

**AN ILLUSTRATED GUIDE TO CUMACEA
(CRUSTACEA: MALACOSTRACA: PERACARIDA)
FROM FLORIDA COASTAL AND SHELF WATERS TO DEPTHS OF 100 M**

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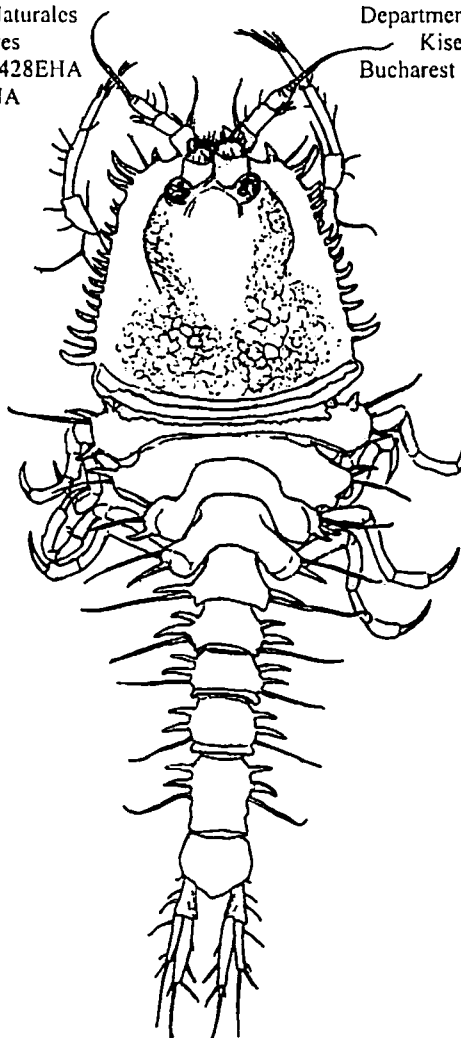
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2007

Cover illustration

Schizotrema sp. A
(NANNASTACIDAE)

Found associated with
sponges in the Florida Keys

DEPARTMENT OF ENVIRONMENTAL PROTECTION
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by

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Many of the cumacean specimens studied for the preparation of this guide came from benchmark surveys sponsored by the Bureau of Land Management (BLM) and Minerals Management Service (MMS) conducted between 1974 and 1984. Other important sources of study material include the National Museum of Natural History and collections made in conjunction with baseline studies conducted for the U. S. Environmental Protection Agency (EPA), National Oceanographic and Atmospheric Administration (NOAA), FDEP, and National Park Service (NPS). Additional material was also made available by Barry A. Vittor & Associates through the efforts of Tom Hansknecht. Individuals who made material available to us include Judy Robinson (Nova Southeastern University), Torleiv Brattegard (University of Bergen, Norway), John Foster (GCRL), and Ford Walton (FDEP). Torleiv Brattegard and Sara LeCroy also kindly allowed us to use some of their unpublished illustrations.

INTRODUCTION

There is no identification guide to the members of the peracarid order Cumacea, an often overlooked, but bionomically important group of Crustacea, from the brackish and marine waters of Florida. Watling (1979) produced a regional guide to the cumacean species occurring along the US Northeast coast, and Heard *et al.* are currently preparing a guide to the species known from the South Atlantic Bight (Cape Lookout, NC to Cape Canaveral, Florida). This guide to Florida cumaceans when used in conjunction with those of Watling (1979) and Heard, *et al.* (in prep) will treat most of the common coastal species occurring along the Atlantic Seaboard and the eastern Gulf of Mexico (Maine to Louisiana). This present work is designed to facilitate the identification of Florida cumaceans for a variety of different user groups. These include professional biologists, teachers, students, and naturalists.

Because of the variety of estuarine and marine habitats represented along Florida's extensive warm-temperate and subtropical Atlantic and Gulf coastlines, its shallow water cumacean fauna appears to be more diverse than that of other coastal areas of the United States. Since a considerable number of the Cumacea occurring in Florida waters represent new taxa, this guide essentially represents a work in progress. We hope that it will serve as a forerunner to facilitate and stimulate future taxonomic and systematic research. We anticipated that future studies will yield additional new records and the discovery of more new species (e.g. cryptic species of *Cumella sensu lato*) from Florida waters. We have chosen the 100m depth limit because a large majority of the genera and species occurring in deeper waters of the Florida shelf and continental slope remain undescribed, and are beyond the scope of this guide. None the less, a considerable number of taxa treated here are new to science.

The authors have collections from these deeper water (100-3000 m) areas off Florida that contain representatives of three additional cumacean families (Lampropidae Sars, 1878; Pseudocumatidae Sars, 1878; and Ceratocumatidae Calman, 1905). Members of the remaining two cumacean families, the Archaeocumatidae Băcescu, 1972 and the Gonodiatylidae Stebbing, 1912, are either deep water forms or are not known from the northwestern Atlantic. Some authorities consider the monotypic, deep-water family Archaeocumatidae, to be a junior synonym of the family Lampropidae. Members of the family Gonodiatylidae are presently known only from the Southern Hemisphere (see Gerken 2001).

In addition to illustrated identification keys for over 60 species of Cumacea currently known from Florida coastal waters, this guide presents (1) a brief overview of the Order, (2) a review of the previous records for cumaceans from Florida waters, (3) important morphological features of the group, (4) short narratives for each of the families, the larger genera, and each species treated, and (5) a glossary of terms commonly used in cumacean taxonomy.

OVERVIEW OF THE ORDER CUMACEA

Over 1,530 nominal species representing 120 genera in eight families currently comprise the peracarid order Cumacea (Anderson 2007). The members of this order are relatively small malacostracan crustaceans, usually 1-12 mm in length, but can reach lengths of 35 mm (Băcescu and Petrescu 1999). Cumaceans occur in brackish and marine waters throughout the world. The members of the genus *Almyracuma* Jones and Burbank, 1959 have been reported from freshwater conditions (Jones and Burbank 1959, Petrescu and Heard 2005). Cumaceans are known to occur from the intertidal zone to depths greater than 7,000 m (Băcescu and Petrescu 1999). Cumaceans occur benthically, epibenthically, or as part of the nocturnal tychoplankton (Hale 1953, Stearns and Dardeau 1990). The members of most cumacean families occur and feed within the first few centimeters of surface sediment (see Jones 1963, 1976); however, many members of the highly derived family Nannastacidae have evolved as cryptic creeping forms associated with algae, sponges, corals, and other epibenthic organisms (R. Heard, per. observ.). Some nannastacid species have piercing mouth parts suggesting that they may be micropredators (Jones 1976); this appears to be true for members of the genera *Campylaspis* and *Procampylaspis*. As in the orders Tanaidacea and Isopoda, cumaceans release their young from the brood pouch (marsupium) as manca, early stages that are characterized by having the last pair of thoracic appendages (legs) absent or undeveloped. Cumaceans can brood from fewer than 10 in *Cumella* spp. (R. Heard, per. obser.) up to 228 eggs in *Diastylis alaskensis* Calman, 1912 (see Ivanova and Vassilenko 1987).

SYNOPSIS OF CUMACEAN TAXONOMY AND SYSTEMATICS

The first known cumaceans were placed with the amphipods and then variously grouped with isopods, macruran larval stages, schizopods, mysidaceans, branchiopods, sessile eyed decapods, and as intermediate forms between the copepods and malacostracans. For references to the early taxonomic and systematic history for the group refer to the classic works of Sars (1900) and Stebbing (1913); for additional synopses see Kestner (1970) and Schram (1986).

Kröyer (1846) first used the name Cumacea when defining the group as an independent and distinct order. Stebbing (1900) proposed the name Sympoda for the group, but later deferred to Kröyer's older designation for the order (see Stebbing 1913). In his synopsis of the Cumacea, Stebbing (1913) recognized 26 families; however, "most of them were based on characters which in some cases are of doubtfully generic value and they did not receive general acceptance" (Jones 1973). Generally, seven families (Bodotriidae T. Scott, 1901; Ceratocumatidae Calman, 1905; Diastylidae Bate, 1856; Lampropidae G. O. Sars, 1878; Leuconidae G. O. Sars, 1878; Nannastacidae Bate, 1866; and Pseudocumatidae Sars, 1878) were recognized by most cumacean workers (e.g., L. Fage, H. M. Hale, S. Gamô, N. S. Jones, K. Zimmer) between the 1920's and the early 1980's. Given (1964) proposed the new family Mesolampropidae for those lampropids having males with two pairs of pleopods, but this family designation was not recognized by other authorities. Another family, the Archaeocumatidae was proposed by Băcescu (1972) based primarily on the presence of a single reduced pair of pleopods on the female. In a synoptic review of the group, Băcescu and Petrescu (1999) recognized nine

families, including the Archaeocumatidae Băcescu, 1972 and Gynodiastylidae Stebbing, 1912. Although Băcescu and Petrescu (1999) considered the monotypic family Archaeocumatidae valid, other authorities consider it an atypical member of the family Lampropidae (e.g., N. S. Jones, J. Day, L. Watling, D. Roccatagliata, and S. Gerken). Based on the monographic work of Gerken (2001) the family rank for Gonodiastylidae is now reestablished and recognized.

Excluding the families Ceratocumatidae and Archaeocumatidae, molecular studies conducted by Haye et al. (2004), indicate that the families Bodotriidae, Leuconidae and Nannastacidae, all of which lack an independent telson, form a monophyletic group and that this clade appears to be the most derived within the Cumacea. Recent molecular systematic studies by Jarman *et al.* (2000) and Spears *et al.* (2005), indicate that the Cumacea are a sister group of the Tanaidacea within the same lineage with the Isopoda, as postulated by some earlier workers (e.g., Jones 1963). Some other recent and classical references dealing with Cumacean systematics, taxonomy, and morphology include Sars (1900), Calman (1912), Stebbing (1913), Zimmer (1941), Fage (1951), Jones (1969, 1976), Băcescu (1988, 1992a), and Băcescu and Petrescu (1999).

PREVIOUS RECORDS OF CUMACEA FROM FLORIDA WATERS

Calman's (1912) report of *Oxyurostylis smithi* Calman, 1912 from Punta Rassa, appears to be the first published record of a cumacean from Florida coastal waters. It was not until over 30 years later that Zimmer (1943) described *Cumella micruropus* Zimmer, 1943 from the coast of southeastern Florida. In the following year Zimmer (1944) described *Cumella vicina* Zimmer, 1944 and *Cyclaspis platymerus* Zimmer, 1944 and reported the occurrence of *Cumella serrata* Calman, 1911; and *Cumella* sp. aff. *C. serrata*; *Diastylis quadrispinosa* G. O. Sars, 1871; *Oxyurostylis smithi* Calman, 1912; and *Vaunthompsonia minor* Zimmer, 1944 from Florida marine waters. Based on material from the Florida Keys and Tampa Bay, Băcescu and his Romanian colleagues published a series of papers describing 10 species belonging to the families Nannastacidae and Bodotriidae (Băcescu 1971, 1979; Băcescu and Muradian 1977; Muradian-Ciamician 1980). Also, Băcescu and Muradian (1974) described a new deep sea genus and species, *Floridocuma selvakumarani*, from off Florida at depths greater than 2000m. *Spilocuma salmoni* Watling, 1977, a species found commonly in shallow water adjacent to high energy beaches along the northeastern Gulf of Mexico, was described from Panama City Beach (Watling 1977). In the same year Camp *et al.* (1977) published the first records for *Oxyurostylis smithi* and the bodotriids *Cyclaspis pustulata* Zimmer, 1943 and *C. varians* Calman, 1912 from the East Coast of Florida (Hutchinson Island). Based on a few subadult specimens from the Gulf of Mexico, Radhadevi and Kurian (1981) described a genus (*Pseudocyclaspis*) and three new species, two of which (*Pseudocyclaspis granulata* and *Oxyurostylis atlantica*) came from SW Florida waters. In 1982 Omholt and Heard reported a new bodotriid, *Cyclaspis bacescui* from the shelf off Tampa Bay. Roccatagliata and Heard (1995) reviewed the genus *Oxyurostylis* Calman, 1912 from the eastern United States and reported *O. lecrovae* Roccatagliata and Heard, 1995 and new records for *O. smithi* from the inshore waters of the Florida west coast. *Spelocuma watlingi* Omholt and Heard, 1979, a species previously known from Alabama waters, was reported from Northwest Florida (Perdido Key) by Rakocinzi *et al.* (1996). Based on published records, gray literature, and unpublished records confirmed by

specialists, Camp (1997), listed 20 species from Florida Gulf waters, but gave no specific records or information for their distribution and occurrence. In 2001 the new genus and species, *Normjonesia danieli* Petrescu and Heard, 2001, were diagnosed and described from waters off the southwest coast of Florida (Petrescu and Heard 2001). Most recently, the same authors reported the new species *Almyracuma bacescui* Petrescu and Heard, 2004 from bays along the west and northwest coasts of Florida and described *Sympodomma sarahae* Petrescu and Heard, 2006 from the continental slope and deep shelf off the SW Florida coast.

GENERAL ASPECTS OF CUMACEA MORPHOLOGY

The distinctive morphology of the Cumacea allows its members to be easily separated from other malacostracan crustacean groups. Some of these distinguishing features include: (a) a bulbous carapace composed of the fused dorsal parts of the cephalon (head), and usually the first three (sometimes the first four and rarely the first five) thoracic somites or segments, (b) the absence of a mandibular palp, (c) maxilla 1 (maxillule) with posterior palp bearing one or more long terminal setae (similar to that in Tanaidacea), (d) maxilla 2 (maxilla) either with 3 moveable endites or reduced to small sparsely setose process (e.g. *Campylaspis* Group), (e) the first 3 pairs of thoracic legs modified into maxillipeds for feeding, (f) a long thin abdomen, (g) a single pair of elongate uropods, often giving a “forked tail” impression. (see Figure 1).

The first two thoracic appendages (maxillipeds 1 & 2) are highly modified in cumaceans (see Figure 2). First maxilliped has an enlarged and greatly modified epipodite called the “branchial apparatus” which extends forward to form the siphon and posteriorly to form a broad respiratory structure with or without laminate or finger-like “gills”(see Figure 2) The second maxilliped is quite variable in structure especially in the modifications of palp, more specifically the dactylus (e.g. *Campylaspis*, *Procampylaspis*). In the adult female there is a “multi-fingered”-like epipodite that extends posteriorly into the marsupium and is apparently involved the incubatory process. These modifications of the female second maxilliped and the first maxilliped are unique to the Cumacea.

Members of the order display considerable sexual dimorphism. Females have a large brood chamber or marsupium, a character that allies the Cumacea with other members of the superorder Peracarida. With one known exception, the monotypic genus *Archeocuma* Bacescu, 1972, the females of cumaceans lack pleopods, while in males the number of pleopods can vary from none to five pairs.

Some general characters used to separate the families are the morphology of the mouth parts, development maxillipeds, number of male and female exopods, the presence or absence of a distinct telson, and the number or absence of male pleopods. More specific characters used in distinguishing species and genera include the form and ornamentation (or lack of ornamentation) of the carapace; the degree of development for the exopods in each sex, the morphology of mandibles (shape of molar process. shape of the base), the developmental features of the maxilla 2, maxillipeds 1-3, and pereopods 1-2; the relative lengths of the fifth and sixth pleonites; and the morphology of the uropods (e.g., number of articles in endopod, relative lengths, and setation and setal types on the peduncle, endopod, and exopod).

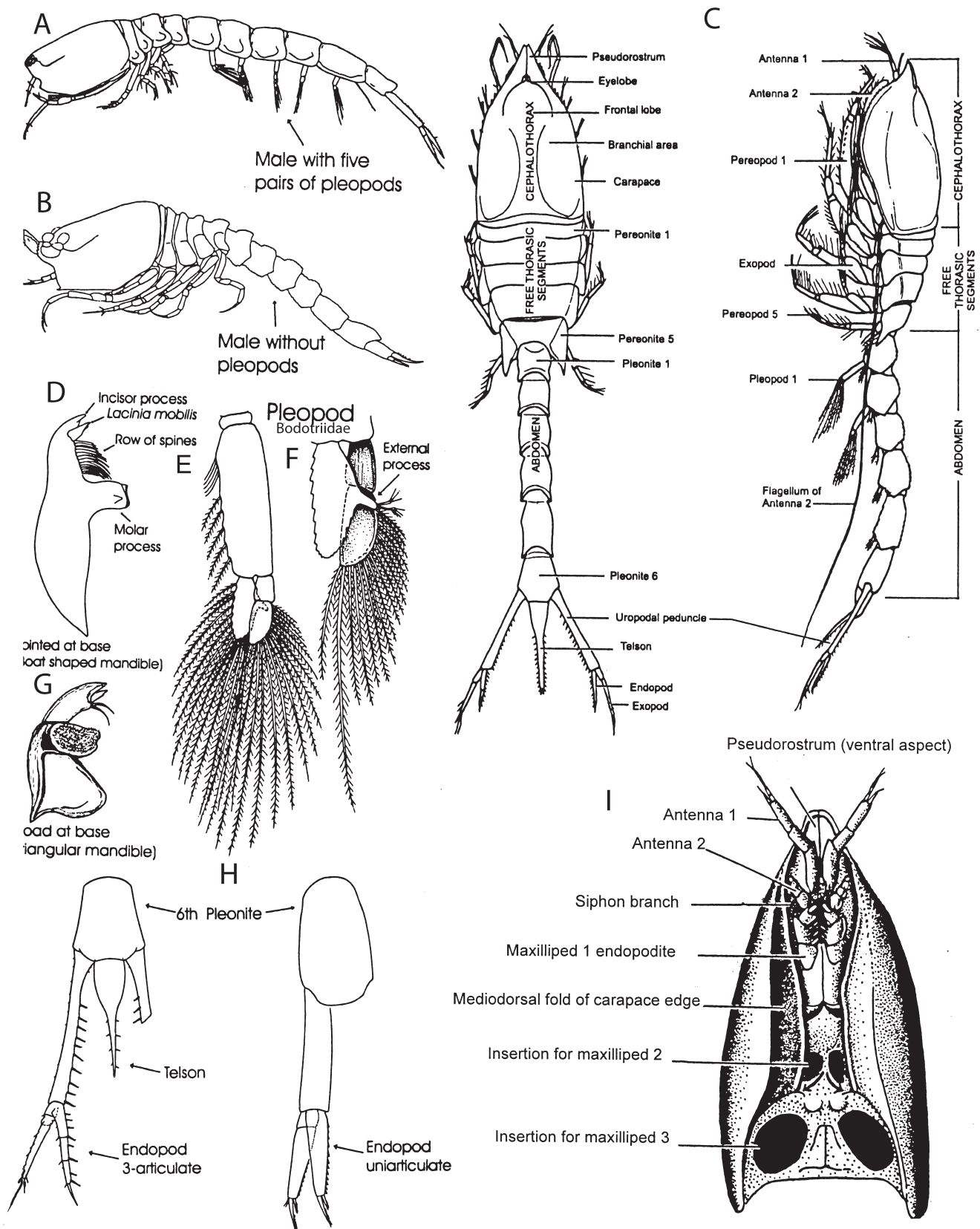


Figure 1. Cumacean morphology. B from Petrescu (2002), C-H from Sars (1900) modified after Jones (1976), I modified from Kestner (1970).

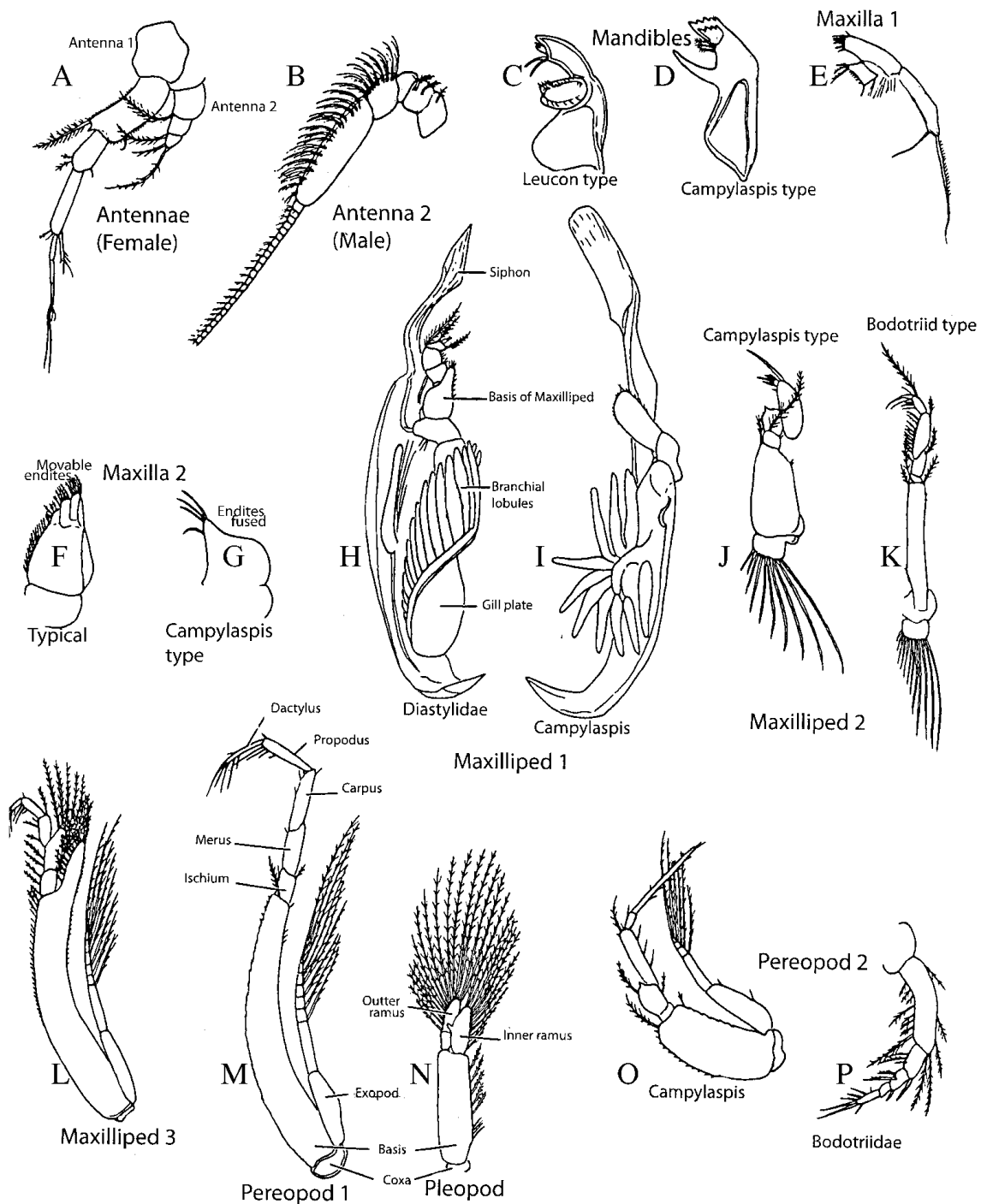


Figure 2. Cumacean morphology: antennae, mouth parts, maxillipeds, pereopods 1-2, and pleopod. All from Sars (1900), modified from Jones (1976).

COLLECTION AND PRESERVATION

PRESERVATION, FIXATION, AND STORAGE: Specimens for morphological examination can be either immediately fixed in 10% formalin sea water or freshwater solution then after a week or so stored (preserved) in 70% ethanol. Living material can be relaxed in a freshwater (70%)/ ethanol (30%) solution and then upon death fixed in formalin and preserved in ethanol as described above. Specimens for DNA analyses should **not** be fixed in formalin, but preserved in a suitably large volume of 95% ethanol or suitable buffer either alive or in very fresh condition, and then stored in a freezer or refrigerator until they can be processed.

SOME SUGGESTED COLLECTION METHODS:

Shallow water: Cumaceans can be sampled using a variety of methods, including:

Rock washings: Dip rocks with attached algae and other incrusting organisms (e.g., hydroids, sponges, bryozoans) several times into a bucket or other suitable container with fresh water mixed with a little ethanol (for DNA analysis) or formalin (for morphological study) added. This will cause most of the epibenthic crustaceans and other motile invertebrates to detach. Discard the rock and immediately sieve (using 0.5 mm or finer mesh) the residue; depending on its intended use, store residue in 95% ethanol or 10% formalin/90% sea water solution. Rock washing techniques work best in tropical reef and back reef “live-bottom” habitats. In such habitats small cryptic and epibenthic cumaceans of the family Nannastacidae can be collected employing this collection method.

Fine mesh (0.5-1.0mm) kicknet or dredge net: Push by hand in depths of less than 1.5 m so that the net skims through the first few centimeters of bottom substrata. Place sample in bucket, plastic dish pan, other suitable container and then elutriate and sieve as described for rock washings above.

Small epibenthic sleds (e.g., Okelmann) with fine mesh (0.5mm) bags: These sleds are light weight (<20 lbs) and can be pulled by hand in shallow water or by a small boat in depths to over 20 meters, depending on the currents, the diameter of the tow line and the scope should be 3 to 6 times the water depth. In areas with relatively strong currents, a 2 to 4 kg weight can be placed at the end of the tow line where it attaches to the harness of the sled. When the sled is retrieved, place sample in a bucket, plastic dish pan, or other suitable container and then it can be processed for morphological or DNA analyses as described above for rock washings.

Benthic grabs (e.g., Ponor, mini-Ponor, Ekman): Samples collected by benthic grabs should be elutriated, sieved, fixed and/or preserved in the manner as described for the rock washings.

Light traps: In some habitats (e.g., reefs, off piers) during darkness, light traps have been successful in collecting Cumacea, especially natatory males. Preserve and fix as described for rock washings.

Deep-water sampling usually involves box cores, large epibenthic sleds, and anchor dredges. The methods for separation (elutriation), fixation, and preservation of samples are similar to those mentioned for shallow waters collections.

TAXONOMIC PROBLEMS CAUSED BY IMPROPER LONG TERM FIXATION AND PRESERVATION:

It should be noted that the exoskeleton, particularly the carapace, of cumaceans that have been stored in unbuffered formalin or ethanol for long periods of time (10+ years) can lose the spines, tubercles, and other ornamentation, which apparently become eroded and dissolved by acidic preservatives, leaving the surface of the exoskeleton smooth where it had once been spinose or nodulose. The resultant loss of such features and characters caused by improper preservation and fixation can cause taxonomic confusion.

Also, even if specimens are kept in buffered formalin, after extended periods, the surface of the exoskeleton in Cumacea, as well that of other small crustaceans, may become covered by "fixation artifacts," especially small crystals. These chemical artifacts can hinder or thwart specific identification and make specimens unsuitable for study or reference material. Ethanol (70-80%) buffered with a small amount of borax (about a table spoon per five gallons of ethanol) appears to be a good long term preservative for material to be used in morphological studies.

KEYS

The keys developed for this guide must be used with the caveat that the characters chosen to separate the genera and species in the Florida region are not applicable to cumacean faunas for other regions of the world. The keys are termed “artificial” since the taxa are distinguished using superficial or apomorphic (highly derived) characters that often do not reflect their systematic relationships.

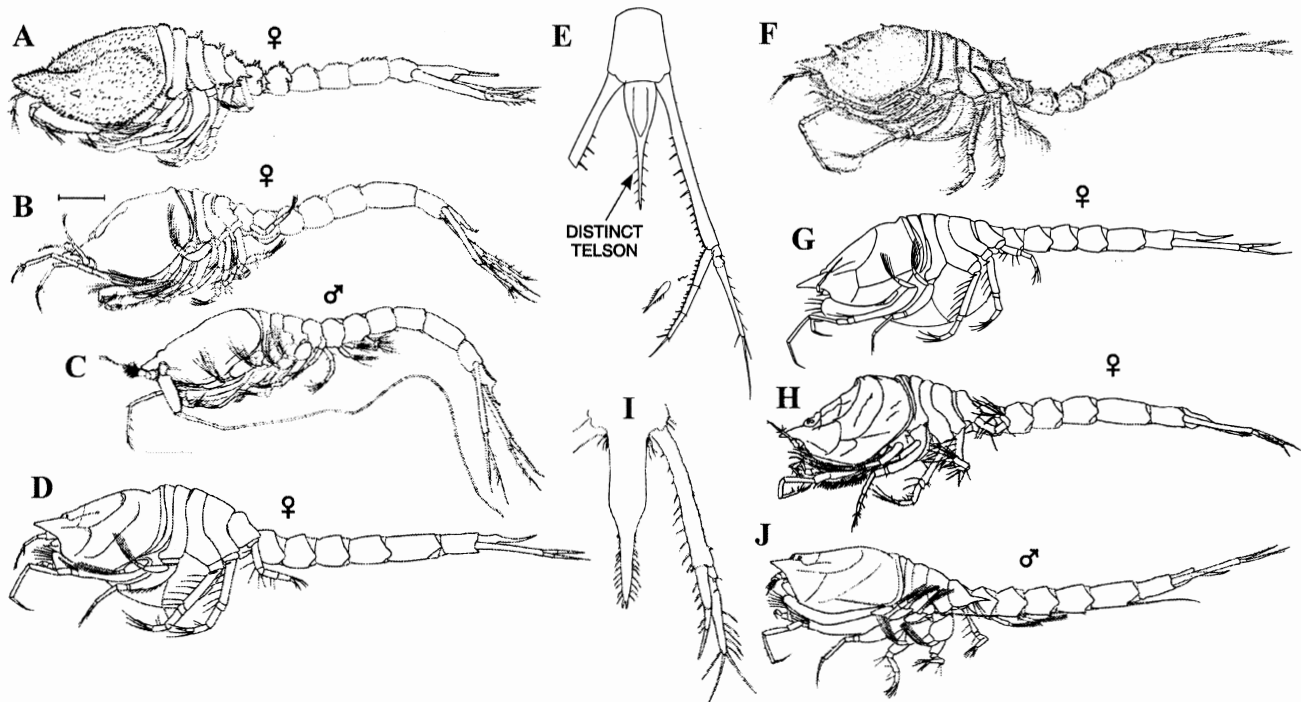
Unfortunately, for the non-specialist many of the important generic characters (e.g., features of the mandible, maxillae, first and second maxilliped) can not be viewed properly without dissection and the use of a compound microscope. Because cumaceans are usually quite small and fragile, examination of the mouth parts and other internal structures often leads to the destruction of the specimen; we have attempted as much as possible to use external characters in the keys to avoid the necessity for dissection.

For some genera (e.g., *Cumella*) whose species exhibit marked sexual dimorphism, the male form remains unknown or unrecognized. Thus, in this guide, the keys to the families and the keys to the genera and species within each family are largely based on the adult females. When males are known they may be included in a key, but in all cases they are mentioned and sometimes illustrated in the narrative section for species. As pointed out by Jones (1963), without the availability of the male stage, attempting to key females in some families often can be quite difficult, especially for the non-specialist. In the keys presented here for the four cumacean families known from Florida coastal and inner shelf waters, both male and female characters (when diagnostic) are used, including those for which dissection of the mouth parts would be necessary.

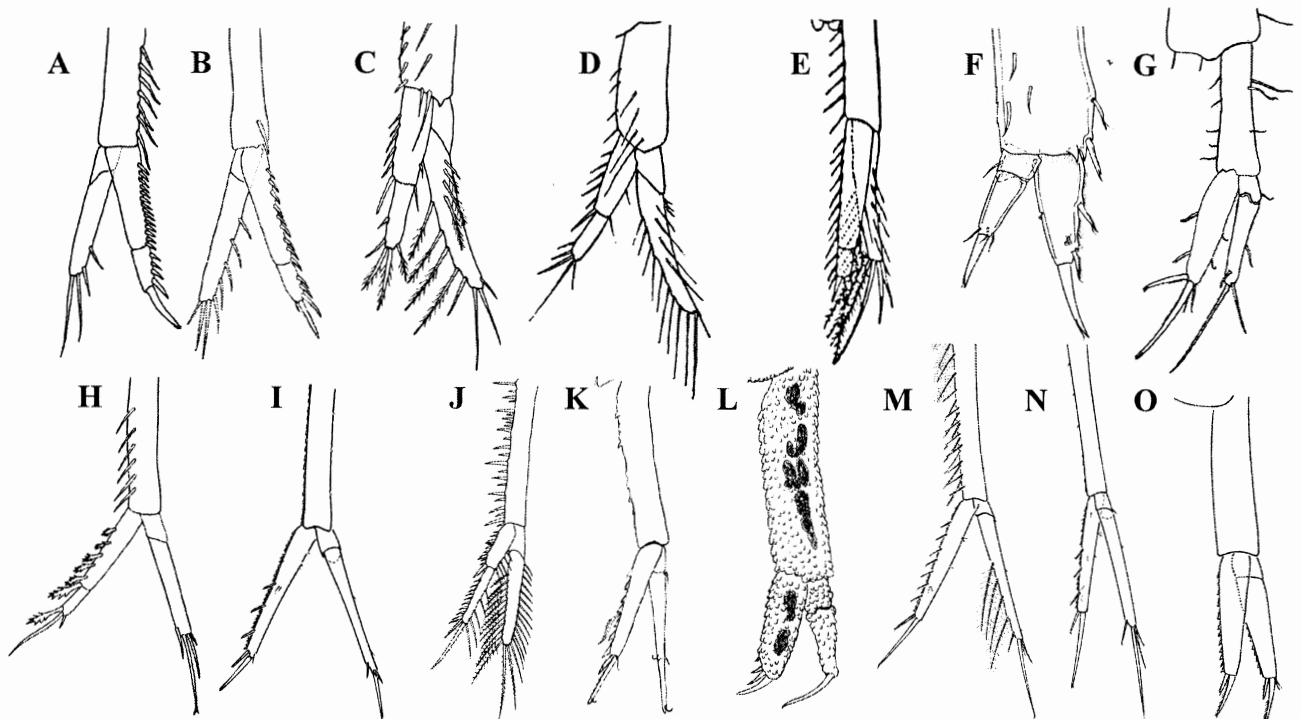
For the families Diastylidae (9 species), Bodotriidae (15 species), and Leuconidae (5 species) single keys were prepared for each family; however, because of the size of the family Nannastacidae (31 species), we have prepared three keys for the identification of genera and species. These keys, like those for the other families, are primarily designed to identify adult females. There is a general key for the nine nannastacid genera known from Florida inshore and shelf waters. Six of these genera *Almyracuma* Jones & Burbank, 1959; *Cubanocuma* Băcescu and Muradian, 1977; *Elassocumella* Watling, 1991; *Normjonesia* Petrescu & Heard, 2001, *Procampylaspis* Bonnier, 1896, and *Styloptocuma* Băcescu and Muradian, 1974 are only represented by a single species. The genus *Schizotrema* Stebbing, 1912 is represented by two species and the remaining two genera, *Campylaspis* Sars, 1965 and *Cumella* Sars, 1865, contain the majority of Florida nannastacids (eight species treated in each key). The species of *Campylaspis* and *Cumella* are treated in separate keys (Key A for species of *Campylaspis* and Key B for the species of *Cumella*).

KEY TO FLORIDA CUMACEAN FAMILIES OCCURING TO DEPTHS OF 100 M

- 1 A. Telson distinct and articulated with sixth abdominal segment, post-anal section having at least one pair of lateral setae and terminating in two relatively short setae or an acute styliform tip. [Uropodal endopod usually with 3 or, less often, 2 articles]
Family Diastylidae Bate, 1856

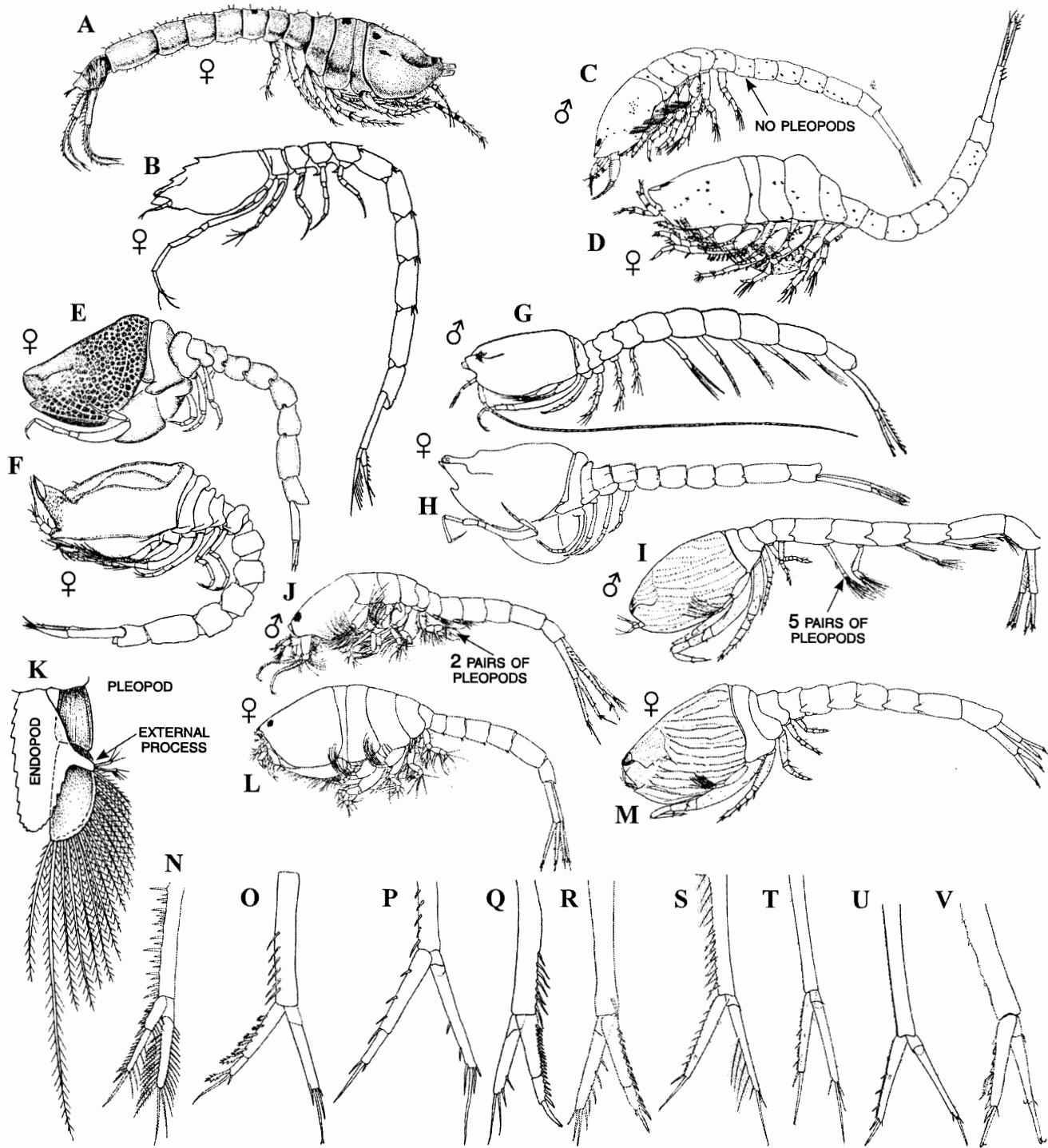


- 1 B. Telson indistinct, reduced with remnants fused with sixth abdominal segment, post-anal section absent or appearing absent. [Uropodal endopods with 1 or 2 articles] 2



2A. Males with five pairs of pleopods **and** antennae with long flagellae extending to posterior region of abdomen **OR** males without pleopods (genus *Spilocuma* only) or with two reduced pairs of pleopods **and** antennae relatively short (not extending past posterior margin of carapace) with pad-like” hold fast structures. Pleopods having inner ramus (endopod) with distinctive process or appendix on outer edge (external process of inner ramus). Exopods present only on first pair pereopods of both sexes (subfamily Bodotriinae) **OR** pereopods 1-2, 1-3, or 1-4 (subfamilies Mancocumatinae and Vaunthompsoninae)

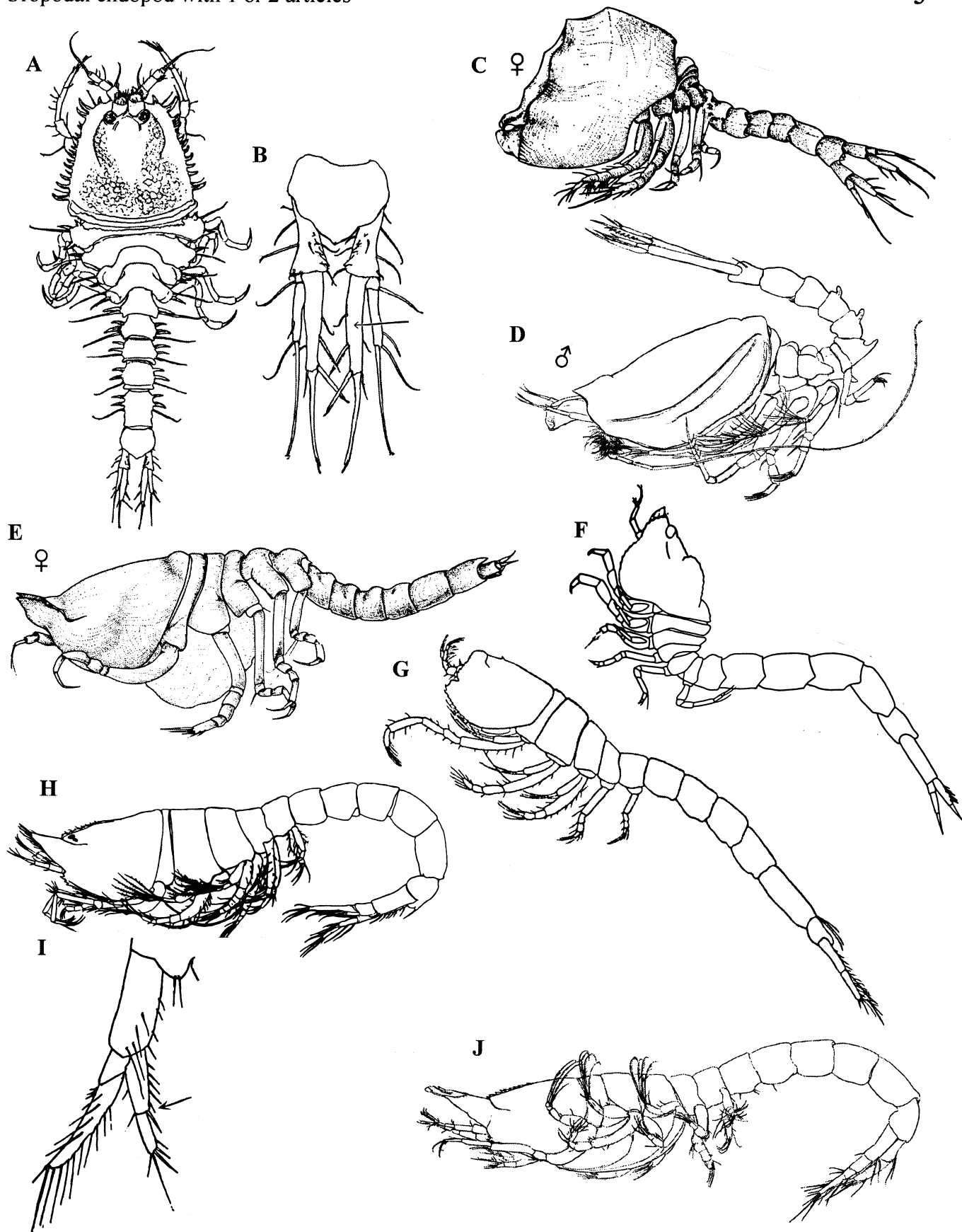
Family Bodotriidae Scott, 1901



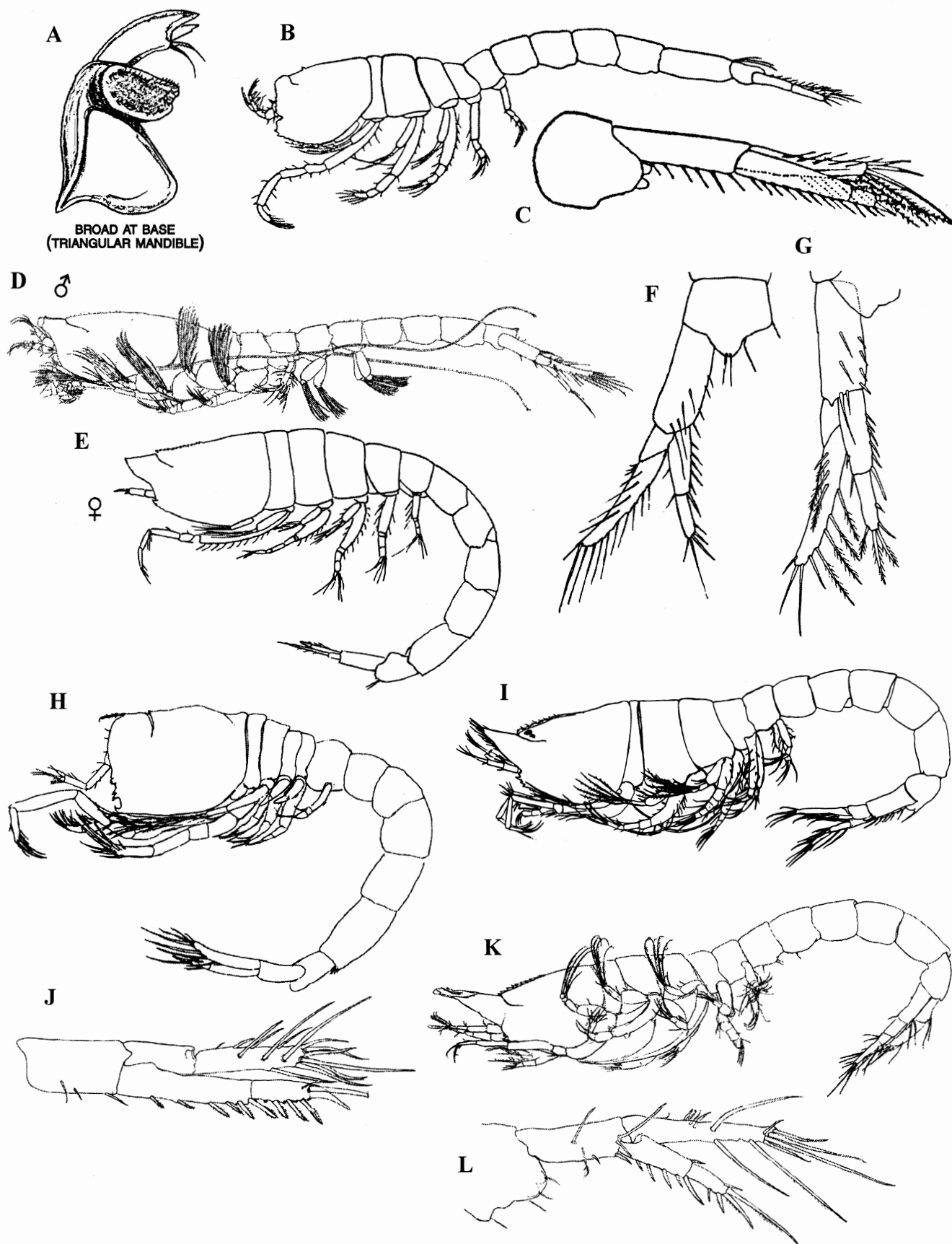
Apocuma body, uropod; Cyclaspis varians body male & female, Sympodomma body; Vaunthompsonia body, uropods; Spilocuma watlingi male, female body; Mancocuma male body; antenna of Spilocuma watlingi

2B. Males lacking pleopods or with two pairs pleopods (inner ramus of pleopod lacking external process.
Uropodal endopod with 1 or 2 articles

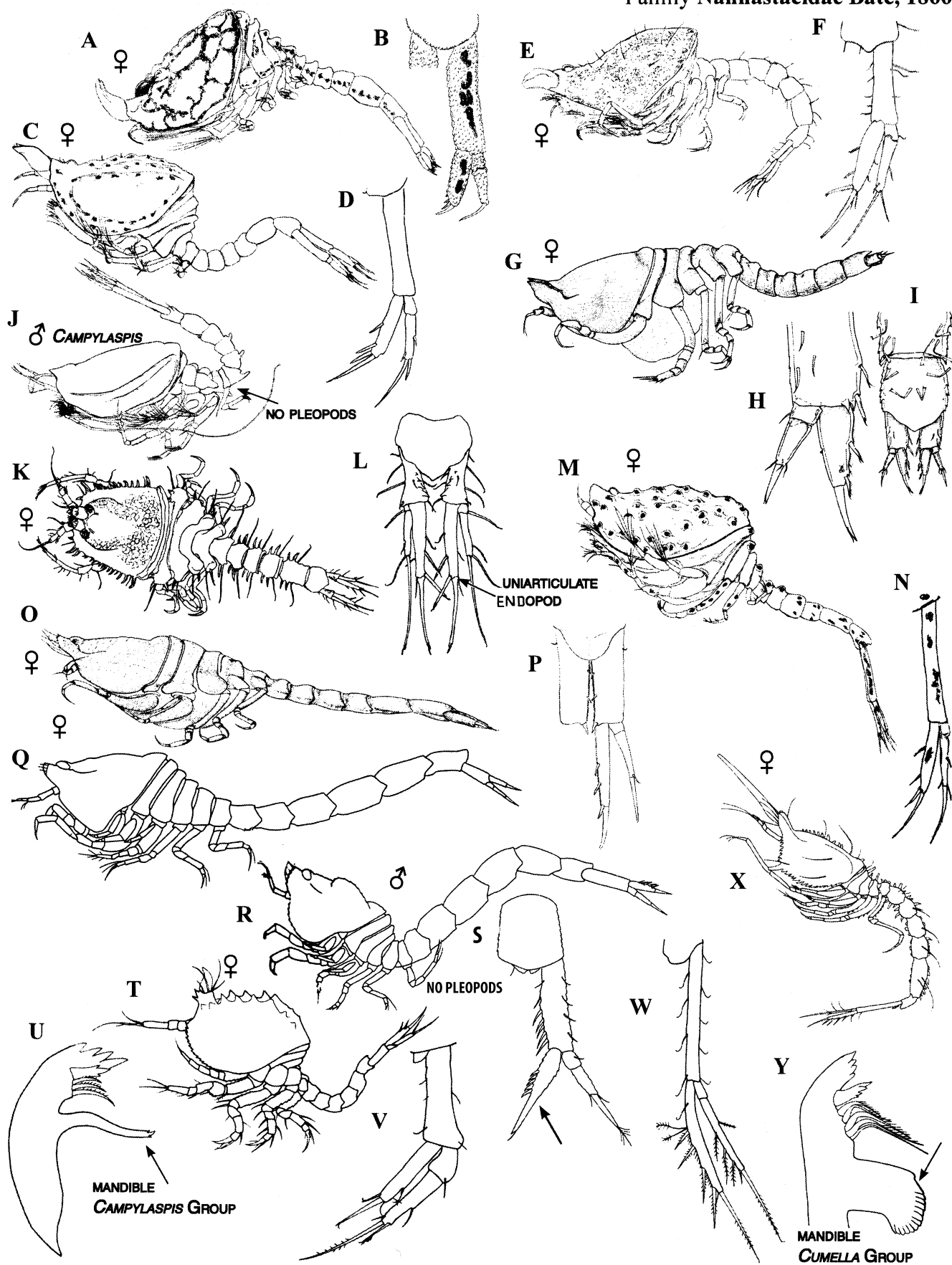
3



3 A. Males with two pairs of pleopods. Mandibles broadened at base. Uropodal endopod biarticulate
 Family **Leuconidae** G.O. Sars, 1878



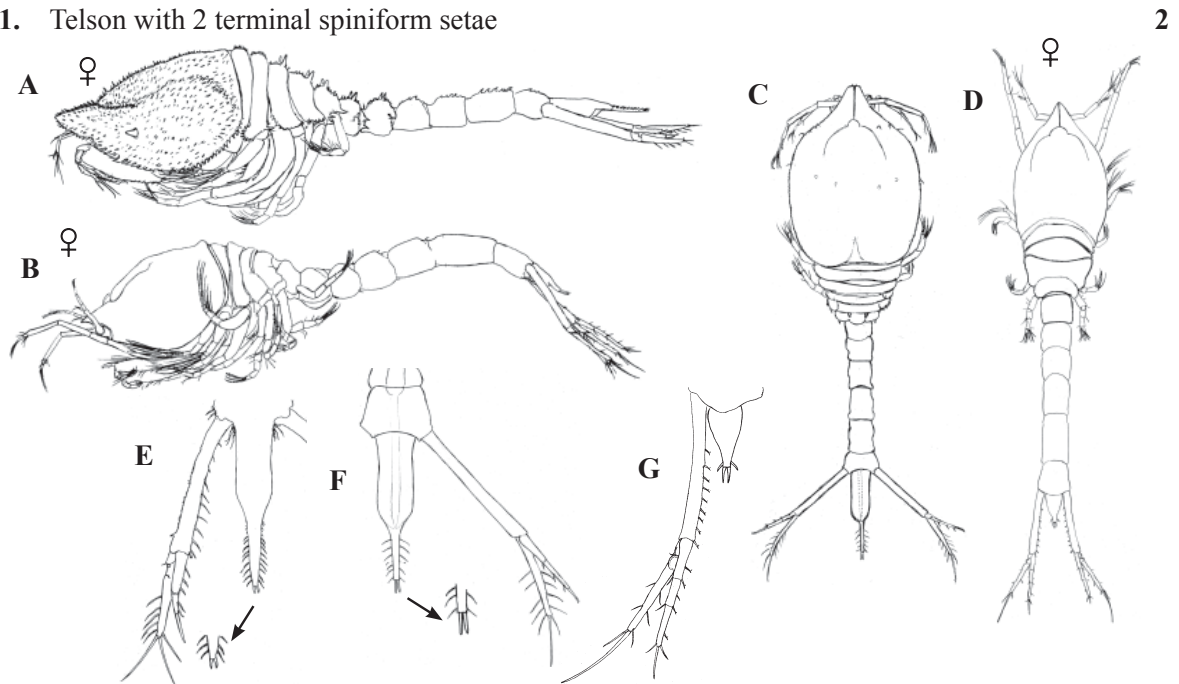
3 B. Males lacking pleopods. Mandibles with boat-shaped base. Uropodal endopod uniaarticulate
 Family Nannastacidae Bate, 1866



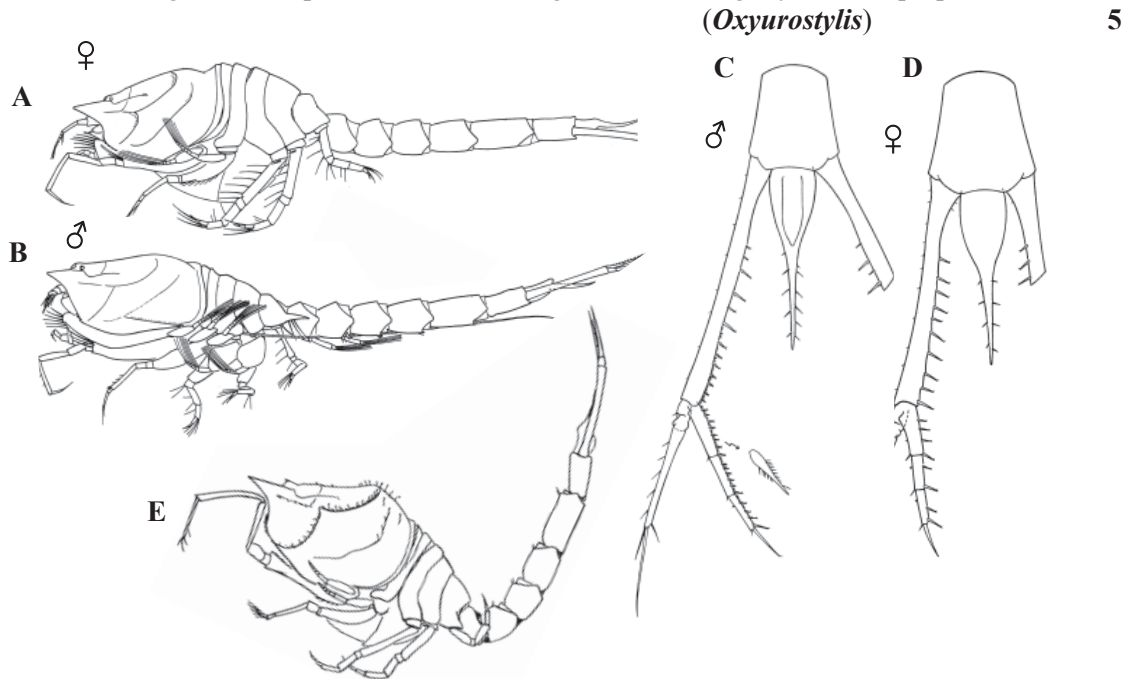
FAMILY DIASTYLIDAE BATE, 1856

Key to the members of the family Diastylidae known from Florida estuarine and shelf waters to depth of 100m. Most of the key characters are based on those of the adult female.

