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Regards,
A. Z. Paul

SUB-TIDAL ISOPODS OF THE FOSA DE CARIACO, VENEZUELA, WITH DESCRIPTIONS OF TWO NEW GENERA AND TWELVE NEW SPECIES

ALLEN Z. PAUL AND ROBERT J. MENZIES

Department of Oceanography, Florida State University, Tallahassee, Florida

ABSTRACT: Benthic Isopoda were collected at two stations of a cruise on the R/V "LA SALLE" at depths of 73m and 95m. Twelve new species and two new genera are described as follows: (1) *ONCILORPHEUS*, n. gen. with *O. stebbingi*, n. sp. as the type; (2) *THERMOARCTURUS*, n. gen. with *T. venezuelensis*, n. sp. as the type; (3) *Malacanthura caribbica*, n. sp.; (4) *Malacanthura cumanensis*, n. sp.; (5) *Haliophasma valeriae*, n. sp.; (6) *Haliophasma irmae*, n. sp.; (7) *Haliophasma curri*, n. sp.; (8) *Paranthura barnardi*, n. sp.; (9) *Apanthura significa*, n. sp.; (10) *Gnathia beethoveni*, n. sp.; (11) *Eurycope cariacensis*, n. sp.; (12) *Astacilla lasalle*, n. sp. One previously known isopod is also described, *Serolis mgrayi* Menzies and Frankenberg.

RESUMEN: Durante un crucero a bordo de la M/N "LA SALLE", se recolectaron Isopodos benticos en dos estaciones a profundidades de 73m y 95m. A continuación se describen doce nuevas especies y dos nuevos géneros: (1) *ONCILORPHEUS*, n. gen. con *O. stebbingi*, n. sp. como el tipo; (2) *THERMOARCTURUS*, n. gen. con *T. venezuelensis*, n. sp. como el tipo; (3) *Malacanthura caribbica*, n. sp.; (4) *Malacanthura cumanensis*, n. sp.; (5) *Haliophasma valeriae*, n. sp.; (6) *Haliophasma irmae*, n. sp.; (7) *Haliophasma curri*, n. sp.; (8) *Paranthura barnardi*, n. sp.; (9) *Apanthura significa*, n. sp.; (10) *Gnathia beethoveni*, n. sp.; (11) *Eurycope cariacensis*, n. sp.; (12) *Astacilla lasalle*, n. sp. También se describe un isopodo previamente conocido, *Serolis mgrayi* MENZIES AND FRANKENBERG.

INTRODUCTION

Ten qualitative benthic samples were collected using the Small Biological Trawl "SBT" (MENZIES, 1962) from the R/V "LA SALLE" leased by the Instituto Oceanográfico, Universidad de Oriente, in November 1968 from Fundación La Salle. Station positions are shown in Figure 1 and station data are given in Table 1.

The Isopoda were separated from the collections and identified. All species are new with the exception of one.

ACKNOWLEDGEMENTS

The senior author was partially supported by an NSF-Duke University Predoctoral Traineeship Award in Biological Oceanography (Grant N° GB-17266).

The junior author wishes to express his gratitude to the late Dr. R. A. CURRA, the then Director

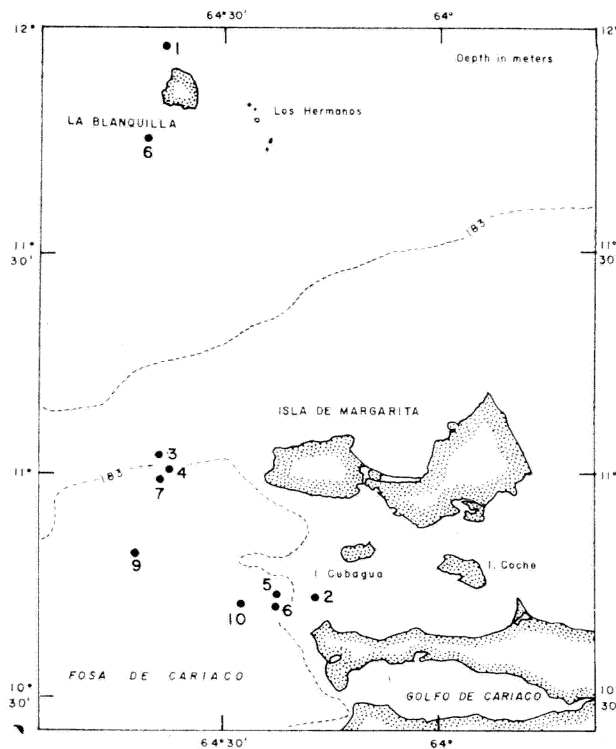


Fig. 1 Location of qualitative sample stations, Cariaco Trench.

of the Instituto Oceanográfico, for the opportunity to use the "La Salle" to make these collections.

MATERIALS AND METHODS

The objective of the study was to learn the distribution of the epifaunal and infaunal benthic organisms in the oxygenated layers of the trench. Samples were taken using the small biological trawl (SBT) in a triangular, tapering, open metal frame. The mouth of the 0.5mm² mesh, three meter long nylon bag was attached to a chain bridle with a one hundred pound weight on it, and this bridle was attached to the hydrowire. The SBT was lowered to

and left on the bottom for periods of time varying from one-half hour to over an hour depending upon the speed of drift of the vessel.

The sample was brought up and all material smaller than 0.5mm was washed away by running sea water through the bag with a hose. The sample thus reduced was stored in 10% neutral formalin sea water and brought to the laboratory for analysis.

Specimens were separated with the aid of a dissecting stereomicroscope and stored in 70% ethanol. Dissections were made under the stereomicroscope with the specimens immersed in glycerol. Parts teased off with "minuten" insect pins were transferred to a drop of glycerol on a microscope slide and provided with a cover slip.

TABLE 1 STATION DATA, CARIACO TRENCH, VENEZUELA

Station Nº	Position		Depth In Meters	Oxygen ml/l
1	Lat. Long.	11°57.0'N 64°37.0'W	73	3.1
2	Lat. Long.	10°42.0'N 64°17.0'W	86	2.7
3	Lat. Long.	11°03.0'N 64°37.5'W	95	3.0
4	Lat. Long.	11°00.0'N 64°37.0'W	201	0.3
5	Lat. Long.	10°42.0'N 64°22.0'W	256	0.1
6	Lat. Long.	11°46.5'N 64°40.5'W	318	0.0
7	Lat. Long.	10°59.0'N 64°38.5'W	330	0.0
8	Lat. Long.	10°42.1'N 64°22.0'W	339	0.1
9	Lat. Long.	10°48.0'N 64°41.0'W	383	0.0
10	Lat. Long.	10°41.0'N 64°27.0'W	426	0.0

Illustrations were made using a Leitz micro-projection unit. The accuracy of each drawing was checked at a magnification greater than that of the original illustration and in some cases observations using oil immersion lenses were used to clarify relationships.

Body measurements given are of greatest length, exclusive of antennae and uropods, and greatest width.

Types have been deposited in the collections of the United States National Museum where each is provided with a catalog number (U.S.N.M.Cat. N^o).

RESULTS

Oncilorpheus, n. gen. (Figures 2-5)

TYPE SPECIES: *Oncilorpheus stebbingi*, n. sp.

DIAGNOSIS: Cirolanidae with narrow cephalon and body. Cephalon not deeply immersed in first peraeonal somite. Both antennae short, second not much longer than first. Frontal lamina projecting prominently in ventral but not in dorsal view. First pleopod with exopod indurated and operculiform, endopod submembraneaceous and much less than one-half the width of exopod and not as long. Inner apex of peduncle of uropod strongly produced, with endopod deeply immersed; exopod produced, sub-cylindrical and claw-like.

AFFINITIES: In general body form this genus resembles *Typhlocirolana* RACOVITZA but it differs in the narrowness of the endopod of the first pleopod, in having both antennae short and subequal and by the presence of eyes. The claw-like exopod of the uropod resembles *Paralimnoria* MENZIES but this genus is easily distinguished from *Paralimnoria* by having the molar plate on the mandible, the narrowness of cephalon and body and the narrowness of the endopod of the first pleopod.

Oncilorpheus stebbingi, n. sp.

SYNONYMS: None.

DIAGNOSIS: *Oncilorpheus* with antennae not visible from dorsal view. Coxal plates on peraeonal somites two through seven are small and visible only lat-

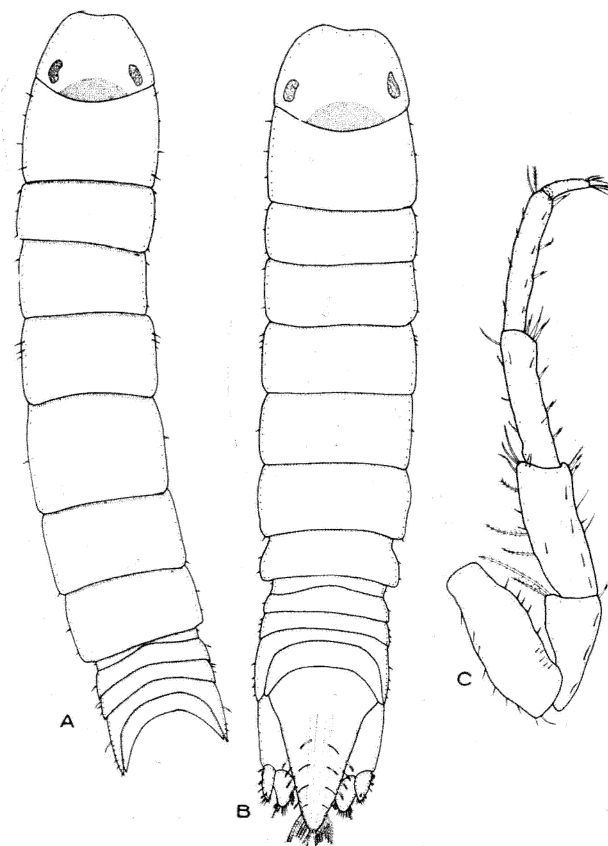


Fig. 2 *Oncilorpheus stebbingi*: n. gen., n. sp. A. Holotype, pleotelson missing, length 11.0 mm, Width 2.0 mm; B. juvenile, length 4.0 mm, Width 0.75 mm; C. seventh peraeopod.

erally. Merus of first peraeopod with four bluntly rounded teeth on inner margin. Pleotelson of juvenile with broad median ridge which extends to apex; this ridge with two lateral grooves.

MEASUREMENTS: Holotype (Pleotelson and pleopods missing); length 11.0 mm, width 2.0 mm (U.S.N.M.Cat. N^o 136431); Juveniles (two); length 4.0 mm, width 0.75 mm (U.S.N.M. Cat. N^o 136432).

TYPE LOCALITY: Off Venezuela. 11°57.0' Lat. N, 64°37.0' Long. W. Depth 73 meters.

DISTRIBUTION: Known from type locality and 11°03' Lat. N, 64°37.5'W.

