

## NEW RECORDS AND NEW SPECIES OF GHOST SHRIMPS (CRUSTACEA: THALASSINIDEA) FROM VENEZUELA

*Juan Pablo Blanco Rambla and Ildefonso Liñero Arana*

### ABSTRACT

Based on collections of Venezuelan ghost shrimps (Decapoda: Thalassinidea), three new records *Cheramus marginatus* (Rathbun, 1901), *Crosniera minima* (Rathbun, 1901) and *Neocallichirus* sp., and two new species (*Gourretia biffari* and *G. laresi*) are described and illustrated in this paper. The present record of *Gourretia* in Venezuela also constitutes the first report of this genus in the Western Atlantic.

Thalassinid ghost shrimps are an ecologically important group in the marine environment in that they commonly burrow in sediments, removing and aerating the substrate. Recent papers (Kensley and Heard, 1991; Manning and Felder, 1991) have contributed much to the taxonomy of this group (see also Saint Laurent, 1973, 1979). However, in Venezuela thalassinids have been very poorly studied, apparently due to the difficulty of collecting specimens from their cryptic habitat. The earliest report is that of Biffar (1970) who reported *Eucalliax quadracuta* from Cumaná, Venezuela; subsequently (Biffar, 1971a, 1971b) recorded *Glypturus acanthochirus*, *Anacalliax agassizi* and *Biffarius fragilis* from the same locality. In this paper, we report our observations on five more species, three of which are new records for Venezuela and two of which are described as new species.

### MATERIALS, METHODS AND TERMINOLOGY

Collections were made with a Petersen grab on board R/V GUAQUERI II of the Instituto Oceanográfico de Venezuela, in the continental shelf waters of eastern Venezuela. Observations and measurements were made with a WILD M-5 research microscope and drawings with a camera lucida. Terminology, abbreviations and specimen measurements were made as given by Biffar (1971a). Detailed descriptions and illustrations are also provided for each taxon. Holotypes of the two newly described species are deposited at the U.S. National Museum of Natural History, Smithsonian Institution, (USNM), Washington, D.C. Additional specimens are deposited in the museum of the Instituto Oceanográfico de Venezuela (IOV), Cumaná. For comparative purposes, paratypes of *Gourretia biffari* new species (*Dawsonius latispina*, sensu Biffar, 1971a) from the Rosenstiel School of Marine and Atmospheric Science (UMML), Miami, Florida were also studied.

### RESULTS

The following systematic treatment of the genera and species is arranged according to recent papers (Kensley and Heard, 1991 for Callianideidae; and Manning and Felder, 1991 for Callianassidae and Ctenochelidae).

#### Family Callianideidae Kossmann, 1880

##### *Crosniera minima* (Rathbun, 1901)

(Fig. 1)

*Callianassa minima* Rathbun, 1901: 92, fig. 16.—Biffar, 1971a: 651.—Saint Laurent, 1979: 1396.—

Kensley and Heard, 1991: 500.—Manning and Felder, 1991: 765.

*Crosniera minima*.—Kensley and Heard, 1991: 500–506, figs. 5, 6.

*Material examined*: One female, TL 25.4 mm, North Píritu Islands (10°18'40"N, 64°52'50"W), at 75 m depth on a soft silty substrate; 29 Jul 1991; along with five specimens of *Automate evermanni* Rathbun.

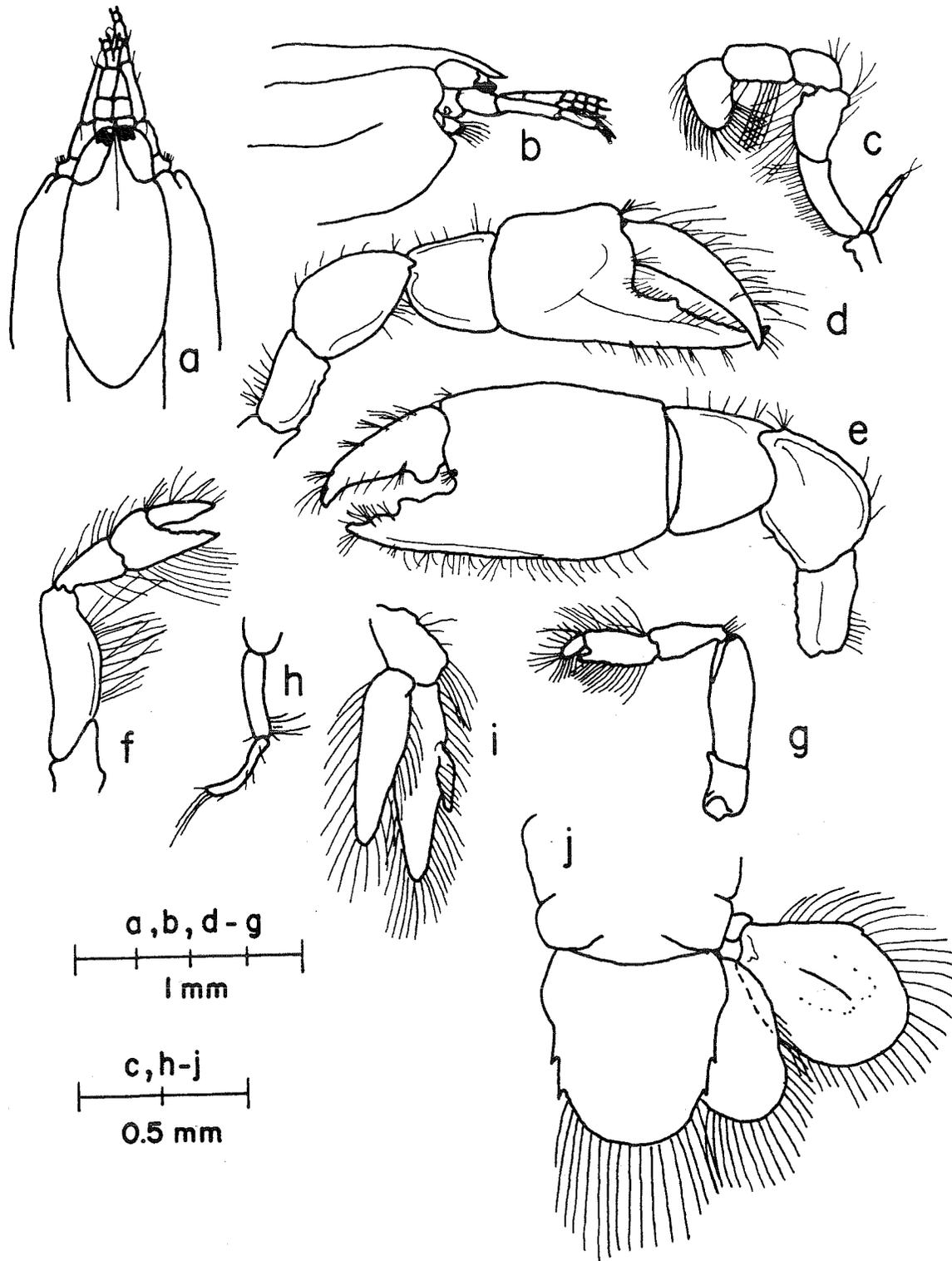


Figure 1. *Crosniera minima* (Rathbun, 1901). Female, anterior part of carapace, (a) dorsal view, (b) lateral view; (c) third maxilliped, outer surface (d) small cheliped, outer surface; (e) large cheliped, outer surface; (f) second pereopod, outer surface; (g) fifth pereopod, inner surface; (h) first pleopod, inner surface; (i) second pleopod, inner surface; (j) tailfan, dorsal view (left uropods omitted).

