Pacific Science (1974), Vol. 28, No. 4, p. 401–422
Printed in Great Britain

# On the Systematics of *Ancinus* (Isopoda, Sphaeromatidae), with the Description of a New Species from the Tropical Eastern Pacific[1]

PETER W. GLYNN[2] AND CARMEN S. GLYNN[2]

ABSTRACT: Recent quantitative sampling of sandy beaches in Central America revealed that species in the sphaeromatid genus *Ancinus* are abundant and widespread at low latitudes. *Ancinus panamensis* n. sp. is described from the Pacific coasts of Panama and Colombia and compared with *A. brasiliensis* Lemos de Castro from the Caribbean coasts of Panama and Costa Rica. The morphology and color polymorphism of the Panamanian species are illustrated in detail. Study of all known species in the genus indicated the existence of at least four and probably five distinct species in the New World. A key to these species is presented.

A RECENT COMPARATIVE STUDY of the sand beach faunas of Panama has shown that sphaeromatid isopods in the genus *Ancinus* are often present in great numbers on both Pacific and Caribbean shores (Dexter 1972). The Pacific species of *Ancinus* (referred to by Dexter [1972] as *Ancinus* sp. A) was found to rank second in abundance of all the macroscopic animals sampled, with a mean density of 102.6 individuals/m²; the Caribbean species (*Ancinus* sp. B) was the most abundant animal present, with a mean density of 80.3 individuals/m². Subsequent sampling by Dexter (personal communication) and ourselves elsewhere in Central America and Colombia indicated that these species are numerically important at several localities and have probably gone unrecognized for so long because of the lack of fine quantitative sampling on the sand beaches in this region.

*Ancinus* is presently known only from the New World. *Bathycopea*, a closely related genus, contains deep-living species in both European (North Atlantic) (Tattersall 1906) and western North American (Menzies and Barnard 1959, Loyola e Silva 1971, Schultz 1973) waters. Five species of *Ancinus* have been described as follows: the Atlantic species are *Ancinus depressus* (Say 1818) from the eastern and Gulf coasts of the United States and *A. brasiliensis* Lemos de Castro 1959, from Brazil; the Pacific species include *A. granulatus* Holmes & Gay 1909, *A. daltonae* Menzies & Barnard 1959 (recently placed in *Bathycopea*, see below), and *A. seticomvus* Trask 1970, from the California coast. Loyola e Silva (1971) synonymized *A. granulatus* and *A. brasiliensis* with *A. depressus* and transferred *A. daltonae* to the genus *Bathycopea*. The synonymy of *Ancinus* was based mainly on the appearance of the pleotelsonal apex, which Loyola e Silva (1971) concluded is due to the viewing position and is, therefore, nothing more than a form of intraspecific variation. Schultz (1973) did not agree with this conclusion and asserted that better criteria would probably be found to show the distinctness of the three species. Schultz (1973) did conclude, however, that *Ancinus seticomvus* is a junior synonym of *A. granulatus*. These conflicting views indicate some of the current difficulties encountered in this group.

In our study a detailed comparison was made of the morphology and color polymorphism in the allopatric populations of *Ancinus* in Panama in order to provide new data for the evaluation of species in this group. Large samples of live and preserved material were examined from several different populations (Fig. 1). Many individuals of different size and sex were dissected and measured quantitatively. The results of this analysis are comparad critically with collections of all known species of *Ancinus*. We offer evidence here that the tropical Pacific

[1] Research supported by Smithsonian Research Foundation grant no. 436130. Manuscript received 9 November 1973.
[2] Smithsonian Tropical Research Institute, P.O. Box 2072, Balboa, Canal Zone.

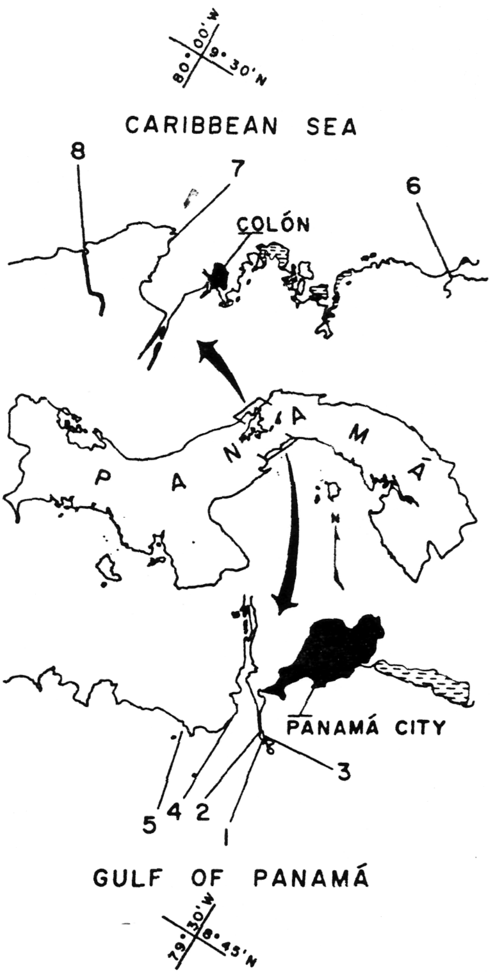


FIG. 1. Principal collecting localities on the Pacific and Caribbean coasts of Panama. *1*, type locality for *Ancinus panamensis* n. sp., sand beach between Naos and Culebra islands; *2*, *3*, beaches on Naos Island; *4*, Palo Seco leprosary; *5*, Venado Beach; *6*, María Chiquita; *7*, Shimmey Beach; *8*, San Lorenzo. Note the difference in orientation of the large-scale maps.

*Ancinus* is a new species and that the Caribbean species belongs to *A. brasiliensis*. Further, our results corroborate Schultz (1973) in his opinion that *A. granulatus*, *A. depressus*, and *A. brasiliensis* are separate species. However, we cannot accept Schultz's conclusion that *A. seticomvus* is a junior synonym of *A. granulatus*. The status of *A. seticomvus* is problematical and will require further study.

It is a pleasure to acknowledge the numerous donations of material made by D. M. Dexter and her constant help and interest in thi
Material was also kindly provided b
Bowman, C. E. Dawson, and M. L.
We thank G. A. Schultz for making avail
manuscript on *Ancinus* and both G. A.
and T. E. Bowman for their critical
of the manuscript. Assistance in the fie
laboratory was provided by A. Velarde.
we express our gratitude for the enco
ment and assistance offered by I. Rubi

*Ancinus* belongs to the section An
the group Platybranchiatae (erected by H
1905). Some of the more important
teristics of the platybranchiate sphaero
include: (*a*) absence of transverse bra
folds on $Plp^4$ and $Plp^5$, (*b*) exopods of P
$Plp^5$ are unjointed, (*c*) exopod of Pl
squamiferous protuberances in sligh
and (*d*) pleotelson usually without a
slit or foramen. Among some of the disti
ing features of the Ancinini may be no
Md without molar process, (*b*) pereopod
chelate in both sexes, and (*c*) pereopod
hensile in male, ambulatory in female.

## Genus *Ancinus* Milne Edwards 1840

### *Type Species*

*Naesa depressa* Say 1818. *Ancinus*
(Say, 1818) Milne Edwards 1840.

### *Diagnosis*

Cephalon fused with pereonite 1; $Mx^1$
degenerate; $Mx^2$ composed of two lobe
mera directed downward; pleonite 1
very small suture on each side; $Plp^1$ uniram
$Plp^3$ exopod uniarticulate; uropod wi
exopod, basipod not widened laterally
breviated from Loyola e Silva 1971).

### *Remarks*

*Bathycopea* can be distinguished on the
of the following characters: $Mx^2$ compos
three lobes; epimera expanded laterally;
nite 1 with two sutures on each side, the
terior pair well developed; $Plp^1$ biramous;
exopod biarticulate; uropodal basipod wid
laterally (Loyola e Silva 1971).

