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A new species of *Axiopsis* (*Axiopsis*) (Thalassinidea, Axiidae) from the Pacific coast of Colombia

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SQUIRES, H. J. 1977. A new species of *Axiopsis* (*Axiopsis*) (Thalassinidea, Axiidae) from the Pacific coast of Colombia. Can. J. Zool. **55**: 1885–1891.

Axiopsis (Axiopsis) baronai is a new species of Thalassinidea (family Axiidae) from the Pacific coast of Colombia in depths of 5–9 m with soft mud substrate. A male holotype and three female paratypes are deposited in the Smithsonian Institution, Washington, D.C. Compared with other species of the genus it is large, reaching 94 mm total length (35 mm cl (measurement from the orbit to the posterior edge of the carapace in the midline dorsally)) in six specimens examined. It resembles *A.* (*A.*) *consobrina* but major differences include the similarity in size of first chelae, more spines on carinae of gastric region and only two or three spines laterally on the telson.

SQUIRES, H. J. 1977. A new species of *Axiopsis* (*Axiopsis*) (Thalassinidea, Axiidae) from the Pacific coast of Colombia. Can. J. Zool. **55**: 1885–1891.

Axiopsis (Axiopsis) baronai est une nouvelle espèce de Thalassinidea (famille Axiidae) de la côte Pacifique de la Colombie; l'espèce se retrouve à une profondeur de 5–9 m sur un substrat mou et boueux. Un mâle holotype et trois femelles paratypes ont été déposés au Smithsonian Institution à Washington, D.C. Comparativement aux autres espèces du genre, *S. baronai* est une espèce de grande taille, atteignant 94 mm de longueur totale (35 mm l.c. (distance de l'orbit à la bordeure postérieure de la carapace telle que mesurée dorsalement, le long de la ligne mèdiene) chez six spécimens examinés. L'espèce ressemble à *A.* (*A.*) *consobrina*, mais les premiers chélopodes sont presque de la même taille, il y a plus d'épines sur les carina de la région gastrique et seulement deux ou trois épines latérales sur le telson.

[Traduit par le journal]

Introduction

De Man's (1925) monograph on the Axiidae lists species occurring on the Pacific coasts of the Americas as follows: *Axius* (*Neaxius*) *vivesi* Bouvier, 1895 (5–7 m; Baja California); *Axiopsis* (*Axiopsis*) *spinulicauda* Rathbun, 1902 (113 m; Bodega Hd., California). Both of the above are from shallow water compared with the following species: *Axius* (*Eiconaxius*) *acutifrons* Bate, 1893 (850–1015 m; south of Panama); *Axius* (*Eiconaxius*) *crista-galli* Faxon, 1893 (850 m; south of Panama); *Calocaris* (*Calastacus*) *investigatoris* Anderson, 1896 (off Cascade Hd., Oregon, 631 m; and off San Diego, California, 763 m); *Calocaris* (*Calastacus*) *stilirostris* Faxon, 1893 (1220 m; off Acapulco); *Calocaris* (*Calastacus*) *quinqueseriatus* Rathbun, 1902 (293–710 m, southern California).

Other American west coast records of some of these species are as follows: *A.* (*A.*) *spinulicauda* (Butler (1961), off the coast of British Columbia, 90–130 m; and in Puget Sound, 70–255 m); *C.* (*C.*) *investigatoris* (Rathbun (1904) off California and off Alaska; Schmitt (1921), off California; McCauley (1972), off Oregon, 640–730 m; Pereyra and Alton (1972), off northern Oregon, 550–1190 m); *C.* (*C.*) *quinqueseriatus* (Hart (1971), west of Queen Charlotte Sound, B.C., 2200 m; Pererya and Alton (1972), off northern Oregon, 730–1920 m).

The present species of *Axiopsis* was taken in depths of 5–9 m during survey trawling for penaeid shrimps on the Pacific coast of Colombia, South America (Squires *et al.* 1970; Squires *et al.* 1971).

