

SPONGICOLOIDES GALAPAGENSIS, A NEW SHRIMP
REPRESENTING THE FIRST RECORD OF THE
GENUS FROM THE PACIFIC OCEAN
(CRUSTACEA: DECAPODA: STENOPODIDEA)

Joseph W. Goy

Abstract.—A new species of stenopodidean shrimp from the Galapagos Islands is described and figured. It is the first species of the genus *Spongicoloides* Hansen recorded from the Pacific Ocean. The new species, *Spongicoloides galapagensis*, is closely related to *S. profundus* and in a few characters is very similar to the genus *Spongiocaris* Bruce and Baba, but is easily distinguished from both by differences of the telson, spination of the carapace, and branchial formula. A table of some morphological differences for the known species of *Spongicoloides* is included.

The four known species of *Spongicoloides* are from the Atlantic Ocean from Iceland to the Caribbean (Holthuis, 1946). While examining some unidentified stenopodid material from the National Museum of Natural History, Washington, D.C., I found a single example of an undescribed *Spongicoloides*, collected by the steamer *Albatross* in deep water off the Galapagos Islands. In addition to its geographical location, several morphological characters also distinguish this specimen from the other members of the genus.

Spongicoloides galapagensis sp. nov.

Figs. 1-4

Material examined.—1 ♀, ovigerous, Galapagos Islands, 00°29'S, 89°54'30" W. U.S. Fish Commission Steamer *Albatross*, 15 April 1888; Station 2818; 717 m, white and black sand, large beam trawl; bottom temperature 6.6°C.

Diagnosis.—A fairly large stenopodidean shrimp, with a stout, depressed body, generally glabrous; telson with 6-7 lateral teeth and 8 smaller teeth on posterior margin; uropodal exopodite with 13-18 teeth on outer margin, dorsally 1 strong and 1 weak ridge; dactyli of fourth and fifth pereopods triunguiculate; third maxilliped with spines; scaphocerite with 10 teeth.

Description.—Holotype (female, USNM 180064). Rostrum (Figs. 1, 2A) short, compressed, extending almost to distal end of antennular peduncle basal segment, tapering gradually into slightly upturned acute tip. Dorsal

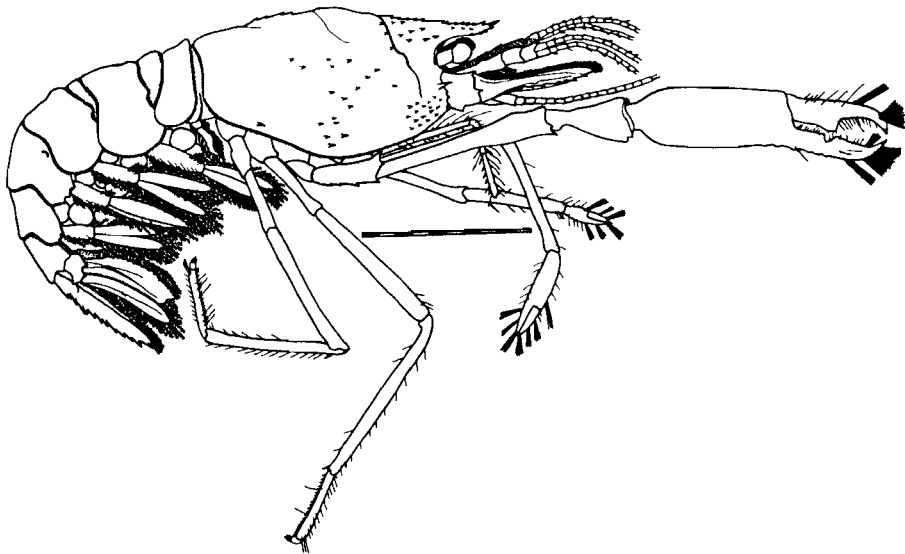


Fig. 1. *Spongiocoloides galapagensis*, holotype, female. Scale bar in mm.

margin bearing 7 strong spines; ventral margin bearing 4 strong spines. Rostral base triangular with each lateral margin bearing 3 small spines.

