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SYNALPHEUS AROSTRIS AND *PHILOCHERAS LAPILLUS*,
TWO NEW SPECIES OF CARIDEAN SHRIMP
(CRUSTACEA) FROM THE TROPICAL
EASTERN PACIFIC

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Abstract.—Two new species of shrimp (Decapoda: Caridea) are described from the eastern Pacific. *Synalpheus arostris* is described from specimens from western Colombia. *Philocheras lapillus* is the first species of its genus to be reported in the area.

During examination of specimens from western Colombia and the Galapagos Islands, I discovered two undescribed species of shrimp. The new species of *Philocheras* is the first report of the genus from the tropical eastern Pacific. I thank Gabriel Ramos, Universidad del Valle (UV); Raymond Manning, United States Museum of Natural History (USNM); and Janet Haig, Allan Hancock Foundation, University of Southern California (AHF) for their interest and assistance during this study. The figures are by Gabriel Ramos and Joseph Goy, Texas A&M University. This project was aided by a Visiting Fellowship of the Smithsonian Institution.

Family Alpheidae

Synalpheus arostris, new species
Fig. 1

Type material.—Holotype: female, total length 10.5 mm. Morro de Los Agujeros, Bahía de Malaga, Colombia (3°55'N, 77°20'W), rocky intertidal zone, 28 Nov 1981, collector not reported, AHF no. 8111. Paratype: female, same site and date, UV.

Description.—Rostrum lacking, a slight raised area present between orbital teeth. Orbital teeth reaching less than 0.5 × length of first segment of antennular peduncle, longer than broad.

Visible part of first antennular segment

1.3 × as long as second antennular article, third article shorter. Stylocerite reaching just beyond first antennular segment. Scaphocerite with lateral tooth reaching beyond end of antennular peduncle and exceeding carapocerite. Squamous part of scaphocerite reaching or almost reaching end of antennular peduncle. Inferior tooth of basicerite reaching as far forward as stylocerite, superior tooth well developed and acute.

Large chela 3 × as long as wide, with fingers occupying about 0.3 × entire length. Superior margin of palm bearing blunt knob proximal to dactylus. Merus 2 × long as broad, superior margin blunt.

Small chela 2.4 × long as wide, with fingers occupying about 0.4 × entire length. Merus almost 3 × long as wide, bearing 3 teeth on superior margin.

Carpal articles of second leg with ratio 10:3:3:3:4.

Merus of third leg 4 × long as broad, without spines. Carpus without teeth or spines. Propodus 7 × long as wide, straight, bearing 7-8 spines on inferior margin and a pair of terminal spines. Dactyl biunguiculate, 0.3 × propodus, relatively straight; superior and inferior ungui slender and almost equal in size and shape. Fourth and fifth legs similar to third.

Telson only slightly longer than width of anterior margin, tapering to posterior margin. Two to three dorsolateral spines per