Family Axiidae

Axiopsis (Axiopsis) baronai new species

The holotype (USNM No. 152653), a male 26 mm in cl[2] and 74 mm in total length from Togorama, Colombia, and three female paratypes (USNM Nos. 152654–152656) from Naya,

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[2]Measurements of cl are from the orbit to the posterior edge of the carapace in the midline dorsally.

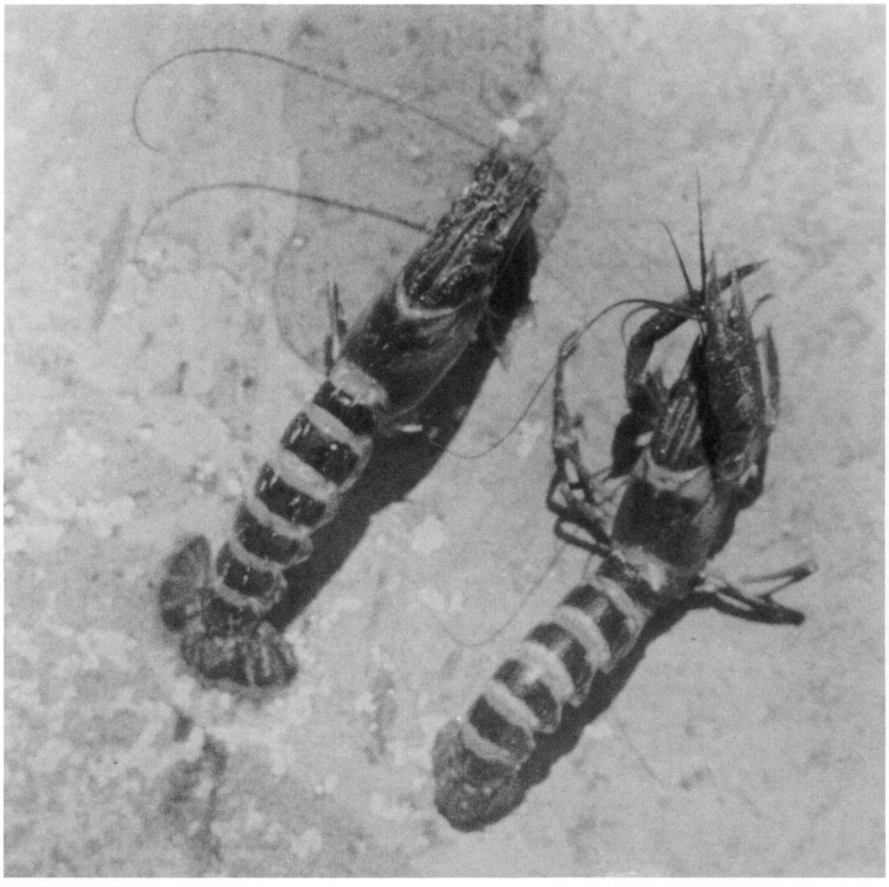

FIG. 1. *Axiopsis* (*Axiopsis*) *baronai* new species. Photograph of male (with claws), 24 mm cl, and female (without claws), 28 mm cl.

Togoroma, and Pizarro are deposited in the United States National Museum of Natural History, Smithsonian Institution, Washington, D.C.

Material Examined

From Ensenada de Tumaco, Colombia, 01°58′ N, 78°37′ W, 5 m; 2 Sept., 1969; Cacique Station 152; one male (24 mm cl), one female (28 mm cl) (Fig. 1).

Off Naya, 03°11′ N, 77°38′ W, 9 m; 29 Oct., 1969; Cacique Station 190; one female (soft shelled, 22 mm cl).

Off Togoroma, 04°23′ N, 77°26′ W, 7 m; 8 June, 1971; Inderena Station 559; one male (26 mm cl (the holotype)), one female (33 mm cl).