Carapace (Figs. 1, 2A) of very thin texture, with distinct cervical groove; less distinct, shorter postcervical groove. Dorsal midline bearing 5 small spines anterior to cervical groove, 4 slightly larger spines posterior to postcervical groove. Frontal region behind rostrum up to cervical groove bearing 8 small spines. Three small spines present directly behind anterior part of cervical groove, which in dorsal view appear to be on cervical groove itself. Small antennal spine, large branchiostegal spine and 4 small pterygostomial spines with pterygostomial region also bearing numerous minute spinules somewhat arranged in rows. Branchial region having numerous scattered spines; branchiostegite bearing large spine close to posterolateral border. Ventrolateral angle of carapace somewhat rounded while posterolateral angle of branchiostegite obtusely angled, slightly concave.

Abdominal somites glabrous, lacking carinae. Pleura of first 3 rounded, without setae ventrally. Anterolaterally, second and third somites bearing articular knobs, while fourth somite with distinct knob. Pleura of fourth and fifth somites ending in 3 small teeth.

Telson (Fig. 2B) broad, roughly rectangular, slightly constricted at base. Dorsal surface with 2 longitudinal ridges; left ridge having 7 spines and right 8. Anteriorly, 2 spines and another outside proximal part of left ridge. Lat-

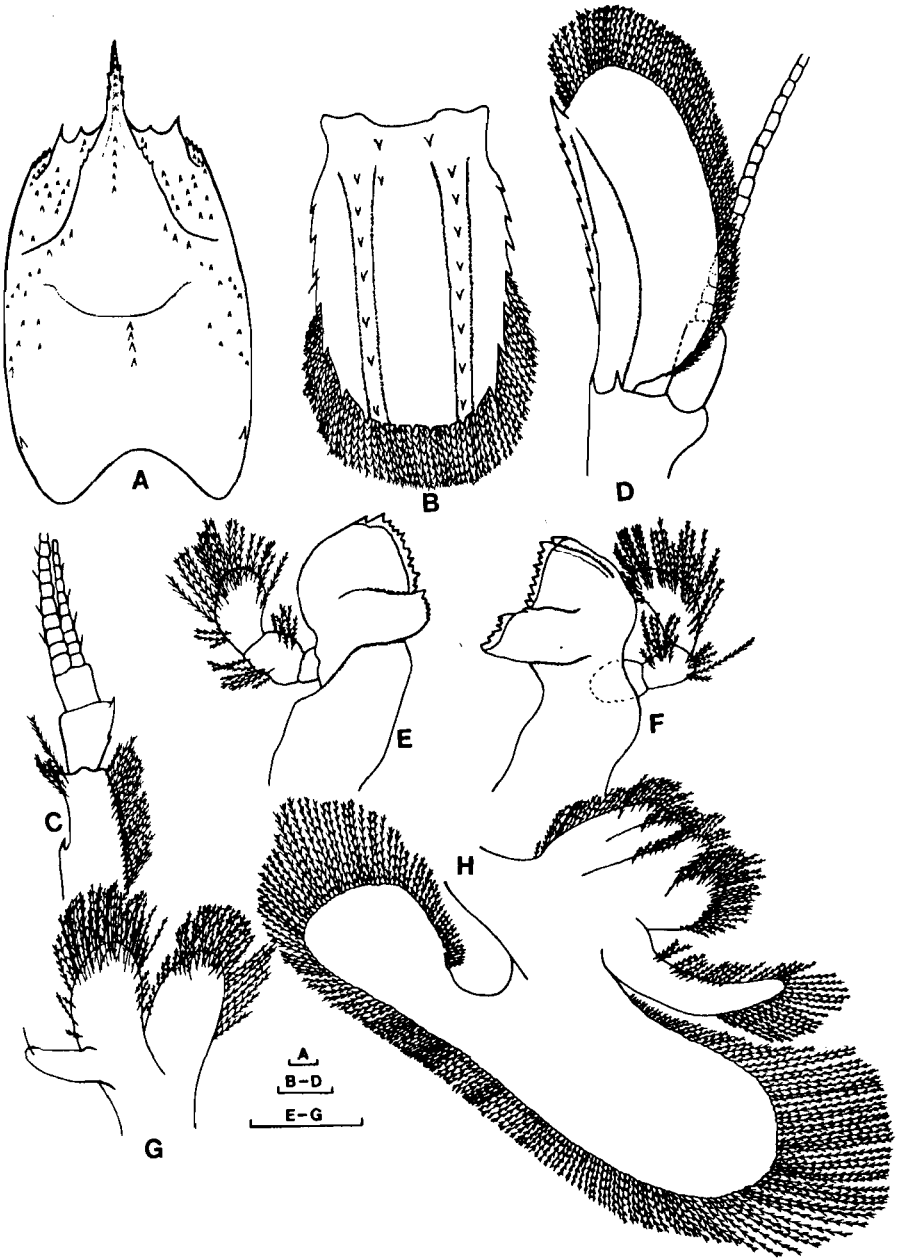


Fig. 2. *Spongicoloides galapagensis*, holotype, female: A, Carapace, dorsal view; B, Telson, dorsal view; C, Antennule, dorsal view; D, Antenna, dorsal view; E, Right mandible, ventral view; F, Same, dorsal view; G, Maxillule; H, Maxilla. Scale bars represent 1.0 mm.

eral borders bearing 6 left and 7 right acute teeth; borders setose along distal third. Posterior margin broadly rounded, densely setose, with 8 small teeth.

Eyes well developed, of moderate size, cornea globular and devoid of black pigment. No spinules on ophthalmic peduncle.

Antennular peduncle (Fig. 2C) short, extending to middle of scaphocerite. Basal segment more than twice length of second segment, third much shorter than both. Inner margin of basal segment straight, bearing 18 plumose setae of moderate length. Outer margin slightly expanded proximally bearing minute stylocerite about midlength, while distal extremity comes to sharp point with 4 plumose setae. Second segment with 2 small spines on inner margin; distal segment glabrous. Lateral flagellum slightly stronger than mesial flagellum, both with some segments bearing short setae.

