far north as South Carolina. It is known in the literature under the designation “*Bunakenia* sp. A” (Heard *et al.*) and is the only known species of that genus in the GOM/NW Atlantic. It can be distinguished from its congeners by a combination of characters such as the pereonites having posterolateral apophyses, the antennule first peduncle article denticulate, the antennule accessory flagellum having five articles, and the first pereopod having four ventral propodal spiniform setae. A key to the known species is presented.

Key words: Apseudinae, Mexico, Campeche Region, Northwest Atlantic, *Pseudobunakenia*, *Bunakenia*

Introduction

Much of the coastal and shelf areas in Mexico have been unexplored due to the lack of research funding or coastal infrastructure to support biological field studies (Fautin *et al.* 2010). Until recently, only one tanaidacean species, the parapseudid *Discapseudes mexicanus* Guțu, 2006, was known from the southwestern Gulf of Mexico, off Veracruz, Mexico (Heard & Anderson 2009). Cházaro-Olvera *et al.* (2018) reported 30 species from Veracruz, and Abarca-Ávila *et al.* (2019) reported 23 species from the Yucatan Peninsula, including the apseudid *Paradoxapseudes bermudeus* (Băcescu, 1980), and a new species belonging to an apparently undescribed species of *Parapseudes* Sars, 1882. In the same year, based on specimens from Quintana Roo, Jarquín-González & Carrera-Parra (2019) described a new species belonging to the leptocheliid genus *Hargeria* Lang, 1973, and later (Jarquín-González & Carrera-Parra 2022) described two new species of the leptocheliid genus *Chondrochelia* Guțu, 2016, one from Veracruz, Mexico, and the other from Quintana Roo, Mexico.

The tanaidacean fauna from the Campeche region is relatively unknown. Drumm & Heard (2022) recently described a new parapseudid genus and species from that region. Examination of that same material revealed another tanaidacean taxon new to science, previously known under the designation “*Apseudes spinosa*” Sars *sensu* Dawson (1966) from off Louisiana and “*Apseudes* sp. A” (see Heard *et al.* 2004) from other regions of the Gulf of Mexico and South Atlantic Bight as far north as South Carolina. A new genus is erected, and an illustrated description of the new species is presented below.

Species within the genus *Bunakenia* Guțu, 1995 are found in Australia, western Indian Ocean (Tanzania), Indo-Pacific, SW Atlantic (Brazil), and GOM/NW Atlantic in depths of < 200m. The genus is distinguished from other members of the family Apseudidae most notably by the presence of a wide gap in the fingers of the male chelae (Guțu, 2006). Material identified as *Bunakenia* sp. A (*sensu* Heard *et al.* 2004) off Georgia at a depth of 58 m is formally described and illustrated and an identification key to the known species is presented.

The Apseudidae Leach, 1814 is considered the most plesiomorphic tanaidacean family (Błażewicz-Paszkowycz *et al.* 2012) and its systematics is fraught with numerous problems. This stems from the poor original description of the type genus and species, *Apseudes talpa* (Montagu, 1808) and caused the genus *Apseudes* Leach, 1814 to be a catch-all taxon. Subsequent studies have made attempts to rectify some of these problems by erecting new genera (e.g., Norman 1899; Lang 1968; Guțu 1995, 2002, 2006; Józwiak 2014), and Larsen *et al.* (2011) redescribed *A. talpa* but unfortunately did not update the list of *Apseudes* species, apart from implicitly including those of *Androgynella* Guțu, 2006 (by synonymy), thus causing the genus to remain a heterogenous taxon. Another genus, *Apseudopsis* Norman, 1899, includes species that conflict with the diagnostic characters (Guțu 2006). It is thus clear that revisionary work is still needed in order to create some stability within the family, and this is illustrated by the fact that there has been no working key to the genera of the Apseudidae since Guțu (1981). The family currently contains three subfamilies and 25 genera (WoRMS 2020) and has a cosmopolitan distribution occurring from the intertidal zone to the deep sea (Heard *et al.* 2004).

Materials and methods

Samples containing *Pseudobunakenia anablexis* **n. gen., n. sp.** were collected at 20 stations off Mexico's Campeche region from depths of 15.6–24 m (Table 1). Samples of *Bunakenia hamata* **n. sp.** came from collections at the South-eastern Regional Taxonomic Center, housed within the South Carolina Department of Natural Resources. Material was collected by David Knott in 1981 off Georgia at depths of 57–58 m.

Measurements of body length were made from the tip of the rostrum to the apex of the pleotelson. The width of the body was made at the broadest section of the cephalothorax. Drawings were made with the aid of a drawing tube mounted on a WILD M12 microscope. Photographs were made with a Leica EC3 camera. Descriptions of the body are based on holotype material and those of dissected appendages are taken from paratypes. Terminology is similar to that of Larsen (2003) although the term 'PSS' (pinnate sensory seta) is used instead of 'broom seta,' and we recognize the peduncle/flagellum division for the antennule/antenna. Type material is deposited at the Smithsonian Institution, National Museum of Natural History, Washington, D.C. (USNM).

TABLE 1. List of station numbers, geographic coordinates, and depth.

Collection Station	Latitude	Longitude	Depth (m)
1	19°13'11.9994"N	91°54'0"W	24
2	19°13'11.9994"N	91°57'35.9994"W	24
3	19°11'24"N	91°59'23.9994"W	23.5
4	19°8'24"N	91°54'0"W	22
5	19°8'24"N	91°57'35.9994"W	22
6	19°4'12"N	91°57'35.9994"W	21.5
7	19°1'48"N	91°55'48"W	20.4
8	19°0'0"N	91°54'0"W	18.5
9	18°55'12"N	91°54'0"W	17
10	18°51'0"N	91°54'0"W	15.6
11	18°51'0"N	91°57'35.9994"W	16.1
12	18°54'36"N	91°57'35.9994"W	17.6
13	18°56'59.9994"N	91°58'48"W	18.5
14	18°58'11.9994"N	92°1'48"W	20.5
15	18°54'36"N	92°1'48"W	18
16	18°50'23.9994"N	92°1'11.9994"W	15.7
17	18°51'0"N	92°4'11.9994"W	16
18	18°51'35.9994"N	92°7'12"W	17.5
19	18°54'36"N	92°5'59.9994"W	18.5
20	18°51'35.9994"N	92°5'59.9994"W	20

Systematics

Order Tanaidacea Dana, 1852

Suborder Apseudomorpha Sieg, 1980

Family Apseudidae Leach, 1814

Subfamily Apseudinae Leach, 1814

Pseudobunakenia n. gen.

Diagnosis. Eye lobes demarcated and with antero-ventral spine; visual elements appear to be absent. Rostrum broad at base, becoming abruptly narrow and acuminate at apex. Antennule with inner margin of peduncular article 1 not denticulate or serrate. Antennule accessory flagellum with 3–?4 articles. Pereonites 2–6 subquadrate, pereonites 3–6 with ventrally directed spine on anterolateral margins. Mandibular palp article 2 longest; article 1 with simple setae, articles 2 and 3 with long simple and short pectinate setae. Labium palp with three distal spiniform setae. Maxillule inner endite with five setulate setae. Cheliped basis with distinctive robust shape, widest midlength with a short and stout spiniform seta on ventral margin. Chela of male with wide gap between fingers lacking teeth on both fixed finger and dactylus. Chela of female with small, but distinct gap between fingers. Cheliped and pereopod 1 with exopodite. Pereopod 1 basis lacking plumose setae; merus lacking dorsodistal spiniform seta. Pereopod 4 dactylus slightly reduced, shorter than propodus. Pereopod 6 merus and carpus with plumose setae on dorsal margin.

Type-species. *Pseudobunakenia anablesis* n. sp.

Etymology. *Pseudo-* Greek for ‘false,’ ‘untrue,’ ‘deceitful’ + generic name *Bunakenia* with which it shows affinities.

TABLE 2. Comparison of selected characters for four genera of related apseudids (the new genus treated herein, plus *Apseudes*, *Apseudopsis*, and *Bunakenia*). The characters for *Apseudes* follows the diagnosis provided by Larsen *et al.* (2011).

	Eyelobe	Antero-lateral apophyses on pereonites	Postero-lateral apophyses on pereonites	Male chela with large gap between fingers	Rostrum	Antennule, # of inner flagellum articles	Sexual system
<i>Apseudes</i>	Separate from carapace	Present	Absent	Absent	Triangular	4+	Simultaneous hermaphroditism
<i>Apseudopsis</i>	Fused with carapace	Present or absent	Absent	Absent	Base wide, narrowing abruptly to acute tip	3,4	Gonochory
<i>Bunakenia</i>	Separate from carapace	Absent	Present or absent	Present	Triangular (except <i>B. kadazan</i>)	3–6	Gonochory
<i>Pseudobunakenia</i> , n. gen.	Separate from carapace	Present	Present	Present	Base wide, narrowing abruptly to acute tip	3,?4	Gonochory

Remarks. *Pseudobunakenia* n. gen. resembles the genus *Bunakenia* Guțu, 1995 in the shape of the cheliped (gaping male chela and inflated basis) and pereonites; however, *Bunakenia* lacks anterolateral apophyses on the pereonites, and the females lack a gaping chela. *Bunakenia aspalieus* Bamber, Bird & Angsupanich, 2003, *Bunak-*

enia kadazan Bamber & Sheader, 2005, and *Bunakenia hamata* **n. sp.** (see below) have apophyses on the posterior corners of some pereonites.

Pseudobunakenia also resembles the genus *Apseudopsis* Norman, 1899 in the shape of the rostrum (wide at base and narrowing abruptly to an acute tip) and apophyses on some pereonites [except *A. latreillii* (Milne-Edwards, 1828) and *A. gabesi* Esquete, 2019]. Esquete *et al.* (2019) discuss the systematic problems with *Apseudopsis*, as there are inconsistencies in the diagnostic features that are not shared among all the species. A revision of the genus with a full redescription of the type species, *A. acutifrons* (G.O. Sars, 1882) from the type locality will be required in order to resolve the systematic issues. Table 2 lists some characteristics distinguishing the new genus from related genera.