Off Pizarro, 05°11′ N, 77°26′ W, 9 m; 11 June, 1971; Inderena Station 573; one female (35 mm cl).

Description

Carapace

The carapace is divided into two portions by a cervical groove. The anterior or gastric portion has five distinct longitudinal carinae with spines in continuous series. Median dorsal carina with rounded close-set spines continued onto the rostrum where they form a crest but do not extend to the tip. Posteriorly this carina becomes less distinct where it is flanked by submedian carinae at about half its length and just ahead of which is a small circular suture but no spine. The submedian carinae are close to the median with small spines becoming less distinct posteriorly not nearly reaching the posterior edge of the cervical groove (Fig. 2).

Mediolateral carinae with 12–15 strong spines directed forward and reaching further posteriorly than the outer carinae but not as far as the cervi-

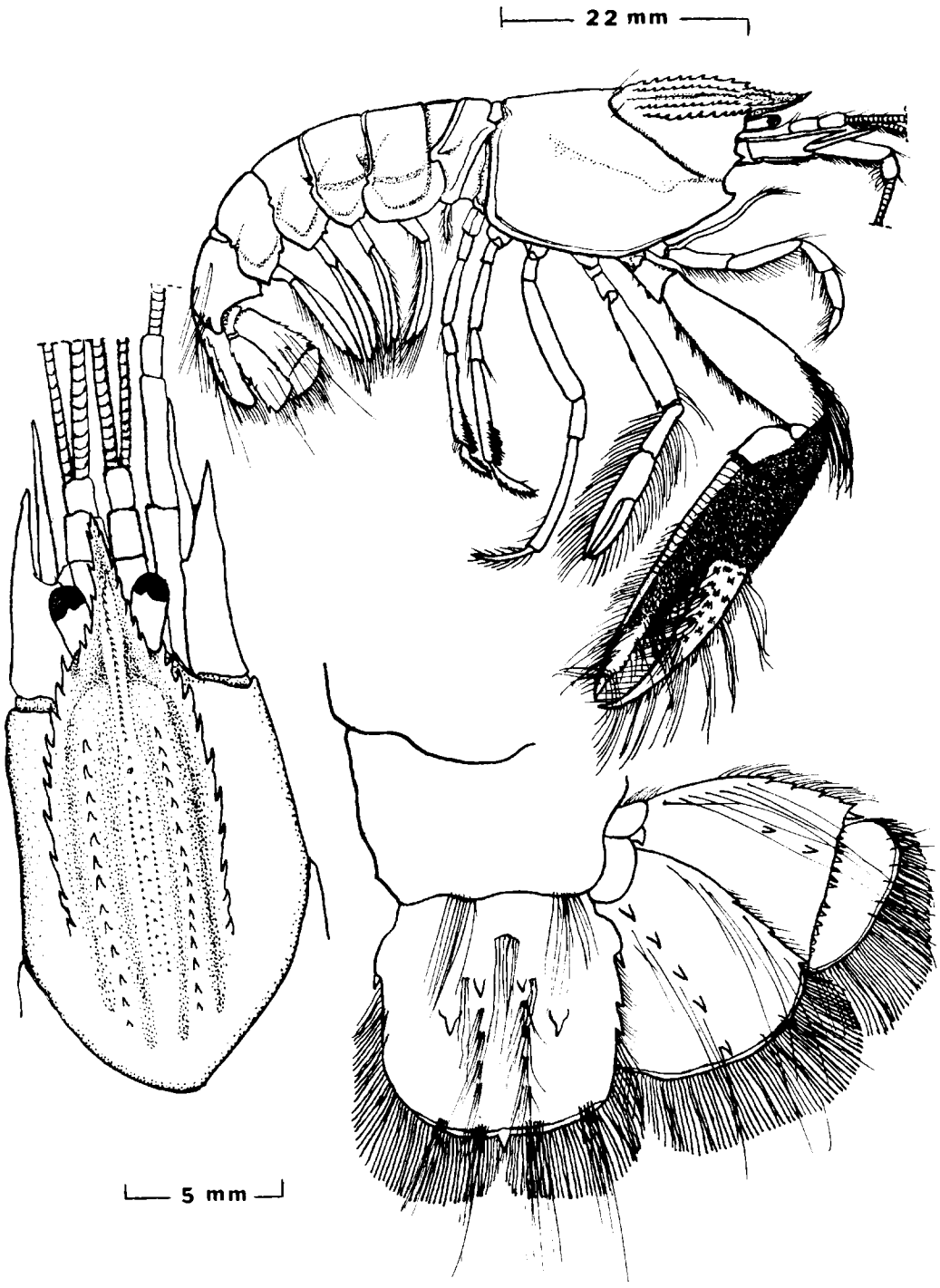

FIG. 2. *Axiopsis* (*Axiopsis*) *baronai* new species. Female, 22 mm cl; details of gastric portion of carapace and telson with one set of uropods.

cal groove. Lateral carinae with the strongest spines about 10 or 11 in each series directed forward and converging toward the front where they are contiguous with the 5 or 6 strong spines on each side of the short pointed and slightly up-turned rostrum. The rostrum is shorter than the antennular peduncle.

There is no distinct median dorsal ridge on the carapace posterior to the cervical groove. A faint ridge may be seen at some angles of the light, however, in some of the specimens (Fig. 1). Laterally on the carapace an irregular depression begins at the anterior edge of the cervical groove and curves back across the hepatic region but does not reach the posterior edge (Fig. 2). Integument of the carapace has minute pits, ridges, and small setae (directed anteriorly) especially on the posterior portion.

Abdomen

