

A NEW SPECIES OF *PYROMAIA* FROM THE CARIBBEAN SEA,
WITH A REDESCRIPTION OF *P. PROPINQUA* CHACE, 1940
(DECAPODA: BRACHYURA: MAJOIDEA: INACHOIDIDAE)

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ABSTRACT

A new species of spider crab, *Pyromaia acanthina*, is described based on specimens collected during a recent sampling program along the Caribbean coast of Colombia. This new species is most similar to *P. propinqua* Chace, 1940, a species also collected during this study that had not been found or mentioned in the literature since its original description from Cuba. The presence of these two species on the Colombian coast represents the first record of the genus *Pyromaia* Stimpson, 1871 in the southern Caribbean or northeastern South America. *Pyromaia propinqua* is redescribed and compared with the new species. The two differ from the other congeners, *P. cuspidata* Stimpson, 1871, *P. arachna* Rathbun, 1924, and *P. tuberculata* (Lockington, 1877), in features of the carapace, ambulatory legs, and male first pleopods. A summary of the classification of this genus, its definition, and distribution of species is presented together with a key to their identification.

Recent studies along the Caribbean coast of Colombia have revealed a diverse and often unusual decapod crustacean fauna (e.g., Campos and Sánchez, 1990; Campos and Manjarrés, 1990, 1991; Werding and Müller, 1990a, b; Campos and Werding, 1991; Lemaitre and Rodrigues, 1991; Campos and Puentes, 1992; Lemaitre and Campos, 1993; Manning, 1993; Campos and Lemaitre, 1994; Campos, 1995; Campos and Sánchez, 1995; Lemaitre, 1995; Lemaitre and Felder, 1996; Navas and Campos, 1998; Lemaitre and Campos, 2000; Lemaitre and Bermúdez, 2000). During recent collaborative sampling programs conducted by Colombian research laboratories and the Smithsonian Institution, several interesting brachyuran specimens representing two species of *Pyromaia* Stimpson, 1871 were discovered. This genus had not been previously recorded from the southern Caribbean or northeastern South America. Some of the specimens were found to be a new species, described herein. Others proved to be *P. propinqua* Chace, 1940, a species not reported since its original description from Cuba and overlooked by previous carcinologists (e.g., Garth, 1958; Guinot and Richer de Forges, 1997). The new species and *P. propinqua* are similar to each other and clearly dif-

fer from other congeners, *P. cuspidata* Stimpson, 1871, *P. arachna* Rathbun, 1924, and *P. tuberculata* (Lockington, 1877), in features of the carapace, ambulatory legs, and male first pleopods. Given the rarity of *P. propinqua* and the fact that Chace's (1940) original description lacks a number of details now considered of diagnostic and phylogenetic importance, the taxon is redescribed and compared to the new species. Also presented is a summary of the classification of this genus, its definition, and a key to aid in species identification.

MATERIALS AND METHODS

Specimens from the Caribbean coast of Colombia were collected using a 5-m-opening semi-balloon trawl net with steel doors built by Marinovich Trawl Co., Biloxi, Mississippi. The cod end was equipped with a 0.5-cm-mesh size net. Sampling was conducted on August 1995 during a collaborative expedition with the Colombian Navy's Centro de Investigaciones Oceanográficas e Hidrográficas, Cartagena (CIOH), Instituto de Investigaciones Marinas y Costeras, Punta de Betín, Santa Marta (INVEMAR), and the Smithsonian Institution. Additional sampling was carried out during October, November, and December of 1998, and April of 1999, as part of a joint program between INVEMAR and the Smithsonian Institution (INVEMAR-Macrofauna I) designed to inventory the invertebrate and fish fauna of the Colombian Caribbean upper slope zone. Sampling was conducted on board the B/I *Ancón*, a 20-m research vessel operated by INVEMAR.

The decapod specimens were pre-sorted on board, preserved in 70% ethanol, and transported to the laboratory for study.

The images shown in Fig. 1 were prepared from preserved specimens using a modified computer flatbed scanner following the methodology described by Reyes and Navas (2001). This method uses a scanner (HP SCANJET 4c) converted into a shallow 4-cm deep aquarium filled with water or alcohol. The specimens were immersed and held in place with weights, and scanned using DeskScan II (version 2.5) software. The images produced were processed using CorelPhoto Paint 8 (version 8.232), printed on high quality glossy paper, and mounted as a plate.

The family Inachoididae Dana, 1851, is used in accordance with Drach and Guinot (1983) and Guinot and Richer de Forges (1997). The general descriptive terminology follows Garth (1958) and Griffin (1966). Specialized terminology for the pleurites (i.e., external pleurites) is after Drach and Guinot (1982, 1983); for the abdominal locking system (i.e., press-button and socket) is after Guinot and Bouchard (1998); and for the pleotelson (i.e., fused abdominal segment 6 + telson) is after Guinot and Richer de Forges (1997). Measurements listed under material examined are in millimeters (mm) and given as total carapace length, including rostrum (TCL) \times carapace width (CW). Rostrum length (RL) is measured along the dorsal midline from the tip of the rostrum to its base at the level of the hiatus formed by the distal margin of the basal antennal segment. The material examined remains deposited in the collections of the Instituto de Ciencias Naturales, Museo de Historia Natural, Universidad Nacional de Colombia (ICN-MHN); Instituto de Investigaciones Marinas y Costeras, Punta de Betán, Santa Marta (INVEMAR); Museum of Comparative Zoology, Harvard University, Cambridge (MCZ); and National Museum of Natural History, Smithsonian Institution, Washington, D.C. (USNM). Abbreviations used are: sta, station; ovig, ovigerous.

SYSTEMATIC ACCOUNT

Family Inachoididae Dana, 1851

Pyromaia propinqua Chace, 1940

Figs. 1a, b, 2–4, 5a, b

Pyromaia propinqua Chace, 1940: 58 (type locality: "Atlantis" sta 3398, Old Bahama Channel, Cuba).

Pyromaia propinqua.—Chace, 1940: legends for figs. 19, 20 (misspelling).

Type Material.—Harvard-Havana "Atlantis" Expedition. Holotype: σ 15.7 \times 10.3 mm, sta 3398 (see *Remarks*), Old Bahama Channel, off Cayo Coco, Camaguey Province, Cuba, 22°35'N, 78°18'W, 180 fm (329 m), 28 April 1939, MCZ 11061. Paratypes: 1 σ 13.0 \times 8.7 mm, same locality as holotype, sta 3396, 22°34'N, 78°15'W, 180 fm (329 m), USNM 81978; 1 σ ovig 16.7 \times 11.1 mm, sta 3420, off Caibarien, Cuba, 22°49'N, 79°04'W, 190 fm (348 m), 30 April 1939, MCZ 11062.