***Pseudobunakenia anablesis* n. sp.**

(Figs 1–9)

?*Apseudes* sp. *A. sensu* McSweeney, 1968 (figs 8–13); Heard *et al.*, 2004 (figs 28, 35).

?*Apseudes spinosus sensu* Dawson, 1966 (*non* M. Sars, 1858).

Diagnosis. As for the genus (currently monotypic).

Material examined. *Holotype*: female (♀), 6.5 mm, (USNM 1666244), station 4. *Allotype*: male (♂), 5.0 mm, (USNM 1666245). *Paratypes*: 1 ♀ (6.5 mm), 1 ♂ (4.0 mm) (USNM 1666246), station 2; 1 ♂ (4.0 mm) (USNM 1666247), station 1; 1 ♂ (5.0 mm) (USNM 1666248), station 18; 2 ♂♂ (4.5 mm) (USNM 1666249), station 10; 1 ♂ (5.5 mm) (USNM 1666250), station 9; 1 ♀ (damaged), 1 ♂ (3.5 mm) (USNM 1666251), station 7.

Etymology. From *anablesis*- Greek for ‘postponement,’ ‘delay;’ alluding to the fact that it has taken over 50 years to formally describe this species since it was first discovered by Dawson (1966) and McSweeney (1968).

Description. Adult female. *Holotype*: (Fig 1A). *Paratypes*: (Figs 1B–7E). *Body* (Figs 1A–B; 2– 3) about 6.2 times as long as wide. *Cephalothorax* as long as wide, about 15% of body length, about as long as first two pereonites combined, naked; rostrum broad at base with rounded shoulders, anterior portion produced in acute tip; eyelobes present, terminating distally in curved spine on ventro-lateral margin; epistome present. *Pereon* about 60% of body length; pereonite 1 shortest, more than twice as wide as long; pereonites 3 and 4 longest and subequal; pereonites 1 and 2 have rounded lateral margins while succeeding pereonites have nearly straight margins; pereonites 3 and 4 length subequal to width, all other pereonites wider than long, with setae on antero- and postero-lateral corners; pereonites 3–6 (Figs 1B, 2) with ventrally directed spine on anterolateral margins; pereonites 2–4 with smaller inconspicuous, ventrally directed spine on posterolateral corners (this character is difficult to observe in smaller specimens and seems to be damaged in some other specimens); hyposphenia on pereonites 2, 3, and 6 (Fig 3). *Pleon* as long as first two pereonites combined, about 16% of body length; pleonites expanded laterally into spiniform projection with plumose setose margins; hyposphenia present on pleonite 1. *Pleotelson* slightly longer than wide, about 6% of body length, about twice as long as one pleonite, with few setae on lateral and dorsal margins, and slight lateral projection anteriorly.

Antennule (Fig 1C) peduncle article 1 about half as long as carapace, 3.2 times as long as wide, with six simple setae on inner margin and four simple setae and six PSS on outer margin; article 2 less than half length of article 1 with seven simple setae and three PSS; article 3 nearly half as long as article 2 with three distal simple setae and one distal PSS; article 4 (common article) about half as long as article 3 with two PSS on dorsal surface. Accessory flagellum with three articles, each one with at least one simple seta and one PSS. Main flagellum with seven articles with one aesthetasc on articles 3 and 5.

Antenna (Fig 1D) peduncle with five articles; article 1 with inner distal projection, naked; article 2 as long as succeeding two articles combined, with one short simple seta on inner and outer margins; squama extending to mid-length of article 5, bearing six simple setae; article 3 short, with two long inner simple setae; article 4 about twice as long as article 3, with two PSS on ventral surface; article 5 as long as article 2, with four PSS and two simple setae. Flagellum with five articles.

Labrum (Fig 4A) with medial depression bearing hair-like setae on either side.

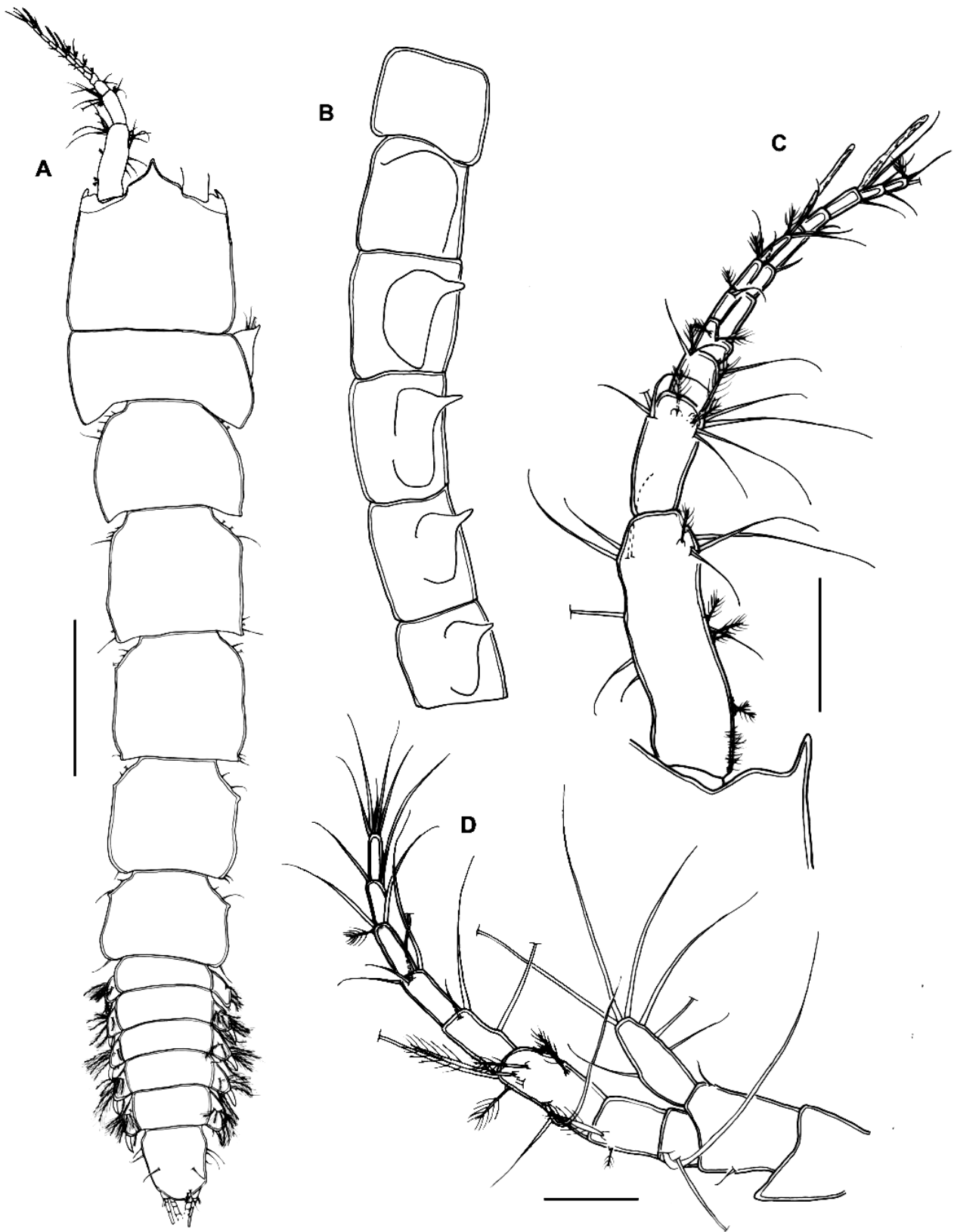


FIGURE 1. *Pseudobunakenia anablesis*, n. gen., n. sp., adult female. A, habitus (dorsal view); B, pereon (lateral view); C, antennule (dorsal view); D, antenna (ventral view). Scale bars: A = 1.0 mm; C = 0.2 mm; D = 0.1 mm.



FIGURE 2. *Pseudobunakenia anablesis*, n. gen., n. sp., adult female. Pereon showing anterolateral apophyses of pereonites 3–6 (oblique view). Photo by D. Drumm.



FIGURE 3. *Pseudobunakenia anablesis*, n. gen., n. sp., adult female. Lateral view of pereon showing hyposphenia on pereonites 2, 3, and 6. Photo by D. Drumm.

Mandibles (Fig 4B–D). Incisor process of right and left mandible with four teeth; lacinia mobilis of left mandible with six teeth; molar process with grinding surface having well-developed micro-denticles; palp article 1 with six long simple setae, about same length as article three, article 2 longest, articles 2 and 3 with long simple and short pectinate setae.

Labium (Fig 4E) with outer margin spinulate, distal margin setulose; palp with lateral hair-like setae and three distal spiniform setae.

Maxillule (Fig 4F–G) inner endite with five setulate setae, outer margin with hair-like setae (Fig 4F); outer endite with 11 spiniform setae (Fig 4G) and two subdistal bipectinate setae (Fig 4F), both margins with hair-like setae; palp biarticulate with four distally setulate setae increasing in length distally.

Maxilla (Fig 4H) inner lobe of fixed endite with posterior row of four bipectinate setae increasing in length laterally and with long anterior row of setae; outer lobe of fixed endite with three trifurcate and one multifurcate spiniform setae, one setulate spiniform seta, several simple setae, posterior face with one setulate spiniform seta; inner lobe of moveable endite

with two long simple setae; outer lobe of moveable endite with one denticulate and one plumo-denticulate setae; outer distal margin serrate.

Maxilliped (Fig 5A, B) basis slightly longer than broad, naked (notwithstanding setules on outer proximal margin), outer distal corner produced (Fig 5A); endite (Fig 5B) with inner margin having four coupling hooks, row of seven setulate setae and several distal simple and blunt-tipped setae, caudo-distal spiniform seta distally setulate, outer margin with short hair-like setae; palp article 1 with outer distal corner produced and bearing one spiniform seta; article 2 with long and shorter simple setae on inner and distal margins; article 3 broader than long with several simple setae on inner mid-distal margin; article 4 short with five distal simple setae.

