

***Periclimenes murcielagensis*, a new species of shrimp
(Crustacea: Decapoda: Palaemonidae) living on black coral from the
Pacific coast of Costa Rica**

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Abstract.—*Periclimenes murcielagensis*, new species, a pontoniine shrimp living on black coral colonies, occurs at depths of 25 m at Isla San Pedrito, Archipiélago de las Islas Murciélago, Guanacaste, Costa Rica. This new species is most similar to *P. veleronis*, Holthuis, and *P. americanus* Kingsley, and is distinguished from these by characters from the rostrum, basal antennular segment, antennular flagellum, and incisor process of the mandible.

Shrimps of the genus *Periclimenes* Costa, 1844, belong to the subfamily Pontoninae, and are distributed widely in subtropical and tropical marine waters worldwide. Some species live freely but the majority are associated with other marine invertebrates. Of the species of this genus known from the eastern Pacific, only *P. infraspinis* (Rathbun 1902), *P. lucasi* Chace, 1937, and *P. veleronis* Holthuis, 1951, have not been reported in association with other invertebrates (Holthuis 1951). Known associates of these shrimps in the western Atlantic are sponges, gorgonians, actinians, corallimorpharians, rhizostome scyphozoans, hydroids, antipatharians, bivalves, ophiuroids and crinoids (Heard & Spotte 1991, Spotte et al. 1994).

While conducting ecological studies of soft corals, specimens of an undescribed species of *Periclimenes* were found living on colonies of black coral (*Antipathes panamensis* Verrill, 1869) at Isla San Pedrito, Archipiélago de las Islas Murciélago, Guanacaste, Costa Rica. This new species is described herein.

Specimens were collected during SCU-BA dives at 25 m. Plastic bags were placed over black coral colonies and closed with a rubber band. The shrimps and *Antipathes panamensis* colonies were fixed in a mix-

ture of 10% formalin and seawater, the colonies washed in the laboratory with fresh water, and all the liquid passed through a 0.5 mm mesh. The shrimps were preserved in 70% ethanol.

The material is deposited in the National Museum of Natural History, Smithsonian Institution, Washington, D.C. (USNM), and Museo de Zoología, Universidad de Costa Rica (UCRMZ). Carapace length (CL) was measured from the tip of the rostrum to the posterodorsal margin of the carapace.

Periclimenes murcielagensis, new species
Figs. 1–5

Material.—Holotype: ovigerous female (CL 7.75 mm), USNM 260931, Isla San Pedrito, Archipiélago de las Islas Murciélago, Guanacaste, Costa Rica, 25 m, coll. Odalisca Breedy, 24 May 1996.—Paratypes: 4 females (CL 7.5–7.9 mm), 2 males (CL 5.256.5), USNM 260932; 9 females (CL 6.25–8.4 mm), 2 males (CL 5.6–6.25 mm), UCRMZ 2247-01, same collection data as holotype.

Diagnosis.—Carapace armed with both hepatic and antennal spine; rostrum well developed, reaching end of antennular peduncle, usually armed with 8–10 teeth dorsally and 2–4 teeth on distal half of ventral margin. Antennular peduncle having basal