Additional Material Examined.—Colombia. 1 σ ovig 13.4 \times 8.6 mm, INVEMAR-Macrofauna 1, sta C-68, Golfo de Morrosquillo, 9°45'19.2"N, 76°15'44.4"W, 317–321 m, 13 April 1999, INVEMAR-CRU 2063; 1 σ 15.5 \times 9.4 mm, 1 σ 9.8 \times 5.8 mm, 1 σ ovig 12.8 \times 8.5 mm, "Expedición CIOH-INVEMAR-Smithsonian", sta T5, SW Isla

Fuerte, 9°05.71'N, 76°34.60'W, 180 m, mud-rubble bottom, 4 August 1995, USNM 276174; 1 σ 14.9 \times 9.1 mm, sta T3, N of Punta Caribana, 8°57.05'N, 76°47.65'W, 380–160 m, mud bottom, 4 August 1995, USNM 276175; 3 σ 14.9 \times 9.1 to 14.2 \times 8.5 mm, 3 females 8.5 \times 5.5 to 14.9 \times 9.4 mm, sta T18, SW Isla Rosario, 10°12.65'N, 75°52.07'W, 171–146 m, 7 August 1995, USNM 276176; 1 σ 16.7 \times 11.2 mm (infested with rhizocephalan), INVEMAR-Macrofauna 1, sta C-4, Bocas de Ceniza, 11°9'44.4"N, 74°40'0.6"W, 200 m, 2 October 1998, ICN-MHN-CR 1863; 1 σ 6.1 \times 3.9 mm, INVEMAR-Macrofauna 1, sta C-8, Neguange, 11°23'25.2"N, 74°12'3.6"W, 204–196 m, 3 October 1998, INVEMAR-CRU 2064.

Diagnosis.—Carapace narrow, TCL 1.4 to 1.7 times as long as CW. Dorsal surface of adult carapace with numerous tubercles or blunt spines. Rostrum prominent, simple, RL about 0.2 to 0.3 times as long as TCL. Postorbital spine large, directed anterolaterally, weakly curving around eye when eye retracted. Male first pleopod terminating in broadly triangular tip with short setae; sperm groove with subterminal aperture forming semi-subcylindrical extension reaching beyond margin of pleopod.

Redescription.—Carapace pyriform (Fig. 1a), TCL about 1.4 to 1.7 times as long as CW. Dorsal surface with short, sparse pubescence. Regions well demarcated, covered with unequally-sized tubercles or strong blunt (adults) or sharp (young) spines, surface of tubercles or spines covered with minute sharp granules; more prominent blunt spines arranged as follows: 1 on center of metagastric region, 1 on center of cardiac region, 2 on protogastric region (1 on each side near base of postorbital spine); 1 on lateroventral margin of hepatic region; and row of 3 to 5 on branchial region near posterolateral margin. External pleurites 5–8 (Fig. 1b) consisting of narrow plates covered with minute sharp granules.

Rostrum (Fig. 2a–d) long, simple, RL about 0.2 to 0.3 times as long as TCL, subconical; arched dorsally, weakly directed upward, terminating in strong sharp or blunt spine. Dorsal face with thin, hook-like setae (not shown in Fig. 2a–d), and short, blunt or sharp spines; ventral face with small spines or tubercles.

Orbits having prominent blunt (Fig. 2a, c) or sharp (Fig. 2d) supraorbital spine with minutely spinulose margins. Postorbital spine large, directed anterolaterally; inner face providing base for eyes when eyes retracted posteriorly, with row of setae on dorsal and ven-

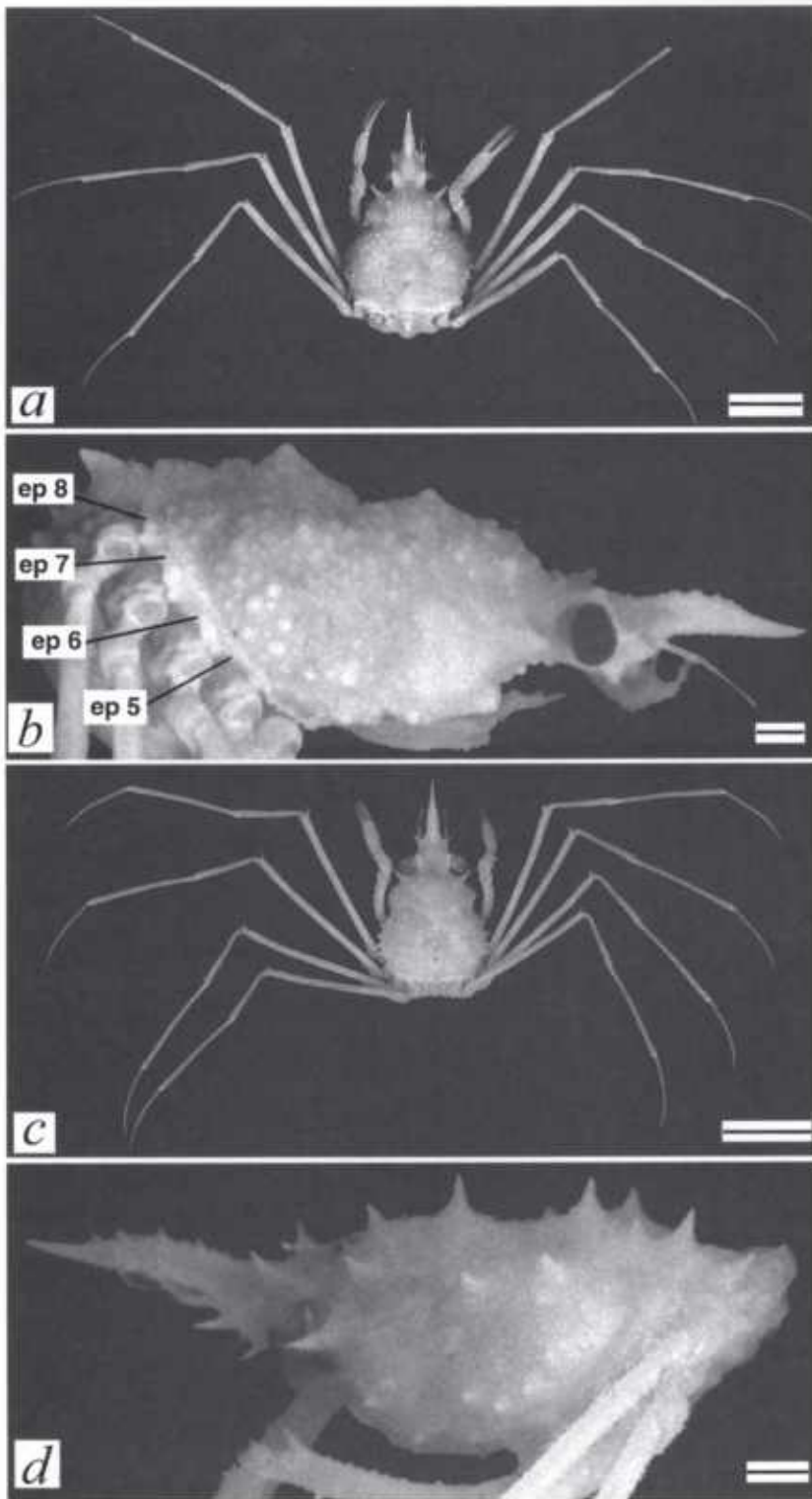


Fig. 1. *a, b*, *Pyrouaia propinqua* Chace, 1940: ♀ ovig 13.4 × 8.6 mm, INVEMAR-CRU 2063; *c, d*, *Pyrouaia acanthina*, new species: holotype ♂ 10.7 × 6.1 mm, INVEMAR-CRU 2065. *a, c*, whole crab, dorsal view; *b, d*, carapace, abdomen and part of chelipeds and ambulatory legs, lateral view. Abbreviations: ep5–8, external pleurites 5 to 8. Scales equal 5 mm (*a, c*) and 1 mm (*b, d*).