ADDITIONAL DESCRIPTIVE NOTES: General body shape narrow, elongate. Frons of cephalon gently concave. Ovate depression (maxillipedal somite) at

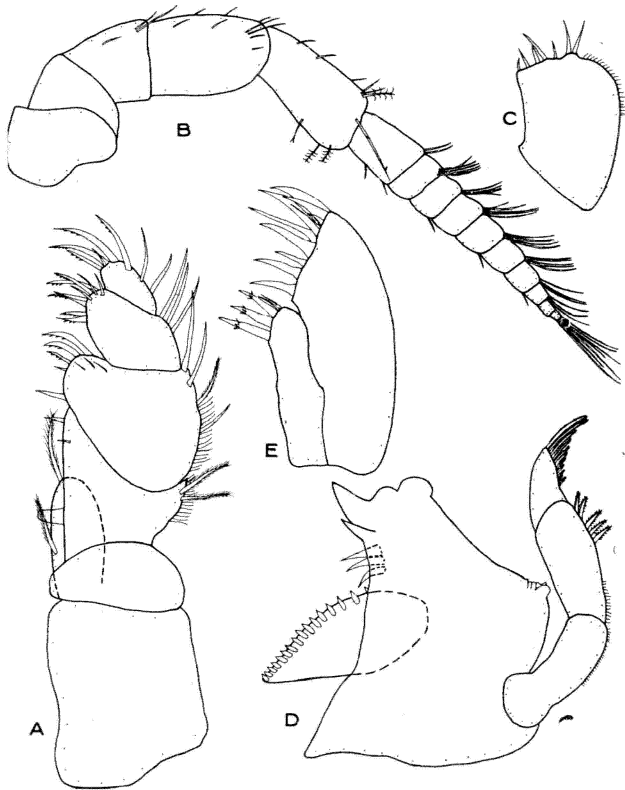


Fig. 3 *Oncilorpheus stebbingi*: n. gen., n. sp. A. maxilliped; B. second antenna; C. inner plate of second maxilla; D. mandible; E. first maxilla.

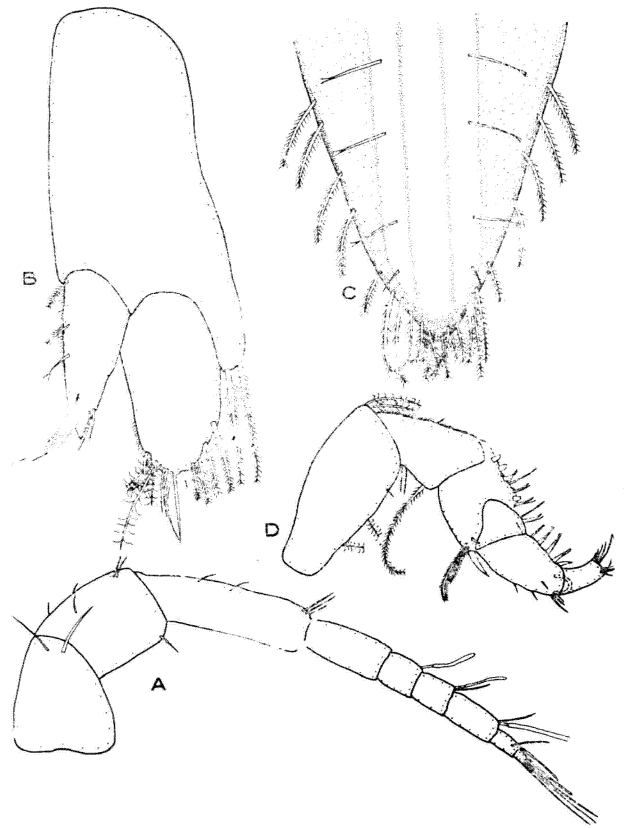


Fig. 4 *Oncilorpheus stebbingi*: n. gen., n. sp. A. first antenna; B. uropod of juvenile; C. pleotelson of juvenile; D. first pereopod.

posterior margin of cephalon. First peraeonal somite about same length as cephalon. Second, third, and fourth peraeonal somites each shorter than first and subequal. Fifth peraeonal somite almost half again as long as fourth. Sixth and seventh peraeonal somites about as long as fourth and subequal. First pleonal somite very short and narrower than seven h peraeonal somite. Second and third pleonal somites longer than first and subequal. Fourth pleonal somite with posteriorly produced lateral extensions that completely overlap the lateral margin of the fifth pleonal somite. First antenna composed of nine articles with a single esthetasc on fifth through ninth articles. Second antenna slightly longer than first with peduncle of five articles and flagellum of ten articles. Mandible with large dentate molar plate and palp of three articles. First and second mandibular palp articles subequal; apical articles about half the length of second with ten pectinate setae increasing in length toward the apex. The inner plate of

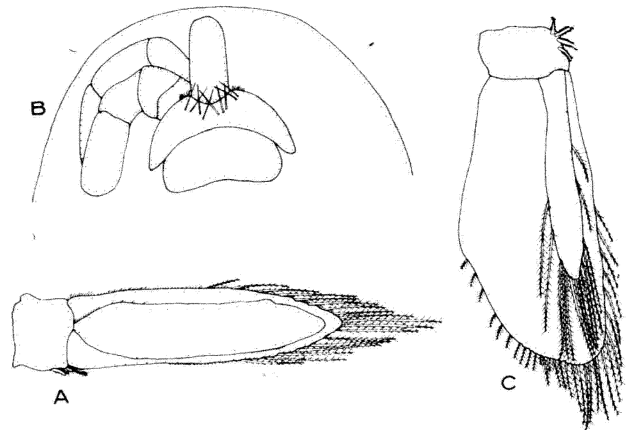


Fig. 5 *Oncilorpheus stebbingi*: n. gen., n. sp. A. second pleopod of juvenile; B. ventral view of cephalon; C. ventral view juvenile pleopod one.

the first maxilla has three large stout setae and two shorter setae; the outer plate has ten stout setae. Maxilliped composed of six articles. First pereopod

short with four two pointed setae on the inner margin of propodus. Seventh peraeopod long and slender; basis longer than any other article; ischium, merus, carpus, propodus subequal, each one successively narrower. First pleopod of juvenile with peduncle shorter than it is wide with four coupling hooks on inner margin. Inner ramus about one fourth as wide as outer; both with long plumose setae. Second pleopod of juvenile with peduncle shorter than wide with three coupling hooks and one plumose seta on inner margin. Inner ramus narrower than outer with a few short spines on margin; outer ramus with short spines on margin and long plumose setae distally. Uropod with inner angle of peduncle strongly produced. Exopod of uropod shorter than endopod, ending in sharp claw. Endopod of uropod bluntly rounded and setose.

AFFINITIES: This species differs from *Conilorpheus berdmani* STEBBING by having three plumose setae on the inner plate of the first maxilla and by the lack of tubercles on the body. It differs from *Conilorpheus scutifrons* STEBBING by the narrowness of the peraeon, the lack of tubercles on the body and in the number of articles in both antennae. It can be distinguished from *C. blandus* BARNARD by the smooth body, lack of plumose setae on peraeonal somites and lack of tridentate frontal lamina.

Thermoarcturus, n. gen. (Figures 6-7)

TYPE SPECIES: *Thermoarcturus venezuelensis*, n. sp.

DIAGNOSIS: Body cylindrical; with body flexed between the fourth and fifth peraeonal somites; first peraeonal somite completely separated from cephalon; fourth peraeonal somite not elongate and not longer than third. Pleon composed of three free somites. First antenna smaller than second. Second antenna as long as peraeon with flagellum of two articles; claw lacking.

AFFINITIES: This genus is allied to *Neoarcturus* BARNARD but differs in having the anterior part of the peraeon flexed between fourth and fifth peraeonal somites; by the presence of three completely free pleonal segments instead of four and by the two-jointed flagellum of the second antennae instead of three.

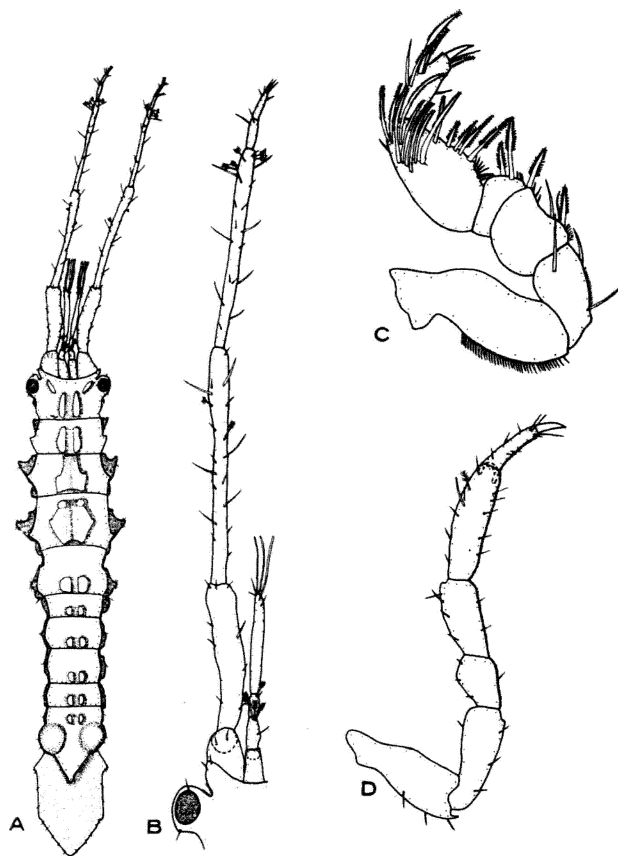


Fig. 6 *Thermoarcturus venezuelensis*: n. sp. A. female holotype, length 4.5 mm, Width 1.0 mm; B. antennae; C. first peraeopod; D. seventh peraeopod.

Thermoarcturus venezuelensis, n. sp.

SYNONYMS: None.

DIAGNOSIS: *Thermoarcturus* with cephalon having a pair of dorsal tubercles between the eyes, posterior to which is a pair of somewhat larger tubercles. Eyes black with preocular lobes; eyelobes project beyond lateral margin of cephalon. Antenna two as long as cephalon and seven peraeonal somites together. Second pleonal somite with pair of small dorsal tubercles, a pair of large dorso-lateral tubercles and posteriorly expanded median margin ending in a rounded apex.

MEASUREMENTS: Female holotype; length 4.5 mm, width 1.0 mm (U.S.N.M. Cat. N^o 136427).

TYPE LOCALITY: Off Venezuela. 11°03' Lat. N, 64°37.5' Long. W. Depth 95 meters.

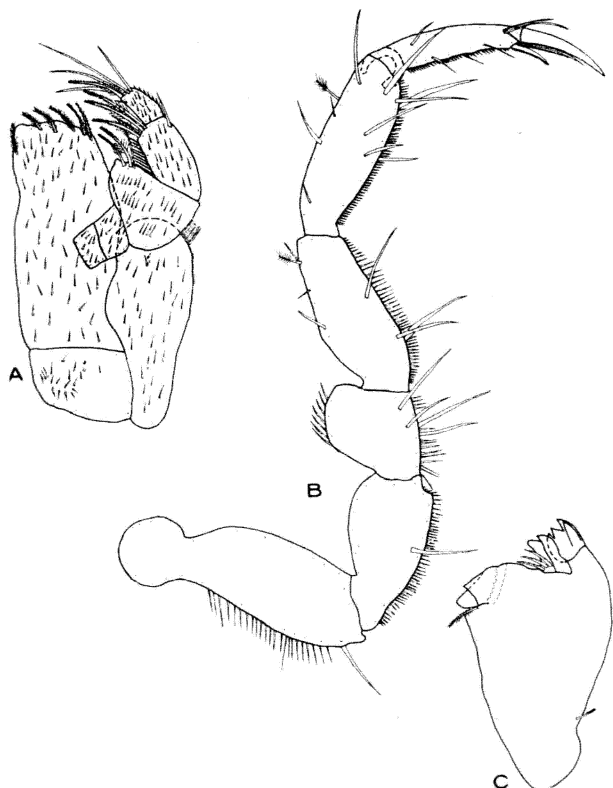


Fig. 7 *Thermoarcturus venezuelensis*: n. sp. A. maxilliped; B. second pereopod; C. mandible.