*Recognition Characters.*—Rostrum acute, elongate, extending more than 0.25 length of eyestalks, with median carina on dorsal surface. Carapace rounded dorsolaterally, well developed *linea thalassinica*; eyestalks elongate, dorsally convex, pigmented area terminal. Mesial surface of ischium of third maxilliped with spinous ridge; propodus elongate. Chelipeds dissimilar: larger cheliped with small spines on ventral margin of ischium, propodal finger with single tooth on cutting edge, dactylar cutting edge unarmed; smaller cheliped, ventral margin of ischium serrated, merus globose, propodal finger ventrally cristate, with mesial tooth on cutting edge, small proximal tooth on dactylar cutting edge. Fingers of second pereopods asymmetrical, propodal finger with cutting edge serrated, dactylus entire. Fifth pereopod subchelate. Abdominal somites dorsoventrally flattened, sixth somite elongate, lateral margin bilobed, posterior lobe shortest. Telson as long as wide, lateral margins converging distally, with two spinules on posterior half of lateral margin, distal margin rounded. Uropods short, basal segment bilobed; lower exopodal plate 1.5 times longer than upper plate, separated by means of a sulcus. Second pleopod of female biramous, one-segmented endopod, exopod with two segments, second segment articulating on lateral distal margin of first, blade-like.

*Previous Records.*—Puerto Rico (Rathbun, 1901); Alabama and Puerto Rico (Kensley and Heard, 1991).

*Remarks.*—Although only one specimen was available for our study, it agreed very well with the description and figures given by Kensley and Heard (1991) for the Alabama and Puerto Rican specimens. According to Saint Laurent (1979) this species may belong to the genus *Thomassinia*; however, Kensley and Heard (1991) point out differences between these two taxa.

Family Callianassidae Dana, 1852  
Subfamily Cheraminae Manning and Felder, 1991  
*Cheramus marginatus* (Rathbun, 1901)  
(Figs. 2, 3)

*Callianassa marginata* Rathbun, 1901: 92, fig. 15.—Schmitt, 1935: 4.—Biffar, 1971a: 689, figs. 15–16.—Manning and Felder, 1991: 780.

*Cheramus marginatus.*—Manning and Felder, 1991: 766.

*Material examined:* One female, TL 15.2 mm, Northwest Chimana Islands (10°18'40"N, 64°47'40"W), at 71 m depth on clay bottom; 27 Jun 1991; along with other decapods such as *Automate evermanni*, *Alpheus heterochaelis*, *Callinectes* sp., and some unidentified amphipods.

*Recognition Characters.*—Rostrum spinous, triangular, elongate, 0.8 times length of eyestalks, lateral projections subrectangular. Carapace rounded dorsolaterally, anterolateral margins rounded, *linea thalassinica* well-marked. Eyestalks flattened dorsally, pigmented area oval, subterminal. Mandible with incisor and molar process differentiated. First maxilliped with narrow exopod; third maxilliped absent in the specimen. Large cheliped strong, ischium with 8 spines on ventral margin; propodal finger straight, cutting edge channeled; dactylar cutting edge with single mesial tooth. Ischium of small cheliped with 9 strong spines on ventral margin; propodal finger with cutting edge entire; dactylus elongate, cutting edge with small proximal tooth. Chela of second pereopod asymmetrical, dactylus longer than propodal finger; third pereopods elongate. Fourth simple. Fifth chelate. First abdominal somite small. Sixth elongate, lateral margins bilobed, anterior lobe biggest. Telson subquadrate, dorsally convex; lateral margins straight, converging

