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A NEW AXIID (DECAPODA, THALASSINIDEA)
FROM THE NORTHERN GULF OF MEXICO
AND TROPICAL ATLANTIC

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ABSTRACT

A new species of axiid "lobster" is described from specimens taken from waters of the inner Continental Shelf of the north central Gulf of Mexico and off British Guiana in the tropical Atlantic. This represents a considerable divergence in vertical and geographical distribution from other closely related species.

INTRODUCTION

The genus *Calocaris* Bell, 1853, is a member of the macruran family Axiidae, and consists of 13 named species, most of which are deep-water forms and Indo-Pacific in distribution. The subgenus *Calastacus*, as presently constituted, is mostly confined to deep, Indo-Pacific and Pacific waters, but the new species described herein is from shallow shelf waters (11-50 meters) of the northern Gulf of Mexico and off northeastern South America.

Measurements were made with dial calipers. Carapace lengths (cl.) refer to the middorsal line from the base of the rostrum to the posterior margin of the carapace. Measurements appearing in the text of the description are of the holotype, unless otherwise noted.

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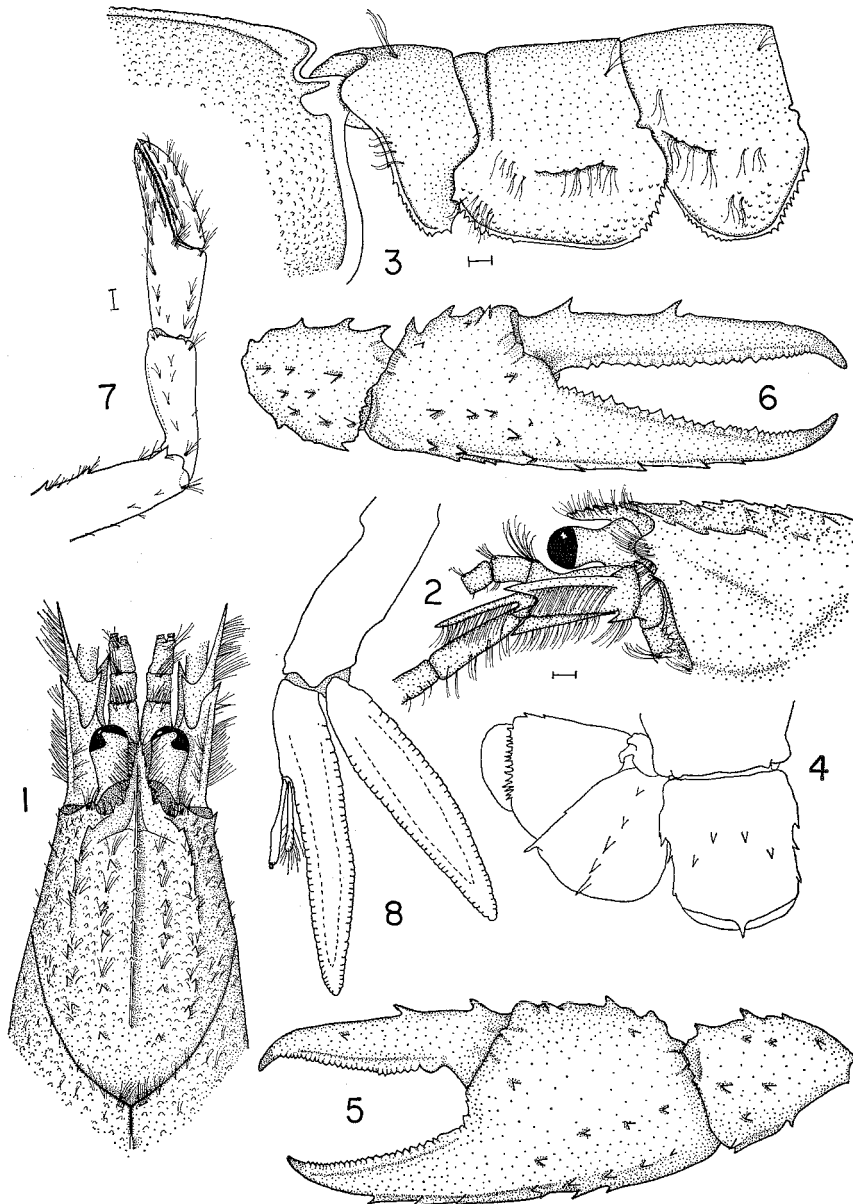
***Calocaris* (*Calastacus*) *hirsutimana*, new species**

Figs. 1-9

Material.—HOLOTYPE: Male, cl. 24.4 mm, 6° 50' N, 54° 47' W (off British Guiana), 50 meters, 29 April 1957, COQUETTE Station 422, U. S. Fish and Wildlife Service, USNM 137428.