ADDITIONAL DESCRIPTIVE NOTES: Cephalon with slightly concave frontal margin. First peraeonal somite slightly shorter than cephalon with a pair of lateral and a pair of dorsal tubercles. Second peraeonal somite slightly longer than first with a pair of lateral tubercles and a large dorsal tubercle. Third peraeonal somite one-fourth longer than second with a pair of lateral and very large dorsal tubercles. Fourth peraeonal somite slightly shorter than third with a pair of dorsal tubercles. Fifth peraeonal somite one-half the length of fourth with concave lateral margins and a pair of small dorsal tubercles. Sixth peraeonal somite slightly longer than fifth with convex lateral margins and a pair of dorsal tubercles. Seventh peraeonal somite slightly longer than sixth with a pair of dorsal tubercles. First pleonal somite little more than half the length of seventh peraeonal somite; pair of dorsal tubercles. Terminal pleonal somite four times the length of first pleonal somite with lateral angular expansions near proximal margin; apex pointed. Antenna one extending to distal margin of second article of antenna two

with esthetascs on its apical article. Antenna two with biarticulate flagellum. Maxilliped with five-jointed palp; third article widely expanded. First pereopod less than half as long as second with propodus twice as long as wide and with many stout pectinate setae. Second pereopod long, slender and setose with biunguiculate dactyl; upper unguis two-thirds length of propodus. Seventh pereopod with proximal margin of merus, carpus, propodus and dactylus slightly setose; terminal claw one-half length of propodus. Pleotelson with lateral angular expansions near proximal margin and lesser posterolateral angles near distal margin; apex pointed.

Malacanthura caribbica, n. sp. (Figures 8-9)

SYNONYMS: None.

DIAGNOSIS: *Malacanthura* with pleon and telson pigmented. Antenna one shorter than antenna two

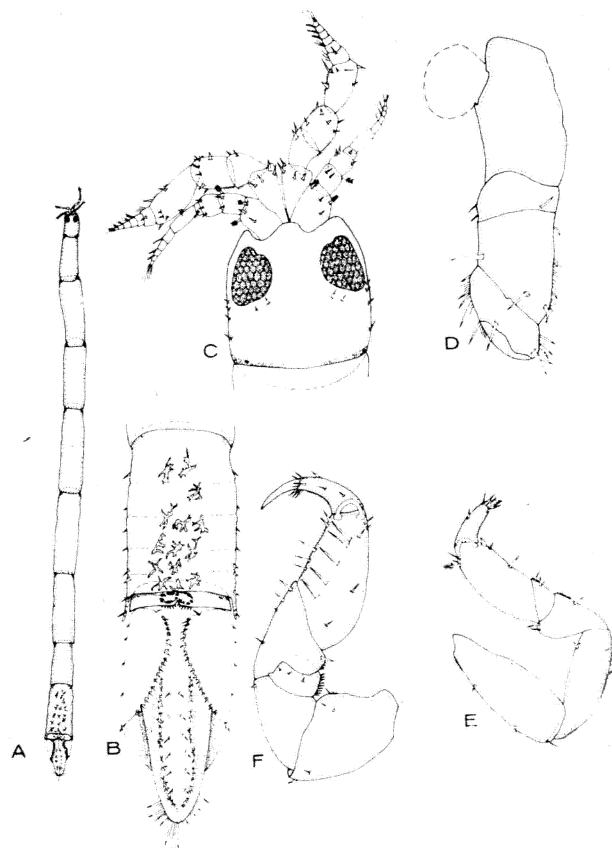


Fig. 8 *Malacanthura caribbica*, n. sp. A. female holotype, length 17 mm, Width 1 mm; B. enlargement of pleon; C. cephalon and antennae; D. maxilliped; E. second pereopod; F. first pereopod.

with five articles in flagellum. Antenna two slightly longer than antenna one, with six articles in flagellum. Eyes large, separated by one eye diameter. Body elongate, about 17 times as long as wide. Exopods of uropods arching over telson. Telson with mid-dorsal carina.

MEASUREMENTS: Female holotype; length 17 mm, width 1.0 mm (U.S.N.M. Cat. N^o 136422). Paratype; length 9.0 mm, width 0.5 mm (U.S.N.M. Cat. N^o 136423).

TYPE LOCALITY: Off Venezuela. 11°03' Lat. N, 64°37.5' Long. W. Depth 95 meters.

DISTRIBUTION: Known from type locality only.

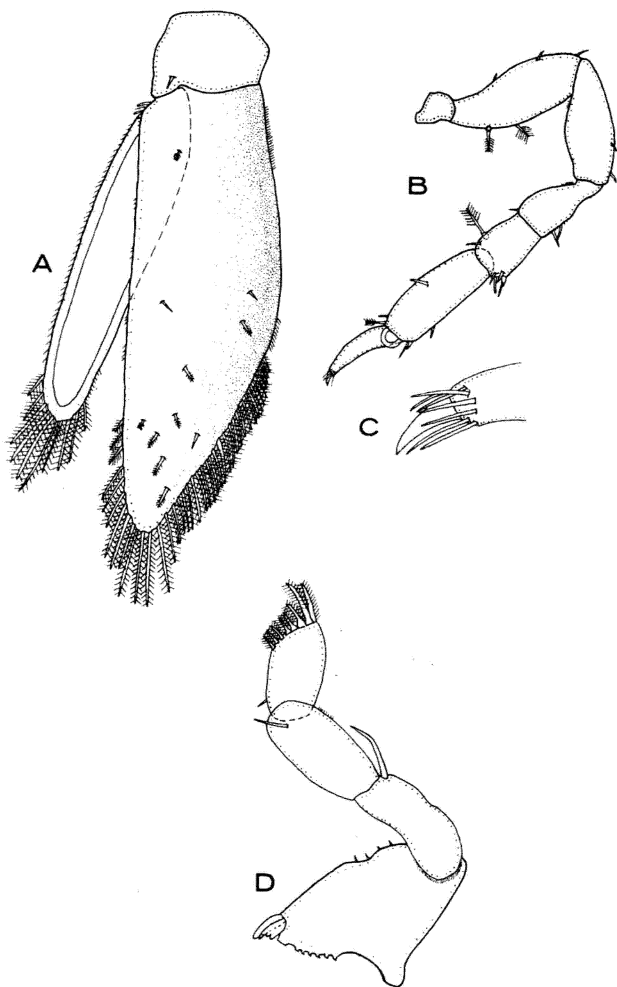


Fig. 9 *Malacanthura caribbica*: n. sp. A. first pleopod; B. seventh pereopod; C. enlargement of apex of seventh pereopod; D. mandible.

ADDITIONAL DESCRIPTIVE NOTES: Cephalon slightly longer than it is wide with frontal margin excavate on each side of short rounded medial point; anterolateral angles strongly produced in acutely rounded lobes extending forward to level of apex. First peraeonal somite about twice as long as cephalon. Second through sixth peraeonal somites sub-equal. Seventh peraeonal somite half as long as sixth. Pleon almost as long as sixth and seventh peraeonal somites together. Pleonal sutures indistinct in dorsal view. Sixth pleonal somite with a middorsal cleft with inner margin of cleft bordered by short setae; posterior margin almost straight on both sides of median cleft. Mandible with palp composed of three articles; first and second subequal; third article is shorter and has eight stout pectinate setae on distal margin. Maxilliped of six articles, apical article reduced. First peraeopod stout with five stout pectinate setae on propodus. Second and third peraeopods with sixth articles cylindrical. Pleopod one operculate. Telson sharply ovate with median dorsal longitudinal ridge. Pigmentation parallels base of ridge. Exopod of the uropod arches over the telson and has a serrated inner margin with short simple setae.

AFFINITIES: This species resembles *Malacanthura cumanensis* described in this paper but can be distinguished by the pigmentation on the pleon and telson, the six jointed maxilliped and by the serrated inner margin of the exopods of the uropod.

Malacanthura cumanensis, n. sp. (Figures 10-11)

SYNONYMS: None.

DIAGNOSIS: *Malacanthura* with pleonal sutures visible only in lateral view. Antenna on with five articles in the peduncle; flagellum of three articles. Antenna two longer than antenna one with six articles in the flagellum. Telson ovate, apex gently rounded with median dorsal longitudinal rounded ridge. Eyes large, separated by two eye diameters. Body elongate. Exopods of uropods arching over telson.

MEASUREMENTS: Female holotype; length 7.5 mm, width 0.35 mm (U.S.N.M. Cat. N^o 136424).

TYPE LOCALITY: Off Venezuela. 11°03' Lat. N, 64°37.5' Long. W. Depth 95 meters.

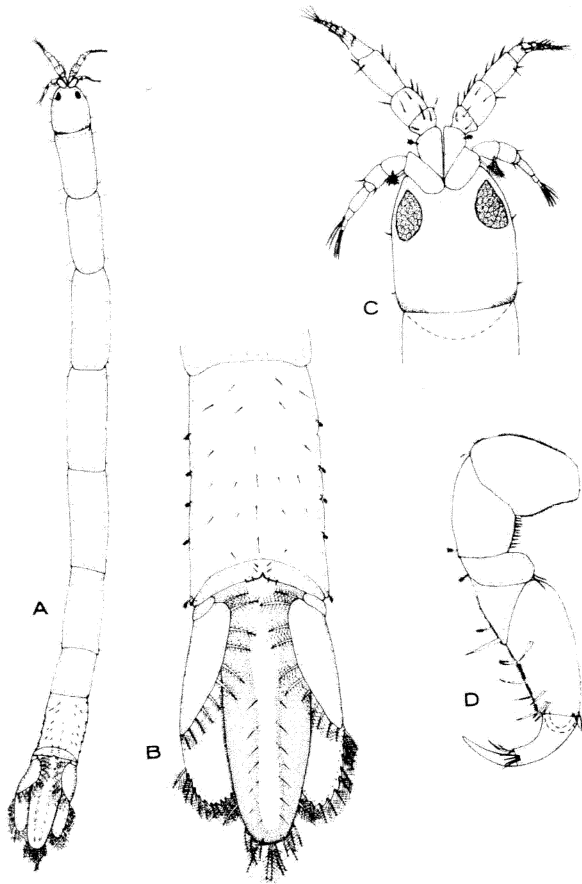


Fig. 10 *Malacanthura cumanensis*: n. sp. A. female holotype, length 7.5 mm, Width 0.35 mm; B. pleon; C. cephalon and antennae; D. first peraeopod.

DISTRIBUTION: Known from type locality only.

ADDITIONAL DESCRIPTIVE NOTES: Cephalon about as long as wide with frontal margin excavate on each side of short sharp medial point. Anterolateral angles strongly produced in acutely rounded lobes extending forward beyond the level of the median. First peraeonal somite longer than cephalon. Second peraeonal somite as long as first. Third through sixth peraeonal somites longer than second and subequal. Seventh peraeonal somite slightly more than half as long as sixth. Pleon three times as long as seventh peraeonal somite. Sixth pleonal somite with a middorsal cleft with inner edge of cleft bordered by small setae; posterior margin concave on both sides of median cleft. Mandible with palp consisting of three articles; first and third subequal, second

article longest; apical article with eight comblike setae on distal margin. Maxilliped with five articles. First peraeopod stout, unguis long, one sensory seta on palmar margin of propodus. Second and third peraeopods with sixth article cylindrical. Exopods of uropods arching over telson, inner margins smooth, with plumose setae. Endopods of uropods not reaching telsonic apex, with serrated distal margin and plumose setae.