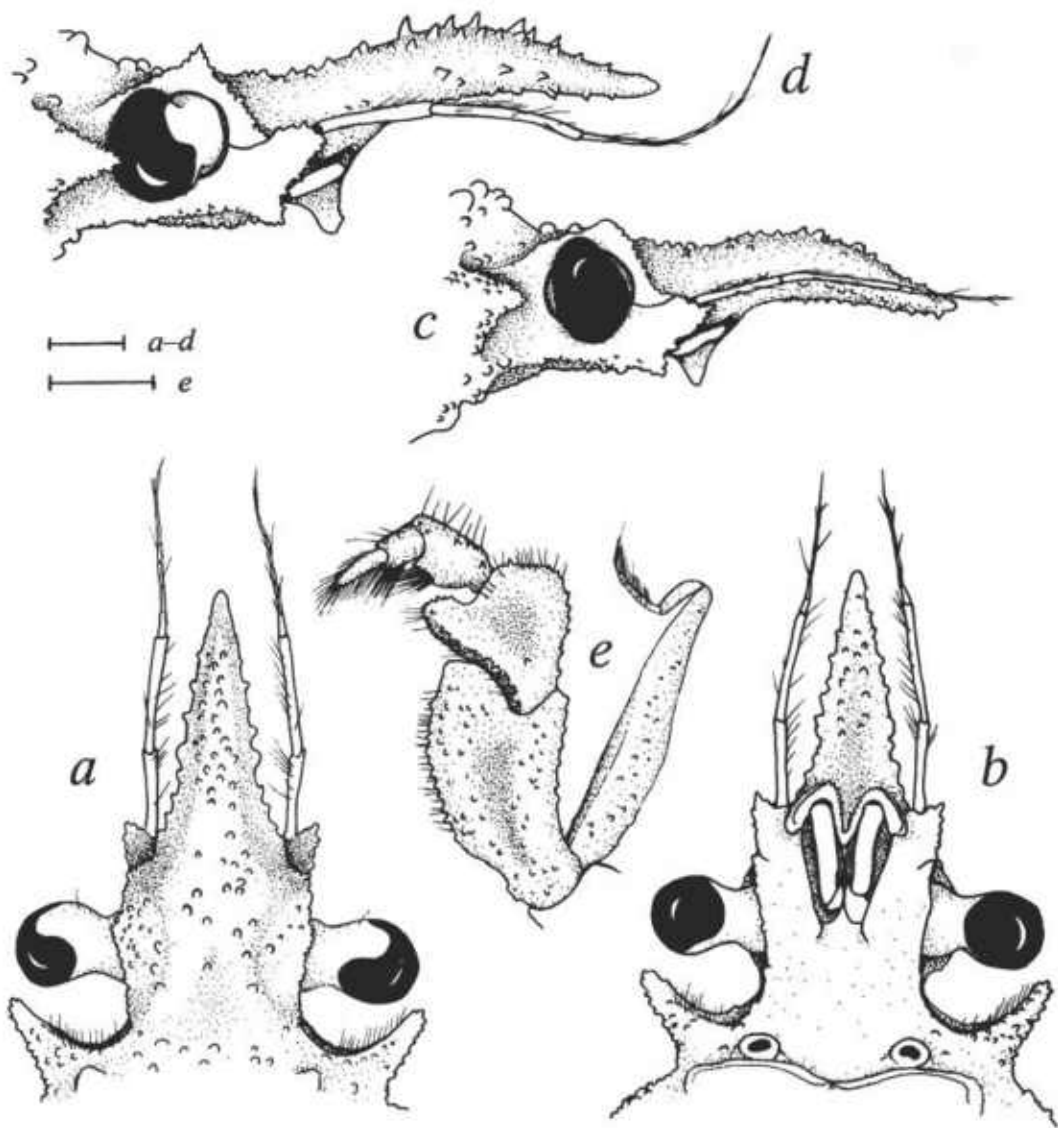


Fig. 2. *Pyromaia propinqua* Chace, 1940: a-c, e, ♀ ovig 12.8 × 8.5 mm, USNM 276174; d, ♂ 15.5 × 9.4 mm, USNM 276174. a, anterior portion of carapace showing rostrum, orbits, eyes, and antennae, dorsal view; b, same, ventral view; c, d, same, lateral view; e, left third maxilliped, outer view. Scales equal 1 mm.

tral margins; outer face minutely spinulose. Ocular peduncles constricted medially, naked or with scattered short setae.

Antennular fossae (Fig. 2b) large, longitudinally ovate; anterior margins minutely spinulose.

Interantennular spine large, flattened laterally.

Antennae (Fig. 2a-d) exceeding tip of rostrum by nearly entire length of flagellum. Second and third segments long, slender, their combined lengths about 0.9 times as long as

rostrum. Basal segment fused to epistome, with strong spine on distolateral angle; ventral face with 1 strong ventrolateral spine just in advance of midpoint, and irregular rows of small spines.

Epistome (Fig. 2b) wider than long, widest posteriorly. Mouthfield subrectangular. Pterygostomial region subtriangular, separated from subhepatic region by row of tubercles.

Third maxillipeds (Fig. 2e) not meeting on inner margins of ischia. Exopod with basal segment nearly reaching distal margin of