Antenna (Fig. 2D) with stout basicerite, having strong spine on distal margin. Carpocerite short, not exceeding second antennular peduncle segment. Antennal flagellum broken at sixteenth segment. Scaphocerite broad, quadrangular, dorsally bearing 2 faint longitudinal carinae, with one bearing small knob about mid-length; outer margin slightly concave bearing 9 small teeth and larger distal tooth, inner margin convex, fringed with 84 long plumose setae.

Mandible (Figs. 2E, F) robust, with short fused molar and incisor processes. Molar surface with 6 small teeth; incisor bearing 2 stout teeth distally followed by 11 small teeth proximally. Palp well developed, 3-segmented. Proximal segment without setae; middle segment setose mesially, on distal outer margin; distal segment broad, densely setose laterally and distally.

Maxillule (Fig. 2G) bearing simple undivided endopodite with terminal short seta. Distal endite narrow with numerous fine setae and 11 stout spines distally; proximal endite also narrow with many fine setae distally.

Maxilla (Fig. 2H) with following setation on coxal and basal endites: 32 on proximal lobe, 16 on distal lobe of coxal; 20 on proximal lobe, 38 on distal lobe of basal. Endopodite long, slender, with 36 lateral and distal plumose setae. Scaphognathite well developed; anterior lobe broad, posterior one narrow with 208 plumose setae along margin.

First maxilliped (Fig. 3A) with stout 3-segmented endopodite. Proximal segment long, narrow proximally, broader distally, bearing 18 long plumose setae on outer margin, 15 shorter plumose setae mesially, and 4 plumose setae on inner margin. Middle segment broad, less than half length of basal segment, with 18 long plumose setae on outer margin and 2 long plumose setae distally. Distal segment very small, vestigial, with 2 short plumose setae. Basipodite large, rounded anteriorly, with straight mesial border bearing dense fringe of long setae. Coxopodite represented by somewhat rounded lobe bearing 10 short setae. Exopodite well developed bearing 11 long plumose setae laterally and distally. Large epipod present with broad proximal and distal lobes.