AFFINITIES: This species resembles *Malacanthura caribbica* described in this paper but can be distinguished by the lack of pigmentation on the pleon and telson, the five jointed maxilliped and by the serrated margins on the endopods of the uropods and by the much shorter seventh peraeonal somite in relation to the pleonal length.

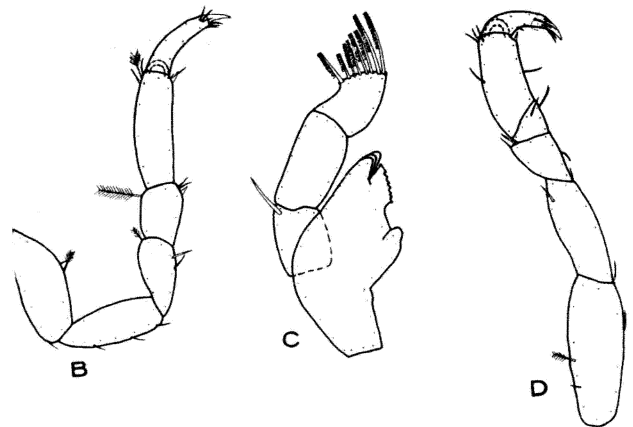


Fig. 11 *Malacanthura cumanensis*: n. sp. A. maxilliped; B. Seventh peraeopod; C. mandible; D. second peraeopod; E. first maxilla.

Haliophasma valeriae, n. sp. (Figures 12-13)

SYNONYMS: None.

DIAGNOSIS: *Haliophasma* with triarticulate flagellum on first antenna. Paired statocysts on pleotelson. Dactylus of first peraeopod with four large teeth on inner margin, the largest of which is almost as large as the unguis. Pleotelson elongate-ovate with a median rounded dorsal ridge. Apical article of three-jointed mandibular palp with three simple setae and one very long comb-like seta.

MEASUREMENTS: Female holotype; length 6.5 mm, width 0.2 mm (U.S.N.M. Cat. N^o 136416).

TYPE LOCALITY: Off Venezuela. 11°03' Lat. N, 64°37.5' Long. W. Depth 95 meters.

DISTRIBUTION: Known from type locality only.

ADDITIONAL DESCRIPTIVE NOTES: Body elongate. Cephalon a little longer than it is wide. First peraeo-

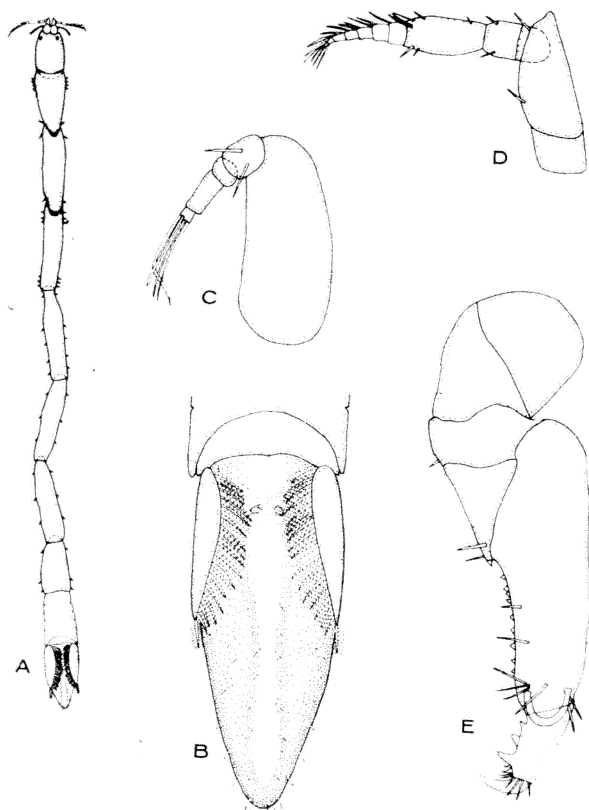


Fig. 12 *Haliophasma valeriae*: n. sp. A. female holotype; length 6.5 mm, Width 0.2 mm; B. enlargement of pleotelson; C. first antenna; D. second antenna; E. first peraeopod.

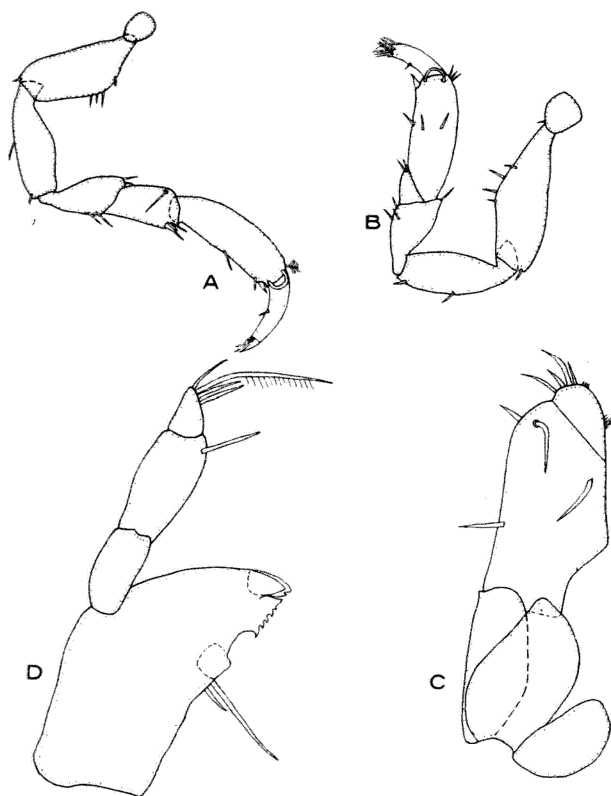


Fig. 13 *Haliophasma valeriae*: n. sp. A. seventh peraeopod; B. second peraeopod; C. maxilliped; D. mandible.

nal somite slightly longer than cephalon and as wide as cephalon but narrows at posterior end. Second through sixth peraeonal somites slightly longer than first and subequal to each other. Seventh peraeonal somite about one-half as long as sixth. Pleon with four lateral incisions indicating partial fusion of first five segments. Basal article of first antenna is almost three times as long as it is broad. Second antenna about twice as long as first; flagellum consists of eight articles. Mandibular palp composed of three articles; second article three times as long as apical article, basal article twice as long as apical article. Maxilliped four jointed; four stout setae and two tufts of small setae on distal article. First peraeopod with elongate propodus; nine triangulate teeth on inner margin. Second peraeopod with stout two-pointed seta on inner distal margin of propodus. Exopods of uropods arching over pleotelson; inner margin smooth with plumose setae.

AFFINITIES: This species differs from all others in the genus, except for *Haliophasma irmae* also describ-

ed in this paper, by the presence of four large spines on the dactylus of the first peraeopod. It differs from *H. irmae* by the absence of a hook-like accessory lobe on the basal article of the first antenna, the smooth inner margin of the exopods of the uropods and by having eight articles in the flagellum of the second antenna.

Haliophasma irmae, n. sp. (Figures 14-15)

SYNONYMS: None.

DIAGNOSIS: *Haliophasma* with an accessory hook-like lobe on the basal article of the first antenna. Paired statocysts on pleotelson. Dactylus of first peraeopod with four large teeth on inner margin; the largest of which is almost as large as the unguis. Pleotelson elongate-ovate with a median dorsal rounded ridge. Palp of mandible composed of three

articles; apical article with four stout setae; second article twice as long as apical article with one stout seta.

MEASUREMENTS: Female holotype; length 10.5mm, width 0.35 mm (U.S.N.M. Cat. N^o 136417).

TYPE LOCALITY: Off Venezuela. 11°03' Lat. N, 64° 37.5' Long. W. Depth 95 meters.

DISTRIBUTION: Known from type locality only.

ADDITIONAL DESCRIPTIVE NOTES: Body elongate. Cephalon slightly longer than it is broad. Eyes large, separated by three eye diameters. First peraeonal somite slightly longer than cephalon, narrowing at posterior. Second and third peraeonal somites longer and narrower than first. Fourth through sixth peraeo-

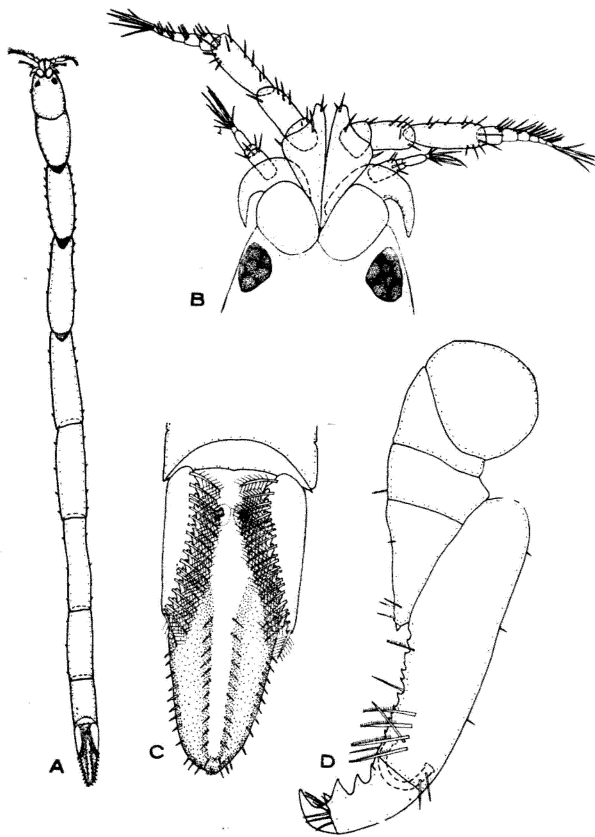


Fig. 14 *Haliophasma irmae*: n. sp. A. female holotype, length 10.5 mm, Width 0.35 mm; B. cephalon and antennae; C. Telson and uropods; D. first peraeopod.