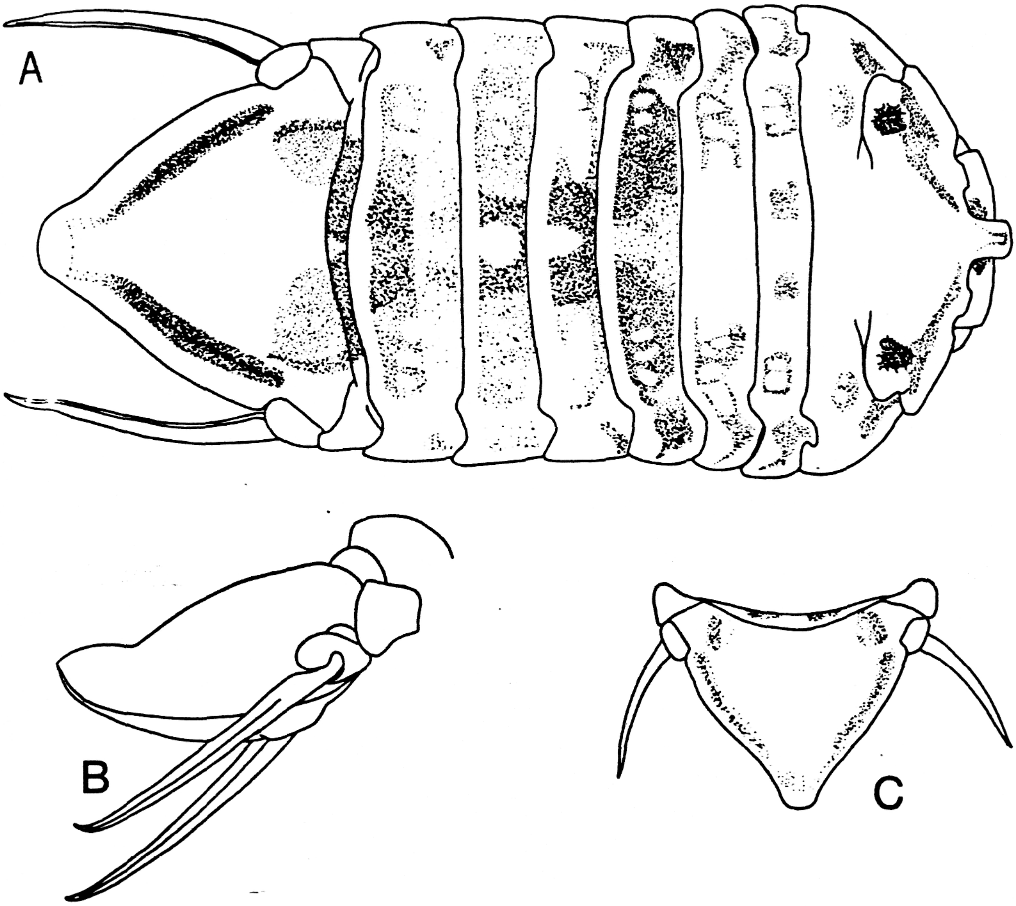


FIG. 2. *Ancinus panamensis* n. sp. *A*, dorsal view, male holotype, length 4.29 mm, width 2.05 mm; *B*, pleotelson, later ' view of holotype; *C*, pleotelson, dorsal view of female allotype, length 2.89 mm, width 1.41 mm.

3541

### *Ancinus panamensis* n. sp.

Figs. 2, 3, 4, 5, 6

*Diagnosis*

Cephalon narrower than pereonites; frontal margin of cephalon and pereonite 1 broadly rounded. Sutures separating cephalon and pereoni 1 reach medially only to about halfway bet een eye and rostrum. Rostrum anterior margin smooth. Pereonites 1–3 broadest, pereonites 4–7 narrower and subequal in width. Lateral margins of pereonites and epimera smooth, without ridges. Lateral margins and apex of pleotelson broadly rounded. Pleotelson dorsum strongly arched (best viewed laterally). Anterolateral margins of pleonite smooth, following body outline. Uropodal endopod styliform, strongly arched, recurved, and extending slightly beyond tip of pleotelson. Md palp articles 2 and 3 with 9 and 10 plumose setae respectively; incisor with three strongly sclerotized cusps. Lacinia mobilis well developed, present on both mandibles, bilobed, each lobe a stout sclerotized tooth. Setal row consists of two acute serrate spines adjacent to lacinia mobilis, a few simple fine setae and a large bladelike spine serrated apically. $Mx^1$ exite with 11 spines, one stout and three serrate. $Mx^2$ endite with five weakly plumose setae; exite with a total of six plumose setae. Mxp palp articles 2, 3, and 4 with produced

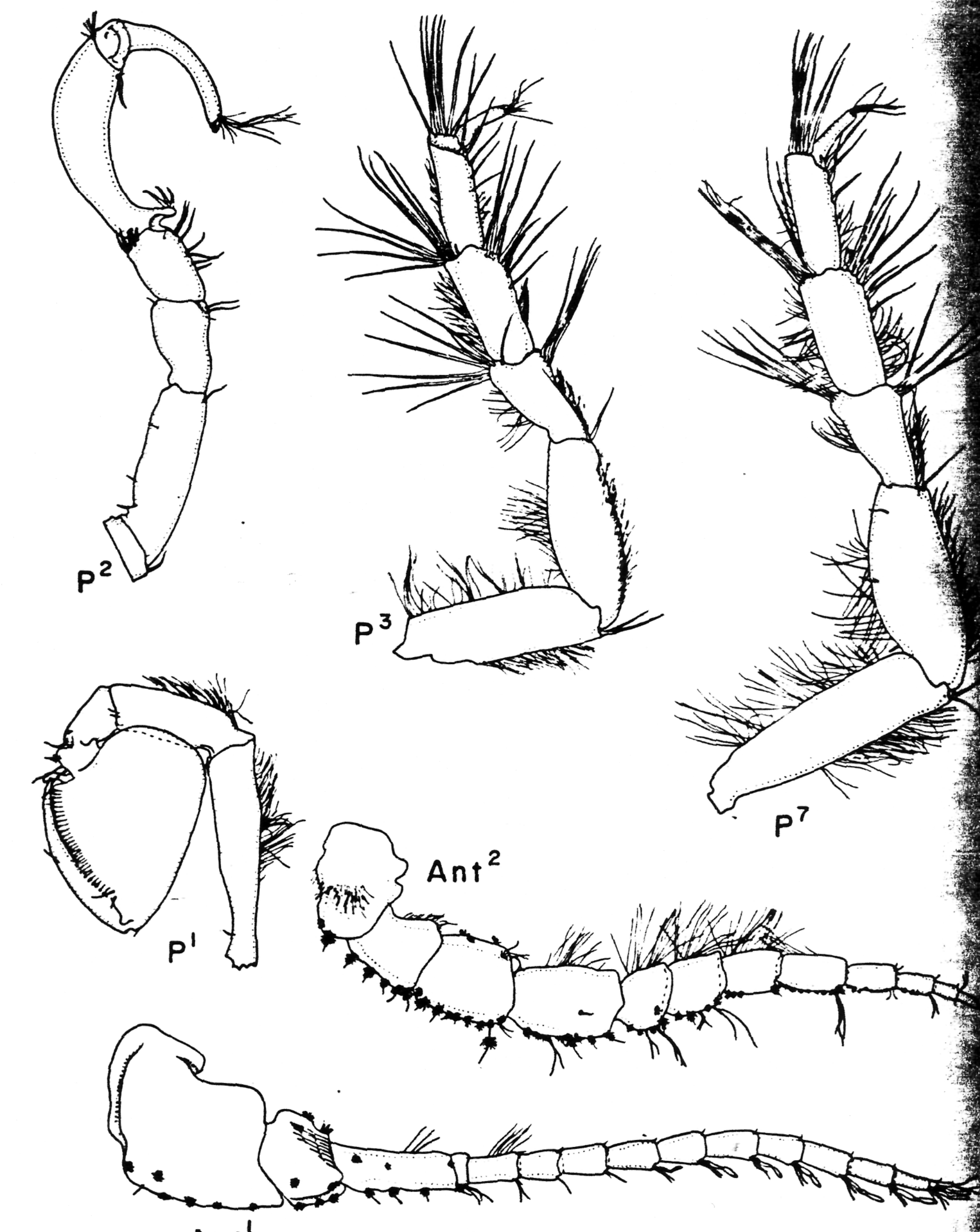


FIG. 3. *Ancinus panamensis* n. sp. Antennae and pereopods from male holotype.