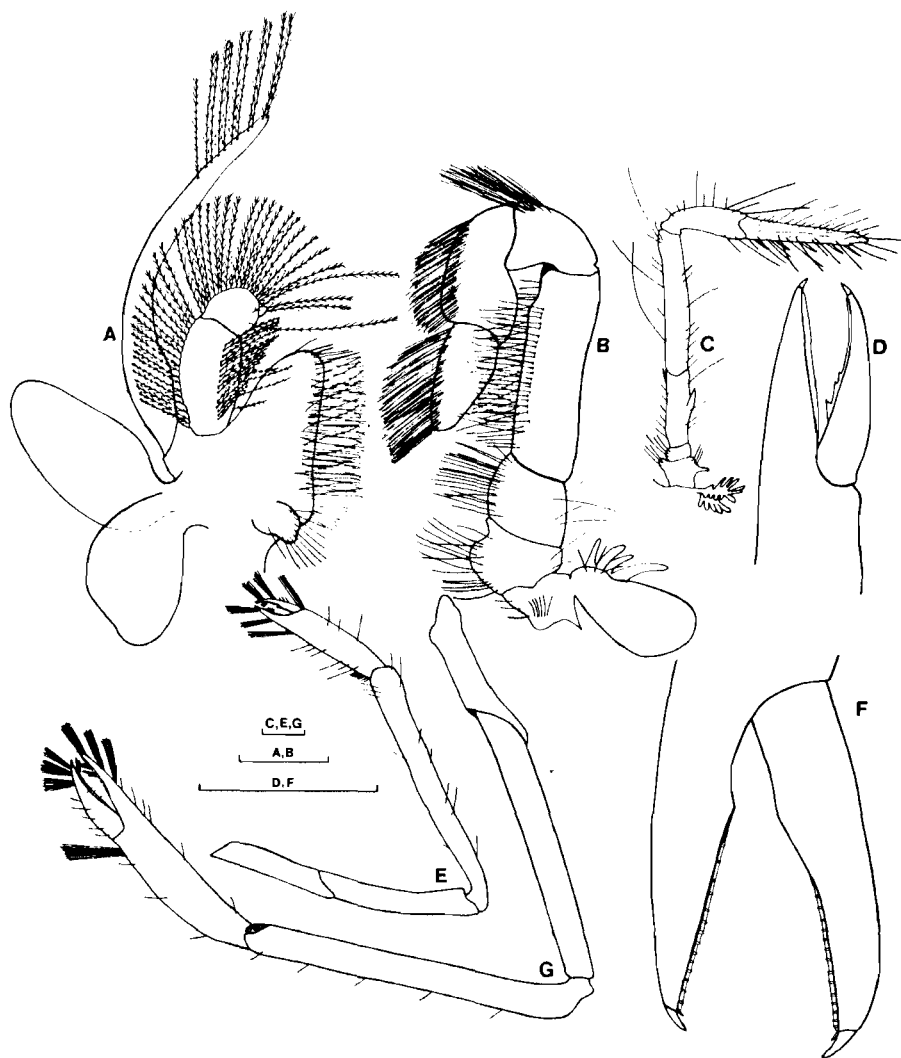


Fig. 3. *Spongiocoloides galapagensis*, holotype, female: A, First maxilliped; B, Second maxilliped; C, Third maxilliped, with dactylus missing; D, E, Chela of first pereiopod; F, G, Chela of second pereiopod. Scale bars represent 1.0 mm.

Second maxilliped (Fig. 3B) with 7-jointed endopodite. Dactylus suboval, about twice as long as broad, with densely setose distodorsal margin. Propodus about 1.2 length of dactylus with dense fringe of setae on distodorsal margin, while carpus short, triangular about half propodal length with numerous long simple setae at distodorsal angle. Merus long, straight, twice propodal length with dense fringe of long setae on inner border. Ischium

and basis not fused, both short with many setae on inner margins, few on outer margins. Coxa with 3 short setae on inner margin, 6 setae mesially, and simple epipod bearing small podobranch laterally. No exopodite present.

Third maxilliped (Fig. 3C) with 7-segmented endopodite, but dactylus missing on specimen. Propodus long, narrow, with 5 spines on inner margin; numerous long and short simple setae mesially, on outer and inner margins. Carpus slightly shorter than propodus with 2 long distal setae on inner border, numerous long and short setae on outer border. Merus longest segment with 3 long, few short setae on outer margin, few setae on inner margin. Ischium as long as carpus with few setae, strong spine on inner margin; small distal spine, some short setae on outer margin. Basis without exopodite but with 3 short setae on outer border. Distal end of coxa produced into rounded point bearing 3 short setae on outer margin; inner margin with 3 short setae, small epipod. Arthrobranch, pleurobranch present.