Including the telson the abdomen is not quite twice the length of the carapace. Pleura of the third to sixth pointed below and with accessory spines in the third to fifth (Fig. 2). Pleuron of the first pointed sharply below. A ridge with small setae crosses each of the second to fourth pleura.

Telson with trapezoid pattern of four large spines dorsally near centre and a large terminal spine at the centre of posterior edge. An accessory row of long setae along posterior edge. Outer edges more or less parallel with two or three spines, the anterior of which is in advance of the middle. Long fringing setae behind anterior spine and posteriorly, and tufts of long setae dorsally in a parallel series or spaced two on each side or singly in the centre (Fig. 2).

Outer branch of uropods with five or six large spines along outer edge and a large axilliary spine at the transverse suture; dorsal ridge with two large spines and about 14 spinules along transverse suture. Inner branch with a strong ridge bearing five or six large spines and three spines along outer edge. Both branches are fringed with long plumose setae posteriorly and with rows of long setae dorsally (Fig. 2).

Appendages

The eyes are pigmented for less than half the length of stalk. They are shorter than the first section of the antennular peduncle (Fig. 2).

A strong spine is at inner edge of first section of the antennular peduncle. The larger flagellum is the inner one (Figs. 2 and 3).

Antenna with scale reduced to a spine not quite as long as fourth section of peduncle (Fig. 3).

Mandible with horizontal molar process behind flat incisor. The molar has a flattened cusp at one end and a pointed cusp at the other (Fig. 3).

Scaphognathite of second maxilla with a long whip-like seta covered with minute hook-like projections posteriorly.

Epipods of second and third maxillipeds with podobranchs (trichobranchiate) attached proximally. Ischium of third with series of 11–21 strong spines along inner edge (Fig. 3).