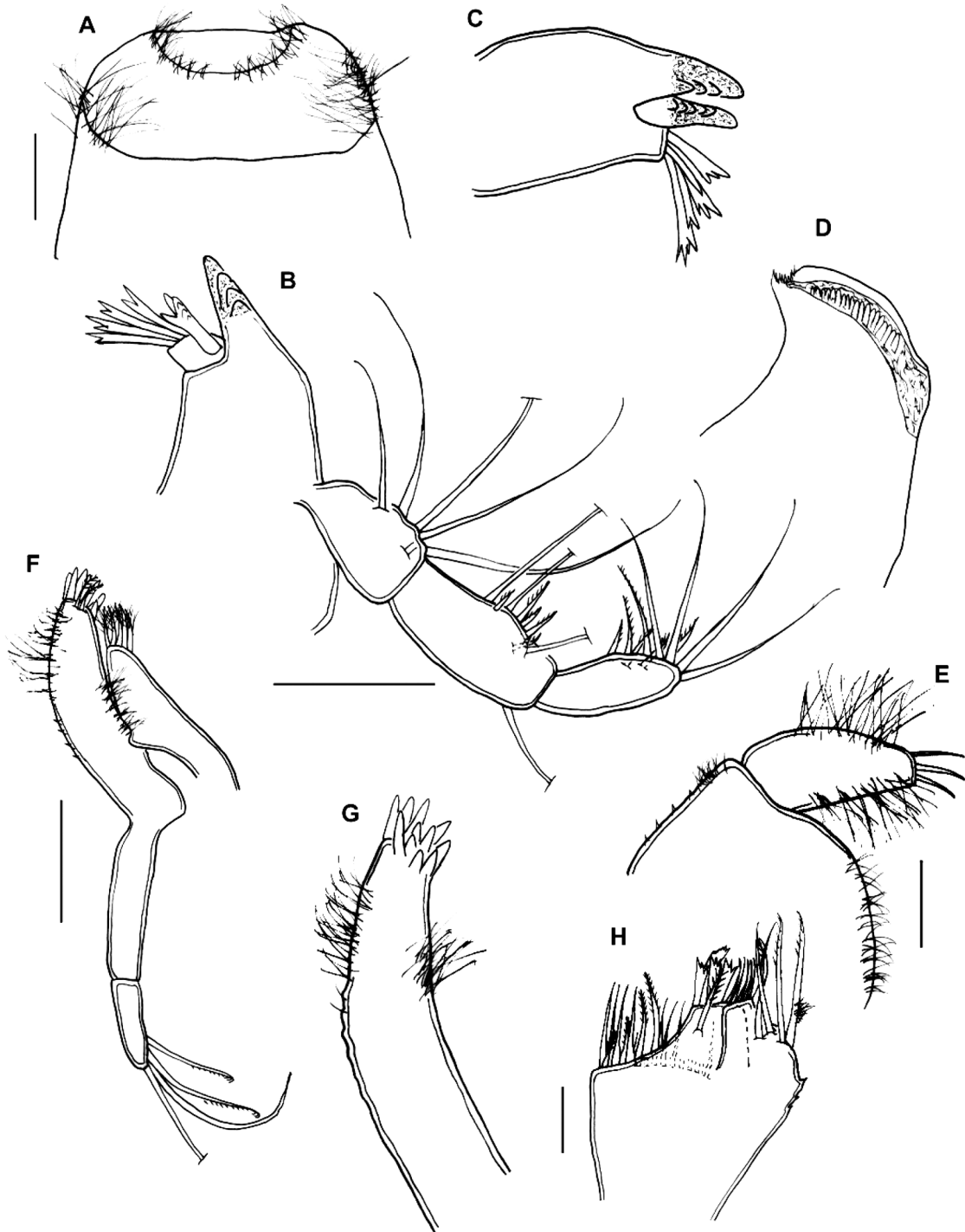


FIGURE 4. *Pseudobunakenia anablesis*, n. gen., n. sp., adult female. A, labrum; B, right mandible; C, left mandible; D, right molar process; E, labium; F, maxillule; G, maxillule (outer endite); H, maxilla. Scale bars: A, E, H = 0.05 mm; B, F = 0.1 mm.

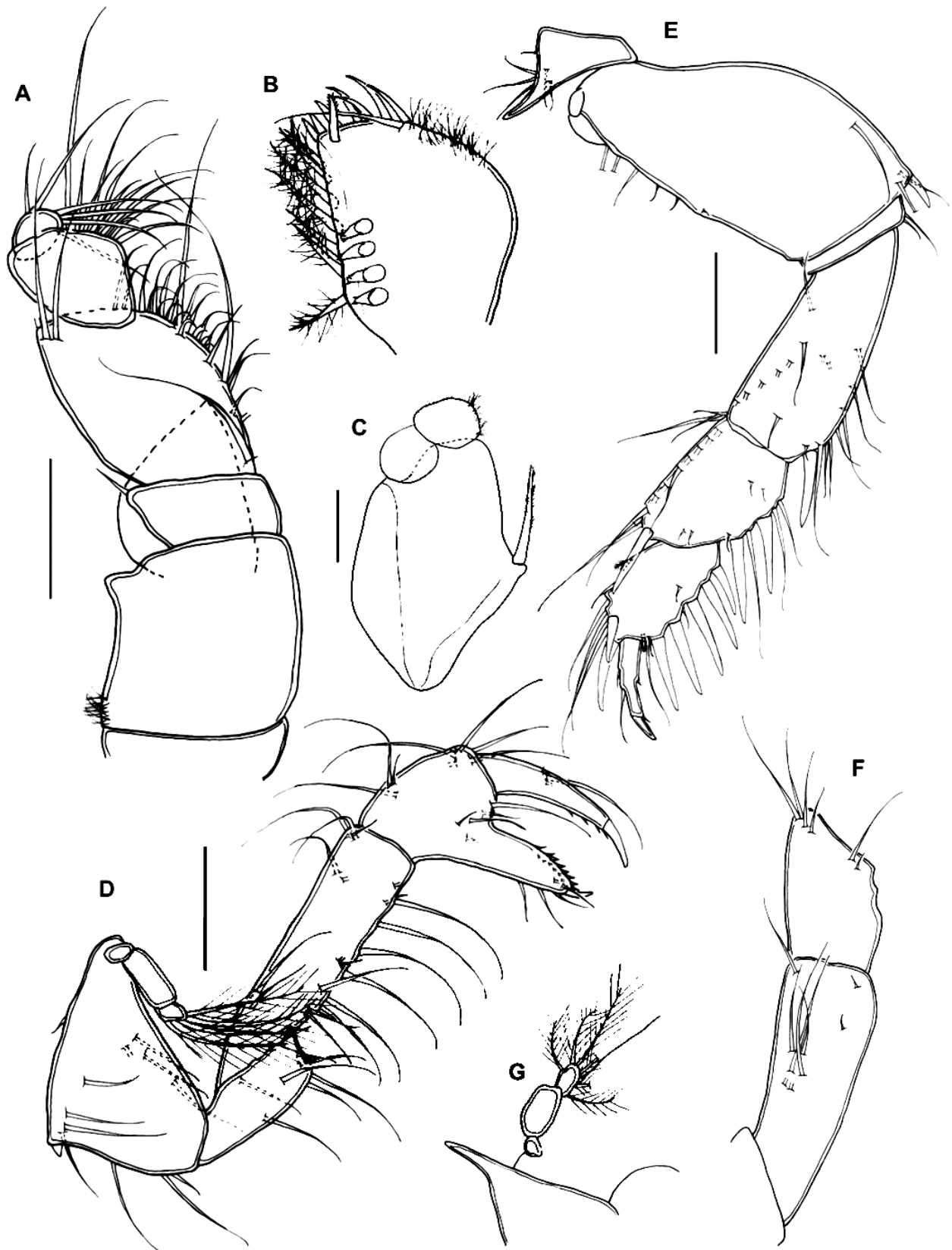


FIGURE 5. *Pseudobunakenia anablesis*, n. gen., n. sp., adult female. A, maxilliped; B, maxilliped endite; C, epignath; D, cheliped (outer view); E, pereopod 1 (outer view); F, pereopod 1 merus and carpus (inner view); G, pereopod 1 exopod. Scale bars: A, C = 0.1 mm; D, E = 0.2 mm.

Epignath (Fig 5C) with stout, setulate spiniform seta; anterior margin with bilobed flap.

Cheliped (Fig 5D) basis triangular, about 1.6 as long as broad, middle of ventral margin produced with a short and stout spiniform seta, and several simple setae on outer and inner faces and ventral margin; merus about 2.5 times as long as broad with several simple setae; carpus elongate, narrow, about 4 times as long as broad with ventral, dorsal, and dorsodistal simple setae; propodus with several simple setae on outer face of palm and dorsally, fixed finger with three ventral simple setae, cutting edge with row of spinules and row of short simple setae on outer face; dactylus with four spinules on distal half of cutting edge and three simple setae on inner face, unguis about one third length of dactylus; exopodite, last article with four plumose setae.

Pereopod 1 (Fig 5E–G) coxa setose with forward-directing spine; basis almost twice as long as broad, with several simple setae ventrodistally and on dorsal margin, ventrodistal spiniform seta; ischium wider than long with two ventrodistal simple setae; merus widest distally, about 2.6 times as long as broad, with several simple setae on ventral margin and inner and outer surfaces and a spiniform seta on ventrodistal corner; carpus wider than long, with simple setae on ventral and dorsal margins and inner and outer surfaces, two ventral spiniform setae and one dorsodistal spiniform seta about half length of propodus; propodus slightly shorter than carpus, with simple setae on ventral, dorsal, and distal margins, five ventral spiniform setae and two dorsodistal spiniform setae; dactylus length slightly shorter than propodus with one mid-ventral spinule and one minute seta proximal to junction with unguis, two dorsal setae, unguis simple, about one third total length of dactylus; exopod last article with six plumose setae.