lobes bearing 8, 7, and 13 spines respectively; article 5 with 10 spines; lateral basal border of article 4 with simple fringe setae. Setae sparse on sensory border of endite; simple fringe setae abundant laterally near articulation of palp. Ant$^1$ peduncular articles with few penicillate setae; flagellum of 13 articles; uniramo thetascs present on flagellar articles 5–12. peduncular articles with relatively few pe late setae; flagellum of nine articles; pedu lar article 5 and flagellar articles 1–4 fri with long simple setae. P$^1$ dentiform proce

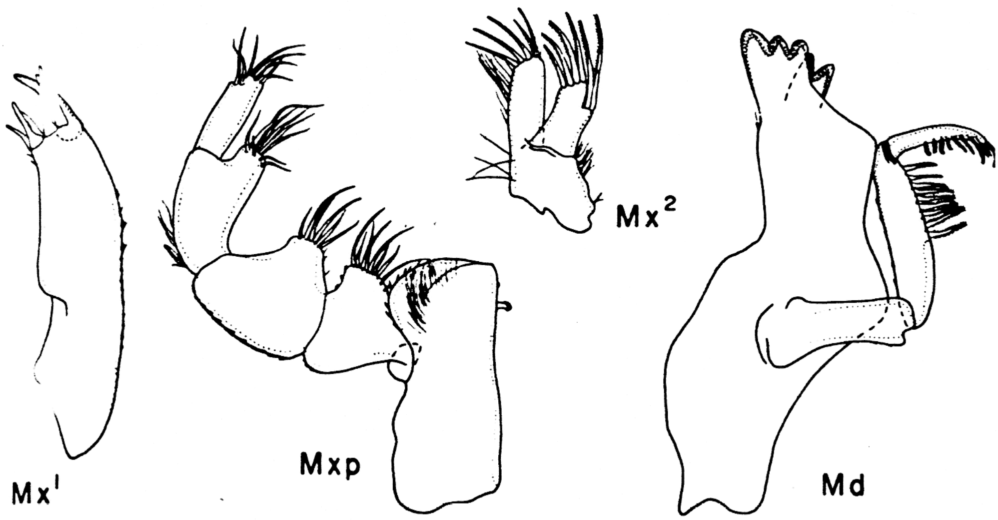


FIG. 4. *Ancinus panamensis* n. sp. Mouthparts from male holotype.

inner base of propodus slightly shorter than carpus; basis and ischium fringed with fine elongate simple setae. $P^2$ dactylus (male) relatively short, closing at midlength of propodus; three long tapering setae on process inside proximal part of propodus. $P^3$–$p^7$ highly setose; merus, carpus, and propodus with numerous closely set elongate setae distally and with fewer long stout setae along medial border. Ischium with numerous fine setae on all pereopods. $Plp^1$ uniramous with 33 plumose marginal setae (PMS). $Ppl^2$ exopod less than half length of endopod, stylet tenuiform, slightly shorter than endopod; endopod medial and lateral borders with few penicillate and numerous plumose setae respectively. $Plp^3$–$Plp^5$ with well-developed blood sinuses (broken lines in Fig. 5 delimit these areas). $Plp^3$ exopod ovate, 3/4 length of endopod, lateral margin fringed with short simple setae. $Plp^4$ endopod with apical spine. $Plp^5$ exopod with three squamiferous protuberances, endopod distomedial border with incipient protuberance.

### *Coloration*

The dorsum in the male holotype displayed a variegated pigment pattern of reddish brown, brownish red, and white. (All colors in this paper are from Kornerup and Wanscher 1967.) This particular color morph is designated "pattern" and is discussed in more detail below under color polymorphism.

### *Measurements*

Male holotype, length 4.29 mm, width 2.05 mm. Female allotype (gravid), length 2.89 mm, width 1.41 mm. The mean length and width (and size range) of 101 paratypes sampled at random were 1.98 mm (1.02–3.40 mm) and 0.95 mm (0.48–1.70 mm), with a mean width: length ratio (percent) of 48.0. Since the distributions of samples were not approximately normal, the median and 0.95 confidence limits of the median ($K = 50/100\ [N+1] - \sqrt{N}$) are also given to indicate the degree of dispersion in the paratypes. The median length and width (and 0.95 confidence limits) of the 101 paratypes were 1.63 mm (1.34–1.95 mm) and 0.77 mm (0.64–0.94 mm). The mean length and width (and size range) of 17 adult male paratypes were 3.76 mm (2.96–4.28 mm) and 1.91 mm (1.64–2.14 mm); for 23 adult female paratypes the mean length and width (and size range) were 3.44 mm (2.40–4.04 mm) and 1.69 mm (1.20–2.00 mm). The mean length of 10 released young was 0.83 mm with the range 0.81–0.84 mm. The mean and median number of embryos per female (range in length 2.05–

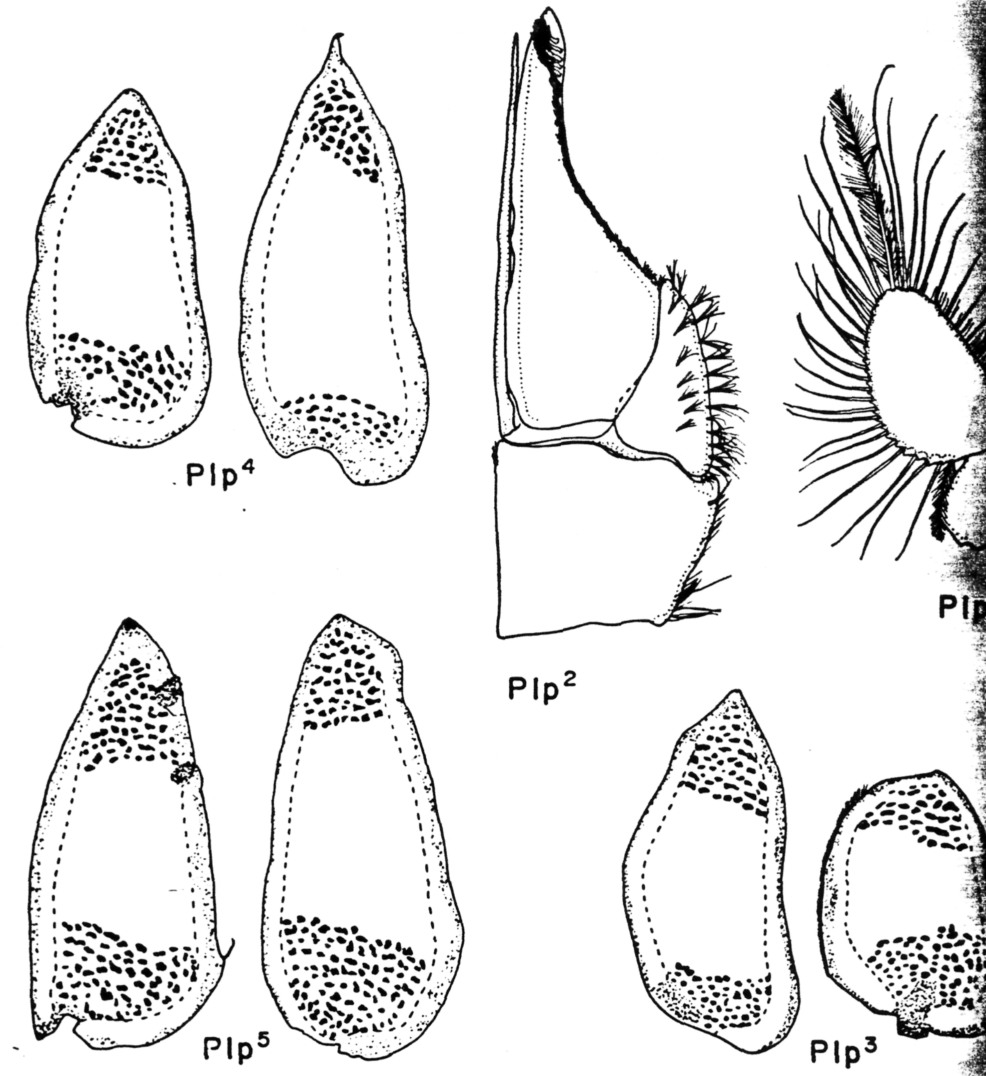


FIG. 5. *Ancinus panamensis* n. sp. Pleopods from male holotype.