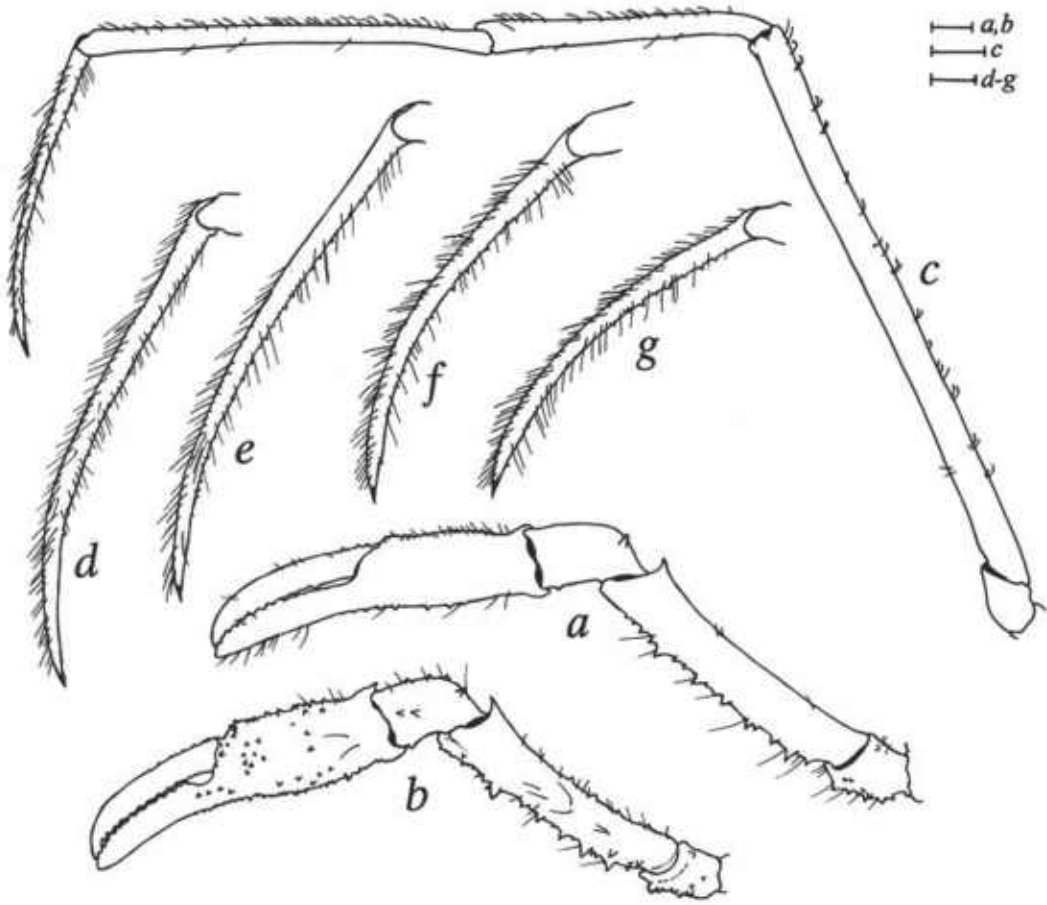


Fig. 3. *Pyromaia propinqua* Chace, 1940: a, c-g, ♀ ovig 12.8 × 8.5 mm, USNM 276174; b, ♂ 15.5 × 9.4 mm, USNM 276174. a, b, left cheliped, outer view; c, left first ambulatory leg, lateral view; d-g, dactyl of first (d), second (e), third (f), and fourth (g) ambulatory legs, lateral view. Scales equal 1 mm (a, b, c) and 0.50 mm (d-g).

merus; outer face with small, well-spaced tubercles. Ischium longer than broad; inner margin broadly curved, with crista dentata consisting of row of small teeth; outer face weakly concave medially, with small, well-spaced tubercles. Merus about 0.6 times as long as ischium; anterolateral margin expanded, minutely spinulose; inner margin with subdistal row of small spines. Palp cylindrical, about 1.3 times as long as merus, with row of well-spaced setae on lateral margins and dense setae on mesial margins; carpus with row of small spines on outer face near lateral margin; propodus usually with 1 or 2 small, often inconspicuous spines at about midline of lateral margin; dactyl unarmed, with setae.

Sternum with sternite I triangular and having few small spines or tubercles. Sternite II

with median protuberance surmounted by few small tubercles. Sternite III strongly sloping down (ventral view), smooth. Sternites IV-VIII densely covered with small blunt spines or tubercles in male, nearly smooth in female.

Chelipeds (Fig. 3a, b) subcylindrical, right and left similar in both sexes, exceeding tip of rostrum by half to nearly full length of dactyls; segments sparsely setose; most specimens with merus and parts of carpus and palm frequently covered with dense minute epibionts. Fingers slightly longer than palm, smooth except for scattered setae and minute spines on dorsoproximal margin of dactyl; cutting edges consisting of subequal calcareous teeth on distal four-fifths, leaving gap proximally when closed. Palm slender, weakly inflated (slightly more so in male than

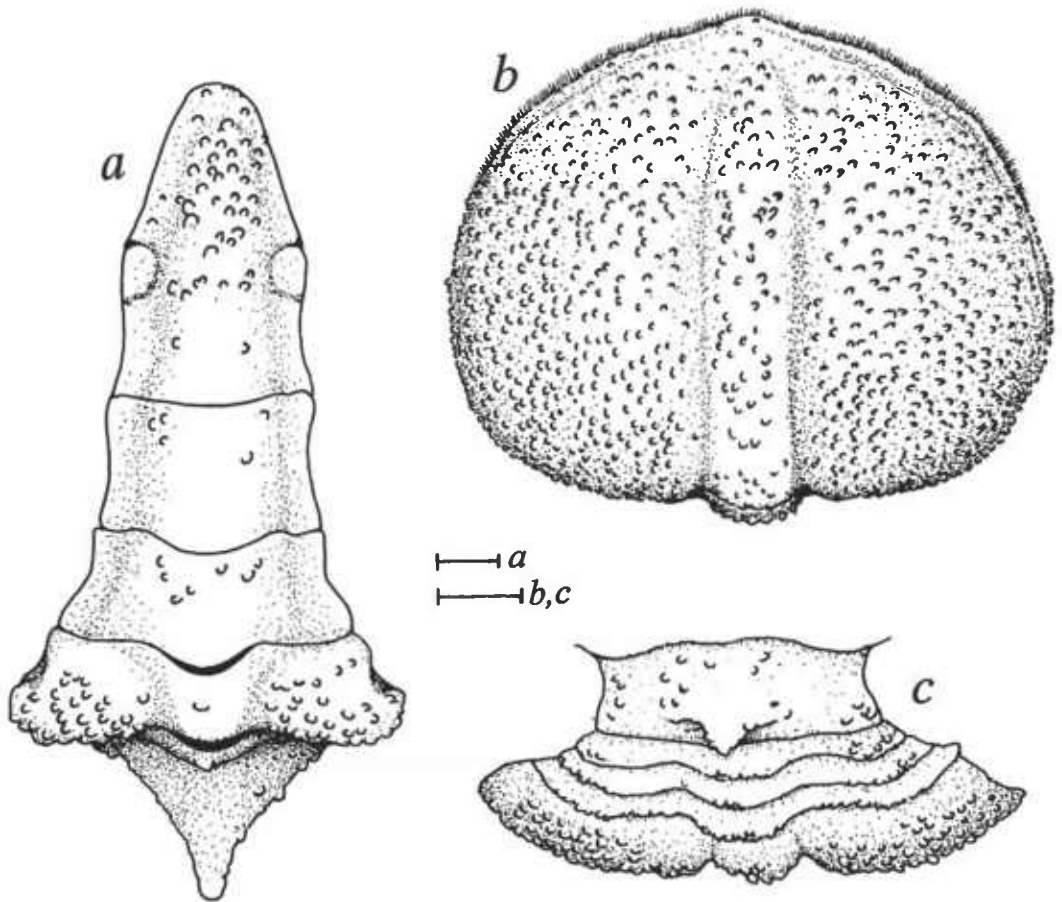


Fig. 4. *Pyromaia propinqua* Chace, 1940: a, ♂ 15.5 × 9.4 mm, USNM 276174; b, c, ♀ ovig 12.8 × 8.5 mm, USNM 276174. a, male abdomen, ventral view; b, female abdomen showing last segment (fused segments 5, 6, and telson), and median portion of segment 4, ventral view; c, female abdomen showing segments 1 to 4 and portion of pleotelson, posterior view. Scales equal 0.5 mm (a) and 1 mm (b, c).

in female), with scattered setae; outer and inner surfaces with small spines (male) or only with row of few small spines on dorsal and ventral margins (female). Carpus with scattered setae; dorsal margin with at least 1 small proximal spine, or with row of few small spines; outer face unarmed or with 1–3 small spines. Merus with scattered setae; dorsal margin armed with strong distal spine, and sometimes also with few spines on proximal half; ventral margin armed with strong, unequal spines. Ischium with small spines on ventral face. Basis and coxa with blunt small spines or granules on outer surface.