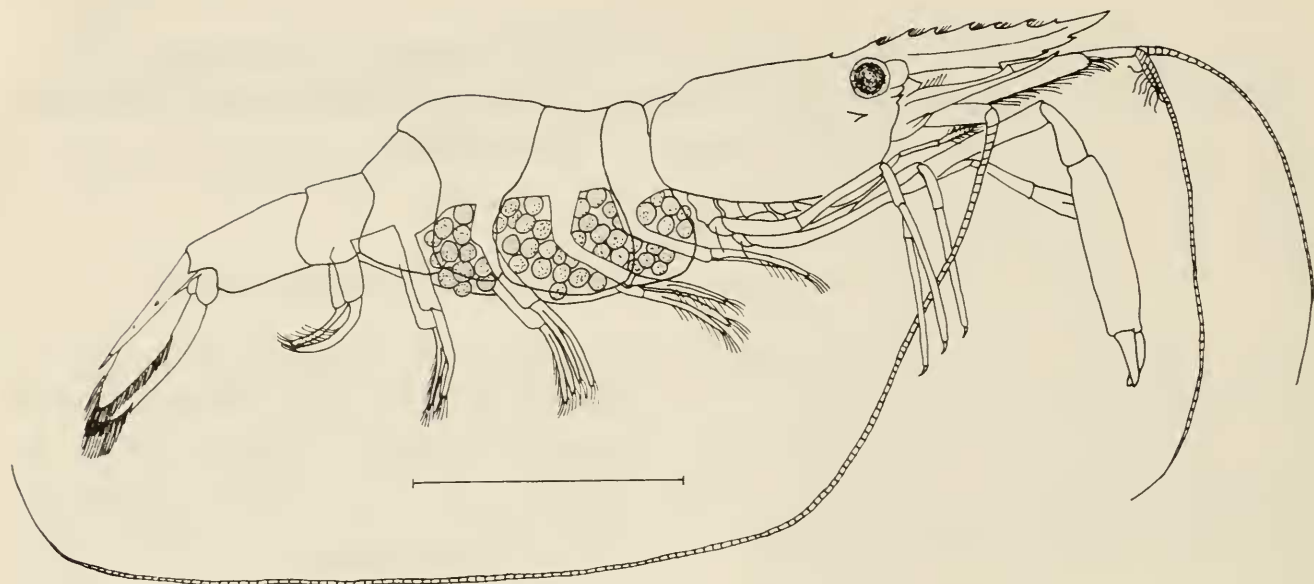


Fig. 1. *Periclimenes murcielagensis*, new species, holotype ovigerous female (CL 7.75 mm), lateral view USNM 260931. Left antennule, antenna and pereopods 1–5 not shown. Scale equals 5 mm.

article armed with 2–4 distolateral spines. Pereopods 3–5 with dactylus simple.

Description.—Rostrum (Figs. 1, 5a–f) nearly straight, slightly reaching end of antennular peduncle; dorsal margin armed with 8–10 teeth interspaced with setae, posteriormost tooth placed on carapace posterior to level of orbital margin, second tooth on carapace usually even with, or anterior to, orbital margin. Distance between first and second tooth, sometimes slightly larger than distance between other teeth, which are regularly spaced over rostrum; ventral margin slightly convex, armed with 2–4 teeth on distal half. No postorbital ridges or supra orbital spines. Antennal spine well developed, acute. Hepatic spine well developed, slightly larger and more robust than antennal spine. Lower orbital angle produced into small, blunt lobe.

Abdominal pleura broadly rounded. Sixth somite (Fig. 1) nearly twice as long as fifth and slightly longer than telson. Dorsal spines of telson (Fig. 2c) distinct, proximal pair situated near midlength of telson, distal pair of spines closer to proximal pair than posterior margin of telson; intermediate marginal spines at posterior end of telson not quite twice as long as mesial pair.

Cornea as broad as peduncle (eyestalk), constricted at junction with eyestalk, acces-

sory pigment spot and associated ommatidia present on dorsoproximal margin of cornea.

Antennular peduncle (Figs. 2b, 4g–h) with stylocerite sharp and slender, reaching to about midlength of basal segment; distolateral margin of basal segment armed with 2–4 spines, second and third segment subequal in length and width. Lateral antennular flagellum with 2 branches fused for about 8 joints; portion of shorter branch not fused consisting of about 6 joints, and about 0.5 times shorter than fused portion.

Antennal scale (Fig. 2a) reaching distal margin of third antennular segment, more than 3 times as long as broad; lateral margin nearly straight, distal tooth falling far short of strongly produced anteromesial angle of blade. Antennal peduncle reaching about to midlength of scale; basal segment with sharp lateral spine near base of scale.