PARATYPES: 2 males, cl. 22.9 mm, 24.2 mm, same collection as holotype, USNM 106414; 1 male, cl. 30.9, SE Pascagoula Sea Buoy, Mississippi, 11 meters, coll. commercial fishing vessel CORAL SEA, Capt. E. W. Howell, Jr., USNM 137429; 1 male, cl. 24.2 mm, 29° 40' N, 88° 30' W, about 80 km

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FIGURES 1-8. *Calocaris (Calastacus) hirsutimana*, new species: 1, anterior part of animal, dorsal view, antennae omitted; 2, anterior part of animal, lateral view; 3, posterior margin of carapace and first three abdominal somites, lateral view;

NE tip of Mississippi River Delta, 42 meters, 18 Jan. 1961, coll. commercial fishing vessel LOVIE DEE, USNM 107101.

Diagnosis.—Five gastric carinae, lateral carinae with six or seven spines, submedial carinae with five spines, medial carina with eight spines. Mid-dorsal carina continues posteriorly for length of carapace after short trench extending from cervical groove. Ocular peduncles exceed rostrum. First pereopods unequal, robust, obscured by very thick setation. Exopods of uropods broad, subequal to telson.

Description.—Carapace slightly arched, nearly as long as first five abdominal somites. Rostrum short and slender, approximately one-ninth length of rest of carapace, not exceeding first antennular article or ocular peduncle; armed with two small spines at base and five small dorsolaterally directed teeth on each lateral margin; tip slightly depressed; long setae arise from ventrolateral aspects of rostrum and borders of orbits.

Gastric region finely granulate, with small tufts of setae and five spiniferous carinae. Prolongations of lateral margins of rostrum continuing laterally as carinae for fourth-fifths length of gastric region, forming, with base of rostrum, horseshoe-shaped prominence bearing, on each side, six or seven anterolaterally directed spines of moderate size; this prominence also with submedial pair of carinae parallel to medial carina, each with five anteriorly directed spines running from near tip of rostrum to last of submedial spines, medial carina bearing eight small spines, the fourth reduced to worn, rounded protuberance. Area behind rostrum and between lateral rostral continuations deeply cleft, except for medial carina. Orbits strongly marked by broad lateral processes extending one-third length of rostrum, consisting of broad orbital processes and short lateral antennal spines.

Cervical groove deep, continuing posteriorly for short distance as depression along dorsal midline. Branchial grooves obsolete.

Carapace more coarsely granulate posteriorly than anteriorly, heavily granulate along posterior and ventral margins; granules with scattered setae throughout. Dorsal carina beginning immediately posterior to short mid-dorsal trench continuing from cervical groove, increasing in strength posteriorly, ending in knob accommodating articulating condyle of first abdominal somite. Knob flanked by strong posterior processes, providing additional articulating surfaces. Posterior and ventral border of carapace marked by thin smooth ridge, becoming wider ventrally.

Abdomen and telson approximately $1\frac{1}{4}$ times as long as carapace.

←

4, telson and uropods, setae omitted; 5, larger (left) chela of holotype, setae omitted; 6, smaller (right) chela of holotype, setae omitted; 7, second pereopod; 8, second pleopod, plumose setae omitted.