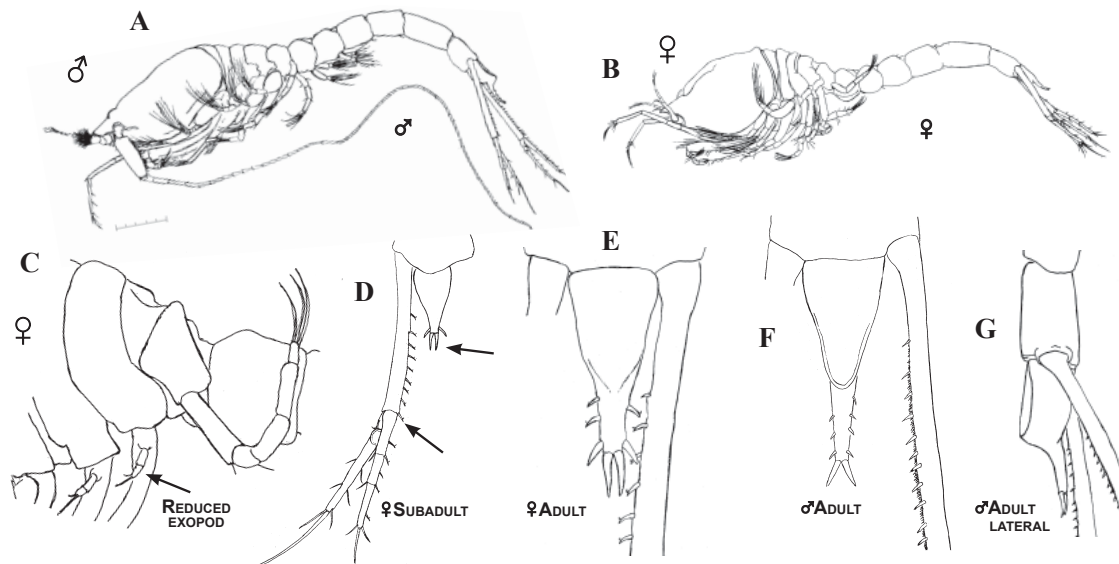
1. Telson with 2 terminal spiniform setae



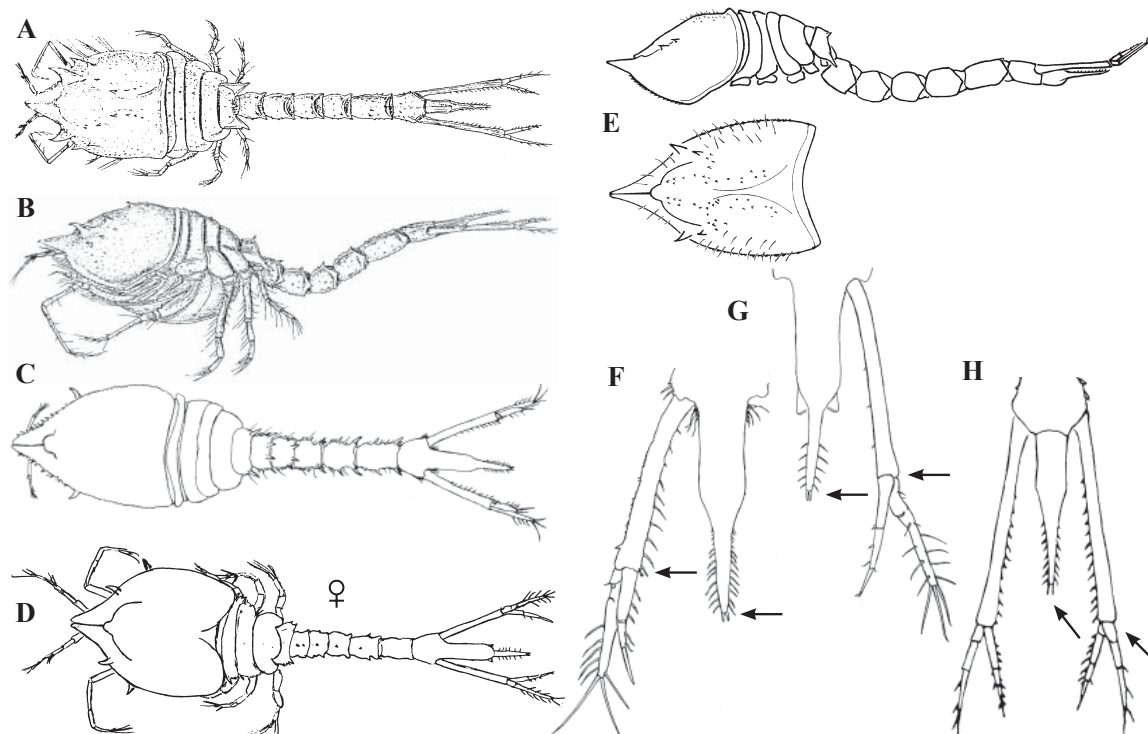
Telson lacking terminal spiniform setae, ending in an acute slightly turned-up tip (*Oxyurostylis*)



2. Carapace **lacking** spines on anterodorsal and lateral surfaces. Females with reduced (vestigial) exopods on pereopods 3 and 4. Telson short, less than 1/3 length of the uropodal peduncle; postanal section with 5 or fewer (males) pairs of lateral setae *Diastylis* sp. A

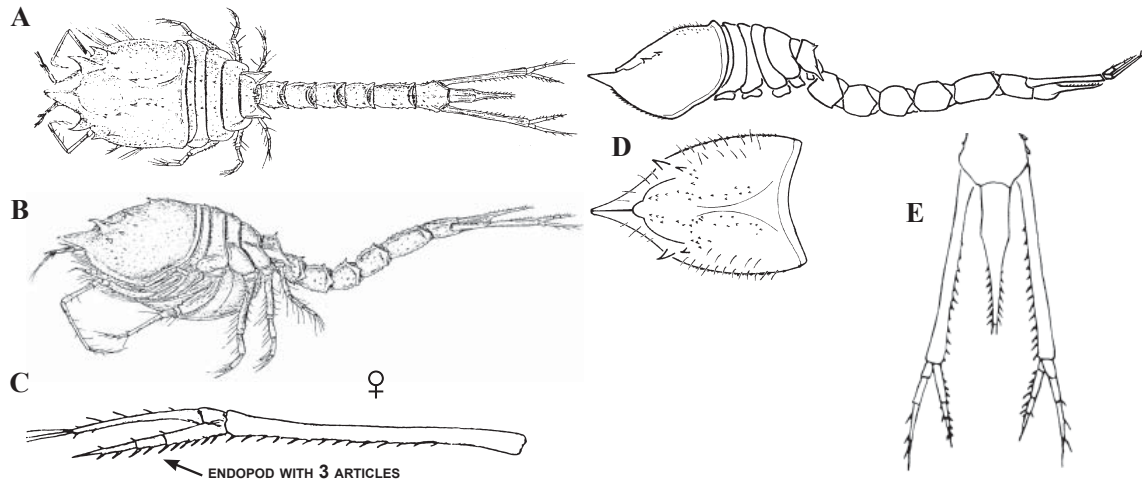


Carapace **with** spines on anterodorsal and lateral surfaces. Female without exopods on pereopods 3 and 4. Telson well-developed, nearly reaching to or extending past uropodal peduncle; postanal section with 6 or more pairs of lateral setae 3



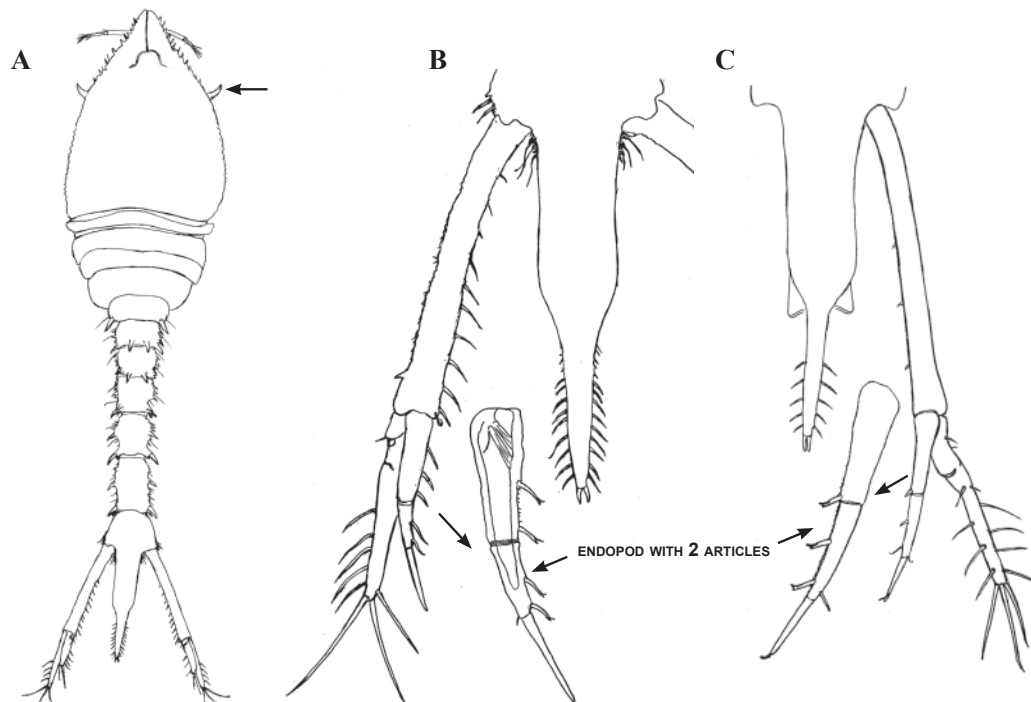
3. Carapace with 2 pairs of large pointing teeth at each side of the frontal lobe. Uropodal endopod with 3 distinct articles. Telson; anal cone distinctly less than half the length of uropodal peduncle

Diastylis bispinosa (Stimpson, 1853)



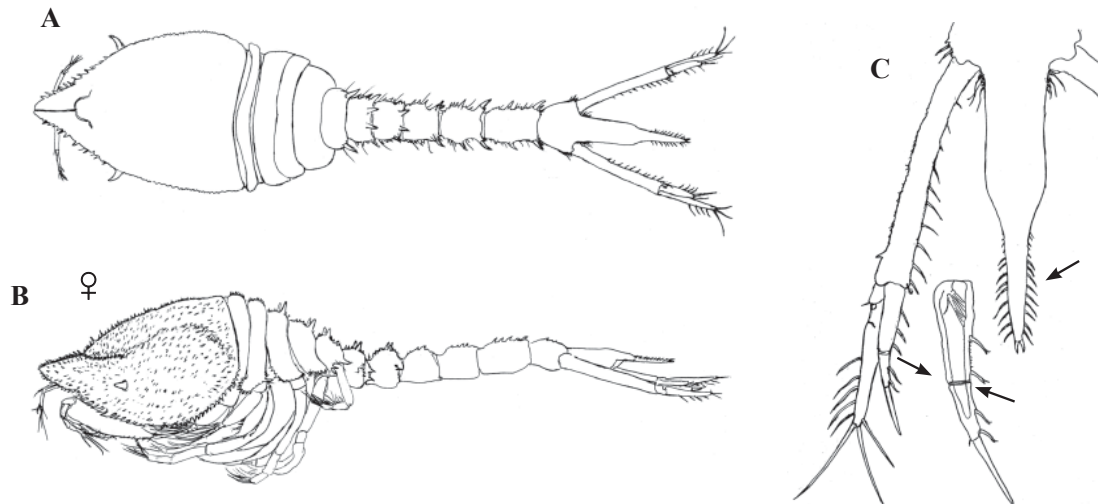
Carapace with 0-1 pair of large spines on anterolateral margin (not adjacent to frontal lobe). Uropodal endopod with 2 articles. Telson; anal cone $\frac{1}{2}$ or more the length of uropodal peduncle

4



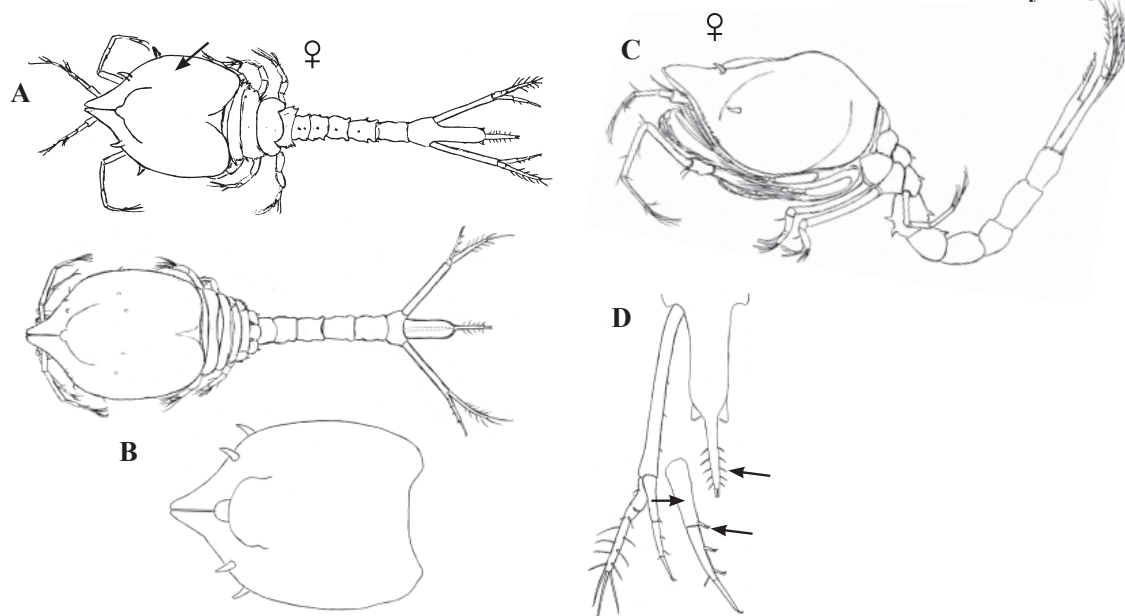
4. Carapace covered with small spines, and with a large spine below posterior margin of frontal lobe on each side. Pereonites 3-5 and pleonites 1-2 armed dorsally with pairs of well-developed spines. Uropod: inner margin of peduncle with 6-9 setae; endopod having proximal article with 3 lateral setae, no seta at articulation with distal article

Diastylis sp. B



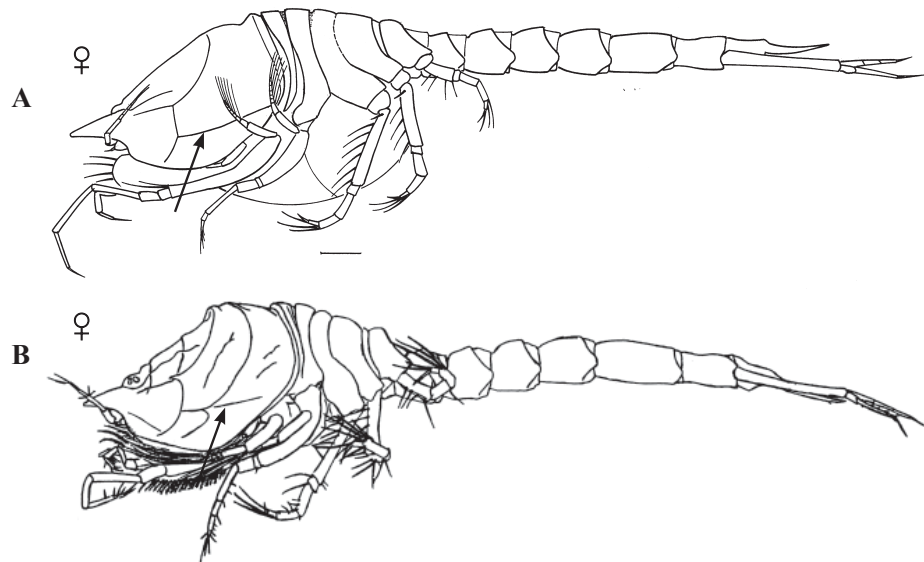
Carapace rounded, appearing inflated from dorsal aspect; in **adult female** anterior half usually armed with one or two pairs of spines on either and/or both the lateral margin and on anterodorsal surface just below frontal lobe, the rest of the carapace relatively smooth, in **subadult female** smooth with a few small blunt spines dispersed over anterior half. Pleonite 1 with one or two well-developed curved spines on mid-ventral surface. Uropod with inner margin of peduncle appearing unarmed, but with 2 to 4 minute spiniform setae; endopod having proximal article with one lateral seta, which is located at articulation with distal article

Diastylis sp. C



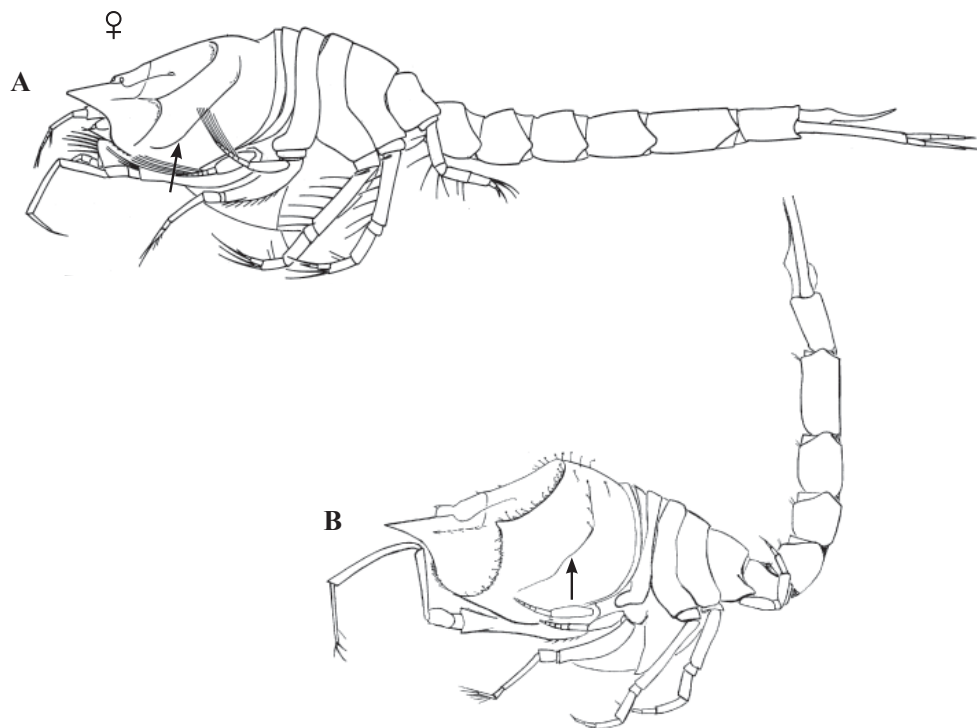
5. Carapace showing a horizontal ridge on each side (see arrows)

6

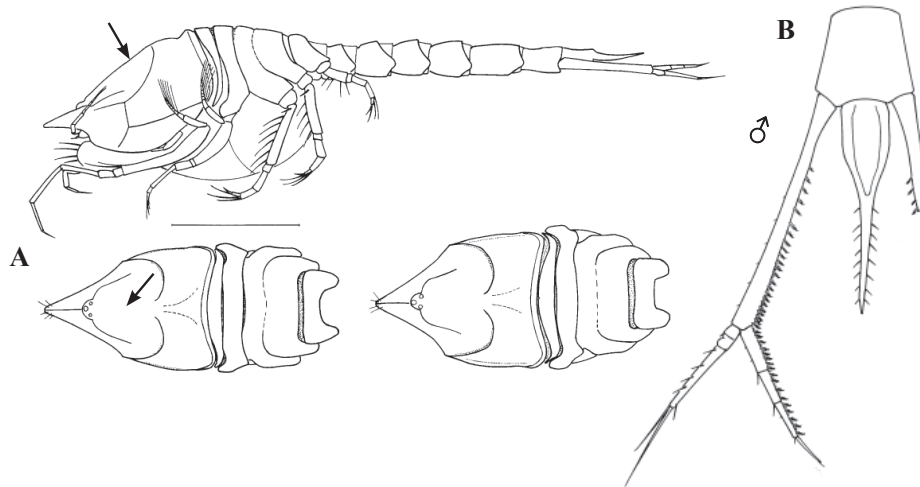


Carapace lacking such horizontal ridge (see arrows)

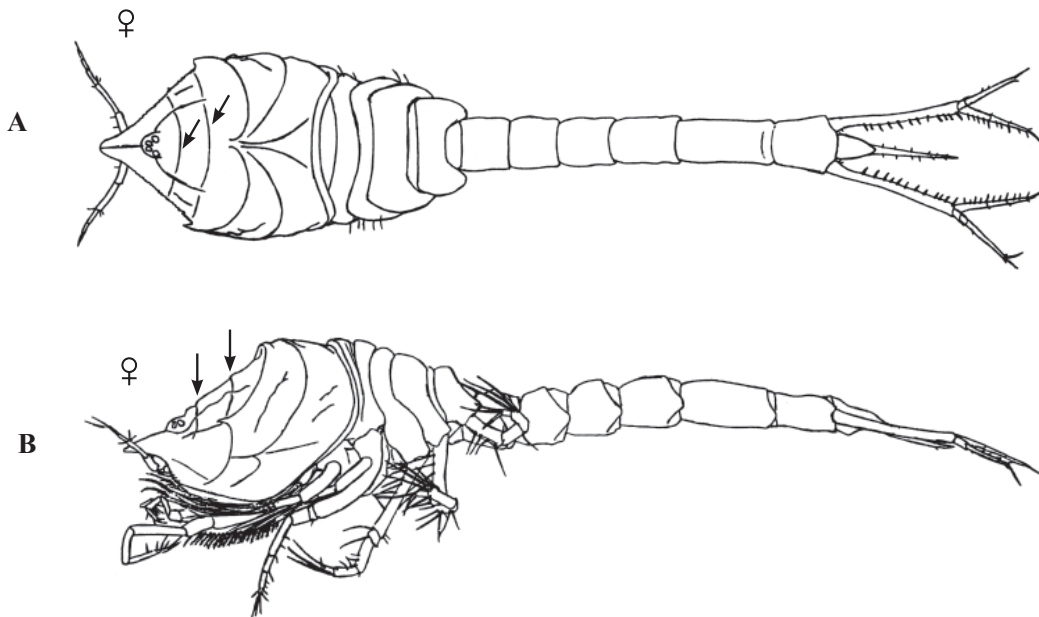
7



6. Anterior oblique ridge of carapace not produced into a tooth. Second oblique ridge absent. Frontal lobe lacking transverse ridges (see arrows) *Oxyurostylis lecroyae* Roccatagliata & Heard, 1995

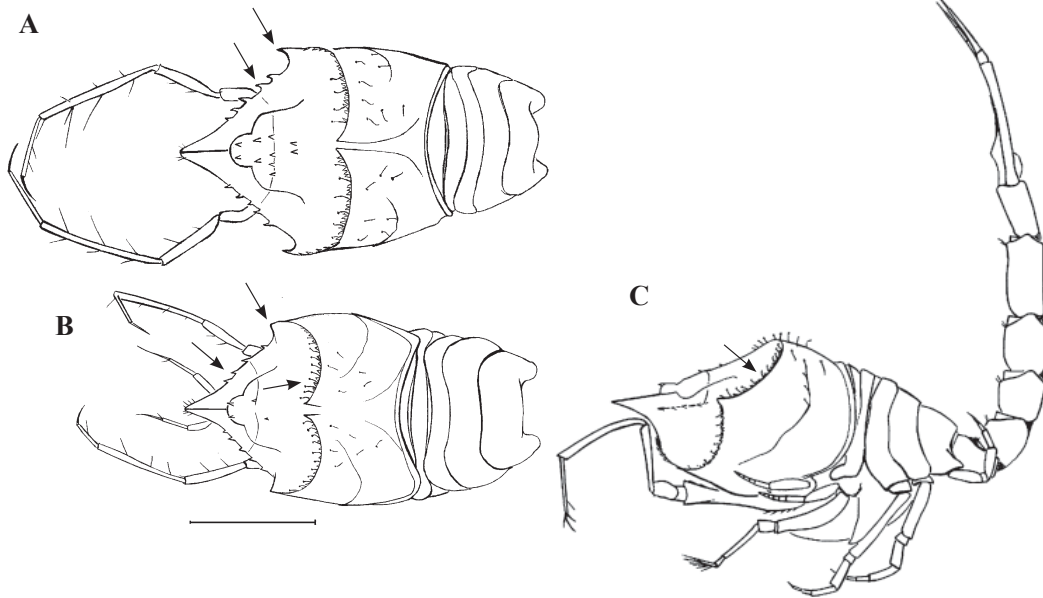


- Anterior oblique ridge produced into a tooth. Second oblique ridge present. Frontal lobe with 2 transverse ridges (see arrows) *Oxyurostylis* sp. C *sensu* Rakocinski et al., 1991



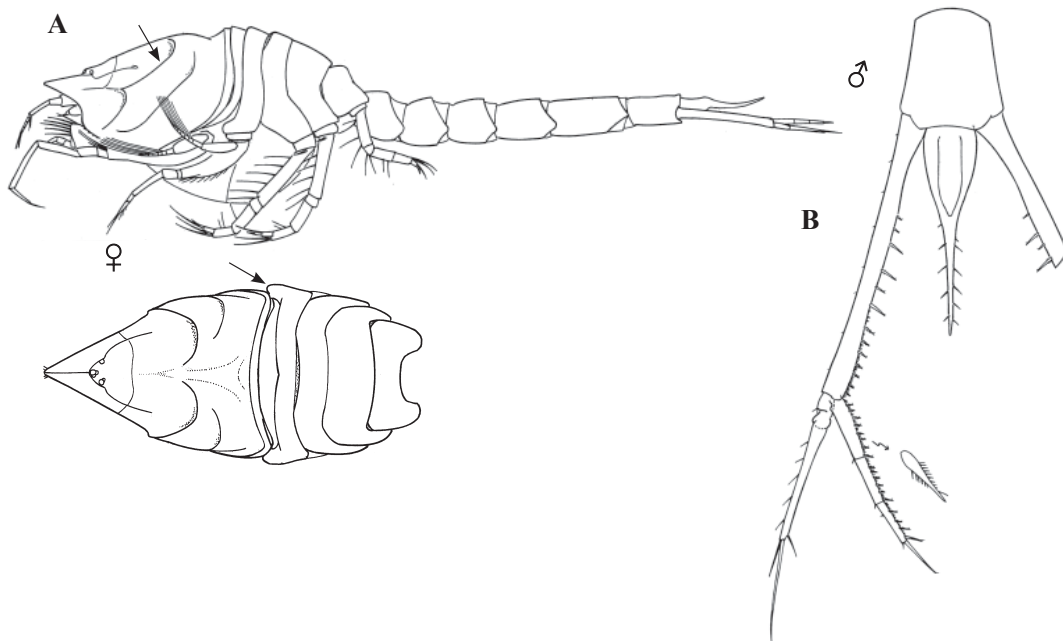
7. Anterior oblique ridge of carapace usually produced into a stout tooth and furnished with small denticles and hairs; pseudorostral and frontal lobes with denticles; first pereopod very long

Oxyurostylis cf. *antipai* Petrescu, Iliffe & Sârbu, 1993



If the anterior oblique ridge is produced into a tooth, this is very small. Surface of carapace smooth (without denticles) and glabrous; first pereopod not very long

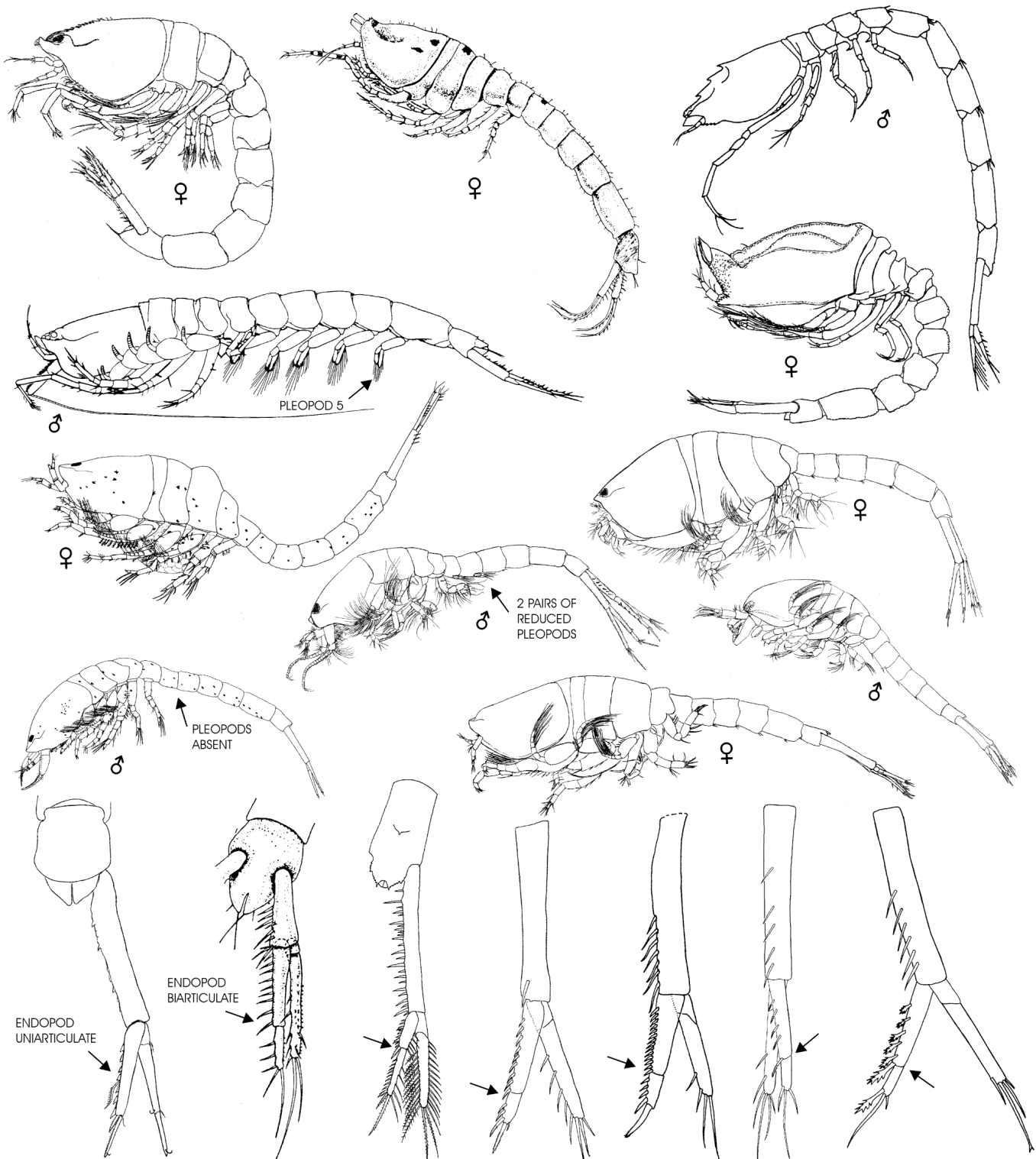
Oxyurostylis smithi Calman, 1912



FAMILY BODOTRIIDAE SCOTT, 1901

Key to the adults of the family Bodotriidae known from Florida estuarine and shelf waters to depth of 100 m

1. Exopods present on maxilliped 3 and pereopods 1-2, 1-3 or 1-4. Uropodal endopod usually with 2 (rarely 1) articles. Male antennae variably developed (threadlike and as long as body, or modified as short and robust claspers). Males with 0, 2 or 5 pairs of pleopods 2

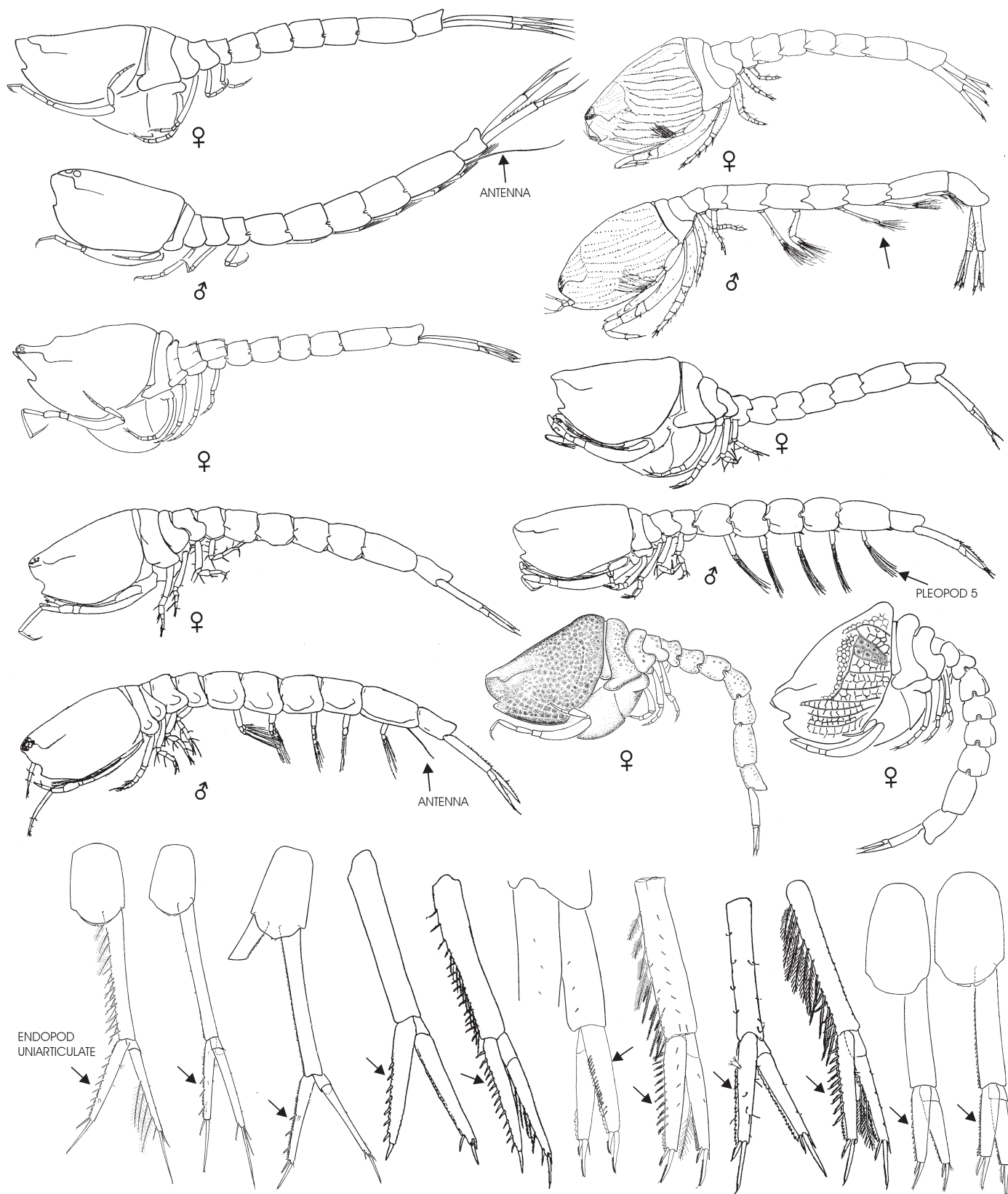


Exopods only on maxilliped 3 and pereopod 1. Uropodal endopod of 1 article. Male antenna threadlike and as long as body. Male with 5 pairs of well developed pleopods

Subfamily Bodotriinae

(*Cyclaspis*)

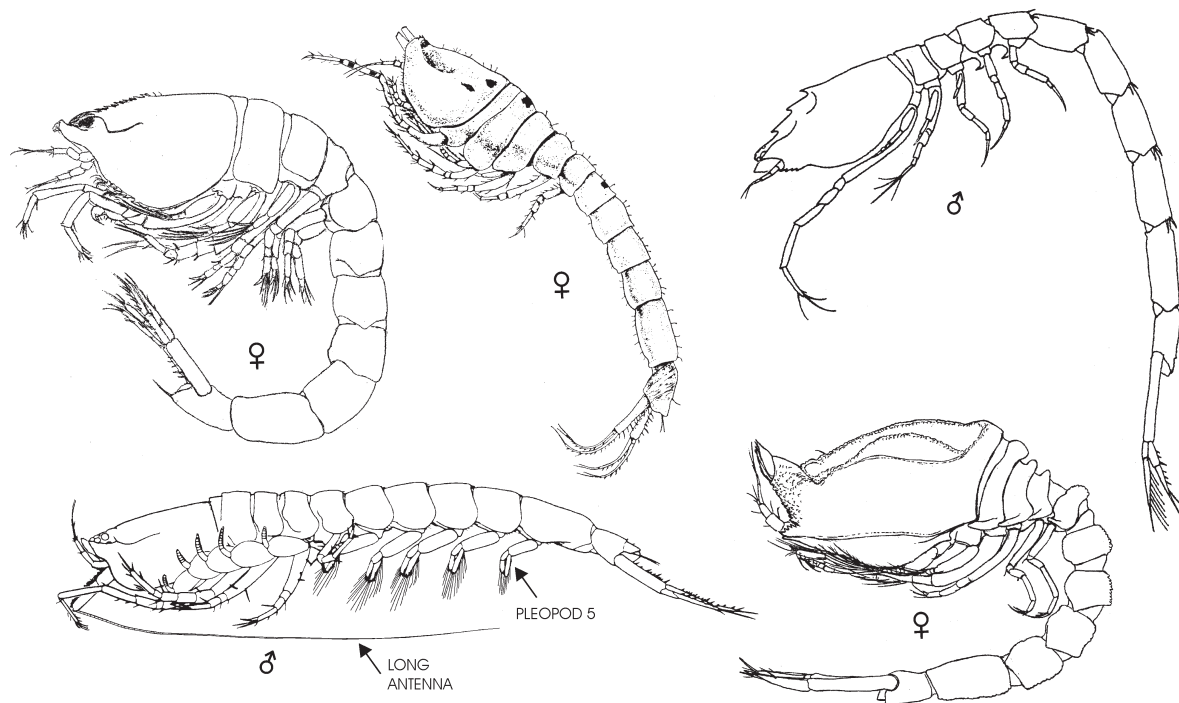
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2. Adult male and female subequal in size. Males with long antennae (about as long as body) and 3-5 pairs of well developed pleopods. Females with exopods on pereopods 1-3 (rarely on pereopods 1-2)

Subfamily Vaunthompsoniinae

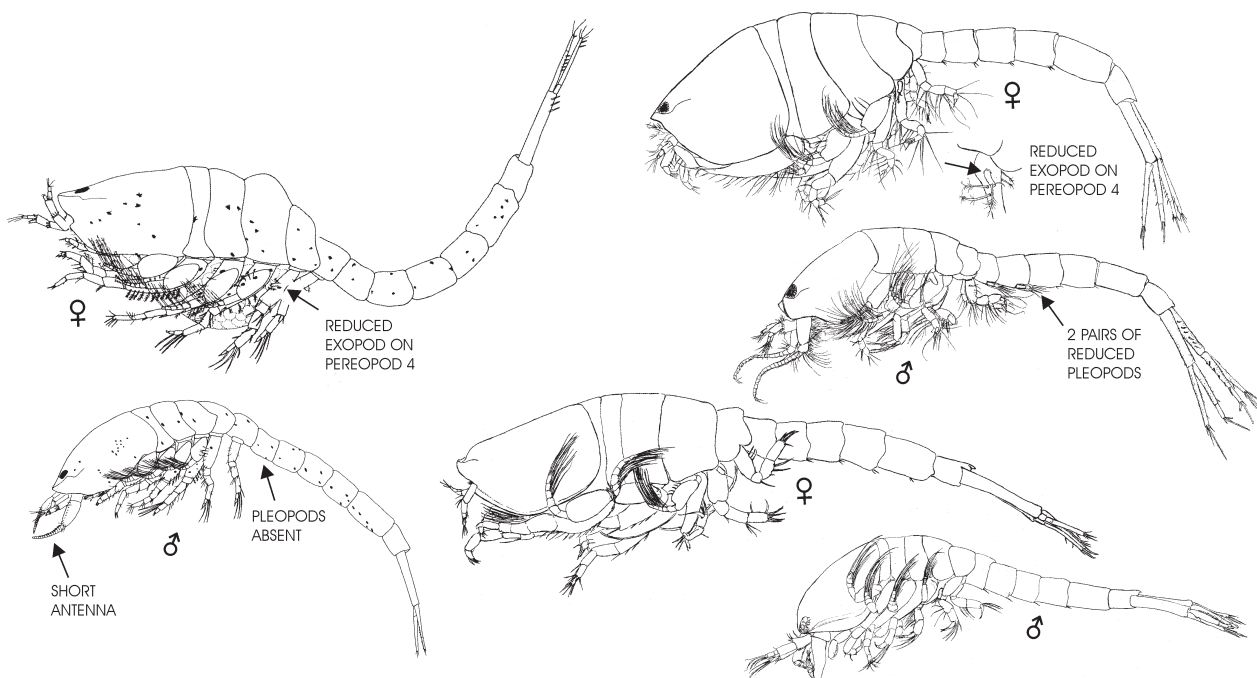
9



Adult male distinctly smaller than adult female, with short antennae (they do not reach end of thorax), lacking pleopods or having 2 rudimentary pairs. Females with exopods on pereopods 1-4 (those on pereopod 4 reduced)

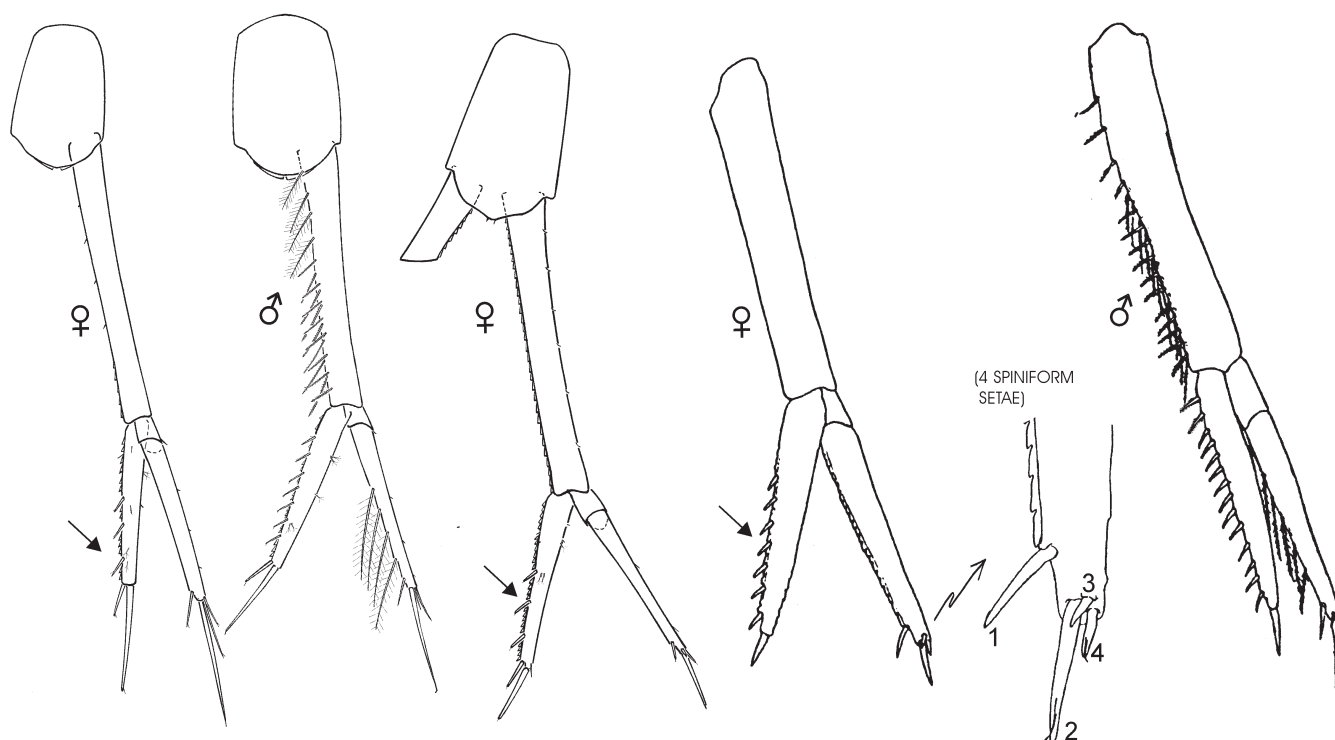
Subfamily Mancocumatinae

12



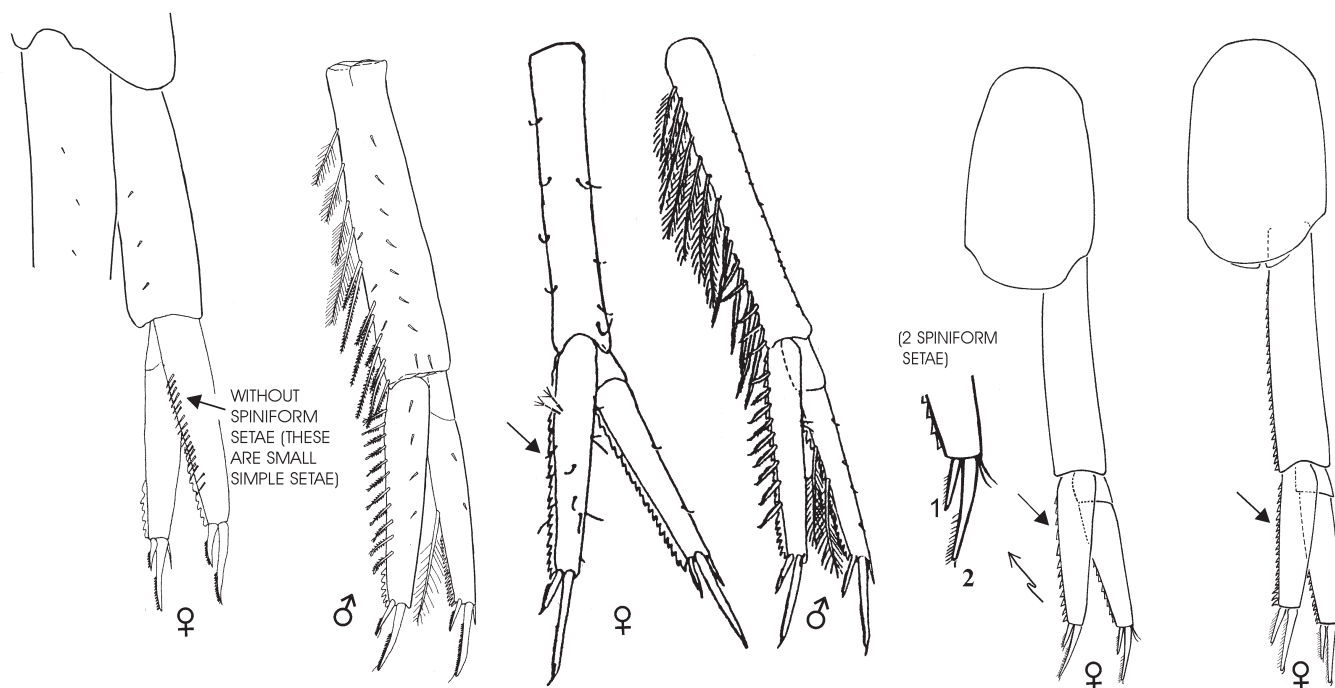
3. Uropodal exopod of both sexes with 4 spiniform setae (1 subterminal and 3 distal). Uropodal endopod of females having a row of spiniform setae on inner margin

4



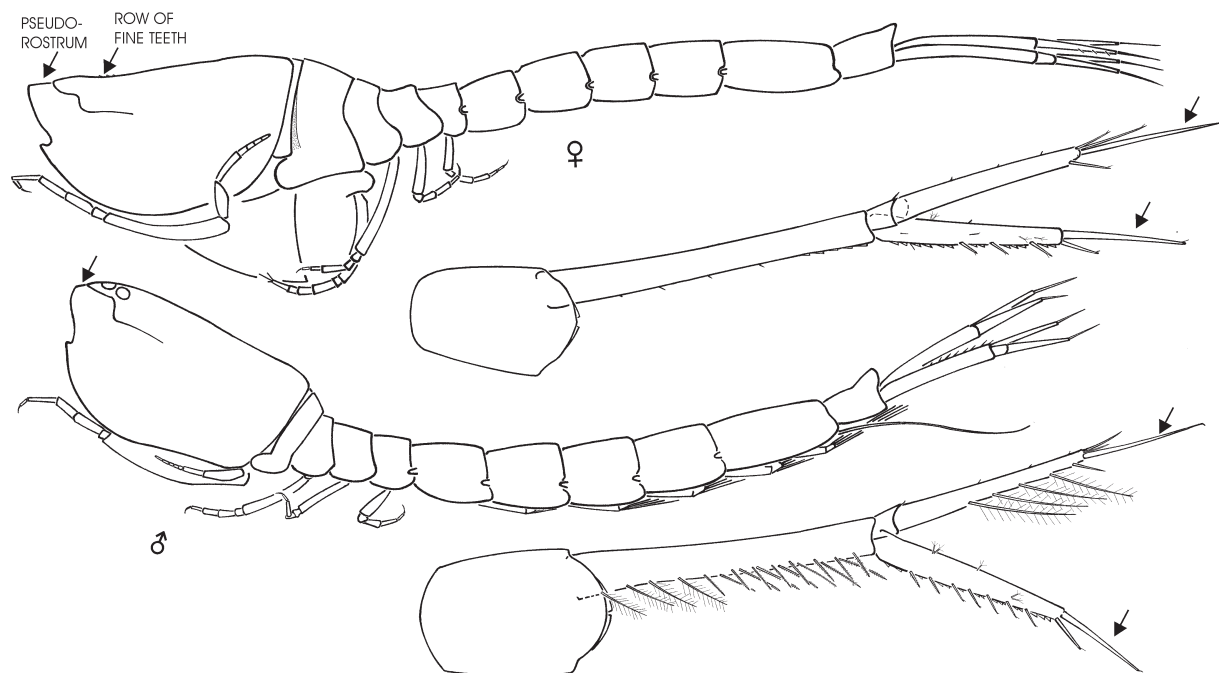
Uropodal exopod of both sexes with 2 spiniform and 1-2 small simple setae at distal end. Uropodal endopod of females without spiniform setae on inner margin

6



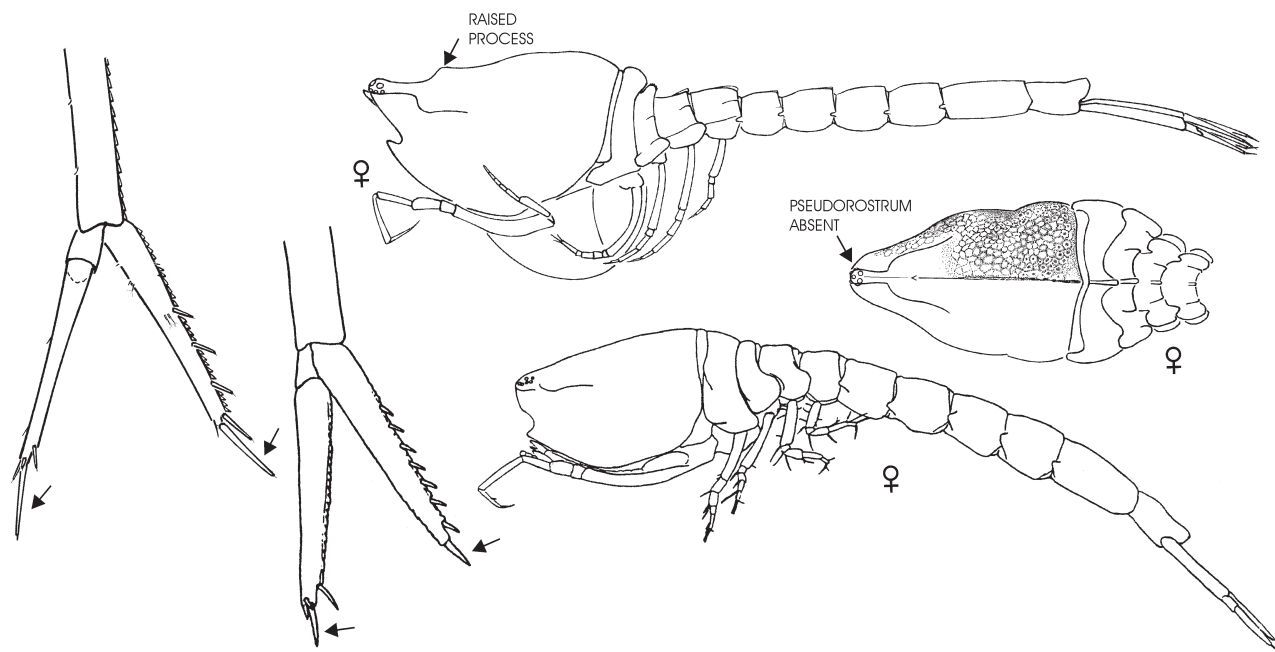
4. Pseudorostrum about as long as the ocular lobe in females. Dorsal midline of female carapace with a row of fine teeth just behind the ocular lobe (teeth may be absent). Uropodal endopod and exopod with largest terminal seta $\frac{1}{2}$ or more length of each ramus

Cyclaspis varians Calman, 1912



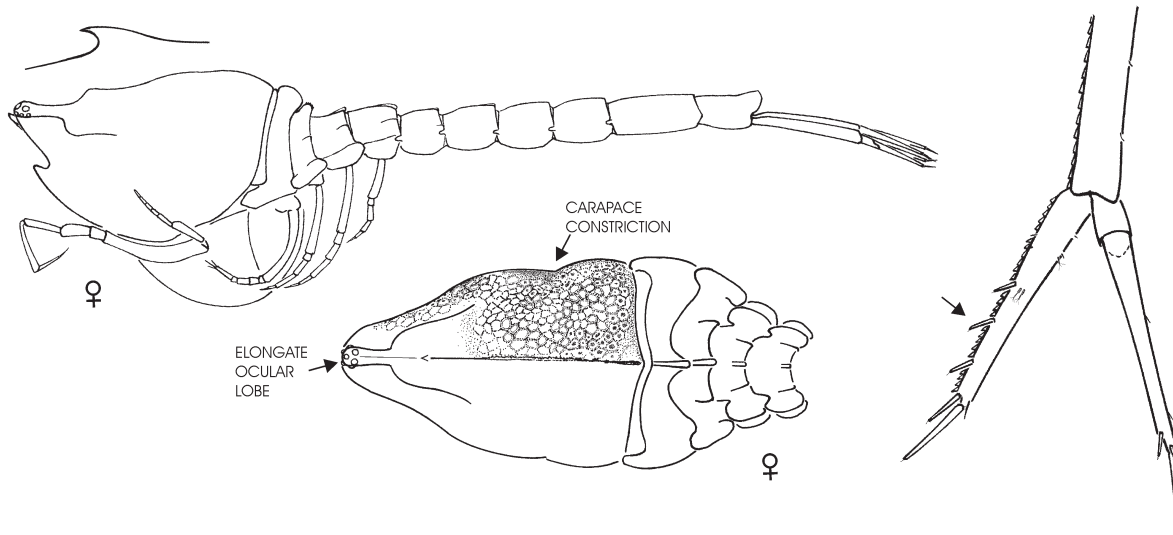
Pseudorostrum absent or very short (pseudorostral lobes barely meeting in front of ocular lobe). Dorsal midline of female carapace without serrations, with or without a strong tooth or raised process. Uropodal endopod and exopod with largest terminal seta $\frac{1}{3}$ or less length of each ramus