Mouthparts as figured (Fig. 3a–f). Mandible (Fig. 3a) lacking palp; incisor process ending in 4 distinct teeth, distal tooth largest; molar process dentate. Maxilla 1 (Fig. 3b) with upper endite (lacinia) possessing stout apical spine-setae crown, distal to, 10 or more smaller subapical setae; endite with 4 or more stout apical spine-setae and 6 or more subapical setae on each side. Maxilla 2 (Fig. 3c) with entire endite. Maxilliped 1

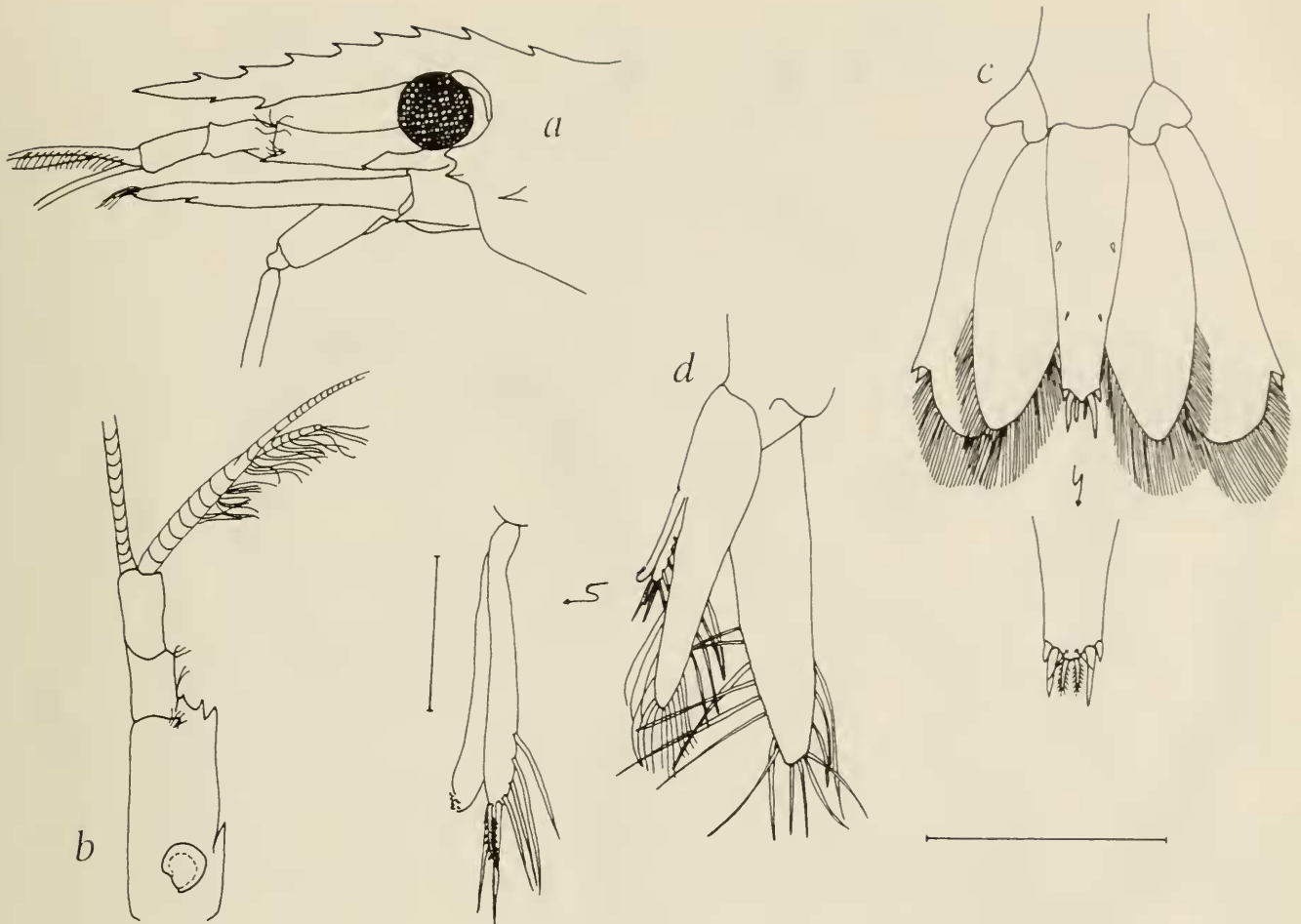


Fig. 2. *Periclimenes murcielagensis*, new species. Paratype male (CL 5.6 mm) UCRMZ 2247-01. a, anterior part of carapace; b, right antennule; c, telson; d, appendix masculina. Scale equal 2 mm (a, c), 1 mm (b), 0.25 mm (d).