First pereopod (Figs. 3D, E) small, slender, glabrous; when extended reaching slightly beyond scaphocerite. No setiferous organ present. Dactylus less than half propodal length. Fingers slightly compressed with slightly hooked tips. Cutting edges rather indistinct with propodus and dactylus bearing chitinous ridge along inner margins. Dactylar ridge proximally forms one large, 2 smaller acute teeth. Both tips of propodus and dactylus rounded, heavily chitinized. Fingers and distodorsal extremity of palm with small tufts of long setae. Carpus longest segment, more than twice propodal length, with few simple setae on inner and outer margins. Ischium same size as propodus; merus slightly longer. Basis and coxa short, unarmed.

Second pereopod (Figs. 3F, G) similar to first, but longer, stronger. Fingers and distodorsal extremity of palm bearing small tufts of long setae. Cutting edges provided with 14 small, stout, peg-like teeth separated by rectangular chitinous lamellae; near tips each edge with small, spike-like tooth; tips hooked, heavily chitinized. Carpus longest segment with 5 short simple setae along outer margin. Merus almost equal in length to carpus, ischium one-third carpal length. Basis and coxa short, unarmed.

Third pereopod (Figs. 1, 4A) largest, strongest, almost as long as entire body length. Dactylus with chitinous ridge along cutting edge with large, rounded, serrate tooth almost at midlength opposing deep notch in serrate chitinous ridge of propodal cutting edge. Fingers elongate with sharp, hooked, chitinized, crossing tips, bearing small tufts of long setae. Propodus longest segment, distoventrally bearing 7 small knobs. Carpus less than half propodal length, narrowing proximally. Merus almost same length as propodus, with distoventral angle forming sharp spine with smaller mesial spine directly above. Ischium equal to carpal length, ventrally bearing 4 spines, distodorsal angle produced into large curved spine with smaller mesial spine below. Basis and coxa short, stout, unarmed.

Fourth, fifth pereopods (Figs. 4B, C) long, slender, subequal in length.