5



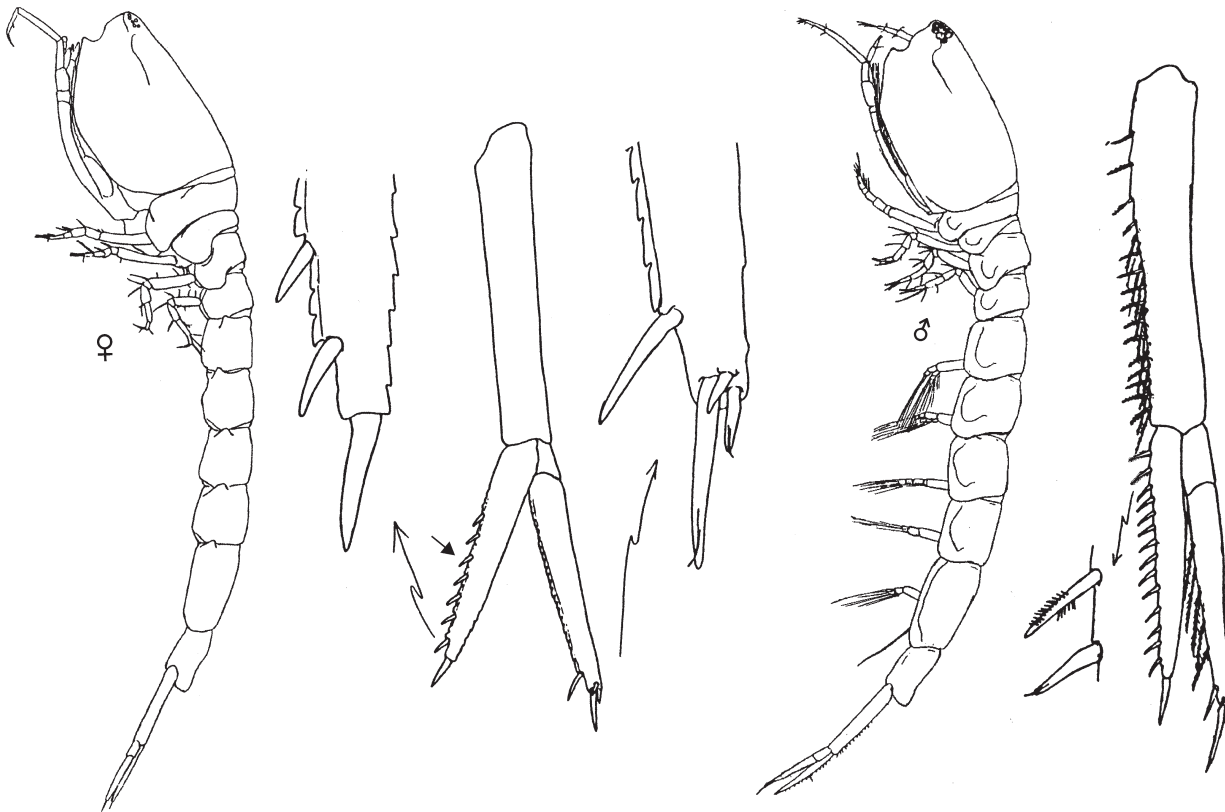
5. Female ocular lobe elongate, about twice as long as wide. Female frontal lobe armed with a process, ranging in shape from an acute tooth to a round elevation. Female carapace in dorsal view with constriction about 2/3 from tip of pseudorostrum. Female uropodal endopod having inner margin armed with 3 spiniform setae

Cyclaspis unicornis Calman, 1911



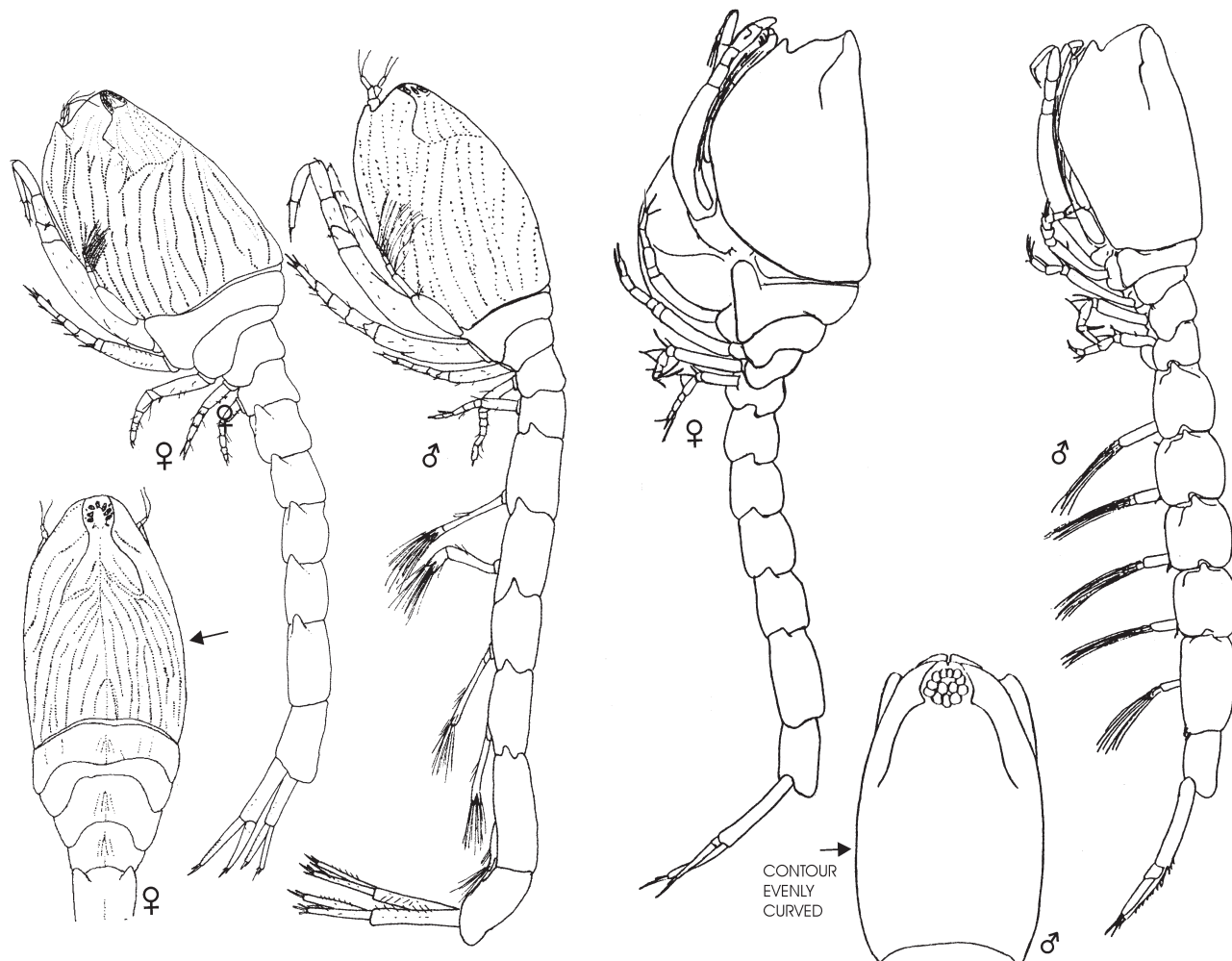
Female ocular lobe about as long as wide. Female frontal lobe lacking a tooth or raised process. Female carapace dorsally uniform, not constricted in posterior third. Female uropodal endopod having inner margin armed with row of 7-8 spiniform setae

Cyclaspis sp. **B** sensu Rakocinski *et al.*, 1996



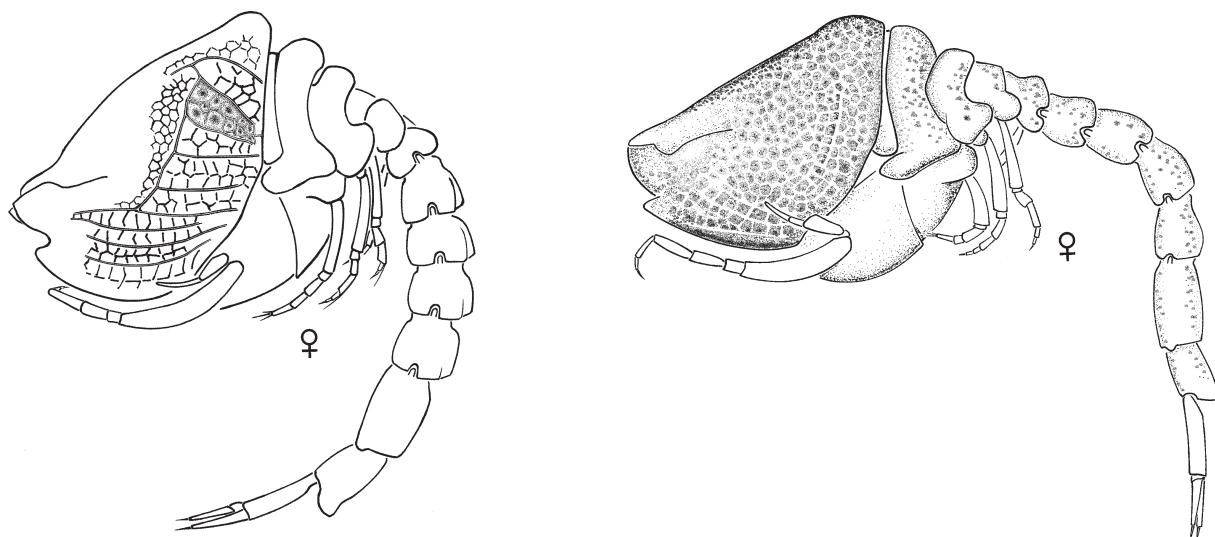
6. Carapace smooth or with fine striae, but lacking ridges and/or a coarse reticulate pattern. Viewed from above the lateral contour of the carapace is evenly curved

7



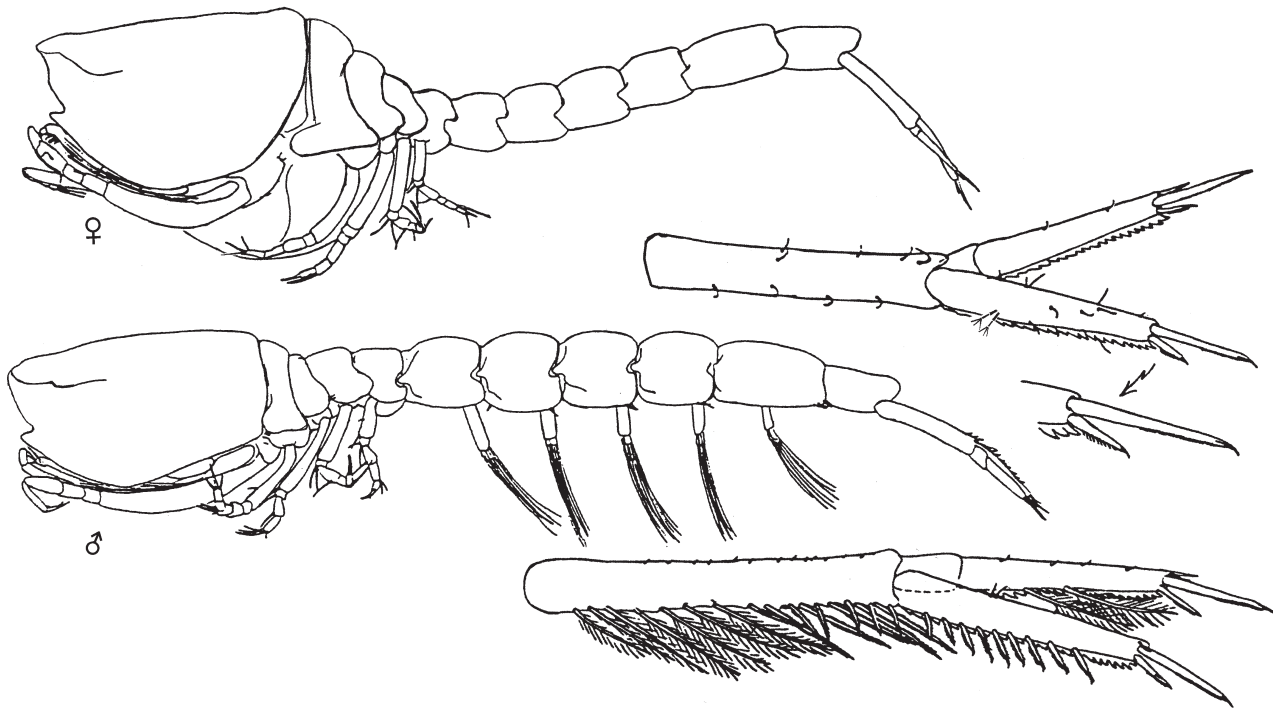
Carapace with ridges and/or showing a coarse reticulate (honeycomb-like) pattern. Viewed from above the lateral contour of the carapace, owing to its sculpture, is not evenly curved

8



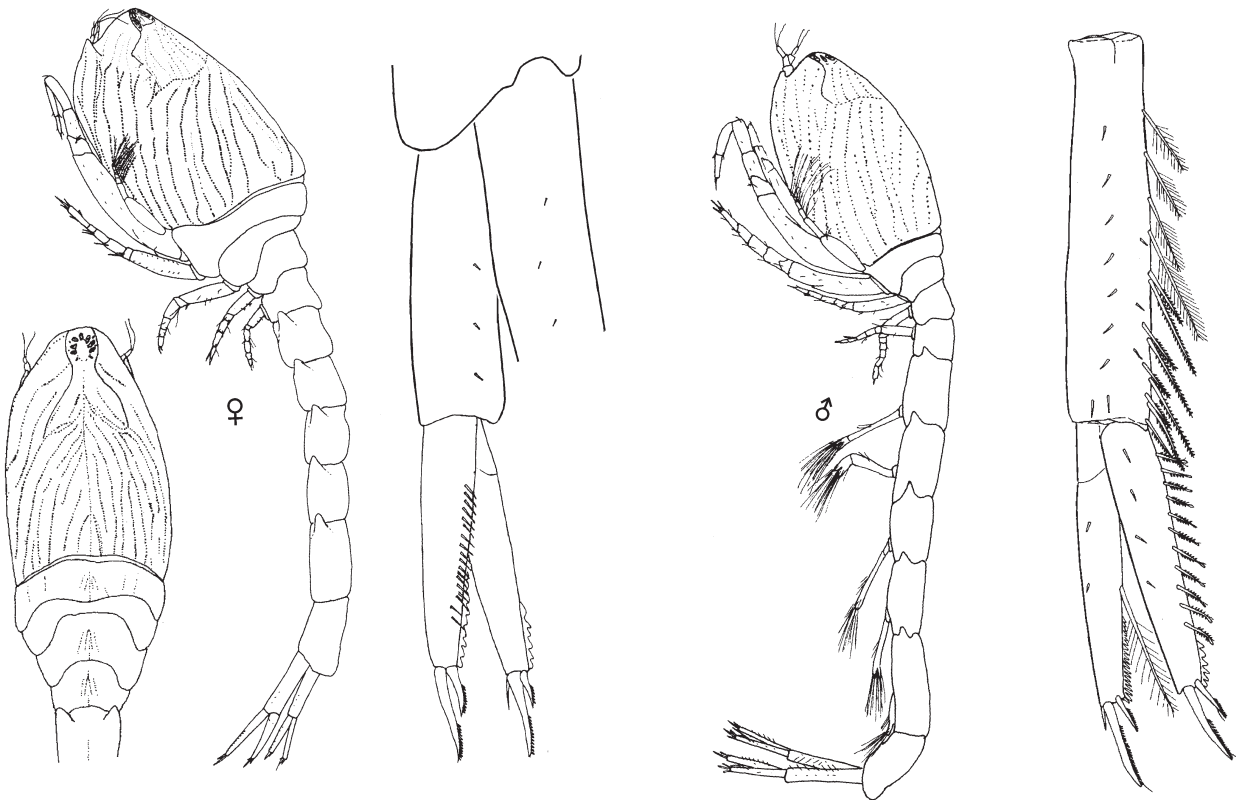
7. Carapace smooth

Cyclaspis sp. *C sensu* Rakocinski *et al.*, 1996



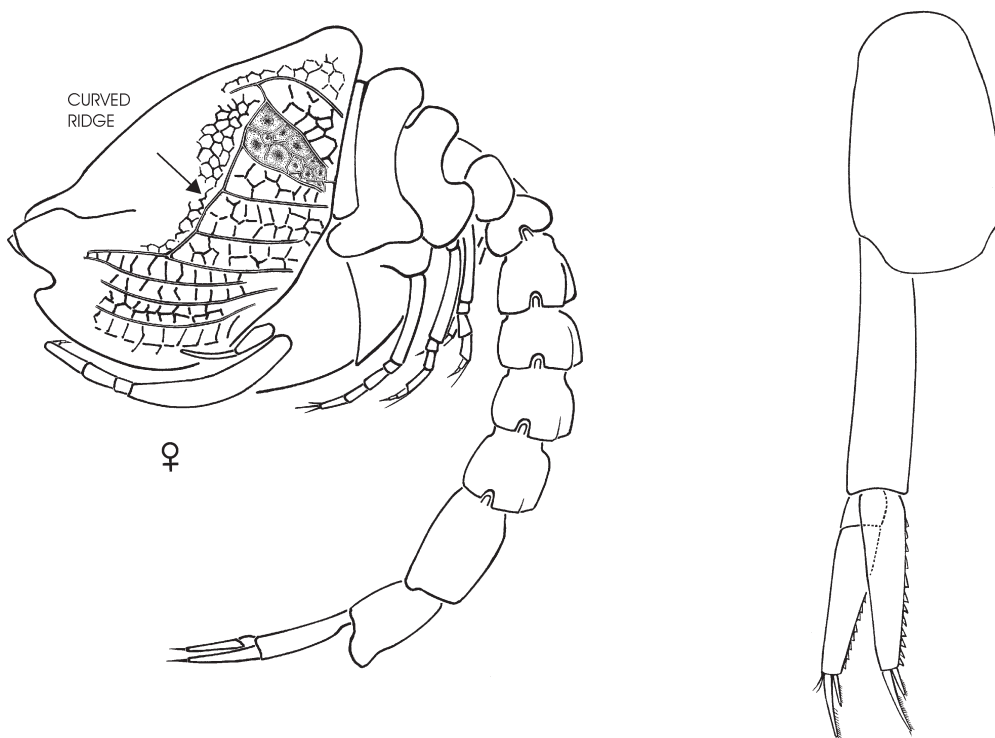
Carapace with numerous lateral oblique striae

Cyclaspis bacescui Omholt & Heard, 1982



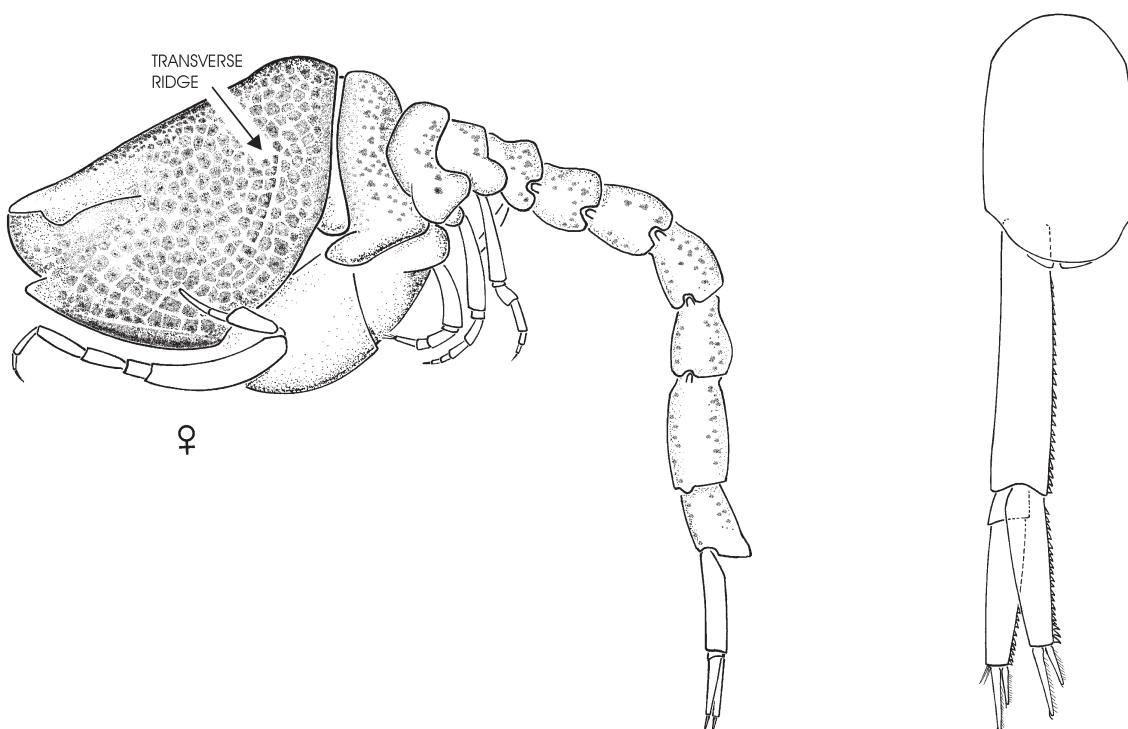
8. Carapace with a deep excavation at each side limited by a curved ridge; posterior part of carapace with 5-8 horizontal ridges (both curved and horizontal ridges may be absent but the indentation is always evident); dorsal outline slightly convex in lateral view

Cyclaspis pustulata Zimmer, 1943



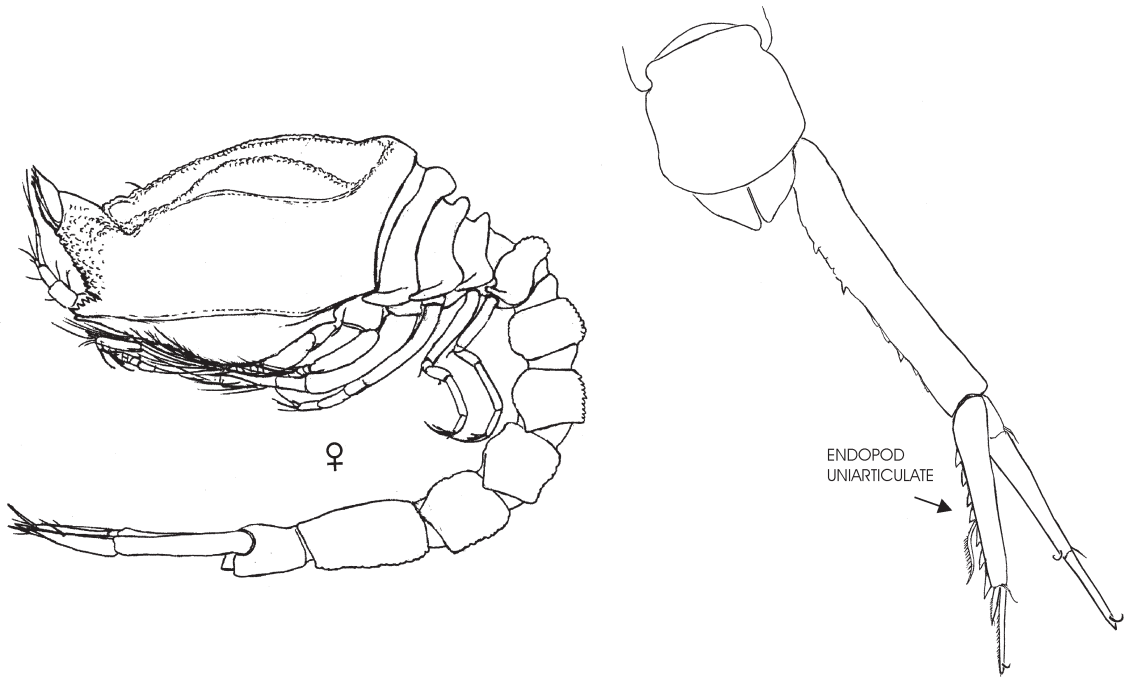
Carapace with transverse ridge posteriorly (sometimes only visible by rotating the specimen), dorsal outline almost straight in lateral view

Cyclaspis platymerus Zimmer, 1944



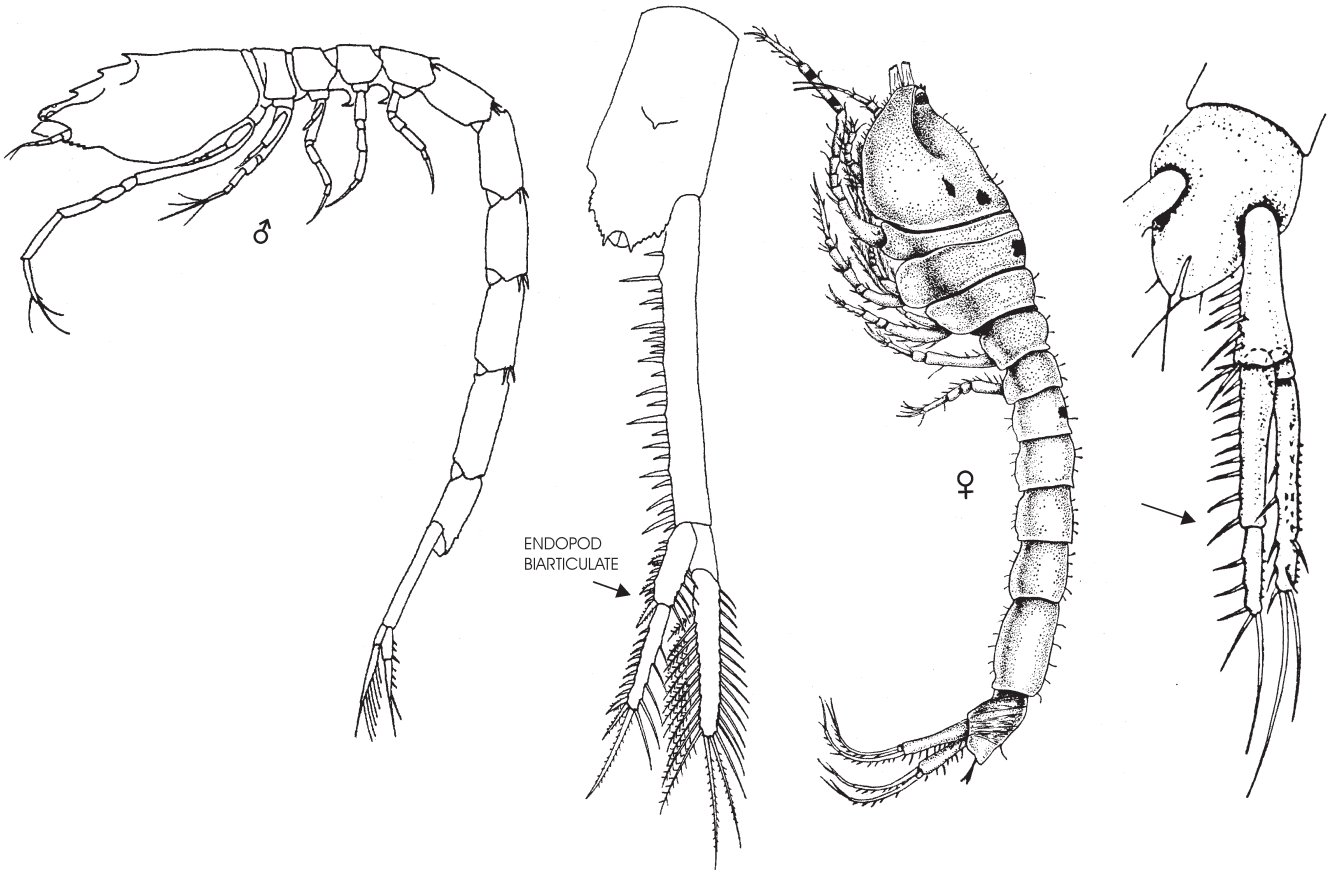
9. Carapace with two pairs of lateral ridges. Uropodal endopod uniarticulate

Apocuma sp. A



Carapace lacking lateral ridges. Uropodal endopod biarticulate

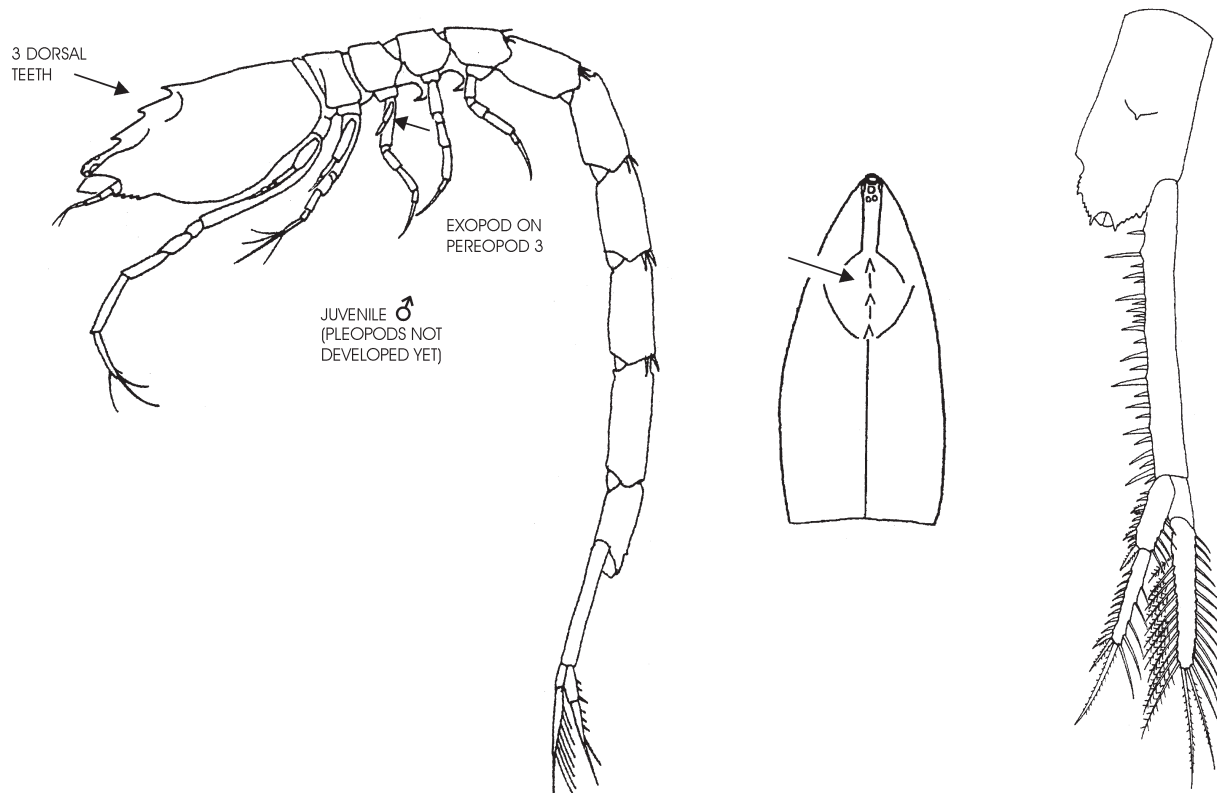
10



10. Carapace with 3 distinct dorsal teeth. Exopods on pereopods 1-3 in both sexes, all fully developed. Males with 3 pairs of pleopods

(*Sympodomma*)

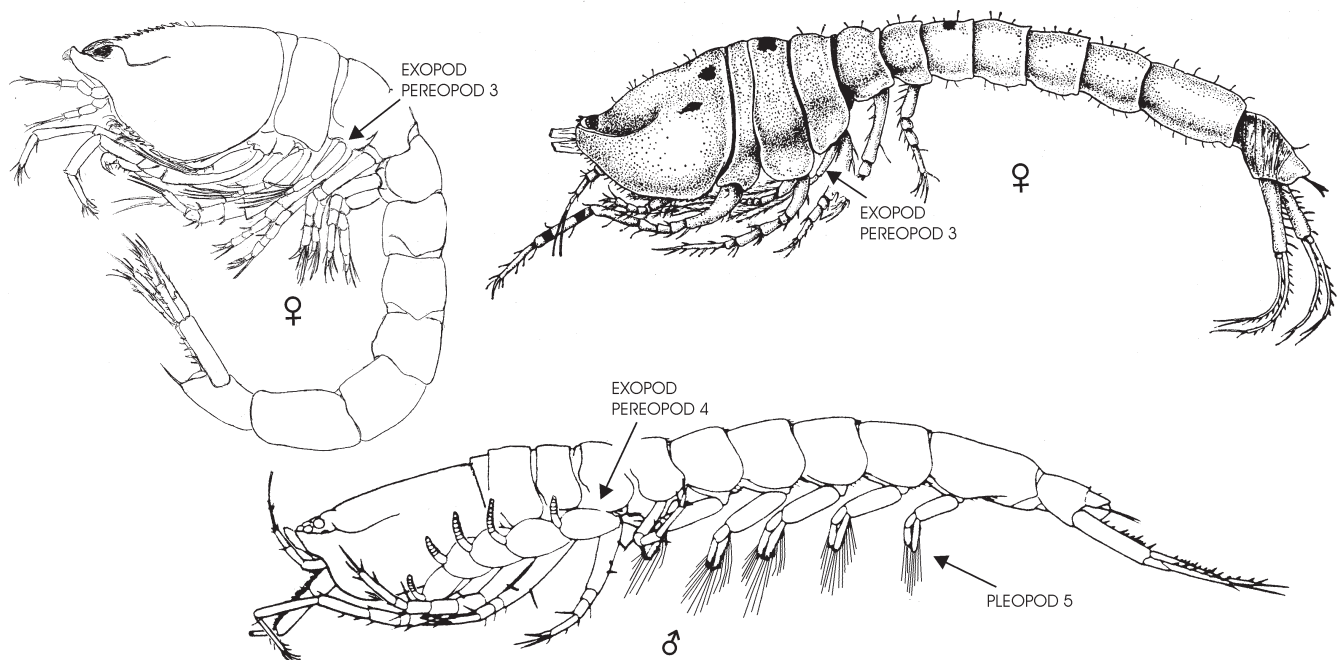
Sympodomma sarahae Petrescu & Heard, 2005



With exopods on pereopods 1-3 in females and pereopods 1-4 in males, all fully developed. Males with 5 pairs of pleopods

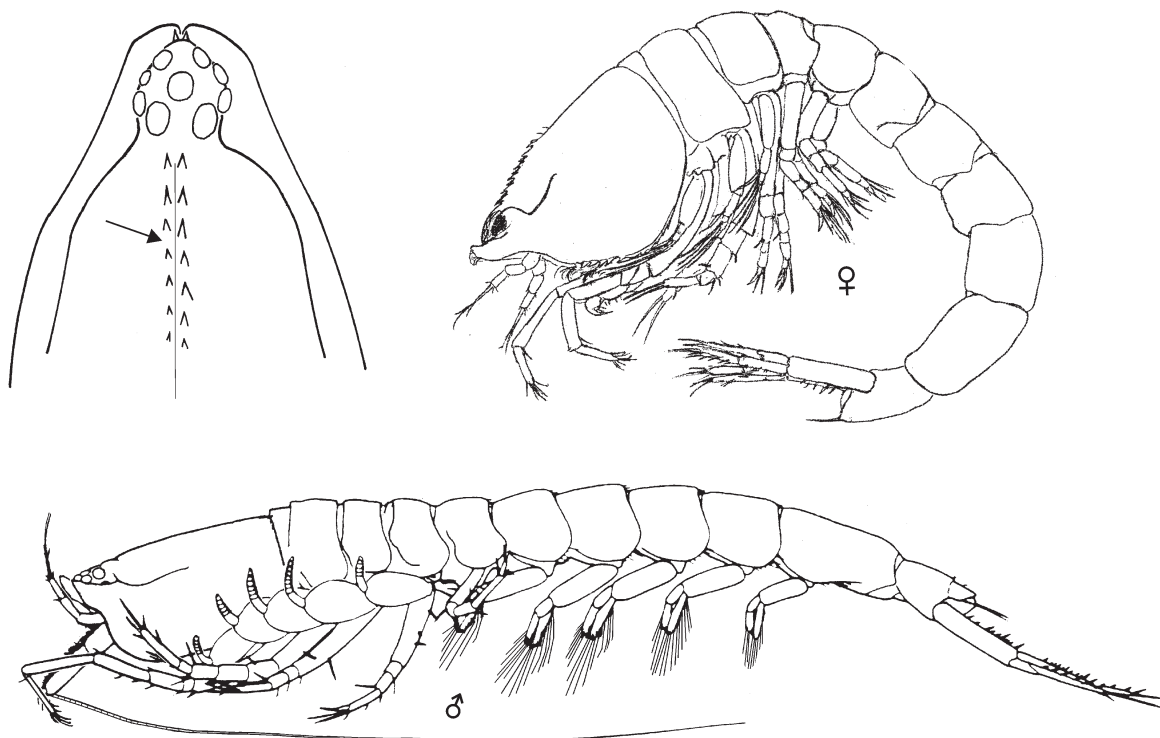
(*Vaunthompsonia*)

11



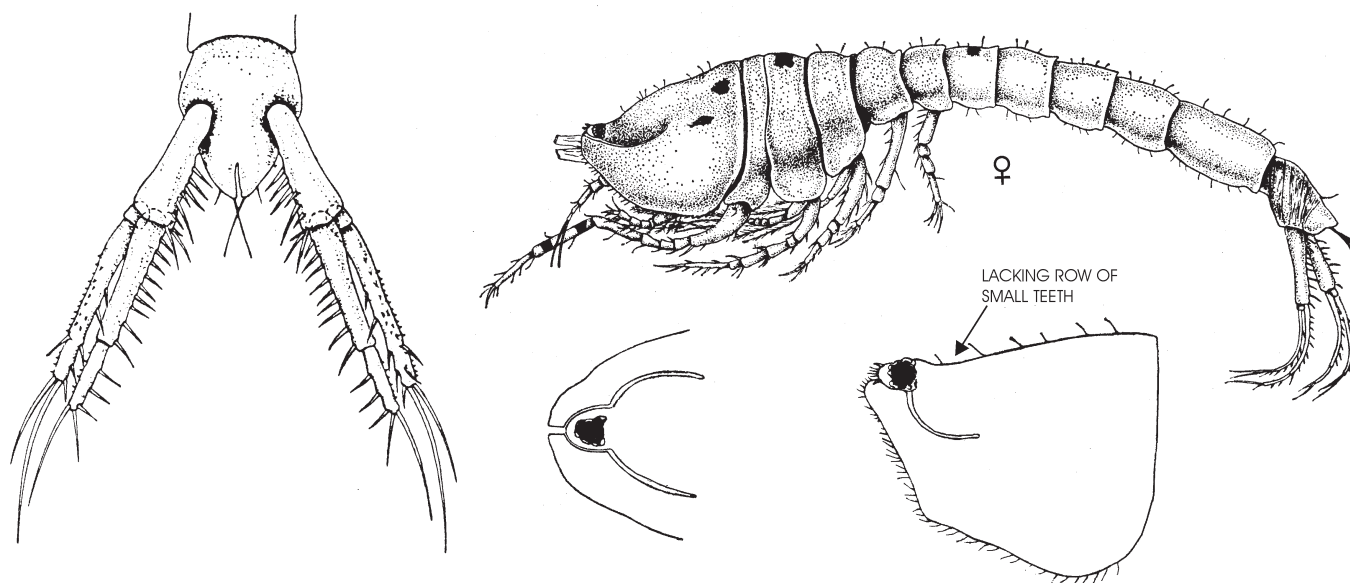
11. Females with a double row of small teeth on mid-dorsal region of carapace

Vaunthompsonia minor Zimmer, 1944



Females without teeth on mid-dorsal region of carapace

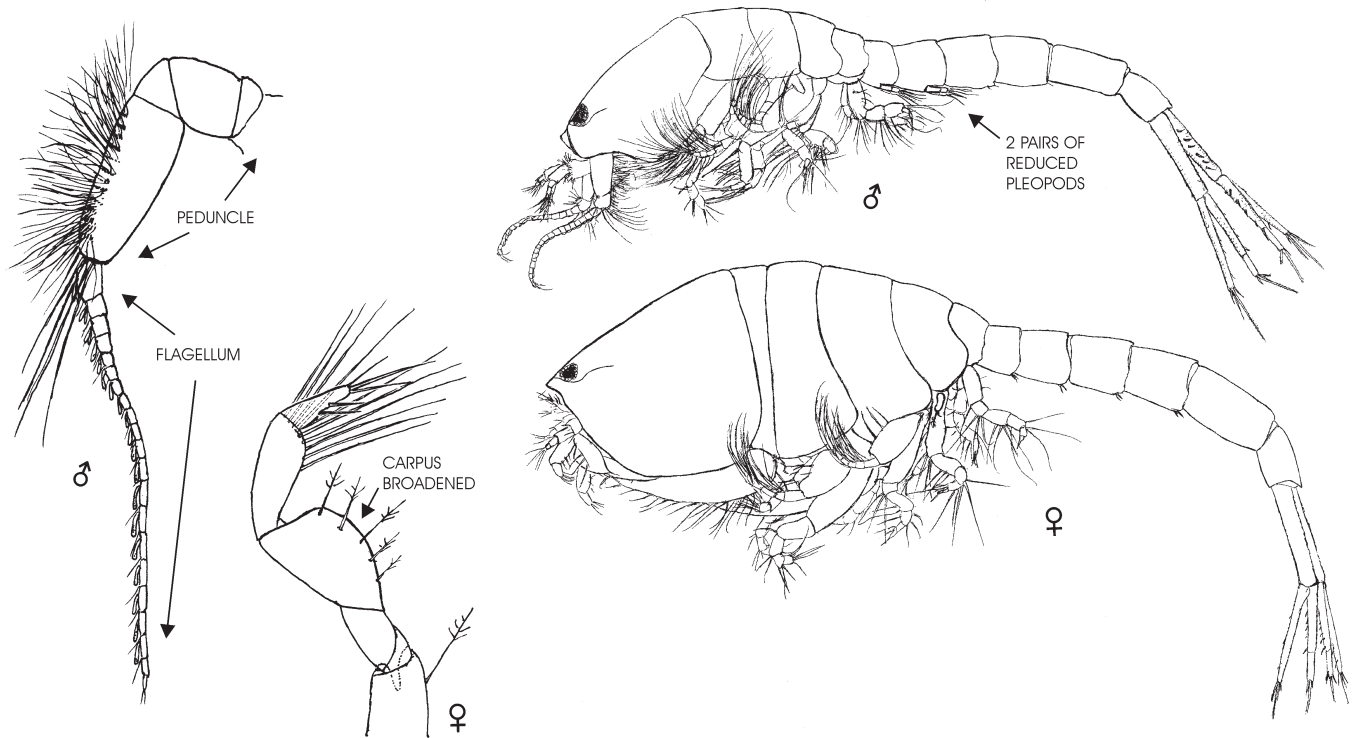
Vaunthompsonia floridana Băcescu, 1971



12. Carpus of first pereopod broadened in females. Males having antennal flagellum nearly twice the length of peduncle and 2 pairs of reduced pleopods

(*Mancocuma*)

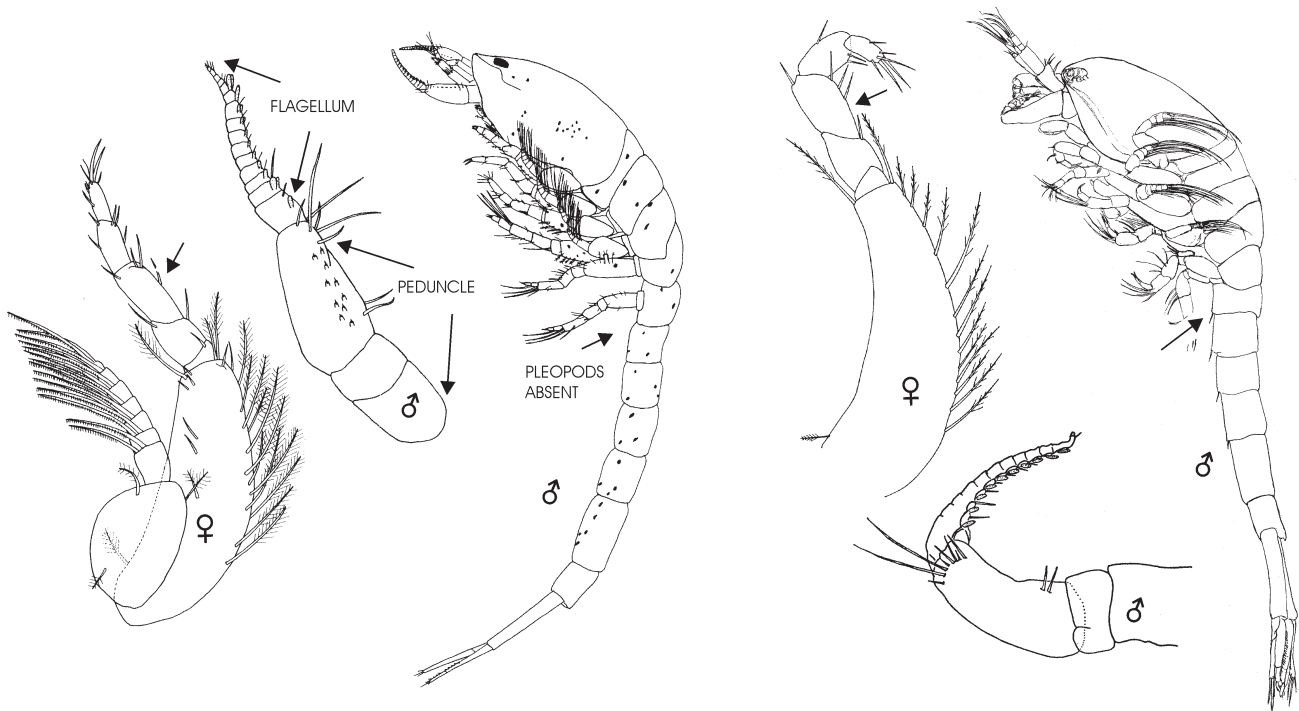
Mancocuma alterum Zimmer, 1943



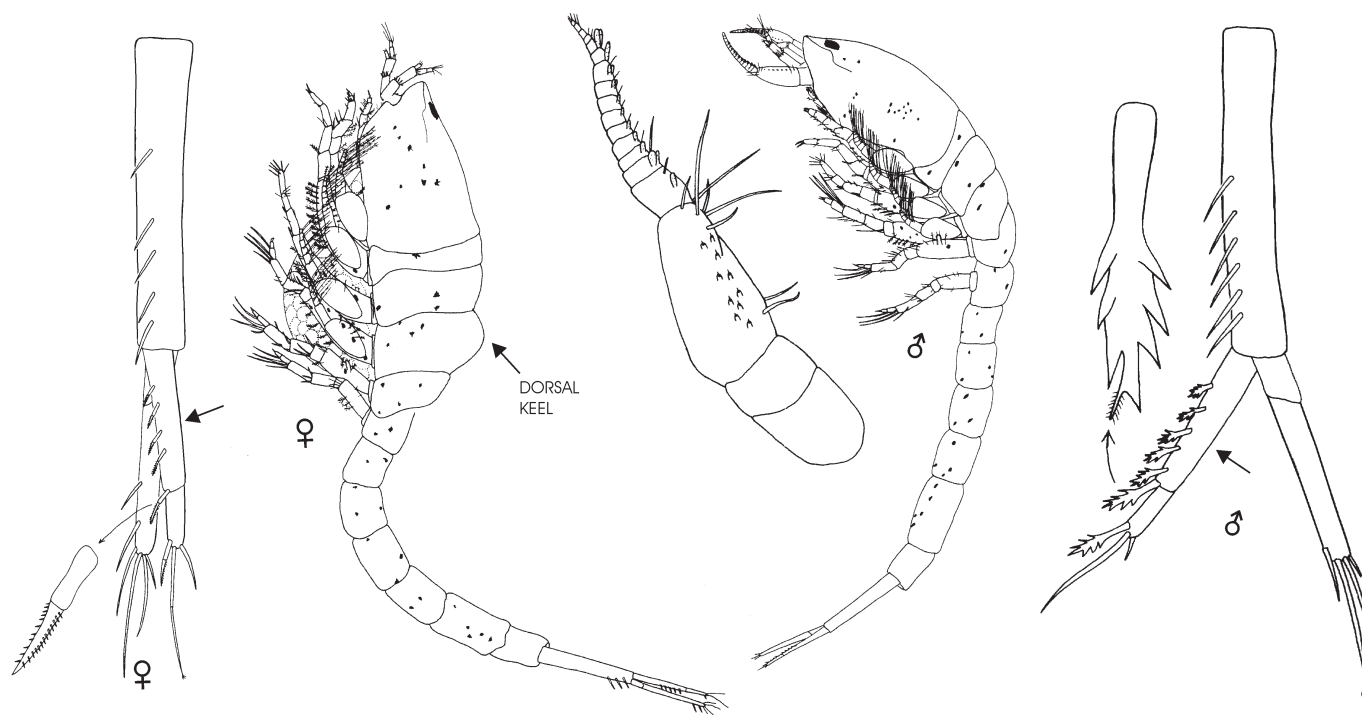
Carpus of first pereopod not broadened in females. Males having antennal flagellum about as long as peduncle, lacking pleopods

(*Spilocuma*)

13

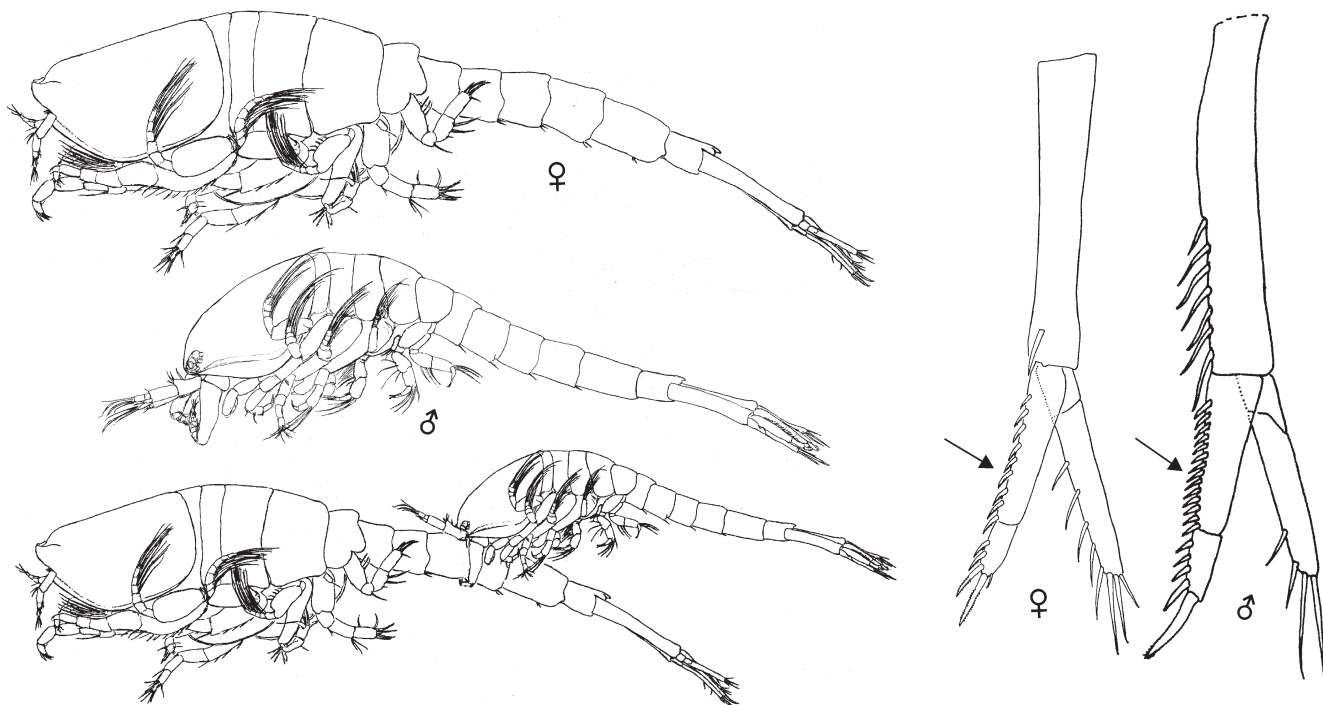


13. Uropod, basal article of endopod armed along inner margin with 4-6 pectinate setae in females and 5-6 stout jagged-edged spatulate setae in males. Adult females with a dorsal keel on the third thoracic segment
Spilocuma watlingi Omholt & Heard, 1979



Uropod, basal article of endopod armed along inner margin with 9-12 pectinate setae in females and 12-15 pectinate setae in males. Adult females without a dorsal keel

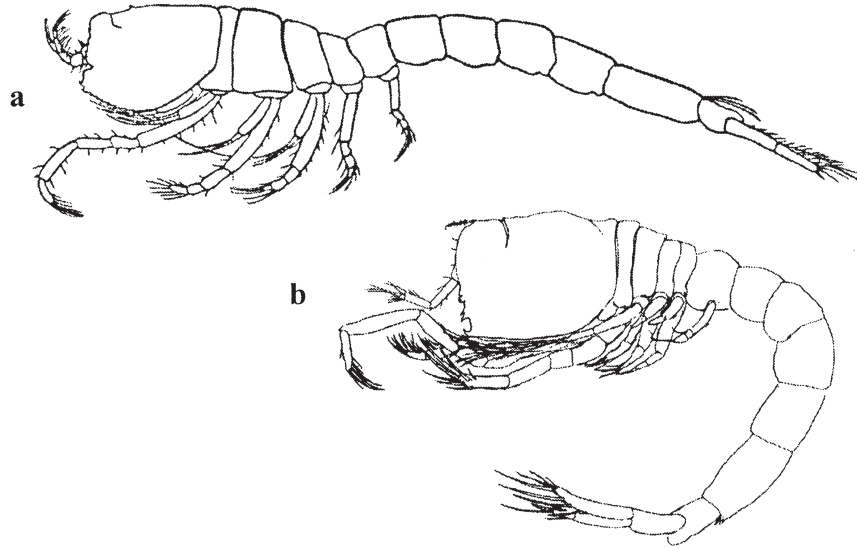
Spilocuma salomani Watling, 1977



FAMILY LEUCONIDAE SARS, 1878

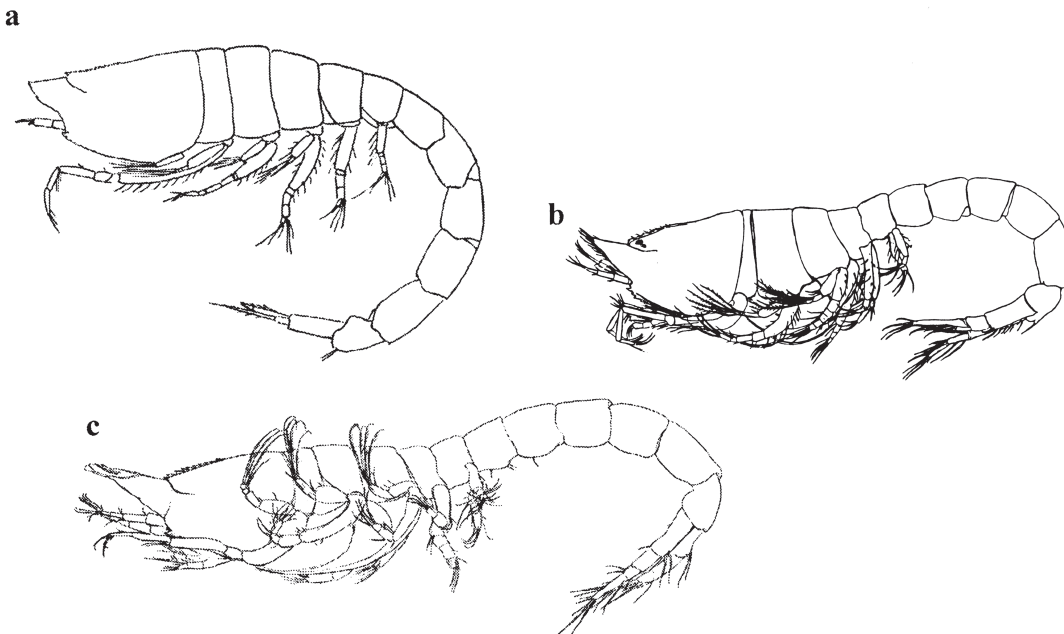
Key to the species of the family Leuconidae known from Florida estuarine and shelf waters to depth of 100 m.