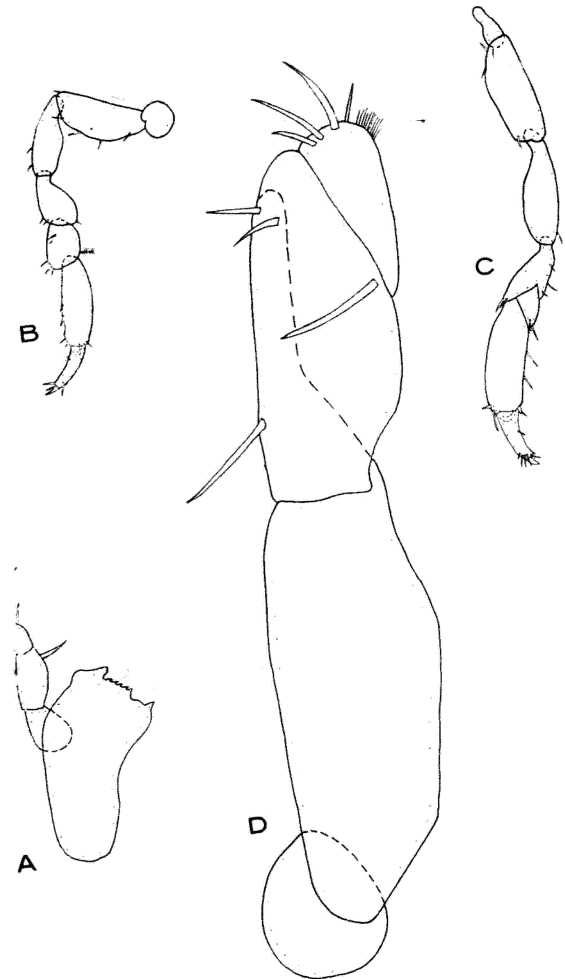


Fig. 15 *Haliophasma irmae*: n. sp. A. mandible; B. seventh peraeopod; C. second peraeopod; D. maxilliped.

nal somites subequal, about as long as third. Seventh peraeonal somite shorter than sixth. Pleon about one-fourth longer than seventh peraeonal somite; four lateral incisions indicating partial fusion of first five segments are visible but only in lateral view. First antenna consists of five-six articles. Second antenna longer than first with five articles in the flagellum. Mandibular palp of three articles; apical article shortest, tipped with three short setae and one long seta. Maxilliped four jointed; apical article has four stout setae and a tuft of small setae on distal margin. First peraeopod with elongate propodus having five comb-like setae near inner margin. Exopod of uropod arches over pleotelson and has serrated proximal margin with plumose setae.

AFFINITIES: This species differs from all others in the genus, except for *Haliophasma valeriae* also described in this paper, by the presence of four large teeth on the dactylus of the first peraeopod. It differs from *H. valeriae* by having the accessory hook-like lobe on the basal article of the first antenna, by having five-six articles in the flagellum of the second antenna and by the presence of a serrated inner margin on the exopod of the uropod. It is possible that these two species belong to a new genus which appears closely related to *Haliophasma* because these two species are the only members of the genus having teeth on the inferior margin of the dactyl of the first legs. The hook-like projection on the peduncle of the first antenna are unique to *H. irmae*.

Haliophasma curri, n. sp. (Figures 16-17)

SYNONYMS: None.

DIAGNOSIS: *Haliophasma* with all somites except the sixth pleonal and pleotelson pigmented. Central areas of peraeonal somites, one, three, four, five, six, and seven are free of pigment. Pleotelson elongate-ovate; apex broadly rounded. Paired statocysts. Exopod of uropod arches over pleotelson; endopod of uropod not reaching pleotelsonic apex. Propodus of first peraeopod broadly expanded.

MEASUREMENTS: Female holotype; length 7.0 mm, width 0.5 mm (U.S.N.M. Cat. N^o 136418) Paratype female; length 7.0 mm, width 0.5 mm (U.S.N.M. Cat. N^o 136419).

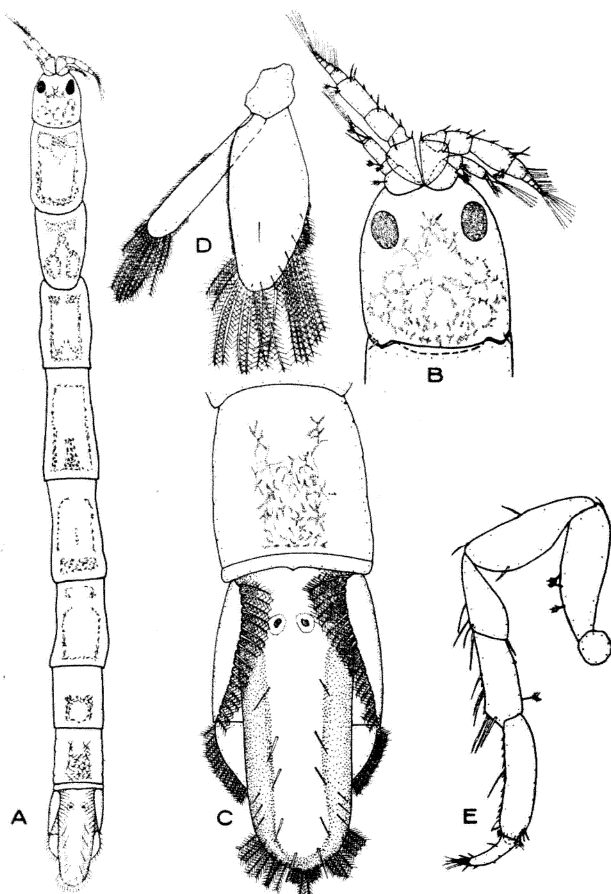


Fig. 16 *Haliophasma curri*: n. sp. A. female holotype, length 7.0 mm, Width 0.5 mm; B. cephalon and antennae; C. telson; D. first pleopod; E. seventh peraeopod.

TYPE LOCALITY: Off Venezuela, 11°03' Lat. N, 64°37.5' Long. W. Depth 95 meters.

DISTRIBUTION: Known from type locality only.

ADDITIONAL DESCRIPTIVE NOTES: Body elongate. Cephalon about as long as it is broad. Eyes large, separated by two eye diameters. First peraeonal somite nearly twice as long as cephalon and as broad. Second peraeonal somite shorter than first, narrowing posteriorly. Third peraeonal somite as long as second and slightly broader. Fourth and fifth peraeonal somites longer than third. Sixth peraeonal somite shorter than fifth. Seventh peraeonal somite shorter than sixth. Pleon with four lateral incisions indicating partial fusion of the first five pleonal segments. Telson twice as long as pleon. First antenna composed of six articles. Second an-

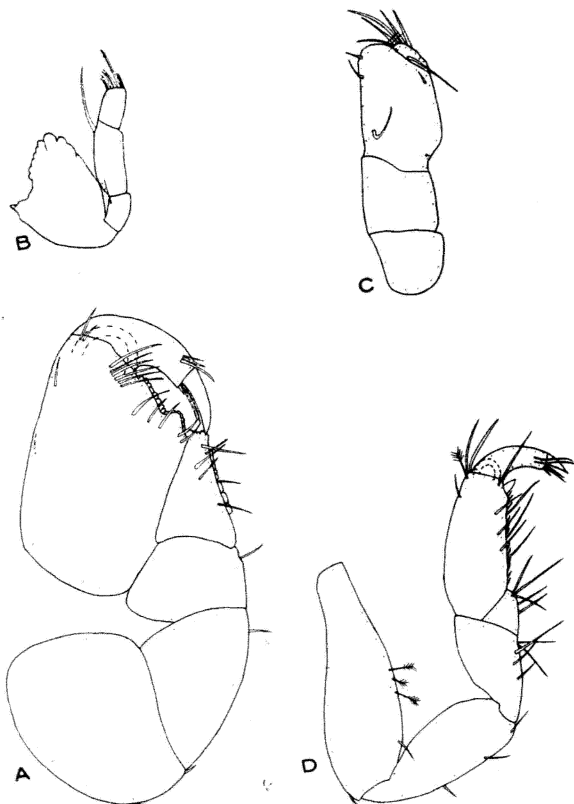


Fig. 17 *Haliophasma curri*: n. sp. A. first pereopod; B. mandible; C. maxilliped; D. second pereopod.

tenna almost twice as long as first, with flagellum of four articles. Mandibular palp composed of three articles; the first and third are subequal, the second article is twice as long as the others with one long stout seta. Maxilliped of five articles; the small apical article has five setae on distal margin. First pereopod very stout with tooth-like scales on the palmar margin of the greatly expanded propodus. Second pereopod with large tooth-like spine on the inner distal margin of the propodus. First pleopod is operculiform. Exopod of uropod arches over pleotelson and has serrated inner margin with plumose setae. Distal margin of endopod of uropod smooth with plumose setae. Pleotelson spatulate with broad raised middorsal longitudinal ridge.

AFFINITIES: This species resembles *Haliophasma geminata* MENZIES AND BARNARD, but differs in having only one broad median carina on the pleotelson and in the pattern of pigmentation; the maxilliped has one more article and the proportions of the articles of the mandibular palp are different.

REMARKS: This species is named in honor of the late director of the Instituto Oceanográfico, Universidad de Oriente, Dr. RAFAEL CURRA who assisted this study.

Paranthura barnardi, n. sp. (Figures 18-19)

SYNONYMS: None.

DIAGNOSIS: *Paranthura* with first antenna composed of eight articles; the apical one minute. Second antenna with articles compressed. Pleonal somites distinct. Mouth parts modified for piercing and sucking. Exopod of uropod arching over telson, each exopod extending inward past midline. Apex of endopod of uropod extending to apex of telson.

MEASUREMENTS: Female holotype; length 6.0 mm, width 0.5 mm (U.S.N.M. Cat. N^o 136425). Paratype: length 2.5 mm, width 0.3 mm (U.S.N.M. Cat. N^o 136426).

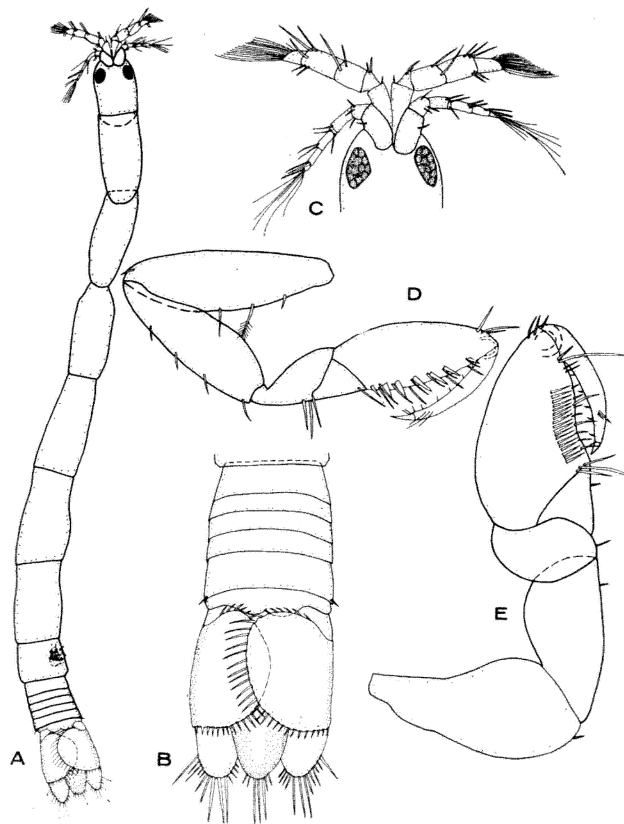


Fig. 18 *Paranthura barnardi*: n. sp. A. female holotype, length 6.0 mm, Width 0.5 mm; B. pleon; C. antennae; D. second pereopod; E. first pereopod.

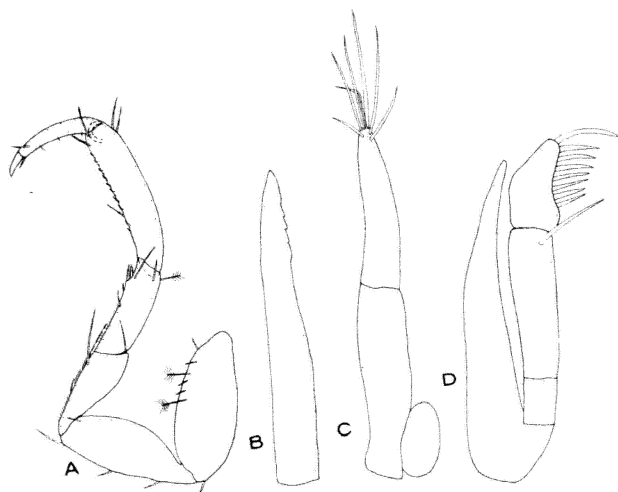


Fig. 19 *Paranthura barnardi*: n. sp. A. seventh pereopod; B. first maxilla; C. maxilliped; D. mandible.