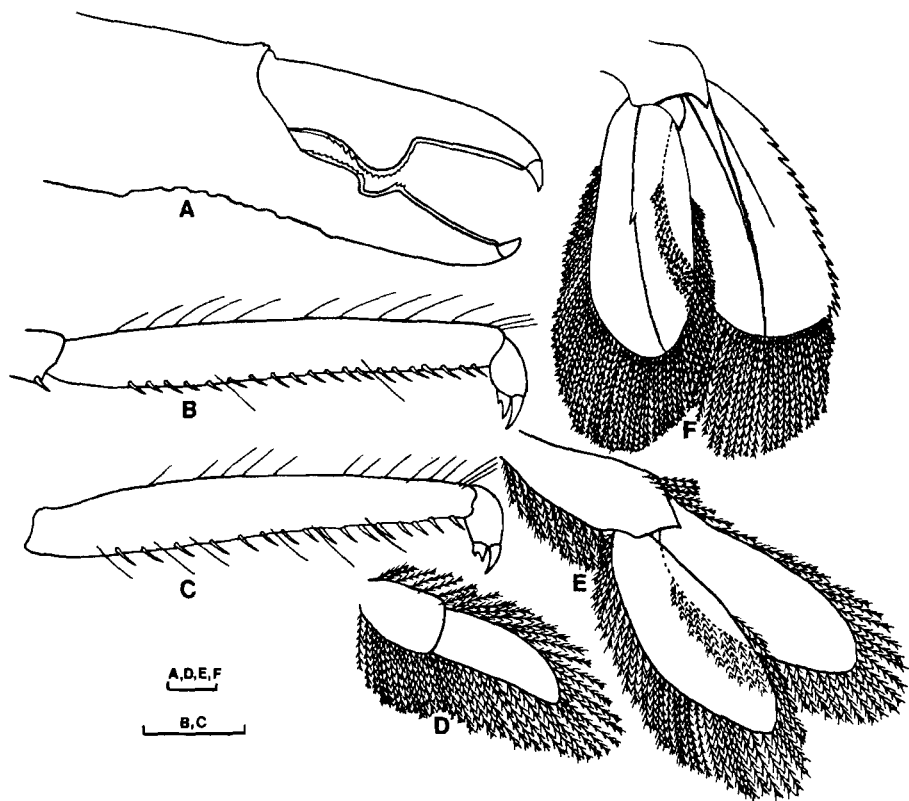


Fig. 4. *Spongiocoloides galapagensis*, holotype, female: A, Chela of third pereiopod; B, Propodus and dactylus of fourth pereiopod; C, Propodus and dactylus of fifth pereiopod; D, First pleopod; E, Second pleopod; F, Right uropod. Scale bars represent 1.0 mm.

Dactylus of fourth triunguiculate with much smaller proximal tooth on accessory spine. Unguis long, curved, clearly separated from dactylar corpus; accessory spine similar but shorter. Propodus and carpus undivided, with propodus about one-third carpal length, bearing 20 movable spines, 2 long setae ventrally; 13 long dorsal setae. Carpus longest segment with 11 dorsal setae, 4 ventral setae, movable spine at distoventral angle. Merus almost same length as carpus with 3 long distal setae dorsally. Ischium same length as propodus; unarmed. Basis and coxa short, stout. Fifth pereiopod with similar dactylus as fourth but much smaller unguis and accessory spine. Propodus half carpal length bearing 16 movable spines, 6 long setae ventrally; 13 long dorsal setae. Carpus and merus equal length; merus unarmed and carpus bearing 14 dorsal setae, 7 ventral setae. Ischium same length as propodus; unarmed. Basis and coxa short, stout.

First pleopod (Fig. 4D) uniramous, second (Fig. 4E) to fifth biramous, all lacking appendices. First pleopod smallest, with exopodite slightly longer than basipodite. Dorsal, ventral margins of basipodite densely covered with long plumose setae. Exopodite with 28 long plumose marginal setae. Rami of second pleopod slightly longer than basipodite. Distodorsal margin of basipodite bearing 5 short plumose setae, ventral margin with numerous longer plumose setae. Exopodite, endopodite respectively bearing 36, 42 long plumose marginal setae. Third to fifth pleopods generally similar, decreasing in size, setation posteriorly.

Uropods (Fig. 4F) well developed, about as long as telson. Basal segment strong with distodorsal angle produced into large tooth, large mesial tooth. Exopodite, endopodite ovate with outer margin of left exopodite bearing 13 teeth, right exopodite bearing 18 teeth. Unarmed margin of exopodite with 78 long plumose setae, dorsal surface bearing strong median ridge, much weaker submedian ridge. Margins of endopodite unarmed, bearing 102 long plumose setae. Dorsal surface with median ridge with spine located about mid-length.

There are only 20 large eggs, about 2.0 mm long and 1.3 mm broad.

Branchial formula:

	Maxillipeds			Pereiopods				
	I	II	III	I	II	III	IV	V
Pleurobranchs	—	—	1	1	1	1	1	1
Arthrobranchs	—	—	1	1	1	1	1	—
Podobranchs	—	1	—	—	—	—	—	—
Epipods	1	1	1	—	—	—	—	—
Exopods	1	—	—	—	—	—	—	—

Measurements (in mm): Postorbital carapace length, 14.0. Rostral carapace length, 17.0. Total length, approx., 39.0. Length of third pereiopod, approx., 36.5.

Coloration: The color of the preserved specimen is a pale yellow, the color of the living animal is unknown.

Type-locality.—Eastern Pacific Ocean, off the Galapagos Islands.

Remarks.—The new species, *Spongiocoloides galapagensis*, follows the definition of the genus *Spongiocoloides* Hansen given by Holthuis (1946), only differing in the spinous third maxillipeds, having 2 dorsal ridges on the uropodal exopodite, and the trianguiculate dactyli of the last 2 pairs of legs. Holthuis used the branchial formulae as one of the means of distinguishing the 4 known species of *Spongiocoloides*. In this regard, *S. galapagensis* comes close to *S. inermis*, but the podobranch on the second maxilliped and the arthrobranch on the fourth pereiopod are not rudimentary in the new species. *Spongiocoloides inermis* also bears 4 small knobs on the ventral

Table 1.—Comparison of some morphological characters in the genus *Spongicoloides*.