1. Anterior margin of cephalothorax blunt with pseudorostrum indistinct, curved backwards, with siphonal opening dorsally, antennal notch forming strong anterior tooth. Carapace of female and male lacking distinct dorsomedian ridge armed with row of spines [Eurodrella] 2

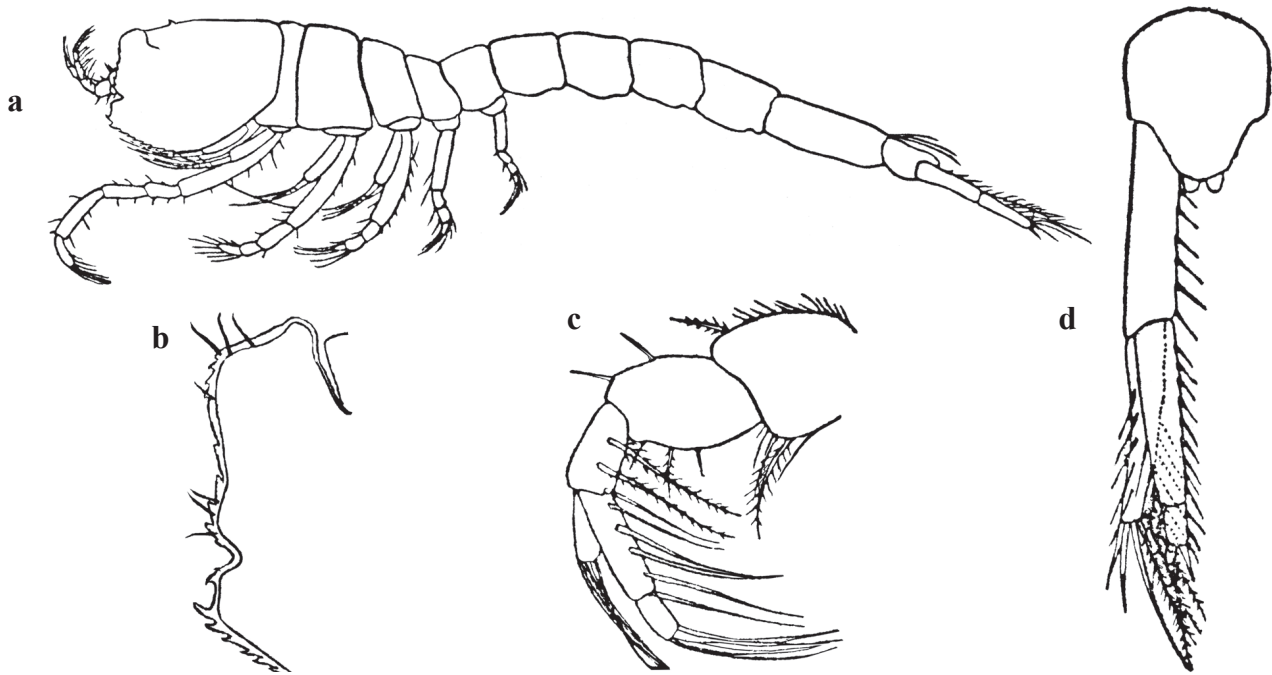


a, *Eudorella monodnon*, female, lateral aspect (after Calman 1912); b *Eudorella* sp. A. subadult male, lateral aspect.

—Anterior margin of pseudorostrum distinct, directed forward with efferent or siphonal opening anteriorly or anterodorsally. Carapace of female with anterior half of dorsomedian ridge armed with row of 8 or more spines, appearing serrate

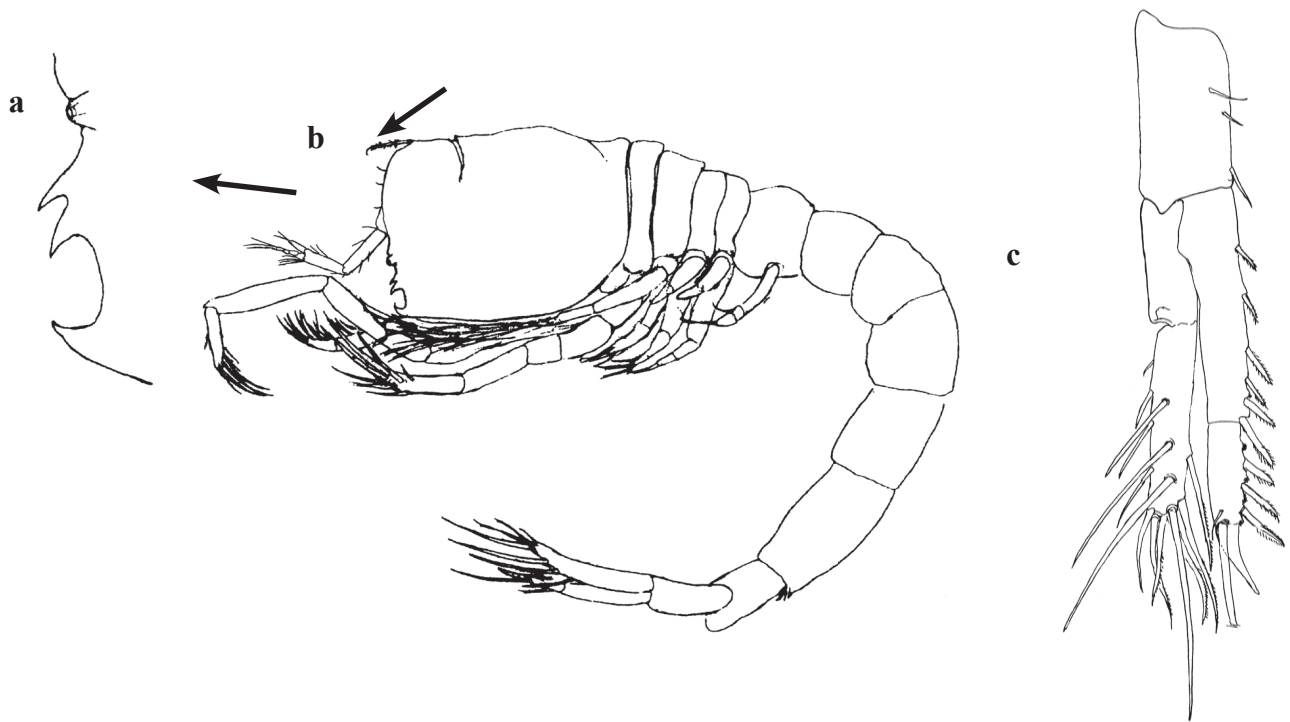


2. Carapace armed with small, but distinctive dorsal tooth; dorsal frontal margin lacking long anteriorly directed setulose seta or setae
Eudorella monodon Calman, 1912



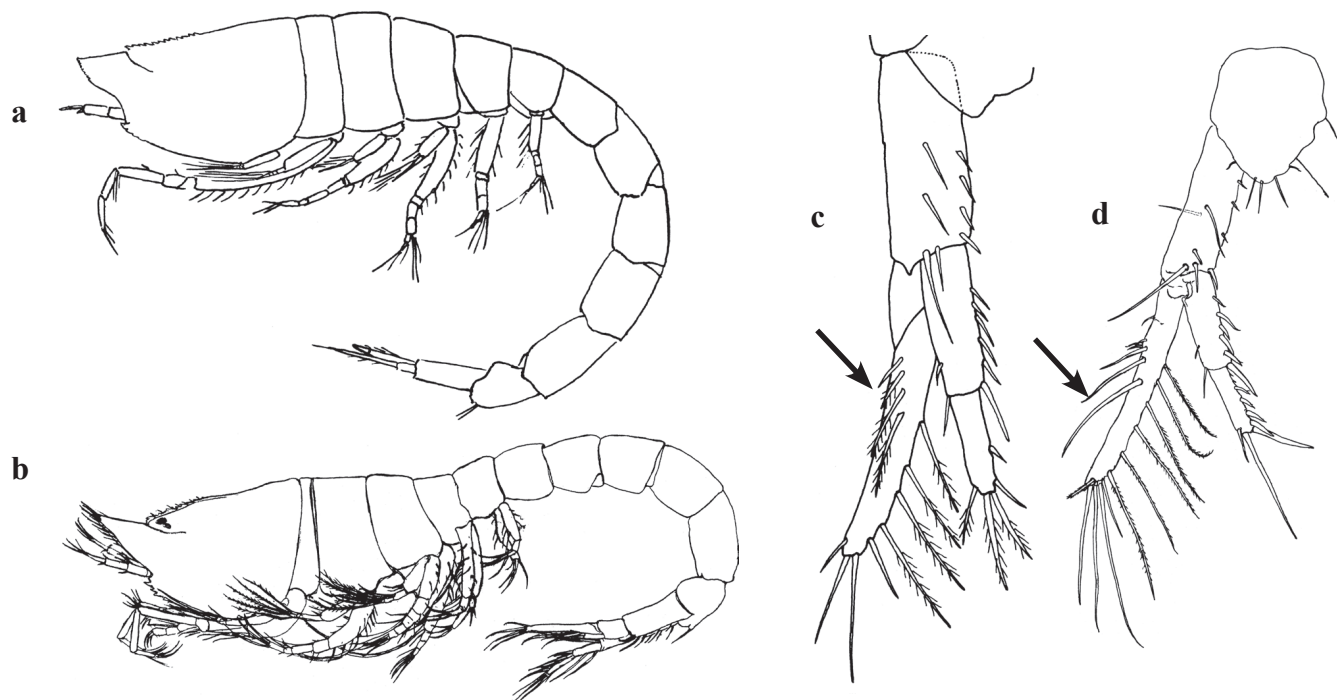
Female, *Eudorella monodon*: a, Lateral view; b, frontal margin of carapace; c, antennule; d, uropods. (after Calman 1912)

—Carapace lacking dorsal tooth; dorsal frontal margin with long anteriorly directed setulose seta.
Eudorella sp.A.



Eudorella sp. A, subadult male. a, lateral view; b, enlargement of carapace frontal margin, c, uropodal endopod.

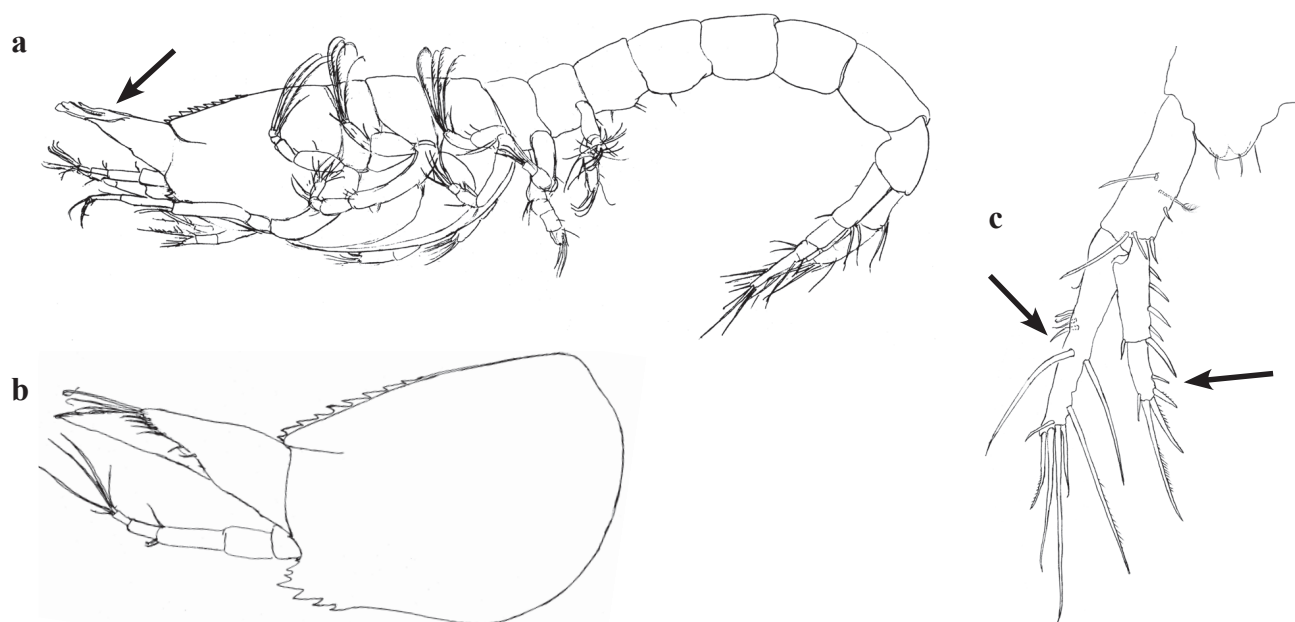
3. Pseudorostrum relatively stout and blunt. Uropod with exopod having dorsolateral margin bearing 3–4 moderately long setae and inner margin with 4–6 long setae (excluding subapical seta) 4



Females. a, *Leucon americanus*, lateral aspect (from Watling 1979); b, *Leucon* sp. A, lateral aspect; c, *L. americanus*, uropods (from Watling 1979); d, *Leucon* sp. A, uropod.

—Pseudorostrum subacute, narrow. Uropod with exopod having a long seta on dorsolateral margin and 2–3 long setae on the inner lateral margin(excluding subapical seta)

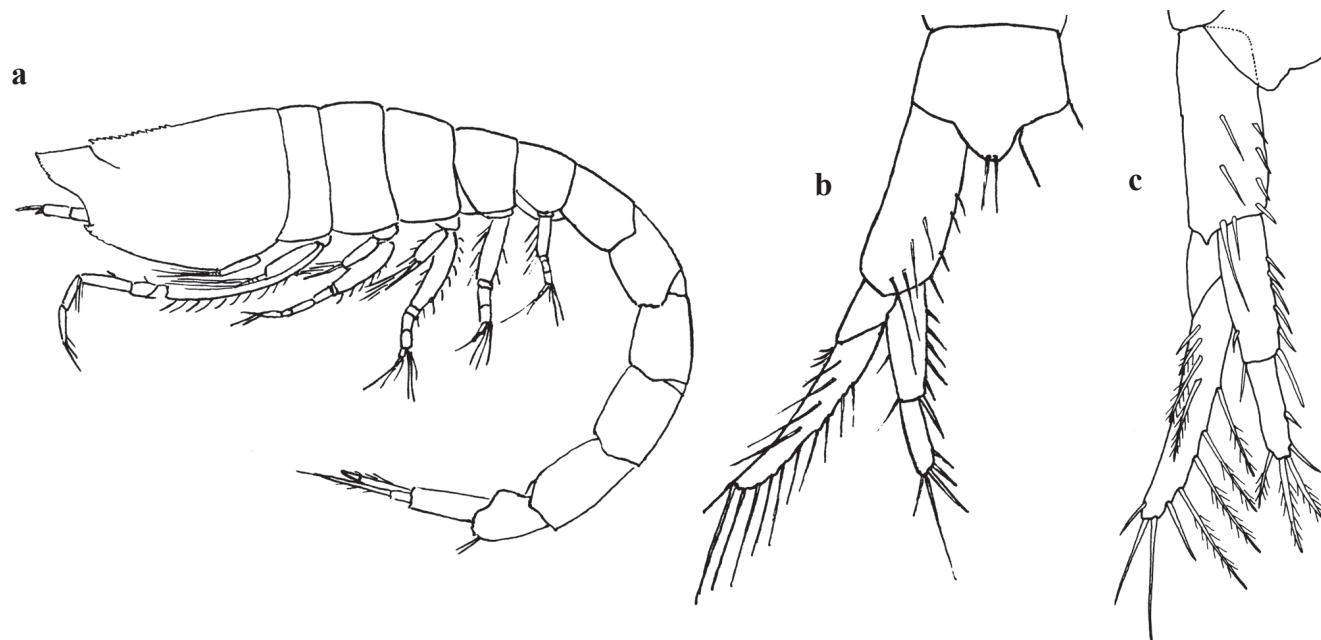
Leucon sp. B



Leucon sp. B, a, adult female, lateral aspect; b, anterolateral aspect of carapace; c, left uropod, dorsal aspect.

4. Pseudorostrum straight, not turned up. Uropod with inner margin of distal article having 0–2 two spiniform setae

Leucon americanus Zimmer, 1943



Leucon americanus Zimmer, 1943: Female: a, lateral aspect of body (from Zimmer 1980); b, left uropod, dorsal aspect (from Zimmer 1980); c, left uropod, dorsal aspect (from Watling 1979).

—Pseudorostrum slightly turned up. Uropod with inner margin of distal article having 3–4 spiniform setae (excluding subapical seta)

Leucon sp A



Leucon sp. A. Female: a, body, lateral aspect; b, anterolateral aspect of carapace; c, left uropod, dorsal aspect.

FAMILY NANNASTACIDAE BATE, 1866

Key to the species of the family Nannastacidae known from Florida estuarine and shelf waters to depth of 100 m.

1. Carapace covered with layer fine sediment and/or detritus. Maxilliped 2 with dactylus, rake-like, armed with distinctive with prong-like teeth. Pereopod 1 with ischium elongate, equal or subequal to carpus *Procampylaspis* sp. A

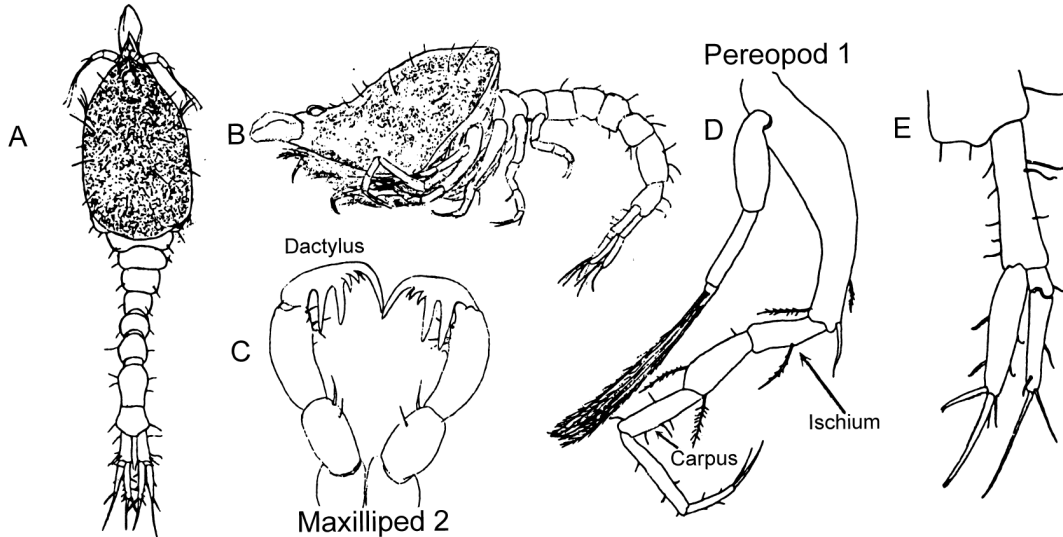
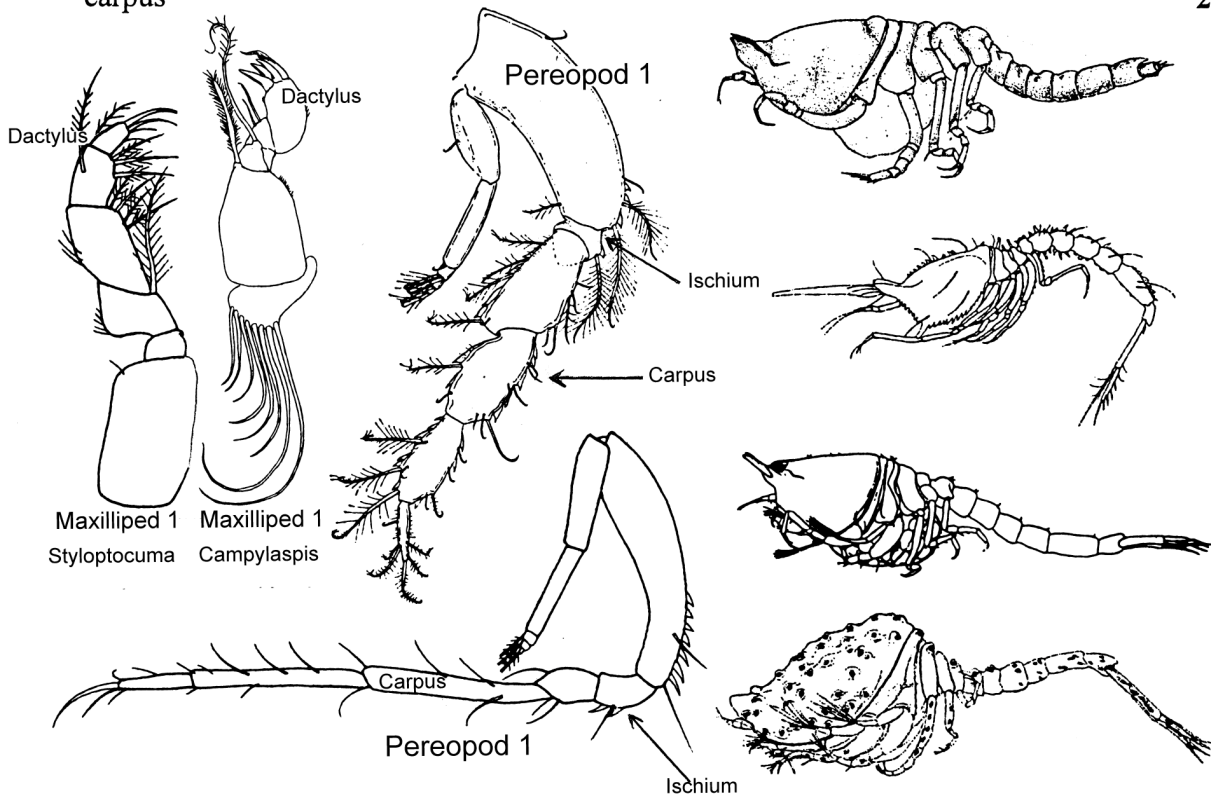


Figure. A, dorsal view; B, lateral view; C, maxilliped 2 rake-like dactylus; D, pereopod 1; E, uropod.

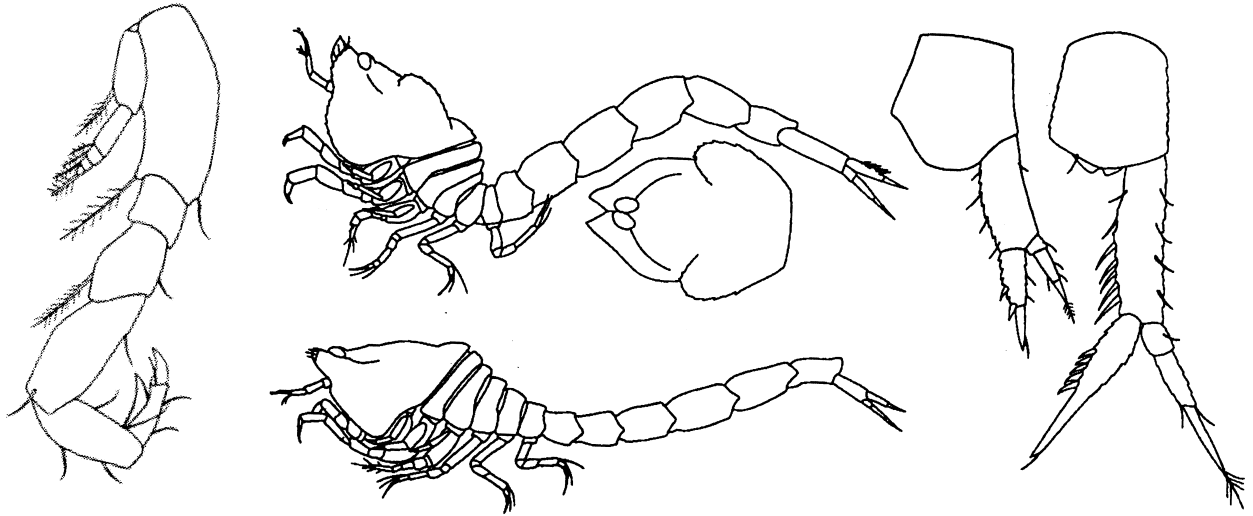
Carapace not covered with fine sediment and/or detritus. Maxilliped 2 having dactylus without prong-like teeth. First pereopod with ischium not elongate, distinctly shorter than carpus

2



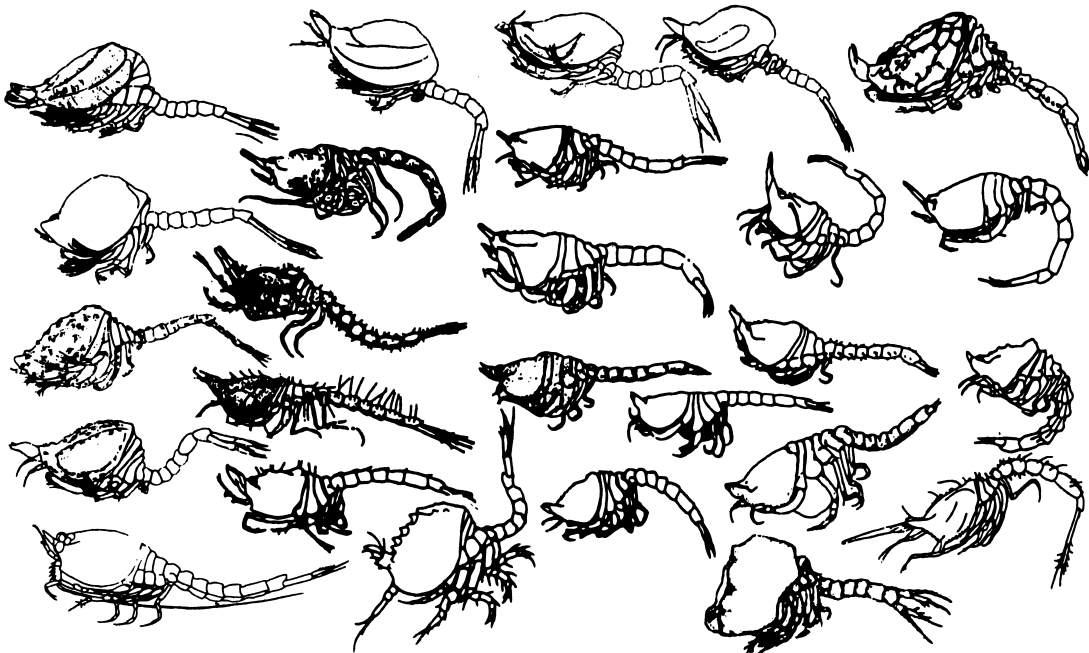
- 2 Carapace **with** pair of short dorsolateral short “wing-like” processes in male; less developed in female appearing a dorolateral carinae. Adult male with antenna vestigial, rudimentary; third maxilliped and first pair of legs enlarged, strongly developed for clasping female during amplexus. [Exopods present on maxilliped 3 and first 2 pereopods in both sexes (Figs)] [Euryhaline estuarine species] .

Almyracuma bacescui Petrescu & Heard, 2005



Carapace of male **lacking** pair of dorsolateral short “wing-like” processes or carinae. Adult male with antenna well-developed, extending posteriorly past carapace, often as far as uropods, and first pair of ureopods not strongly developed or noticeably much larger than pereopod 2. [Marine species]

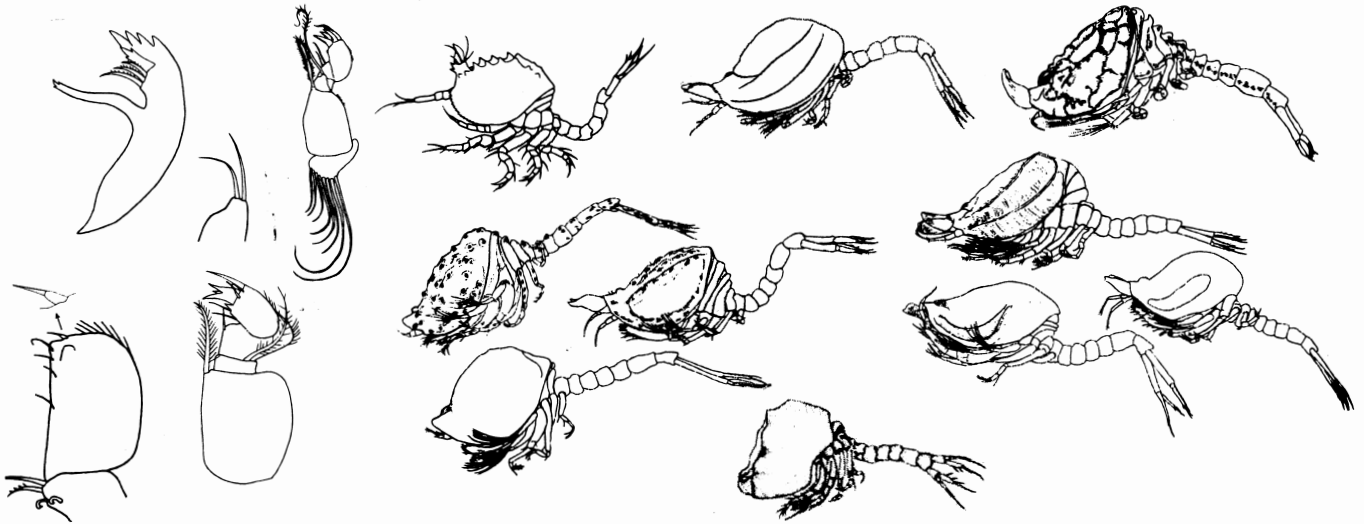
3



3. Female with carapace distinctly swollen, lacking apparent middorsal carina; posterior margin strongly vaulted, often bulging over anterior pereonal segments (perionites); anterolateral angles not strongly produced. Mandible with styliform molar process. Maxilla (maxilla 2) reduced to single fused endite. First maxilliped reduced, with only 3 articles, terminal article, vestigial, minute. Second maxilliped with propodus geniculate at articulation with carpus, ending in broad seta; dactylus short and ending in 2 or more diverging, stout, spiniform setae

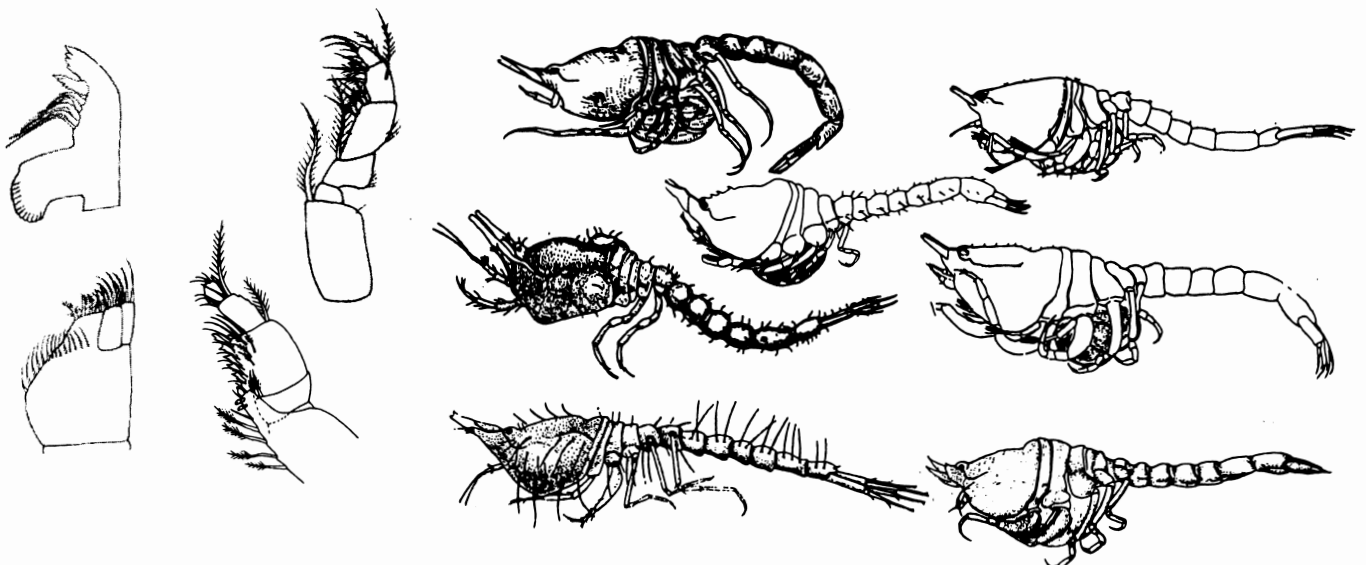
[*Campylaspis* Group]

4



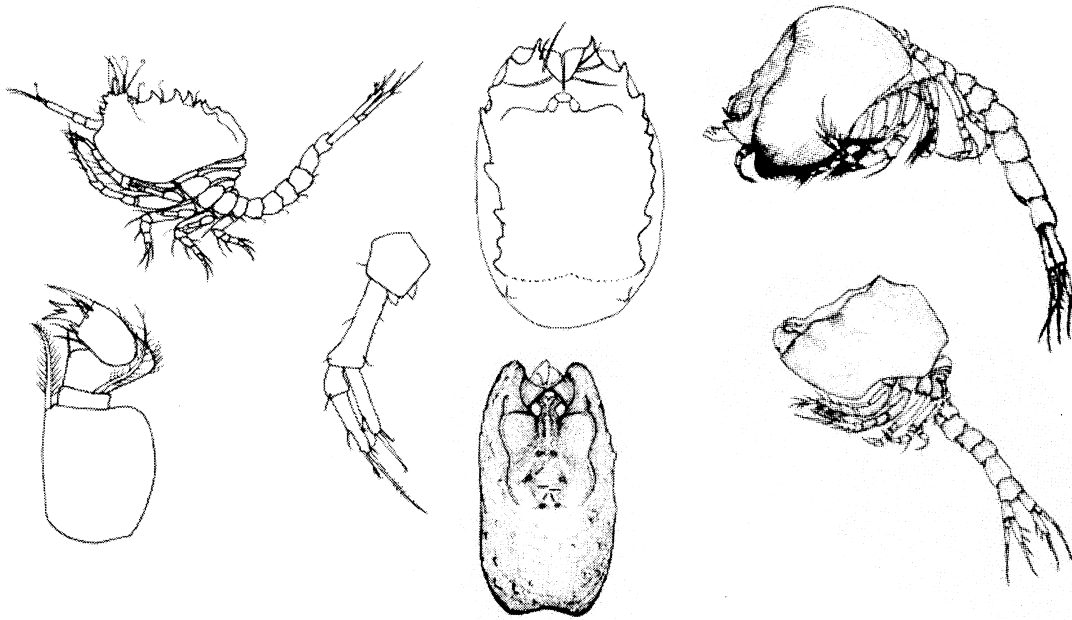
Female with carapace not greatly swollen or vaulted posteriorly to bulge over anterior most pereonites, surface smooth, or with grooves, or with acute spines; mid-dorsal carina usually present. Anterolateral angles of carapace usually strongly produced. Mandible having molar process truncate or distally expanded (not styliform) with grinding surface. Maxilla with moveable endites. First maxilliped with 5 articles, terminal article small, but not minute. Second maxilliped with propodus not geniculate at articulation with carpus

6



4. Carapace very deep (deeper than long?), greatly enlarged in relation to rest of body, armed either with prominent circlet of large dorsal spines or with dorsolateral carina and large low tubercles

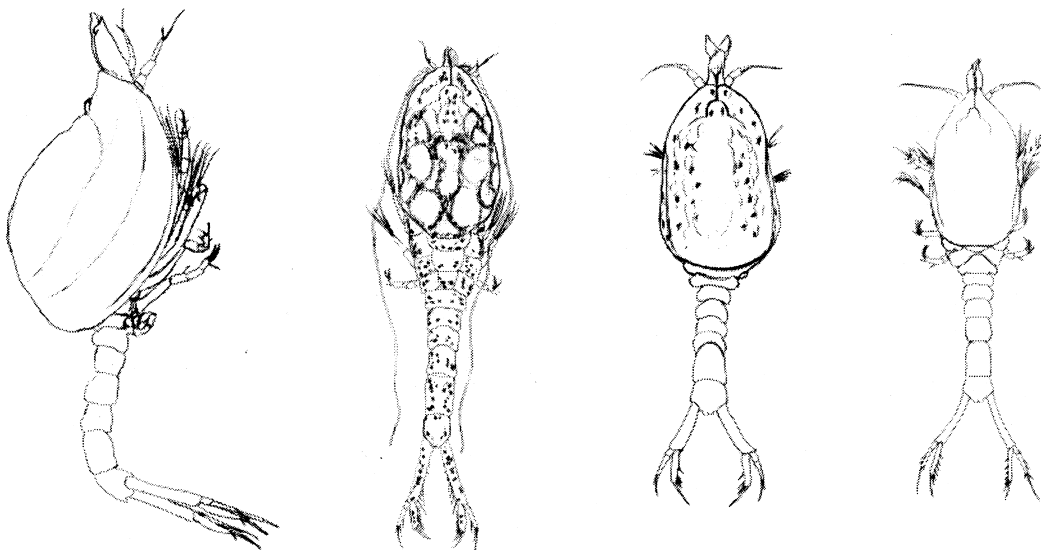
5



Carapace not deeper than long, smooth, rugose, spinose, tuberculate, and with or without with sulcus or one or more lateral carinae. [Exopods on maxilliped 3, and pereopods 1-4 on male ad maxilliped 3 and pereopods 1 and 2 on female]

Campylaspis G. O. Sars, 1865

[See KEY A]



5. Carapace with dorsolateral margin armed with prominent circlet of large dorsal spines. Pseudorostrum upturned at nearly right angle, slightly exceeding eyelobe. Maxilliped 3 with very long terminal simple setae. Female lacking pereopodal exopods; males as in *Campylaspis* with exopods on third maxilliped and pereopods 1-4.

Normjonesia danieli Petrescu & Heard, 2001

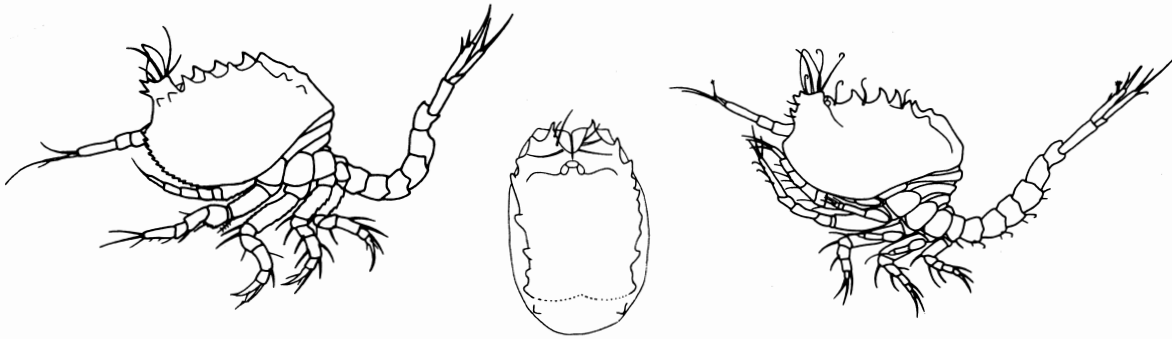


Figure. Left to right. female lateral view, female carapace dorsal aspect, male lateral view.

Carapace with sinuous dorsolateral carina and large low tubercles. Maxilliped 3 lacking long, simple terminal setae (as in *Campylaspis*). Pseudorostrum turned up dorsally, but not at right angle. Males with exopods on pereopods 1-3.

Cubanocuma gutuzi Băcescu, and Muradian, 1977

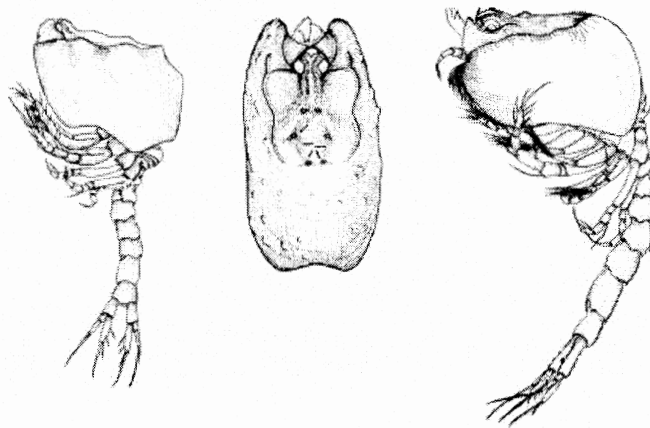
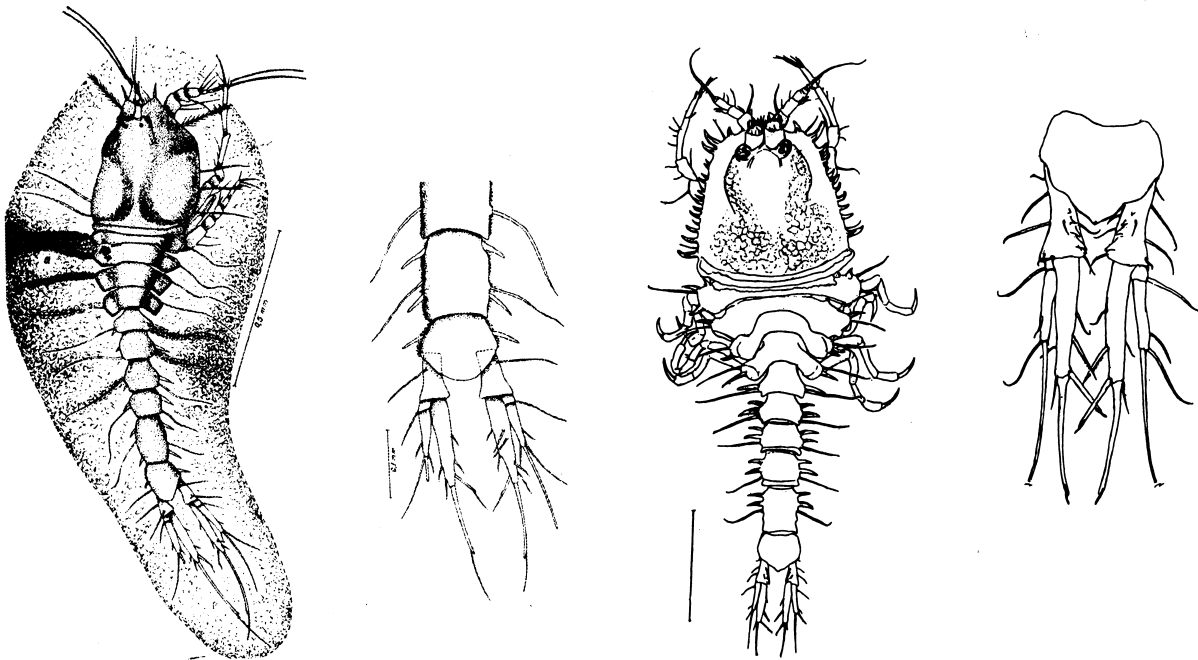


Figure. Left to right. female lateral view, female carapace dorsal aspect, male lateral view.

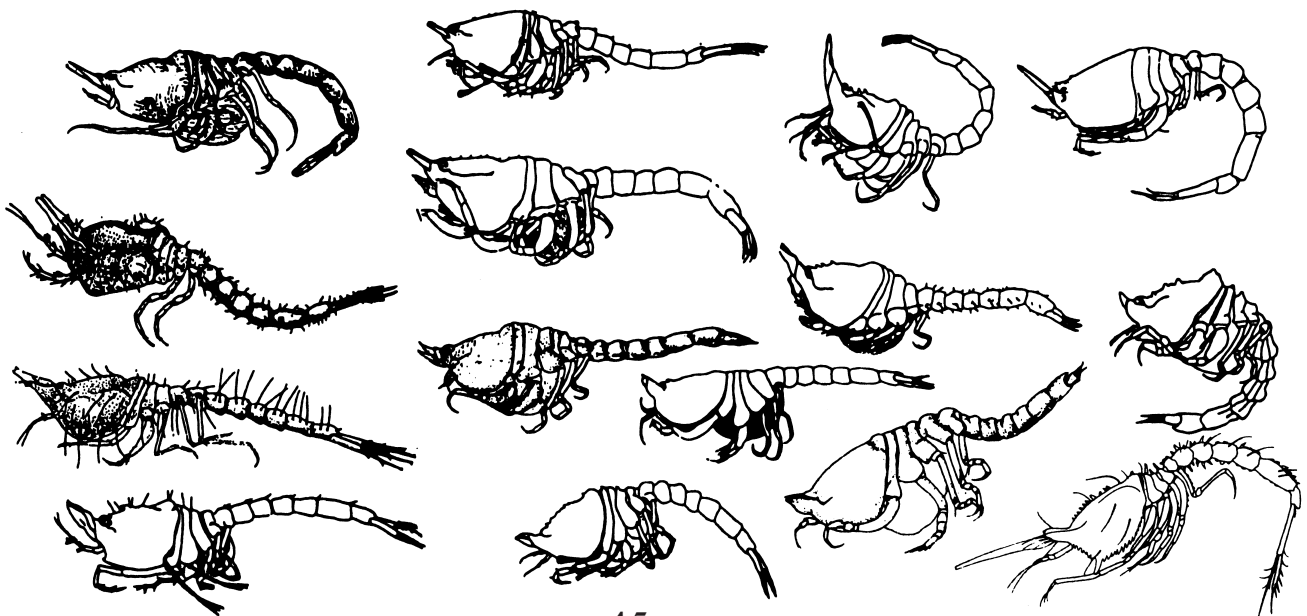
6. Pseudorostal lobes distinctly separated. Lateral margins of with prominent relatively long, lateral spiniform setae.

7



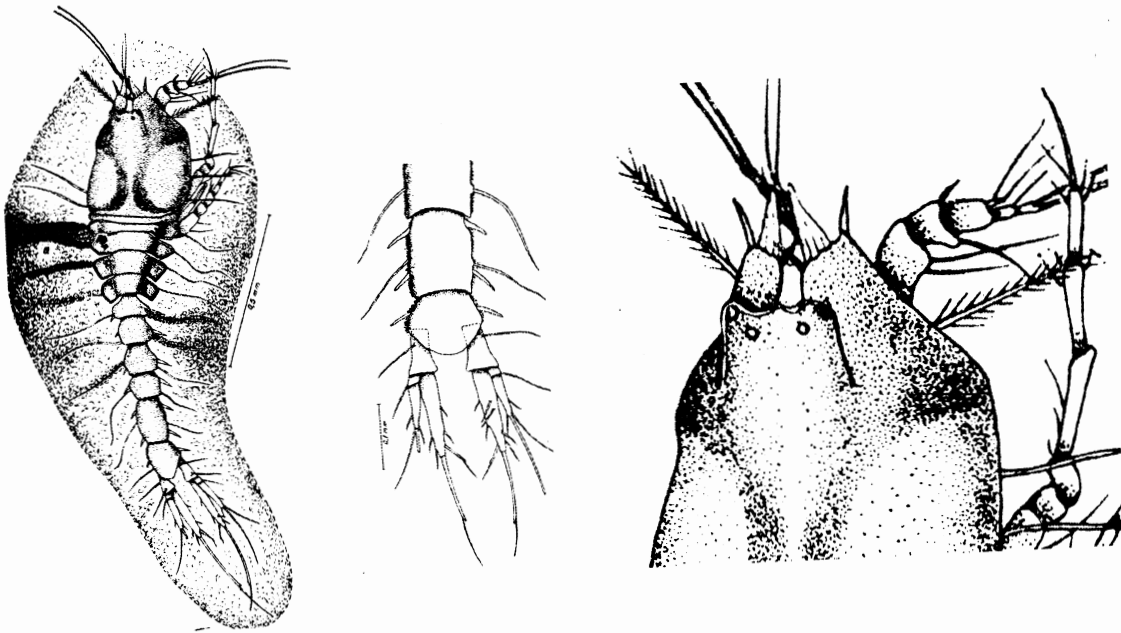
- Carapace with pseudorostal lobes not distinctly separated. Lateral margins of abdominal segments lacking long, straight lateral spiniform setae.

8



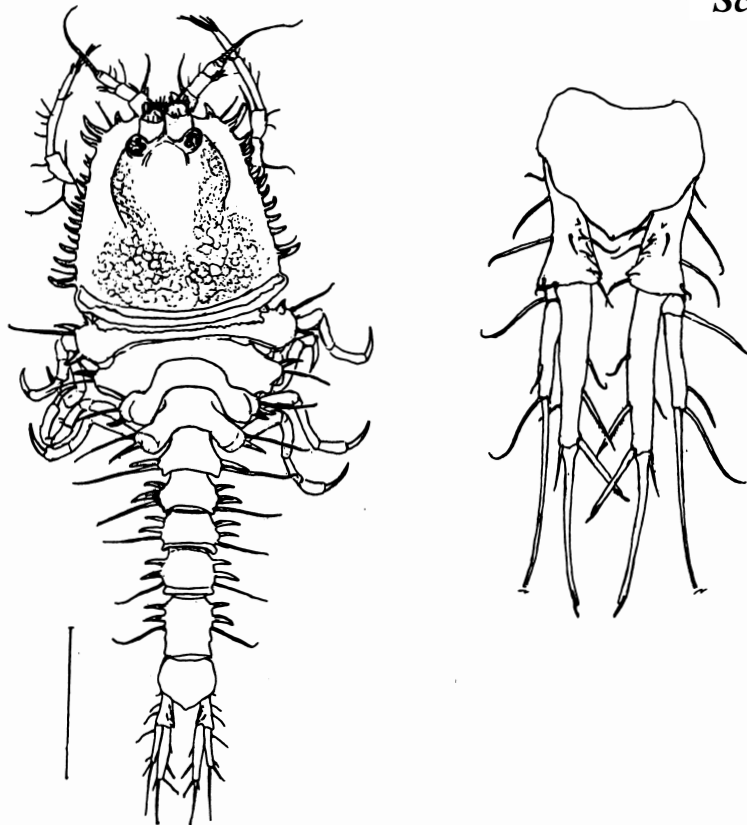
7. Carapace with long lateral setae, lateral margins lacking row of spines.

Schizotrema aglutinanta (Băcescu, 1968)



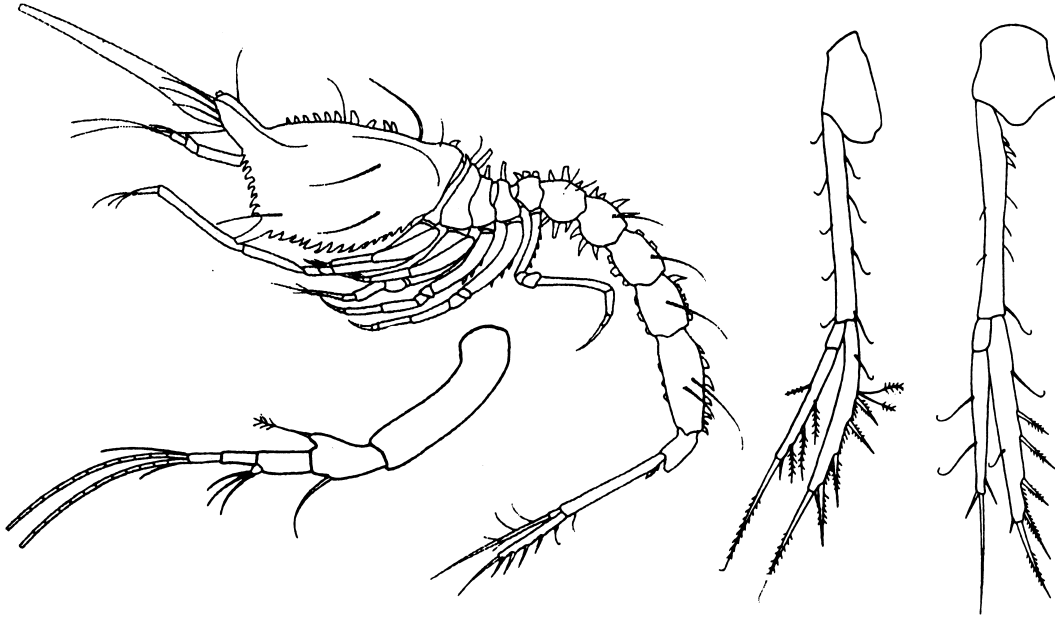
Carapace lacking long on lateral setae, lateral margins each armed with row of 10-12 lateral spines.

Schizotrema sp. A



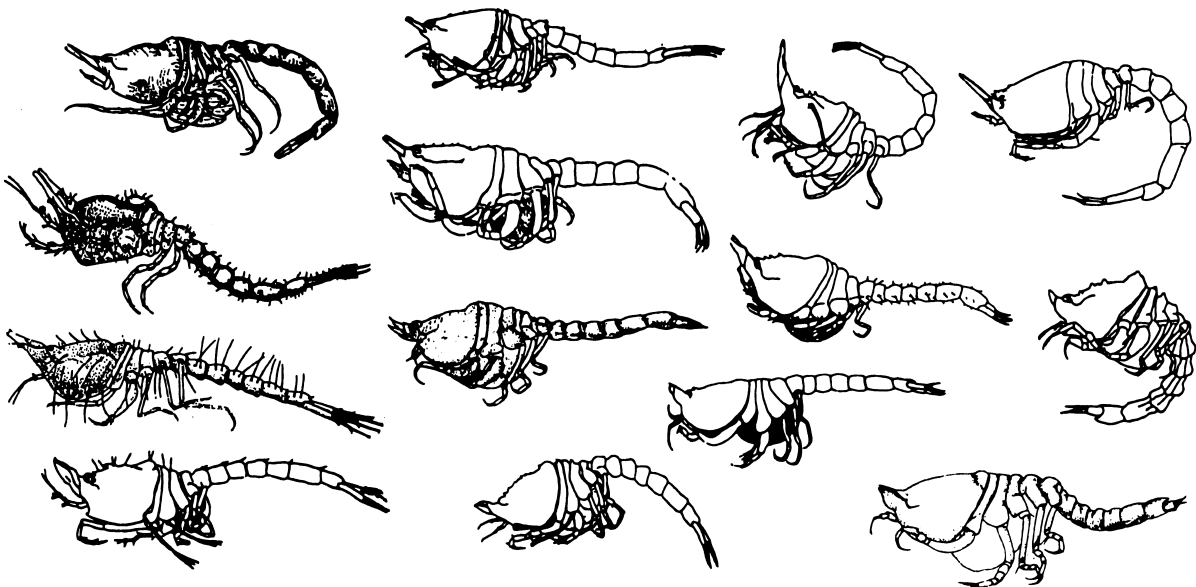
8. Siphon, very long, attenuated, about as long as carapace; ocular lobe reaching to end or beyond pseudorostral lobes. Carapace armed with prominent long, sharp spines on mid-dorsal ridge and on ventral margin from just below to base of pseudorostral lobes to near articulation with first pereonite; large spine present on anteroventral margin

Styloptocuma heardi (Bacescu, 1979)

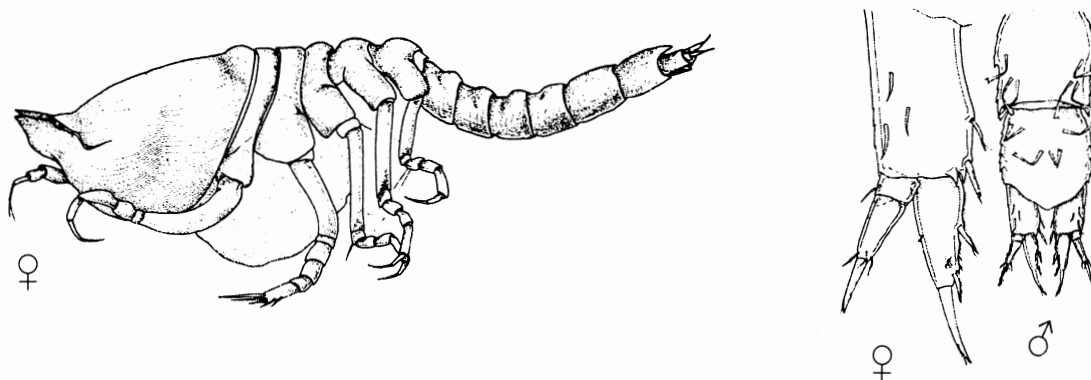


Siphon distinctly shorter than carapace; ocular lobe shorter than pseudorostral lobes. Carapace with or without sharp spines, when spines present they do not occur on posteroventral margin, no strongly developed styliform spine present on anteroventral margin.