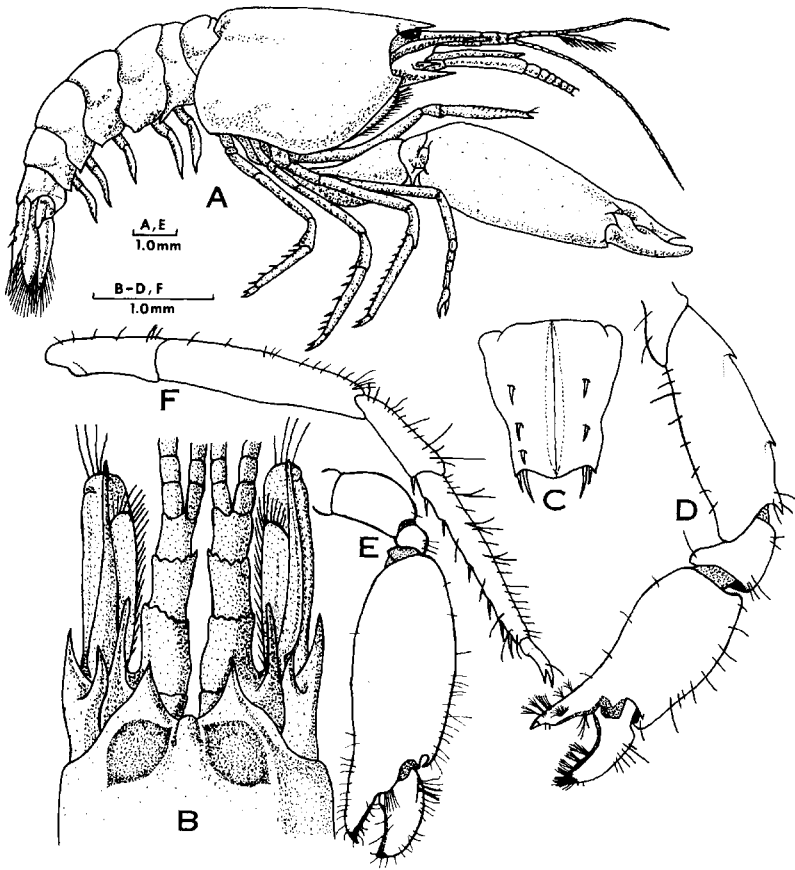


Fig. 1. *Synalpheus arostris*. A, Holotype in lateral view; B, Anterior end in dorsal view; C, Telson; D, Small cheliped; E, Large cheliped; F, Third pereopod.

side, pair long spines at distolateral margin, distolateral margin produced into small tooth. Posterior margin of telson rounded.

Discussion.—Coutière (1909) established six groups in the genus *Synalpheus*, based on features of the rostrum, orbital teeth, setae of the smaller chela, ungui of the dactyls, and other features. Banner & Banner (1975) reexamined these groups and found that perhaps only two of them were of taxonomic validity—the others contained such a range of variation or overlapped other groups to such an extent that the group certainly was artificial. The new species illustrates the difficulties in finding relationships among the species of *Synalpheus*; lacking a

rostrum, it cannot easily be compared with many other species.

The short orbital teeth and equal, slender ungui of the dactyls of *S. arostris* are found in species of Coutière's "*Brevicarpus*" group, known only from American waters. Three species, *S. minus* (Say), *S. obtusifrons* Chace, and *S. brevicarpus* Coutière are found in the Caribbean region. All of these species have short rostra. *Synalpheus minus* has a stylocerite that greatly exceeds the first article of the antennular peduncle, but the spine of the scaphocerite does not reach the end of the carpocerite. *Synalpheus obtusifrons* has a rounded stylocerite and a short scaphocerite that does not reach the end of the