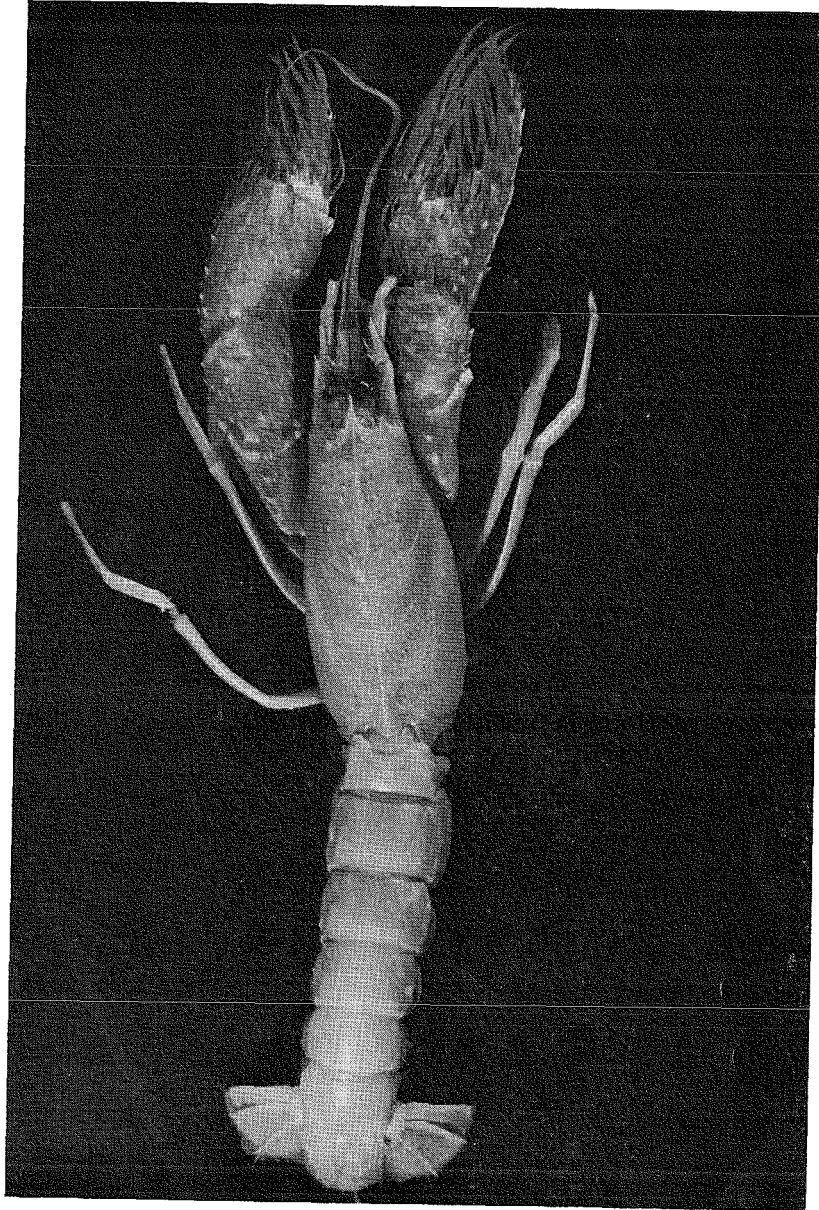


FIGURE 9. *Calocaris (Calastacus) hirsutimana*, new species.

Abdominal terga smooth, rounded dorsally, separated from broad but slightly angular pleura by distinct submedial carinae. Pleura granulate, bordered by smooth thin ridge bearing small sharp teeth on anterior and ventral margins. Tufts of setae arising from beneath submedial carinae; pleura fringed ventrally with plumose setae.

Telson quadrangular, $1\frac{1}{4}$ times as long as broad, bearing two pairs of spines on dorsal surface at tip of smooth, raised, anteromedial portion of telson, with tufts of setae just anterior to spines, posterior margin nearly straight, bearing median spine, fringed with long plumose setae. Uropods as long as telson. Inner uropod with thickened longitudinal midrib bearing four or five long spines; row of setae paralleling outer margins, bearing small spine and terminating in long, sharp, distal spine. Distal border of outer uropod thin, unarmed; transverse suture bounded by row of 13-15 spinules; two thickened longitudinal ribs on upper surface smooth, unarmed; outer margin with two small spinules.

Ocular peduncles large and rounded, exceeding first pereopods; inner flagellum slightly longer than outer; first peduncular segment upturned distally, second and third approximately equal in length.