(Fig. 3d) with well developed exopodal flagellum (lash) possessing 4 terminal plumose spine-setae; epipod slightly bilobed; palp slender and lacking terminal spine setae. Maxilliped 2 (Fig. 3e) possessing well developed exopod with terminal plumose setae; epipod rectangular. Maxilliped 3 (Fig. 3f) extending for proximal 0.25 of scaphocerite; exopod exceeding midlength of proximal segment; with broad, round epipod.

First pereopod (Fig. 4a) reaching end of antennal scale; fingers unarmed, shorter than palm; carpus distinctly longer than chela, subequal to merus. Second pereopod distinctly unequal. Major cheliped (Fig. 4b, c) overreaching antennal scale by approximately length of chela; fingers armed with teeth, distinctly shorter than palm, carpus distinctly shorter than chela, subequal to merus; ischium and merus equal in length.

Minor cheliped (Fig. 4d) of second pair overreaching antennular scale by approximately length of fingers; fingers unarmed, shorter than palm; chela, carpus, merus and ischium subequal in length. Pereopods 3–5 (Fig. 4e–g) nearly equal in size and shape; dactyls entire (not bifid), propodi with single spine on distal flexor margin. Third pereopod just reaching end of antennal scale; propodus 4 times length of dactyl, slightly more than twice length of carpus or ischium; merus subequal in length to propodus, with single distal spine on flexor margin. Fourth pereopod extending to distal end of second segment of antennular peduncle; propodus 4 times length of dactyl, slightly more than twice length of carpus or ischium; merus subequal in length to propodus. Fifth pereopod extending to distal end of second segment of antennular peduncle; propodus 4 times length of dactyl, subequal