Pereopod 2 (Fig 6A) basis about three times as long as wide with two setae on dorsal margin and several ventral and ventrodistal simple setae; ischium about as wide as long, with two ventrodistal simple setae; merus about twice as long as wide with several simple setae on ventral and dorsal margins and outer surface; carpus almost twice as long as wide with several simple setae on ventral and dorsal margins; propodus shorter than carpus, about twice as long as wide with several ventral, dorsal, and distal simple setae, one dorsal PSS; dactylus with one minute distal seta on dorsal margin, dactylus + unguis slightly shorter than propodus.

Pereopod 3 (Fig 6B) similar to pereopod 2, merus and carpus lacking dorsal setae.

Pereopod 4 (Fig 6C, D) basis 2.8 times as long as wide with one small simple seta on inner and outer surfaces, one ventral and three dorsal PSS; ischium with one long and one short simple seta on ventrodistal corner; merus about twice as long as wide with four simple setae on ventral margin; carpus about 2.7 times as long as wide with five spiniform setae on outer margin and several simple setae on ventral margin and inner and outer surfaces; propodus almost half as long as carpus with several distal simple setae and four long dorsodistal pectinate spiniform setae, dorsodistally with row of about seven short bipectinate spiniform setae, one proximal PSS on dorsal margin; dactylus with one minute seta distally on ventral margin; unguis + dactylus slightly more than half length of propodus.

Pereopod 5 (Fig 7A, B) similar to pereopod 4; basis three times as long as wide with one simple seta on ventrodistal corner, one ventral and two dorsal PSS; ischium with three simple setae on ventrodistal corner; carpus without spiniform setae; propodus similar to pereopod 4 but with fewer (about four) dorsodistal short bipectinate spiniform setae; dactylus with one seta on mid outer surface; unguis + dactylus length subequal to propodus.

Pereopod 6 (Fig 7C) basis about 2.8 times as long as wide with two simple setae on ventrodistal corner; ischium with three simple ventrodistal setae; merus about 1.8 times as long as wide with three plumose setae on dorsal margin, two simple setae and one spiniform seta (broken off) on ventral margin, and one simple seta on outer surface; carpus about 1.9 times as long as wide with three plumose setae on dorsal margin, two simple and two spiniform setae on ventral margin, and three simple setae on outer surface; propodus subequal to carpus length with several simple setae on outer surface and ventral and distal margins, inner surface with row of about 17 bipectinate spiniform setae, and one PSS midway on dorsal margin; dactylus with minute seta near dorsal margin and distally on ventral margin; unguis + dactylus length shorter than propodus.

Pleopod (Fig 7D) foliaceous, basal article slightly longer than wide with five plumose setae on lateral margins; exopod shorter than endopod, with 21 plumose setae; endopod with 22 plumose setae.

Uropod (Fig 7E) length less than half body length; basal article almost twice as long as wide with several distal simple setae; number of articles in exopod and endopod hard to discern due to multiple pseudo-articulations.

Male (Figs 8–9) similar to female but with the following differences:

Pereon with hyposphenia behind maxilliped insertion and on pereonites 2 and 3 and genital cone on pereonite 6.

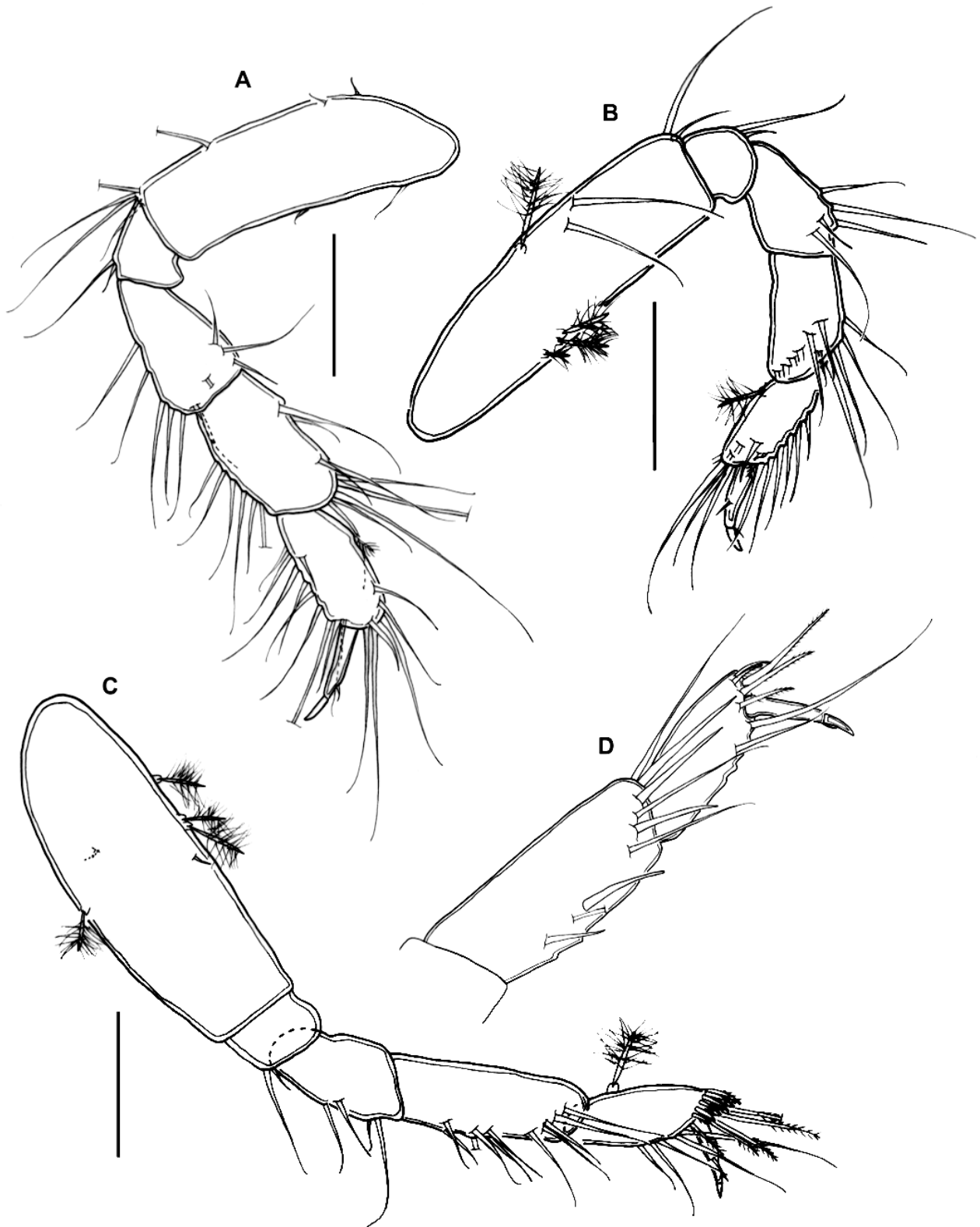


FIGURE 6. *Pseudobunakenia anablesis*, n. gen., n. sp., adult female. A, pereopod 2 (outer view); B, pereopod 3 (outer view); C, pereopod 4 (inner view); D, pereopod 4 carpus, propodus, and dactylus (outer view). Scale bars = 0.2 mm.

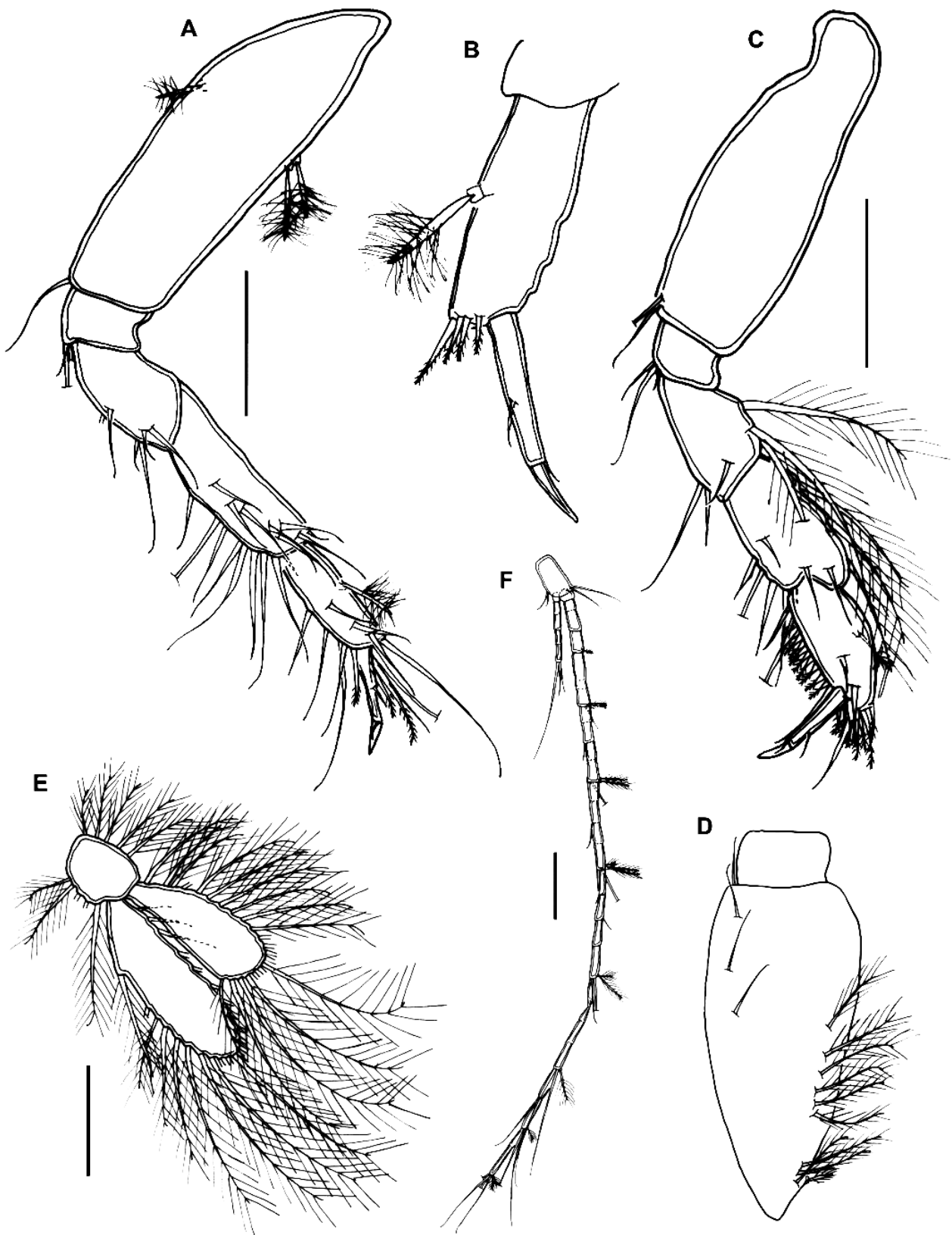


FIGURE 7. *Pseudobunakenia anablesis*, n. gen., n. sp., adult female. A, pereopod 5 (outer view); B, pereopod 5 propodus and dactylus (inner view); C, pereopod 6 (outer view); D, pereopod 6 basis (outer view showing plumose setae on dorsal margin of a specimen from South Carolina); E, pleopod; F, uropod. Scale bars = 0.2 mm.