Chelae of the first pereiopods unequal, the left slightly wider and longer (comparative widths of 11 and 9 mm and lengths of 24 and 23 mm). The propodus with many low rounded protuberances and covered with a thick pile of tufted setae; also a row of squamous protuberances along the toothed edges of the fingers. The ventral edge of the propodus with a series of 14–18 plates, the distal one much longer than the others (Fig. 2). The carpus is short and covered with a pile of tufted setae. The merus with four or five large spines evenly spaced along the ventral edge (increasing in size distally in males and with a parallel ridge along the edge outside). One large spine on the outer edge of the merus distally among a group of long setae. Ischium with a row of three or four spines decreasing in size proximally (Fig. 4). The right chela with even teeth slightly larger on the propodus and apparently stronger in males. The left chela with uneven teeth: a flat-topped large tooth proximally and a low crest of teeth distally, both fingers ending in long pointed tips that cross over each other. Both fingers with long setae arranged in tufts and directed distally (Fig. 4).

Second pereiopods slenderly chelate with long fringing setae. Inner edge of merus with two or three large spines (Fig. 2).

Third pereiopods longest of third to fifth, the fourth and fifth about equal. Propodi of both the latter expanded distally with a bunch of lateral bristles (Fig. 2).

Sternal plaque of fourth pereiopods of males with a stronger spine on each side of posterior portion than in females. Posterior portion divided down the centre in both sexes.

First pleopods missing in males. In females they are small and uniramous, less than half the length of the second pleopods.