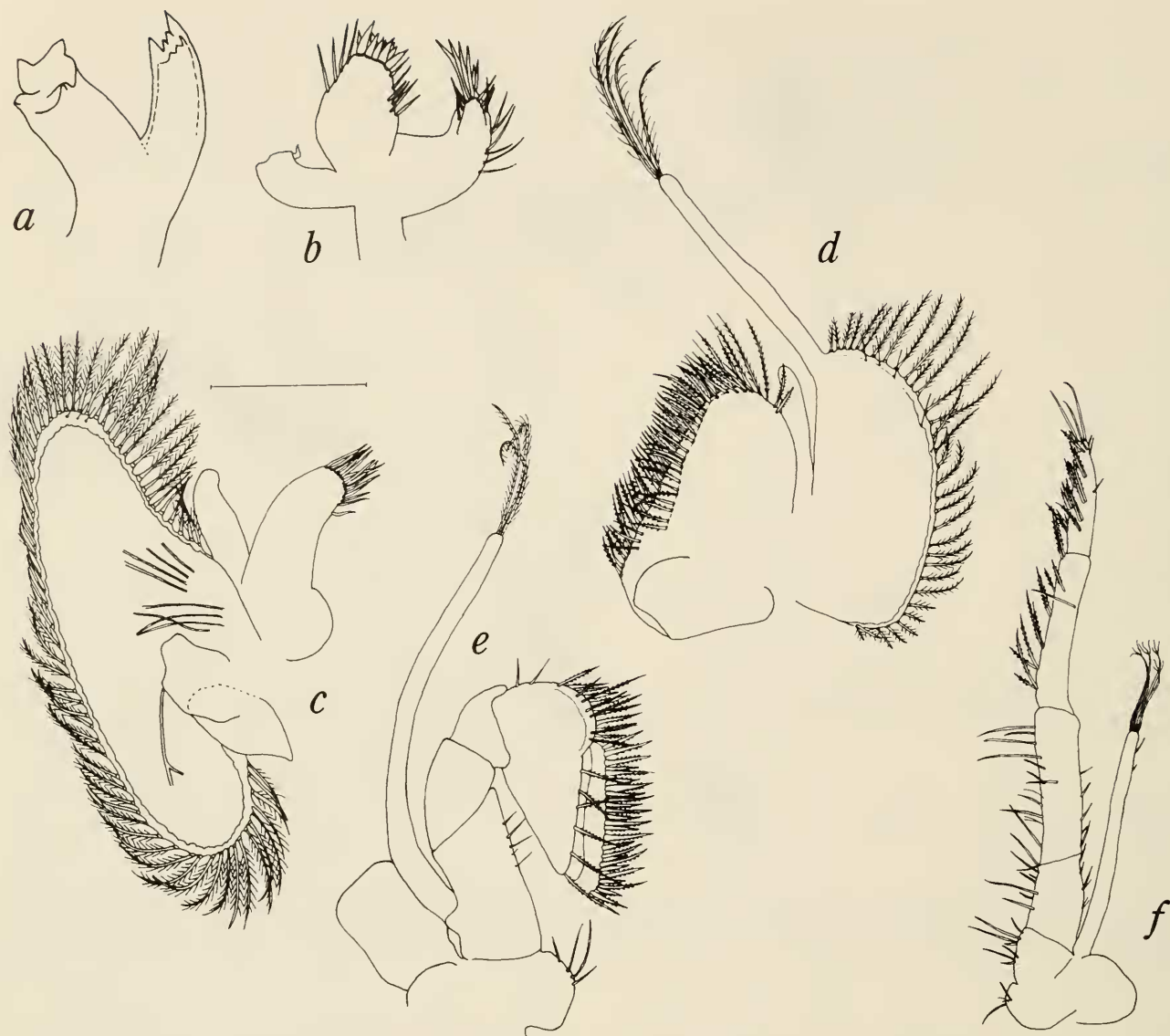


Fig. 3. *Periclimenes murcielagensis*, new species. Paratype male (CL 5.6 mm) UCRMZ 2247-01. a, mandible; b, maxilla 1; c, maxilla 2; d, maxilliped 1; e, maxilliped 2; f, maxilliped 3. Scale equal 0.5 mm (a-e), 1 mm (f).

to merus; carpus and ischium subequal in length.

Males with appendix masculina (Fig. 2d) armed with 3 apical spine-like setae, middle smaller and weakly serrate, and subapical spine-like setae. Eggs size ranging in maximum length from 0.3 to 0.5 mm (hatching stage).

Uropodal exopods extending beyond telson for about 0.8 times length of exopod; with strong movable spine between distolateral tooth and blade; movable spine distinctly longer than distolateral spine.

Color.—Orange after preservation.

Habitat.—*Periclimenes murcielagensis*, new species, was found living on colonies

of black coral *Antipathes panamensis*. Also found on the same colonies with the pontonin *Waldola schmitti* Holthuis, 1951, cirripeds, mollusks and polychaete worms. Depth: 25 m.

Distribution.—Known only from type locality, Archipiélago de las Islas Murciélago, Guanacaste, Costa Rica.

Etymology.—The species is named for the type locality, Archipiélago de las Islas Murciélago.

Remarks.—Adult males and females differ only in the size of the major cheliped of the second pereopod; in males the major cheliped is markedly smaller than in females. The major cheliped in adult