TYPE LOCALITY: Off Venezuela. 11°03' Lat. N, 64° 37.5' Long. W. Depth 95 meters.

DISTRIBUTION: Known from type locality only.

ADDITIONAL DESCRIPTIVE NOTES: Body elongate, about 12 times as long as it is wide. Cephalon with frontal margin excavate on each side of small median point. Eyes large, separated by two eye diameters. First pereaeonal somite longer than cephalon and as wide. Second pereaeonal somite as long as first, narrowing posteriorly. Third pereaeonal somite as long as second, narrow at anterior margin. Fourth pereaeonal somite slightly longer than third. Fifth and sixth pereaeonal somites slightly shorter than fourth and subequal. Seventh pereaeonal somite about one-half the length of sixth. Pleon about as long as the sixth and seventh pereaeonal somites together. First antenna composed of seven articles. Second antenna composed of five articles; the third, fourth and fifth subequal and compressed. Mandible with lancet like incisive process extending slightly below apex of three jointed palp; comb of eight stout setae on third palpal joint, single stout seta on second palpal joint. First maxilla spear like with serrated inner apical margin. Maxilliped of three (two free) articles. First pereopod stout with palmar margin of expanded propodus slightly concave and subtended by a comblike row of stout setae. Second pereopod with seven toothlike spines on palmar margin of propodus. Seventh pereopod with ten flat spines

on palmar margin of propodus. Pleopod one operculiform. Exopods of uropods ovate with somewhat crenulated setose inner margins. Endopods of uropods crenulate at distal margins, setose.

AFFINITIES: This species resembles *Paranthura ostergaardi* MILLER and MENZIES but can be distinguished by the broadly ovate uropodal exopods which overlap the middorsal line, by the absence of a minute apical article on the maxillipedal palp and by the subparallel margins of pleon which in *P. ostergaardi* taper towards the paeon.

REMARKS: This species is named in honor of Dr. K. H. BARNARD.

Apanthura signifera, n. sp. (Figures 20-21)

SYNONYMS: None.

DIAGNOSIS: *Apanthura* with eyes present. Paired statocysts on pleotelson. First three pleonal sutures dorsally distinct; suture between fourth and fifth somites distinct in lateral view only. Telson ovate, apex pointed. Exopod of uropod arching over pleotelson; endopodal apex extends past pleotelsonic apex.

MEASUREMENTS: Female holotype; length 5.0 mm, width 0.4 mm, (U.S.N.M. Cat. N^o 136420) Paratype; length 4.0 mm, width 0.3 mm (U.S. N.M. Cat. N^o 136421).

TYPE LOCALITY: Off Venezuela. 11°03' Lat. N, 64° 37.5' Long. W. Depth 95 meters.

DISTRIBUTION: Known from type locality only.

ADDITIONAL DESCRIPTIVE NOTES: Body elongate; about ten times as long as wide. Cephalon longer than wide with short rounded medial margin. Eyes small, separated by four eye diameters. First pereaeonal somite slightly shorter than cephalon. Second through seventh pereaeonal somites broader than first somite and cephalon. Second through sixth pereaeonal somites slightly longer than first and subequal. Seventh pereaeonal somite about three-fourths as long as sixth. Pleon more than twice as long as seventh pereaeonal somite and narrower. First three pleonal somites completely free and subequal. Fourth pleonal somite about as long as third and partially fused dorsally to fifth pleonal somite which is twice as

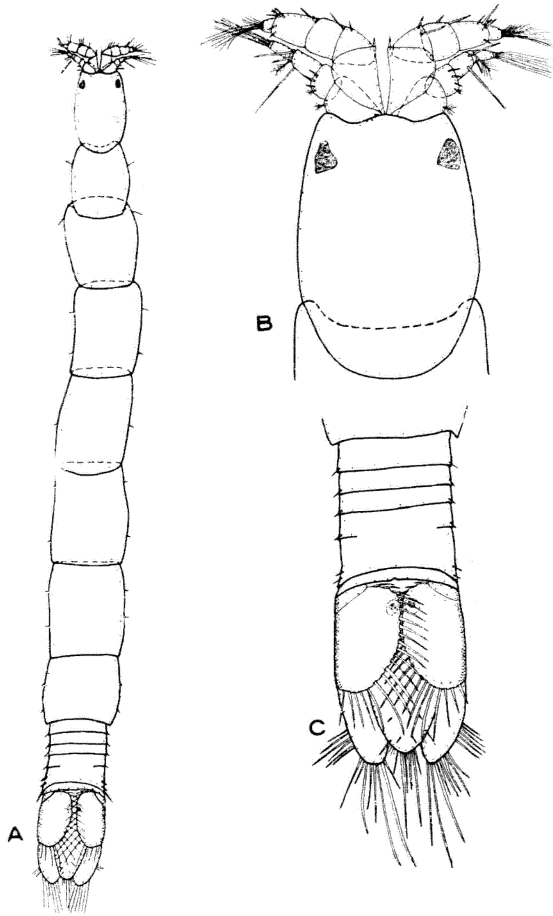


Fig. 20 *Aphantura signifera*: n. sp. A. female holotype, length 5.0 mm, Width 0.4 mm; B. cephalon and antennae; C. enlargement of pleon.

long as fourth. First antenna slightly shorter than second, composed of six articles. Second antenna with four articles in peduncle and three in flagellum; the distal two very small. Mandibular palp composed of three articles; second article with two very long setae near distal margin. Maxilliped of five articles, apical article smallest and tipped with four setae. First peraeopod stout subchelate, unguis as long as dactylus. Second peraeopod smaller than first subchelate, unguis one-fifth as long as dactylus. Fifth to seventh peraeopods with fifth joint overriding sixth. Seventh peraeopod about as long as second and narrower. Exopods of uropods arching over telson; medial margins crenulate with simple setae. Apex of endopods of uropods extending past apex of pleotelson; margins smooth.

AFFINITIES: This species may be distinguished from *Aphantura magnifica* MENZIES and FRANKENBERG by the lack of a notch on the exopod of the uropod; by the two long setae on the second article of the mandibular palp and by the presence of three setae on the apical article of the mandibular palp. It differs from *Aphantura signifera* MENZIES and GLYNN by the lack of pigmentation; antenna one having six articles instead of five; crenulate margin of the exopod of the uropod instead of smooth and the presence of small spines on the dactylus of the seventh peraeopod. In *A. signifera* spines are lacking.

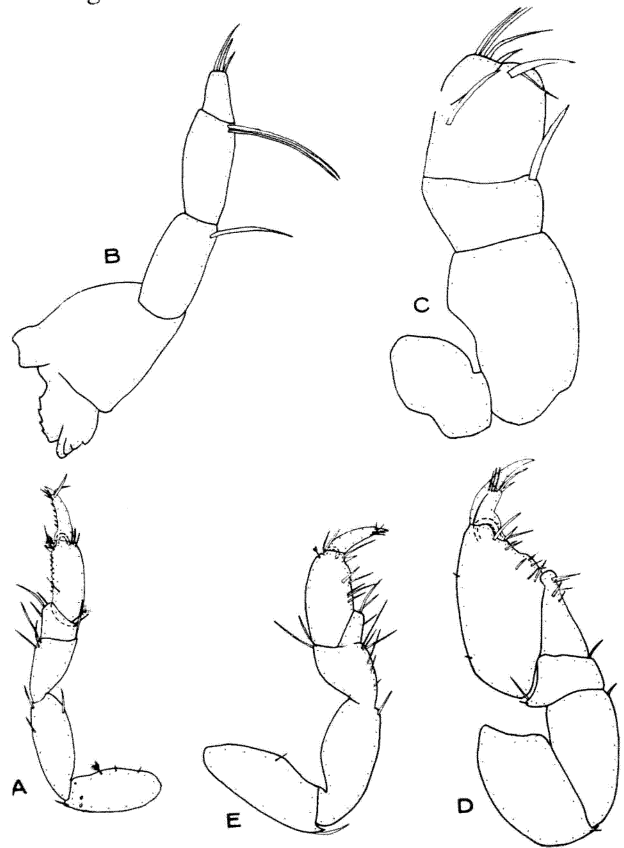


Fig. 21 *Aphantura signifera*: n. sp. A. seventh peraeopod; B. mandible; C. maxilliped; D. first peraeopod; E. second peraeopod.

Gnathia beethoveni, n. sp. (Figures 22-24)

SYNONYMS: None.

DIAGNOSIS: *Gnathia* with body about three times as long as wide. The third free segment of the pe-

raeon slightly constricted. Center of frons deeply concave with two dorsolateral projections between mandibulae. Inner face of mandibles with six small teeth and one large apical tooth.

MEASUREMENTS: Male holotype; length 3.0 mm, width 1.0 mm (U.S.N.M. Cat. N^o 136430).

TYPE LOCALITY: Off Venezuela. 11°03' Lat. N, 64° 37.5' Long. W. Depth 95 meters.

DISTRIBUTION: Known from type locality only.

ADDITIONAL DESCRIPTIVE NOTES: Body and pleon paucisetiferous, lacking tubercles. Cephalon slightly longer than wide; frons produced at an angle between mandibles. Eyes present, black, located at convex lateral margins. Third and fourth peraeonal somites (first and second free) subequal; lateral areas project slightly forward. Fifth peraeonal somite (third free) slightly longer than fourth and

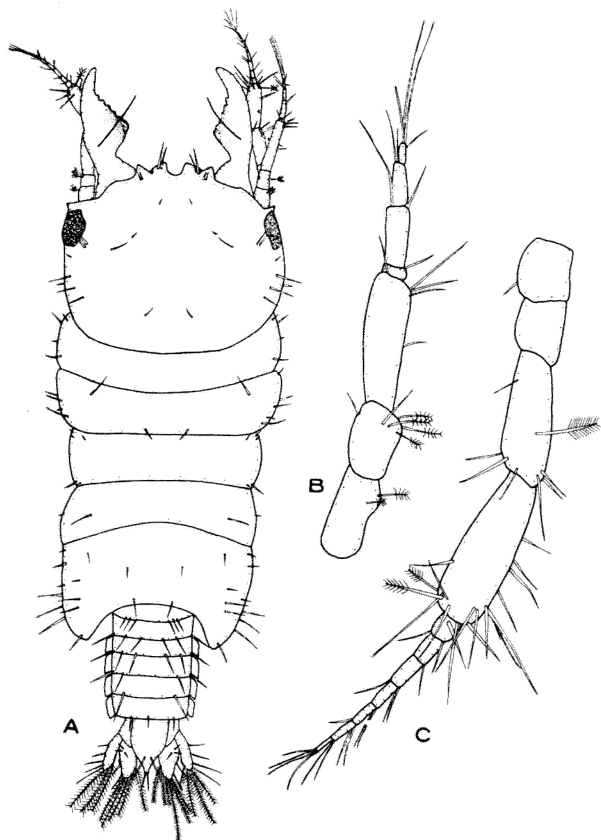


Fig. 22 *Gnathia beethoveni*: n. sp. A. male holotype, length 3.0 mm, Width 1.0 mm; B. first antenna; C. second antenna.