Ambulatory legs (Fig. 3c–g) slender, subcylindrical. First leg longest, about 1.9 times as long as TCL, remaining legs decreasing in length posteriorly, last leg about 1.6 times

as long as carapace length. Dactyl (Fig. 3d–g) slightly shorter than propodus, curved distally, with moderately dense setae on all surfaces, terminating in short, sharp corneous claw; ventral margins armed with irregular row of calcareous spinules. Merus, carpus, and propodus with scattered short, thin hook-like setae on dorsal surfaces, frequently covered with dense minute epibionts. Basisischium, merus, carpus, and propodus lacking spines. Coxa with granules on ventral face.

Abdomen (Fig. 4a–c) with surfaces granulose; segment 1 in both sexes bearing strong sharp or blunt spine, remaining segments slightly raised medially and forming low longitudinal ridge. Male abdomen (Fig. 4a) consisting of 6 free segments: segments 1–5, and pleotelson; pleotelson subtriangular, termi-

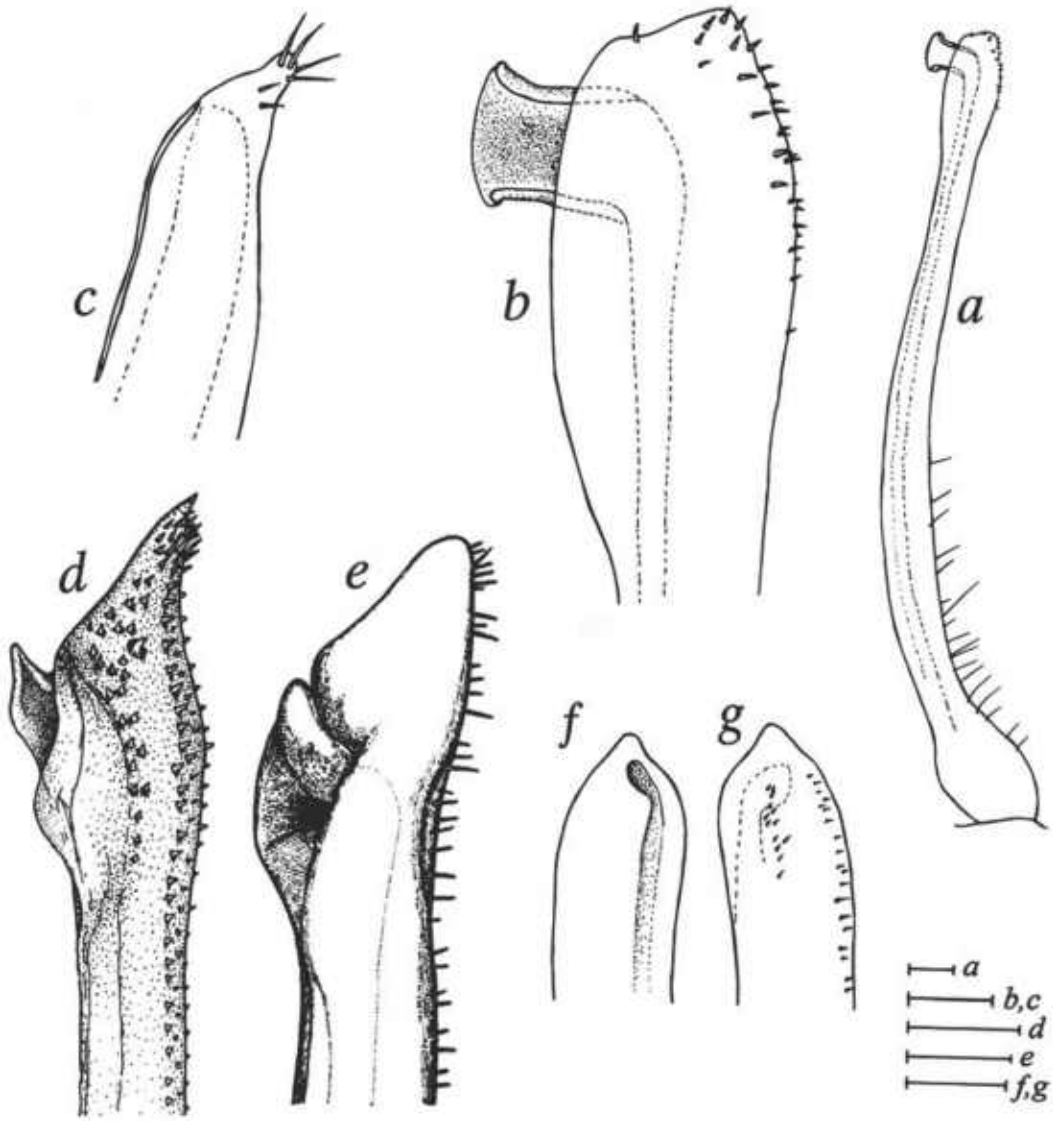


Fig. 5. Male right first pleopod in species of *Pyromaia* Stimpson, 1871. *P. propinqua*, 15.5 × 9.4 mm, USNM 276174: a, whole, sternal view; b, tip of same, sternal view. *P. acanthina*, new species, paratype 15.2 × 8.6 mm, USNM 276177: c, tip, sternal view. *P. cuspidata* Stimpson, 1871: d, tip, sternal view (after Williams, 1984: 305, fig. 241m, no museum number indicated). *P. tuberculata* (Lockington, 1877): e, tip, sternal view (after Garth, 1958: 513, pl. E, fig. 7, no museum number indicated). *P. arachna* Rathbun, 1924, Tortugas, Florida, USNM 73242: f, tip, sternal view; g, same, abdominal view. Scales equal 0.25 mm (a), 0.5 mm (b, c, f, g), 0.33 mm (d), and 0.15 mm (e).

nating in rounded apex. Abdominal locking system with deep socket on ventral side of pleotelson; dorsal side of pleotelson with slight bulge on each side medially corresponding to socket; with prominent blunt press-button on oblique flank of sterno-abdominal cavity on fifth sternite. Female abdomen (Fig. 4b, c) consisting of 5 free segments: segments 1–4, and large, broad seg-

ment formed by fusion of segments 5, 6, and telson; lateral margins with short, dense setae.

Male first gonopod (Fig. 5a, b) terminating in broadly subtriangular tip. Distolateral surface of tip with irregular rows of small spinules. Sperm groove curving at right angle distally, ending in subterminal aperture forming semi-subcylindrical extension reaching beyond margin of pleopod.

Distribution.—Caribbean Sea: north coast of Cuba; and Colombia, from Neaguange, Magdalena Department, in the north, to Punta Caribana, Antioquia Department, in the south. Depth: 146 to 482 m.