2.81 mm) respectively in a sample of 20 from Naos Island (11 August 1972) were 9.7 and 10. The Kendall rank correlation test showed a highly significant positive correlation between body size and number of embryos ($P \ll 0.001$).

*Type Locality*

Sand beach between Naos Island and Culebra Island (no. 1 in Fig. 1) near Pacific entrance of the Panama Canal (79°31′57″ W; 8°54′51″ N). In sand near neap low water level. Male type catalog number USNM 143954, female type USNM 143955, 363 paratypes USNM 14 (20 July 1969).

*Material Examined*

(Collections were made by authors noted otherwise.) Monthly collections numbering at least 100 individuals were examined the sand beach between Naos Island and bra Island over the period 5 February

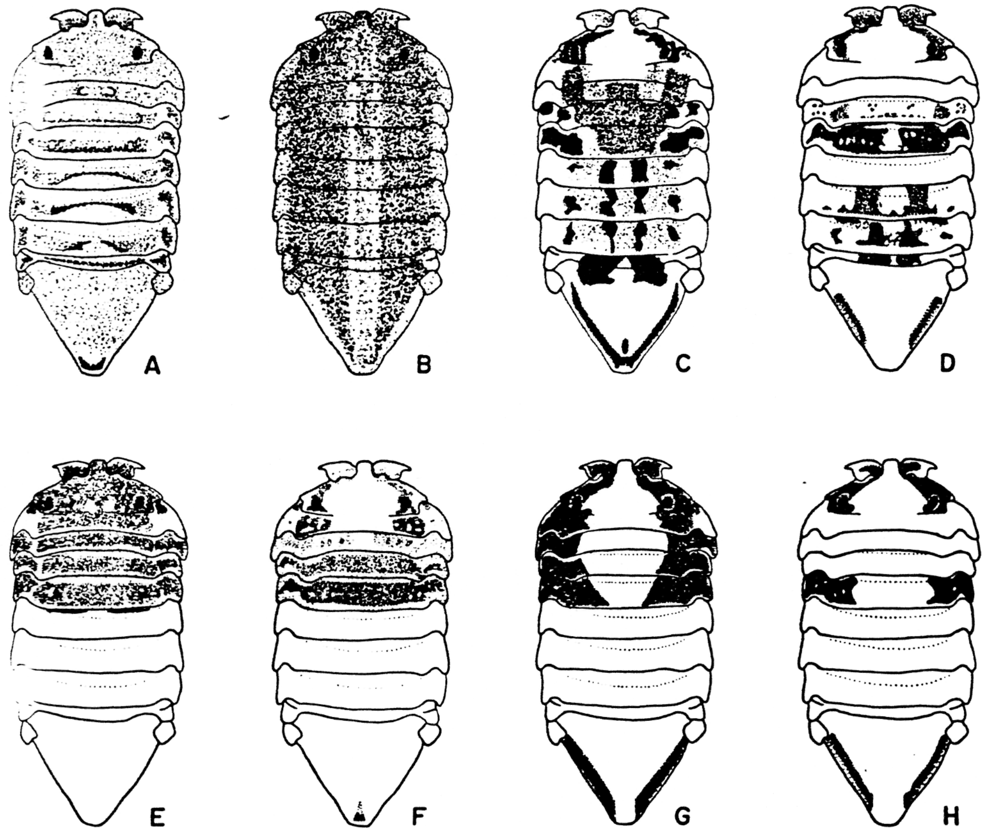


FIG. 6. Color polymorphism in *Ancinus panamensis* n. sp. *A*, uniform; *B*, stripe; *C*, pattern; *D*, half pattern; *E*, bicolor; *F*, bi-O; *G*, bi-1/2 O; *H*, half belt. Various morph patterns are illustrated on a single standardized individual.

13 May 1971. Large collections were also examined from the following localities in Panama: Naos Island beaches (nos. 2 and 3, Fig. 1), 30 July 1969 and 28 August 1969 (collector D. Dexter), several samples in 1970 and 1971; Palo Seco Leprosary (no. 4, Fig. 1), 11 December 1969, 11 and 12 March 1970, 22 October 1971; Venado Beach (no. 5, Fig. 1), 8 January 1970; San Carlos Beach, Panama Province (79°57.5′ W; 8°28.0′ N), 4 August 196[illegible] collector D. Dexter. One collection of 71 specimens was examined from Colombia, Juanchaco, Bahía de Málaga (77°22.0′ W, 3° 54.4′ N), 20 January 1971.

## *Distribution*

Abundant at type locality and on other partly protected sand beaches near the Pacific terminus of the Panama Canal (Fig. 1). Also found at San Carlos Beach, Panama, and at Juanchaco, near the mouth of Bahía de Málaga, Colombia.

## *Supplementary Descriptive Notes*

The following information is based on the examination of adult male and female paratypes. Pereonite 1 in males tends to be the broadest of all pereonites; in females about half have pereonites 1 or 2 the broadest and half pereonite 6 the broadest. $Ant^1$ reaches to pereonite 4, flagellar articles 10–11. Penicillate setae present on both antennae (about 10–15 visible along anterior margin of $Ant^1$ and 50–60 along anterior margin of $Ant^2$). Pleotelson inflated in females, with a rounded apex (Fig. 2*C*) as in males. Uropods do not reach apex of pleotelson in all specimens. Mouthparts virtually identical in both sexes. Md palp articles 2 and 3 with 7–9 and 6–10 plumose setae respectively. Mx¹ exite with eight–nine spines, one always stout, two–three serrate. P¹ dentiform process may be subequal in length to carpus. The process inside the proximal part of the propodus of p² with three tapering setae in the six males examined. P² ambulatory in female and similar to p³. Elongate setae on merus, carpus, and propodus abundant on p³–p⁵, decreasing in number on p⁶–p⁷. Pleopods similar in both sexes. Plp¹ with 22–28 PMS. Specimens collected in Colombia varied slightly from the Panamanian material in the following characters: (*a*) dorsum of pleotelson less inflated, and (*b*) pleotelsonal shelf relatively narrow.

*Affinities*

*Ancinus panamensis* shares a number of features in common with *A. depressus* (Say) and *A. granulatus* Holmes & Gay. The pleotelson in these three species is inflated and tends to be truncate posteriorly. The third peduncular article of Ant¹ is also without esthetascs. Ant² in *A. panamensis* and *A. granulatus* has few setae present on peduncular article 5 and flagellar articles 1–3. In *A. depressus* these setae are much more numerous and present on a greater number of articles (up to nine articles). The location and number (3) of the squamiferous protuberances on the exopod of Plp⁵ is also similar in *A. panamensis* and *A. granulatus*. However, it will become apparent later that *A. panamensis*, like *A. granulatus*, stands apart from the closely allied species complex *A. depressus*, *A. brasiliensis*, and *A. seticomvus*.

*Etymology*

The specific epithet *panamensis* is derived from the Republic of Panama, where the species was first collected.

*Ancinus brasiliensis* Castro 1959

Figs. 7, 8, 9, 10, 11*A–C*, and 12

*References*

*Ancinus brasiliensis* Castro 1959: 215–218, figs. 1–8; Loyola e Silva 1963: 1–19, figs. 1–5. *Ancinus depressus* (Say 1818).—Loyola e Silva 1971: 212–215, fig. 1. *Ancinus brasiliensis* C 1959. Schultz 1973.

*Diagnosis*

Body elongate, breadth 0.44–0.48 of le surface smooth except for ridges p laterally on pereonites; pleotelson elo breadth 0.40–0.45 of length; pleotelsona narrow, not noticeably truncate; pleotels inflated, vault shelf narrow; Ant¹ basal arti and flagellar article 1 with numerous ste esthetascs; pereopod 2 (male) propodus cess with four setae; Plp⁵ exopod with squamiferous protuberances.