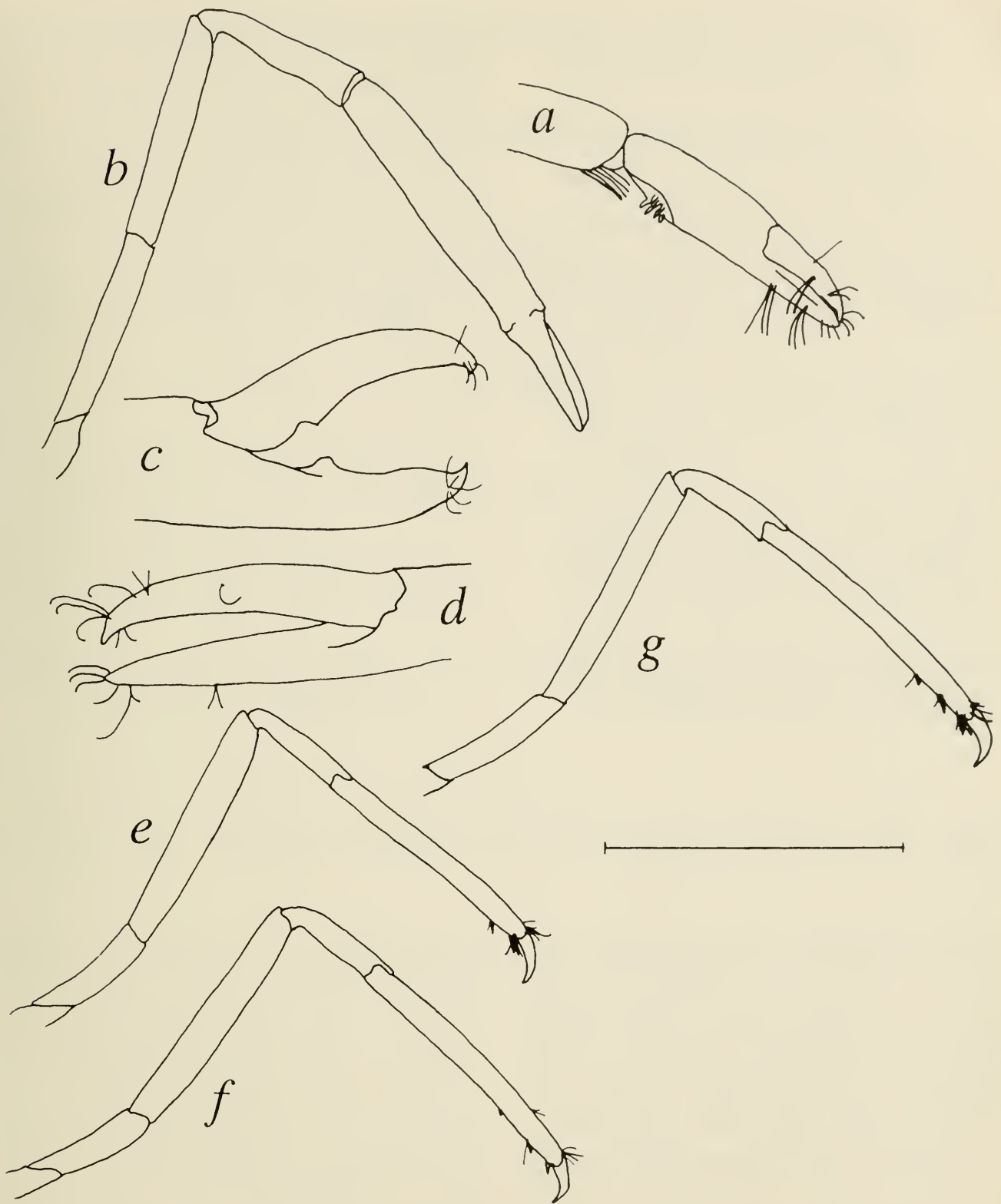


Fig. 4. *Periclimenes murcielagensis*, new species. Paratype male (CL 5.6 mm), lateral view, UCRMZ 2247-01. a, distal portion of chela of first pereopod; b, right second major pereopod; c, enlargement of chela of mayor pereopod; d, distal portion of chela of minor pereopod; e, f, g, third, fourth and fifth pereopods. Scale equal 4 mm (b), 2 mm. (e, f, g), and 1 mm (a, c, d).

males is similar to that of immature females.

Among the eastern Pacific species of *Periclimenes*, *P. murcielagensis*, new spe-

cies, is most similar to *Periclimenes veleronis*, from La Libertad, Ecuador (Holthuis 1951). The new species can be distinguished from *P. veleronis* by the slender