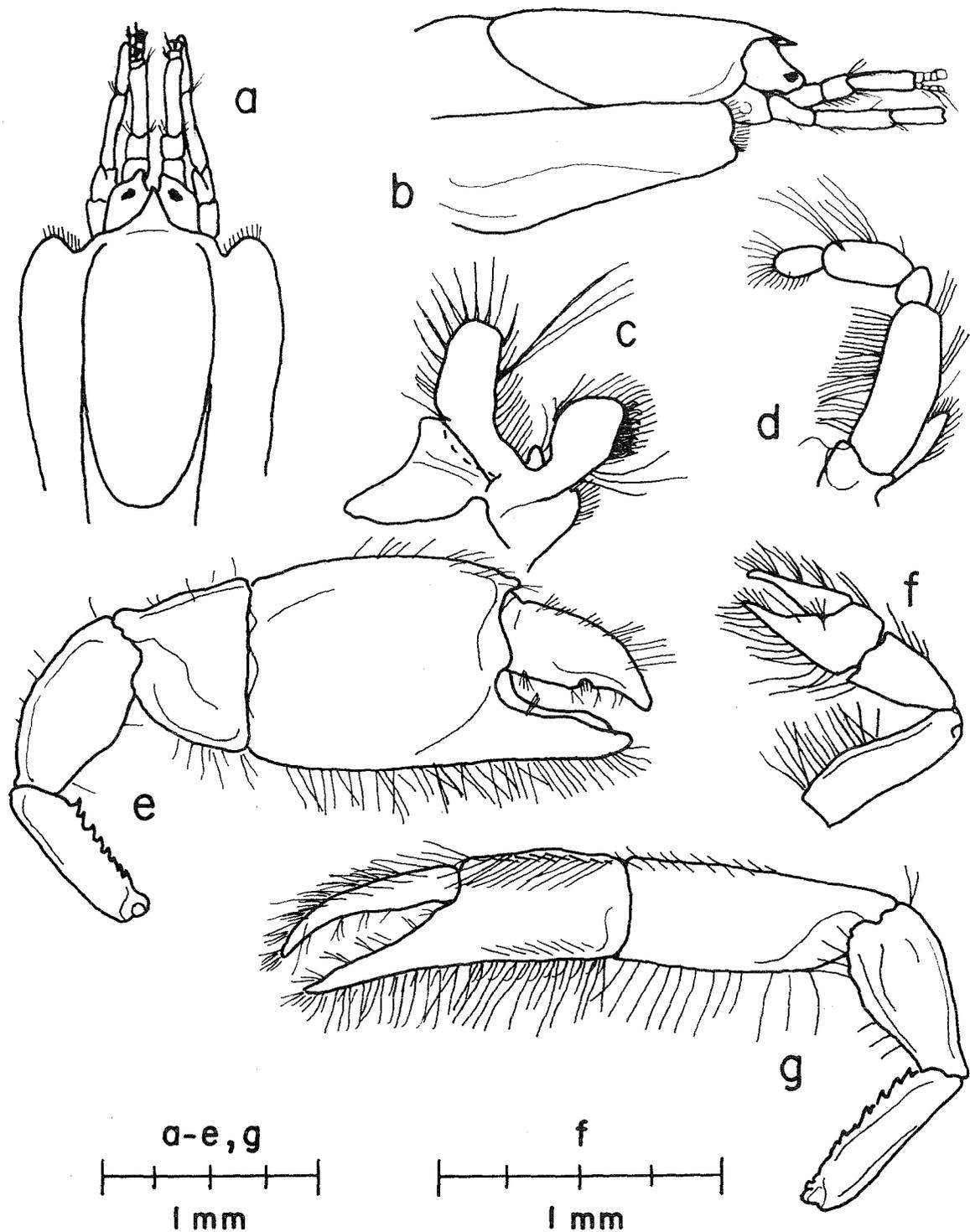


Figure 2. *Cheramus marginatus* (Rathbun, 1901). Female: anterior part of carapace, (a) dorsal view, (b) lateral view; (c) first maxilliped; (d) second maxilliped, inner surface; (e) large cheliped, inner surface; (f) second pereopod, outer surface; (g) small cheliped, inner surface.

posteriorly, a medial acute projection on posterior margin. Uropods elongate, basal segment rounded, bilobed; exopod elongate, more than 1.5 times length of telson. First pleopod of female uniramous, two-segmented. Second pleopod biramous, exopod narrow; endopod two-segmented, second segment articulating on mesial margin of first segment.

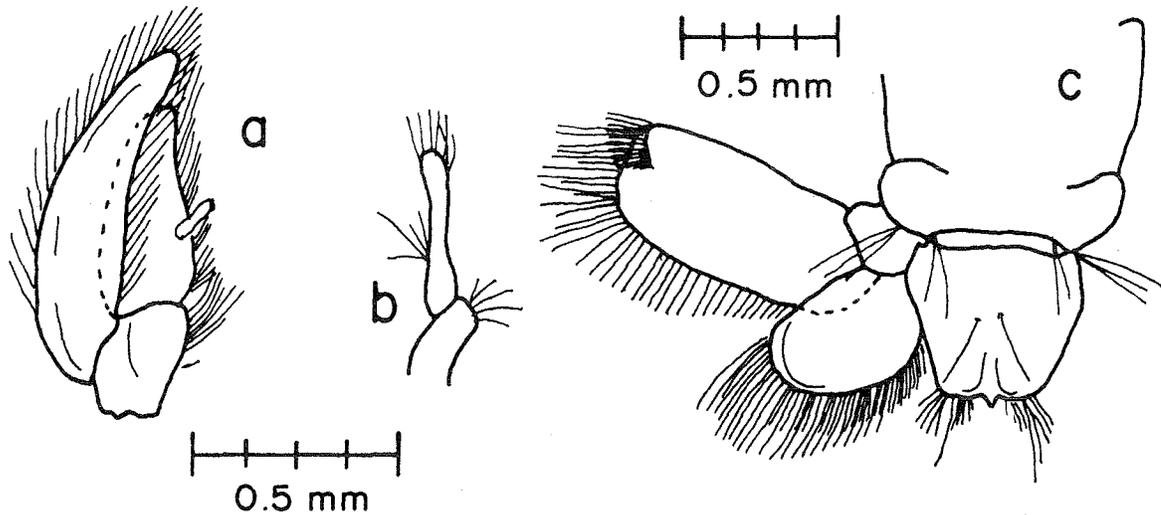


Figure 3. *Cheramus marginatus* (Rathbun, 1901). Female: (a) second pleopod, inner surface; (b) first pleopod, inner surface; (c) tailfan, dorsal view (right uropods omitted).

*Previous records.*—Florida, Mexico, Puerto Rico, Barbados, Atlantic, coast of Colombia (Biffar, 1971a).

*Remarks.*—*Cheramus marginatus*, one of the smallest species from the Western Atlantic (Biffar, 1971a), resembles *C. oblongus* from the eastern Atlantic in shape of the tailfan and in presence of an acute posterior projection on the telson. However, it differs in shape of the eyestalks, a shorter antennular penduncle and broader propodus on the third pereopod.

#### Subfamily Callichirinae Manning and Felder, 1991

##### *Neocallichirus* sp.

(Figs. 4, 5)

*Material examined:* Four males, TL 28.3–49.1 mm, North Jose (10°08'40"N, 64°50'10"W), at 24 m depth on clay-silt bottom; 9 May 1991; along with some polychaetes such as *Pectinaria meredithi*, *Fabricia* sp., *Diopatra* sp. and *Goniada* sp., the decapod *Alpheus floridanus* and an unidentified ophiuroid.

*Recognition Characters.*—Rostrum short, subtriangular, flattened, extending less than half length of eyestalks. Carapace rounded dorsolaterally; dorsal oval with a sulcus on posterior third. Eyestalks dorsally flattened, rounded distally, pigmented area convex. Third maxilliped without exopod, ischium with a row of spinules mesially, ischium-merus subpediform; propodus dilated, longer than wide; dactylus narrow. Chelipeds unequal and dissimilar. Large cheliped strong; ventral margin of ischium serrated; merus broad, ventral margin convex, serrated, without hooks or spines; carpus subquadrate, as long as palm; palm with ventral margin serrated to base of fixed finger; dactylus with two teeth on proximal half. Ischium of small cheliped narrow; merus broad on distal half, lacking ventral keel, serrations or hooks; carpus elongate, more than two times longer than wide; dactylus longer than propodus, both dactylar and propodal cutting edges denticulate. Second pereopod chelate, propodal finger and dactylus symmetrical. Carpus of third pereopod with two rounded projections on ventral margin; propodus two times wider than long. Fourth pereopod subchelate, carpus broader distally. Fifth pereopod chelate, propodal finger short, subtriangular; dactylus elongate, apex rounded. First abdominal somite broader posteriorly. Sixth bilobed, anterior lobe