*Coloration*

Illustrated adult male "uniform." Col eggs green, newly released young white out pigmentation). See section on color morphism for further variations in this sp

*Measurements*

Mean length and width (and size range spectively of individuals in random sa ($N = 111$) from María Chiquita Beach (6 S tember 1973) 3.25 mm (1.57–6.11 mm) 1.50 mm (0.76–2.65 mm). Mean length width (and size range) respectively of viduals in random sample ($N = 141$) Shimmey Beach (6 September 1973) 2.71 (1.64–5.42 mm) and 1.27 mm (0.82–2.39 The mean width: length (100) ratio (and ra of 20 individuals (range in length 2.83–4.03 was 46.4 (44.4–48.2). Comparable measure in 20 *Ancinus panamensis* (range in length 2 4.28 mm) gave a mean width: length ratio of 50.1 (48.3–51.8) with no overl values, a quantitative indication of the elongate body proportions in *A. brasiliens* largest individuals were males, as observe this species by Loyola e Silva (1963), and i *panamensis*. Mean length (and size range) released young 1.14 mm (1.12–1.19 mm). mean and median number of embryo female respectively in 20 individuals (le 2.71–3.46 mm) sampled from Shimmey Be (16 October 1970 and 6 September 1973) 14.6 and 14. This indicates a larger brood than that observed in *A. panamensis* (media

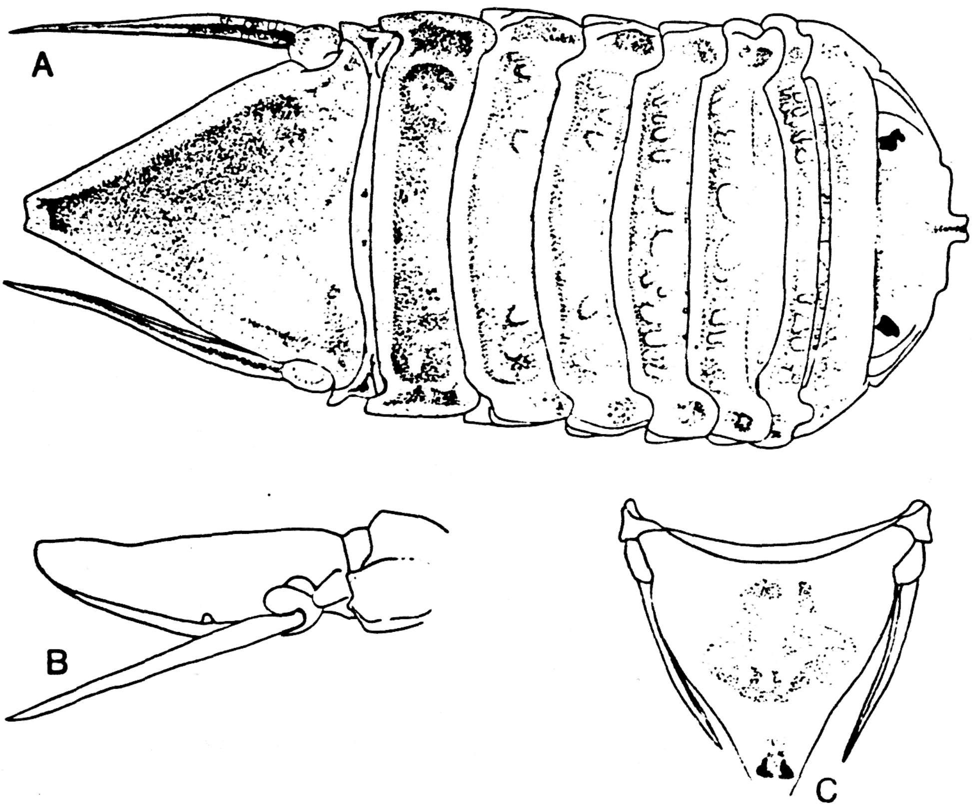


FIG. 7. *Ancinus brasiliensis* Lemos de Castro. *A*, dorsal view, male, length 5.64 mm, width 2.50 mm; *B*, pleotelson, lateral view; *C*, pleotelson, female, length 4.74 mm, width 2.24 mm.

3537

10). However, since the number of embryos and body size are positively correlated in both species ($P < 0.001$, Kendall rank correlation test) and females of *A. brasiliensis* attain a larger size, this difference is best interpreted as a size effect only. Mean length and width (and size range) of seven specimens from Brazil (courtesy of M. L. Koening, Castro 1959, Loyola e Silva 1963) 6.45 mm (5.38–8.50 mm) and 3.05 mm (2.53–3.80 mm).

### Type Locality

Ribeira Beach, Mangaratiba Bay, Rio de Janeiro State. Collected from a sand bottom at 1.5 m depth.

### Material Examined

PANAMA: María Chiquita, from beach near mouth of Brazuelo River (no. 6, Fig. 1), 13 August 1969, 29 specimens, collector D. Dexter; 15 March 1970, 22 specimens; 6 October 1970, 35 specimens; 6 September 1973, 95 specimens. Shimmey Beach, near Ft. Sherman (no. 7, Fig. 1), 5 July 1969, three specimens, collector D. Dexter; catalog no. USNM 143957, 20 July 1969, 69 specimens, collector D. Dexter; 28 July 1969, 94 specimens, collector D. Dexter; 16 October 1970, 156 specimens; 11 August 1972, 398 specimens; 6 September 1973, 105 specimens. Ft. San Lorenzo, from beach at base of ruins east of the Chagres River mouth (no. 8, Fig. 1), 26 June 1969, one specimen, collector D. Dexter; 27 June 1969, seven specimens.

COSTA RICA: Puerto Viejo (9°40′ N, 82°44′ W), 2 April 1971, two specimens, collector D. Dexter. Cahuita south (9°44′ N, 82°50′ W), 1 April 1971, 10 specimens, collector D. Dexter. Cahuita north (9°45′ N, 82°52′ W), 3 April 1971, four specimens, collector D. Dexter. Airport


FIG. 8. *Ancinus brasiliensis* Lemos de Castro. Antennae and pereopods from male in Fig. 7.

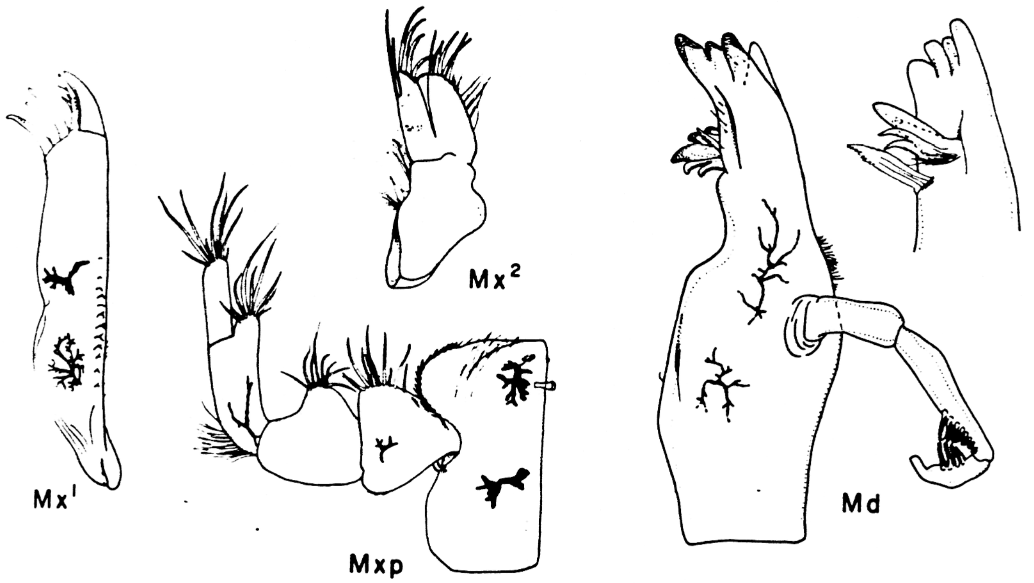


FIG. 9. *Ancinus brasiliensis* Lemos de Castro. Mouthparts from male in Fig. 7. Inset of distal portion of mandible (Md) from male, length 5.88 mm, width 2.72 mm.

Be... , Limón (9°58′ N, 83°01′ W), 19 March 1971, two specimens, collector D. Dexter.