Second pleopods with appendices masculinae

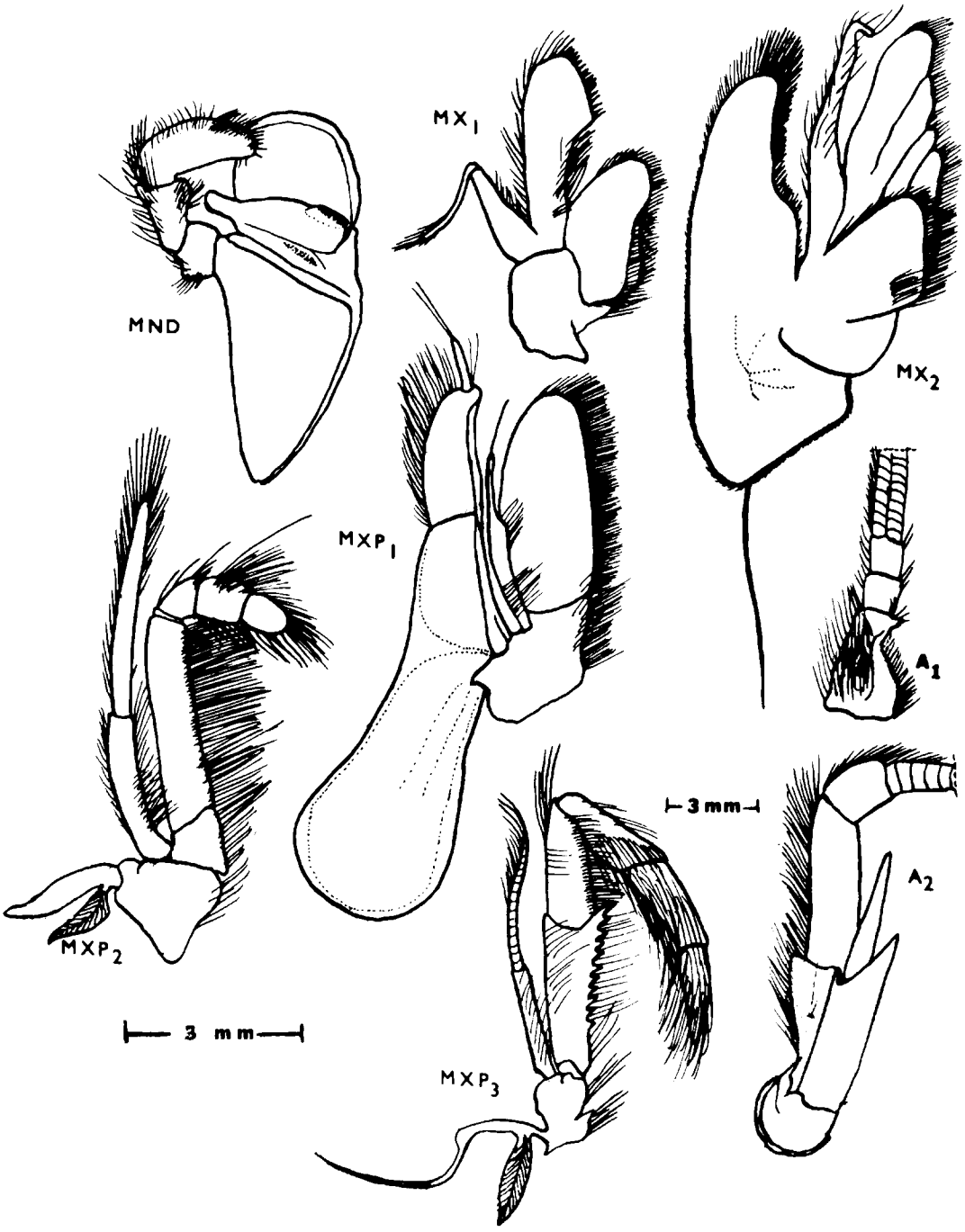

FIG. 3. *Axiopsis* (*Axiopsis*) *baronai* new species. Details of mouth parts and antennae: MND, mandible; MX_1, first maxilla; MX_2, second maxilla; MXP_1, first maxilliped; MXP_2, second maxilliped; MXP_3, third maxilliped; A_1, antennule; A_2, antenna. Smaller scale applies to A_1, A_2, and MXP_3 only.