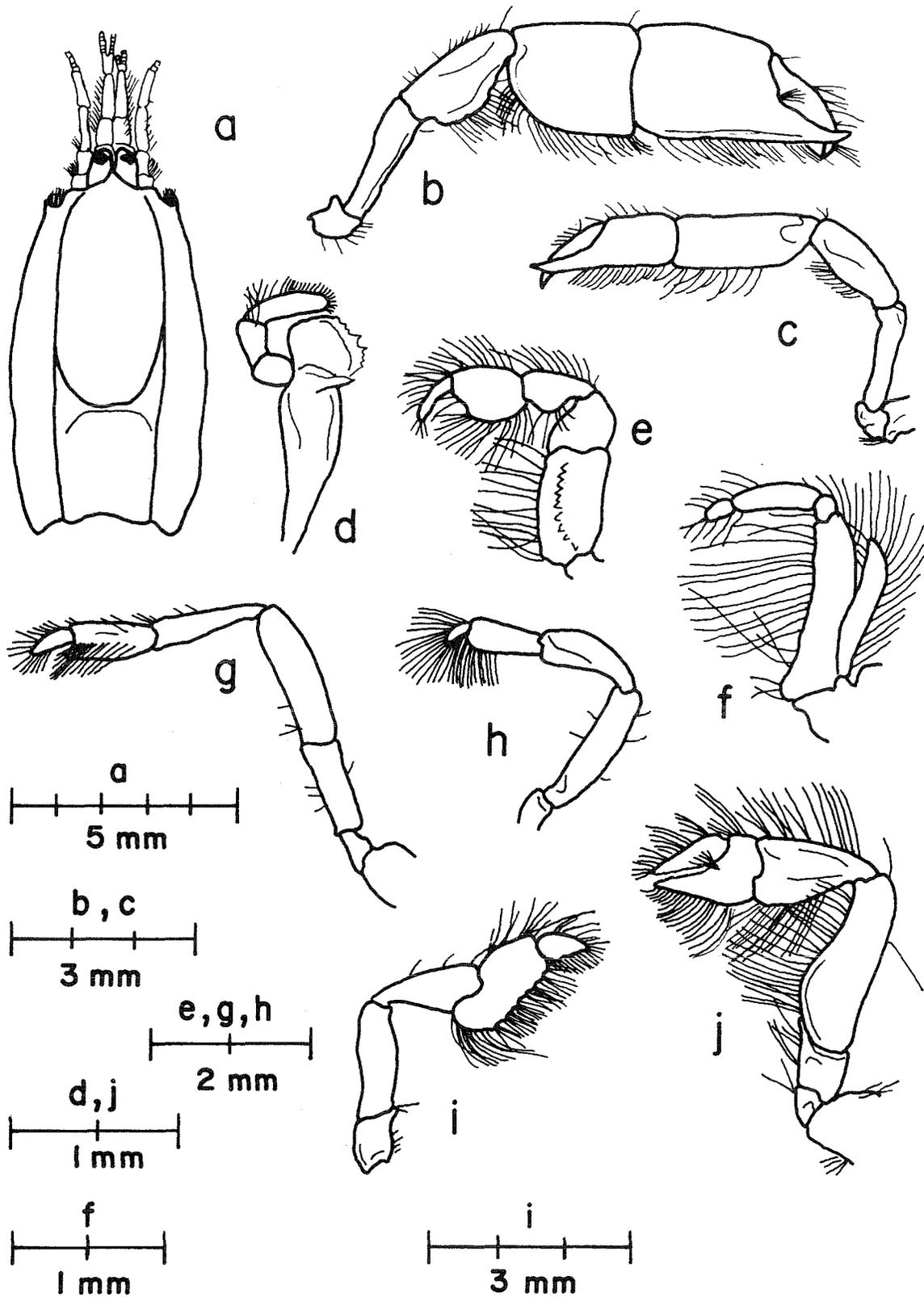


Figure 4. *Neocallichirus* sp. Male: (a) carapace, dorsal view, (b) large cheliped, outer surface; (c) small cheliped, outer surface; (d) mandible; (e) third maxilliped, inner surface; (f) second maxilliped, inner surface; (g) fifth pereopod, outer surface; (h) fourth pereopod, outer surface; (i) third pereopod, outer surface; (j) second pereopod, inner surface.

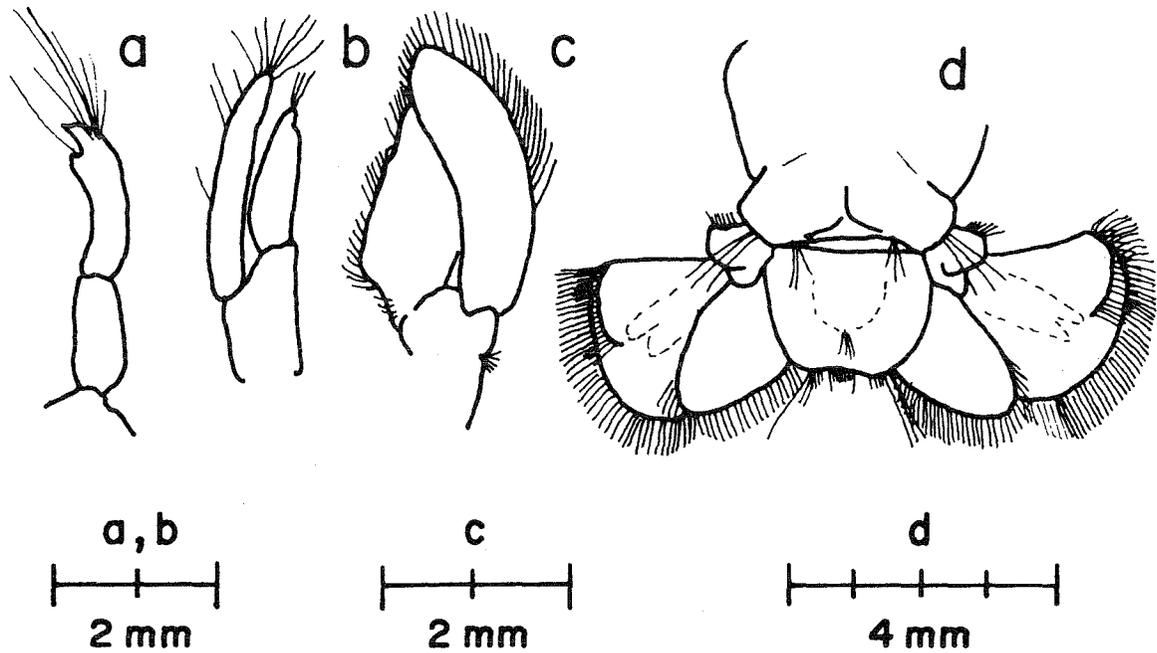


Figure 5. *Neocallichirus* sp. Male: (a) first pleopod, outer surface; (b) second pleopod, inner surface; (c) third pleopod, outer surface; (d) tailfan, dorsal view.

biggest. Telson wider than long, lateral margins convex, distal margin slightly concave. Uropodal protopod slightly bilobed, lacking spines. Uropods longer than telson, exopod broad, longer than endopod, exopodal plates differentiated; endopod longer than wide, posterior margin rounded. First pleopod of male uniramous, two-segmented. Second pleopod biramous, bladelike exopod, endopod rounded at tip.