Remarks.—This species was previously known only from the specimens collected off the north coast of Cuba, and used by Chace (1940) in his original description. Chace (1940) mistakenly listed sta 3399 as the locality for the holotype (MCZ 11061). We have examined the holotype, and from the information accompanying the specimen and MCZ records have determined that the holotype was actually collected at "Atlantis" station 3398. The paratypes listed by Chace (1940) from "Atlantis" stations 3419, 3390, 3391, 3392, and 3397 are missing from the MCZ collections, and are apparently lost (A. Johnston, personal communication).

Pyromaia acanthina, new species

Figs. 1c, d, 5c, 6, 7

Material Examined.—Holotype: ♂ 10.7 × 6.1 mm, INVEMAR-Macrofauna I, sta C-8, Neaguange, 11°23'25.2"N, 74°12'3.6"W, 204–196 m, 3 October 1998, INVEMAR-CRU 2065. Paratype: 1 ♂ 15.2 × 8.6 mm, INVEMAR-Macrofauna I, sta C-68, Golfo de Morrosquillo, 9°45'19.2"N, 76°15'44.4"W, 317–321 m, 13 April 1999, USNM 276177.

Diagnosis.—Carapace narrow, TCL about 1.7 to 1.8 times as long as CW. Dorsal surface of carapace with numerous small and prominent spines. Rostrum prominent, simple, RL about 0.4 times as long as TCL. Postorbital spine large, directed anterolaterally, weakly curving around eye when retracted. Meri, carpi, and propodi of ambulatory legs with numerous small spines. Male first pleopod terminating in bluntly subtriangular tip with long distal setae; sperm groove with subterminal aperture not extending beyond margin of pleopod.

Description.—Carapace pyriform (Fig. 1c), TCL about 1.7 to 1.8 times as long as CW. Dorsal surface with short, sparse pubescence. Regions well demarcated, covered with numerous minute and prominent spines, latter covered with minute sharp granules. Prominent spines on carapace regions arranged as follows: transverse row of 3 spines consisting of 1 on each side of protogastric region, and 1 on center of mesogastric region; 1 on center of metagastric region; 1 on cardiac re-

gion; 1 on intestinal region; 2 medial, and row of 5 near posterolateral margin on each branchial region; 1 medial and row of 3 laterally on hepatic region. External pleurites 5–8 (not clearly shown in Fig. 1d) consisting of narrow plates covered with minute sharp granules.

Rostrum (Fig. 6a–c) long, simple, RL about 0.4 times as long as TCL, subconical; weakly arched dorsally, terminating in strong sharp spine. Dorsal surface with scattered thin, hook-like setae (not shown in Fig. 6a–c), and sharp spines; ventral surface with small spines or tubercles.

Orbits with strong supraorbital spine (Fig. 6a, c). Postorbital spine large, directed anterolaterally; inner surface providing base for eyes when eyes retracted posteriorly, with row of short setae on dorsal and ventral margins; outer surface minutely spinulose. Ocular peduncles constricted medially, with setae dorsally near cornea.

Antennular fossae (Fig. 6b) large, longitudinally ovate; anterior margins minutely spinulose.

Interantennular spine large, flattened laterally, with spinulose margins.

Antennae exceeding tip of rostrum by about 0.3 times length of flagellum. Second and third segments sparsely setose, their combined lengths about half or more as long as rostrum. Basal segment fused to epistome, with strong spine on distolateral angle; ventral surface with 1 strong ventrolateral spine just in advance of midpoint, and irregular rows of small spines.

Epistome (Fig. 6b) nearly smooth, wider than long, widest posteriorly. Mouthfield subrectangular. Pterygostomial region subtriangular; surface with many minute spines, and distinct tubercle anteriorly.

Third maxillipeds (Fig. 6d) not meeting on inner margins of ischia. Exopod with basal segment nearly reaching distal margin of merus; outer surface with small, well-spaced tubercles. Ischium longer than broad; inner margin broadly curved, with crista dentata consisting of row of small teeth; outer surface weakly concave medially, with small, well-spaced tubercles. Merus about 0.6 times as long as ischium; anterolateral margin expanded, minutely spinulose; inner margin with subdistal row of small spines. Palp cylindrical, about 1.3 times as long as merus, with row of well-spaced setae on lateral mar-

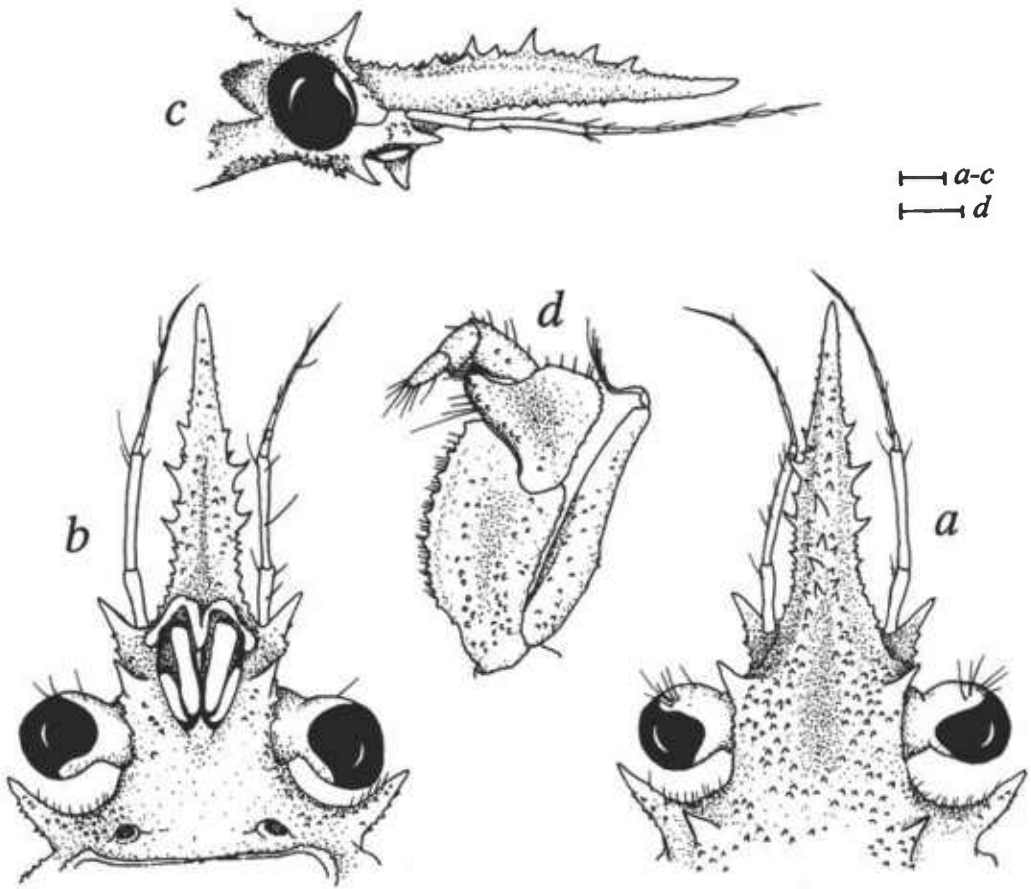


Fig. 6. *Pyromaia acanthina*, new species: holotype ♂ 10.7 × 6.1 mm, INVEMAR-CRU 2065. *a*, anterior portion of carapace showing rostrum, orbits, eyes, and antennae, dorsal view; *b*, same, ventral view; *c*, same, lateral view; *d*, left third maxilliped, outer view. Scales equal 0.5 mm.

gins, and dense setae on mesial margins; carpus with row of small spines on outer face near lateral margin; propodus and dactyl unarmed except for few setae.