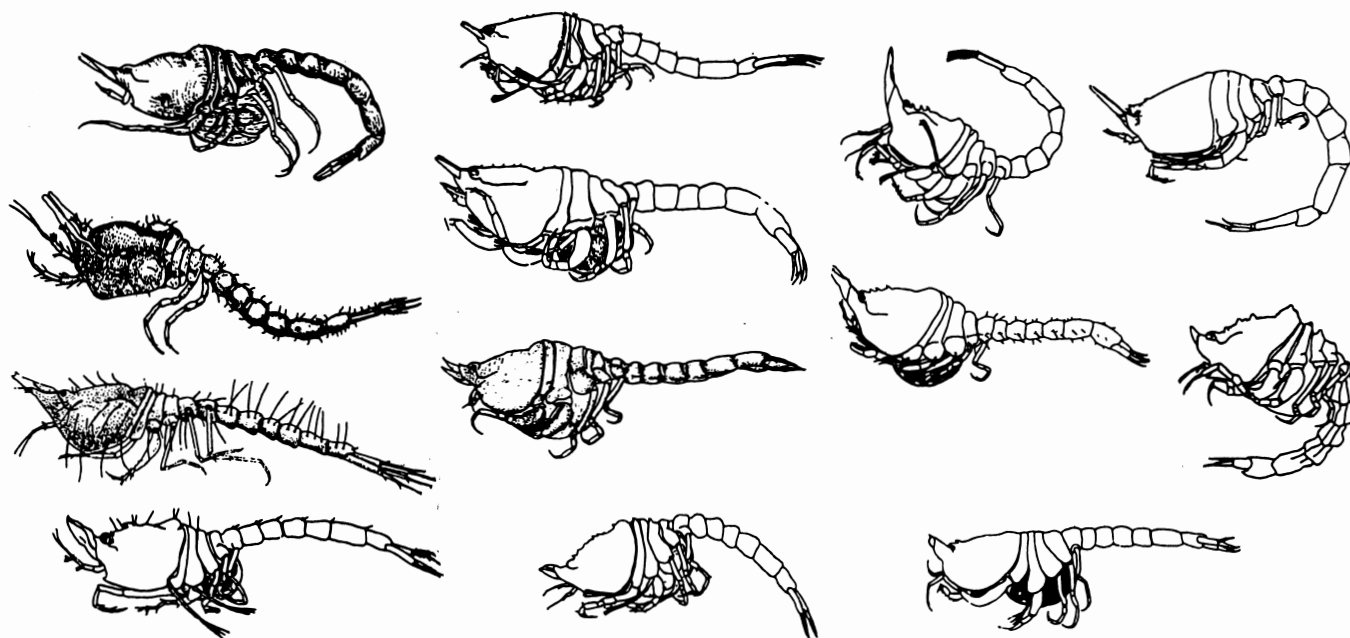
9



9. No exopods present on pereopods of female. *Elassocumella micropus* (Zimmer, 1943)



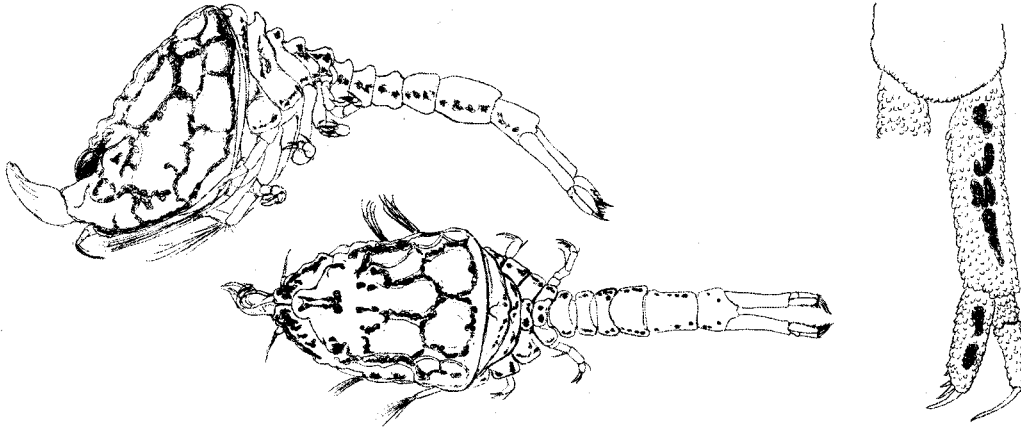
Three pairs of exopods present on first 3 pairs of pereopods of female [Males with exopods on first 4 pairs of pereopods]. *Cumella* Sars, 1865 [KEY B]



KEY A : KEY TO THE FEMALES OF THE GENUS CAMPYLASPIS

1. Surface of carapace have a reticulate appearance with several hexagonal and pentagonal in shaped depressions having margins lined with small reddish-orange granulate protuberances. Uropod having finely tuberculae surface; endopod slightly longer than exopod, distal forth bearing 3-stout setae on inner margin (becoming larger distally); exopod and endopod each with single, relatively short terminal seta; terminal seta on endopod about 1/3 length of endopod

Campylaspis heardi Muradian-Ciamician, 1980



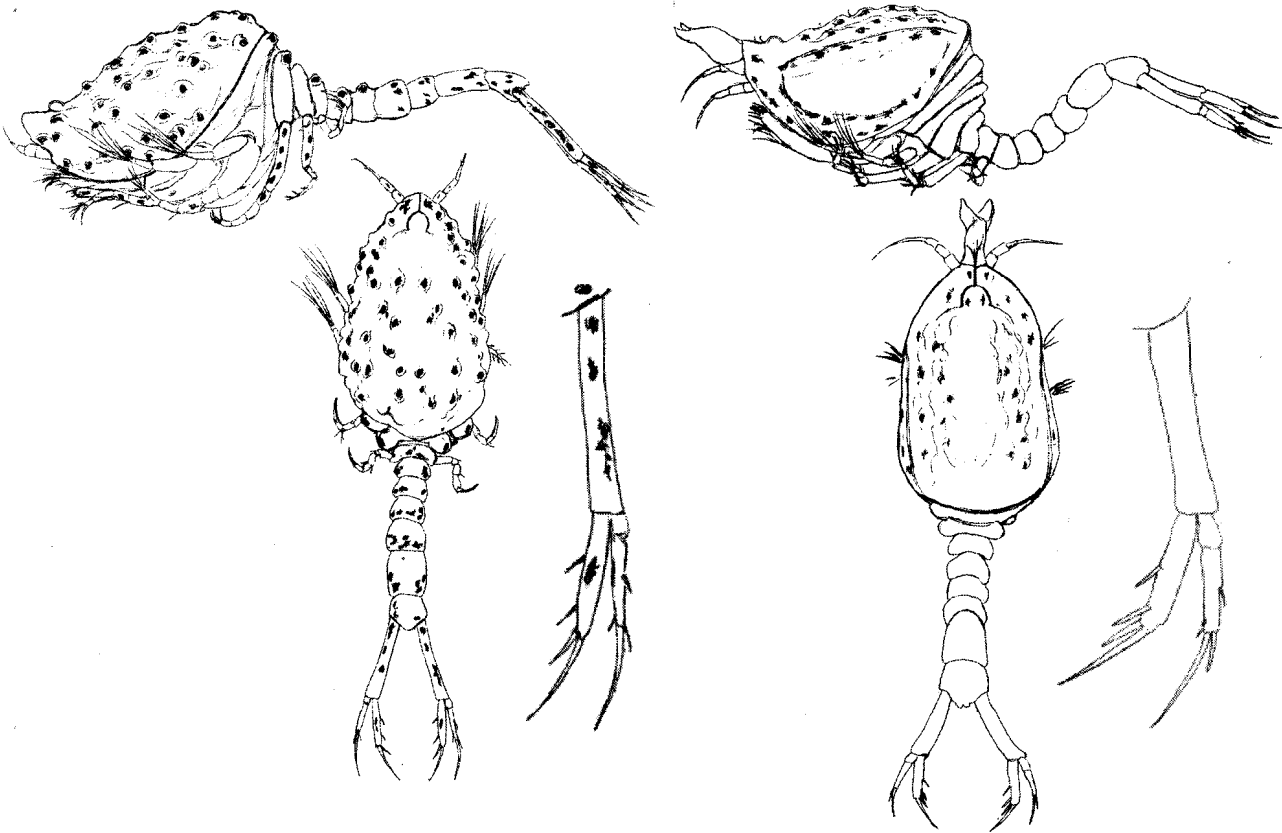
Surface of carapace not having a reticulate appearance, either smooth, granular, or with carinae and sulcus. Uropods having surface not strongly tuberculate, peduncle narrow with or without setae on inner margin; endopod with 3 or more narrow setae, including distolateral seta, occurring over half length of inner margin; terminal seta on endopod over 1/2 length of endopod

2



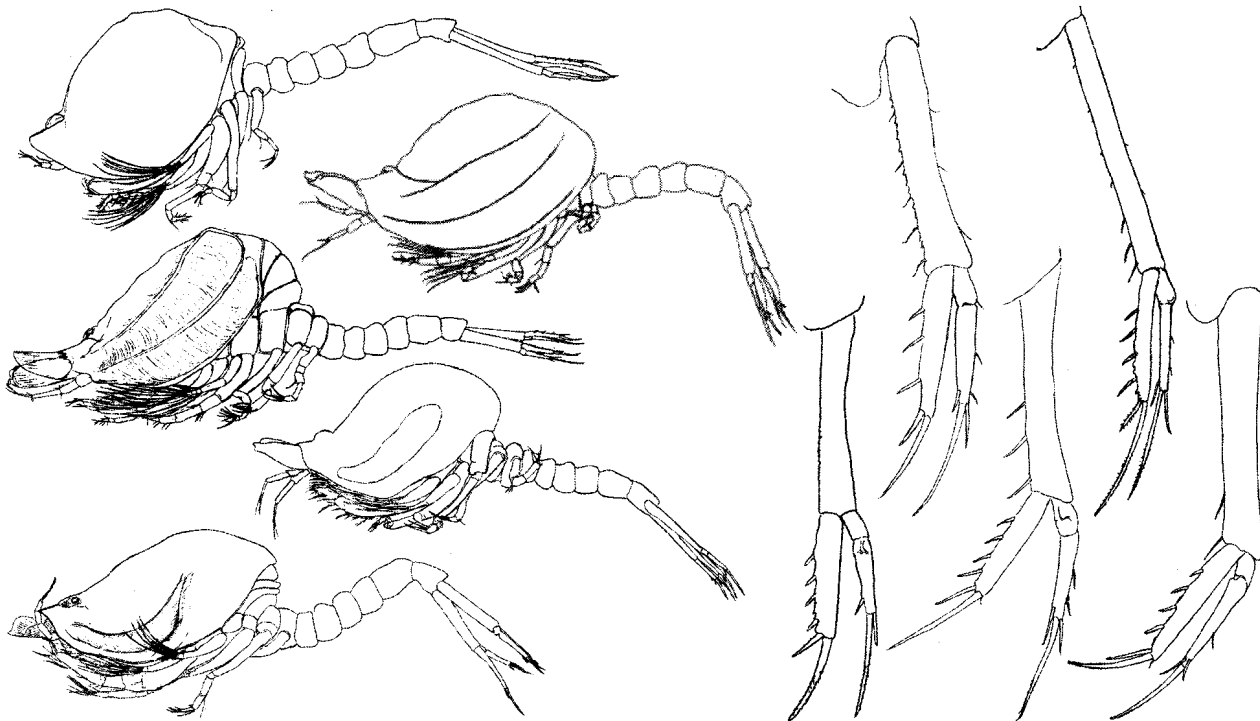
2. Carapace with granulate protuberances. Uropod with endopod having 3 narrow setae, including distolateral seta, on inner margin

3

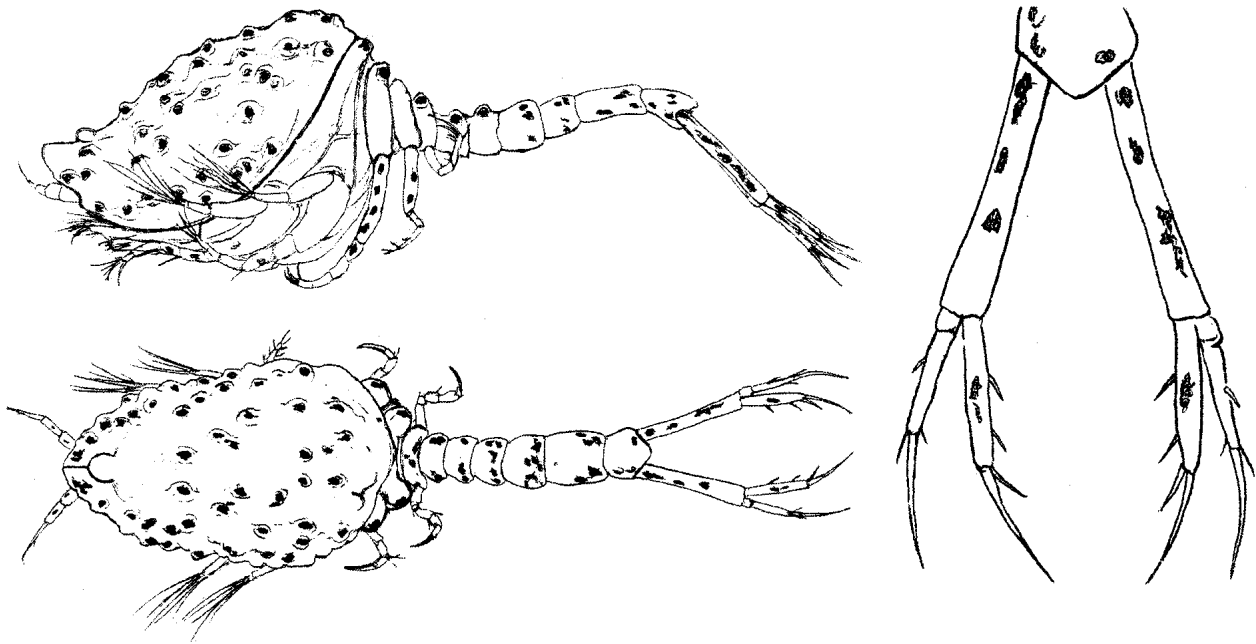


Carapace lacking granulate protuberances. Uropod with endopod having 4 or more setae on inner margin, including subterminal seta

4

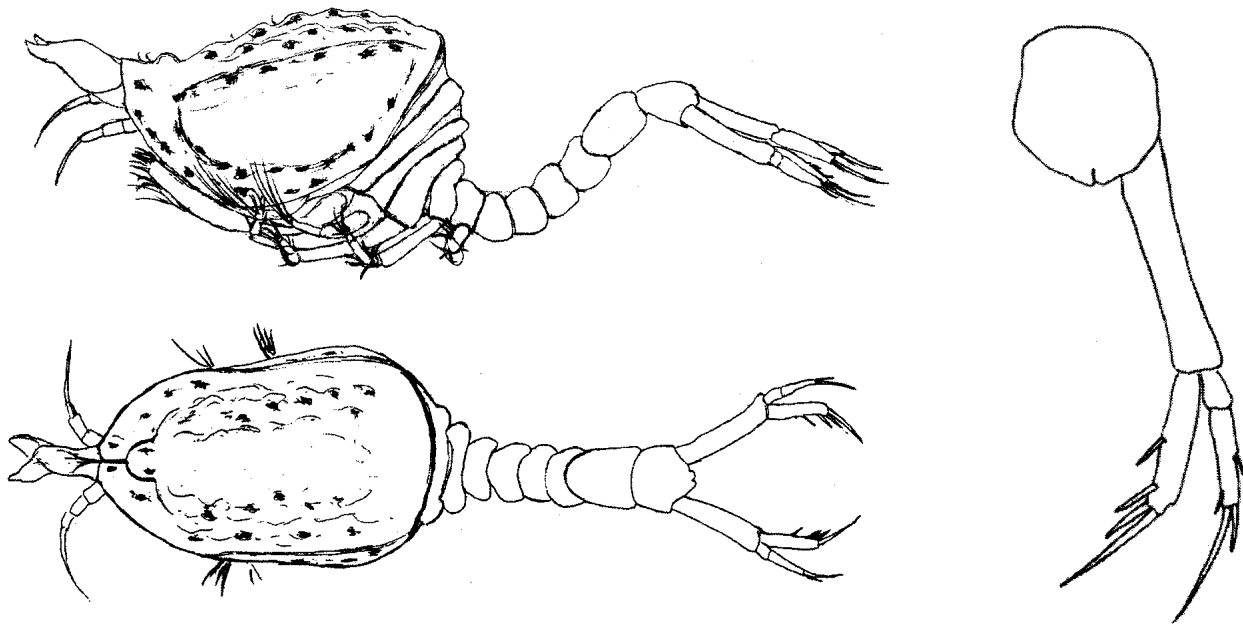


3. Carapace with rounded sides convex ; dosolateral carina absent. Endopod with second seta on inner margin not extending distally past bases of subterminal and terminal setae *Campylaspis* sp. A



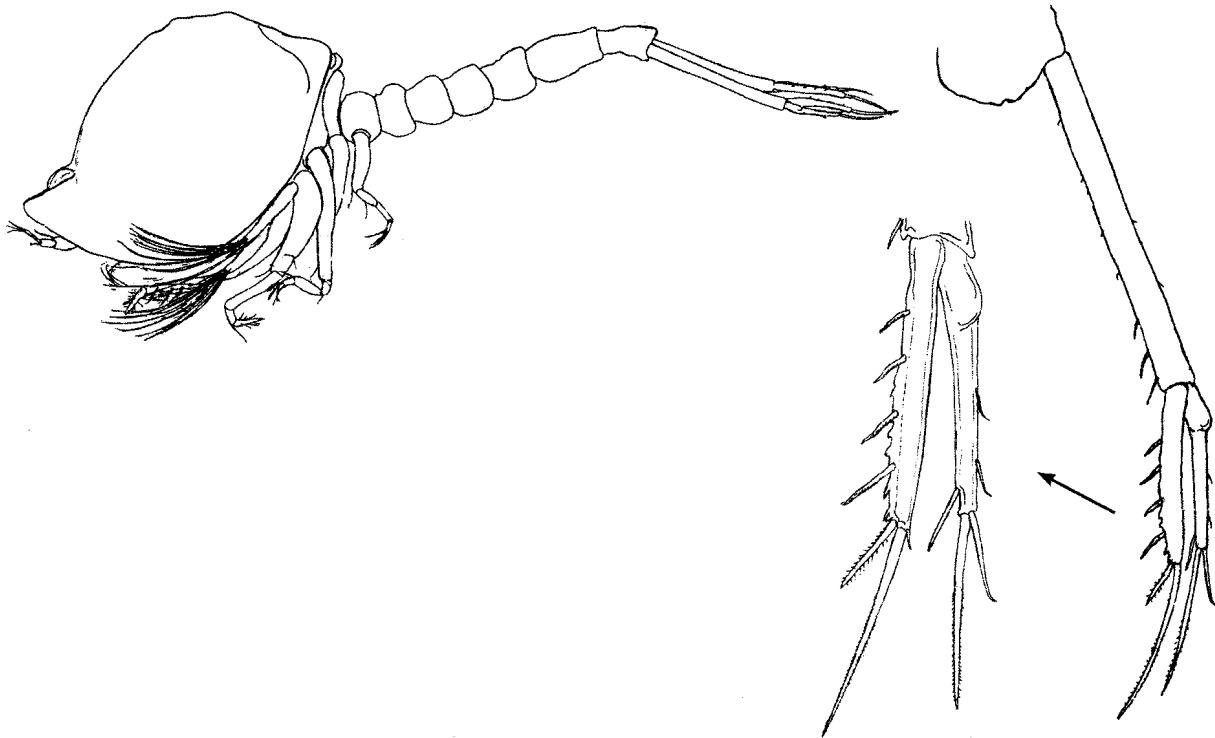
- Carapace with sides concave; dosolateral carina present. Endopod with second seta on inner margin extending distally well past bases of subterminal and terminal setae

Campylaspis sp. B



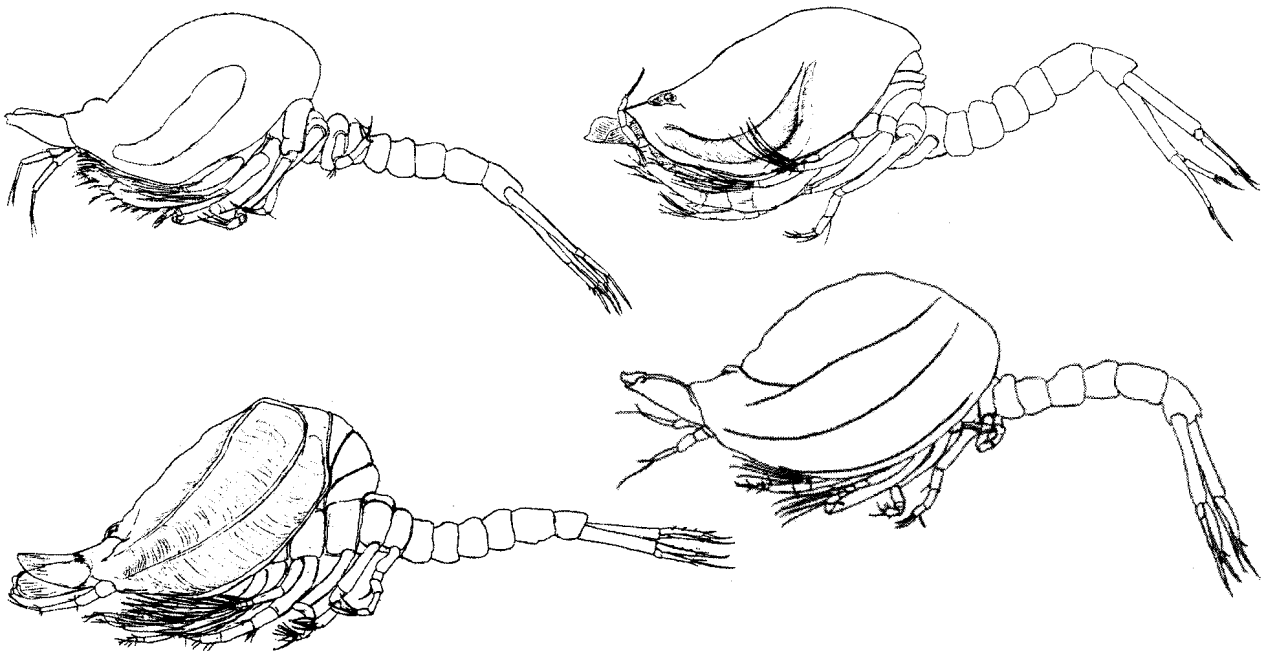
4. Carapace relatively smooth (lacking carinae, lateral grooves, and/ or sulcus)

Campylaspis sp. C



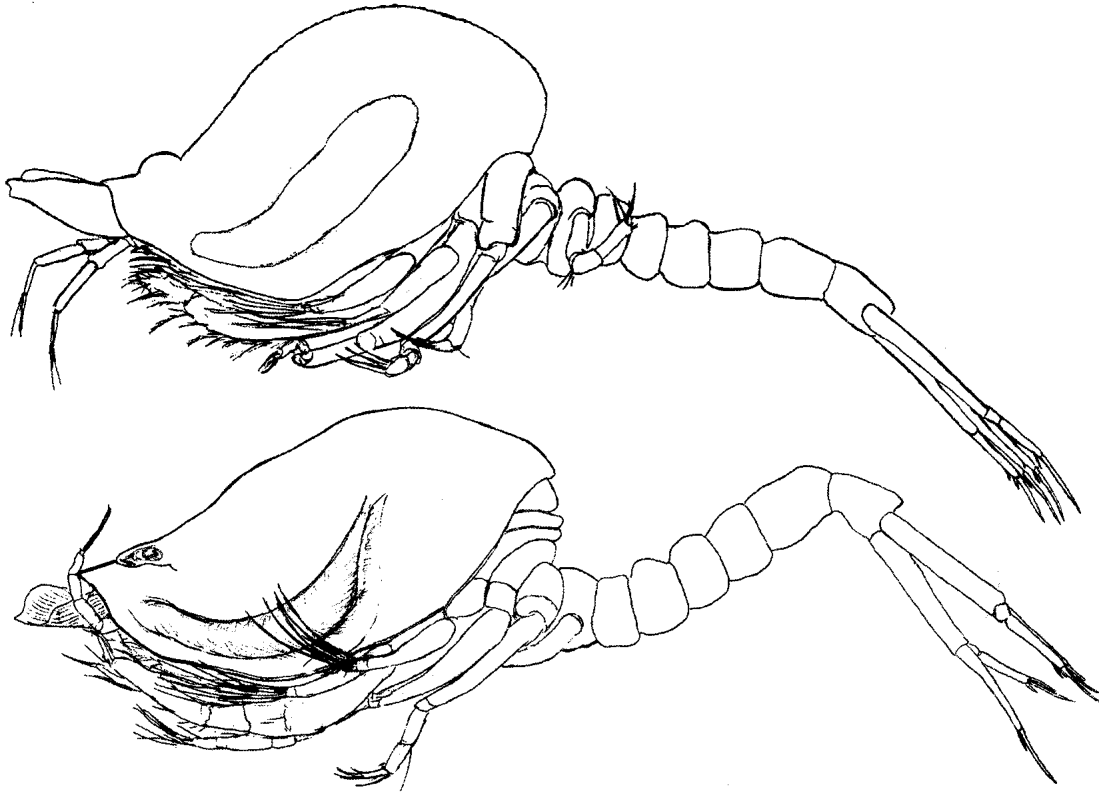
Carapace not smooth, with carinae, lateral grooves, and/ or sulcus

5



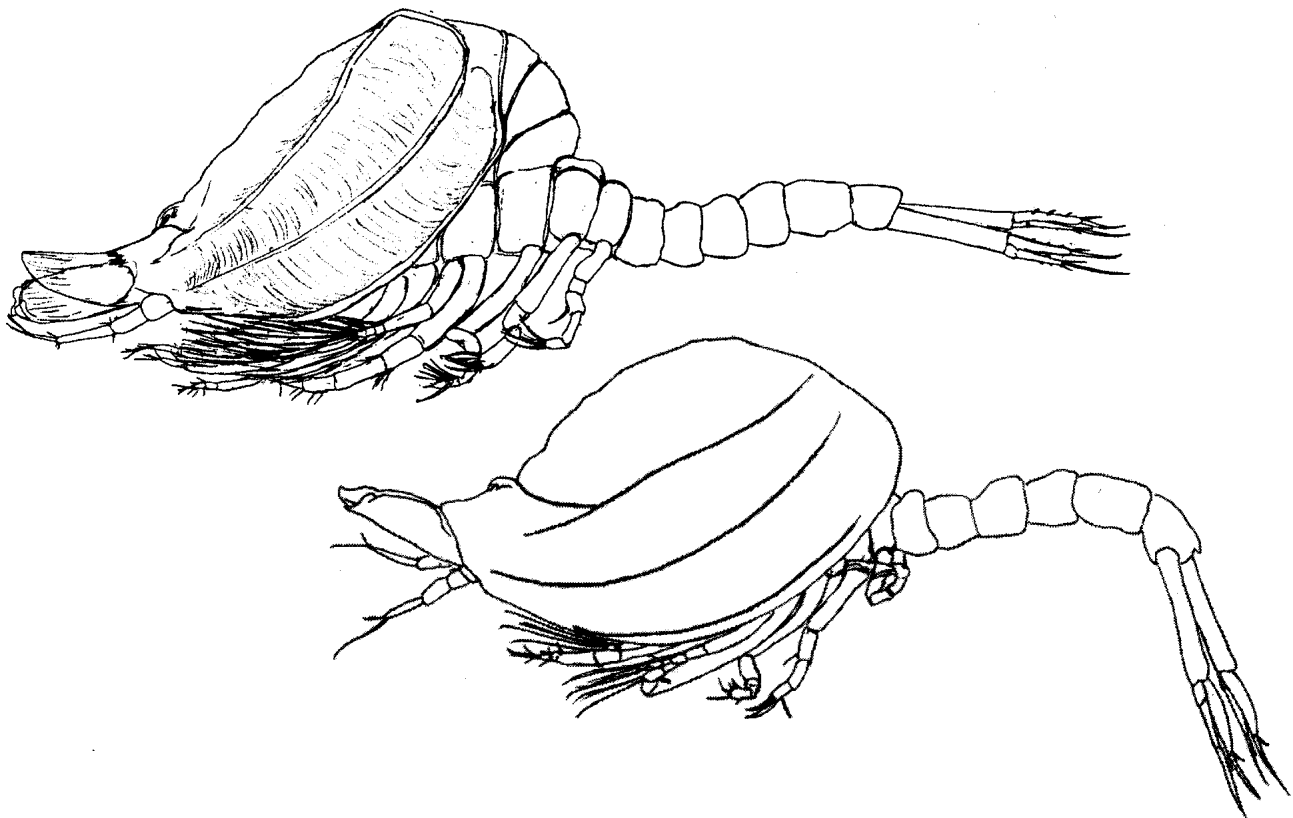
5. Carapace with sulcus (lacking carinae or long lateral grooves)

6



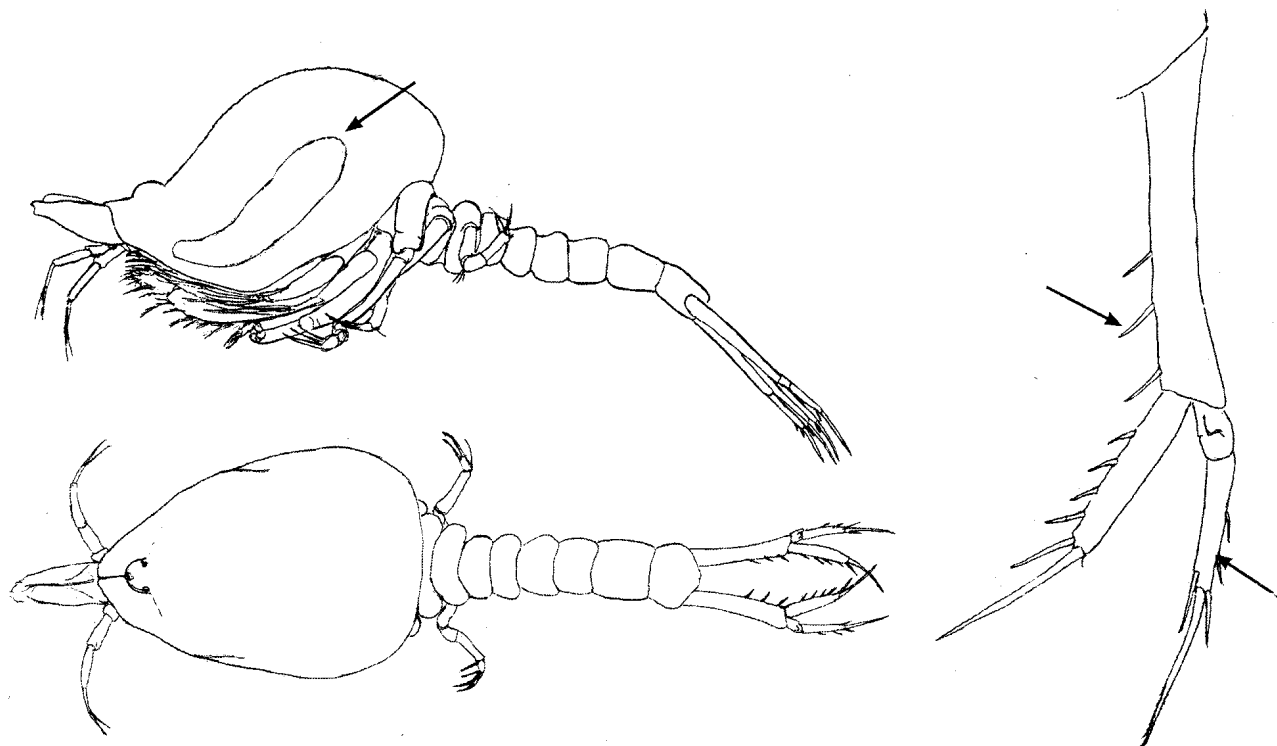
Carapace lacking sulcus, having carinae and lateral groove or grooves.

7



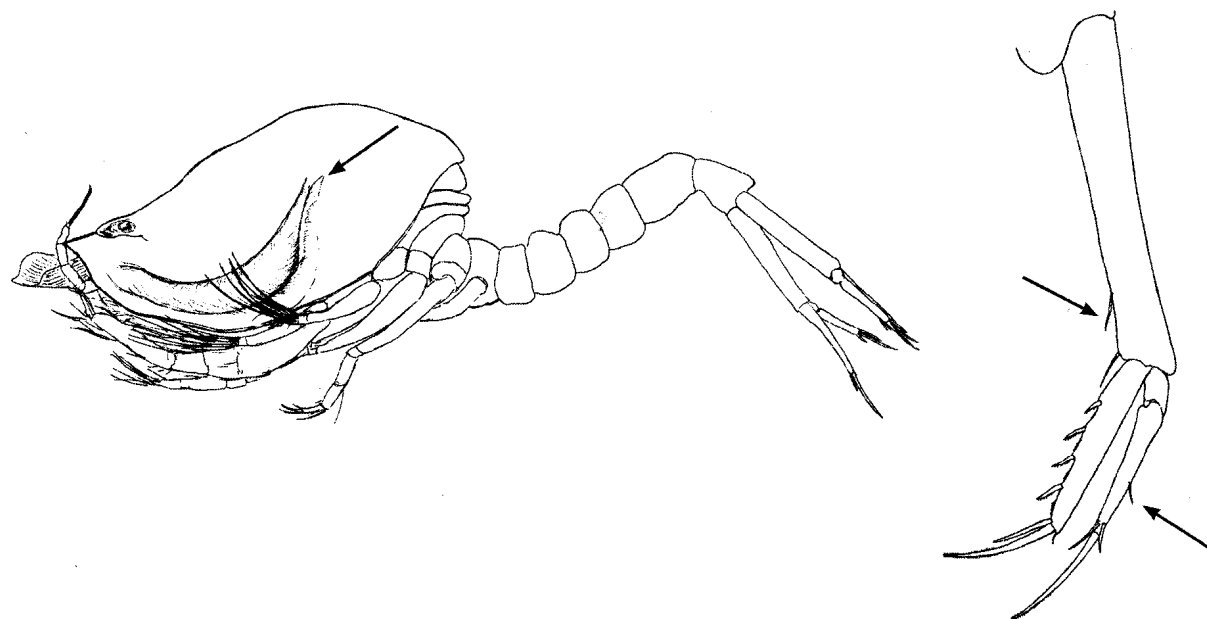
6. Sulcus with margins blunt, rounded and widest posteriorly. Uropod with peduncle having 3 or more setae on distal $\frac{1}{2}$ of inner margin; exopod with 2 small setae on lateral margin (excluding relatively large sub terminal seta)

Campylaspis sp. D



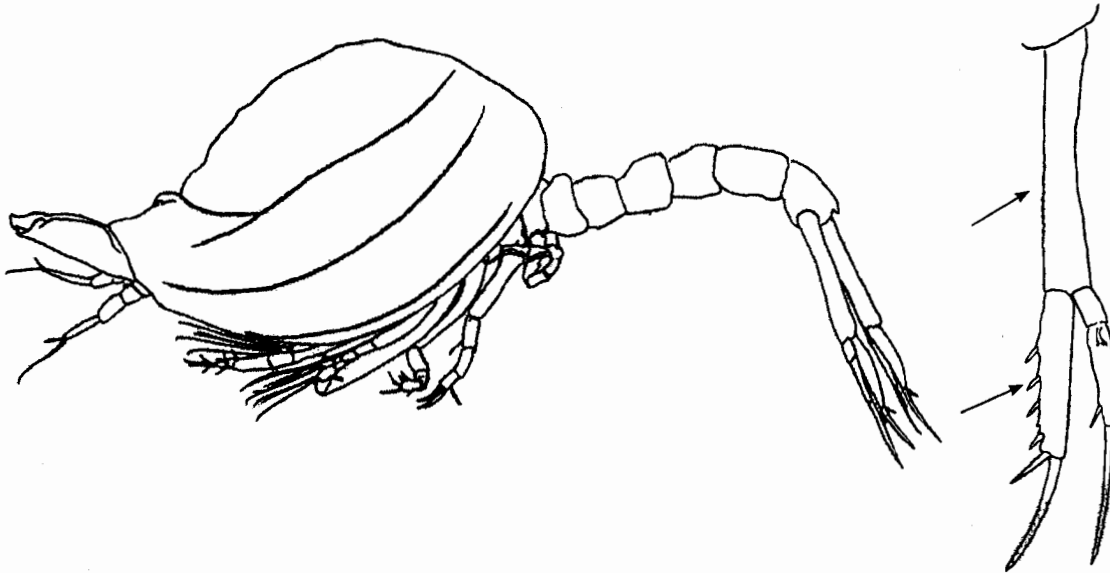
Sulcus with margins acute and thin, narrowing and attenuated posteriorly. Uropod with peduncle having 2 thin setae on distal $\frac{1}{4}$ of inner margin; exopod with 1 small setae on lateral margin (excluding relatively large sub terminal seta)

Campylaspis sp. G



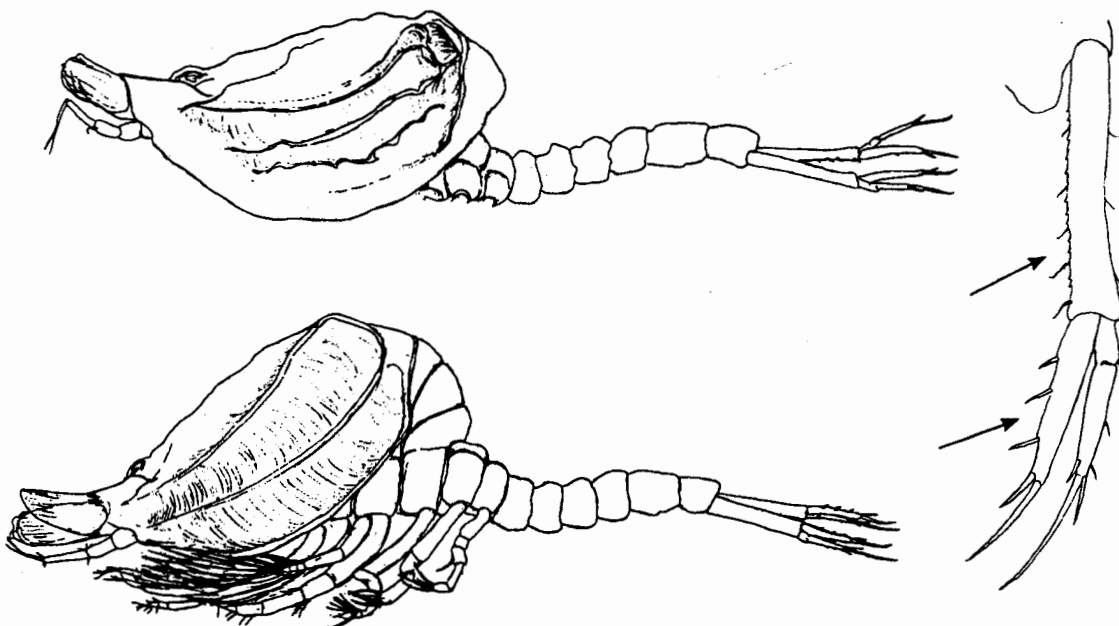
7. Carapace dorsally convex with 3 weakly developed lateral ridges. Uropod with peduncle having inner margin lacking distinct setae; endopod (excluding inner terminal seta) having inner margin with 4 stout spiniform seta (not noticeably increasing in size distally), inner terminal seta more than twice length of distal most lateral seta.

Campylaspis sp. E



Carapace relatively flat dorsally with at least 3 well-developed lateral, carinate ridges. Uropod with peduncle having inner margin with 3-4 setae (increasing in length distally); excluding inner terminal seta, endopod having inner margin with 3 narrow spiniform setae increasing in length distally, distal most lateral seta more than half length of inner terminal seta.

Campylaspis sp. F

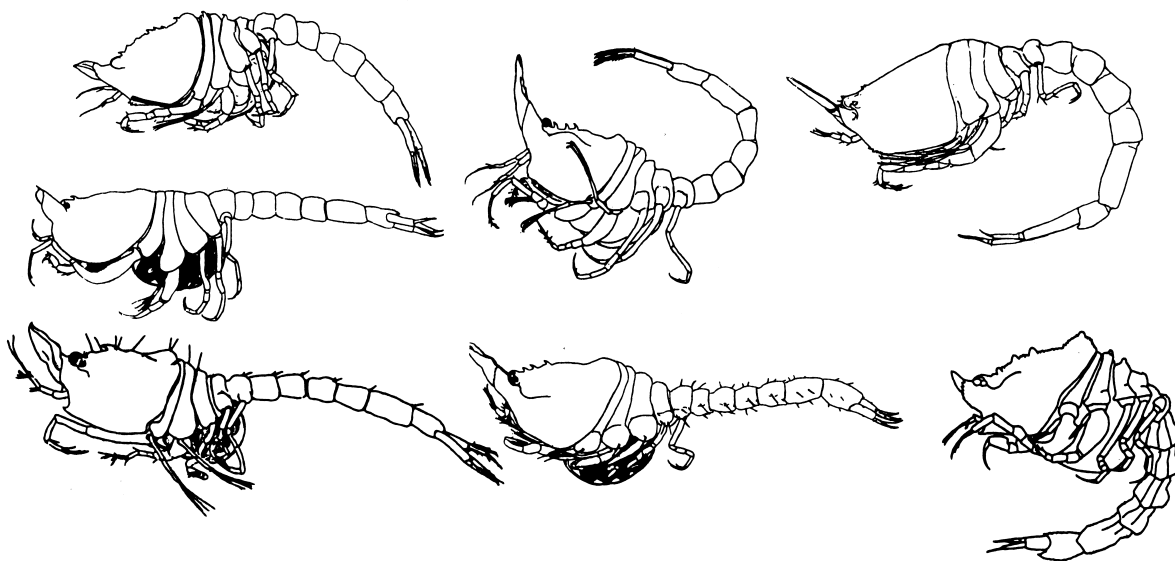


**KEY B: KEY TO THE ADULT FEMALES OF THE GENUS *CUMELLA*
known from Florida coastal waters.**

*This key should be used with the caveat that there are many additional species of *Cumella* or complexes of cryptic species in Florida waters that remain poorly documented and undescribed*

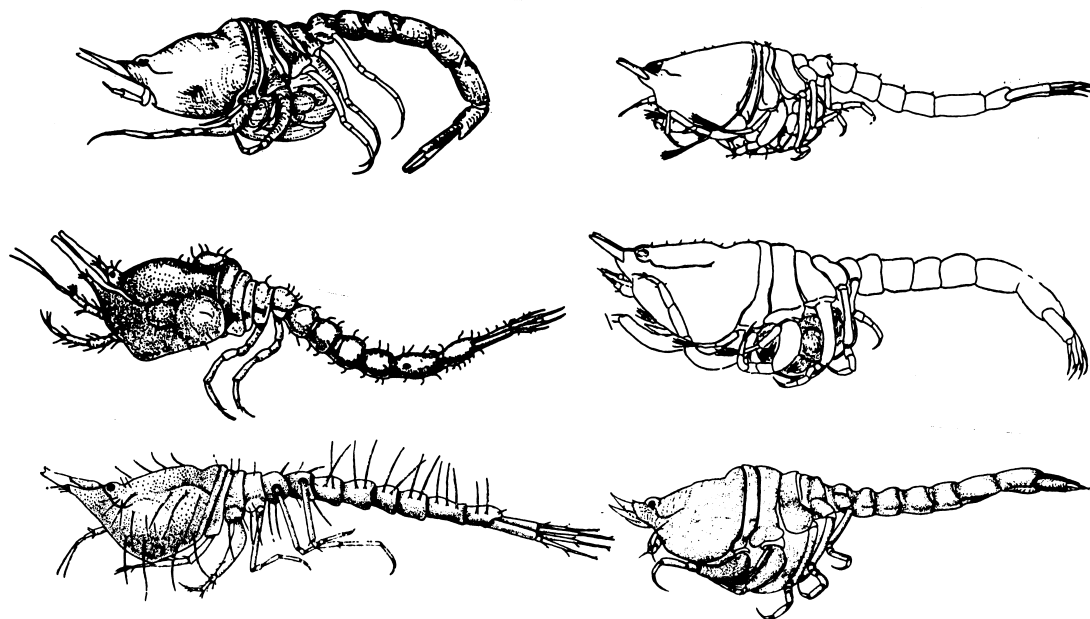
1. Carapace with 1 or more dorsal spines (teeth) or tubercles

2



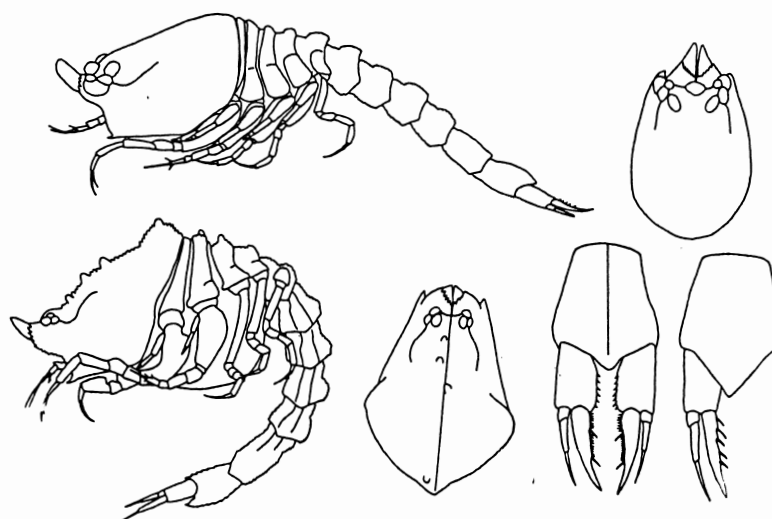
- Carapace with lacking dorsal teeth or tubercles

8



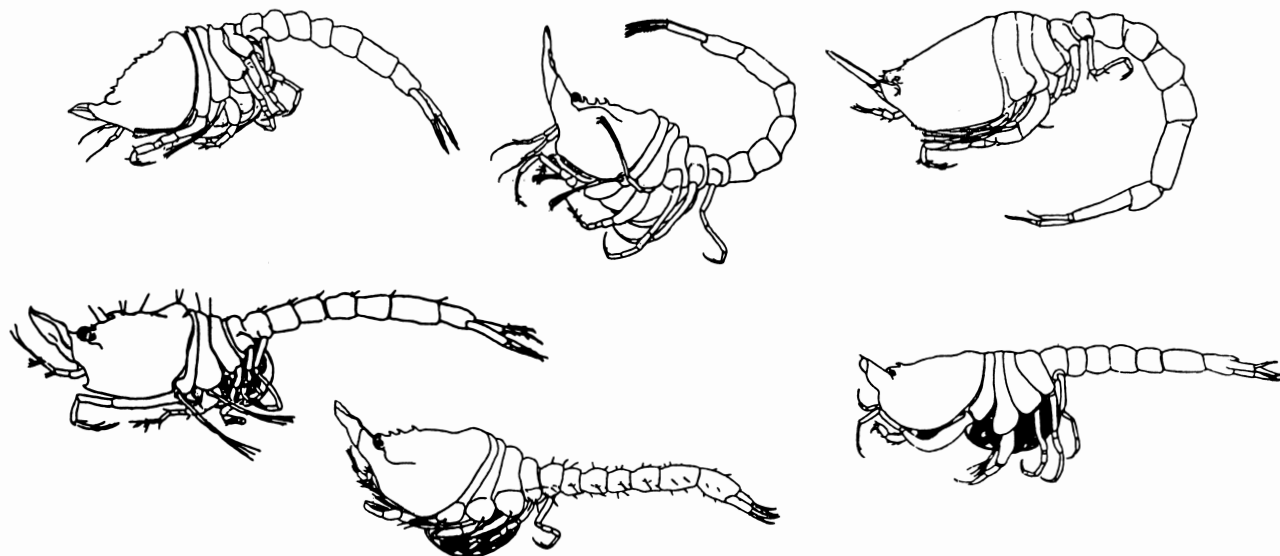
2. Carapace with 4-5 blunt tubercles. Pereonites 2-4 with dorsal tubercles. Pleonites 1-3 and the anterior region of 4 with 2 pairs of narrow, lateral, granulate carinae. Uropod: peduncle stout, distinctly shorter than 6th pleonite; endopod curved medially and distally continuous and fused with terminal seta

Cumella vicina sensu Petrescu (2002)



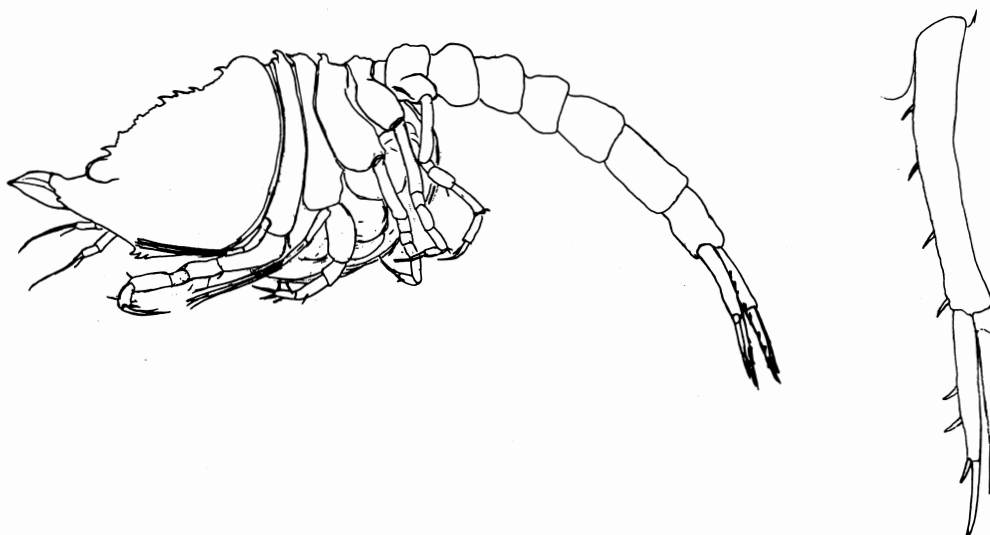
- Carapace 1 -7 dorsal teeth. Uropod: peduncle as long as or longer than 6th pleonite; endopod not distinctly curved medially and not continuous and fused with terminal seta.