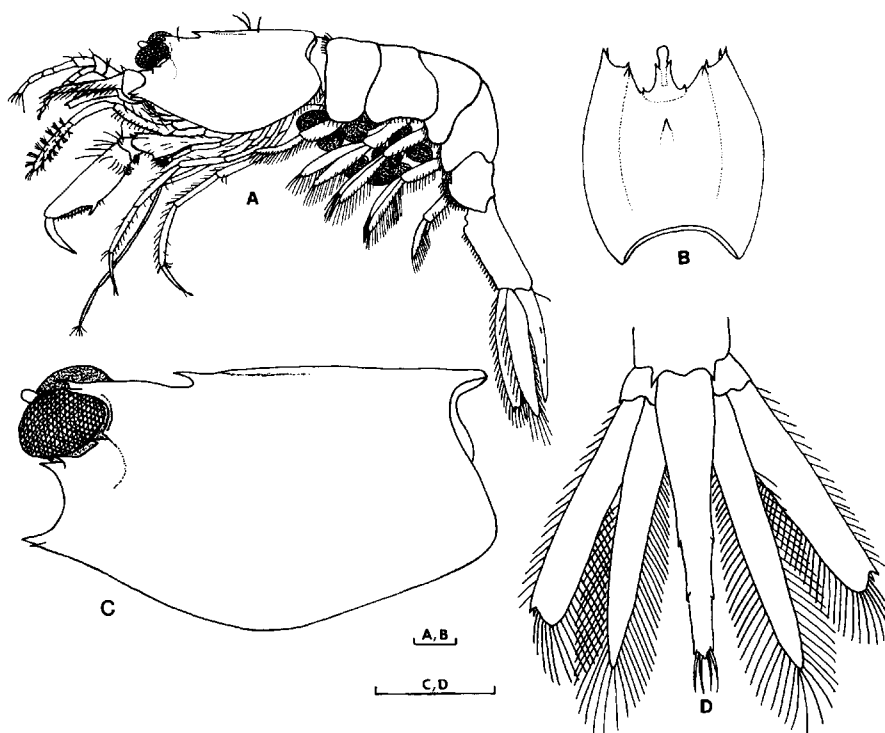


Fig. 2. *Philocheras lapillus*, paratype: A, Entire animal in lateral view; B, Carapace in dorsal view; C, Carapace in lateral view; D, Telson and uropods.

antennular peduncle. The eastern Pacific species, *S. digueti* Coutière, is common in rocky intertidal areas. Aside from lacking a rostrum, *S. arostris* can be distinguished from *S. digueti* by having a shorter stylocerite, reaching barely beyond the end of the first article of the antennular peduncle rather than to the middle of the second article; and having a longer spine on the scaphocerite, reaching proportionally farther beyond the blade than in *S. digueti*. Only *S. arostris* has three teeth on the superior margin of the merus of the small cheliped.

Synalpheus arostris can be distinguished easily from *S. lockingtoni* Coutière by the lack of the rostrum (seen in both specimens of the new species). Should one encounter a specimen of *S. lockingtoni* missing a rostrum, the species can be distinguished by the sharp spine at the anterior margin of the

palm of the major chela, above the articulation of the dactyl, in *S. arostris*. In *S. lockingtoni*, the anterior margin of the major chela ends in a knob or tubercle. The posterior margins of the telson of *S. arostris* are sharply triangular, those of *S. lockingtoni* are weakly pointed. Adult *S. lockingtoni* can be larger than the specimens of *S. arostris*: Schmitt (1921) gives a length of 30 mm for a large female *S. lockingtoni*.

Family Crangonidae

Philocheras lapillus, new species

Figs. 2-4

Type material.—Holotype male, total length 13.7 mm. Off Gardner Bay, Hood Island (Isla Española), Galápagos (Archipelago de Colón) 1°22'S, 90°40'W, 46-65 m, rock, 31 Jan 1934, *Velero III* sta. 201-34, USNM 234435.