Sternum (Fig. 7*d*) with sternite I triangular, bearing transverse row of spines distally. Sternite II slightly elevated medially; with few median, small tubercles. Sternite III strongly sloping down (ventral view), smooth. Sternites IV–VIII densely covered with small tubercles. Female unknown.

Chelipeds (Fig. 7*a*) similar right from left, not exceeding tip of rostrum when fully extended; segments sparsely setose. Fingers slightly longer than palm, smooth except for scattered setae and minute spines on dorso-proximal margin of dactyl; cutting edges consisting of subequal calcareous teeth on distal two-thirds, leaving narrow gap proximally when closed. Palm weakly inflated; outer sur-

face with small spines dorsally and ventrally; inner surface with scattered small spines. Carpus having dorsal margin with 1 proximal spine and 2 or 3 small spines distally; outer surface unarmed or with 1 or 2 small spines dorsodistally. Merus with strong dorsodistal spine; dorsal margin with small spines; ventral margin with strong, unequal spines; outer surface with small spines. Ischium with ventrodistal spine, and small spines on outer and ventral surfaces. Basis and coxa with few small spines on outer surface.

Ambulatory legs (Fig. 7*b, c*) slender, subcylindrical. First leg longest, about 2.2 times as long as TCL, remaining legs decreasing in length posteriorly, last leg about 1.8 times as long as TCL. Dactyl (Fig. 7*c*) about 0.8 times length of propodus, slightly curved distally, with moderately dense setae on all surfaces and terminating in short corneous claw;

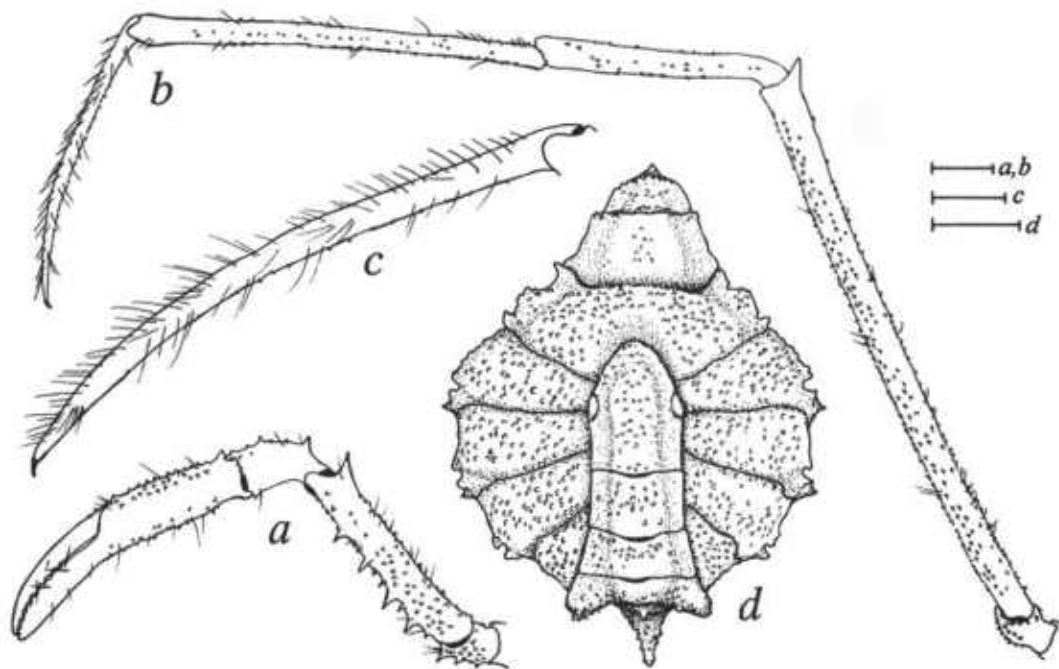


Fig. 7. *Pyromaia acanthina*, new species: holotype ♂ 10.7 × 6.1 mm, INVEMAR-CRU 2065. a, left cheliped, outer view; b, left first ambulatory leg, lateral view; c, dactyl of same, lateral view; d, sternum and abdomen, ventral view. Scales equal 1 mm (a, b, d) and 0.5 mm (c).

ventral margin armed with irregular row of minute calcareous spinules. Merus, carpus, and propodus surfaces with numerous small spines and scattered short, thin setae (often hook-like). Merus with strong dorsodistal spine. Coxa with granules on ventral surface. Basis-ischium with small spines.

Abdomen of male (Fig. 7d) consisting of 6 free segments: segments 1–5, and pleotelson; surfaces of segments with small sharp or blunt spines except laterally on pleotelson and segment 5. Pleotelson subtriangular, terminating in rounded apex. Abdominal locking system with deep socket on ventral side of pleotelson; dorsal side of pleotelson with slight bulge on each side medially corresponding to socket; with prominent blunt press-button on oblique flank of sterno-abdominal cavity on fifth sternite. Segment 1 bearing strong sharp or blunt spine, remaining segments slightly raised medially and forming low longitudinal ridge. Female unknown.

Male first gonopod terminating in bluntly subtriangular tip (Fig. 5c), with 4 long distal setae, and 2 short subdistal setae. Aperture subterminal, not extending beyond margin of

pleopod; sperm groove forming longitudinal slit extending proximally to almost basal portion of gonopod.

Distribution.—So far known only from the Caribbean coast of Colombia, from Neaguange, Magdalena Department, in the north, to the Gulf of Morrosquillo, in the south. Depth: 196 to 321 m.

Etymology.—The specific name is derived from the Greek *akanthinus*, an adjective meaning “thorny”, modified with the ending *-ina* to conform with the feminine generic name, and refers to the spiny aspect of the crab.

Remarks.—Among species of *Pyromaia*, this new species is most similar to *P. propinqua* in carapace proportions and development of the rostrum. In both species the carapace is long and narrow, with a TCL/CW ratio of about 1.4 to 1.8, and the rostrum is strong and long, with an RL/TCL ratio ranging from 0.2 to 0.4. In other *Pyromaia* species the TCL/CW ratio, at least in adults, is distinctly less than 1.4, and the RL/TCL ratio is about 0.1. *Pyromaia acanthina* and *P. propinqua*

differ from each other in armature of the carapace and ambulatory legs, and in the case of males, the first pleopods. In *P. propinqua* the carapace is armed with tubercles or short, blunt spines (Fig. 1a, b), and the meri, carpi, and propodi of the ambulatory legs lack spines (Fig. 3c), while in *P. acanthina* the carapace is armed with short and long, sharp spines (Fig. 1c, d), and the meri, carpi, and propodi of the ambulatory legs have numerous small spines (Fig. 7b). In *P. propinqua*, the male first pleopod (Fig. 5b) terminates in a broadly triangular tip with short setae and has a sperm groove with a subterminal aperture that extends mesially beyond the margin of the pleopod. In *P. acanthina*, the male first pleopod (Fig. 5c) terminates in a narrowly subtriangular tip with long setae, and the sperm groove does not extend beyond the margin of the pleopod.