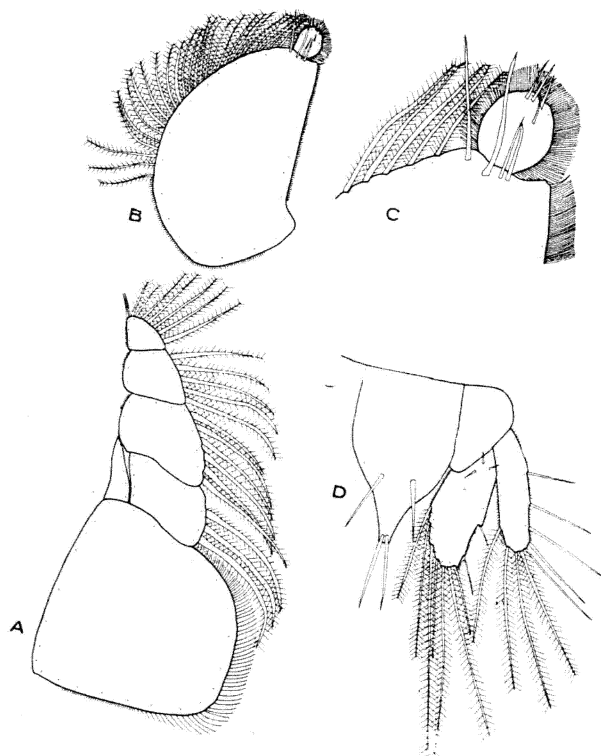


Fig. 23 *Gnathia beethoveni*: n. sp. A. maxilliped; B. pyloped; C. enlargement of apex of pyloped; D. telson and uropod.

constricted. Sixth peraeonal somite (fourth free) slightly shorter than fifth and broader. Seventh peraeonal somite (fifth free) about twice as long as sixth; postero-lateral angles well produced. Third, fourth, fifth, and sixth pleonal somites with coxal plates. Antenna one with seven articles, first slightly longer than second, third article three times as long as second and longer than all others. Antenna two with peduncle of four articles flagellum of seven articles. Mandible with a long seta on dorsum. Maxilliped with four articles to palp. Pyloped biarticulate, last article small. Peraeopods without tubercles. First peraeopod with stout seta on distal end of inferior margin of propodus. Endopods of uropods extending beyond apex of telson.

AFFINITIES: In general body shape this species is allied to *Gnathia calamitosa* MONOD but is distinguished by the median concavity of the frons and the lack of tubercles. In frons structure it is quite similar to *Gnathia margaritarum* MONOD from which it differs in having a slightly constricted fifth

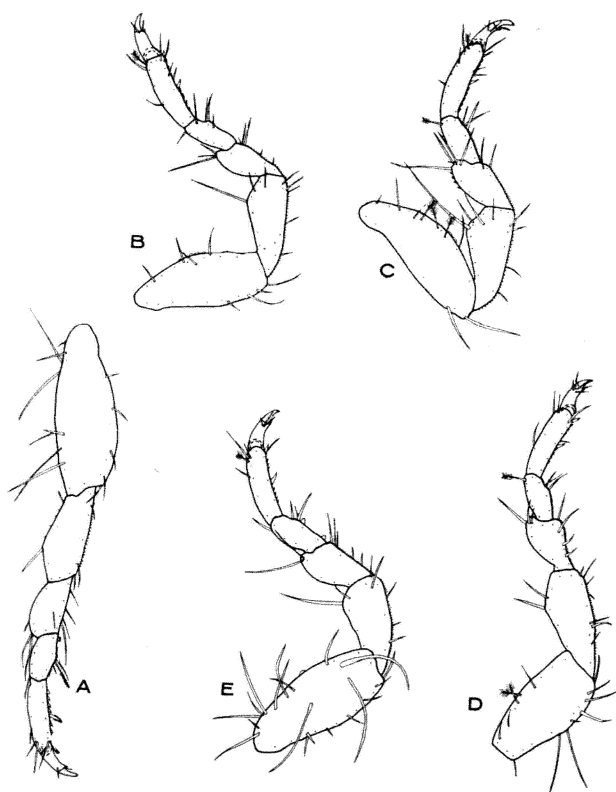


Fig. 24 *Gnathia beethoveni*: n. sp. A. first pereopod; B. fourth pereopod; C. fifth pereopod; D. third pereopod; E. second pereopod.

peraeonal somite (third free) and lack of tubercles on the pereopods. It is possible that the two are twin species with *G. margaritarum* in the Pacific side of Panama and *G. beethoveni* in the Caribbean. Both are subtidal species.

Eurycope cariacensis, n. sp. (Figures 25-26)

SYNONYMS: None.

DIAGNOSIS: *Eurycope* with a broad, blunt frontal area about one-third the width of cephalon. Pleon without spines or incisions, apex bluntly rounded. Peraeonal somites five and six completely free, not fused. Uropoda biramous, exopod about one-half the length of endopod.

MEASUREMENTS: Female holotype; length 2.0 mm, width 0.75 mm (U.S.N.M. Cat. N^o 136428). Paratypes; range of lengths, 1.0-1.5 mm, widths 0.24-0.5 mm (U.S.N.M. Cat. N^o 136429).

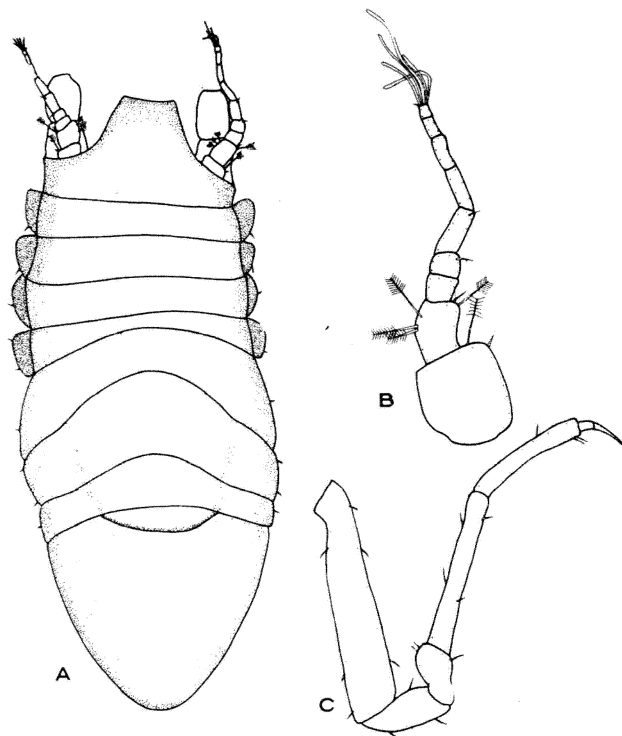


Fig. 25 *Eurycope cariacensis*: n. sp. A. female holotype, length 2.0 mm, 0.75 mm; B. first antenna; C. first pereopod.

TYPE LOCALITY: Off Venezuela. 11°03' Lat. N, 64°37.5' Long. W. Depth 95 meters.

ADDITIONAL DESCRIPTIVE NOTES: Cephalon large, deeply emarginate on either side of blunt frontal area. First three peraeonal somites short, subequal, with coxal plates. Fourth peraeonal somite less than one-half as long as third; posterior margin convex; with coxal plates. Fifth peraeonal somite about three times as long as fourth, anterior and posterior margins convex. Sixth peraeonal somite twice as long as fifth, anterior and posterior margins convex. Seventh peraeonal somite slightly more than one-half as long as sixth, anterior and posterior margins convex. Pleon of two somites; first with lateral margins enclosed by second. Antenna one composed of nine articles; apical article with five esthetascs. Second antennae missing except for first two (three?) articles; distal margin of second article reaches to distal margin of sixth article of antenna one. Maxillipedal palp composed of five articles, last subequal in length and much narrower than second article; apical article with four setae on distal margin. First peraeo-

pod slender; basis longest article. Second pereopod slender, about one-third longer than first; propodus longest article. Third pereopod slender, longer than second, propodus longest article. Exopod of uropod about one-third the width and one-half the length of endopod.

AFFINITIES: In general body shape and the presence of two pleonal somites this species resembles *Eurycope frigida* VANHOFFEN but it differs in having pereaeonal somites six and seven completely separated and in the shape of the rostrum. This species also resembles *Eurycope complanata* BONNIER and can be distinguished by the two pleonal somites, the broadness of the frontal projection of the cephalon and the narrowness of the seventh pereaeonal somite. In *E. complanata* the front is narrower and the seventh pereaeonal somite is twice as long as the sixth.

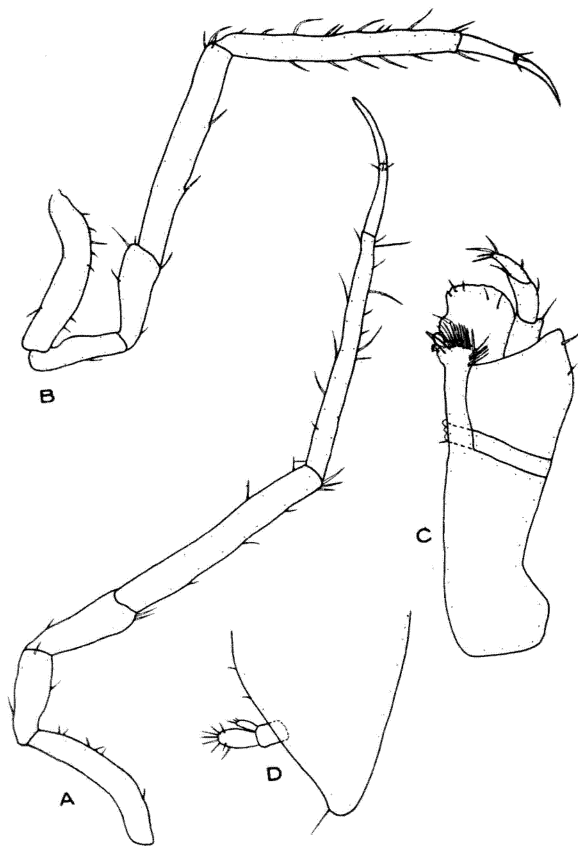


Fig. 26 *Eurycope cariacensis*: n. sp. A. third pereopod; B. second pereopod; C. maxilliped; D. lateral view of telson, showing uropoda.

Astacilla lasallae, n. sp. (Figures 27-28)

SYNONYMS: None.

DIAGNOSIS: *Astacilla* with many tubercles on body. First pereaeonal somite fused to cephalon. Fourth pereaeonal somite (third free) four times as long as wide. Three completely separated pleonal somites. Terminal pleonal somite with lateral angular expansions near proximal margin and lesser postero-lateral angles near distal margin; apex pointed.

MEASUREMENTS: Female holotype; length 3.5 mm, width 0.25 mm (U.S.N.M. Cat. N^o 136415). **TYPE LOCALITY:** Off Venezuela. 11°03' Lat. N, 64°37.5' Long. W. Depth 95 meters.

DISTRIBUTION: Known from type locality only.