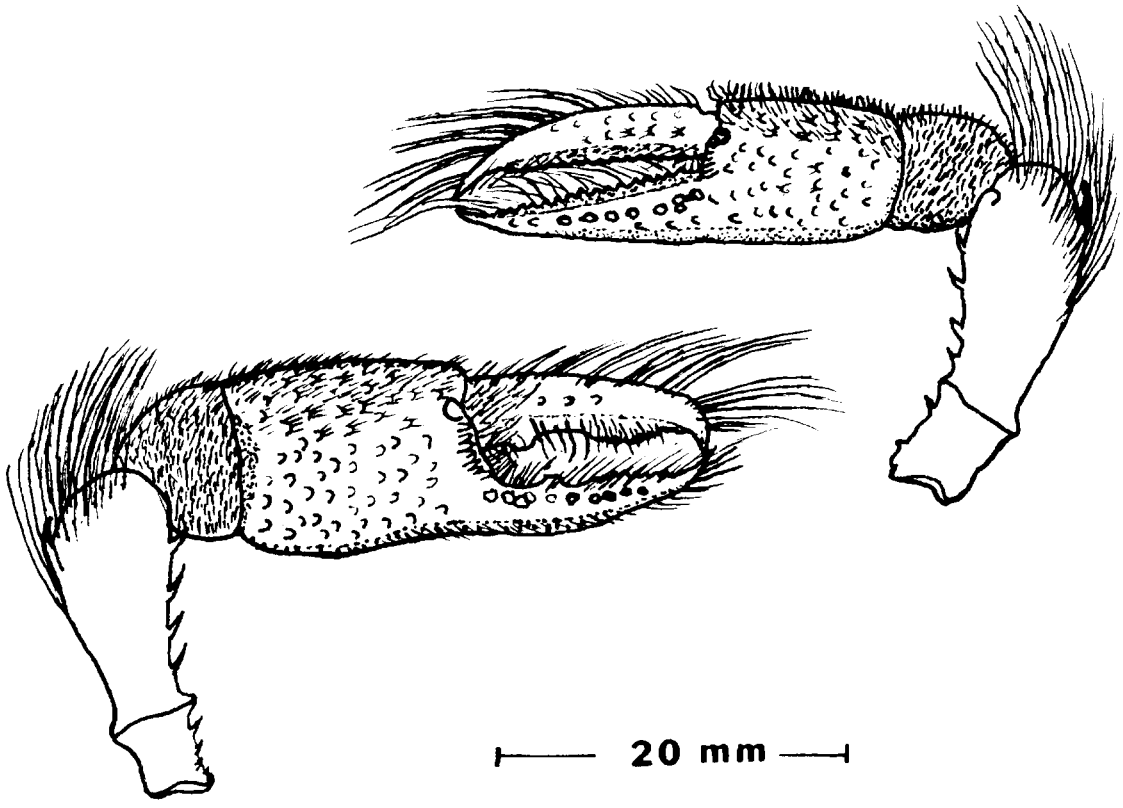

FIG. 4. *Axiopsis* (*Axiopsis*) *baronai* new species. Left and right first pereiopods (to autotomy point) of female 22 mm cl.

slightly shorter than the appendices internae but with long apical setae. All pleopods are biramous, large, and foliaceous with many fringing plumose setae (Fig. 2).

Size

De Man (1925) mentions *A.* (*A.*) *princeps* as a species of large size, but only 75 mm in total length. The present species is apparently larger, 65–94 mm in total length (22–35 mm cl).

Colour

Colour is dark to reddish brown with horizontal white or creamish stripes, the first across the carapace at the cervical groove and the other six across the abdomen at each flexion point (Fig. 1).

Name Source

The species is named in honour of a Colombian biologist, Mr. Omar Barona M., who worked with me on shrimps and invertebrates in fisheries surveys of the Pacific coast of Colombia.

Discussion

Boesch and Smalley (1972) express the opinion that some members of *Axiopsis* and *Calocaris* may eventually be included in one genus. The apparent differences are that some subgenera of *Calocaris* are hermaphroditic and have unpigmented eyes (among exceptions is *Calastacus* with separate sexes and pigmented eyes) and they all have a pronounced ridge on the carapace behind the cervical groove. *Axiopsis* typically has pigmented eyes and no such ridge. The main similarity is a suture across the outer branch of the uropods. The branchial formula of the present species (Table 1) is similar in the subgenus *Calastacus* but not the same in *Calocaris* (Faxon 1895).

In De Man's (1925, p. 68) key for separation of the species of *Axiopsis* (*Axiopsis*) the present species keys out to *consobrina* except that the outer margins of the telson in the latter have four spines while in the former there are only

TABLE 1. Branchial formula of *Axiopsis* (*Axiopsis*) *baronai*

	Maxillipeds			Pereiopods			
	2	3	1	2	3	4	5
Exopods	1	1	0	0	0	0	0
Epipods	1	1	1	1	1	1	0
Podobranchs	1	1	1	1	1	0	0
Arthrobranchs	0	2	2	2	2	2	0
Pleurobranchs	0	0	0	0	0	0	0

TABLE 2. *Axiopsis* (*Axiopsis*) *consobrina* compared with *A.* (*A.*) *baronai*

	A. (*A.*) *consodrina*	*A.* (*A.*) *baronai*
Chelae of first legs	Greatly different in size	Almost the same size
Spines on outer edges of telson	4	2–3
Spines in median carina	13	> 20
Mediolateral carinae	8	12–15
Lateral carinae	7–9	10–11
Eye pigment	More than one-half length of stalk	Less than one-half length of stalk

two or three spines. Other differences are present some of which are shown in Table 2.

Distribution of the present species is apparently in shallow muddy areas off the Pacific coast of Colombia where there is deep mud seaward from mangrove forests. The shrimp fishery is intensive in this area. However, survival of the species is assured because of its habit as in other thalassinids (Buchanan 1963; Pemberton *et al.* 1976) to live most of the time in deep burrows in the mud. Very few specimens were taken in 3 years of survey fishing with shrimp trawls in this area (Squires *et al.* 1970; Squires *et al.* 1971).

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