FAMILIAL CLASSIFICATION AND DEFINITION OF *PYROMAIA*, DISTRIBUTION OF SPECIES, AND KEY TO THEIR IDENTIFICATION

Drach and Guinot (1983) and Guinot and Richer de Forges (1997) elevated Dana's (1851) subfamily Inachoidinae to family level (Inachoididae) based on 18 new skeletal characters considered apomorphic. In this family they included *Pyromaia* as well as nine other genera, all strictly distributed in the Americas: *Aepinus* Rathbun, 1925; *Anasimus* A. Milne-Edwards, 1880; *Arachnopsis* Stimpson, 1871; *Batrachonotus* Stimpson, 1871; *Collodes* Stimpson, 1860; *Euprognatha* Stimpson, 1871; *Inachoides* H. Milne Edwards and Lucas, 1842; *Leurocyclus* Rathbun, 1897; and *Paradasygyius* Garth, 1958. All but *Leurocyclus* were previously classified by most authors in the subfamily Inachinae MacLeay, 1838 (e.g., Rathbun, 1925; Garth, 1958; Manning and Holthuis, 1981; Williams, 1984). However, in a recent phylogenetic study based on larval evidence, Pohle and Marques (2000) found no support for a monophyletic Inachoididae and elected to place these genera instead in the subfamily Inachoininae.

The genus *Pyromaia* has been traditionally defined based on a number of characters of the carapace, antennae, third maxillipeds, ambulatory legs, and abdomen (Stimpson, 1871; Rathbun, 1925; Garth, 1958; Hendrickx, 1999), to which can be added the fundamental morphological features of the skeletal sys-

tem that characterize members of the Inachoididae (Guinot and Richer de Forges, 1997). Species of this genus can be characterized primarily by having a pyriform carapace armed with tubercles or spines. The latero-external parts of pleurites 5 to 8 extend beyond each side of the carapace forming narrow plates (Fig. 1b). The rostrum is well developed and simple. The postorbital spine is large and curves around the eye in adults of some species. The basal antennal article is long and narrow and has slender distal segments. The third maxillipeds do not completely fill the buccal cavity; the ischium has the inner distal portion strongly advanced; and the merus is cordate, with a prominent lobe on the inner side. The chelipeds are of moderate length, shorter than the ambulatory legs which are very long and slender, and have long, slightly curved dactyls; the palms in some species can be inflated, whereas in others, such as *P. propinqua* and *P. acanthina*, they are at most weakly inflated (Figs. 3a, b, 7a). The male abdomen consists of six free segments: segments 1 to 5, and a pleotelson. The abdominal locking system has a deep socket on the ventral side of the pleotelson, and a prominent, blunt press-button on the sternal cavity (cf. Guinot and Bouchard, 1998: 659, fig. 20C, D). The female abdomen consists of five free segments: segments 1 to 4, and a segment representing the fusion of segments 5, 6, and telson. The morphology of the male first pleopod (Fig. 5) differs considerably depending on the species.

During this study we have observed some overlap in characters exhibited by *Pyromaia* species with those of *Anasimus* and *Inachoides*. These characters include rostrum shape and size, shape and armature of the carapace, degree of development of the external pleurites, shape and length of the ambulatory legs, and even morphology of the male first pleopod. The greater development of the postorbital spine in *Pyromaia* species appears to be the single most important character setting apart species of this genus from others in the Inachoididae.

The natural range of all species of *Pyromaia* is exclusively along the Pacific and Atlantic coasts of the American continent. In addition to *Pyromaia propinqua* and *P. acanthina*, the genus includes three other species: *P. cuspidata*, *P. arachna*, and *P. tuberculata*. The latter species was divided by Garth

(1958, 1960) into two subspecies, *P. t. tuberculata* (Lockington, 1877), and *P. t. mexicana* (Rathbun, 1893); however, Hendrickx (1990) showed this division to be unjustified on morphological grounds and eliminated the subspecific categories. *Pyromaia cuspidata* and *P. arachna* are known from the western Atlantic, the former from North Carolina, U.S.A., to off Nicaragua (Rathbun, 1925; Powers, 1977; Williams, 1984), the latter from South Carolina, U.S.A., to the Gulf of Mexico (Rathbun, 1925; Pequegnat, 1970; Powers, 1977). The range of *P. tuberculata* (Lockington, 1877) includes the eastern Pacific from California, U.S.A., to Colombia (Hendrickx, 1995, 1999), and also the south-western Atlantic in Brazil (Melo *et al.*, 1989; Melo, 1996, 1998; Franzo and Negreiros-Franzo, 1997). However, *P. tuberculata* has been introduced in Japan, New Zealand, and Australia (Sakai, 1976; Webber and Wear, 1981; Wear and Fielder, 1985; Morgan, 1990; Furota, 1996a, b).

Key to Species of *Pyromaia*

1. Basal antennal article with strong spine on ventrolateral margin just anterior to midpoint. 2
 - Basal antennal article without strong spine on ventrolateral margin. *P. tuberculata* (eastern Pacific; southwestern Atlantic; introduced in Japan, New Zealand, and Australia; 24–412 m)
2. Ambulatory legs with dense, longitudinal fringe of setae on lateral and mesial margins of dactyls and strong spine on dorsoproximal margin of meri *P. arachna* (northwestern Atlantic; 83–384 m)
 - Ambulatory legs without fringe of setae on dactyls and lacking spine on dorsoproximal margin of merus 3
3. Dorsal surface of carapace and rostrum with tubercles or blunt spines; ambulatory legs with meri, carpi, and propodi without spines; sperm groove of first male pleopod extending mesially beyond margin of pleopod (Fig. 5b, d). 4
 - Dorsal surface of carapace and rostrum with sharp spines; ambulatory legs with meri, carpi, and propodi armed with many small spines (Fig. 7b); sperm groove of first male pleopod not extending beyond margin of pleopod (Fig. 5c). *P. acanthina*, new species (southern Caribbean; 196–321 m)
4. Ventral margin of dactyl of ambulatory legs armed with row of minute, calcareous spines (Fig. 3d–g); ratio TCL/CW \geq 1.4; male first pleopod terminating in blunt, broadly subtriangular tip (Fig. 5b). *P. propinqua* (Caribbean; 146–482 m)
 - Ventral margin of dactyl of ambulatory legs without spines; ratio TCL/CW < 1.4; male first pleopod terminating in acute subtriangular tip (Fig. 5d) *P. cuspidata* (northwestern Atlantic; 27–549 m)

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While this paper was in proof stage, Türkay's (1968) description of *Pyromaia vogelsangi* Türkay, 1968, from Isla Margarita, Venezuela, came to our attention. Türkay's species, the sixth in the genus, is similar to *P. arachna*.

Türkay, M. 1968. Dekapoden von den Margarita-Inseln (Venezuela) (Crustacea).—Senckenbergiana biologica 49: 249–257.