Antennae nearly as long as carapace plus abdomen. Coxocerite short, expanded, with short, sharp spine ventrodistally. Basicerite broad and flattened dorsally with shallow longitudinal trench near outer edge; broad spiniferous process on outer, and short spine on inner, dorsal margins; lateral surface rounded; ventral surface with large spine proximally, rounded process distally. Scaphocerite (exopodite) with strong outer spine, reaching nearly to distal extremity of merocerite; spine near base of inner margin directed inward, reaching $\frac{1}{6}$ length of outer spine. Ischiocerite with strong inner spine exceeding inner spine of scaphocerite. Merocerite longer than ischiocerite with strong inner spine exceeding inner spine of scaphocerite. Carpocerite $\frac{1}{2}$ as long as merocerite.

Endopods of third maxillipeds pediform; ischium with two small spines on lower border; merus with three spines, increasing in strength distally on lower border; one spine on distal end of lower border of carpus; propodus and carpus unarmed. Inner side of ischium bearing comblike crest with 15-16 acute teeth. Lower borders of all segments with very heavy setae.

First pereopods chelate, asymmetrical; three specimens, including holotype, with right chela more slender, with longer fingers; two specimens with this condition on left appendage. Dorsum of carpi and chelae, especially fingers, totally obscured by dense covering of long thick setae.

Right first pereopod (on holotype) slender, with basis small, partially fused with ischium, bearing one large ventral tooth. Ventral border of ischium with two longitudinal rows of spines, those of inner row stronger. Merus, 11 mm long, 7.5 mm broad; armed on ventral inner border with five long spines, on outer border with eight or nine smaller spines; dorsal

border convex with four large spines; large protuberance and very large spine on outer distal end of segment. Carpus short, 5 mm long; dorsal and lateral surfaces with many sharp spines. Chela long and narrow, 25 mm long, 8 mm wide, 5 mm thick; length of fingers more than $\frac{2}{3}$ length of whole chela; outer margin bearing raised row of nine spines; dorsal surface of manus with scattered small spines; ventral surface of palm with four large spines; row of four small spines on outer lateral surface. Tips of fingers strongly recurved; dactyl with two large spines on lateral surface.

Left first pereiopod (on holotype) robust, with measurements and spination of basis, ischium, and merus identical with opposite appendage. Carpus longer (9.5 mm) with scattered sharp spines on dorsal and lateral surfaces. Chela as long (25 mm) but wider (11 mm) and thicker (6.5 mm) than opposite chela; fingers shorter, little more than $\frac{1}{2}$ length of whole chela. Spination similar to that of other chela.

Second pereiopods chelate, segments flattened. Basis 2 mm long, with one ventral spine; ischium 5 mm, with four ventral spines; merus 13 mm, with four ventral spines; carpus 6 mm, expanded distally; chela 10 mm, with fingers half length of whole chela; fingers with numerous small corneous teeth and corneous tips. Ventral edge of merus, carpus, and manus fringed with long hairs.

Third and fourth pereiopods pediform, almost identical. Bases, 2 mm long; ischia, 5 mm; meri, 14 mm on third and 10 mm on fourth, with single ventral spine distally; carpi, 6 mm; propodi, 9 mm; dactyli, 3 mm.

Fifth pereiopod weakly subchelate, positioned under abdomen. Coxae bear paired sexual openings; basis, 1 mm long; ischium 4 mm; merus 6 mm; carpus 4 mm; propodus 8 mm, with ventrodistal projection forming weak subchela; dactylus 1.5 mm.

First pair of pleopods small, 3 mm long, uniramous. Second pleopod large, bearing two foliaceous, broad rami; protopod 5.6 mm long; exopod 7.5 mm; endopod 8.1 mm. Inner edge of endopod with *appendix masculina* inside and stylamblys (*appendix interna*) outside; *appendix masculina* 1.9 mm long, with long hairs on distal third; stylamblys 2.2 mm long, with hooklike cincinnuli at tip. All following pleopods similar to second, but without *appendix masculina*.

Gills as described by Gurney (1942: 149) except podobranch and arthrobranch on second maxilliped well developed and epipod of second pereiopod lacking a podobranch.