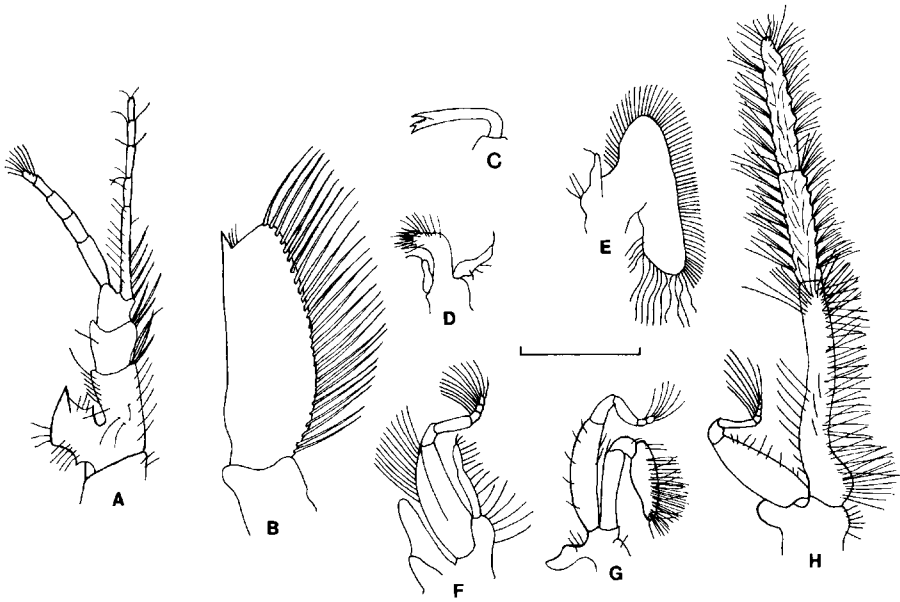


Fig. 3. *Philocheras lapillus*: A, Antennule; B, Scaphocerite; C, Mandible; D, First maxilla; E, Second maxilla; F, First maxilliped; G, Second maxilliped; H, Third maxilliped.

Paratypes. — Tagus Cove, Albemarle Island (Isla Isabela) ($0^{\circ}17'S$, $91^{\circ}23'W$), 37 m, rock and nullipores, 11 Jan 1934, *Velero III* sta. 149-34, one specimen. Stephens Bay, Chatham Island (Isla San Cristobal), ($0^{\circ}48'S$, $89^{\circ}31'W$), 59 m, fine sand and coralline algae, *Velero III* sta. 170-34, 21 Jan 1934, three specimens. Off Cartago Bay, Albemarle Island ($0^{\circ}35'S$, $90^{\circ}54'W$), 59 m, mud, 25 Jan 1934, *Velero III* sta. 185-34, five specimens. Off Cartago Bay, Albemarle Island ($0^{\circ}34'S$, $90^{\circ}53'W$), 59 m, sand and nullipores, 25 Jan 1934, *Velero III* sta. 186-34, two specimens. Off Gardner Bay, Hood Island (same station as holotype), *Velero III* sta. 201-34 (four specimens USNM, two specimens AHF). All specimens USNM except as noted.

Description. — Rostrum exceeding or nearly exceeding end of cornea, distal end wide. Anterior margin of carapace with teeth, one suborbital tooth, pair near base of second antenna and two pterygostomial teeth. One large tooth on dorsal midline.

Abdominal pleura rounded. Sixth abdominal segment about $1.5 \times$ length of fifth,

slightly shorter than length of telson. Telson narrow, with two pair dorsolateral, three pair terminal spines and sharp posteromesial tip.

Basal article of antennular peduncle not reaching as far as end of cornea. Stylocerite not as long as basal article of antennular peduncle, broad and quadrangular. Last two articles of antennular peduncle short.

Scaphocerite longer than antennular peduncle, outer margin straight, blade longer than spine. Basicerite short.

Third maxilliped exceeding scaphocerite. Ultimate segment longer than penultimate, $0.6 \times$ antepenultimate. Exopod present. Other mouthparts as figured.

First pereopod stout, subchelate. Dactyl about $0.3 \times$ propodus length, subchelar spine narrow and simple. Carpus $0.25 \times$ propodus, with one or no spines. Merus shorter than chela, with two teeth on distal end near articulation with carpus and one large tooth on lower margin. Ischium and basis short, without teeth. No exopods or epipods on pereopods.

Second pereopod short, chelate. Dactyl $0.5 \times$ propodus, carpus about equal to chela,