FIGURE 8. *Pseudobunakenia anablesis*, n. gen., n. sp., adult male paratype. Photo by D. Drumm.

Antennule (Fig 9A) more robust, peduncle article 1 2.7 times as long as wide. Main flagellum with eight articles with one aesthetasc on articles 2, 3, 4, and 6.

Cheliped (Fig 9B, C) more robust, carpus about 2.6 times as long as wide; chela with wide gap between fingers.

Intraspecific variation. One preparatory female has six ventral spiniform setae on the propodus of pereopod 1. The allotype male has four plumose setae on the dorsal margin of the carpus of pereopod 6 and one and three spiniform setae on the ventral margin of the merus and carpus, respectively. One male has two plumose setae proximally on the dorsal margin of the pereopod 6 basis. Plumose setae were not observed in other specimens, so it is not clear if these setae are easily broken off or if it was an anomaly, although specimens from South Carolina have several plumose setae on the dorsal margin of the pereopod 6 basis (Fig 7D). Some adult females from Tampa Bay and South Carolina had five plumose setae on the dorsal margin of the carpus of pereopod 6.

Type locality. Gulf of Mexico, Southwest coast of Mexico off the coast of Campeche, 19°8'24"N, 91°54'0"W, depth 22 m in soft bottom substrata.

Distribution. Southern Gulf of Mexico [Campeche region (type locality)], Texas (senior author, pers. observ.), Louisiana to Florida Keys; U.S. East Coast: Florida (Biscayne Bay) northward to South Carolina (off Port Royal Sound).

Remarks. McSweeney (1968) described a new apseuidid species from South Florida (*Aapseudes* sp. A) in his unpublished graduate thesis that is very similar and possibly conspecific with the new species described here. The only major differences based on comparison with his description and illustrations are that *Aapseudes* sp. A: 1) has the inner flagellum of the antennule 4 articulate, and 2) the merus and carpus of pereopod 6 lack plumose setae. It is possible that his specimens either had these setae broken off or that he just did not observe the setules, so the status is uncertain until topotypical material can be examined. Specimens examined from the western coast of Florida and from South Carolina labeled as *Aapseudes* sp. A are seemingly conspecific with the new species (senior author, pers. observ.).

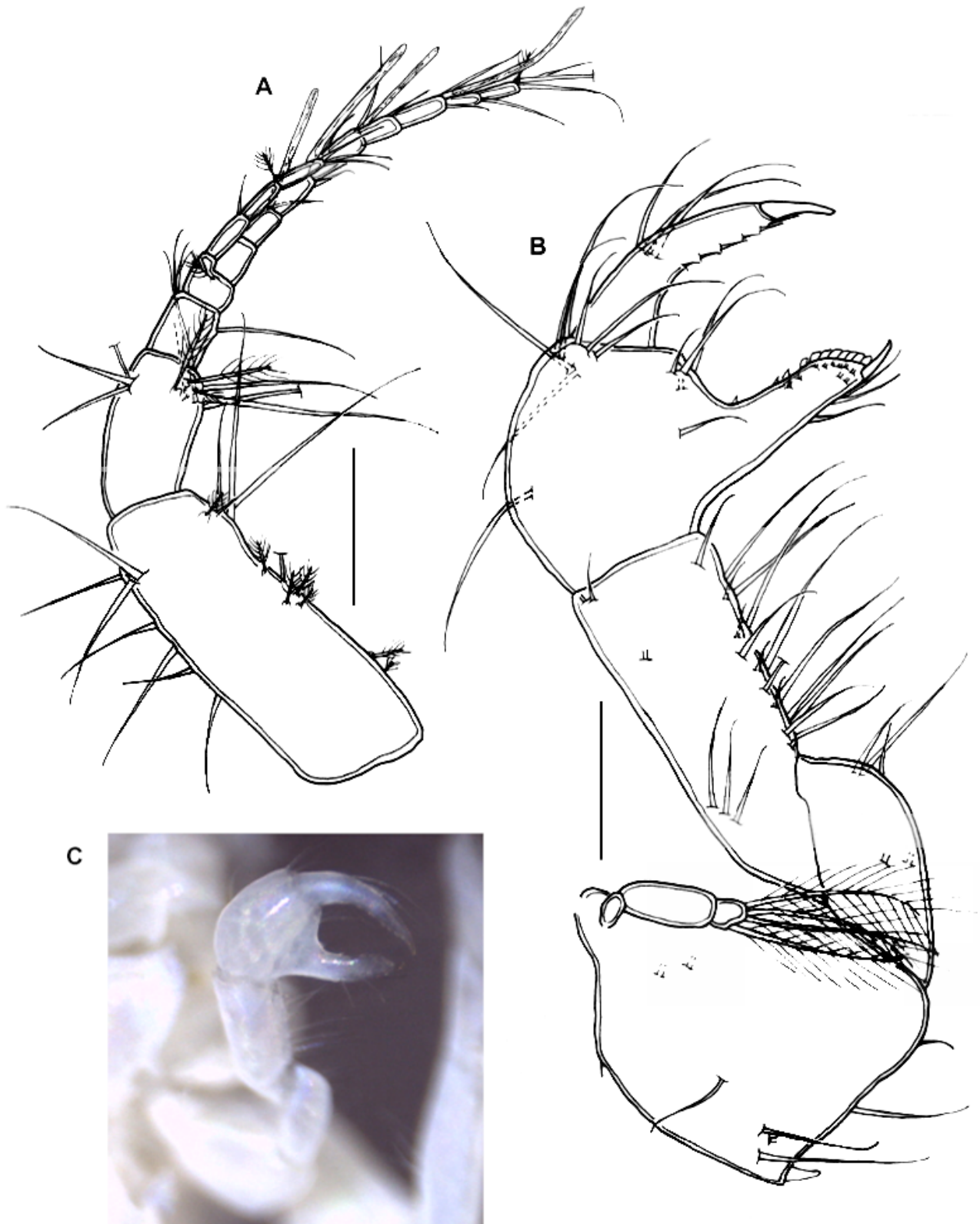


FIGURE 9. *Pseudobunakenia anablesis*, n. gen., n. sp., adult male. A, antennule (ventral view); B, cheliped (outer view); C, male chela showing gape when fixed finger and dactylus are pressed together. Scale bars = 0.2 mm. Photo by D. Drumm.

Pseudobunakenia anablesis n. gen., n. sp. can be distinguished from the apseudids presently known from the GOM/NW Atlantic by the following combination of characteristics: 1) the anterolateral apophyses on pereonites not large and hook-like [as in *Apseudopsis olimpiae* (Guțu, 1986)], and 2) the presence of gaping chelae (present also only in the new *Bunakenia* species described below, but which lacks anterolateral apophyses on the pereonites).

Pseudobunakenia anablesis is similar to *Apseudopsis caribbeanus* Guțu, 2006, described off Cuba, but can be distinguished by having acute anterolateral apophyses on pereonites 3–6 (small lobate processes on *A. caribbeanus*), pereonites 3–5 length subequal to width (wider than long in *A. caribbeanus*), hyposphenia on pereonites 2–3, and 6 (on pereonites 2–4, and 6 in *A. caribbeanus*), long and short setae on mandibular palp article 2 (only short setae in *A. caribbeanus*), gaping chelae (gaping chelae lacking in *A. caribbeanus*), and pereopod 1 propodus with five or six ventral spiniform setae (4 in *A. caribbeanus*).

***Bunakenia* Guțu, 1995**

***Bunakenia hamata* n. sp.**

(Figs 10–15)

Bunakenia sp. A *sensu* Heard *et al.*, 2004 (figs. 29, 36).

Material examined. *Holotype*: male (♂), 5.0 mm, (USNM 1666252), Georgia, USA (31°31'54.12"N, 79°44'24"W), depth 58 m.—*Allotype*: female (♀), 6.0 mm, (USNM 1666253). Georgia, USA (31°31'59.88"N, 79°44'17.88"W), depth 57 m. *Paratypes*: 2 ♀♀ (~5.5 mm) (USNM 1666254), same collection data as holotype. 1 ♂ (~4.5 mm); 4 ♀♀ (~5.5 mm); 1 juvenile (~3.0 mm), (USNM 1666255), same collection data as allotype.

Diagnosis. Rostrum broadly triangular with acute tip. Eye lobes with spine, visual elements present. Pereonites 2–5 with posterolateral apophyses; all pereonites wider than long; pereonite 1 of males and non-ovigerous females with bidentate hyposphenia posterior to maxilliped insertion; hyposphenia present on all pereonites in females and pereonites 1–5 in males (genital cone on pereonite 6) and are strongly developed on all pleonites. Antennule medial margin of peduncle article 1 denticulate on much of proximal half; accessory flagellum with five articles. Cheliped basis with one spiniform seta midway on ventral margin; male cheliped with wide gap between fixed finger and base of dactylus, fixed finger with small proximal tooth; female cheliped without gape and tooth. Pereopod 1 basis lacking plumose setae and with at least two spiniform setae on ventral margin; propodus with four ventral spiniform setae. Pereopod 6 with plumose setae on dorsal margin of merus and carpus.