Variations.—The most noticeable variation is in the “handedness” of the animals. This variation may be due to genetic or regenerative phenomena. Variations in the numbers and sizes of spines were also noted; especially, the antennal “thorns” seem to become relatively larger with growth.

Color.—(Specimens preserved in alcohol 6 to 10 years.) Carapace with two broad, pale orange bands, one around branchial region, another roughly

following cervical groove. Dorsum of abdominal terga pale orange. Antennae and antennules pale violet. First pereopods with broad orange band on distal portion of lateral surface of merus; tips of fingers orange; protuberances and spines on manus and carpus orange tipped. Meri of second through fifth pereopods with broad orange band.

Discussion.—Three species of *Calocaris* have been described from the North Atlantic Ocean: *C. macandreae* Bell, 1853; *C. templemani* Squires, 1965; and *C. aberrans* Bouvier, 1905; all of which are members of the subgenus *Calocaris*. The subgenus *Calastacus* has been regarded as entirely Pacific or Indo-Pacific in distribution, and has been reported previously only from waters below 293 meters, with the exception of *C. amakusana* Miyake & Sakai, 1967, from 20-40 m in the East China Sea. The discovery of *C. hirsutimana*, therefore, represents a considerable divergence in geographic and bathymetric distribution from other members of the subgenus *Calastacus*.

However, the close similarity among some members of *Calastacus*, including *C. hirsutimana*, and some members of the genus and subgenus *Axiopsis* (*Axiopsis*) discourages one from generalities about these axiid genera. Indeed, the similarities among some species of *Calocaris* (*Calastacus*), including *C. sibogae*, *C. longispinis*, *C. euophthalma*, *C. quinqueseriata*, *C. amakusana*, and *C. hirsutimana*, and some *Axiopsis* (*Axiopsis*), including *A. consobrina*, *A. habereri*, and *A. serratifrons*, must be considered greater than among these *Calocaris* and members of *Calocaris* (*Calocaris*). Should *Calastacus* and *Calocaris* be revised in the future, at least three newly defined genera would result, one of which would include members of both *Calocaris* and *Axiopsis*, as constituted today. Presently, the two genera are separated on the basis of the middorsal keel, which is distinct at least on the gastric region and at the posterior border of the carapace in *Calocaris*, and absent in *Axiopsis*. At least one *Calocaris* (*C. aberrans*) is without a dorsal carina behind the cervical groove, and one *Axiopsis* (*A. habereri*) has a distinctly developed carina between the cervical groove and posterior border of the carapace. Undoubtedly further study will show that the presence or absence of a middorsal keel is not a character at the generic level.

C. hirsutimana bears closest resemblance to *Axiopsis consobrina* from the Indian Ocean, *A. habereri* and *C. amakusana* from Japanese waters, and *C. quinqueseriata* from deep waters off the Pacific Coast of North America. *C. hirsutimana* may be most easily distinguished by the very noticeable setation of the chelae of the first pereopods, the fact that the rostrum is exceeded by the ocular peduncles, the presence of the short middorsal trench extending posteriorly from the cervical groove, and the armature of the telson and uropods. Unfortunately, all of the specimens available are males. This fact, together with the paucity of specimens and their

morphology, suggests a fossorial habit for the animal. Perhaps the males were caught by bottom trawls as they emerged from their burrows to mate. Although at least two members of the genus, *C. macandreae* and *C. templemani*, are known to be hermaphroditic (Buchanan, 1963; Squires, 1965), the presence of a single pair of sexual pores on the coxae of the fifth pereopods and of the *appendix masculina* on the second pereopods leaves no doubt that these specimens are males and the species is dioecious.

SUMARIO

UN NUEVO AXIID (DECAPODA, THALASSINIDEA) DE LA PARTE NORTE DEL GOLFO DE MÉXICO Y DEL ATLÁNTICO TROPICAL

Se describe una nueva especie de "langosta" axiida de ejemplares cogidos en aguas de la plataforma continental interior de la parte norte del centro del Golfo de México y frente a la Guyana Británica en el Atlántico Tropical. Esto representa una considerable divergencia en la distribución vertical y geográfica de otras especies estrechamente relacionadas con ella.

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