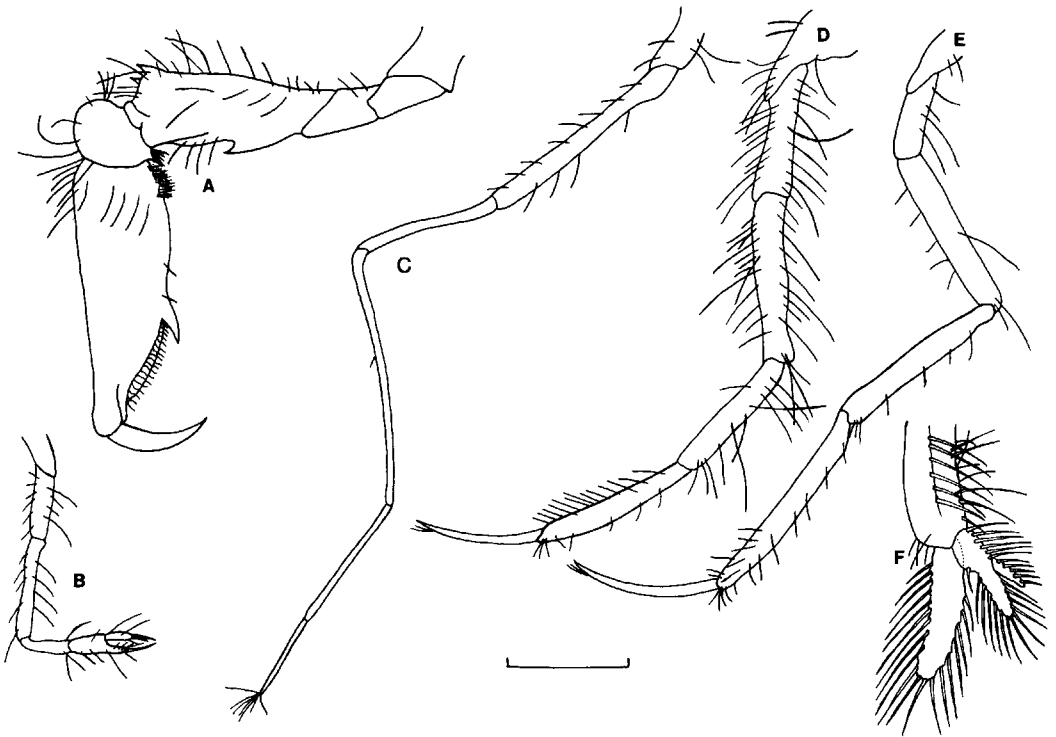


Fig. 4. *Philocheras lapillus*: A, First pereopod; B, Second pereopod; C, Third pereopod; D, Fourth pereopod; E, Fifth pereopod; F, Second pleopod of female.

0.5 × merus. Merus longer than ischium. Third pereopod slender, thread-like. Dactyl thin, 0.7 × propodus. Propodus 0.6 × carpus, carpus 1.8 × merus, merus 0.6 × ischium. Fourth and fifth pereopods similar. Dactyl long and simple, 0.8 × propodus. Carpus 0.8 × propodus, merus 1.2 × carpus, ischium 0.8 × merus.

Second pleopod with appendix interna, male with appendix masculina. Uropods long, outer uropod shorter than inner. Outer uropod with small posterolateral tooth.

Color in life.—Carapace almost all white, body Van Dyke brown, speckled. (Field note for specimen at sta. 149-34, by Waldo L. Schmitt.)

Discussion.—I follow the revision of Chace (1984) in considering *Philocheras* to be distinct from *Pontophilus*. *Philocheras lapillus* most closely resembles *P. gorei* (Dardeau, 1980) from the Gulf of Mexico

and Georgia. In *P. gorei*, however, there are always teeth on the distal margins of the carpus of the first pereopod. The outer flagellum of the antennular peduncle of *P. lapillus* is much thicker than that of *P. gorei*. The tip of the rostrum of *P. lapillus* is rounded, not spatulate. *Pontophilus lapillus* also may be larger than *P. gorei*: the carapace length of the holotype is 3.3 mm, that of the type of *P. gorei* is 2.5 mm.

The habitat and living color of *P. lapillus* suggest that the animal's mode of life is similar to that of species of *Crangon* and *Lisocrangon* along the coast of California. These species have a speckled, cryptic color pattern, which provides camouflage when the shrimp dig into sand (Kuris & Carlton 1977; Ricketts et al. 1985).

The species epithet means "pebble," which the resting animal resembles. The name is a noun in apposition.

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