BRAZIL: Isle of Itamaracá, Pernambuco, two specimens, collection no. ITA 19, *Halimeda* sand bottom, 5.6 m depth; one specimen, collection no. ITA 91, calcareous algal bottom, 1.5 m depth. Tambaú, Paraíba, one specimen, from algae, collector M. L. Koening.

### *Distribution*

A wide-ranging western Atlantic species. Widespread along Brazilian coast from Ubatuba (Enseado de Flamengo), São Paulo (Loyola e Silva 1963), ca. 24° S to Tambaú, Paraíba State (M. L. Koening, personal communication), ca. 7° S. Abundant on beaches in Panama at María Chiquita, Shimmey, and near Ft. San Lorenzo (Fig. 1). Present along Costa Rican coast between latitudes 9°40′ N to 9°58′ N.

### *Supplementary Descriptive Notes*

The following is based on the examination of collections from Panama and Brazil. In each case where significant differences were observed these are noted, otherwise the material was in essential agreement. *Ancinus brasiliensis* is contrasted with other species of *Ancinus* in a separate section below. Ant¹ reach to pereonite 5, peduncular articles with numerous penicillate setae (18 present along anterior margin in illustrated specimen); flagellum usually of 14–16 articles; uniramous stemless esthetascs present on peduncular article 3 and flagellar article 1 (unlike the usual esthetascs, these structures are stemless but presumably chemoreceptive in function, T. Bowman, personal communication), uniramous esthetascs with stems present on distal articles of flagellum; the Brazilian specimens have esthetascs on the distal flagellar articles only. Ant² peduncular articles with numerous penicillate setae (75 present along anterior margin of illustrated specimen); flagellum usually of 8–10 articles; peduncular articles 4 and 5 and flagellar articles 1–4 with numerous long simple setae. Rostrum anterior margin slightly indented lengthwise. Sutures between cephalon and pereonite 1 reach far medially, approaching midline. Anterolateral margin of pleonite usually concave. Ridges well developed laterally on epimera and pereonites 2–7. Pleotelson not inflated, lateral profile of apex acute (Brazilian material, Fig. 11*A*, *B*) or truncate (Panamanian material, Fig. 11*C*). Pleotelson narrow, more so in specimens from Brazil (Table 1). Pleotelsonal shelf relatively narrow and equal in all collections (Table 2). Pleotel-

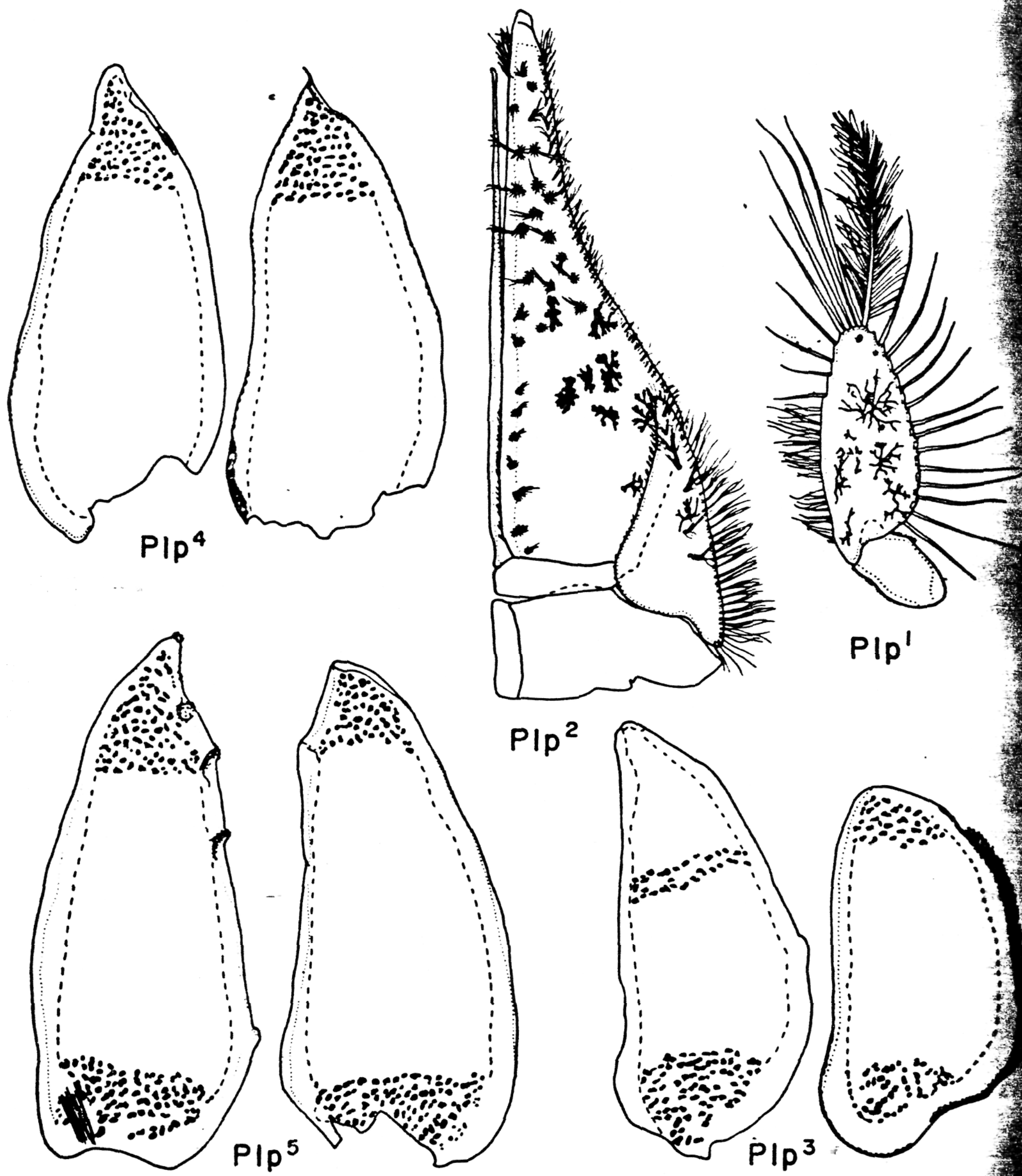


FIG. 10. *Ancinus brasiliensis* Lemos de Castro. Pleopods from male in Fig. 7.

sonal apex (in dorsal view) slightly truncate, especially in younger individuals. Mxp as described in Loyola e Silva (1963), including simple fringe setae at base of palp article 4. Plumose setae on Md palp articles variable in number, ranging from 8–11 on article 2 and 4–11 on article 3; incisor with three strongly sclerotized cusps and a stout nonsclerotized process. P$^1$ basis and ischium without fine setae. P$^2$ dactylus long, closing onto carpus; process inside proximal part of propodus with four relatively short, stout, and blunt setae.

P$^3$–p$^7$ highly setose; merus, carpus, and prop dus with numerous closely set elongate se distally and along medial border (although of fewer in number than those present distal setae progressively diminish in number on and p$^7$; fine setae on ischium increase in num from p$^3$–p$^6$, but absent from p$^7$. Plp$^1$ in sp mens from Brazil and Pamana without an complete suture as illustrated in Loyola e Si (1963), Fig. 4; PMS number variable, from 2 27. Plp$^2$ rami without clefts. Plp$^3$ exopod ova smaller than endopod, lateral margin fringed