ADDITIONAL DESCRIPTIVE NOTES: Cephalon and first fused pereaeonal somite together about twice as long as wide. Anterolateral projections on frons

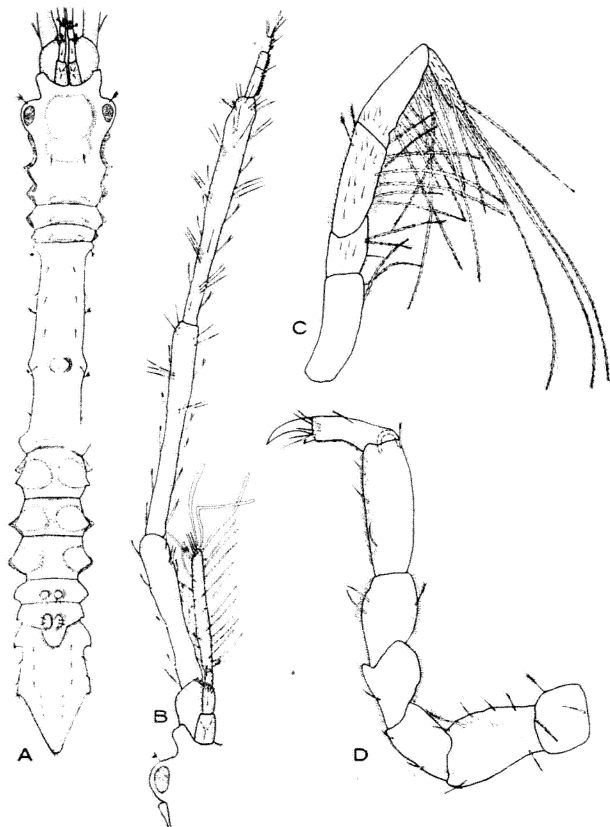


Fig. 27 *Astacilla lasallae*: n. sp. Without antennae. A. female holotype, length 3.5 mm, Width 0.25 mm; B. antennae; C. first pereopod; D. seventh pereopod.

bluntly produced on either side of small median point and extending well forward of median projection. Eyes black, strongly projected with small plumose seta projecting anteriorly near front margin of eye. Large median tubercle on cephalon about one-half as long as cephalon; small median tubercle at posterior margin of first fused peraeonal somite. Second and third peraeonal somites short and subequal with median tubercle at posterior margin of both and lateral tubercle on second only. Fourth peraeonal somite with three lateral irregularities, two median dorsal tubercles between the second lateral tubercles and one transverse median tubercle

medially to end in rounded apex. Pleotelson over twice as long as second pleonal somite with marginal and dorsal setae. Antenna one composed of five articles; fourth article reduced, fifth article reaching almost to distal margin of second article of second antenna; many esthetascs on article. Second antenna as long as body; peduncle of four articles, flagellum of four articles, the fourth being a claw. Maxilliped with palp of five articles; first article reduced, second, third and fourth subequal and apical article a little shorter than fourth. Epipodite of maxilliped with setose margin and two long sensory setae. First peraeopod of filter-type, non-ambulatory, slender with many very long plumose setae. Seventh peraeopod biunguiculate with large claw about two-thirds length of dactylus and three times as long as inferior claw.

AFFINITIES: This species resembles *Astacilla kerguelensis* VANHOFFEN but can be distinguished from it by the prominent lateral tubercle on the cephalon and first fused peraeonal somite; by the three lateral tubercles on the fourth peraeonal somite and by the posterior mediodorsal projection on the second pleonal somite.

Serolis mgrayi MENZIES and FRANKENBERG
(Figures 29-30)

SYNONYMS: *S. mgrayi* MENZIES and FRANKENBERG 1966, p. 31-32, Figure 12.

DIAGNOSIS: *Serolis* with biramous uropoda; rami flattened subequal in length. Coxal areas of peraeonal somites not extending beyond apex of pleotelson. First and second antennae subequal in length. Uropoda extending slightly beyond apex of pleotelson. Dorsum of cephalon with two spinelike tubercles on midline. All peraeonal somites except fifth bear a median tubercle at posterior margin; second through fourth peraeonal somites with a spine-like tubercle at posterolateral corner.

MEASUREMENTS: Specimen drawn; length 4.0 mm, width 3.0 mm. Range of 114 specimens; length 1.5-4.0 mm, width 0.5-3.0 mm (U.S.N.M. Cat. No 111071).

TYPE LOCALITY: Off Georgia. 31°20'22" Lat. N, 80°00'26" Long. W.

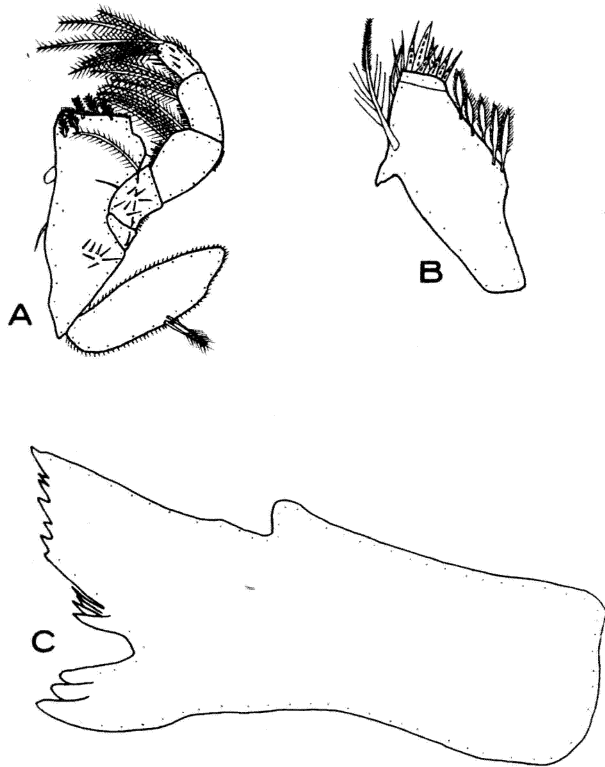


Fig. 28 *Astacilla lasallae*: n. sp. A. maxilliped; B. first maxilla; C. mandible.

between the third lateral tubercles at posterior margin of segment. Fifth, sixth and seventh peraeonal somites subequal, each with enlarged dorsolateral tubercles. First pleonal somite about one-half the length of seventh peraeonal somite and with lateral and two small dorsomedial tubercles. Second pleonal somite about as wide as first but extended posterior-

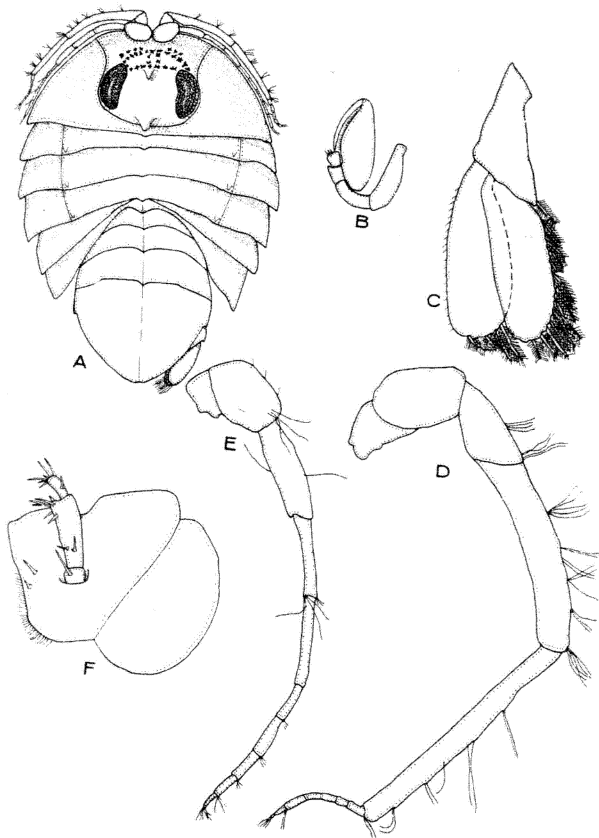


Fig. 29 *Serolis mgrayi* Menzies and Frankenberg. A. whole animal, male length 4.0 mm, Width 3.0 mm; B. first pereopod; C. uropod; D. second antenna; E. first antenna; F. maxilliped.

DISTRIBUTION: Type locality. Present record 11° 03'N, 64°37.5'W.

ADDITIONAL DESCRIPTIVE NOTES: Body very much flattened, nearly as broad as long. Cephalon almost as broad as long and deeply set in first peraeonal segment. Eyes large, oval, composite, set in the posterolateral angles of the cephalon. The lateral portions of the first peraeonal somite are widely expanded and enclose the lateral border of the cephalon. Second through sixth peraeonal somites are free with lateral parts widely expanded and subequal. Seventh peraeonal somite lacking in dorsal view. Pleon composed of four segments; the first three are short and subequal in length; lateral parts of the first two are covered by the widely produced lateral parts of the sixth peraeonal somite. Last pleonal somite is large and somewhat triangular in shape. Peduncle of first antenna composed of five articles; flagellum

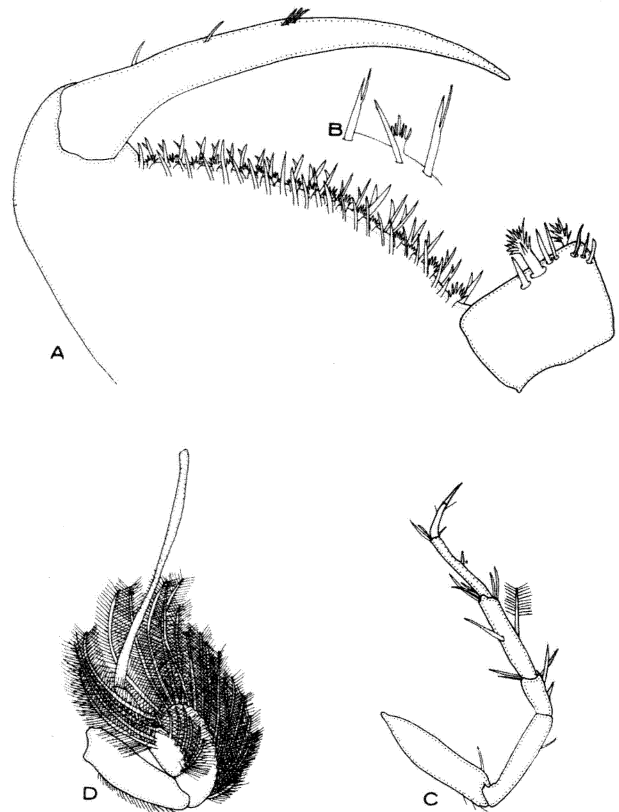


Fig. 30 *Serolis mgrayi* Menzies and Frankenberg. A. first pereopod, enlargement of palm and unguis; B. enlargement of palmar margin, first pereopod; C. seventh pereopod; D. second pleopod, with appendix masculina.

of seven articles. Peduncle of second antenna composed of five articles; flagellum of five articles. Palp of the mandible composed of three articles. Maxillipedal palp composed of three articles. Propodal palm of first pereopod with many simple setae, two-pointed setae and complex flat digitate setae. Seventh pereopod slender; dactylus and unguis together almost as long as propodus. Mesial margins of exopod and endopod of uropods somewhat crenulate with plumose setae.

AFFINITIES: MENZIES and FRANKENBERG (1966) point out that except for the lateral spine-like tubercles on peraeonal somites two through four, this species resembles *Serolis carinata*. This Venezuelan collection differs from the Georgia population in the lack of feather-like setae on the outer distal margin of the fourth article of the seventh pereopod. The significance of this difference is unknown at this time.

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(Manuscrito recibido el 25 de mayo de 1971)