	<i>S. vulpaxensis</i>	<i>S. profundus</i>	<i>S. koehleri</i>	<i>S. icterus</i>	<i>S. evollutus</i>
Teeth on rostrum	7D, 4V, 3L	5-7D, 0-3V, 0L	6-9D, 0-4V, 0L	4D, 0V, 0L	some D, some V
Teeth on outer margin of scaphocerite	10	4-7	2-5	3-6	?
Carapace spination	numerous	numerous	few	glabrous	?
Arthrobranchs on 3rd Mxp, 1st-4th legs	1	1	2	1	2
Epipods or cicatrices visible on 1st-4th legs	absent	absent	present	absent	present
Teeth on longitudinal telson ridges	7-8	9-10	?	3-4	?
Lateral telson teeth	6-7	6-7	4-14	5	?
Teeth on outer margin of uropodal exopodite	13-18	16	?	7	?
Dactyli of 4th & 5th legs	triunguiculate	biunguiculate	biunguiculate	biunguiculate	?
Spinacion of 3rd leg	merus & ischium	glabrous	merus & dactylus	merus	?
Propodal knobs on 3rd leg	present	absent	absent	present	?
Spines on 3rd maxilliped	present	absent	absent	absent	absent
Eye cornea	white (pigmented), as broad as peduncle	white (pigmented), as broad as peduncle	annular band of black pigment, as broad as peduncle	unpigmented, narrower than peduncle	?
Vertical distribution	717 m	1,480 m	760-1,410 m	780 m	882 m

(abbreviations: Mxp = maxilliped; D = dorsal; V = ventral; and L = lateral).

margin of the third pereopod propodus, similar to the 7 knobs on *S. galapagensis*. The new species has a few characters similar to the genus *Spongiocaris* Bruce and Baba, namely the dactyli of the fourth and fifth pereopods and the dorsal ridges on the uropodal exopodite. This supports Bruce's and Baba's (1973) statement that the genus *Spongiocaris* seems to be an intermediate form between *Spongiocola* and *Spongiocoloides*. In most other respects, the new species is most closely related to *Spongiocoloides profundus*, but it is easily distinguished from members of the genera *Spongiocaris* and *Spongiocoloides* by differences of the telson, spination of the carapace, and branchial formula. The new species differs from the other members of the genus *Spongiocoloides* in a number of other characters shown in Table 1.

The 4 previously described species of *Spongiocoloides* are known only from the Atlantic Ocean. There is not much known of the characteristics of *S. evolutus* (Bouvier, 1905), based on a single specimen collected off the west coast of the Sahara. The only characteristics given by Bouvier (1905a, 1908a) and Milne Edwards and Bouvier (1909) are shown in Table 1. *Spongiocoloides profundus* Hansen, 1908 has only been recorded southwest of Iceland, 60°37'N, 27°52'W (Hansen, 1908); *S. inermis* (Bouvier, 1905) was collected off St. Lucia in the Caribbean (Bouvier, 1905b, 1908b; Milne Edwards and Bouvier, 1909); and *S. koehleri* (Caullery, 1896) has been collected from the Bay of Biscay and the Atlantic Ocean near the Strait of Gibraltar (Caullery, 1896; Kemp, 1910; Sund, 1920). The new species is the first record of the genus from the Pacific Ocean. Three specimens of yet another Western Atlantic species of *Spongiocoloides* were found in the unidentified stenopodid material of the U.S. National Museum. This species differs from *S. galapagensis* and the other members of the genus by differences in the rostrum, scaphocerite, telson, and uropods and a full description will be presented in a forthcoming publication.

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Duke University Marine Laboratory, Pivers Island, Beaufort, North Carolina 28516.

ADDENDUM

After this manuscript was sent to the printer the following paper was published: Baba, K. 1979. A new stenopodidean shrimp (Decapoda, Natantia) from the Chatham Rise, New Zealand. Pacific Sci. 33(3):311–314. He describes *Spongiocoloides novaezealandiae* sp. nov., which differs from *S. galapagensis* and the other members of the genus in number of gills and spination of the rostrum.