Etymology. The specific name *hamata* (Latin) is derived from the presence of hook-like processes (apophyses) on the pereonites. Gender feminine.

Description. Adult male. *Holotype*: (Fig 10A). *Paratypes*: (Figs 10B, 11A–14C). Adult female. *Paratypes*: (Figs 10C–D, 15A–C). *Body* (Fig 10A) about 6.2 times as long as wide. *Cephalothorax* slightly longer than wide, longer than first two pereonites combined, about 20% of body length; with setae on lateral margin just below eyelobe; rostrum broadly triangular, anterior portion produced in acute tip; eyelobes and visual elements present, terminating distally in curved spine on ventro-lateral margin; epistome present. *Pereon* about 55% of body length; pereonites 1 and 2 shortest and subequal; pereonites 4 and 5 longest and subequal, slightly longer than pereonite 3 and 6; pereonites 1 and 2 have rounded lateral margins while succeeding pereonites have nearly straight margins; all pereonites wider than long, with setae on antero- and postero-lateral corners; pereonites 2–5 (Fig 10A) with posterolateral apophyses; bidentate hyposphenia on pereonite 1 just behind maxilliped insertion (Fig 10B); unidentate hyposphenia on pereonites 2–5 and genital cone on pereonite 6. *Pleon* as long as first two pereonites combined, about 16% of body length; pleonites expanded laterally into spiniform projection with simple setae on margins; hyposphenia present on all pleonites (Fig 10D). *Pleotelson* slightly longer than wide, more than twice as long as one pleonite, about 9% of body length; with several setae on lateral and dorsal margins, and slight lateral projection anteriorly.

Antennule (Fig 11A) peduncle article 1 about half as long as carapace, 2.7 times as long as wide, with several simple setae on inner margin and several simple setae and PSS on outer margin, inner margin denticulate on much of proximal half; article 2 less than half length of article 1 with several simple setae and PSS; article 3 nearly half as long as article 2 with several distal simple setae; article 4 (common article) about half as long as article 3 with one simple seta on dorsal surface. Accessory flagellum with five articles, each with at least one simple seta. Main flagellum with 12 articles with one aesthetasc on articles 4, 6, and 10.

Antenna (Fig 11B) peduncle with five articles; article 1 with inner distal projection denticulate and three simple setae on inner margin; article 2 longer than succeeding two articles combined, with one short simple seta on inner and outer margins; squama extending to mid-length of article 5, bearing 15 simple setae; article 3 short, with one

long inner simple seta; article 4 about twice as long as article 3, with one PSS on inner margin; article 5 shorter than article 2, with one PSS and several simple setae. Flagellum with nine articles.

Labrum (Fig 11C) with medial depression bearing hair-like setae on either side.

Mandibles (Fig 11D, E). Incisor process of right mandible (Fig 11D) with four teeth, left mandible (Fig 11E) with five teeth; lacinia mobilis of left mandible with five teeth; molar process with grinding surface having well-developed micro-denticles; palp article one with several long simple setae, about same length as article three, article two longest, articles two and three with long simple and short pectinate setae.

Labium (Fig 11F) with outer margin spinulate and short setules, distal margin setulose; palp with hair-like setae on inner and outer margins and three distal spiniform setae.

Maxillule (Fig 12A) inner endite with five setulate setae, outer margin with hair-like setae and proximal tubercle; outer endite with ten spiniform setae and two subdistal bipectinate setae, both margins with hair-like setae; palp biarticulate with six setae increasing in length distally.

Maxilla (Fig 12B, C) inner lobe of fixed endite with posterior row of five bipectinate setae increasing in length laterally and with long anterior row of setae, inner distal margin serrate; outer lobe of fixed endite with one trifurcate and one bifurcate spiniform seta, several simple setae; inner lobe of moveable endite with denticulate and simple setae; outer lobe of moveable endite with two plumo-denticulate setae and several simple setae; outer distal margin serrate.

Maxilliped (Fig 12D) basis slightly wider than long, outer distal corner denticulate; endite with inner margin having four coupling hooks, row of ten setulate setae and several distal simple and blunt-tipped setae, outer margin with short hair-like setae; palp article 1 with outer distal corner produced and bearing one spiniform seta; article 2 with long and shorter simple setae on inner margin, outer distal corner with spiniform seta extending past the last palp article; article 3 broader than long with several simple setae on inner distal margin; article 4 short with several distal simple setae.

Epignath (Fig 12E) with stout, setulate spiniform seta.

Cheliped (Fig 12F) basis about 1.7 as long as broad, middle of ventral margin produced with a short and stout spiniform seta, and several ventrodistal simple setae; merus about 2.9 times as long as broad with several simple setae; carpus about 2.5 times as long as broad with ventral, dorsal, and dorsodistal simple setae; propodus with several simple setae on outer face of palm and dorsally, fixed finger with five ventral simple setae, cutting edge with row of spinules and row of short simple setae on outer face, short proximal tooth with two spinules; dactylus with about eight spinules on cutting edge and three simple setae on inner face, unguis about one third length of dactylus; exopodite, last article with four plumose setae.

Pereopod 1 (Fig 13A) coxa setose with forward-directing spine; basis almost twice as long as broad, with simple setae on ventral margin and ventrodistal corner and proximally on dorsal margin, two ventral spiniform setae; ischium wider than long with three ventrodistal simple setae; merus widest distally, about 1.7 times as long as broad, with several simple setae on ventral margin, dorsodistal corner, and a spiniform seta on ventrodistal and dorsodistal corner; carpus slightly longer than wide, with simple setae on ventral and dorsodistal margins and inner and outer surfaces, two ventral spiniform setae and one dorsodistal spiniform seta shorter than half length of propodus; propodus about same length as carpus, with simple setae on ventral, dorsal, and distal margins, four ventral spiniform setae and two dorsodistal spiniform setae, one dorsal PSS; dactylus length slightly shorter than propodus with three ventral spinules and two dorsal setae, unguis simple, slightly more than one half total length of dactylus; exopod last article with six plumose setae.

Pereopod 2 (Fig 13B) basis about 3 times as long as wide with several simple setae proximally and ventrodistally, spiniform seta on ventrodistal corner; ischium with several ventrodistal simple setae; merus about twice as long as wide with several simple setae on ventral and dorsodistal margins, spiniform seta on ventrodistal and dorsodistal corner; carpus almost twice as long as wide with several simple setae on ventral and dorsodistal margins, four spiniform setae (two dorsodistal, one ventrodistal, and short one on outer face); propodus slightly longer than carpus, about three times longer than wide with several ventral, dorsal, and distal simple setae, five spiniform setae (two ventral, two distal, and one dorsal), one dorsal PSS; dactylus with three minute setae, one longer dorsal seta, and one dorsodistal seta; dactylus + unguis about same length as propodus.

Pereopod 3 (Fig 13C) similar to pereopod 2. Basis with ventrodistal spiniform seta not observed; merus with two ventrodistal spiniform setae (one short and one long) and lacking dorsodistal spiniform seta; carpus with three ventral/ventrodistal spiniform setae and one dorsodistal spiniform seta; propodus with three ventral, one ventrodistal, one distal, and one dorsodistal spiniform seta; dactylus + unguis longer than propodus.