3



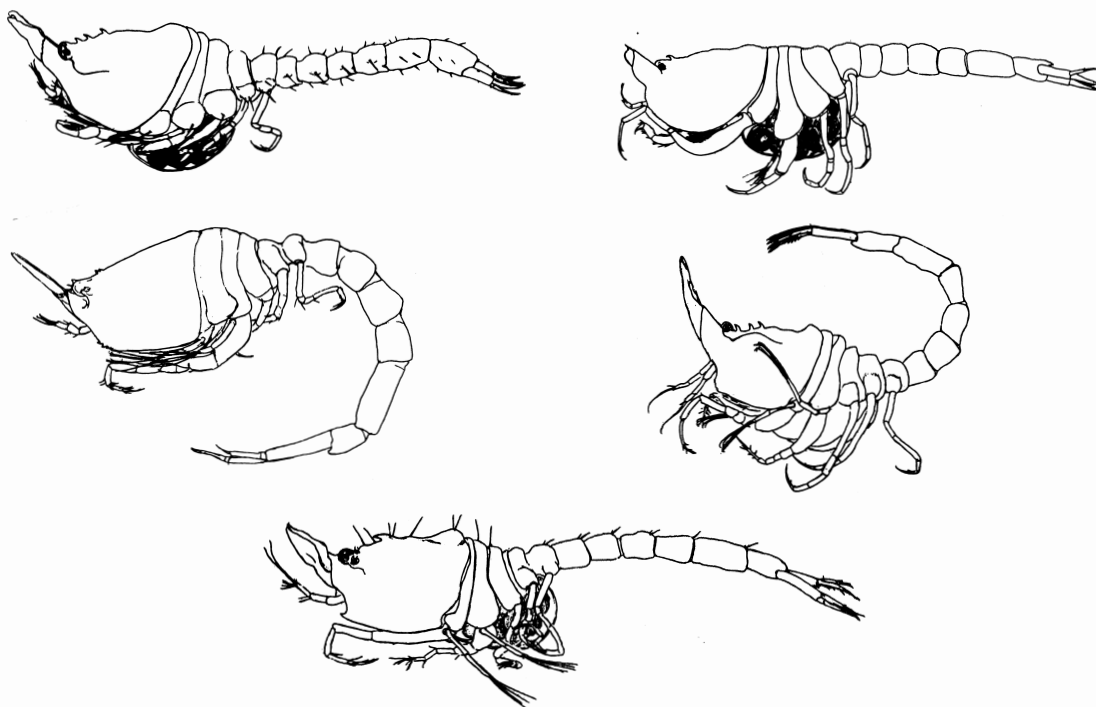
3. Female with 5 or more dorsal teeth or spines on carapace, pereonites 1-3 with dorsal spines

Cumella cf. serrata Calman, 1911



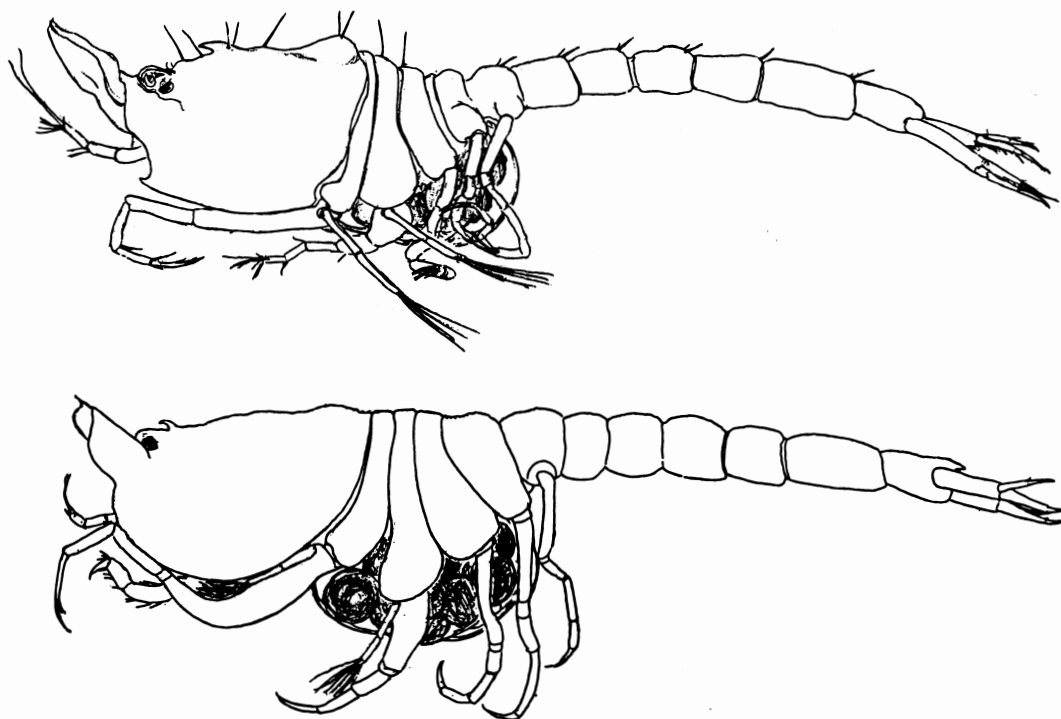
Carapace with 1-3 dorsal teeth or acute spines

4



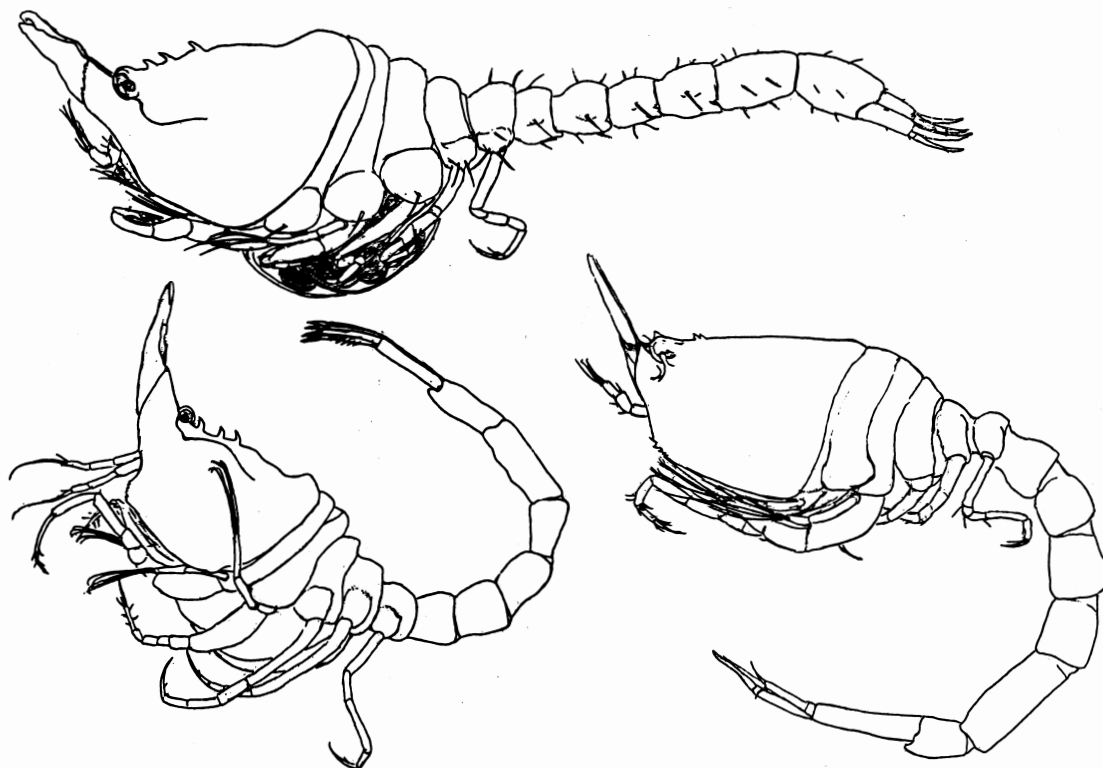
4. Carapace armed with a single anteriorly curved dorsal tooth or spine

5

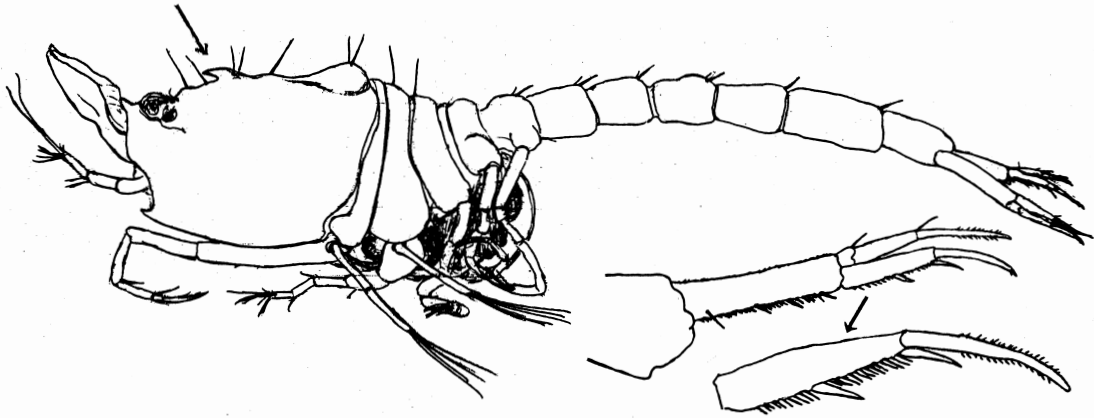


-- Carapace armed with 3 dorsal teeth or spines

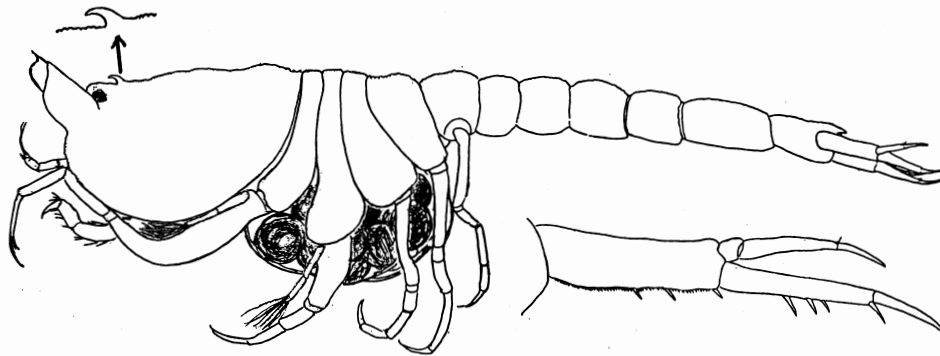
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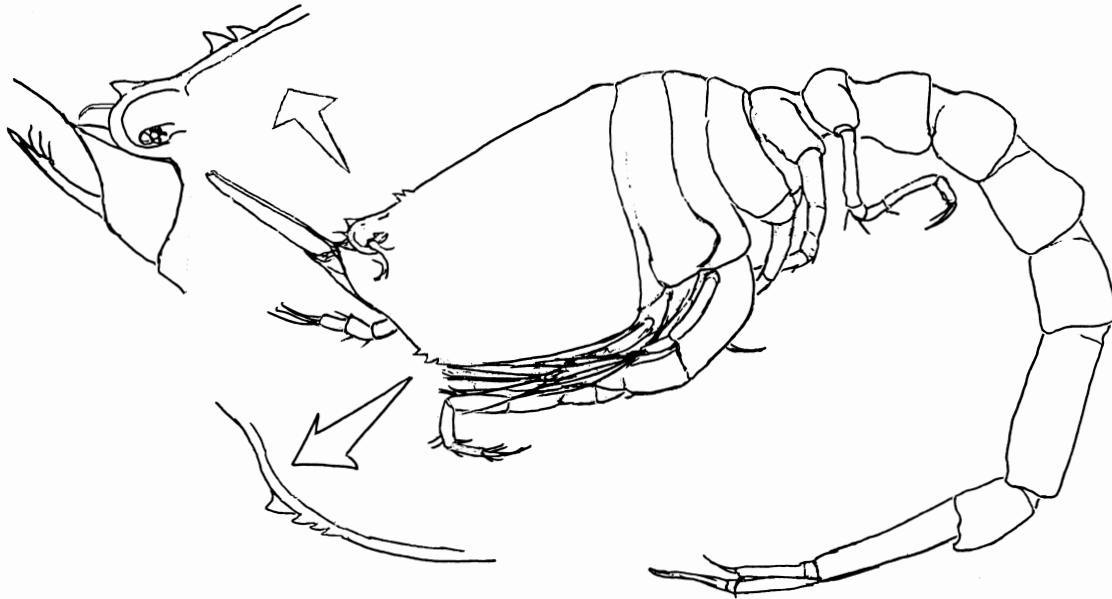
5. Dorsal tooth on carapace located near posterior margin of frontal lobe. Pseudorostrum weakly-developed, not extending well beyond ocular lobe; siphon distinctly longer than pseudorostrum. Surface of carapace **with** long dorsal and lateral setae. Uropod with endopod having inner margin pectinate with 2 spiniform setae, one medial and subterminal; length of terminal seta over $\frac{3}{4}$ that of endopod *Cumella* sp. A



- Dorsal tooth located immediately behind ocular lobe, pseudorostrum well-developed extending well beyond ocular lobe; siphon distinctly shorter than pseudorostrum. Surface of carapace **lacking** long dorsal and lateral setae. Uropod with endopod having inner margin armed with 4 spiniform setae, 3 medial and 1 subterminal; length of terminal seta slightly less than half that of endopod *Cumella* sp. B

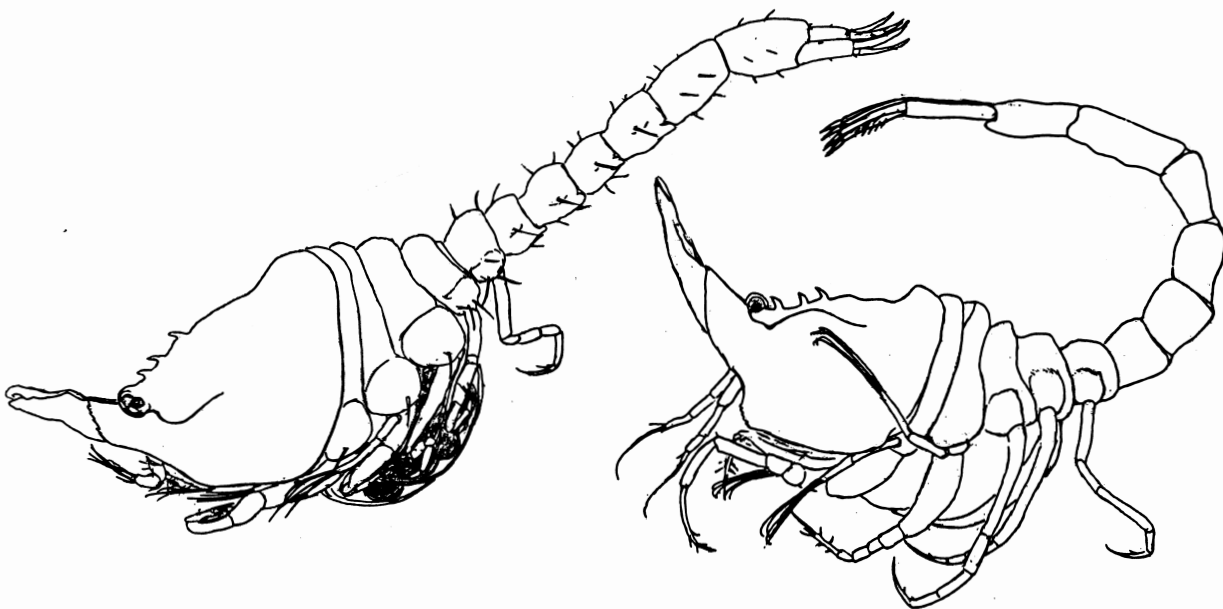


6. Carapace with dorsal teeth **not** evenly spaced, 2 on dorsal lobe and 1 on ocular lobe. Pseudorostrum reduced, weakly developed, not extending dorsally above ocular lobe; siphon bipartite (divided into long narrow distinct twin siphons). Sixth pleonite less than $\frac{1}{2}$ length of 5th pleonite. Uropodal peduncle lacking spineform or setulate setae on inner margin, about twice long as 6th pleonite *Cumella* sp. C



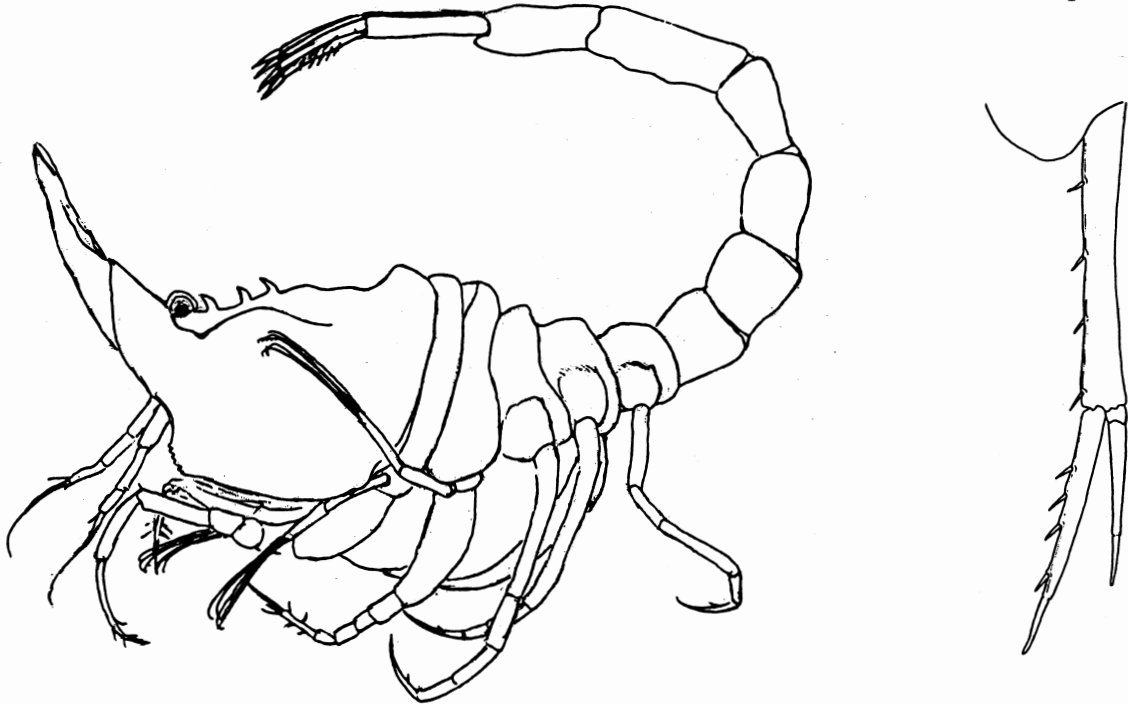
-- Carapace with dorsal teeth evenly spaced, confined to dorsal lobe. Pseudorostrum extending anterodorsally well-beyond the ocular lobe; siphon undivided or not completely undivided, Sixth pleonite (=pleotelson) over $\frac{3}{4}$ length of 5th pleonite. Uropodal peduncle about as long or shorter than last pleonite (= 6th pleonite).

7



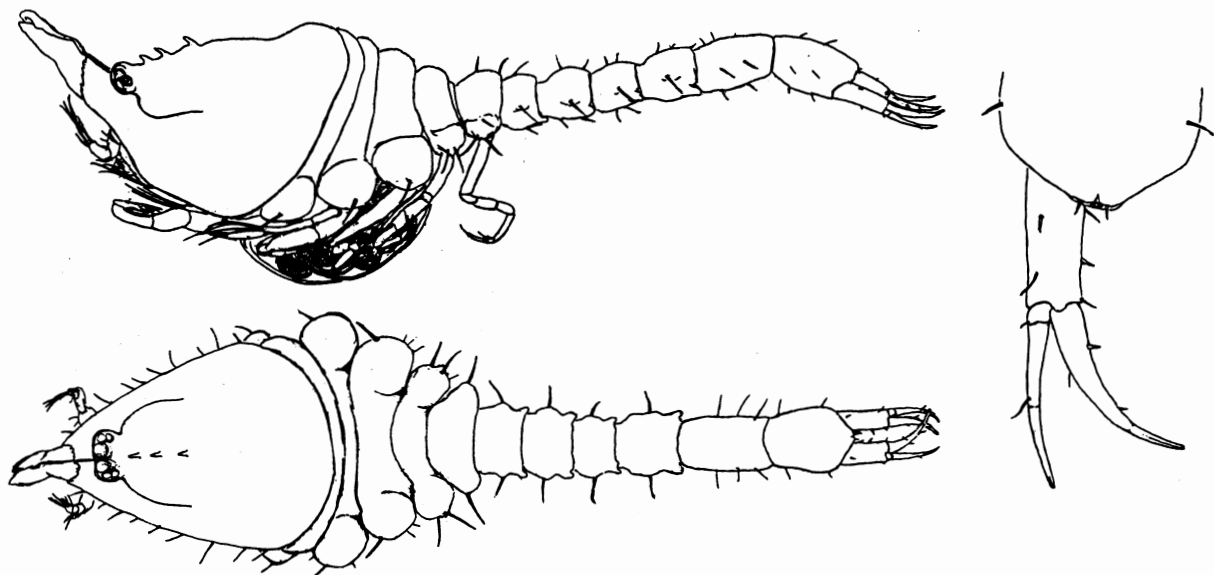
7. Sixth pleonite (=pleotelson) uniformly wide (not widest in posterior half), about $\frac{3}{4}$ length of 5th pleonite. Uropod: peduncle about as long as last pleonite (= 6th pleonite); endopod relatively straight with well-developed spiniform setae on inner margin

Cumella sp. D

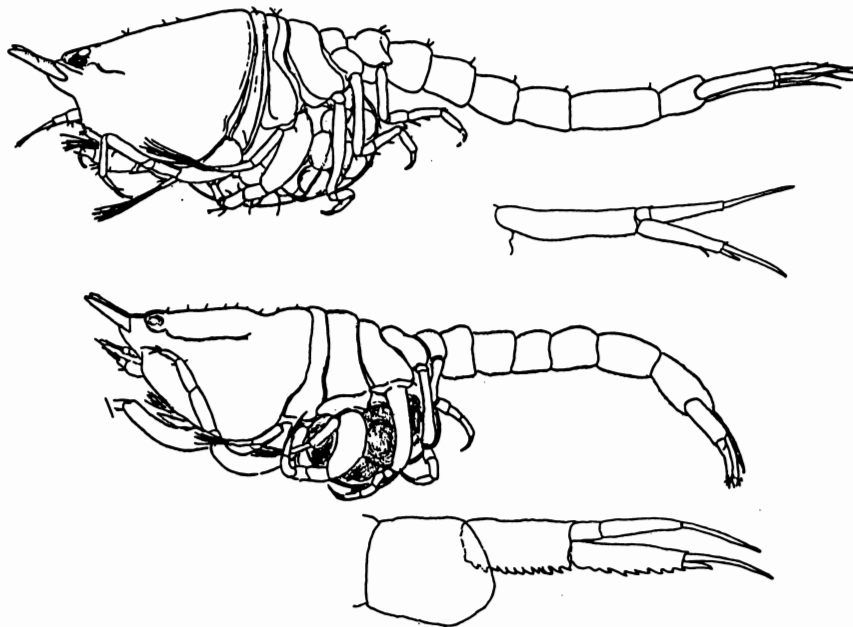


-- Sixth pleonite widest posteriorly, about equal in length to 5th pleonite. Uropod, peduncle shorter than last pleonite; endopod curved medially with 2 small setae on inner concave margin.

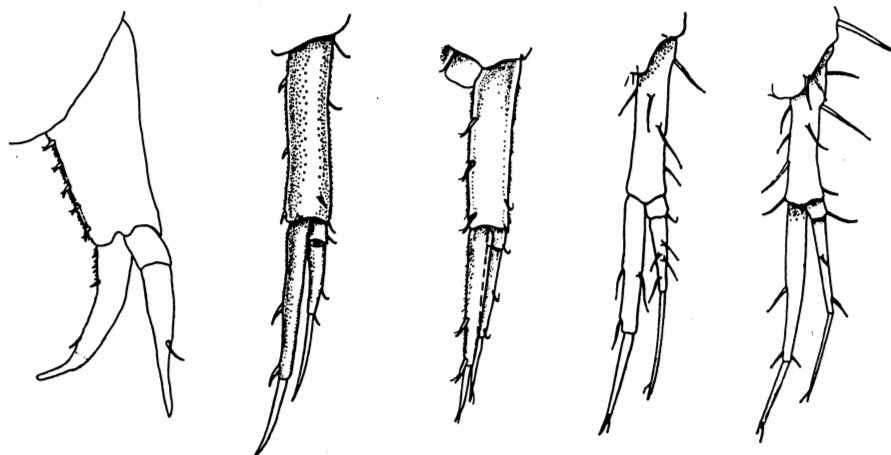
Cumella sp. E



8. Uropodal peduncle **lacking** distinct elongate or spiniform seta or setae on inner margin. Inner margin either finely pectinate or bluntly serrate. [Endopod with 2 terminal setae, outer seta about 3 times length of inner] 9

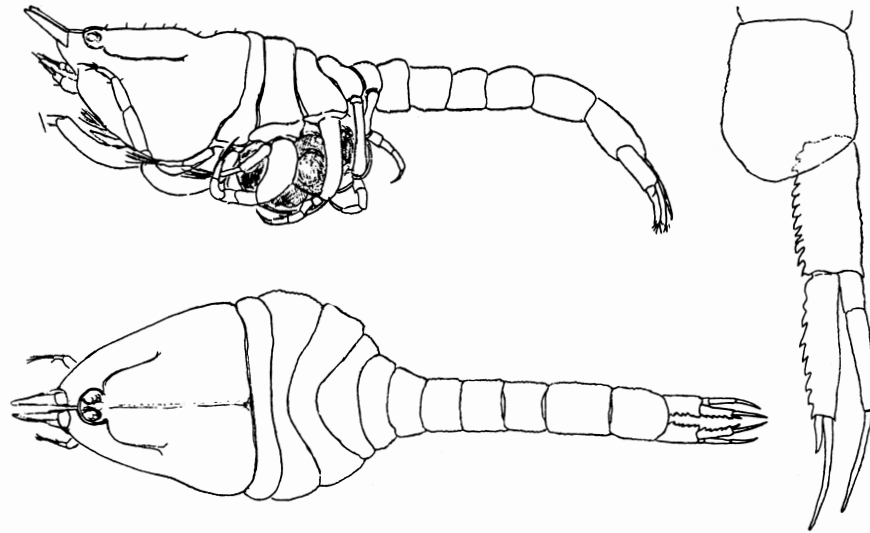


-- Uropodal peduncle with 1 or more distinct elongate, or spiniform, or setulate setae on inner margin. [Endopod usually with single terminal seta] 10



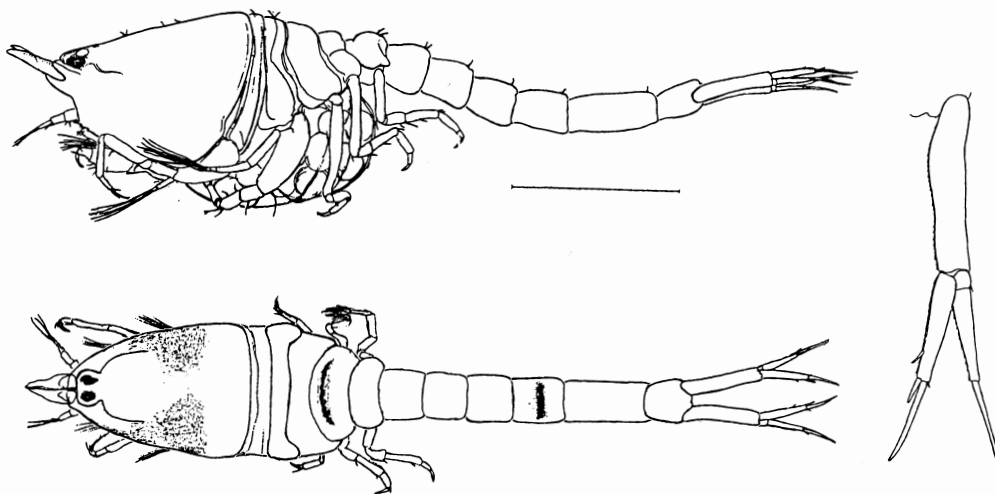
9. Uropodal peduncle stout, slightly more than twice as long as wide, inner margin bluntly serrate; endopod, like peduncle with inner margin bluntly serrate, lacking spiniform or spinulate setae [Dorsal region of carapace in lateral view with shallow depression just behind frontal lobe].

Cumella sp. F



-- Uropod: peduncle with inner margin finely **pectinate**; endopod with 1 acute spiniform seta on distal 1/3 of inner margin and 2 terminal setae, the outer about 1/3 the length of inner. Dorsal region of carapace in lateral view having an even contour (e.g., no bulges or shallow concavities)].

Cumella sp. G



10. Sixth pleonite longer than uropodal peduncle. Uropodal endopod curved medially with 2-6 small setulate setae on inner margin and distally continuous with terminal seta]

Cumella clavicauda Complex

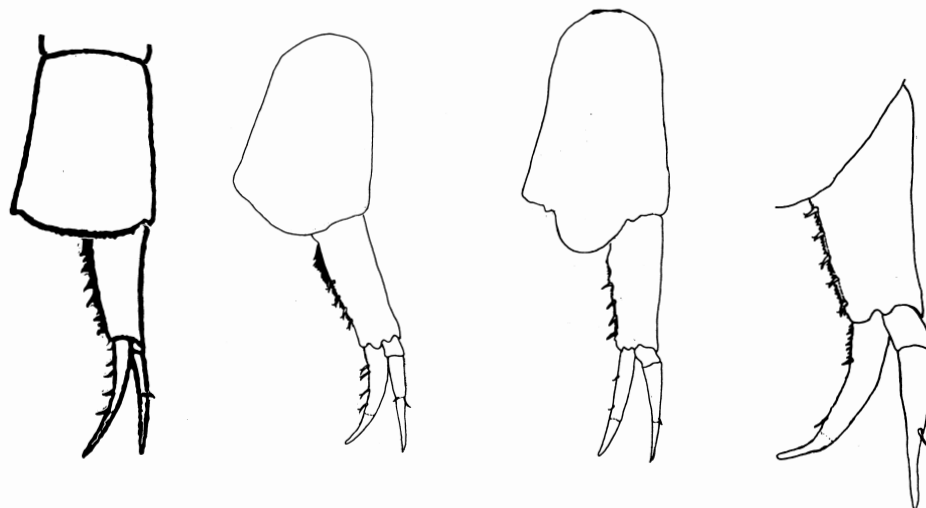
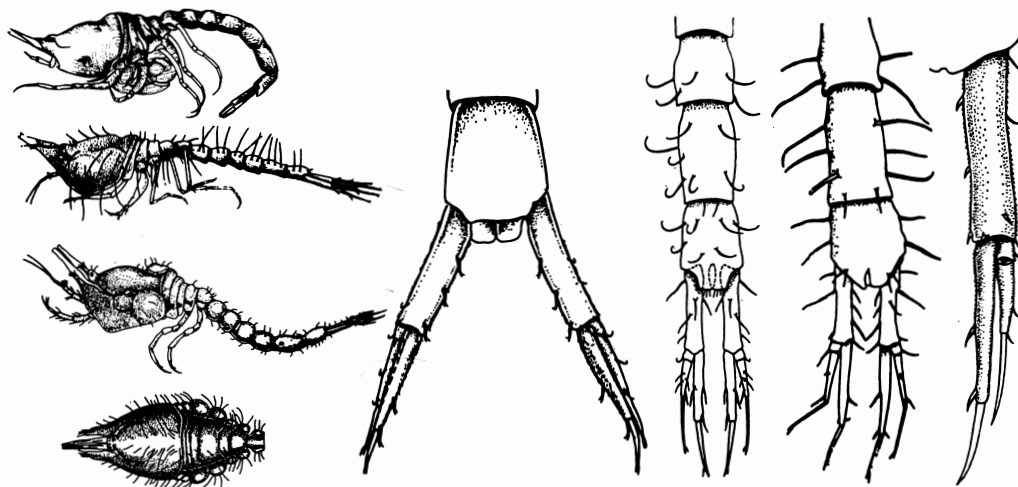


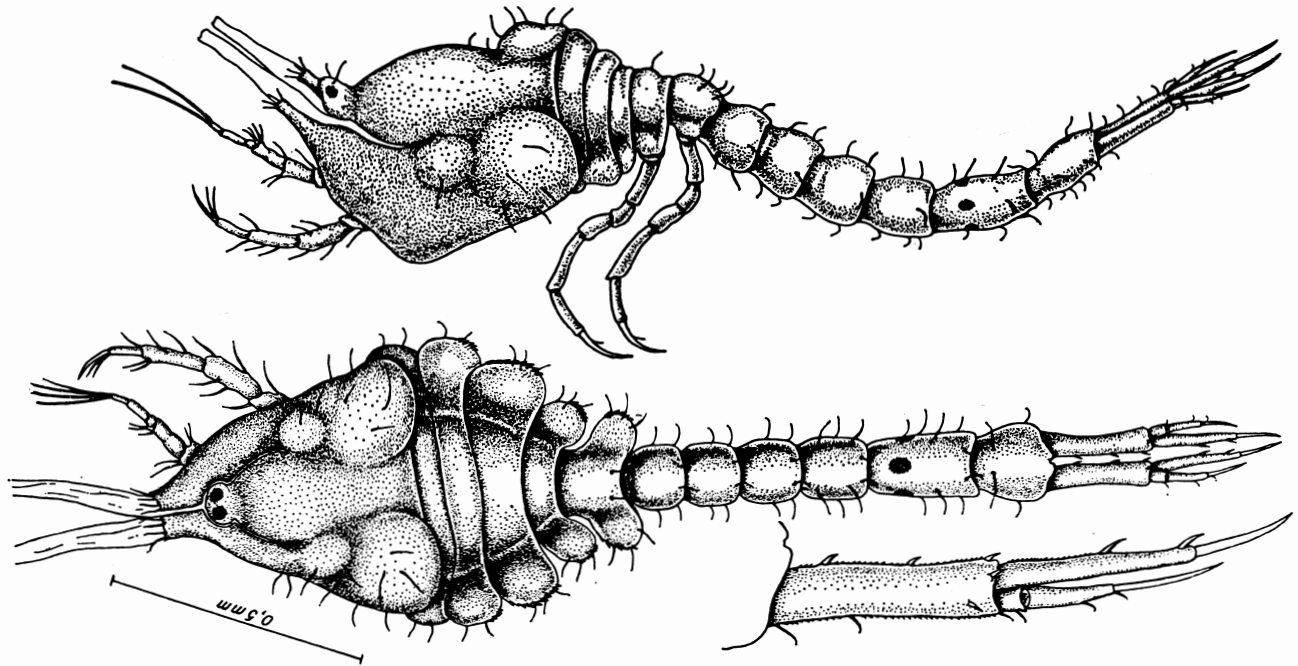
Figure. Uropods and pleonite 6. A, male of *C. clavicauda* sensu Calman (after Calman 1911); B & C, respectively, male & female of unidentified species pair; D, female, unidentified species

-- Sixth pleonite **not** noticeably robust **or** longer than uropodal peduncle. Uropodal endopod not noticeable curved medially

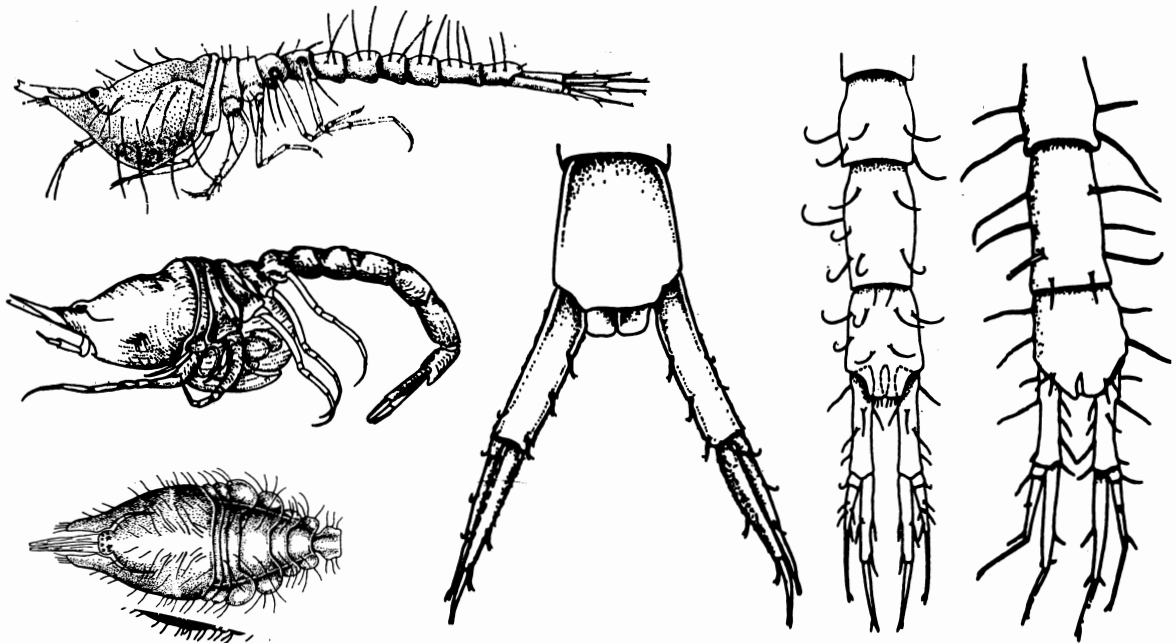
11



11. Carapace with prominent dorsolateral bulges (circular inflated areas) on carapace, posterior bulge, protruding over anterior margin of first pereonite, much larger than medial bulge (located just below posterior margin of frontal lobe. Three pigmented patches present on 5th pleonite *Cumella tripunctata* Băcescu, 1971

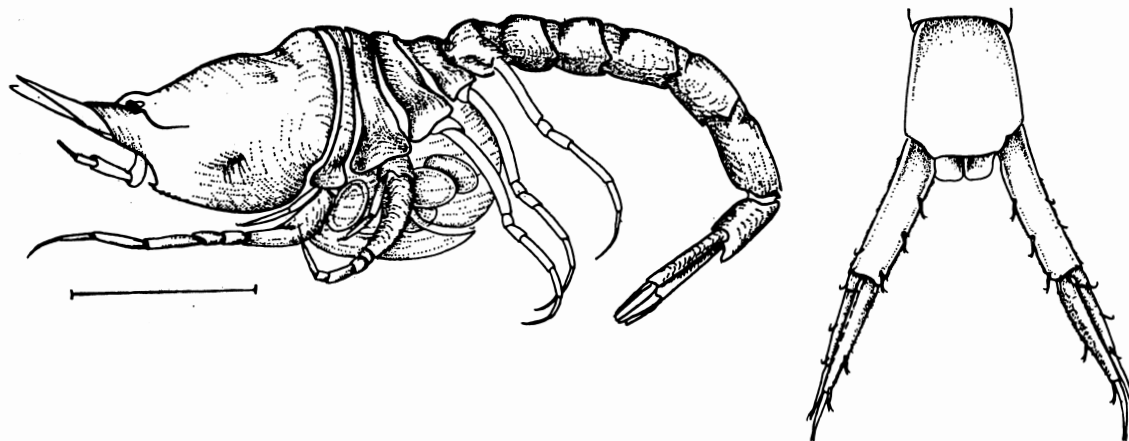


- Carapace lacking prominent dorsolateral bulges No pigment patches on 5th pleonite 12



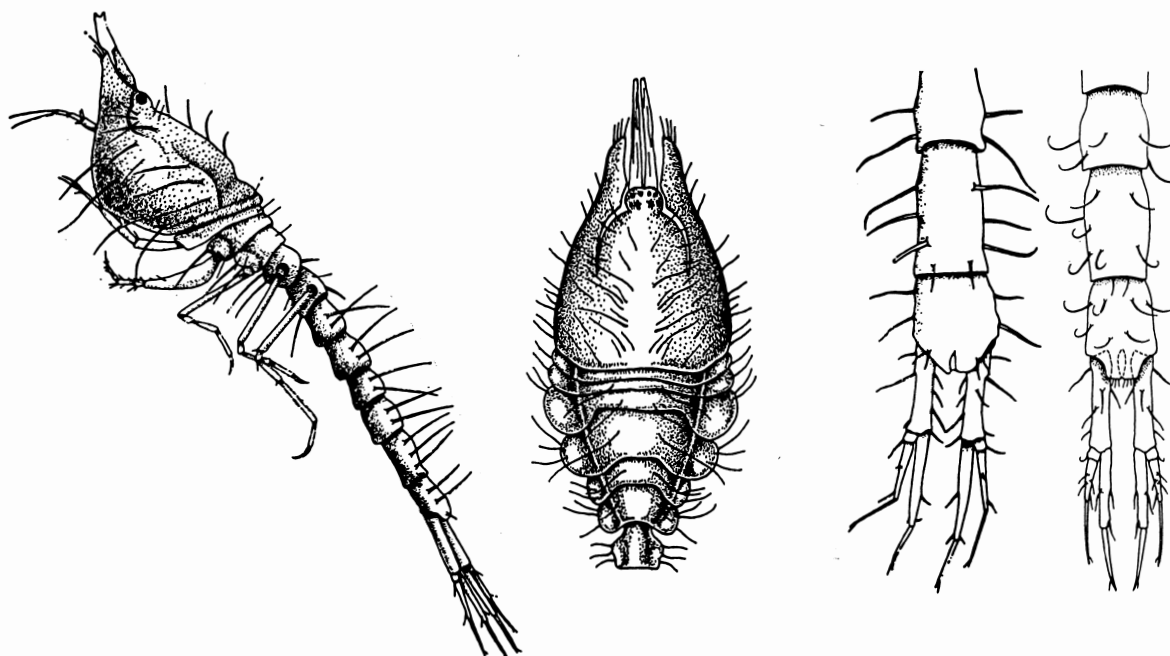
12. Body relatively smooth, lacking numerous long setae. Uropodal peduncle with 3-4 small setulate spiniform setae on inner margin

Cumella garritii Bacescu and Muradian, 1976



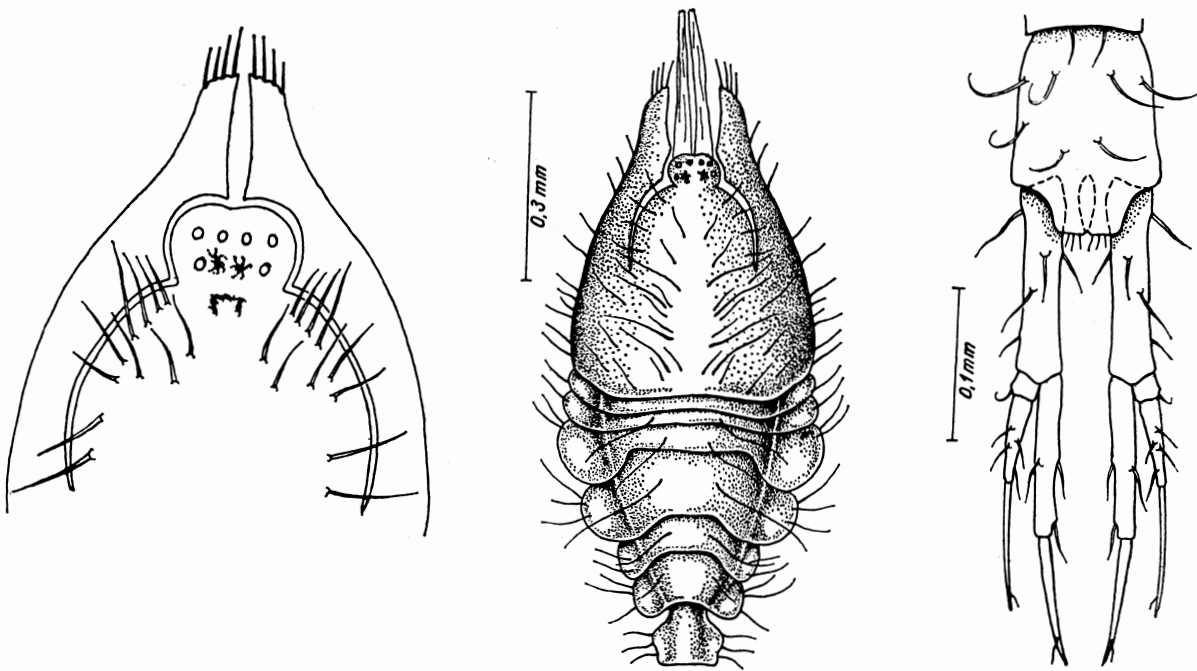
- Body with numerous long setae. Uropodal peduncle with 1-3 long simple setae on inner margin

13



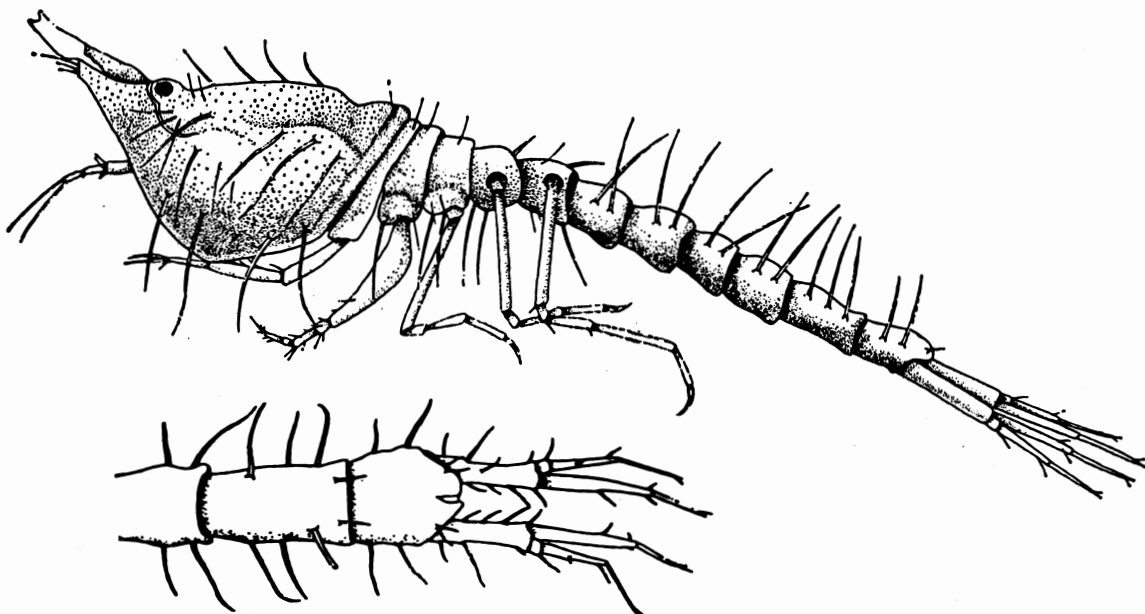
13. Eye lobe with minute lenses arranged in 2 rows. Uropod with peduncle having 1 slender seta on proximal inner margin; endopod (excluding seta) having terminal seta over $\frac{3}{4}$ length of ramus

Cumella pilosa Băcescu, 1971



- Eyelobe with pair of pigmented eyes (lacking 2 rows of minute lenses). Uropod with 3 slender setae on inner margin; endopod (excluding seta) with terminal seta about $\frac{1}{2}$ length of ramus

Cumella coralicola Băcescu, 1971



NARRATIVES

FAMILY DIASTYLIDAE BATE, 1956

FAMILY BODOTRIIDAE SCOTT, 1901

FAMILY LEUCONIDAE SARS, 1878

FAMILY NANNASTACIDAE BATE, 1866

FAMILY DIASTYLIDAE BATE, 1856

Genus *Diastylis* Say, 1818

Diastylis bispinosa (Stimpson, 1853)
(as *Diastylis quadrispinosa*)*

Diastylis sp. A

Diastylis sp. B

Diastylis sp. C

Genus *Oxyurostylis* Calman, 1912

Oxyurostylis cf. antipa Petrescu, Iliffe and Sarbu, 1993

Oxyurostylis atlantica Radhadevi & Kurian, 1981*

Oxyurostylis lecroyae Roccatagliata & Heard, 1995*

Oxyurostylis smithi Calman, 1912*

Oxyurostylis sp. C *sensu* Rakocinski et al (1991)*

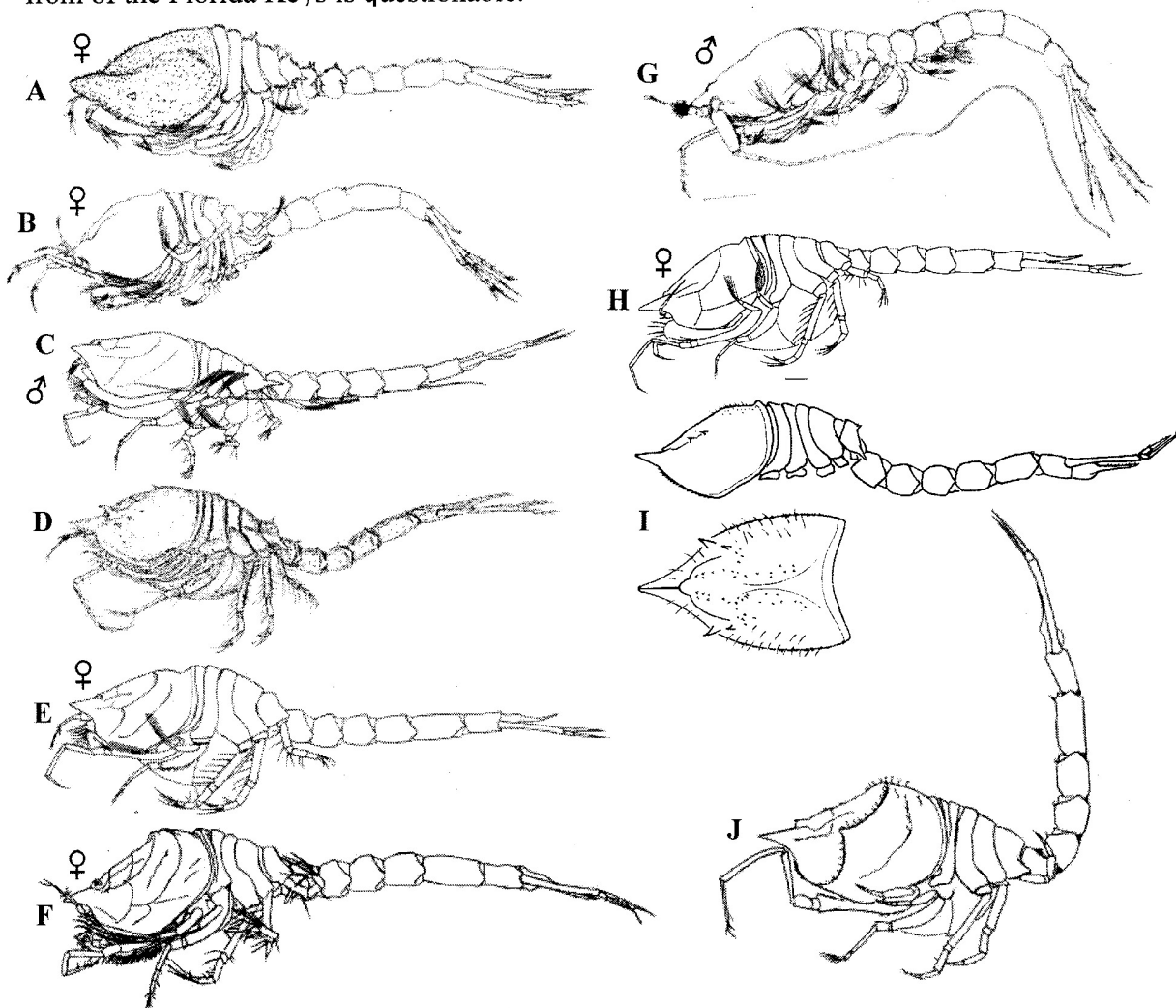
* Previously reported from Florida waters

FAMILY DIASTYLIDAE BATE, 1856

This large family, which contains 18 genera more than 320 species, is characterized by: (1) presence of an independent telson variable in size and usually with two terminal setae (*Oxyurostylis* exception with asetose styliform pointed tip); (2) males with 2 pairs of pleopods (except absent in *Atlantistylis*) without external process on inner ramus; (3) exopods present on third maxilliped (except in *Paradiastylis*), in females present on pereopods 1 and 2 and absent or rudimentary on pereopods 3 and 4, in males present on pereopods 1-4; (4) mandibles normally boat-shaped (see Figure 1 D), but widened at base in *Diastyloides*; (5) uropods usually long and slender with endopod having 2 or 3 articles, rarely 1 (*Holostylis*); male antenna filament-like, reaching at least to posterior margin of thorax, composed of many short articles; and (6) maxilliped 2 having branchical apparatus divided into numerous leaflet-like "gills" (see Figure 1 H).

Diastylids are a cosmopolitan and usually a eurybathyal group of moderate to large size cumaceans. The majority of the species (over 60%) have been found in latitudes between 20° and 50°. The family occurs over a wide depth range (1-7000 m) with about 15% presently known from depths greater than 2000 m (Day 1980).

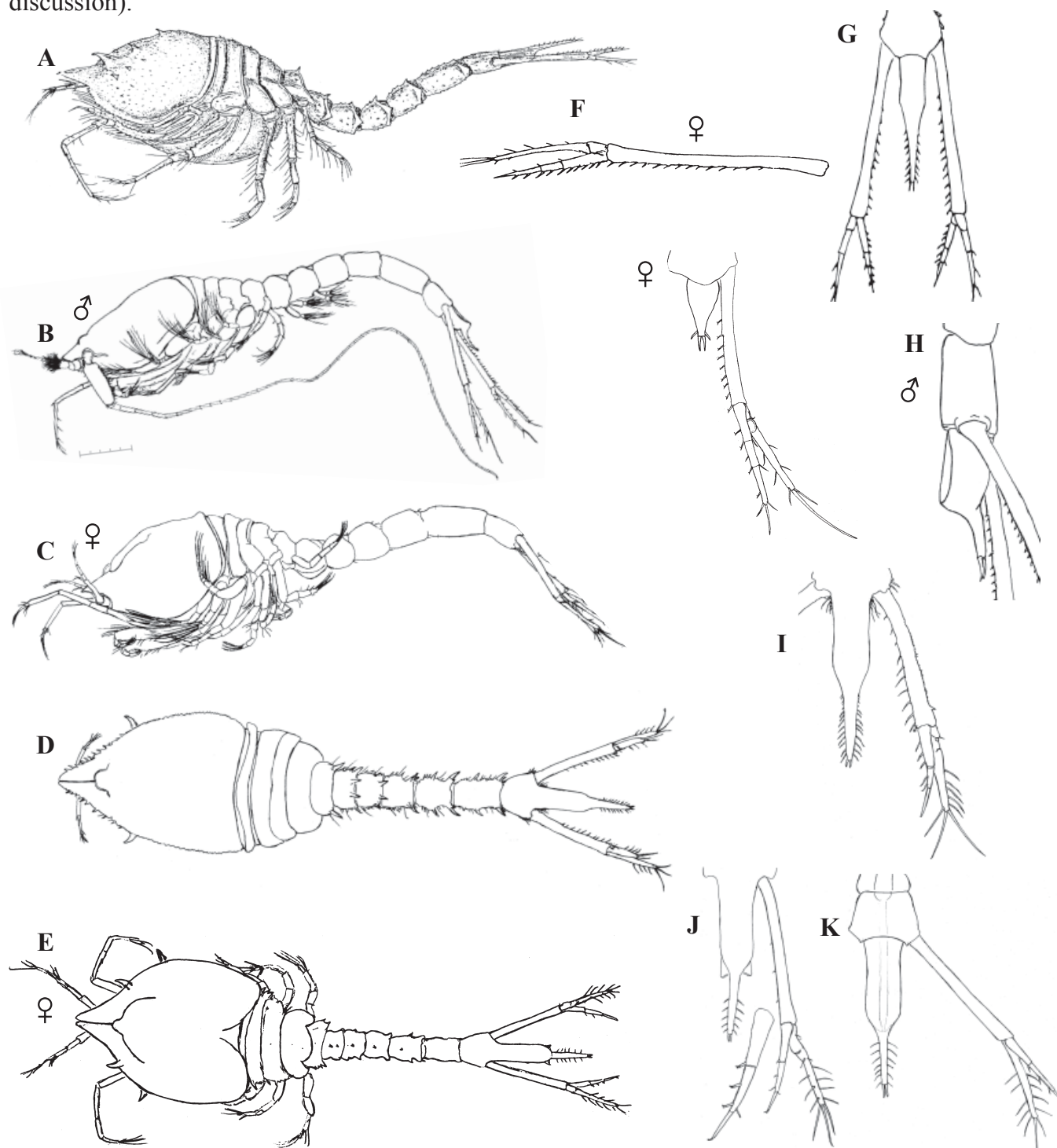
At least two genera, representing seven species, are currently known from Florida inshore and shelf waters. Three (or possibly four) of these appear to be unnamed. The report of another species *Diastylis quadrispinosa* (now *D. bispinosa*) by Zimmer (1944) from the Florida Keys is questionable.



Genus *Diastylis* Say, 1818

Diastylis SAY, 1818: 313. – WATLING & McCANN, 1997. 129 (diagnosis). GERKEN & WATLING, 1998: 873 (discussion).
– GERKEN, 2005: 283 (discussion). See Bacescu (1992) for the synonymy before that date.
Type Species. *Cuma rathkei* (Krøyer, 1841).

This is the oldest of all cumacean genera. At present it includes about 100 species distributed worldwide, most of which occur at depths of less than 1000 m. The genera *Diastylis*, *Leptostylis* and *Makrokyllindrus* are problematical because their definitions overlap to such an extent that it is impossible to separate them neatly (see Day 1980, Gerken & Watling 1998 and Gerken 2005 for discussion).



Diastylis bispinosa (Stimpson, 1853)

Cuma bispinosa STIMPSON, 1853: 39. *Diastylis quadrispinosa* SARS, 1871: 28-30, figs. 50-61 (descr. ♀, ♂). – SMITH, 1873: 554, pl. 3 fig. 13. – SMITH 28. – WHITEAVES, 1874: 215. – CALMAN, 1912: 658-660. – ZIMMER, 1944: 136 (new record: Florida Keys). – BOUSFIELD, 1961: 50 (new record: Bay of Fundy, E. Canada). – WIGLEY 1964: 98-99, pl. 12 fig. 24 (key). – BRUNEL, 1970: 30 (new record: Grande Rivière, Golfe St. Laurent). – GRANGER, 1970: 57 (vertical distribution, Canada). – WATLING, 1979: 16, 20, Fig. 28 (key). – COREY, 1981: 66-72 (fecundity). – ZIMMER, 1980: 21-22 (list old and new records from the East coast of the USA). – RAFI, 1986: 38 (catalogue).

Diastylis quadrispinosus SMITH, 1879: 112

Diastylis bispinosus SARS, 1883: 57. – STEBBING, 1913: 95-96.

Diastylis bispinosa SARS, 1900: 47. – ZIMMER, 1900: 421, 434. – ZIMMER, 1930: 648, 654, Fig. 46.

Holotype: lost?, Hake Bay, Grand Manan Isle, New Brunswick, 64 m. Canada.

Recognition characters: Female: Pseudorostral lobes well produced, horizontal, acute.

Carapace with a pair of conspicuous forward-pointing teeth, nodose in the male, followed by a much smaller pair, flanking the frontal lobe. Surface of carapace beset with spicules and short hairs. Pereopods 3 and 4 lacking exopods. Fifth thoracic segment with a median tooth behind. Pleonite 1-5 of male with a median serrate ridge. Uropodal endopod with three distinct articles. Telson slightly shorter than uropodal peduncles, with 12-14 pairs of lateral setae and 1 pair distally.

Distribution: From Nova Scotia to Florida; 2-348 m.

Remarks: This species is extremely abundant from off Nova Scotia to Cape Hatteras. The record of its occurrence off the Florida Keys (Zimmer, 1944, 1980) needs to be confirmed.