*Remarks.*—This species is similar to *Neocallichirus grandimanus* (Gibbes, 1850) and *Neocallichirus lemaitrei* Manning (1993), but differs from them in having a much longer carpus on the small cheliped, and a carpus as long as palm on the major cheliped. In *N. grandimanus* the carpus is less than half as long as the palm, and in *N. lemaitrei* is two-thirds, whereas it is as long as palm. This species seems to be more closely related to *N. lemaitrei*.

Subfamily Ctenochelinae Manning and Felder, 1991

*Gourretia* Saint Laurent, 1973

*Gourretia biffari* new species

(Figs. 6, 7)

*Material examined:* One female, TL 59.0 mm, Northwest Barcelona (10°15'30"N, 64°42'30"W) at 50 m depth on muddy bottom; 29 Aug 1991. (Holotype, USNM 259410). Six females, TL 13.0–36.0 mm; one male, TL 17.5 mm, Pillsbury Sta. 623-624, off Trujillo, Honduras; 21 Mar 1968; Paratypes (UMML 323787, 323788, 323790).

*Description.*—Rostrum short, triangular, acute distally, flattened dorsally and slightly concave medially, apex curved upwards. Carapace rounded dorsolaterally, front triangular, cervical groove deep; strong tubercle on both sides of dorsolateral margins. Eyestalks flattened, two times longer than wide, extending more than half length of first antennular article, cornea small, pigmented area on distal third, near internal margin of eyestalk; third segment of antennular peduncle nearly two times length of second. Mandible with six rounded teeth on incisor process, molar

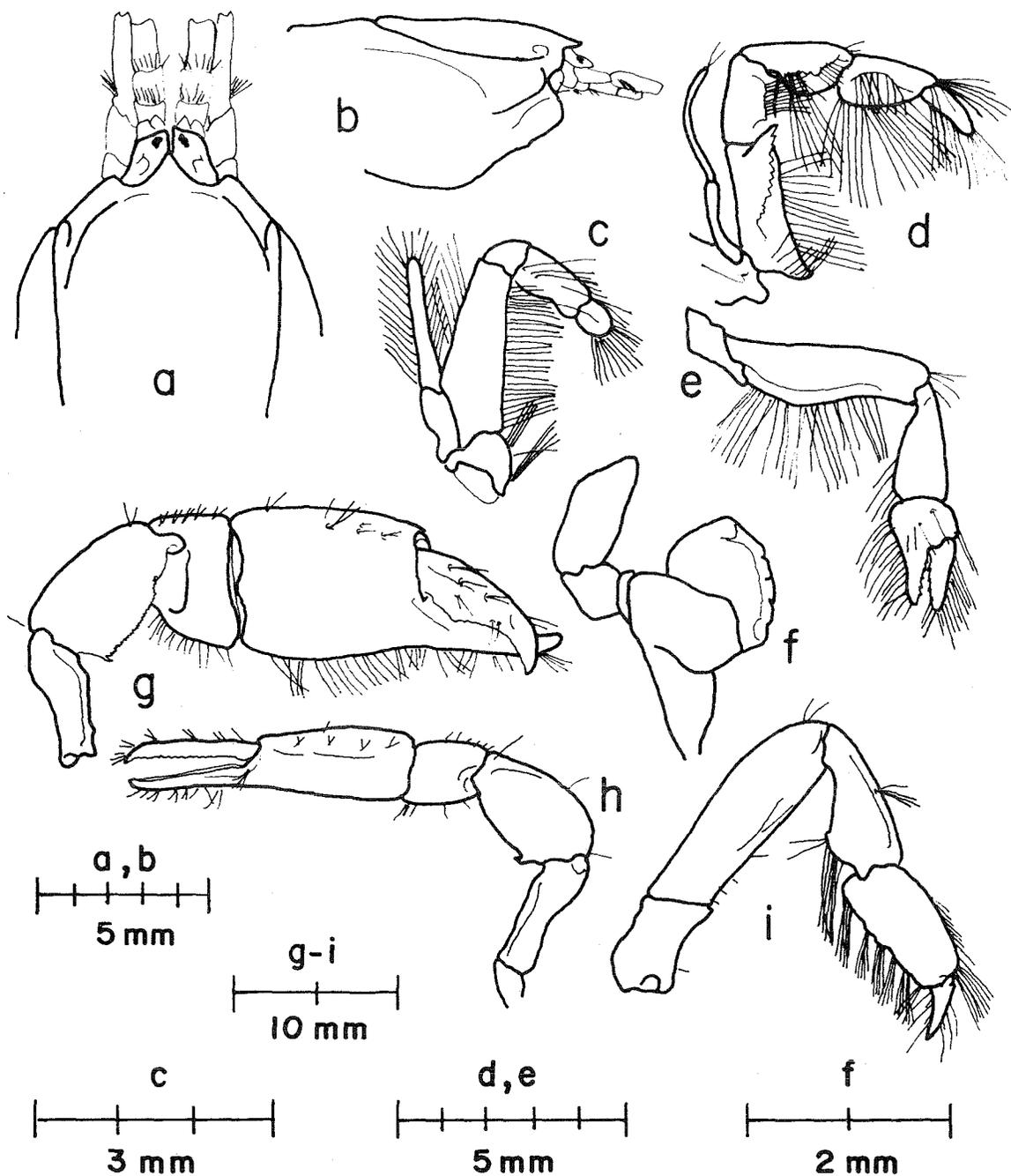


Figure 6. *Gourretia biffari* sp. nov. Female holotype, USNM 259410: anterior part of carapace, (a) dorsal view, (b) lateral view; (c) second maxilliped, inner surface; (d) third maxilliped, inner surface; (e) second pereopod, inner surface; (f) mandible; (g) large cheliped, inner surface; (h) small cheliped, inner surface; (i) third pereopod, inner surface.

process entire, mandibular palp with distal article larger than remainder. Second maxilliped with short two-segmented exopod, tip of endopod quadrate. Third maxilliped with narrow, two-segmented exopod; endopod pediform, ischium with spinous ridge on mesial surface; merus with spinous projection at distoventral corner; carpus pyriform, with tuberculate prominence ventrally; dactylus elongate, rounded at tip. Chelipeds unequal; large cheliped stout, ventral margin of ischium finely serrated; merus 1.5 times longer than wide, serrated on ventral margin, with curved spine proximally; carpus broader than long, margins entire, rounded dis-