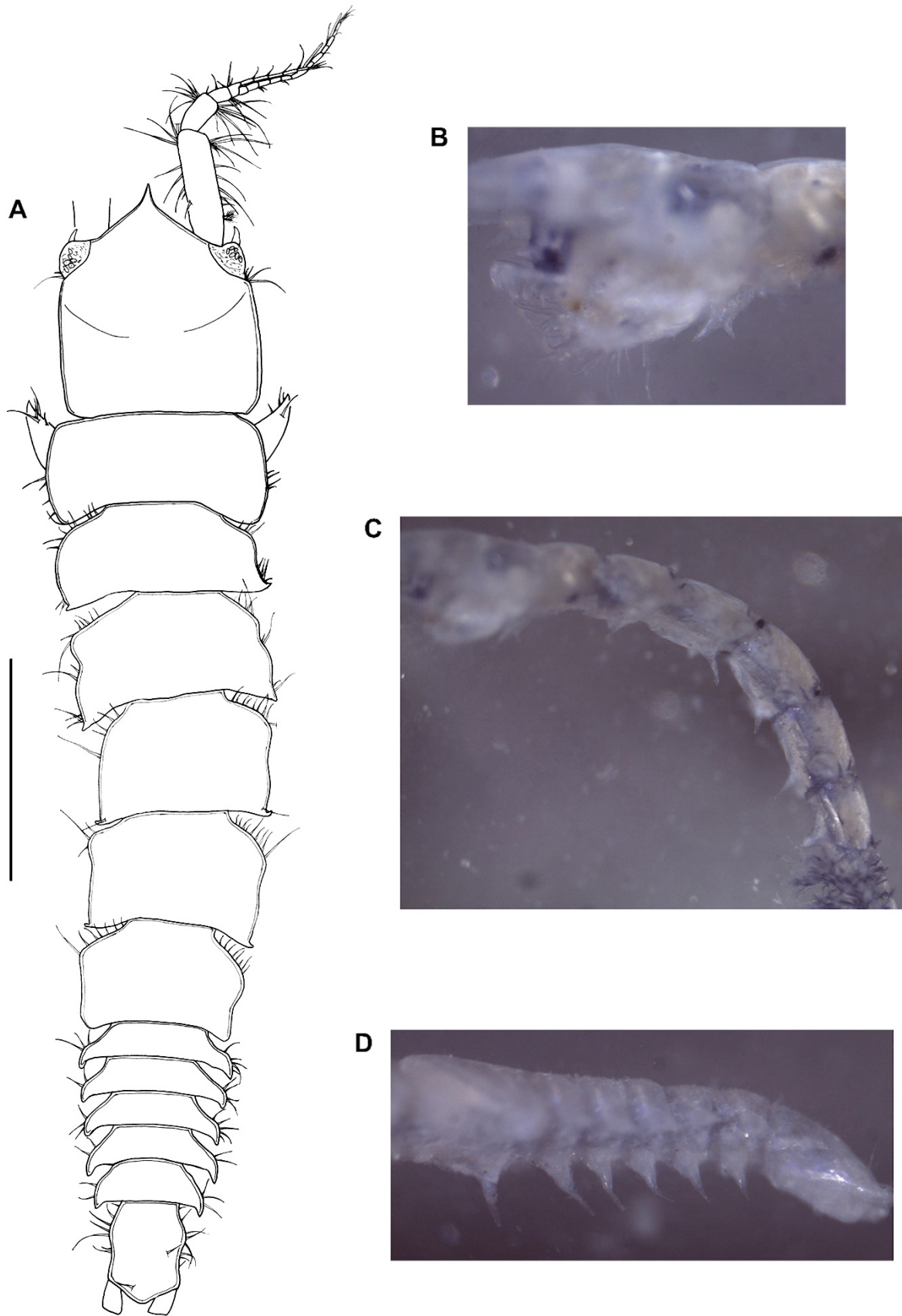


FIGURE 10. *Bunakenia hamata*, n. sp., adult male (A, B), adult female (C, D). A, habitus (dorsal view); B, ventral view of head and pereonite 1 showing bidentate hyposphenia on pereonite 1; C, ventral view of pereon showing hyposphenia; D, ventral view of pleon showing hyposphenia. Scale bar = 1.0 mm. Photos by D. Drumm.

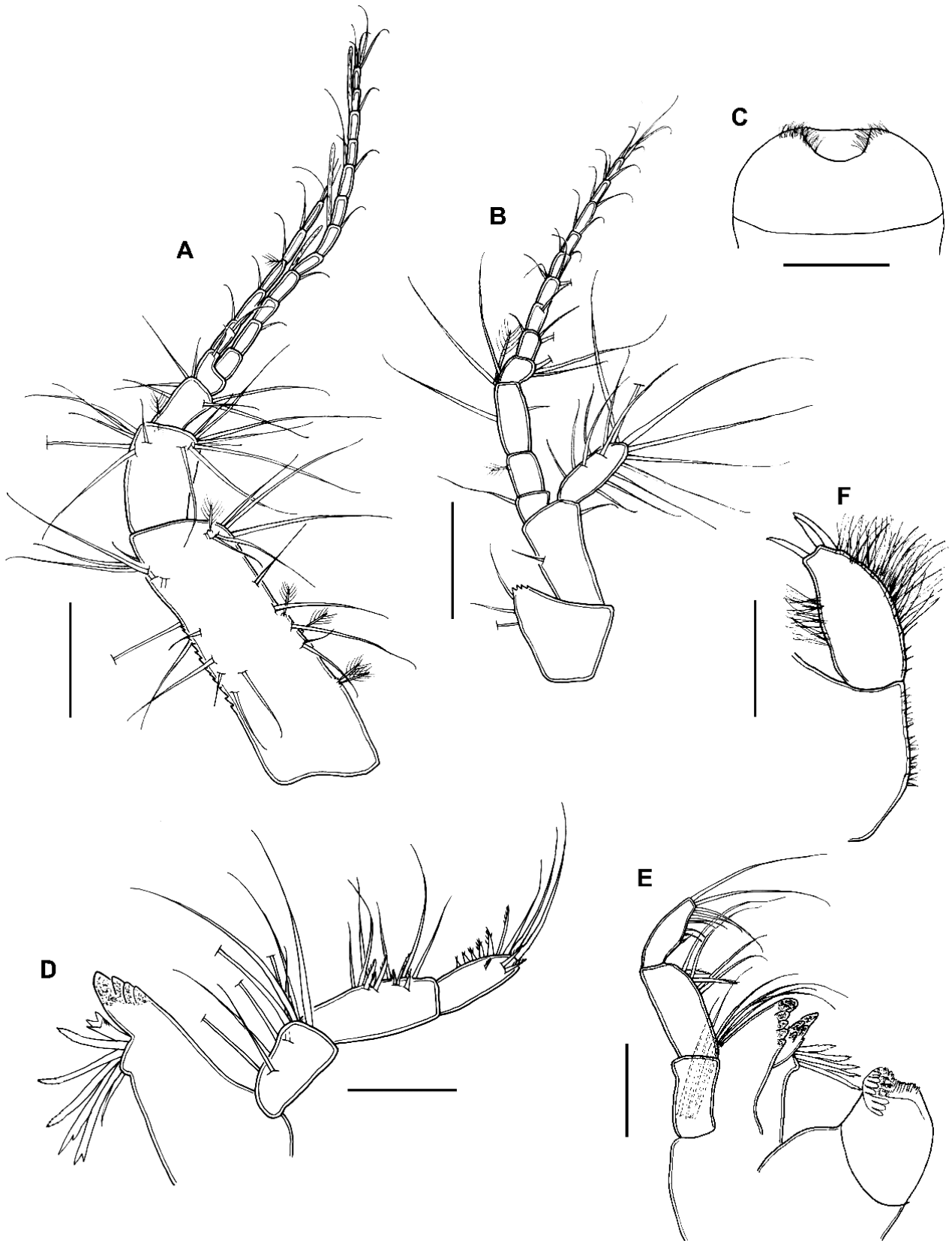


FIGURE 11. *Bunakenia hamata*, n. sp., adult male. A, antennule (dorsal view); B, antenna (dorsal view); C, labrum; D, right mandible; E, left mandible; F, labium. Scale bars: A–B = 0.2 mm; C–F = 0.1 mm.



FIGURE 12. *Bunakenia hamata*, n. sp., adult male. A, maxillule; B, maxilla (moveable endite); C, maxilla (fixed endite); D, maxilliped; E, epignath spine; F, cheliped (outer view). Scale bars: A–E = 0.1 mm; F = 0.2 mm.

Pereopod 4 (Fig 13D) basis slightly more than 2 times as long as wide with two simple setae (one long and one short) on ventrodistal corner and two dorsal PSS; ischium with several simple seta on ventrodistal corner; merus with several simple setae on ventral margin and two ventrodistal spiniform setae; carpus about 2.5 times as long as wide with five spiniform setae on ventral and distal margins and several simple setae on ventral and distal margins; propodus slightly shorter than carpus with several distal simple setae, two spiniform setae, and four long dorsodistal pectinate spiniform setae, dorsodistally with row of short bipectinate spiniform setae, one proximal PSS on dorsal margin; dactylus naked; unguis with three small ventral teeth; unguis + dactylus shorter than propodus.

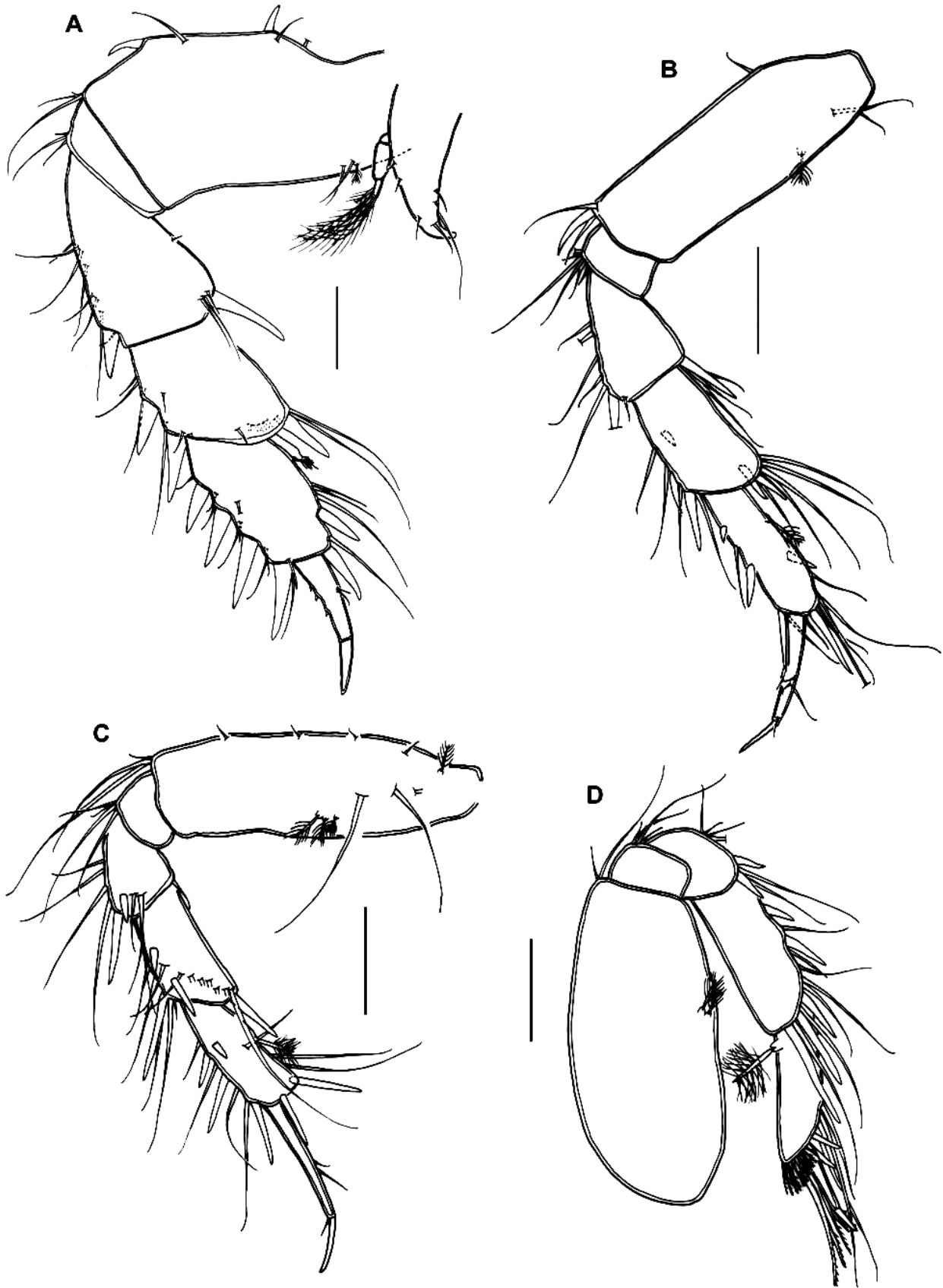


FIGURE 13. *Bunakenia hamata*, n. sp., adult male. A, pereopod 1 (outer view); B, pereopod 2 (inner view); C, pereopod 3 (outer view); D, pereopod 4 (inner view). Scale bars = 0.2 mm.