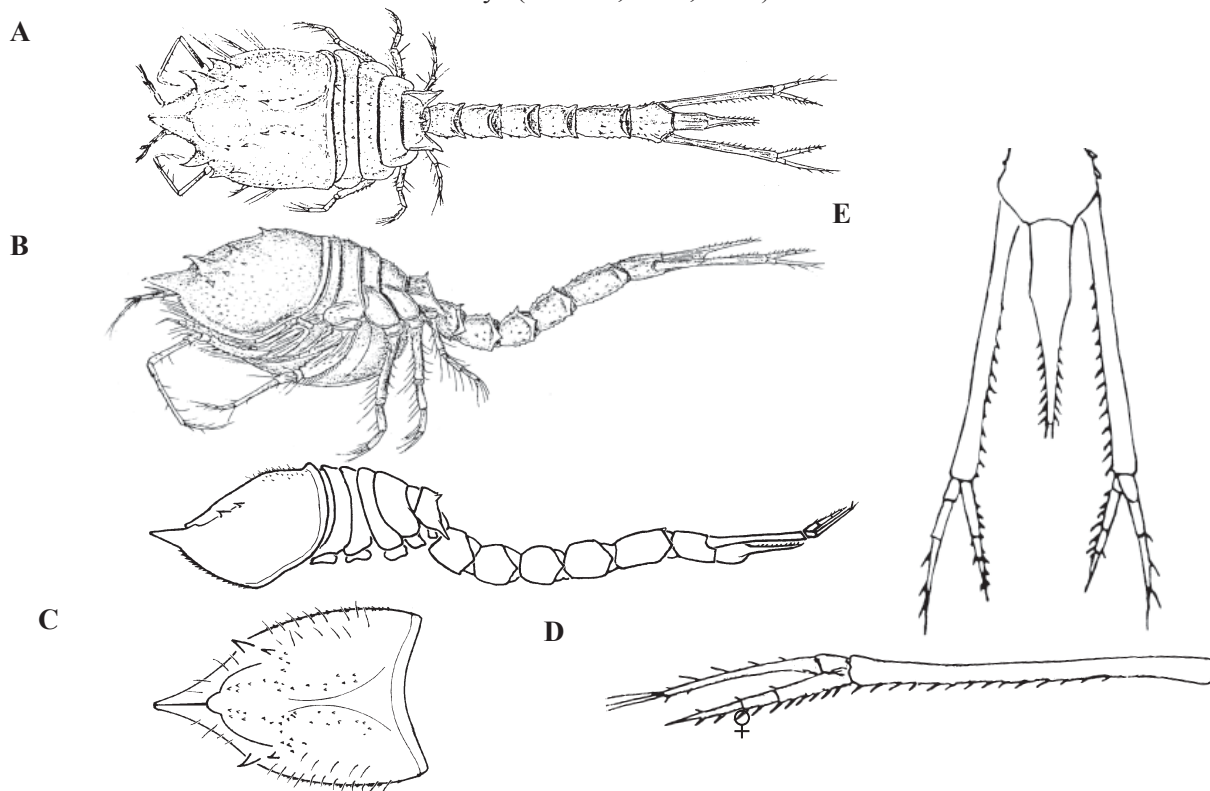


Figure. *Diastylis bispinosa* (Stimpson, 1853). ♀. A-C habitus in dorsal and lateral views; D, left uropod; E, uropods and telson (all redrawn or modified from (Sars, 1871))

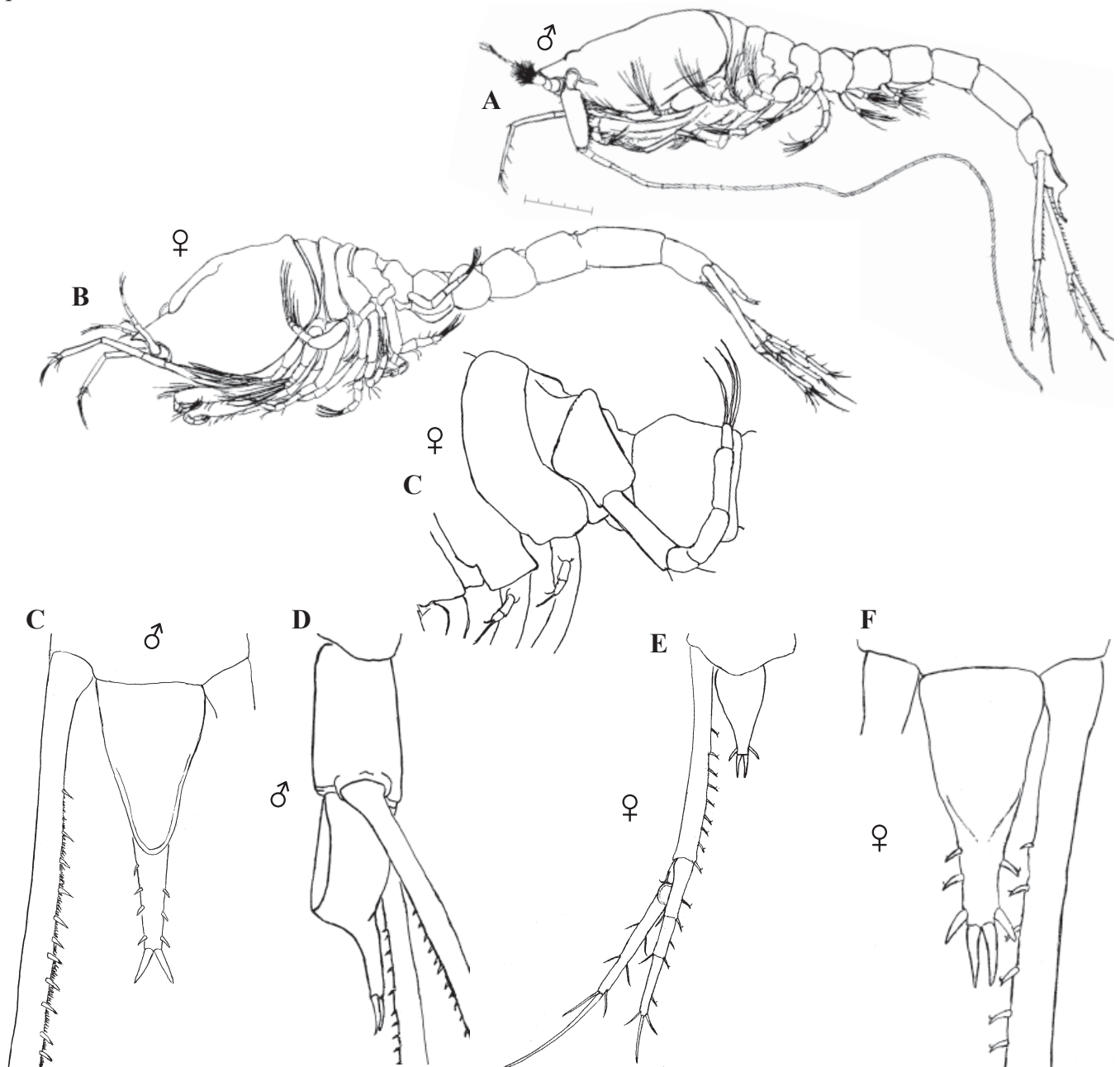
Diastylis sp. A

Recognition characters: Carapace lacking spines. Telson short, less than 1/3 length of the uropodal peduncle; preanal part of male telson produced as a hump dorsally with oval ridge surrounding the dorsal depression, postanal part with 5 (in female) or fewer (in male) pairs of lateral setae. Maxilliped 3 opercular (basis distally expanded). Females pereopods 3 and 4 with reduced (vestigial) exopods.

Distribution: presently known from Southwest Florida Continental Shelf at a depth of ?

Remarks.- Gerken & Watling (1998) recognized within the genus *Diastylis* a group of 10 species that share an opercular maxilliped 3, short telson, and rudimentary exopods 3 & 4 in the females. These authors stated that this group seems to represent a transitional state between what is represented by a “typical” member of the genus *Diastylis* and those of *Leptostylis*.

Diastylis sp. A appears to belong to this group, thus becoming the first species of this group to be reported from the northwestern Atlantic.



Diastylis sp. B

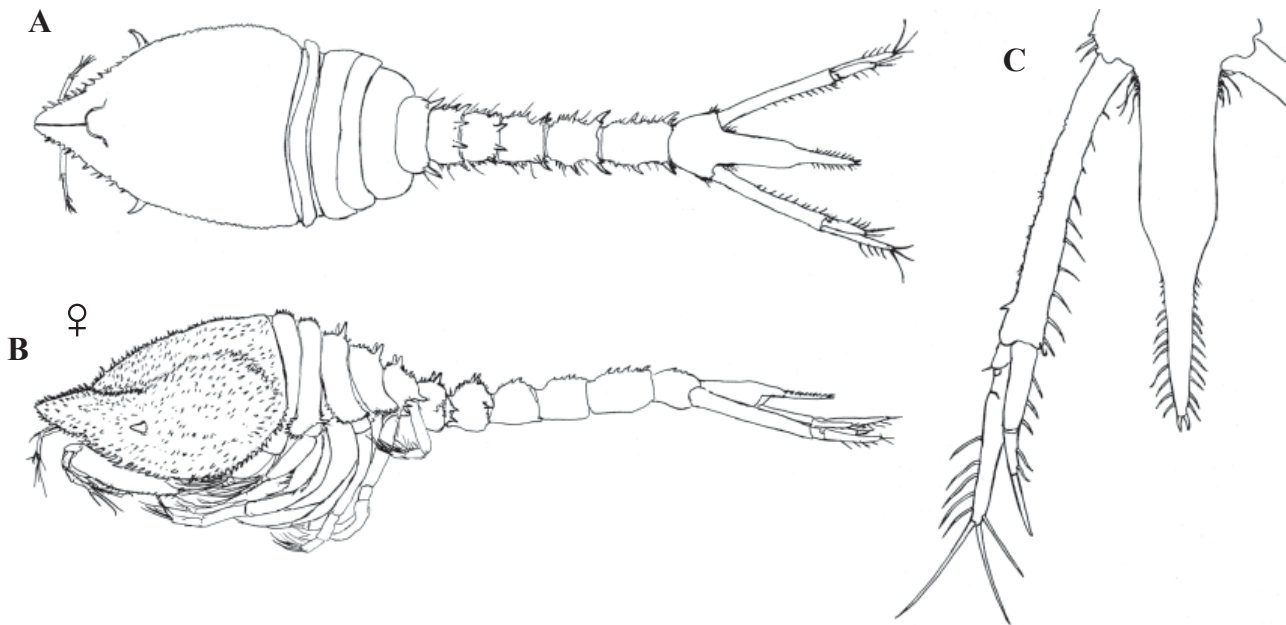
Recognition characters: *Ovigerous female*: carapace covered with small denticles, two well-developed lateral spines (horns) present below the posterior margin of frontal lobe. Pereonites 3-5 and pleonites 1-2 armed dorsally with pairs of well-developed spines. Vestigial exopods absent on pereopods 3 and 4. Telson longer than peduncle of the uropods, with 9 pairs of lateral setae and 1 pair of distal setae. Uropod: peduncle with 6-9 setae on inner margin; endopod much shorter than exopod, biarticulate (articles appearing partially fused), basal article almost twice as long as distal one and with 3 setae on inner margin, distal article with 2 setae on inner margin and 1 stout seta distally. *Male*: unknown.

Distribution: Deep shelf (greater than 100m) and upper slope off Miami, Florida.

Remarks: The genus *Diastylis* includes species with 2 or 3 articles on the endopod of the uropods. Stebbing (1912), aware of this variability, erected the monotypic family Ekdiastylidae to accommodate 10 diastylids with endopods of two articles occurring mainly in cold and deep waters from both hemispheres. However, neither this family nor its genus has been generally accepted by later researchers.

Four species of *Diastylis* with uropods exhibiting biarticulate endopods are known from northeastern USA: *D. cornuifera* Blake, 1929; *D. abbreviata* Sars, 1871; *D. sculpta* Sars, 1871 and *D. polita* Smith, 1879. Of these *D. cornuifera* and *D. abbreviata* appear to be most similar to *Diastylis* sp B.

Although *Diastylis* sp B came from depths (150-250 m) off Miami, Florida we included in this guide because of the remote possibility that it may have been the species from “off the Florida Keys” that Zimmer (1944) referred to as “*Diastylis quadrispinosa*.”

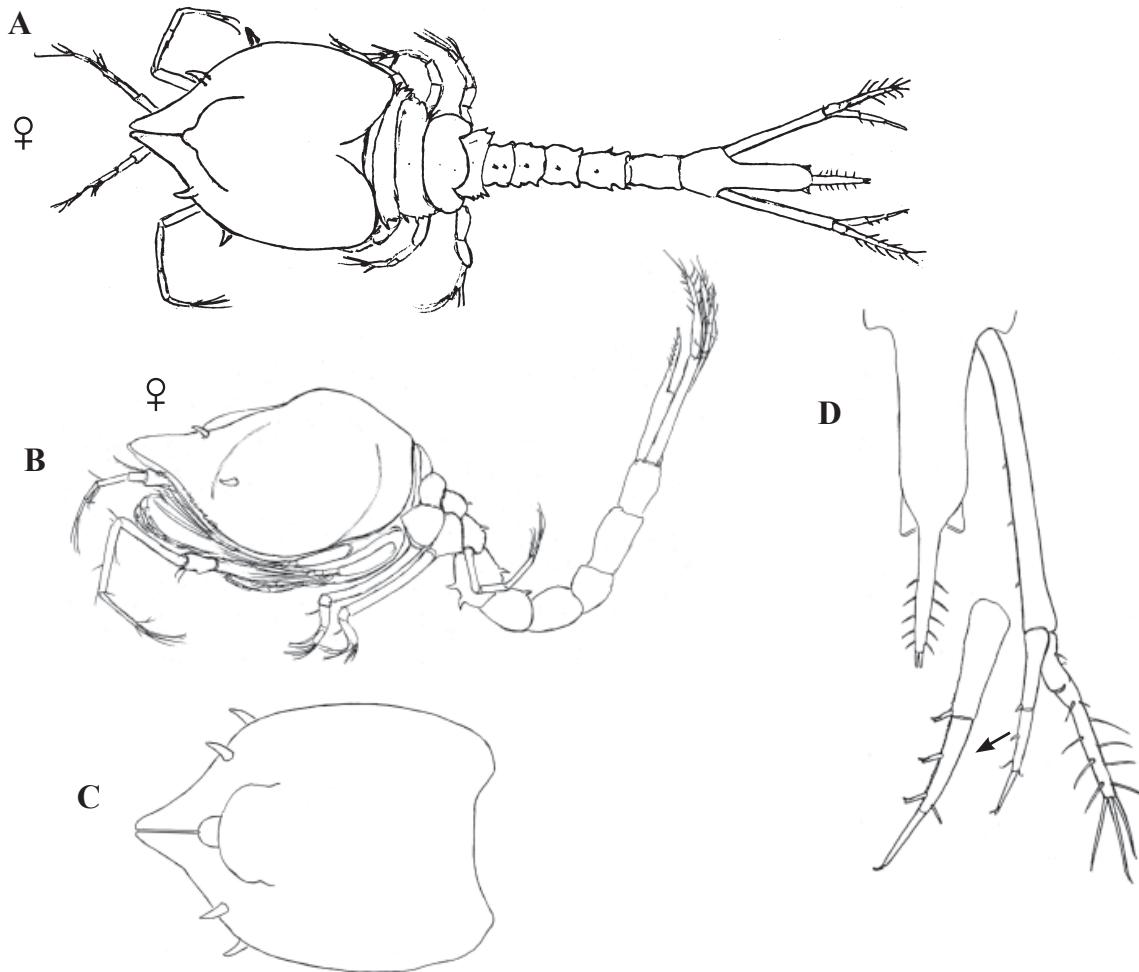


Diastylis sp. C

Recognition characters: *Female:* Carapace rounded, appearing inflated from dorsal aspect; **adult female** anterior half of carapace usually armed with one or two pairs of spines on either and/or both the lateral margin and on anterodorsal surface just below frontal lobe, the rest of carapace relatively smooth; **subadult female** with carapace smooth with a few small blunt spines or tubercles dispersed over anterior half. Maxilliped 3, basis not expanded distally. Pleonite 1 with one or two well-developed, curved-tipped spines on mid-ventral surface. Uropod with inner margin of peduncle appearing unarmed, but with 2 to 4 minute spiniform setae; endopod have distal article distinct with seta present at articulation (Figure) *Male:* unknown.

Distribution: Southwest Florida Shelf (25° 16.9- 26° 15.7 N , 82° 47.7 - 83° 43.2 W).
Depth: 87-90 m, on medium to fine sand substrata

Remarks: The apparently undescribed species of *Diastylis*, like *Diastylis* sp B., has the telson extending beyond the uropodal peduncle and a biarticulate uropodal endopod. The presence of two to four spines on the carapace is variable, but in adult females usually at least a pair present; in subadult females the spines may not be developed. Based on our observations, the spines on adult females can dissolve when stored in acidic preservatives over long periods of time.



Genus *Oxyurostylis* Calman, 1912

Oxyurostylis CALMAN, 1912: 605, 666. – STEBBING, 1913: 132 (diagnosis, erected the family Oxyurostylidae). – ZIMMER, 1930: 652 (Key). – ZIMMER, 1940: 289 (distribution). – DAY, 1980: 224 (key).

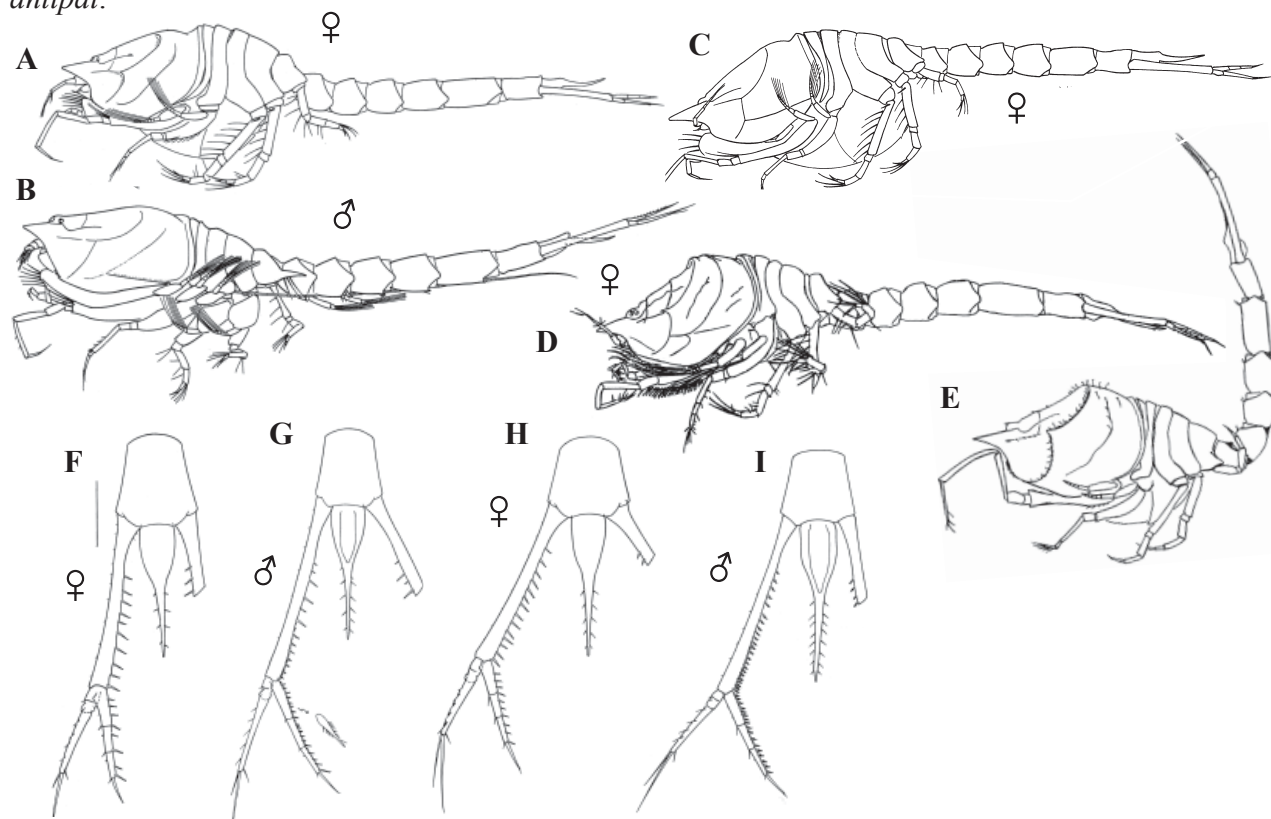
Type Species (by original designation): *Oxyurostylis smithi* Calman, 1912. Gender feminine.

The main character that immediately distinguishes the genus *Oxyurostylis* from the larger and probably paraphyletic genus *Diastylis* is the presence of a posteriorly upturned styliform telson, acutely pointed and lacking terminal setae. All the remaining diastylid species have a pair of terminal setae on the tip of the telson. As in some diastylids exopods are absent on pereopods 3 and 4.

The genus *Oxyurostylis* presently contains eight nominal species, six from western Atlantic [*Oxyurostylis smithi* Calman, 1912 (US East and Gulf coasts); *Oxyurostylis lecrovayae* Roccatagliata & Heard, 1995 (northern Gulf of Mexico); *Oxyurostylis atlantica* Rada Devi & Kurian, 1981 (southern Gulf of Mexico); *Oxyurostylis antipai* Petrescu, Iliffe & Sârbu, 1993 (Jamaica); *Oxyurostylis bacescui* Petrescu, 2002 (Belize); and *O. salinori* Brum, 1966 (Brazil)], and two from northeastern Pacific (*O. pacifica* Zimmer, 1936 and *O. tertia* Zimmer, 1943).

The taxonomic status of *O. atlantica*, a poorly described and illustrated species collected in the plankton from the southeastern Gulf of Mexico, is confused and unsettled. Until the types and additional topotypic material are studied in detail, we consider *O. atlantica* a *species inquirenda*, and do not treat it further in this guide.

During the preparation of this guide, we have examined some specimens from the eastern midshelf of GOM and southeast Atlantic coasts which closely resemble *O. antipai*. This species is based on a single specimen collected in Jamaica, which prevents us from stating whether or not our specimens belong to this species. This situation may be reviewed when further material from the type locality is available. For the present, it seems best to name our specimens *Oxyurostylis* cf. *antipai*.



Oxyurostylis atlantica Radhadevi & Kurian, 1981

Oxyurostylis atlantica Radadevi & Kurian, 1981: 59-63, figs. 5, 6a-f (descr. &, compar. with *O. smithi*, *O. pacifica*, *O. tertia* and *O. salinoi*). HOLOTYPE: & (deposited in Zoological Survey of India), 25°30'N, 81°35'W (off Florida Keys).

Distribution: : 29°00'N, 83°20'W (Northwest Florida), 25°30'N, 81°35'W (Florida Keys), 19°06.8'N 91°16.2'W (Gulf of Campeche), 20°00'N, 81°57'W (Caribbean Sea).

Remarks: The description of this species is based on specimens taken in plankton tows over the western Florida Continental Shelf and off Campeche, Mexico. Unfortunately, the text and figures for *O. atlantica* are vague and/or incomplete leading us to consider it as a *species inquirum*. For reference we have included the original illustrations from Radhadevi and Kurian (1981) below.

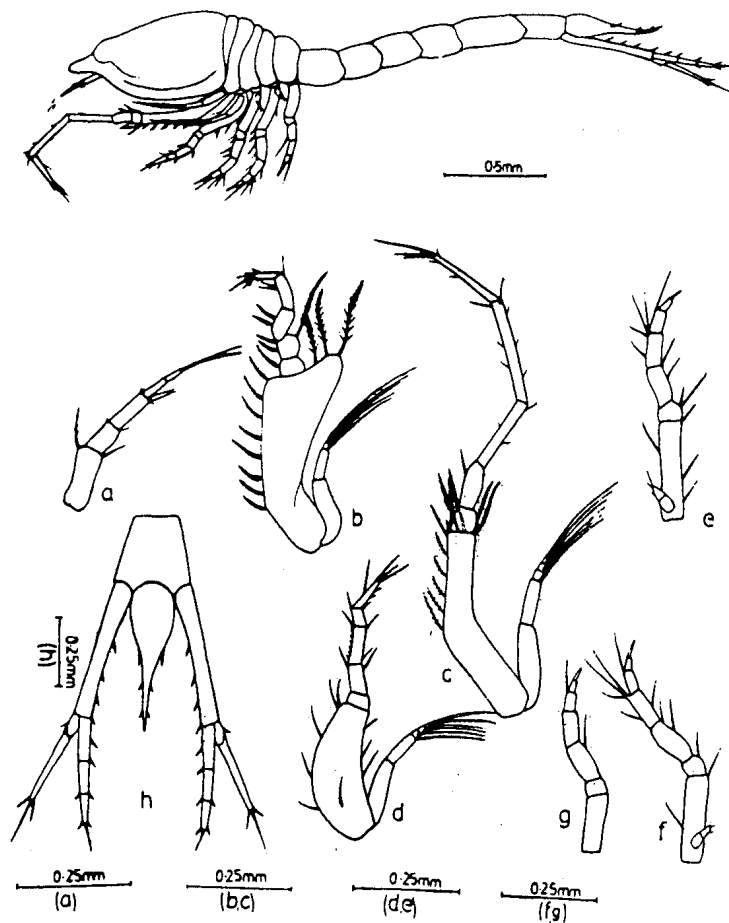


Fig. 6. *Oxyurostylis atlantica*, sp. nov. Female

- a. First antenna, b. Third maxilliped, c. First pereopod,
d. Second pereopod, e. Third pereopod, f. Fourth pereopod,
g. Fifth pereopod, h. Uropod.

***Oxyurostylis cf. antipai* Petrescu, Iliffe & Sârbu, 1993**

?*Oxyurostylis antipai* PETRESCU, ILIFFE & SARBU, 1993: 380-382, fig. 10.

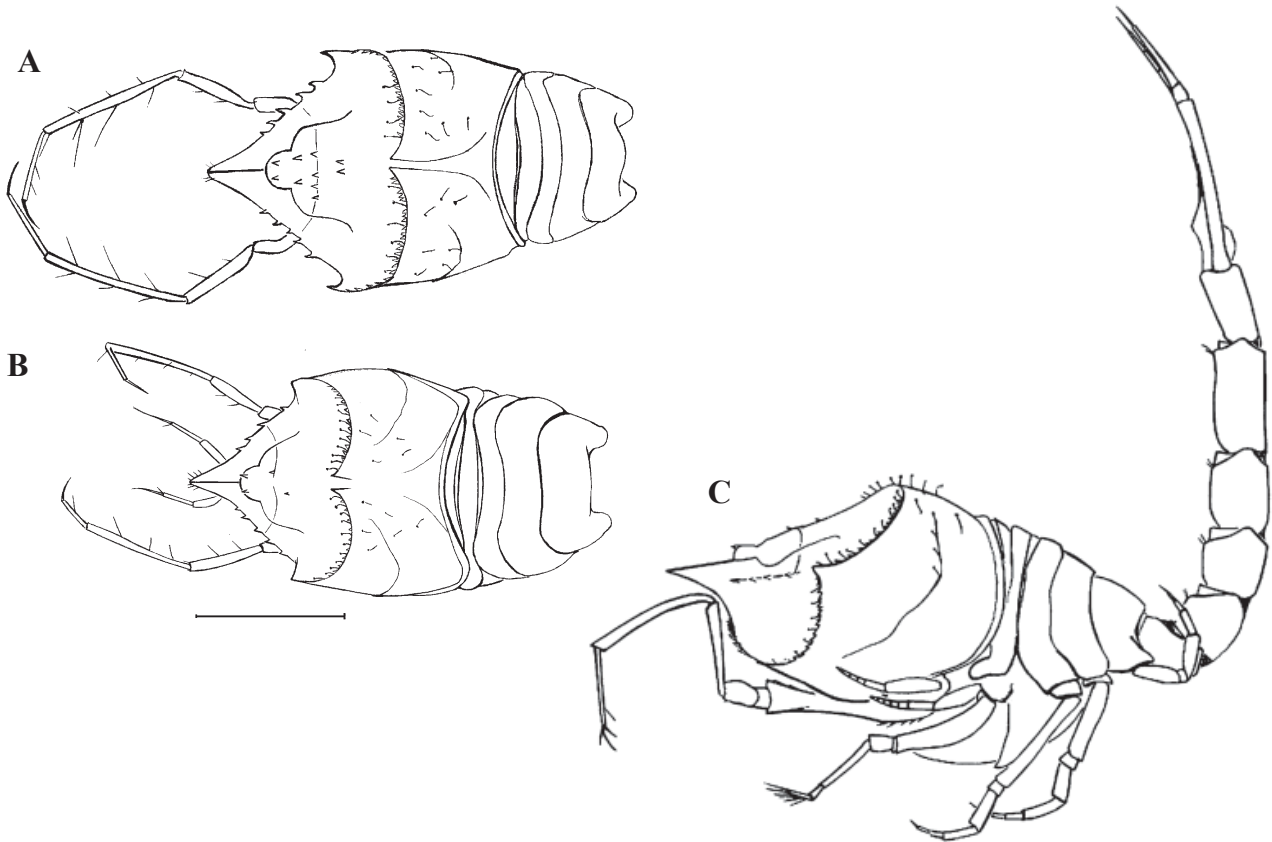
Holotype (MNH "Grigore Antipa" 49512/772). Jamaica, Joseph's Caves, Negril, Westmoreland Parish. 1-3 m.

Recognition characters: Pseudorostral lobes with a distinctly serrated; frontal lobe with teeth; anterior oblique ridge with a pronounced angularity (geniculation) that is usually developed into a strong tooth (horn); and with small hairs and teeth (or lamellae) on its surface. Some small hairs also scattered on the posterior part of the carapace. First pereopod extending well beyond the anterior margin of carapace.

Distribution: East coast of South Carolina to southern Florida, and Florida Gulf coast.

Remarks: Petrescu (1993) briefly described *O. antipai* based on a single (immature?) female from Jamaica and therefore, it is not possible to state with certainty that our specimens are conspecific with that described by Petrescu. Two other species within this genus have denticles on the carapace are: *O. tertia* Zimmer, 1944 from Baja California (Mexico) and *O. bacescui* Petrescu 2002 from Belize. The former has a serrated mid-dorsal ridge on anterior part of the carapace, whereas the latter has two strong transverse rows of teeth on the frontal lobe.

Figure. *Oxyurostylis cf. antipai* Petrescu, Iliffe & Sârbu, 1993. **A-B**, ovigerous ♀ (Sta.14, Mote 310.111, 28 Jul 1981, Florida). **A**, habitus in lateral view. **B**, cephalothorax in dorsal view. **C** preparatory ♀ (SERCT S183, Southern Carolina), carapace in dorsal view. Scales: 1 mm.



Oxyurostylis lecrovae Roccatagliata & Heard, 1995

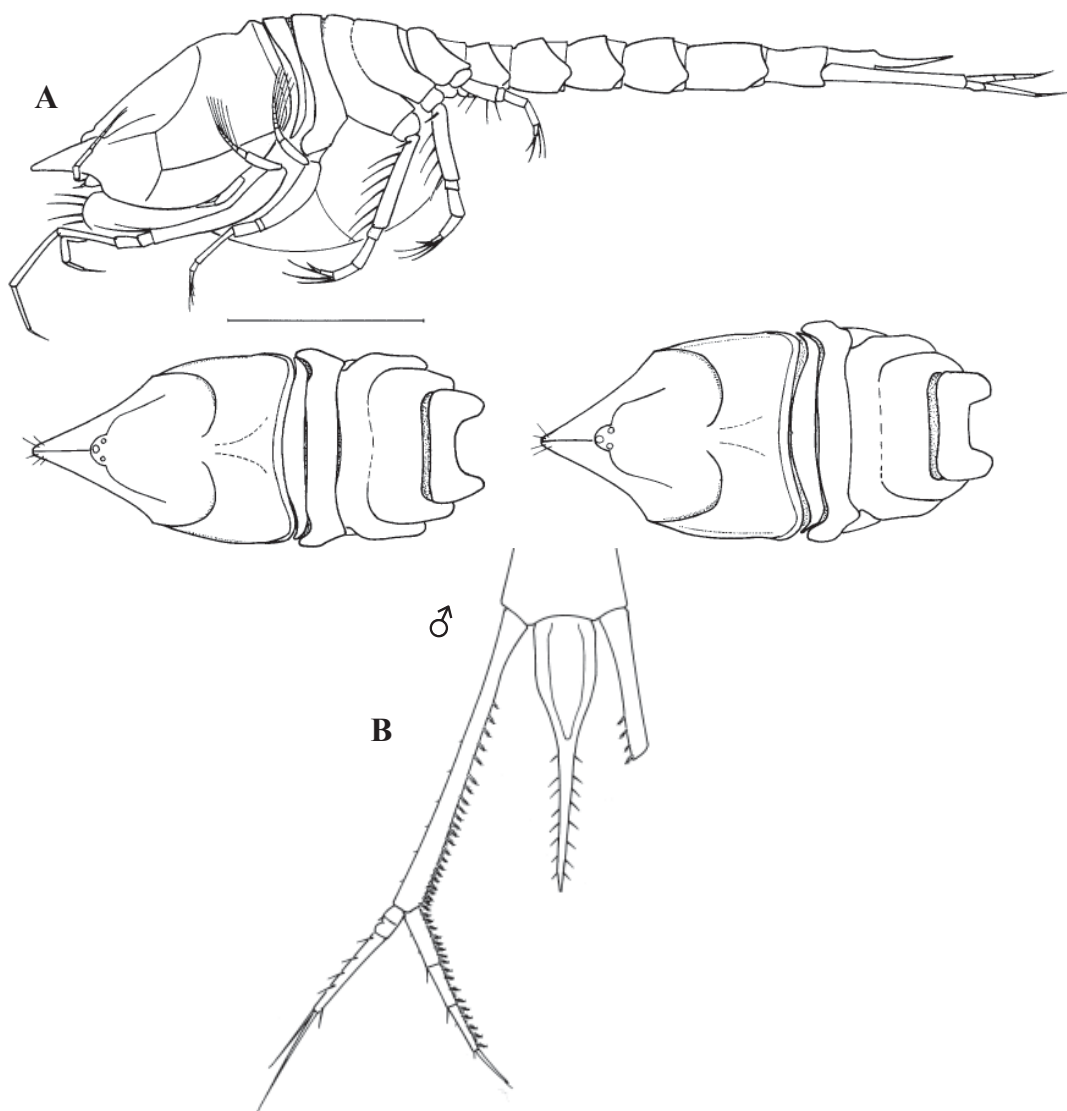
Oxyurostylis lecrovae ROCCATAGLIATA & HEARD, 1995: 604-608. – CAMP, 1998: 138.
Holotype (USNM 274187), Biloxi, Mississippi. 1 m depth.

Recognition characters: Angular projection of anterior oblique ridge (geniculation) not developed into a tooth, posterior oblique ridge absent; adult females with a horizontal ridge running from the oblique one to the posterior margin of carapace. Ridges variably developed, acute and distinct or blunt and perceptible only by rotating the specimen.

Distribution: Gulf of Mexico, from Texas to Florida (Tampa Bay), 1-12 m depth.

Remarks: *Oxyurostylis lecrovae* and *Oxyurostylis* sp. *C sensu* Rakocinski et al. (1991) can be distinguished from the other members of the genus by the adult female has a lateral horizontal ridge on the carapace

Figure. *Oxyurostylis lecrovae* Roccatagliata & Heard, 1995. Ovigerous ♀. **A**, habitus in lateral view. **B**, cephalothorax in dorsal view. **C**, idem, from another ♀ showing slight different width/length carapace proportion. **D**, telson and uropods. Scales: 1 mm (**A**, **B**, **C**), 0.5 mm (**D**). (after Roccatagliata & Heard, 1995).



Oxyurostylis smithi Calman, 1912

?*Diastylis arenarius* SAY, 1818: 314. - ZIMMER, 1941: 1,2 (*species inquirenda*).

Oxyurostylis smithi - CALMAN, 1912: 667-670, figs. 91-99 (descr. ♀, ♂). - STEBBING, 1913: 132, 133 (catalog). - ZIMMER, 1930: 652 (key). - ZIMMER, 1940: 264 (list). - ZIMMER, 1941: 1 (comment about the identity of *Diastylis arenarius*). - ZIMMER, 1943: 166 (comment about carapace carinae). - ZIMMER, 1944: 136 (new record: Key West, Fla.). - BOUSFIELD, 1958: 15 (new record: upper end of the Bay of Fundy). - BOUSFIELD, 1962: 53 (list). - WIGLEY, 1964: 98, figs. 11, 26 (key). - BRUM, 1966: 66 (table comparing *O. smithi*, *O. pacifica*, *O. tertia* and *O. salinoi*). - JONES, 1969: 164 (list). - DEXTER, 1969: 96 (list, new record: Morehead City, North Carolina). - KRAEUTER & HAVEN, 1970: 167 (fecal pellets). - HOWARD & DÖRJES, 1972: 620 (list, new record: Sapelo Island, Georgia). - VAN ENGEL, 1972: 145 (list). - CAMP, WHITING & MARTIN, 1977: 14, 15 (new record: Hutchinson Is., Fla.). - WATLING, 1979: 5, 14, 20, fig. 22 (key). - BOWEN et al., 1979: 226 (distribution). - FARREL, 1979: 409, 411-416, tabs. 2, 3 (new record: Timbalier Bay and offshore Louisiana). - ZIMMER, 1980: 26, 27, fig. 78 (comment about carapace carina; new records: Chesapeake Bay, North and South Carolina). - RADA DEVI & KURIAN, 1981: 62 (table comparing *O. smithi*, *O. pacifica*, *O. tertia*, *O. salinoi* and *O. atlantica*). - VIRNSTEIN et al., 1983: 370 (list; new record: Indian River Lagoon, Fla.). - SANTOS & BLOOM, 1983: 622 (list, new record: Tampa Bay). - HORLICK & SUBRAHMANYAM, 1983: 82 (list, new record: St. Marks, Fla.). - COREY, 1984: 514, 515, fig. 2 (fecundity). - RAFI, 1986: 40, 41 (list). - MODLIN & DARDEAU, 1987: 291-296, fig. 3, tabs. 2,3 (seasonal and spatial distribution in the Mobile Bay estuary, new record). - CAHOON & TRONZO, 1989: 16 (list). - TRONZO & CAHOON, 1990: 81 (list). - HOPKINS, VALENTINE & LUTZ, 1989: 113, 115, figs. 43g-h (key). BACESCU, 1992: 367, 368 (catalog). - ROCCATAGLIATA & HEARD, 1995. (redescr. ♀, ♂). - CAMP, 1998: 138 (list).
Holotype: (USNM 44162), Woods Hole, surface.

Recognition characters: The development of the ridges on the carapace is variable. According with Calman (1912) there are a sinuous ridge on the pseudorostral lobe and two oblique ridges farther back. These ridges are separated from each other by conspicuously depressed areas (Figs. ?A, B). However, in many specimens the first pseudorostral ridge is faintly indicated or absent. In addition, a connecting ridge is usually present between the pseudorostral and first oblique ridges, and the first oblique ridge has an angularity, sometimes produced into a tooth (Figs ?D, E).

Distribution: from Bay of Fundy (Canada) to Texas; 0-30 m.

Remarks: This species shows a remarkable intraspecific variation. The differences observed between the populations from the northeastern Gulf of Mexico and the type locality (Woods Hole, Massachusetts) may deserve subspecific recognition or possibly may represent cryptic species.

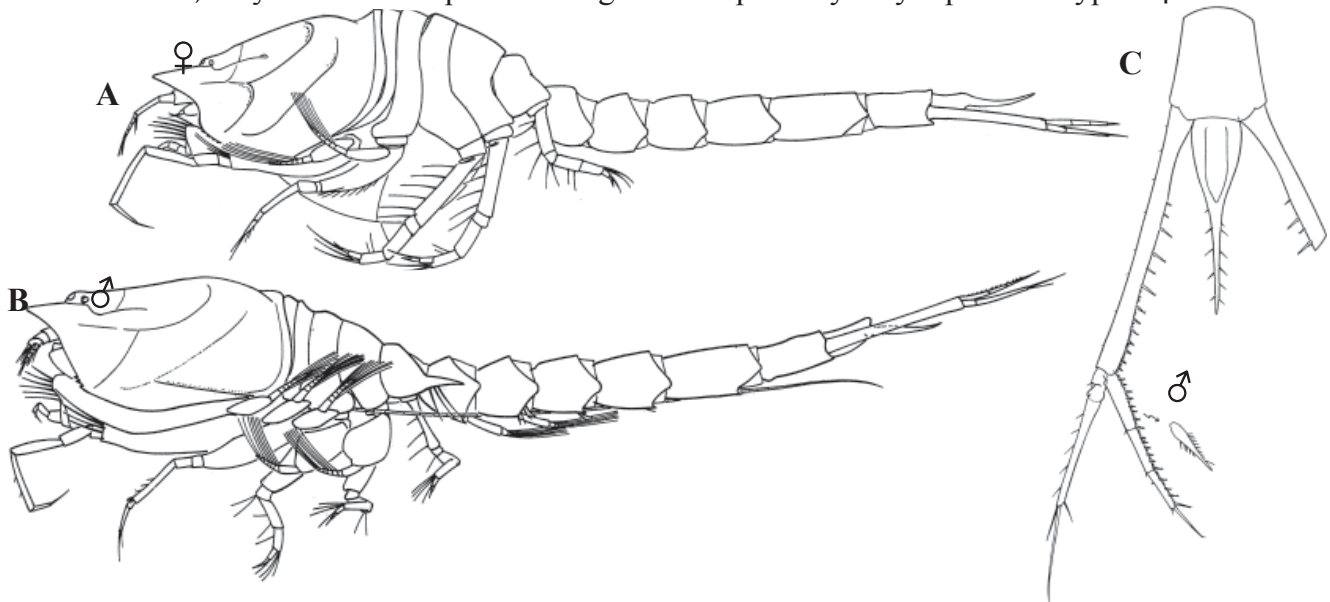


Figure. *Oxyurostylis smithi* Calman, 1912. **A, B**, ovigerous ♀ from Massachusetts. **A**, habitus in lateral view. **B**, cephalothorax in dorsal view. **C-E**, ovigerous female from the GOM. **C**, habitus in lateral view. **D**, cephalothorax in dorsal view. **E**, uropod. Scales: 1 mm (**C, D**), 0.5 mm (**E**). (After Calman, 1912; Roccatagliata & Heard, 1995)

***Oxyurostylis* sp. C sensu Rakocinski et al., 1991**

Recognition characters: Carapace with horizontal ridge on each side. Anterior oblique ridge produced into a tooth. Second oblique ridge present. Frontal lobe with 2 transverse ridges.

Known distribution: Northwestern Florida off Perdido Key in shallow near shore waters.

Remarks: *Oxyurostylis* sp. C sensu Rakocinski et al. (1991) apparently undescribed species is presently known from open near shore waters where it occurs on sand substrata in depths 4-8 m. It has probably been confused with *O. smithi sensu lato* in earlier regional studies.

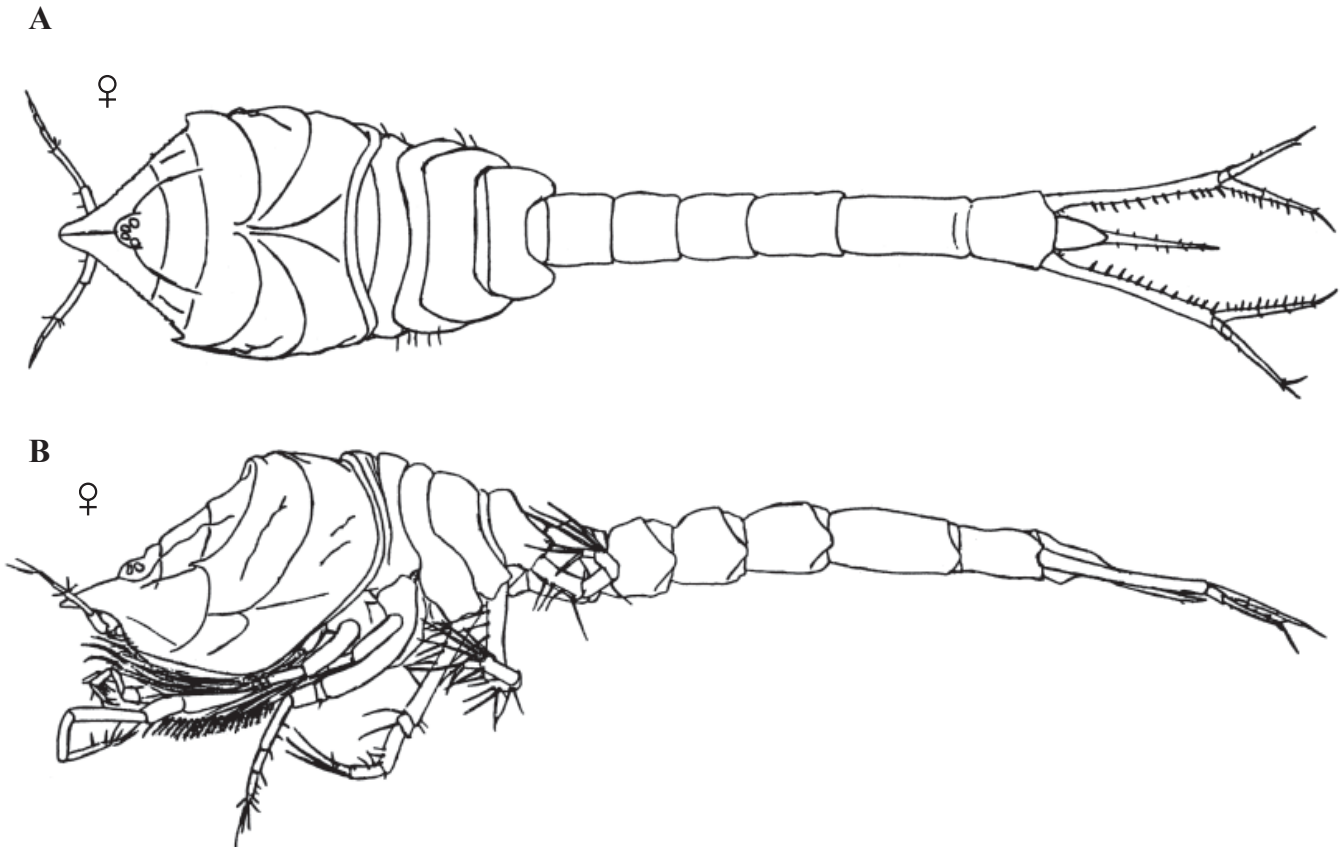


Figure. *Oxyurostylis* sp C sensu Rakocinski et al.,1991. Subadult ♀. **A**, habitus in lateral view. **B**, habitus in dorsal view.

FAMILY BODOTRIIDAE SCOTT, 1901

Subfamily Bodotriinae Scott, 1901

Genus *Apocuma* Jones, 1973

Apocuma sp. A

Genus *Cyclaspis* Sars, 1865

Cyclaspis bacescui Omholt and Heard, 1982*

Cyclaspis granulate (Radhadevi and Kurian, 1981*)

Cyclaspis platymerus Zimmer, 1944*

Cyclaspis pustulata Zimmer, 1943*

Cyclaspis varians Calman, 1912*

Cyclaspis sp. B *sensu* Rakocinski et al. (1991)*

Cyclaspis sp. C *sensu* Rakocinski et al. (1991)*

Subfamily Mancocumatinae Watling, 1977

Genus *Mancocuma* Zimmer, 1943

Mancocuma altera Zimmer, 1943

Genus *Spilocuma* Watling, 1977*

Spilocuma salmoni Watling, 1977*

Spilocuma watlingi Omholt and Heard, 1979*

Subfamily Vaunthompsoniinae G. O. Sars, 1878

Genus *Sympodomma* Stebbing, 1912

Sympodomma sarahae Petrescu and Heard, 2006*.

Genus *Vaunthompsonia* Bate, 1858*

Vaunthompsonia floridana Băcescu, 1971*

Vaunthompsonia minor Zimmer, 1944*

* Previously reported from Florida waters

FAMILY BODOTRIIDAE SCOTT, 1901

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Subfamily Vaunthompsoniinae G. O. Sars, 1878

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Sympodomma sarahae Petrescu and Heard, 2006*.

Genus *Vaunthompsonia* Bate, 1858*

Vaunthompsonia floridana Băcescu, 1971*

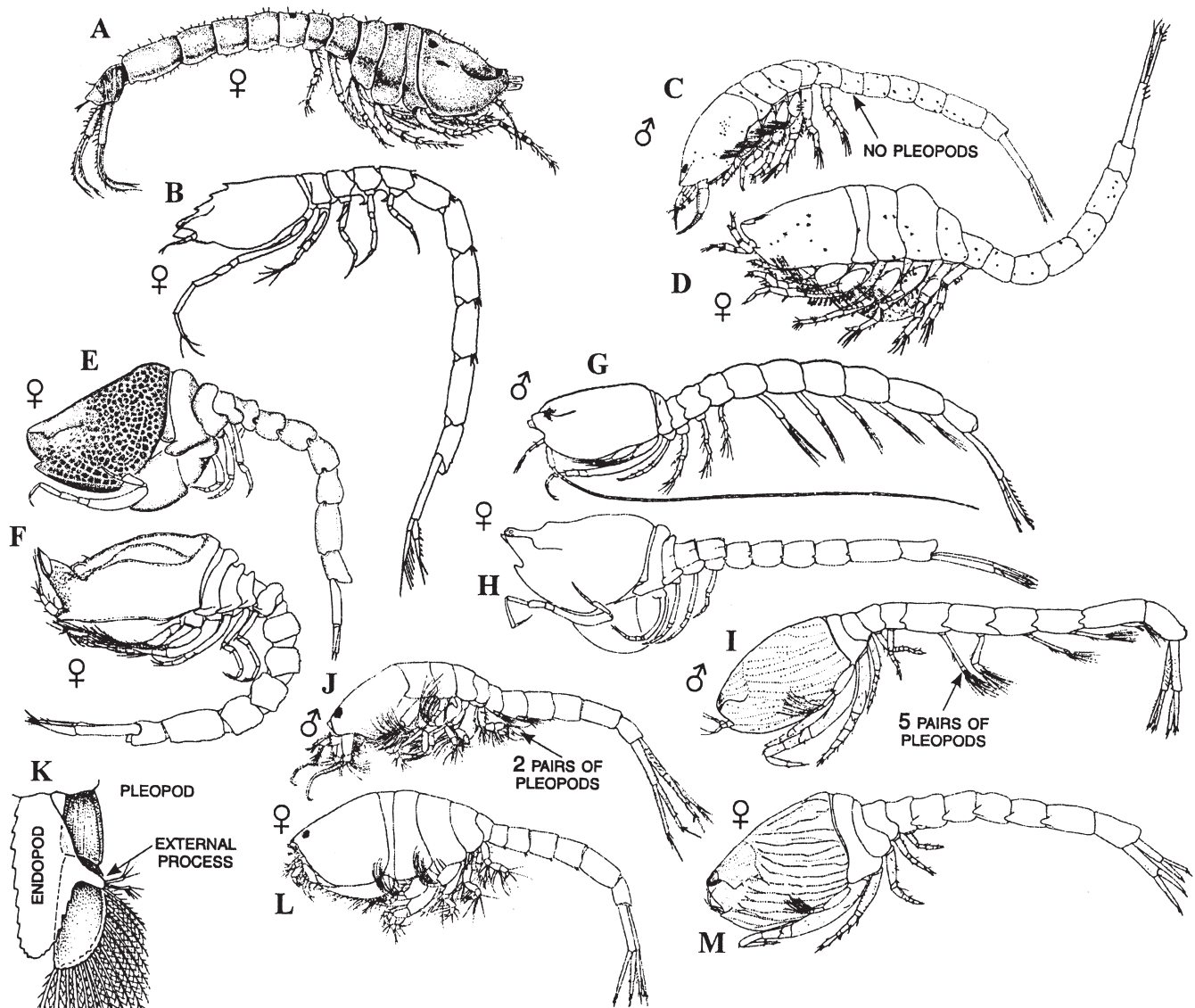
Vaunthompsonia minor Zimmer, 1944*

* Previously reported from Florida waters

FAMILY BODOTRIIDAE SCOTT, 1901 *

Worldwide, the family Bodotriidae is presently composed of about 35 genera and over 300 species. Bodotriids are generally characterized by: (1) the apparent absence of a telson (reduced and fused with last abdominal segment), (2) males usually with 5 pairs of pleopods (occasionally 4, 3, 2 or 0 pairs), (3) the inner ramus of the pleopods with an external process (see Figure 1F), (4) a variable number of exopods, but always present on third maxilliped and first pereopod 1, (5) the mandible not broadened at the base, (6) endopod of uropod uni- or biarticulate, and (7) the branchial apparatus lacking gill plates or supports. Although there a number of deep water species, most members of the family are known from depths of less than 200 m.

In Florida waters the bodotriids represent the second largest cumacean family after the Nannastacidae. Six genera and 15 species are presently known or reported from Florida's inshore and shelf waters.



*Haye (2007) published a revision of the Bodotriidae in which she synonymizes the subfamily Mancocumatinae with the Vaunthompsoniinae. We did not have time to respond to these changes and thus the subfamily Mancocumatinae is treated here as a valid taxon.

Subfamily Bodotriinae Scott, 1901

Members of this subfamily are characterized by: (1) having exopods on the third maxilliped and first pereopod only, (2) females with one or two articles in the antenna, (3) basis of third maxilliped generally expanded ventrally over the ischium, and (4) males usually having five pairs of pleopods. At present contains 11 genera and over 250 species.

Based on published and unpublished records, 1 genus and 8 nominal species are currently known from Florida coastal and shelf waters.

Genus *Cyclaspis* Sars, 1865

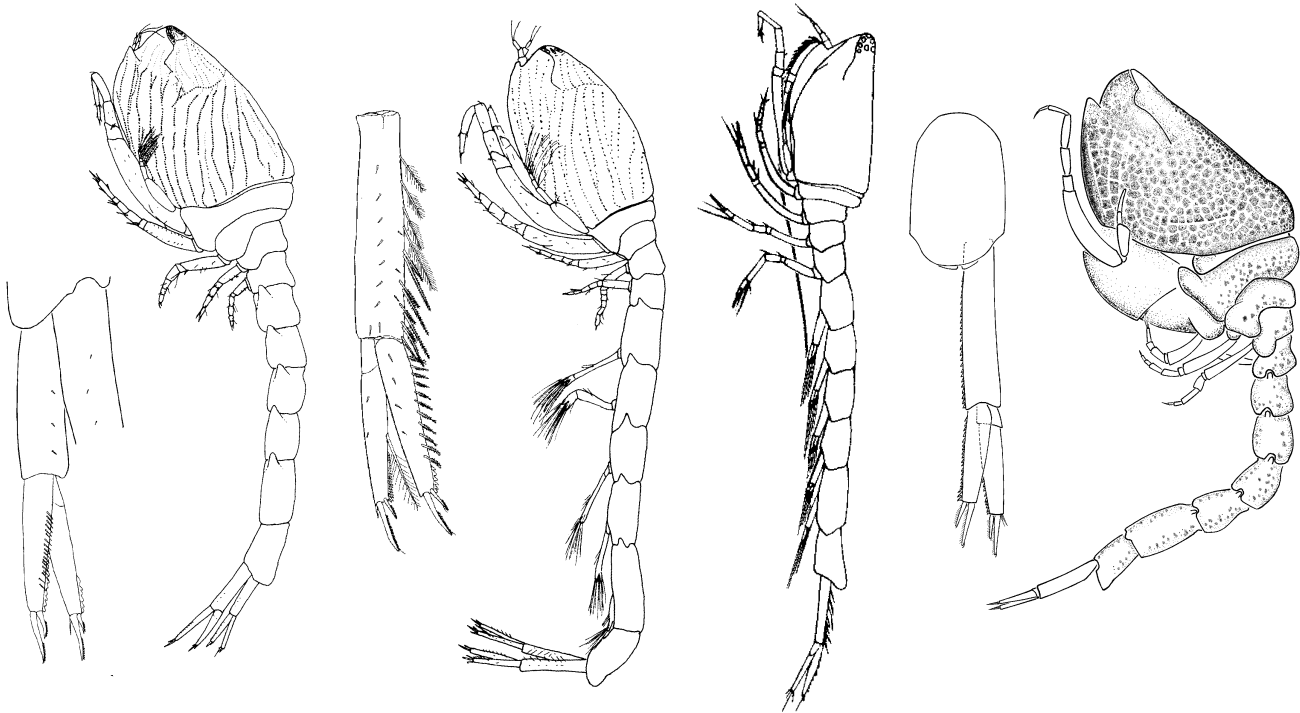
Cyclaspis - SARS, 1865: 206-207. - TAFE & GREENWOOD, 1996: 404- 411 (diagnosis, key to Indo-Australasian species). See Băcescu (1988) for the synonymy before that date.