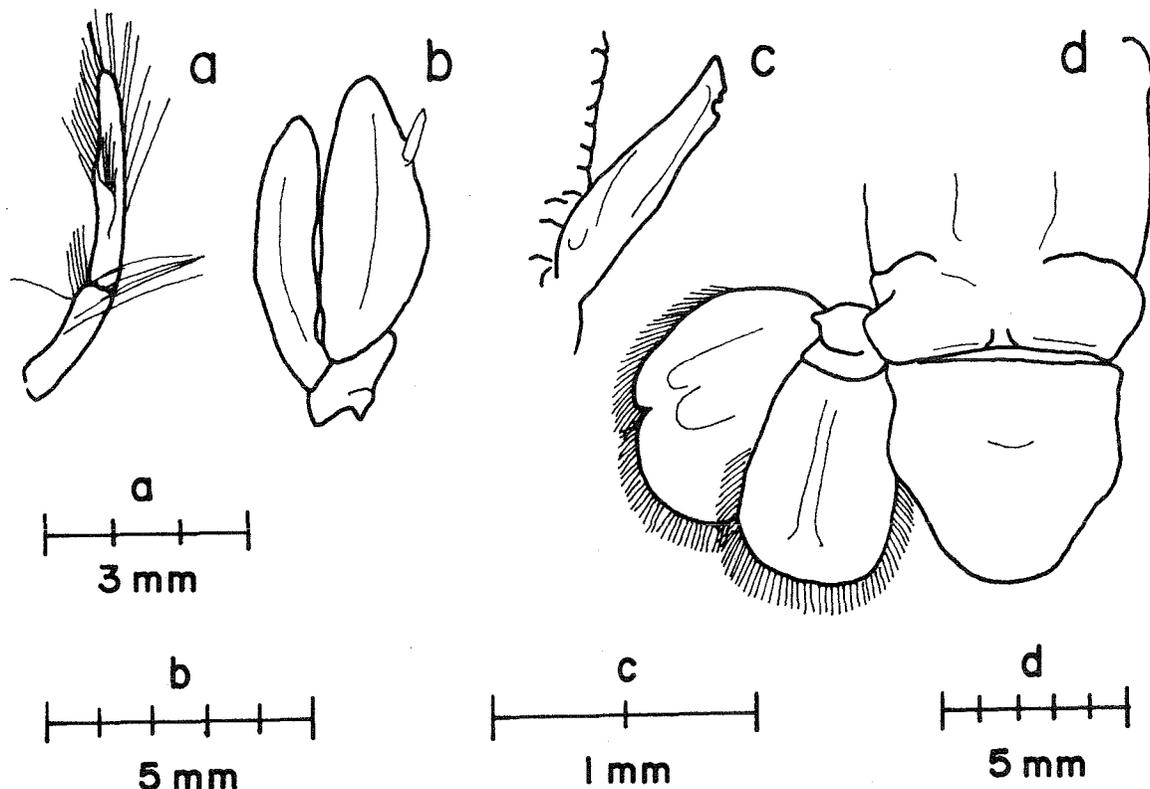


Figure 7. *Gourretia biffari* sp. nov. Female holotype, USNM 259410: (a) first pleopod, outer surface; (b) second pleopod, inner surface (setae omitted); (c) detail appendix interna; (d) tailfan, dorsal view (right uropods omitted).

tally; length of propodus 1.2 times width, ventral margin finely serrated; propodal finger long, cutting edge with an irregular tooth medially; dactylus narrow, curving downward distally, single triangular tooth proximally. Ischium of small cheliped finely serrated on ventral margin; merus lacking serrations, a proximal curved spine on ventral margin; carpus elongate, narrower than in large cheliped; propodus two times longer than wide, margins converging distally; propodal finger straight, curved at tip, cutting edge entire; dactylus curved downward, cutting edge lightly pectinate. Second pereopod chelate, small; propodal finger and dactylus forming a triangle when closed; carpus subtriangular, lacking spines or teeth. Third pereopod simple, ventral margin of carpus convex, broader distally; propodus nearly two times longer than wide, dactylus elongate, acute at tip. Fourth pereopod simple, propodus and dactylus elongate; fifth pereopod subchelate; carpus 3 times longer than wide, broadest on distal edge; propodus elongate, propodal finger short; dactylus longer than propodal finger, sinuous. First abdominal somite wider than long. Sixth abdominal somite narrower than fifth; anterolateral margins expanded, posterior lobes rounded. Telson subquadrate, proximolateral lobe slight, posterior margin convex. Uropods short; basal segment rounded anteriorly, divided by a transverse ridge; endopod broad, oval, 1.3 times longer than broad; exopodal plates equal, distinguishable on margins only by a sulcus. First pleopod of female uniramous, two-segmented, second segment spatulate, rounded at tip, numerous setae. Second pleopod of female, biramous, exopod shorter than endopod; endopod broad, foliaceous, with appendix interna articulating on mesial margin, minute hooks at tip.

*Color*.—Alcohol-formalin preserved holotype showed some color variation in the different parts of the body: carapace brown-yellowish; abdominal somites light brown dorsally; merus and propodus of chelipeds light orange-yellow and rest of the body whitish.

*Measurements of Holotype*.—Total length 59.0 mm; carapace length 17.3 mm; length of telson 6.3 mm, width 5.9 mm; length of uropodal endopod 6.6 mm, width 4.5 mm; large cheliped: length of merus 8.8 mm, width 4.9 mm; length of carpus 4.5 mm, width 6.8 mm; length of propodus 10.7 mm, width 7.3 mm; length of dactylus 10.1 mm.

*Remarks*.—The genus *Gourretia* (Saint Laurent, 1973) currently includes four species only, being recorded from the Mediterranean and eastern Atlantic (*G. denticulata*: Lutze, 1937). West Africa (*G. lahouensis* and *G. barracuda*: Le Loeuff and Intes, 1974) and Australia (*G. coolibah*: Poore and Griffin, 1979). It must however be pointed out here that Manning and Felder (1991) suggested that specimens from the Caribbean Sea (Honduras) identified by Biffar (1971a) as *Dawsonius latispina* (Dawson, 1967) are in accordance with the generic attributes of *Gourretia*. The Venezuelan specimen of *G. biffari* differs from *D. latispina* (Dawson, 1967), in having an exopod on the third maxilliped and by lacking sharp lateral projections on the sixth abdominal somite. In our opinion, the Honduran specimens of *D. latispina* are referable to *G. biffari*, and Dawson's specimens from the Gulf of Mexico are referable to *D. latispina*. *Etymology*.—The specific name honors Dr. T. A. Biffar, who for the first time pointed out differences between the specimens from Louisiana and Honduras.

***Gourretia laresi* new species**  
(Figs. 8, 9)

*Material examined*: One male, TL 25.4 mm, Northwest Chimana Islands (10°18'40"N, 64°47'40"W), at 71 m depth on clay bottom; 27 Jul 1991. (Holotype USNM 259376). Two females, TL 24.4–35.9 mm; data as in holotype. (Paratypes, IOV).