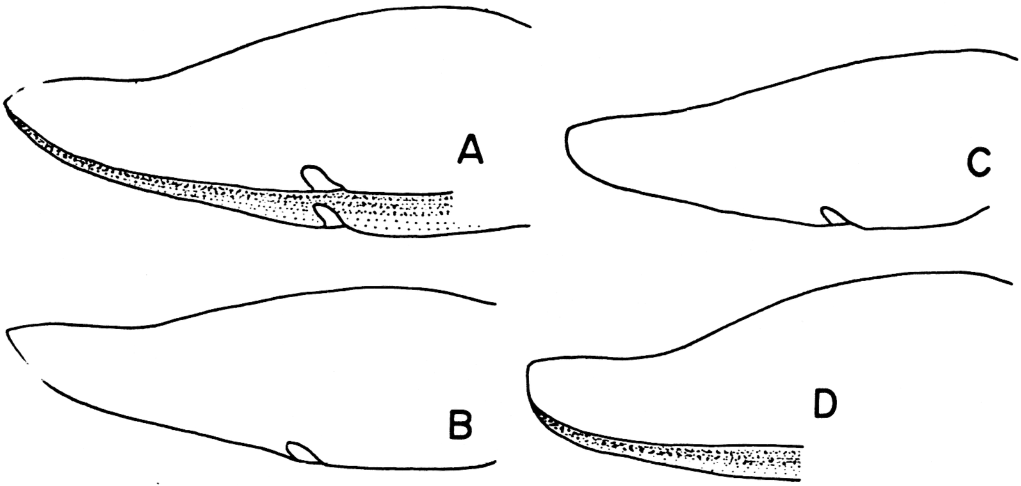


Fig. 11. Lateral views of pleotelson in males. *Ancinus brasiliensis* Lemos de Castro from Brazil—*A*, length 6.30 mm; *B*, length 6.20 mm. *A. brasiliensis* from the Caribbean Sea, Panama—*C*, length 5.80 mm. *Ancinus depressus* (Say) from the Gulf of Mexico—*D*, length 11.92 mm.

with simple setae. Plp$^4$ endopod acute apically. Plp$^5$ exopod with four squamiferous protuberances (a fifth incipient squamiferous protuberance also present proximally) and margin slightly squamous between two distal protuberances; endopod distal medial border with slight bulge.

## Ancinus brasiliensis *Compared with* A. depressus *and* A. granulatus

Since Loyola e Silva (1971) and Schultz (1973) are not in agreement on the status of *Ancinus brasiliensis*, *A. depressus*, and *A. granulatus*, the three species are here compared in detail. We hope to demonstrate that Schultz was correct in believing that the three species are distinct and not conspecific with *A. depressus* as interpreted by Loyola e Silva. *Ancinus granulatus* is treated first because this species is relatively easy to distinguish from the others.

## *Ancinus granulatus* Holmes & Gay 1909

Fig. 13*A–C*

### *References*

*Ancinus granulatus* Holmes & Gay 1909: 375–376, figs. 1 and 2; Loyola e Silva 1963: 18–19. *Ancinus depressus* (Say 1818).—Loyola e Silva 1971: 214. *Ancinus seticomvus* Trask 1970: 145–149, figs. 1, 2. *Ancinus granulatus* Holmes & Gay 1909.—Schultz 1973: 268–269, fig. 1*B*, *C*, *F*.

### *Diagnosis*

Body very broad and densely granulated; eyes slightly elevated on swellings; pleotelson very short with truncate apex; pleotelsonal shelf broad (revised).

### *Material Examined*

Pete's Campo, ca. 16 km north of San Felipe, Baja California, Gulf of California, Mexico, 1 April 1969, three males, seven females, collector D. Dexter. Radar Beach, Punta Diggs, ca. 25 km south of San Felipe, Baja California, Gulf of California, Mexico, 18 March 1972, one male, collector D. Dexter.

### *Discussion*

The specimens of *A. granulatus* examined from the Gulf of California agree well with Holmes' and Gay's (1909) description of the species, including the dense granulations whose presence was denied by Loyola e Silva (1971). Other notable features include: (*a*) the elevation of the eyes on swellings, (*b*) a short pleotelson, (*c*) the truncate apex of the pleotelson, (*d*) a broad pleotelsonal shelf, (*e*) strongly recurved

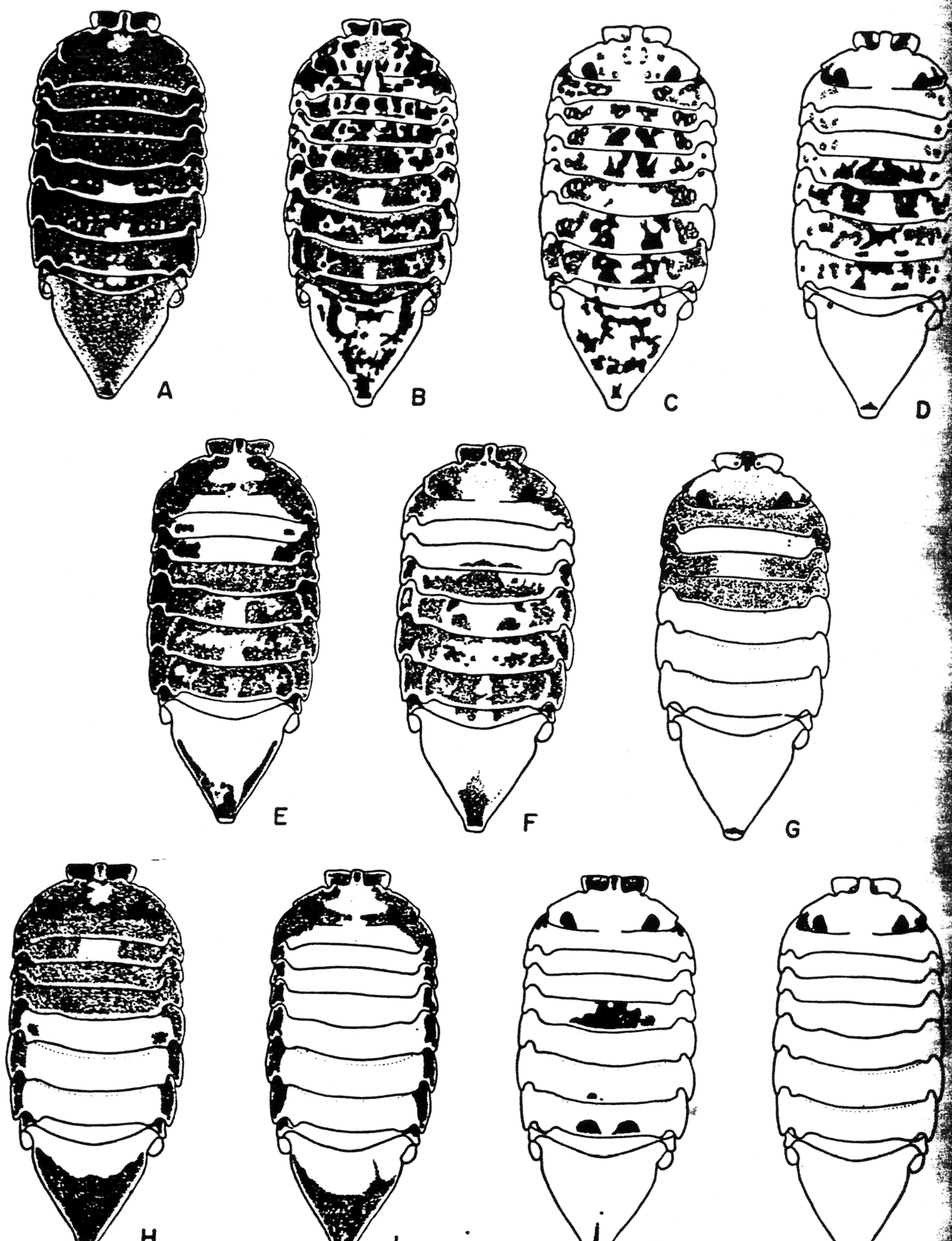


FIG. 12. Color polymorphism in *Ancinus brasiliensis* Lemos de Castro. *A*, uniform-S; *B*, *C*, speckled; *D*, speckled; *E*, girdle; *F*, girdle-B; *G*, belt; *H*, half quadrate; *I*, quadrate; *J*, fleck; *K*, uniform. Various morph patt are illustrated on a single standardized individual.