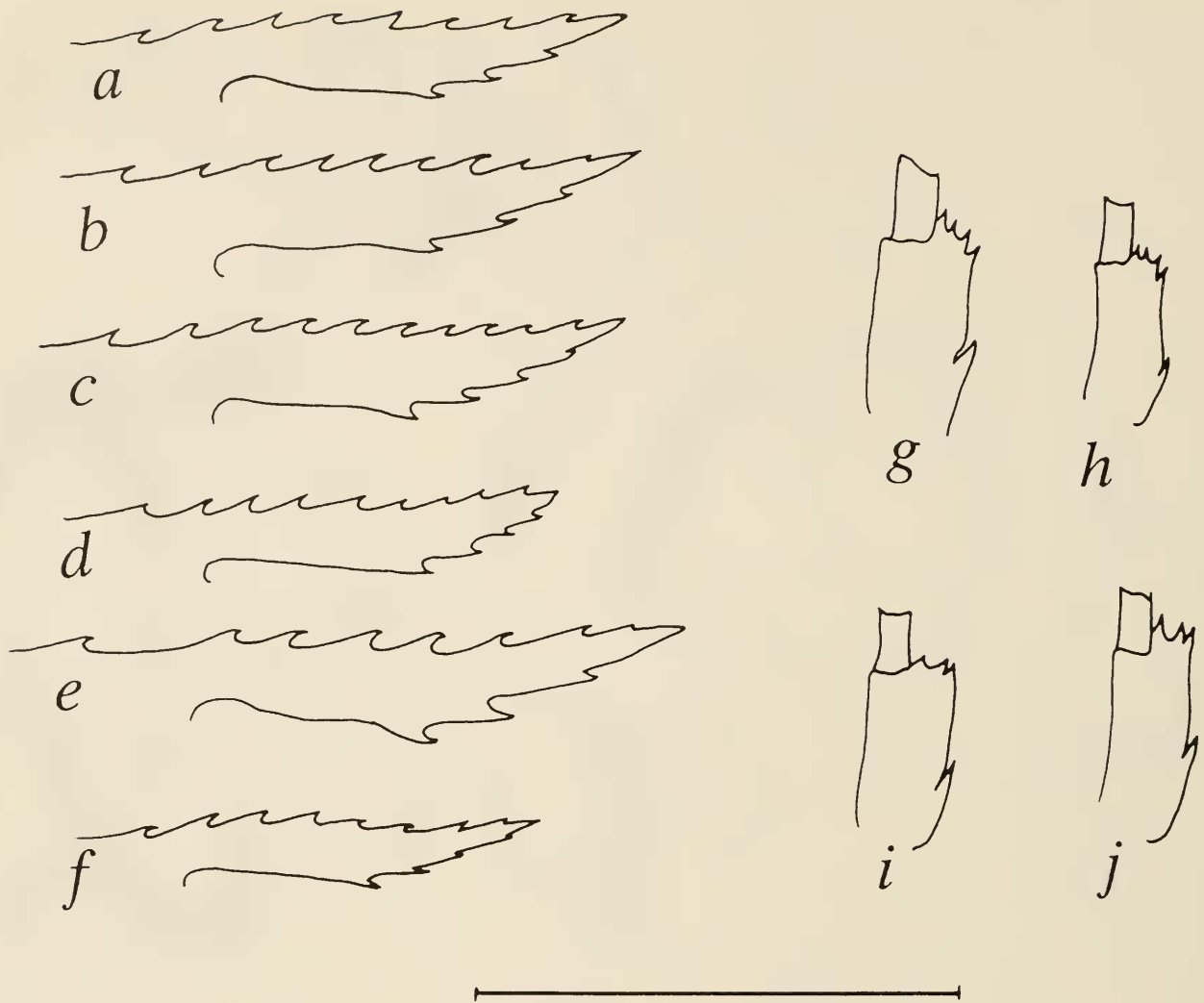


Fig. 5. *Periclimenes murcielagensis*, new species. Variations in rostrum (a-f) and basal segment of antennular peduncle (g-j). (a, f, males; b, c, females; g, i, j, females; h, male). Scale equals 5 mm.

shape and number of teeth on the dorsal (8–10) and ventral (2–4) margins of the rostrum; the presence of two to four subequal spines on the distolateral margin of basal segment of antennular peduncle; the two branches of the antennular flagellum are fused for about eight joints (five joints in *P. veleronis*); the non-fused portion consists of about six joints and is about one-half times shorter than fused portion, whereas in *P. veleronis* the non-fused portion has three joints and is more than half as long as the fused portion.

Periclimenes murcielagensis, new species, also resembles *P. americanus*, from Florida (Kingsley 1878). The two have a similarly shaped and armed rostrum. The new species can be distinguished from *P. americanus* by the presence of two to four

subequal spines on the distolateral margin of the basal segment of antennular peduncle (one in *P. americanus*); no postorbital ridge is present in *P. murcielagensis*; the two branches of the antennular flagellum are fused for about eight joints (eight to 12 joints in *P. americanus*), and the non-fused portion consists of about six joints (three or four in *P. americanus*); the incisor process of the mandible ends in four distinct teeth in *P. murcielagensis* (three in *P. americanus*); the second pereopods are distinctly unequal in *P. murcielagensis* (equal in *P. americanus*).

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