*Description*.—Rostrum spinous, elongate, extending 0.9 times length of eyestalks, slightly concave medially, acute at tip; lateral projections rounded. Carapace with rounded anterolateral margins, a transverse ridge extending from dorsal to lateral plates at posterior half of carapace. Eyestalks elongate, 2 times longer than wide, flattened dorsally, rounded projection on internal margin distally, cornea small, pigmented area small, terminal. Eyestalks extending to distal third of first antennular article.

Third antennular segment 1.3 times length of second segment, spinous projection on distal margin. Fourth and fifth antennal segments equal in size, third segment 0.6 times length of fourth segment, first and second segments short. Dorsal antennular flagellum thicker than ventral flagellum. Mandible with molar and incisor process well-marked, incisor process with 5 rounded teeth, 3 teeth on molar process. First maxilla with rounded distal lobe on coxal endite, basal endite broad. Second maxilla with elongate lobes on coxal and basal endites. First maxilliped with elongate basal endite, exopod expanded. Second maxilliped with short exopod, 0.8 times length of first segment of endopod. Third maxilliped with narrow exopod, two-segmented, length 1.3 times length of first segment of endopod; ischium of endopod with strong curved projection ventroproximally, a ridge of 12 teeth mesially, distal tooth biggest; merus with spinous projection distally; carpus broad on distal half. Chelipeds unequal. Large cheliped strong; ischium elongate, 4 times longer than wide, 5 strong teeth on ventral margin,

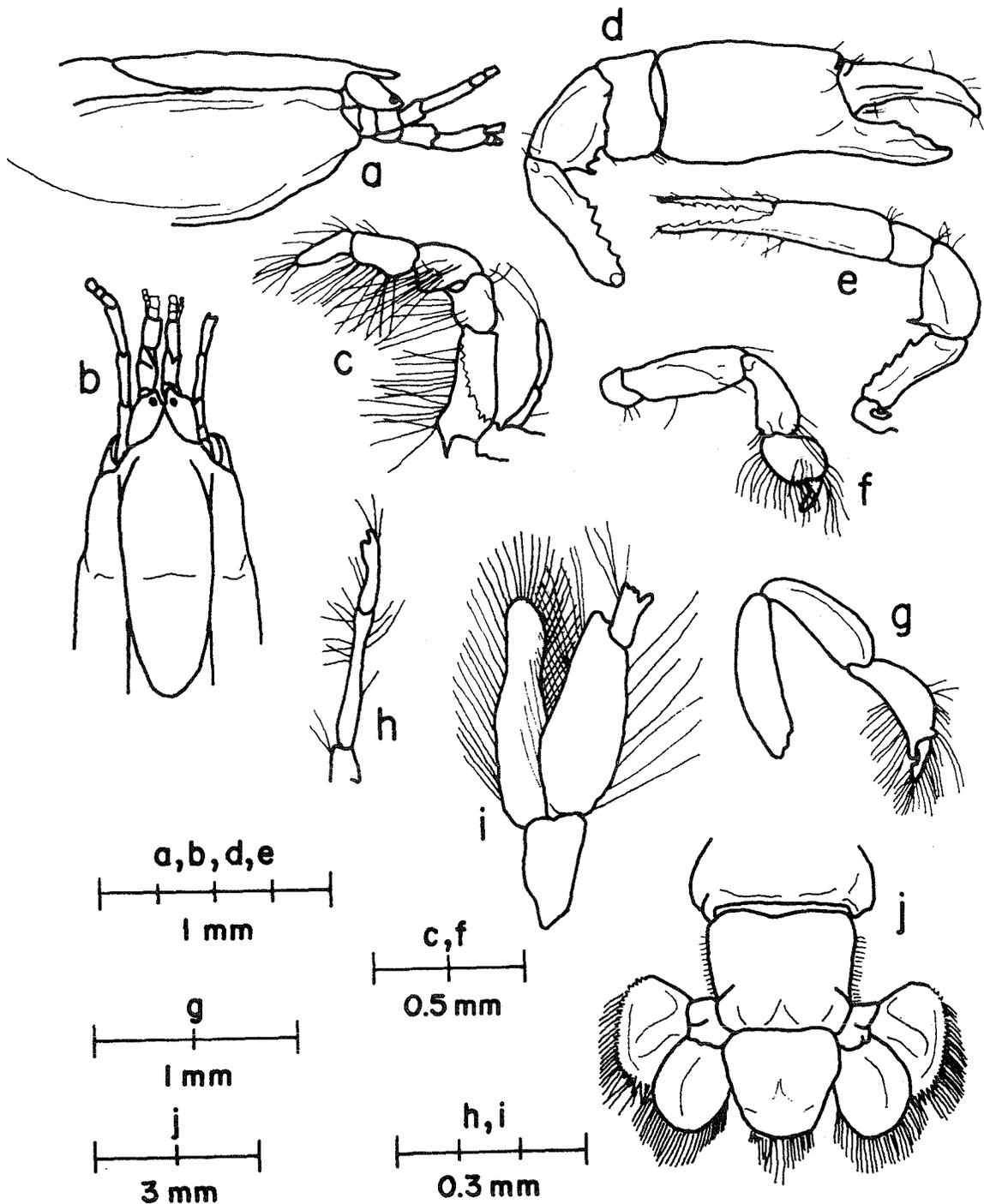


Figure 8. *Gourretia laresi* sp. nov. Male holotype, USNM 259376: anterior part of carapace, (a) lateral view; (b) dorsal view; (c) third maxilliped, inner surface; (d) large cheliped, inner surface; (e) small cheliped, inner surface; (f) third pereopod, outer surface; (g) fifth pereopod, outer surface; (h) first pleopod, inner surface; (i) second pleopod, inner surface; (j) tailfan, dorsal view.

rounded at tip. Merus cristate on dorsal margin, ventral margin with 5 projections: 2 spinelike (proximal stronger) and 3 toothlike. Carpus broad, 1.7 times wider than long, dorsal margin cristate, ventral margin slightly sinuous. Propodus rectangular, 1.4 times longer than wide; margins cristate on proximal half, distal half broad; propodal finger short, with 2 rounded minute projections on ventral margin, cutting edge with three rounded teeth on anterior half. Dactylus thick, 1.2 times