TABLE 1

RATIO OF WIDTH TO LENGTH OF PLEOTELSON IN *Ancinus brasiliensis* AND *Ancinus depressus*

| | | BODY LENGTH (mm) | | | RATIO (%) | | SIGNIFICANCE |
|---|---|---|---|---|---|---|---|
| SPECIES | LOCALITY | NUMBER | $\overline{X}$ (range) | MEDIAN | $\overline{X}$ ($s_{\overline{x}}$) | MEDIAN | LEVEL, $P$* |
| *Ancinus brasiliensis* | Brazil<br>Itamaracá<br>Lambari<br>Mangaratiba Bay and Ubatuba† | 6 | 6.43 (5.38–8.50) | 6.25 | 40.5 (1.11) | 40.4 | $P < 0.01$ |
| *Ancinus brasiliensis* | Panama<br>Shimmey Beach | 10 | 5.54 (4.74–6.27) | 5.72 | 45.0 (0.82) | 44.0 | |
| *Ancinus depressus* | Gulf of Mexico<br>Texas<br>Mississippi | 10 | 9.42 (5.51–11.92) | 9.46 | 55.3 (1.00) | 56.0 | $P \ll 0.001$ |

NOTE: Pleotelsonal width measured at a point two-thirds the length of the pleotelson (toward apex). Measurements include both sexes and large adults selected to maximize overlap in size.

* Nonparametric Mann-Whitney $U$ test (after Siegel 1956).

† One measurement each from illustrations in Castro (1959) and Loyola e Silva (1963).

TABLE 2

RATIO OF WIDTH OF PLEOTELSONAL SHELF TO LENGTH OF PLEOTELSONAL VAULT IN *Ancinus brasiliensis* AND *Ancinus depressus*

| | | BODY LENGTH (mm) | | | RATIO (%) | | SIGNIFICANCE |
|---|---|---|---|---|---|---|---|
| SPECIES | LOCALITY | NUMBER | $\overline{X}$ (range) | MEDIAN | $\overline{X}$ ($s_{\overline{x}}$) | MEDIAN | LEVEL, $P$* |
| *Ancinus brasiliensis* | Brazil<br>Itamaracá<br>Lambari | 4 | 5.91 (5.38–6.30) | 5.98 | 11.8 | 12.0 | NS<br>$P > 0.05$ |
| *Ancinus brasiliensis* | Panama<br>Shimmey Beach | 10 | 5.54 (4.74–6.27) | 5.72 | 11.6 (0.40) | 11.4 | |
| *Ancinus depressus* | Gulf of Mexico<br>Texas<br>Mississippi | 10 | 9.42 (5.51–11.92) | 9.46 | 15.1 (0.56) | 14.4 | $P \ll 0.001$ |

NOTE: Shelf width is the average of two sides measured at a point one-half the length of the vault. NS, not significant.

* Nonparametric Mann-Whitney $U$ test (after Siegel 1956).

uropods, and (*f*) Plp[5] with three squamiferous protuberances. The collection from Pete's Campo contained, in addition to the 10 specimens of *A. granulatus*, six adult male and female (some gravid) *Ancinus* that correspond to Trask's description of *A. seticomvus*. Schultz (19[illegible]) examined the type specimens of *A. granulatus* and paratypes of *A. seticomvus* and concluded that they are conspecific. He emphasized that the key character used by Trask to erect the species *A. seticomvus*, namely the setal number on the process of the propodus of pereopod 2, is not a good character for specific distinction. Schultz found the setal number to vary between six–eight in both forms and noted that "...it was difficult to count the exact number on some of the male propodi." The setal number in the Pete's Campo material was four–five in *A. granulatus* and five–six in *A. ?seticomvus*. Our study of the Pete's Campo material indicates the existence of two distinct species, with no overlap whatever in the morphological features enumerated for *A. granulatus* above. The form agreeing with *A. seticomvus* has a smooth body surface with no granulations and can be further contrasted with *A. granulatus* as follows: (*a*) eyes not elevated, (*b*) pleotelson long, (*c*) pleotelson nearly acute

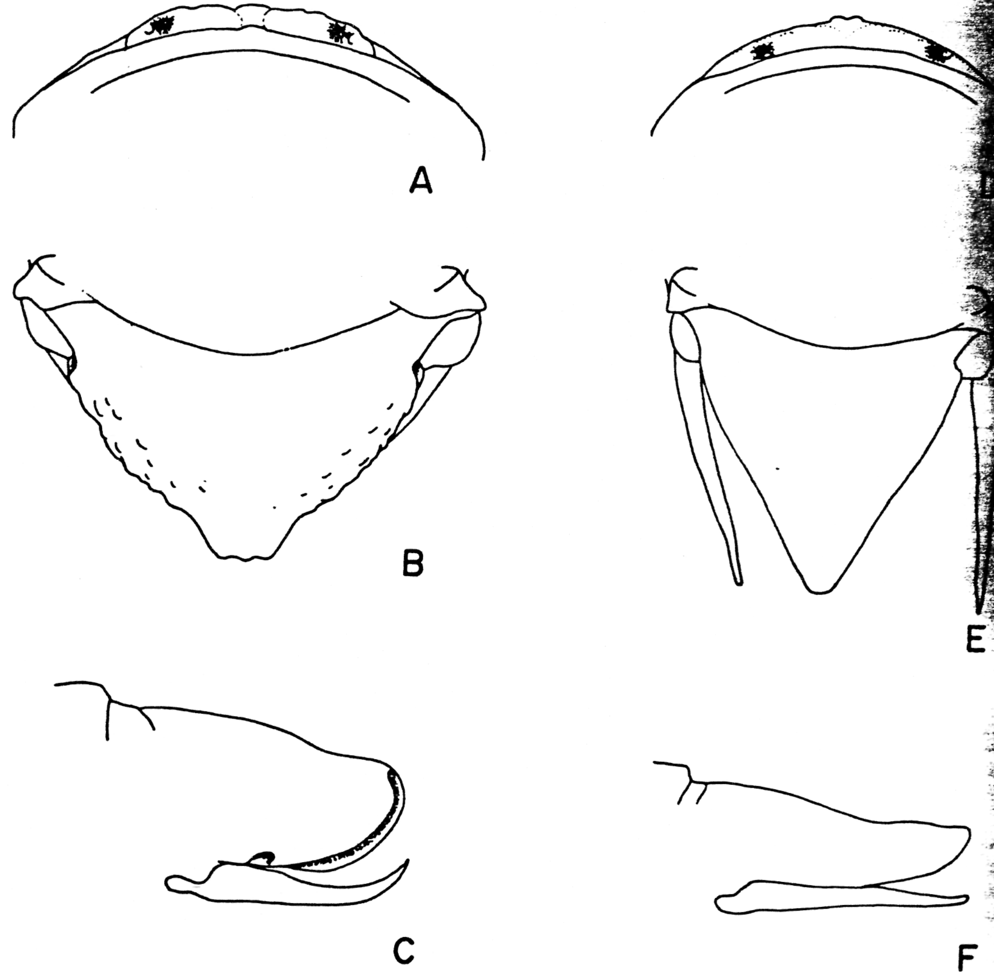


FIG. 13. Cephalon and pleotelson (dorsal and lateral views) from *Ancinus granulatus* Holmes & Gay, *A*, *B*, an male, length 7.12 mm, width 3.65 mm; and *Ancinus ?seticomvus* Trask, *D*, *E*, and *F*, male, length 6.43 mm, w 3.02 mm. Cephalon tilted down anteriorly and pleotelson tilted down posteriorly in both specimens.

or narrowly rounded, (*d*) pleotelsonal shelf narrow, (*e*) uropods only slightly recurved, and (*f*) $Plp^5$ with five squamiferous protuberances, one positioned far basally (Fig. 13*D*–*F*). Additional specimens agreeing with *A. seticomvus* were collected by D. Dexter at Punta Diggs and Topolobampo (Sinaloa), Gulf of California, and at Mazatlán (Sinaloa), near the entrance to the Gulf. In order to resolve this problem, it will be necessary to study the holotypes, type collections, and—preferably—new collections. It is possible that the sympatric occurrence of the two species has led to mixed collections and the resulting confusion noted.

*Ancinus depressus* (Say 1818)

Fig. 11D

*References*

*Naesa depressa* Say 1818: 482–485. *Anci depressus* (Say 1818).—Milne Edwards 1840: 22 pl. 32, figs. 17–20; Richardson 1905: 271–2 fig. 282; Richardson 1909: 173–177, figs. 1 Menzies and Frankenberg 1966: 43, fig. 1 Loyola e Silva 1971: 212–215, fig. 1; Schu 1973: 269–270, fig. 1*A*.