Pereopod 5 not examined (broken off on all specimens examined).

Pereopod 6 (Fig 14A) basis about 2.3 times as long as wide with several ventral, dorsal, and ventrodistal simple setae; ischium with four simple ventrodistal setae; merus about 1.5 times as long as wide with three plumose setae on dorsal margin, several simple setae on ventral margin and one ventrodistal spiniform seta; carpus about 2.5 times as long as wide with seven plumose setae on dorsal margin, several simple and one spiniform seta on ventral margin; propodus shorter than carpus length with several simple setae on outer surface, ventral inner surface with row of bipectinate spiniform setae and six spiniform setae, one dorsal spiniform seta, and one PSS on dorsal margin; dactylus with two minute setae; unguis + dactylus length subequal to propodus.

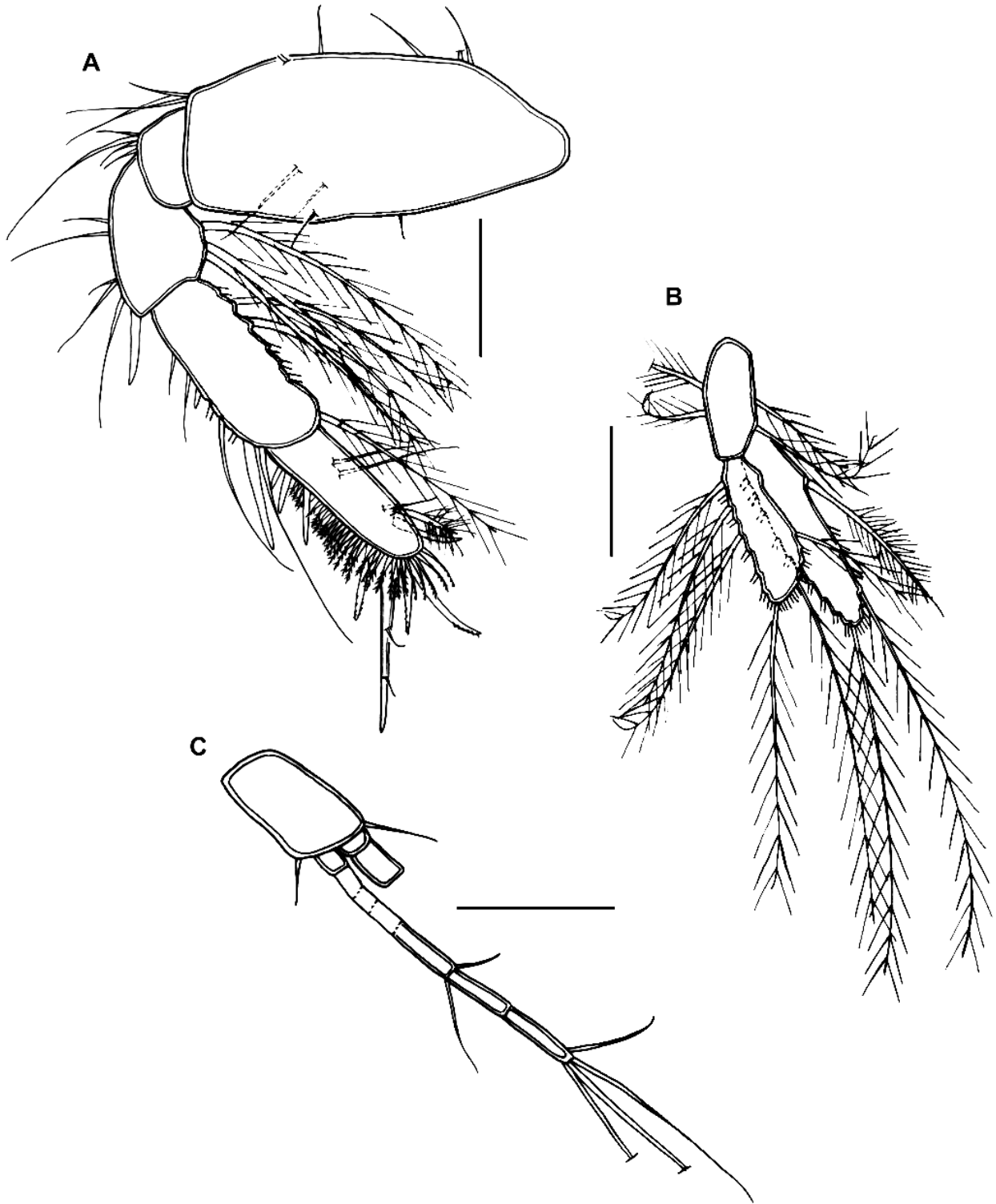


FIGURE 14. *Bunakenia hamata*, n. sp., adult male. A, pereopod 6 (inner view); B, pleopod; C, uropod. Scale bars = 0.2 mm.

Pleopod (Fig 14B) basal article 2.4 times longer than wide with four plumose setae; exopod shorter than endopod, each ramus with 19 plumose setae.



FIGURE 15. *Bunakenia hamata*, n. sp., adult female. A, antennule (dorsal view); B, cheliped (outer view); C, pereopod 1 (inner view). Scale bars = 0.2 mm.

Uropod (Fig 14C) length less than half body length; basal article 1.5 times as long as wide with one simple seta on distal corners; number of articles in exopod and endopod hard to discern due to multiple pseudo-articulations.

Female (Figs 10C, 15) similar to male but with the following differences:

Pereon with hyposphenia on all pereonites (Fig 10C).

Antennule (Fig 15A) main flagellum with ten articles with one aesthetasc on articles 6 and 8.

Cheliped (Figs 15B) less robust, carpus almost 4 times as long as wide; chela without gap between fingers, fixed finger cutting edge without proximal tooth.

Pereopod 1 (Fig 15C) basis with three ventral spiniform setae.

Intraspecific variation. The number of plumose setae on pereopod 6 and basis of pleopods can be quite variable.

Type locality. NW Atlantic, offshore Georgia, 31.5317° N, 79.7400° W, depth 58 m.

Distribution. Florida Gulf of Mexico coast; NW Atlantic from South Florida north to South Carolina, depth 40–200m.

Remarks. *Bunakenia hamata* n. sp. is known in the literature as *Bunakenia* sp. A (Heard *et al.* 2004) and is the first record of the genus in the GOM/NW Atlantic. It can be distinguished from the other congeners by the following combination of characters: 1) pereonites 2–5 with posterolateral apophyses, 2) antennule accessory flagellum with five articles, 3) antennule inner margin of first peduncle article denticulate, 4) male cheliped with proximal tooth on fixed finger, and 5) pereopod 1 propodus with four ventral spiniform setae. *Bunakenia aspalieus* Bamber, Bird & Angsupanich, 2003 and *Bunakenia kadazan* Bamber & Sheader, 2005 are the only other species that have apophyses, but *B. aspalieus* has them on pereonites 3–5 and *B. kadazan* has them on pereonites 2 and 3. *Bunakenia aspalieus* also has an antennule accessory flagellum with three articles and the first peduncle article is not denticulate. *Bunakenia kadazan* has a 5-articulate accessory flagellum but the first peduncle article is not denticulate and the pereopod 1 propodus has five ventral spiniform setae.

Key to species currently within the family *Bunakenia* Guțu, 1995

1. At least two pereonites with posterolateral apophyses (hook-like processes) 2
- All pereonites lacking posterolateral apophyses (hook-like processes) 4
2. Antennule accessory flagellum with three articles *B. aspalieus* (Thailand)
- Antennule accessory flagellum with five articles; male cheliped with proximal tooth on fixed finger 3
3. Pereonites 2 and 3 with posterolateral apophyses; antennule inner margin of first peduncle article not denticulate; pereopod 1 propodus with five ventral spiniform setae *B. kadazan* (Malaysia)
- Pereonites 2–5 with posterolateral apophyses; antennule inner margin of first peduncle article denticulate; pereopod 1 propodus with four ventral spiniform setae *B. hamata* n. sp. (GOM/NW Atlantic)
4. Pereopod 1 basis without plumose setae 5
- Pereopod 1 basis with plumose setae 6
5. Antennule accessory flagellum with three articles; pereopod 1 propodus with five ventral spiniform setae
- *B. anomala* (Australia)
- Antennule accessory flagellum with six articles; pereopod 1 propodus with four ventral spiniform setae
- *B. sudvestatlantica* (Brazil)
6. Antennule accessory flagellum with five articles; pereopod 1 propodus with six ventral spiniform setae
- *B. salzella* (Australia)
- Antennule accessory flagellum with three or four articles; pereopod 1 propodus with four or five ventral spiniform setae 7
7. Antennule accessory flagellum with four articles; pereopod 1 propodus of female with four ventral spiniform setae
- *B. tanzaniana* (Tanzania)
- Antennule accessory flagellum with three articles; pereopod 1 propodus of female with five ventral spiniform setae 8
8. Pereopod 1 merus with dorsodistal spiniform seta *B. betatari* (Brunei)
- Pereopod 1 merus lacking dorsodistal spiniform seta *B. indonesiana* (Indonesia)

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