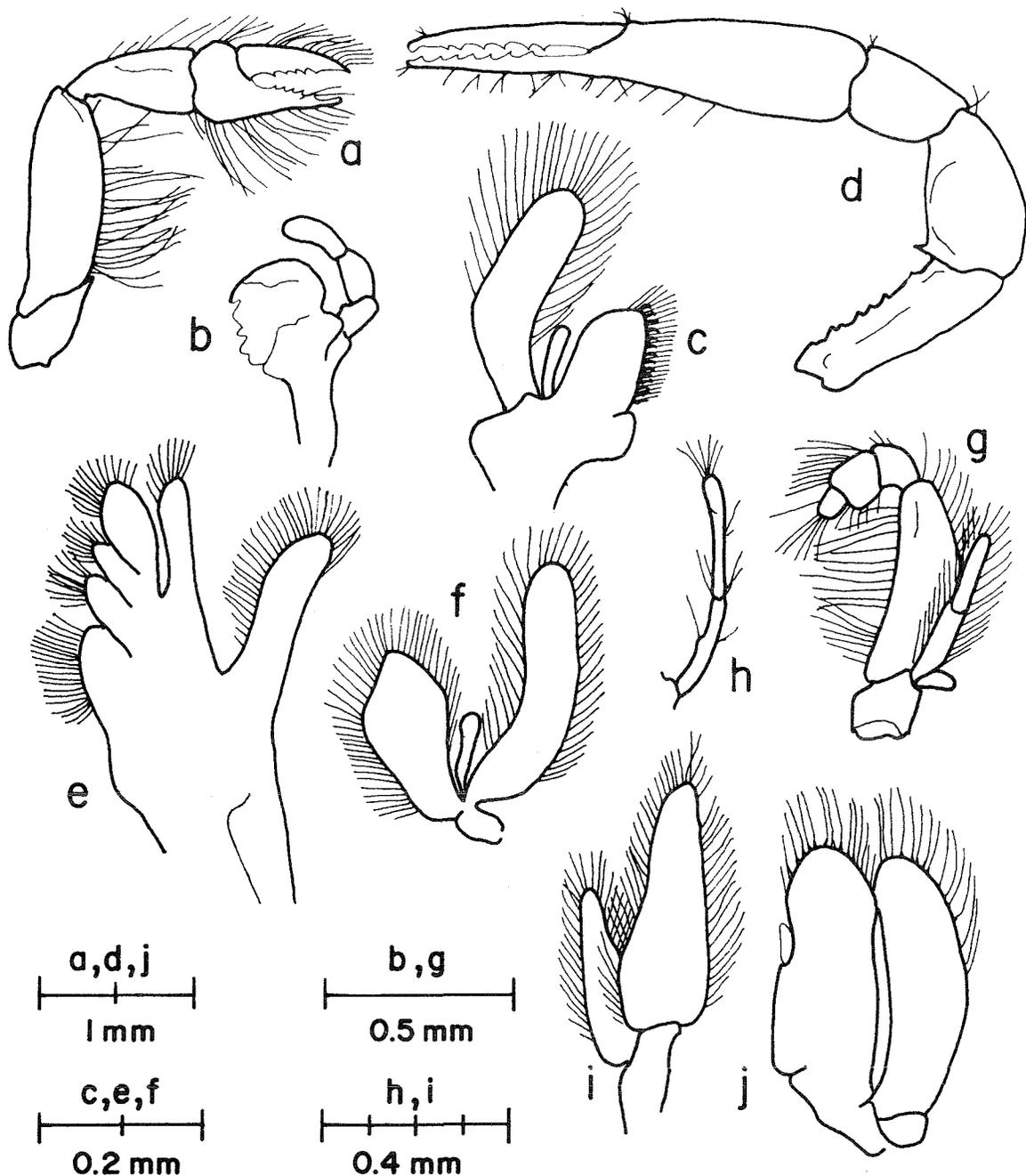


Figure 9. *Gourretia laresi* sp. nov. Female paratype, IOV: (a) second pereopod, outer surface; (b) mandible; (c) first maxilla; (d) small cheliped, inner surface; (e) second maxilla; (f) first maxilliped; (g) second maxilliped, inner surface; (h) first pleopod, inner surface; (i) second pleopod, outer surface; (j) third pleopod, inner surface.

longer than propodal finger, curved downward, cutting edge entire. Small cheliped weak; ischium cristate dorsally, ventral margin with 6 sharp teeth. Merus globose, with a strong spine ventroproximally. Carpus quadrate, as long as wide. Propodus elongate, 2.9 times longer than wide, margins entire. Propodal finger narrow, elongate, straight, cutting edge with 7 sharp teeth. Dactylus straight, narrow, cutting edge with 6 sharp teeth, subtriangular distal tooth. Second pereopod chelate, chela asymmetrical, merus with rounded projection ventroproximally; carpus broad distally, propodal finger shorter than dactylus, cutting edge with 5 sharp

teeth; dactylar cutting edge with 5 sharp teeth. Third pereopod with small proximal projection on dorsal margin of carpus; propodus bilobed, rounded, broader than long, dactylus simple. Fourth pereopod slightly subchelate. Fifth pereopod chelate, carpus cristate on dorsal margin; propodus dorsally convex, propodal finger short, straight; dactylus strong, sinuous, concave on ventral margin. First abdominal somite with no divisions; fifth abdominal somite widening posteriorly, lateral margins with small lobe; sixth abdominal somite subquadrate, broad proximally, lateral margins bilobed, posterior lobe short. Telson wider than long, subtriangular, distal margin slightly convex, elevated on proximal half, distally flattened. Basal segment of uropods bilobed, posterior lobe with a strong projection. Uropods short, endopod 1.2 times longer than wide, rounded margins. Exopod subtriangular, widening distally, exopodal plates undistinguishable, lacking lateral notch or incision, margins with large setae and strong spinelike setae increasing in size at distoventral corner. First and second pleopods sexually dimorphic. First pleopod of male uniramous, two-segmented, distal segment slightly bifurcated anteriorly; second pleopod of male biramous, exopod longer than first segment of endopod, endopod two-segmented, second segment articulating on distal third of first segment, distal margin irregular, with elongate projections ventrally. First pleopod of female, uniramous, three-segmented, distal shortest, ventral margin of first segment with small tubercle. Second pleopod of female, biramous, exopod short, widening proximally; endopod 1.4 times longer than exopod, rounded at tip, broad proximally.

*Measurements of Holotype.*—Total length 25.4 mm; carapace length 7.5 mm; length of telson 2.8 mm; width of telson 2.4 mm; length of uropodal endopod 2.1 mm, width 1.3 mm. Large cheliped: length of merus 2.8 mm, width 1.7 mm; length of carpus 1.5 mm, width 2.6 mm; length of propodus 4.1 mm, width 3.0 mm; length of dactylus 2.4 mm.

*Remarks.*—*Gourretia laresi* is characterized and also distinguished from other species of the genus in having a strong curved projection on the ventral margin of the ischium of the third maxilliped. The species differs from *G. biffari* in presence of five projections on the merus of the major cheliped, shape of the uropods, form of the dactylus of the fifth pereopod and in the acute projection of the third maxilliped.

*Etymology.*—The specific name honors Luis B. Lares, professor of Invertebrate Zoology, Instituto Oceanográfico de Venezuela, Universidad de Oriente, Cumaná, Venezuela, in recognition of his contributions to the study of the Venezuelan crustacean fauna.

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ADDRESS: *Instituto Oceanográfico de Venezuela, Universidad de Oriente, Apdo. Postal 245, Cumaná, Edo. Sucre, Venezuela.*