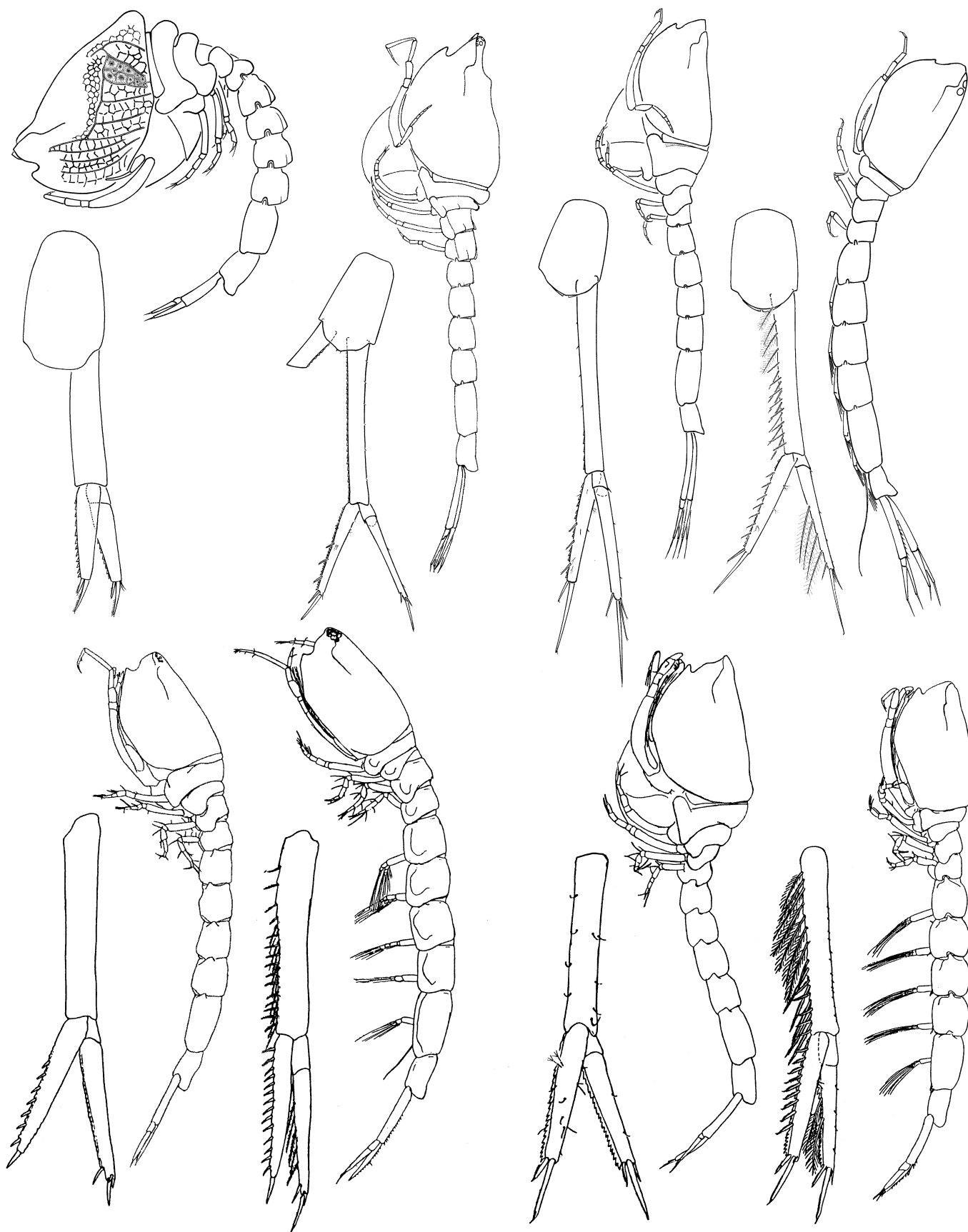
Pseudocyclaspis Radhadevi & Kurian, 1981: 53-54.

Remarks. *Cyclaspis* represents the largest bodotriid genus of the subfamily Bodotriinae (it includes at present about 125 species). In addition, it shows a great morphological variability. The carapace of some species is highly ornamented whereas in others is smooth, and the uropod rami is sharp pointed in some species whereas in others is truncate and armed with spines. Day (1978) suggested that this genus should be split into two or more genera.

Cyclaspis is the only genus of the subfamily Bodotriinae represented in Florida inshore and shelf waters. Therefore, its members are easily distinguished from those of other genera known to occur in Florida by having no exopods beyond the first pair of pereopods on both females and males. There are eight species recognized from Florida, all of them showing large distal spines on both rami of the uropods.

Type species: *Cyclaspis quadriplicata* Sars, 1865.





Cyclaspis bacescui Omholt & Heard, 1982

Cyclaspis bacescui OMHOLT & HEARD, 1982: 120-129, figs. 2-5 (descr. ♀, ♂, map showing collection sites, compar. with *C. costata* and *C. strigilis*). - BĂCESCU & ORTIZ, 1984: 23 (Cuba, new record). - BĂCESCU, 1988: 52 (catalog). - DONATH-HERNÁNDEZ, 1988: 45 (Quintana Roo, new record). - ORTIZ & LALANA, 1988: 14 (list). - MARKHAM *et al.*, 1990: 411 (list). - CAMP *et al.*, 1998: 138 (list).

HOLOTYPE: Adult ♀ (USNM 172102), west of Tampa Bay, Fla. (27°37'12"N, 83°35'30"W), 30 m.

PARATYPES: Adult ♂, from type locality (USNM 172103); juvenile ♂, west of Sarasota, Fla. (27°03'26"N, 83°01'09"W), 36 m (USNM 172104).

Distribution.— Eastern Gulf of Mexico, Quintana Roo, Cuba, 10-53 m, benthic and night zooplankton.

Recognition characters.— **Female:** Carapace with numerous oblique striae extending diagonally from anterodorsal surface to posteroventral surface; pseudorostral lobes not meeting in front of ocular lobe; anterior edge rounded in dorsal view. Uropod with peduncle subequal to pleonite 6; rami shorter than peduncle, with serrate distal inner margins; endopod with 2 larger terminal spines, and 18-23 minute lateral spiniform setae; exopod with 3 serrate terminal spines. **Male:** Carapace similar to female but less deep. Uropod with peduncle having 13-16 plumose setae and numerous spinules on inner margin; rami with serrate distal inner margins; endopod with 2 large serrate terminal spines, 9-11 inner setae; and 4-6 small lateral spines; exopod with 3 terminal spines, 1 medial inner plumose seta, and several small longitudinal spines.

Remarks.— *C. bacescui* resembles *C. simonae* Petrescu *et al.*, 1993 in the oblique lines on the carapace and in the spination of the uropods. *C. bacescui* can be easily distinguished from *C. simonae* by the lack of a pseudorostrum and a mid-dorsal crest extending on the carapace, pereon and pleon. In addition, *C. bacescui* has fine oblique striae on carapace whereas *C. simonae* has oblique ridges.

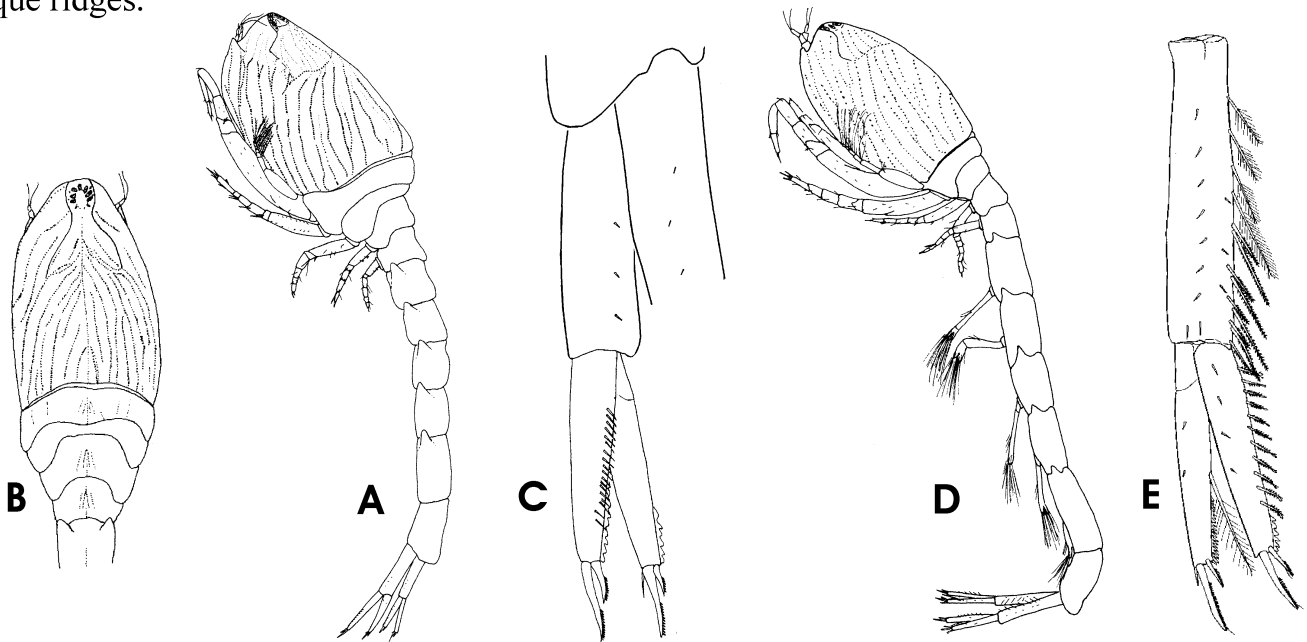


Fig. A-E. *Cyclaspis bacescui* Omholt & Heard, 1982. A-C, adult ♀. A, habitus in lateral view. B, dorsal view of carapace and thoracic segments. C, uropod. D-E, adult ♂. D, habitus in lateral view. E, uropod. (after Omholt & Heard, 1982).

***Cyclaspis granulata* (Radhadevi & Kurian, 1981)**

Pseudocyclaspis granulata RADHADEVI & KURIAN, 1981: 54-56, figs. 1, 2a-i (descr. adult ♂). - BĂCESCU, 1988: 96 (catalog).

?*Cyclaspis granulata* - Petrescu, 2002: 149-153 (descr. ovigerous ♀, adult ♂ from Belize).

HOLOTYPE: adult ♂ (Zoological Survey of India collection), South-West Florida (25°30'N, 82°00'W), 8-3-1974.

Distribution.— Gulf of Mexico, Belize?

Remarks.— This species was incompletely described by Radhadevi & Kurian (1981) based on a single adult male collected off Florida. Petrescu (2002) fully described some adult females and males from Belize that he ascribed to this species. Unfortunately, Petrescu didn't succeed in finding the holotype of *C. granulata* to confirm his identification. To avoid confusion, we prefer to consider *C. granulata* as *species inquirenda* until the description of the holotype (if available) is completed and/or topotypic material is described.

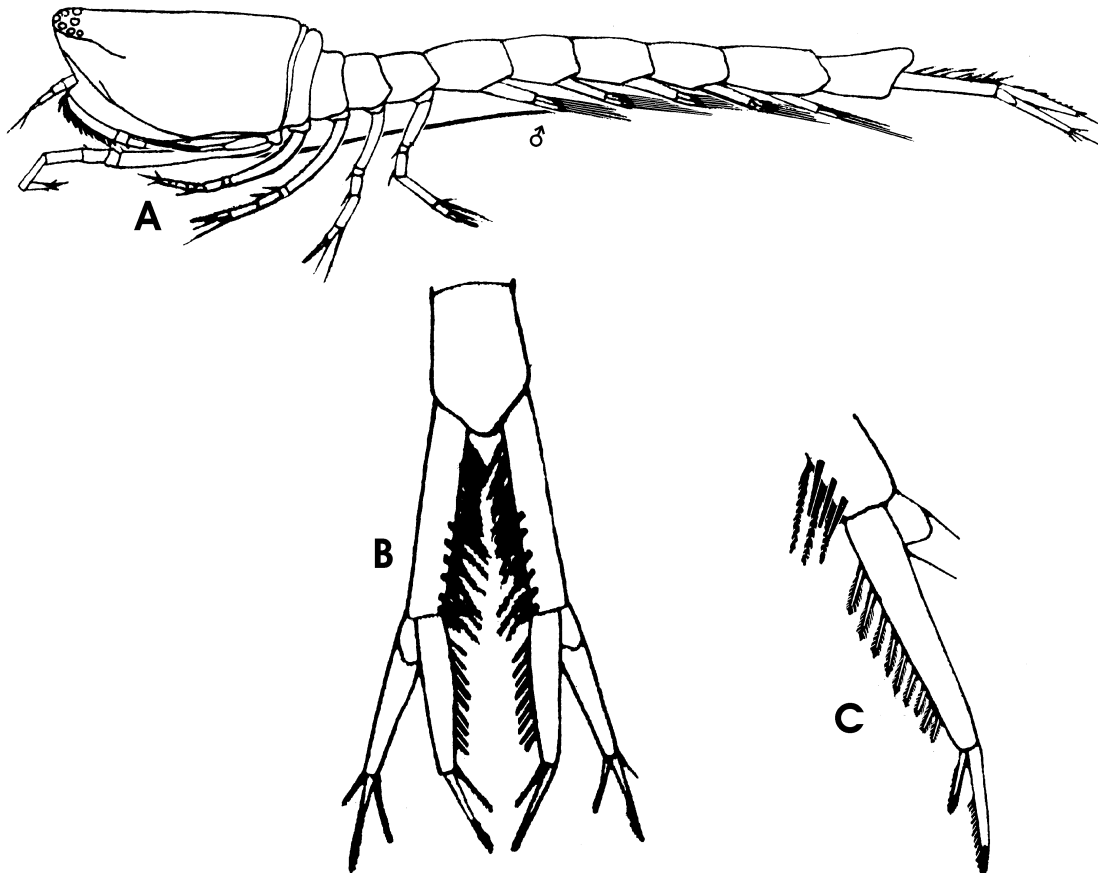


Fig. A-C. *Cyclaspis granulata* (Radhadevi & Kurian, 1981). A-C, adult ♂. A, habitus in lateral view.

Cyclaspis platymerus Zimmer, 1944

Cyclaspis platymerus ZIMMER, 1944: 124-127, figs. 10-15 (descr. ♂). - JONES, 1969: 157 (list). - ROCCATAGLIATA, 1985, Crustaceana 49(2): 184-187, 191 (addendum), figs. 24-26 (brief descr. syntypes). - BĂCESCU, 1988: 63 (catalog). - CAMP *et al.*, 1998: 138 (list).

SYNTYPES: 20 adult ♂♂ (deposited in Zoologische Staatssammlung, Munich), Gulf of Mexico (25°49'N, 82°08'30"W to 25°46'N, 82°07'30"W), 28-IV-1915, 19-20 h, surface, Steamer Fish Hawk, Sta. 8255.

Distribution.— Southwest Florida inner shelf (type locality) and off South Carolina.

Recognition characters.— Carapace with a distinct coarse reticulate pattern. Dorsal edge almost straight, rising slightly near posterior end to form a hump. Pseudorostral lobe with a rounded prominence, more evident when the animal is seen from above. Posterior part of carapace with transverse ridge (sometimes only visible by rotating the specimen). Ischium of first pereopod without tooth-like projections. Female uropod: inner margin of peduncle and rami without setae, all three strongly serrated. Male uropod: inner margin of peduncle with long plumose setae proximally and two rows of bipectinate setae distally; inner margin of endopod with several pectinate setae followed by simple setae and a short serration; inner margin of exopod serrate and with 1-2 long plumose setae. In both sexes, distal end of rami with 2 unequal setae, exopod also with 2 tiny distal setae.

Remarks.— *Cyclaspis platymerus* was previously known from an all male type series (“syntypes”) collected on the surface off the west coast of Florida. The material available for our study, which came from inner shelf and near coastal sand bottom habitats, included both adult males and females.

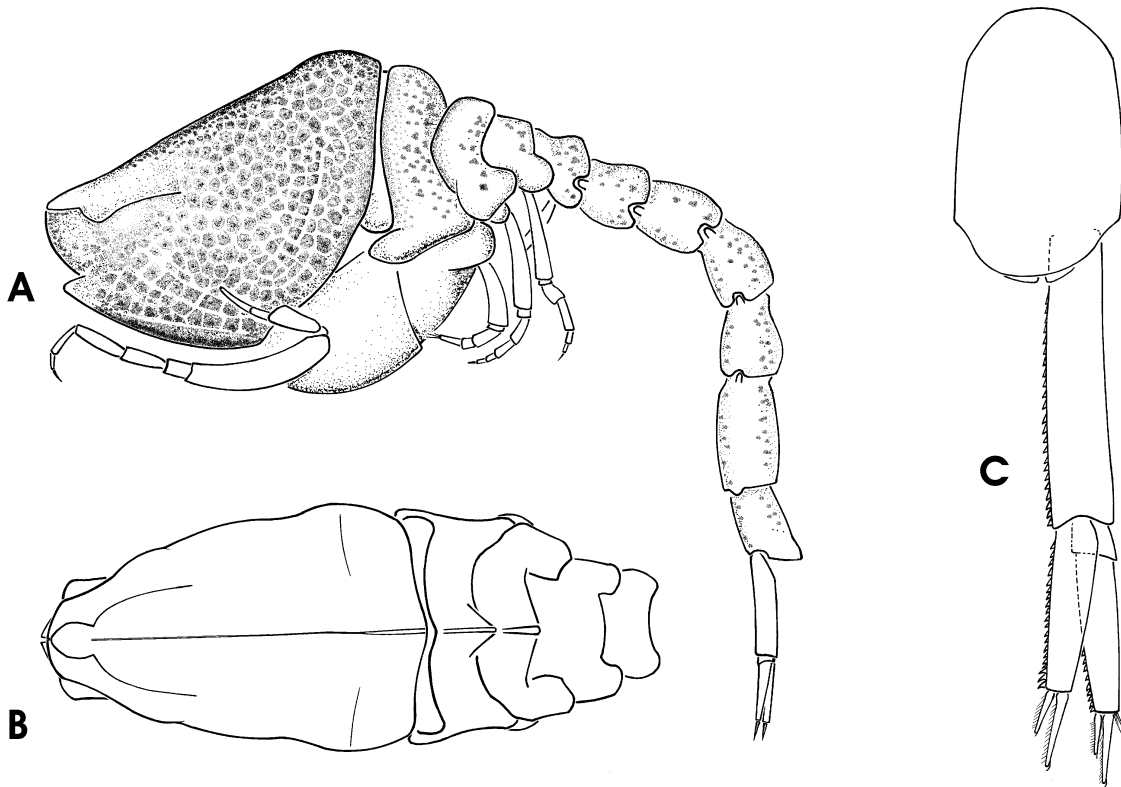


Fig. A-C. *Cyclaspis platymerus* Zimmer, 1944. A-C, ovigerous ♀. A, habitus in lateral view. B, dorsal view of carapace and thoracic segments. C, last abdominal segment and uropod.

Cyclaspis pustulata Zimmer, 1943

Cyclaspis pustulata ZIMMER, 1943: 157-159 (descr. ♂). - JONES, 1969: 157 (list). - VAN ENGEL, 1972: 144 (new record, Chesapeake Bay). - CAMP, WHITING & MARTIN, 1977: 14 (Hutchinson Is. and Florida Keys, Mississippi, new records). - WATLING, 1979: 5, 6, 19, fig. 4 (key). - ROCCATAGLIATA & MOREIRA, 1987: 65-67, 77 (addendum), figs. 8-10, 32, 33, 35 (descr. ♀, ♂; desig. LECTOTYPE, new records: Southern Brazil, South Carolina). - ZIMMER, 1980: 7-9, figs. 28-36 (English translation of 1943 Zimmer's description). - BĂCESCU, 1988: 64 (catalog). - CAHOON & TRONZO, 1989: 16 (list, North Carolina, new record). - TRONZO & CAHOON, 1990: 81 (list). - RAKOCINSKI *et al.*, 1993: 94 (table, new record: Perdido Key, Florida). - RAKOCINSKI *et al.*, 1996: 350 (table) - CAMP *et al.*, 1998: 138 (list).
LECTOTYPE: Preparatory ♂ (USNM: 92100), Chesapeake Bay, Steamer Fish Hawk Sta. 8827, 18.3 m, 9 Jul. 1920, Sal. 25.40‰.

Distribution.— East coast U.S.A. North Carolina to South Florida.— Gulf of Mexico: Florida, Alabama, Mississippi. — Costa Rica (Caribbean), Southern Brazil. 2-58 m.

Recognition characters.— Pseudorostral lobes confluent for short distance in front of the ocular lobe. Sides of the carapace with a pronounced excavation, which is defined by a ridge beginning on the pseudorostral lobe, extending posteriorly as a prominent curved ridge and turning forwards toward median line. With a coarse reticulation on the outside of the curved ridge, the edges of these reticulations, arranged end to end, form 5 to 8 longitudinal ridges (some better developed than others). The carapaces sculpturing presents some individual variation: the ridges may be as developed as mentioned above, poorly developed or absent (in this case, the surface is smooth and bright). Regardless of the ridge development, the characteristic deep excavation is always present. Female uropod: inner margin of peduncle and rami without setae, all strongly serrated. Male uropod: inner margin of peduncle with long plumose setae proximally and two rows of bipectinate setae distally; inner margin of endopod with bipectinate setae followed by simple setae, inner margin of exopod serrate and with 2 long plumose setae. In both sexes, distal end of rami with 2 unequal setae, exopod also with 2 tiny distal setae.

Remarks.— This species shows a great variation in carapace sculpturing, varying from highly sculptured (as in the specimen drawn) to completely smooth. Despite this variation, this species is very easily identified by the characteristic deep excavation on each side of the carapace.

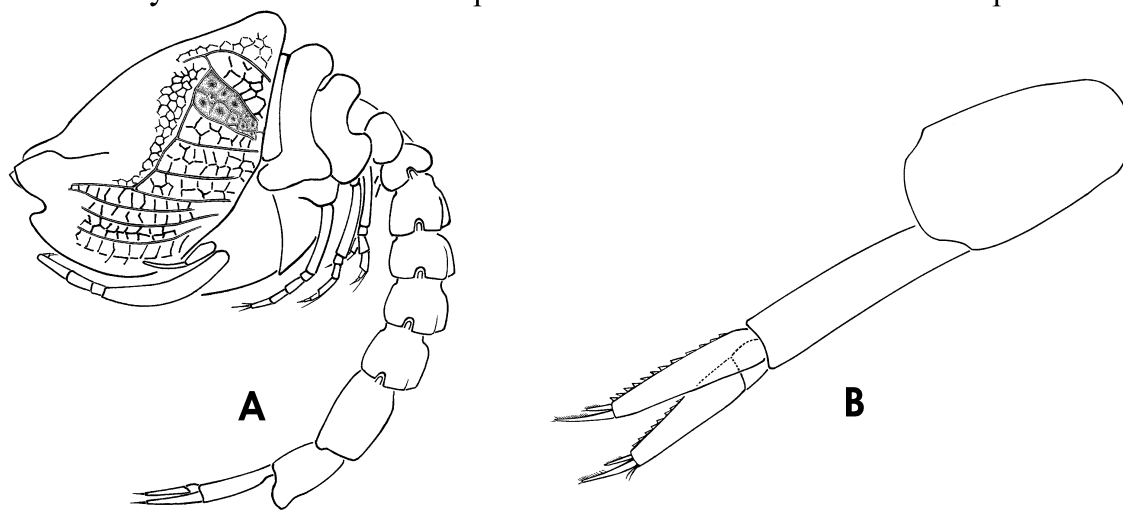


Fig. A, B. *Cyclaspis pustulata* Zimmer, 1943. **A-B**, ovigerous ♀. **A**, habitus in lateral view. **B**, last abdominal segment and uropod.

Cyclaspis unicornis Calman, 1907

Cyclaspis unicornis CALMAN, 1907: 14, figs. 9-11 (descr. immature ♀). - STEBBING, 1913: 29, 36 (catalog). - ZIMMER, 1940: 264 (list). - HALE, 1944: 71 (key). - JONES, 1969: 156 (list). - BĂCESCU & ORTIZ, 1984: 23 (Cuba, new record). - ROCCATAGLIATA, 1986: 131 (comparison with *C. dentifrons*). - BĂCESCU, 1988: 52 (catalog). - ORTIZ & LALANA, 1988: 14 (list). - DONATH-HERNÁNDEZ, 1988: 45 (Quintana Roo, new record). - MARKHAM *et al.*, 1990: 411 (list). - PETRESCU, ILIFFE & SÂRBU, 1993: 379, figs. 7a-d (juvenile ♀, new record: Jamaica Is.). - CAMP *et al.*, 1998: 138 (list).

HOLOTYPE: Immature ♀ (UZMK), "Cruz Bay, St. Jan [Danish West Indies]".

Distribution.— Virgin Islands (depth?), Cuba (13 m), Jamaica (3 m), Quintana Roo (intertidal area?), Florida.

Recognition characters.— **Female:** Frontal lobe with a process, ranging in shape from an acute forwardly curved tooth to a round elevation. Carapace in dorsal view showing a constriction at about two-thirds from its anterior end. Ocular lobe much longer than wide. Uropod more than twice as long as last abdominal segment; endopod with 4 setae on its serrate medial margin and a long seta distally; exopod with 1 subterminal and 3 unequal distal setae. Adult ♂ unknown.

Remarks.— The adult female is herein described for the first time. Petrescu (2002) considered *Cyclaspis unicornis* as a junior synonym of *Stephanomma goesii*. This synonymy appears to be based on an erroneous identification.

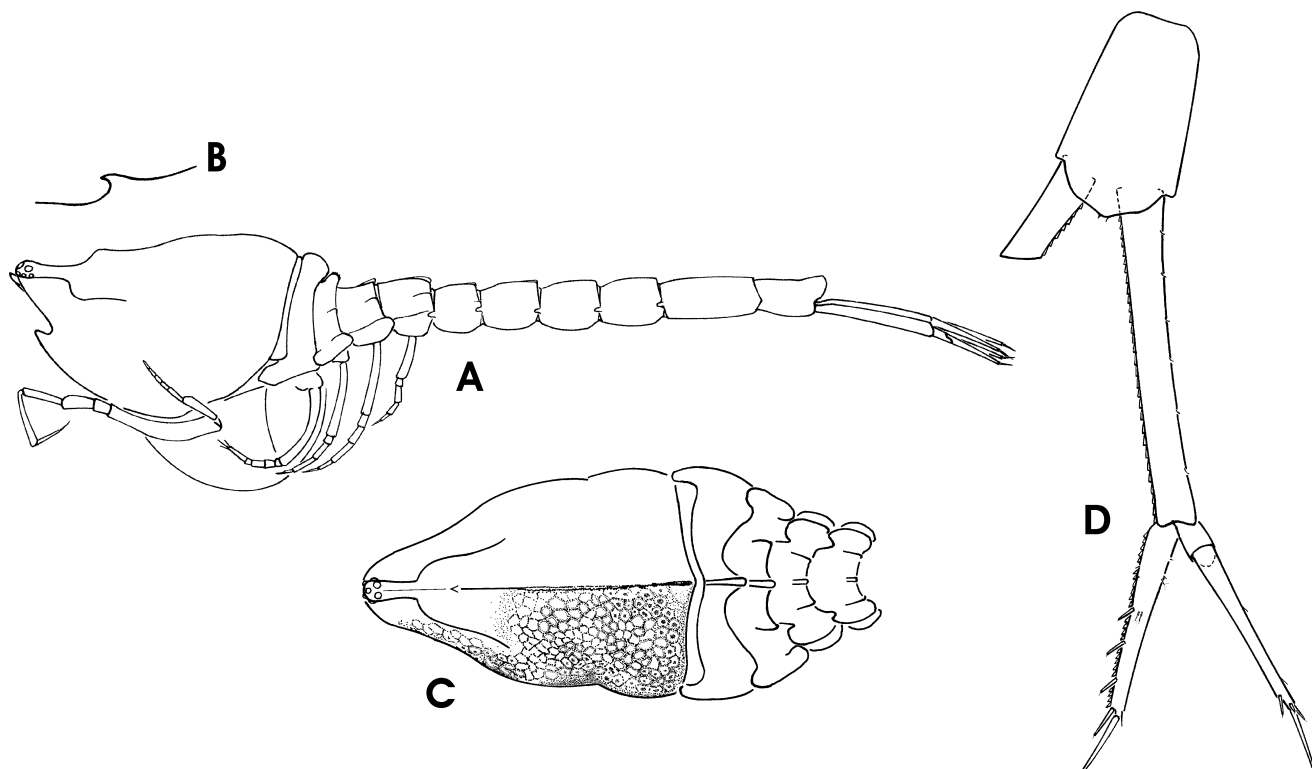


Fig. A-D. *Cyclaspis unicornis* Calman, 1907. A-D, ovigerous ♀. A, habitus in lateral view. B, detail of a forwardly curved tooth (from another specimen). C, carapace and thorax in dorsal view. D, last abdominal segment and uropod.

Cyclaspis varians Calman, 1912

Cyclaspis varians CALMAN, 1912: 610-612, figs. 1-5 (descr. ovigerous ♀ adult ♂). - STEBBING, 1913: 29, 33 (catalog). - HALE, 1944: 71 (key). - WIGLEY, 1964: 99, figs. 5, 19 (key). - JONES, 1969: 156 (list). - VAN ENGEL, 1972: 144 (Chesapeake Bay, new records). - CAMP, WHITING & MARTIN, 1977: 14 (Hutchinson Is. and Florida Keys, Mississippi, new records). - WATLING, 1979: 5, 6, 19, fig 3 (key). - RADHADEVI & KURIAN, 1980: 112 (brief descr. 1 immature ♀ from west coast of India, most probably an erroneous identification). - ZIMMER, 1980: 7 (Chesapeake Bay, new records). - MODLIN & DARDEAU, 1987: 291-296, fig. 3, tabs. 2,3 (seasonal and spatial distribution in the Mobile Bay estuary, new record) - DONATH-HERNÁNDEZ, 1988: 45 (Laguna Verde, Veracruz, new record). - BĂCESCU, 1988: 70 (catalog). - HOPKINS, VALENTINE & LUTZ, 1989: 113, 115, figs. 43a-d (key). - CAMP *et al.*, 1998: 138 (list).

Cyclaspis cf. varians. - RAKOCINSKI *et al.*, 1993: 95. - RAKOCINSKI *et al.*, 1996: 350 (table).
HOLOTYPE: USNM 44016, Woods Hole, Massachusetts, surface. U.S.F.C. 1885.

Distribution.— Vineyard Sound and Woods Hole, Chesapeake Bay, Hutchinson Is., Florida Keys, Mobile Bay, Mississippi, Veracruz, India (?); 2.5-14 m, surface.

Recognition characters.— Surface of carapace smooth. Dorsal edge distinctly keeled; anterior part just behind the ocular lobe cut into a number of fine teeth in some specimens; in others, however, teeth are poorly developed or absent. Pseudorostrum of moderate length, about as long as the ocular lobe. Uropod (in both sexes): 3 or more times as long as last abdominal segment; endopod with 1 subterminal and 1 distal setae, exopod with 1 subterminal and 3 unequal distal setae. Female uropod: peduncle without setae on inner margin, endopod with 3 simple setae on inner margin. Male uropod: peduncle with row of plumose setae followed by a double row of bipectinate setae on inner margin; endopod with 2 bipectinate setae followed by a row of simple setae on inner margin; exopod with 4 long plumose setae on inner margin.

Remarks.— The range of distribution of this species is suspiciously large (from Massachusetts to Veracruz). A detailed study of the variations exhibited among individuals from different localities is badly needed.

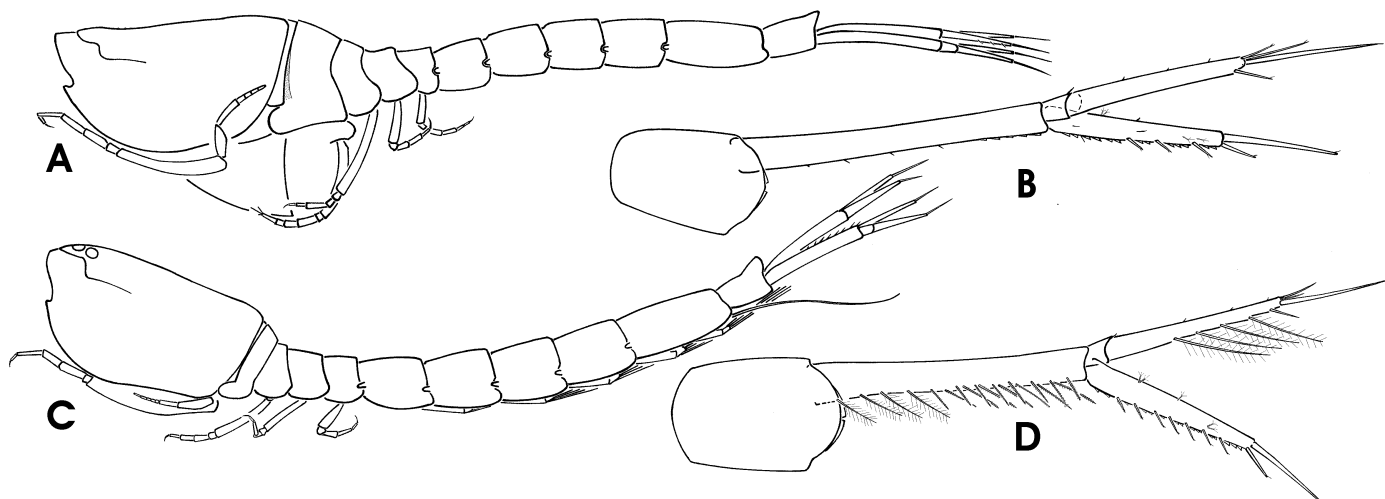


Fig. A-D. *Cyclaspis varians* Calman, 1912. **A-B**, ovigerous ♀. **A**, habitus in lateral view. **B**, last abdominal segment and uropod. **C-D**, adult ♂. **C**, habitus in lateral view. **D**, last abdominal segment and uropod.

Cyclaspis sp. B *sensu* RAKOCINSKI *et al.* 1996: 350 (table). - CAMP *et al.*, 1998: 138 (list).

Distribution.— Perdido Key, Gulf of Mexico.

Recognition characters.— Sides of the carapace without ridges in either sex. Posterior dorsal hump absent. Pseudorostral lobes not meeting (males) or barely meeting (females) in front of the ocular lobe. Uropod more than twice as long as last abdominal segment. Endopod with a simple distal seta, exopod with 1 subterminal seta and 3 unequal distal setae. Female uropod: peduncle without setae on inner margin, endopod with a row of simple setae on inner margin. Male uropod: inner margin of peduncle with row of short simple setae followed by a double row of bipectinate setae, endopod with 2-3 bipectinate setae followed by a row of simple setae on inner margin. Inner margin of exopod with 4-5 long plumose setae. Large species.

Remarks.— *Cyclaspis* sp. B *sensu* Rakocinski *et al.*, 1996 can be easily distinguished from all the other *Cyclaspis* having both rami of the uropods armed with terminal spines because the male has a simple row of small simple setae (instead of long plumose setae) on the proximal half of its uropodal peduncles.

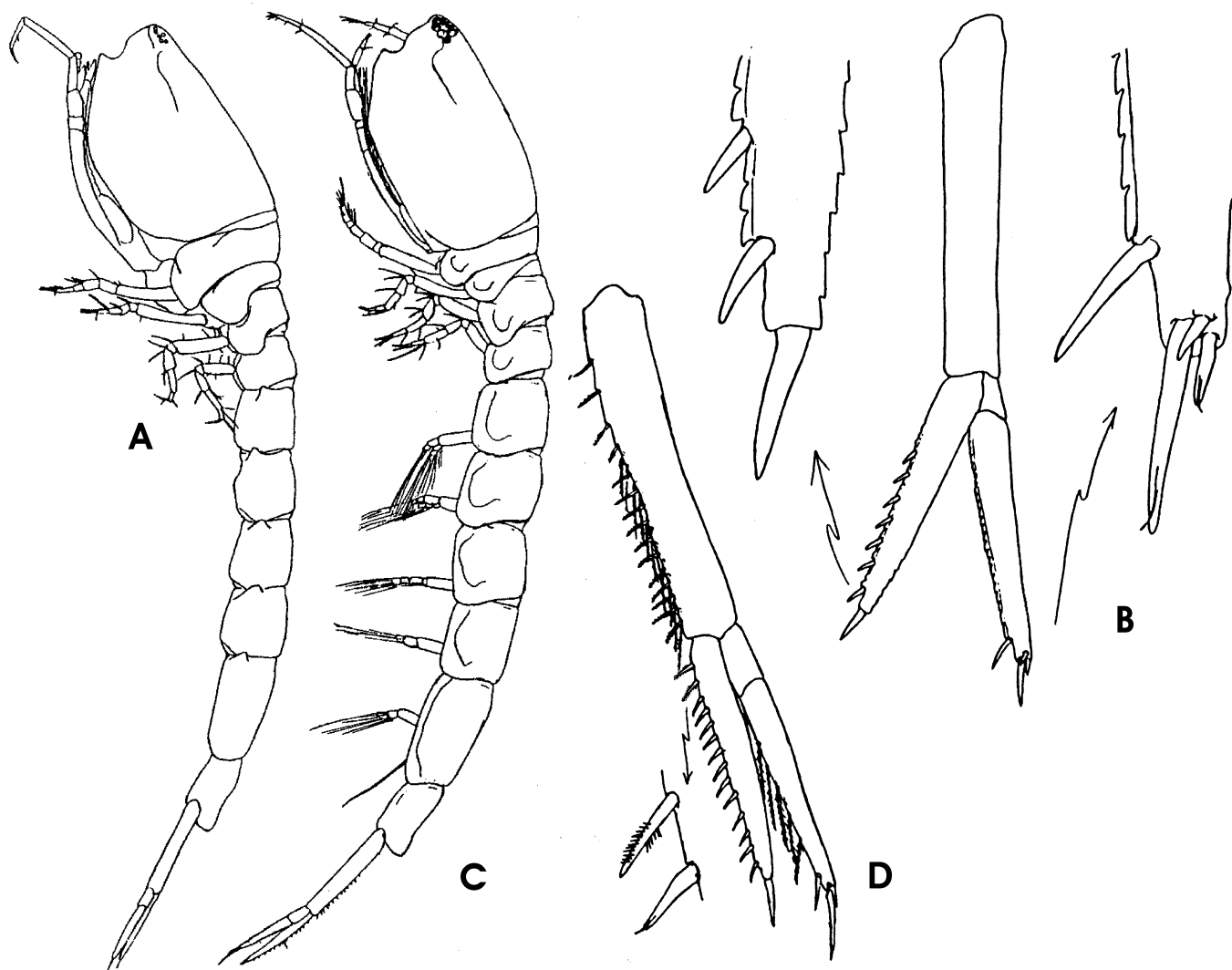


Fig. A-D. *Cyclaspis* sp. B *sensu* Rakocinski *et al.*, 1996. A-B, ovigerous ♀. A, habitus in lateral view. B, uropod. C-D, adult ♂. C, habitus in lateral view. D, uropod. (after LeCroy, 1992).

Cyclaspis sp. *C sensu* RAKOCINSKI *et al.*, 1996: 350 (table) - CAMP *et al.*, 1998: 138 (list).

Distribution.— Perdido Key, Gulf of Mexico.

Recognition characters.— Carapace with a distinct coarse reticulate pattern, dorsal edge almost straight, posterior dorsal hump almost unnoticeable or absent. Uropod more than twice times longer than last abdominal segment. Distal end of both rami with 2 unequal setae, exopod also with 2 tiny distal setae. Female uropod: inner margin of peduncle and rami without setae, both rami strongly serrated. Male uropod: inner margin of peduncle with long plumose setae proximally and two rows of bipectinate setae distally; inner margin of endopod with several bipectinate setae followed by simple setae and a short serration, inner margin of exopod serrate and with 2 long plumose setae. Small species.

Remarks.— *Cyclaspis* sp. *C sensu* Rakocinski *et al.* closely resembles *Cyclaspis reticulata* Roccatagliata, 1985 from Brazil. These two species show a reticulate pattern on the carapace and a similar spinulation of the uropods. *Cyclaspis* sp. *C sensu* Rakocinski *et al.* can be distinguished from *C. reticulata* by the straight outline of its carapace, the absence of a mid-dorsal ridge on the abdomen, and its longer uropods. Another species close to the ones mentioned above is *Cyclaspis conceptionensis* Donath-Hernández, 1988 from Baja California. However, we are postponing the analysis of the similarities and differences with *Cyclaspis* sp. *C sensu* Rakocinski *et al.* and *C. reticulata* until we are able to examine the types of *C. Conceptionensis*.

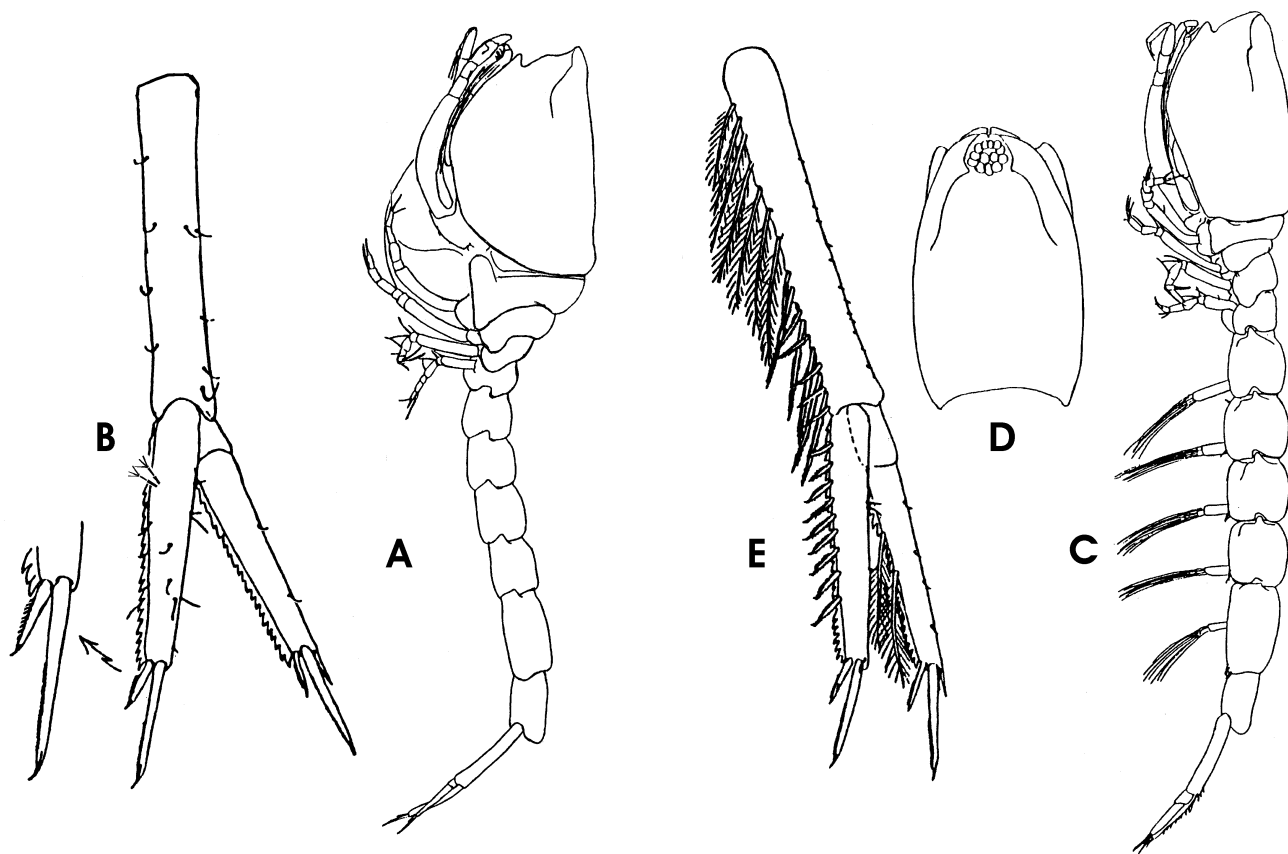
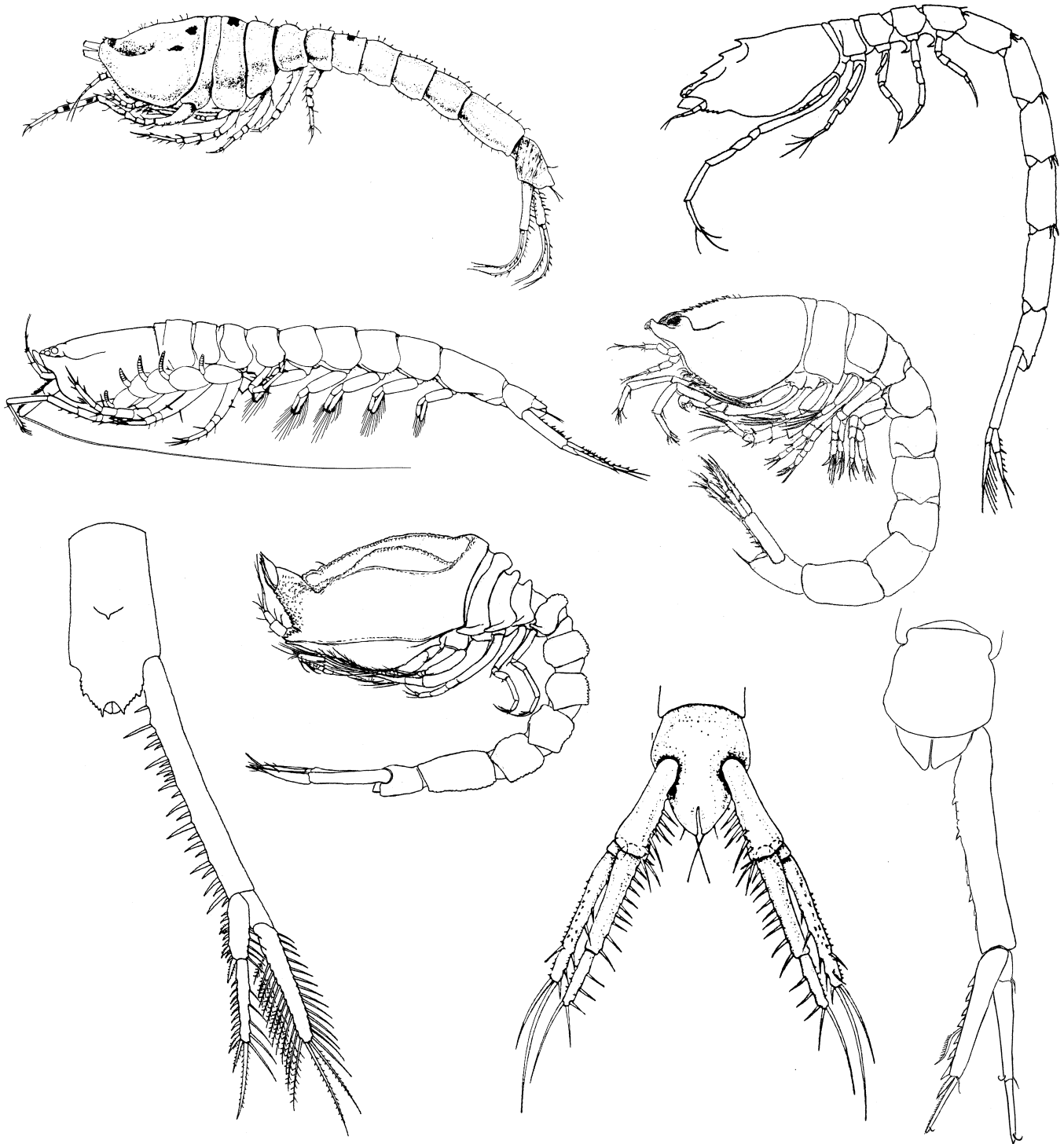


Fig. A-E. *Cyclaspis* sp. *C sensu* Rakocinski *et al.*, 1996. A-B, adult ♀. A, habitus in lateral view. B, uropod. C-E, adult ♂. C, habitus in lateral view. D, carapace in dorsal view. E, uropod. (after LeCroy, 1992).

Subfamily Vaunthompsoniinae G. O. Sars, 1878

Members of this subfamily are characterized by having: (1) exopods beyond the first pair of pereopods (always occurring on pereopods 1 and 2, usually on pereopod 3, and sometimes on pereopod 4), (2) females with at least three articles on the antenna, (3) males with 5 pairs of pleopods, and (4) uropod endopod generally bi-articulated (exception: *Apocuma*).



Genus *Apocuma* Jones, 1973

Apocuma JONES, 1973: 297-298.

Remarks.— The main diagnostic character of the genus *Apocuma* are: (1) pseudorostral lobes meeting for some distance at the front of the carapace, (2) last abdominal somite not project much between the uropods, (3) the female has well developed exopods on the first two pairs of pereopods and rudimentary exopods on the third pair while the male has well developed exopods on the first four pairs, (4) the basis of the third maxilliped is not produced, and (5) the endopod of the uropods is unsegmented. This genus has been considered as a member of the Bodotriinae by Băcescu (1988), although upon erection it was described as a genus of Vaunthompsoniinae. Jones (1973) pointed out that *Apocuma* in some respects bridges the gap between the two subfamilies above mentioned, but it must be placed in the Vaunthompsoniinae because of the presence of exopods beyond the first pair of pereopod.

The genus *Apocuma* contains four species at present: two from the Atlantic (*A. brasiliense* Jones, 1973; *A. mauritiense* Ledoyer, 1997) and two from Australia (*A. australiense* (Hale, 1949); *A. poorei* Petrescu, 2004). World bathymetrical range: 80-2100 m.

Type species: *Apocuma brasiliense* (by original designation).

Apocuma sp. A

Distribution.— Florida mid shelf to upper slope (depth range about 80-300 m).

Recognition characters.— Carapace with two pairs of lateral ridges. Female with well-developed exopods on the first two pairs of pereopods (rudimentary pair of exopods not observed on pereopod 3). Endopod of the uropods unsegmented.

Remarks.— The specimens from Florida waters closely resemble *A. brasiliense* Jones, 1973 described from Brazil at depths of 587-805 m. *Apocuma* sp. A can be easily distinguished from *A. brasiliense* by possessing an antero-lateral corner of carapace acute and serrate (rounded and rugose in *A. Brasiliense*).

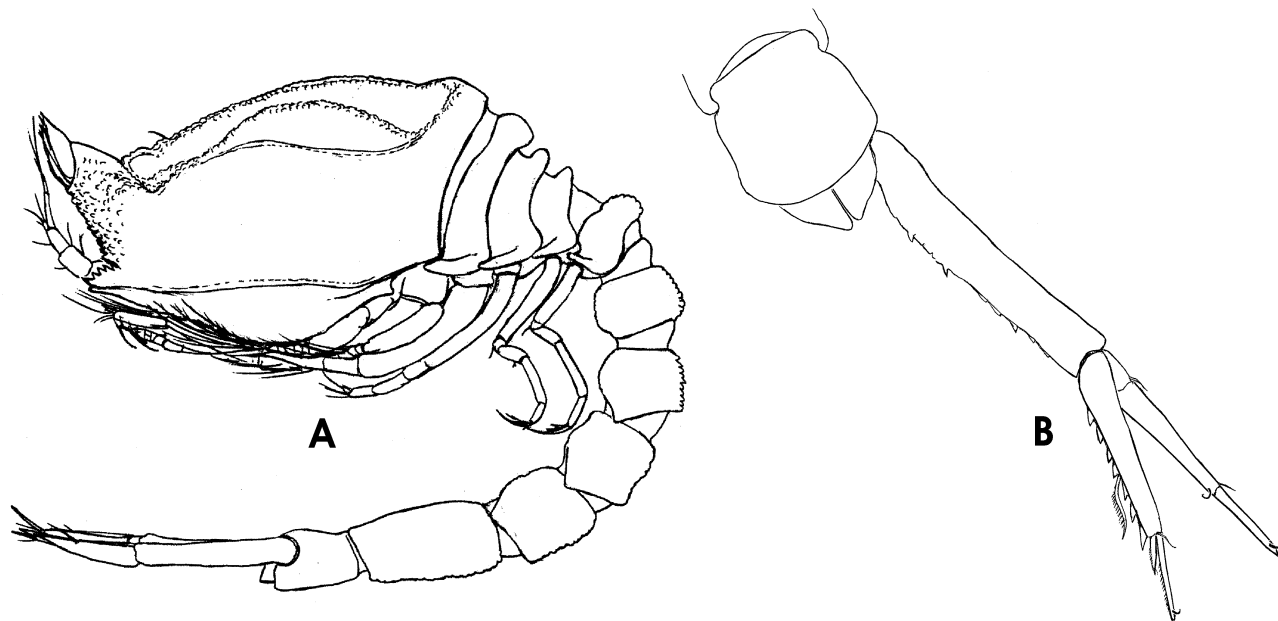


Fig. A-B. *Apocuma* sp. A. ♀. **A**, habitus in lateral view. **B**, uropod.

Sympodomma Stebbing, 1912

See Băcescu (1988) for the synonymy.

Remarks.— The most relevant generic characters are: (1) eyes present and pseudorostral lobes do not extend beyond the ocular lobe or slightly extend but do not meet, (2) dorsal plate of telsonic somite produced between uropods, (3) third maxilliped with external distal portion of basis prominently produced, (4) females and males with exopods fully developed on pereopods 1-3, and (5) endopod of uropods bi-articulated.

Type species: *Sympodomma diomedae* (Calman, 1912) by subsequent designation of Hale (1949).

Sympodomma sarahae Petrescu & Heard, 2005

Distribution.— Southwest Florida shelf 90-213 m.

Recognition characters.— Carapace with 3 mid-dorsal teeth on anterior half. Ocular lobe digitiform and extending slightly beyond tip of the pseudorostral lobes, with several small lenses. Last pleonite armed with a median spine and produced between uropodal peduncles into a rounded plate. Third maxilliped with external distal portion of basis prominently produced. With exopods on pereopods 1-3, all fully developed.

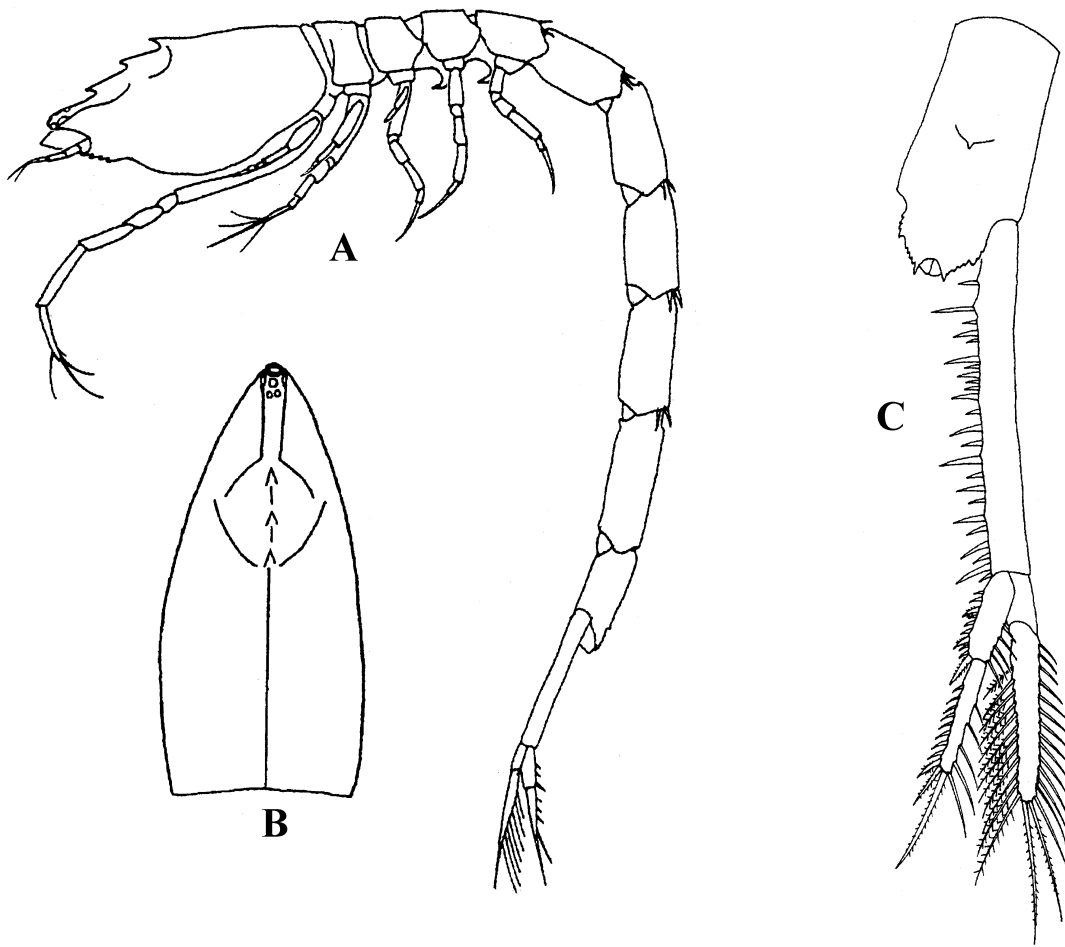


Fig. A-C. *Sympodomma sarahae* Petrescu & Heard, 2005, subadult ♂. A, habitus in lateral view. B, carapace in dorsal view. C, last abdominal segment and uropod.

Genus *Vaunthompsonia* Bate, 1858

See Băcescu (1988) for the synonymy.

The most relevant characters for the identification of the members of this genus are: (1) telsonic segment produced between uropodal peduncles, (2) basis of third maxilliped not extending distally, (3) exopods present on pereopod 1-4 in male and 1-3 in female, and (4) endopod of uropods bi-articulated.

Type species: *Vaunthompsonia cristata* Bate, 1858.

Vaunthompsonia floridana Băcescu, 1971

Vaunthompsonia floridana BĂCESCU, 1971: 18-22, figs. 8a-d, 9a-e (descr. ♀, key). - DAY, 1975: 202 (key). - BĂCESCU, 1988: 127 (catalog). - DONATH-HERNANDEZ, 1988: 46 (Quintana Roo, new record) - ORTIZ & LALANA, 1989: 221 (new record: Cuba). - MARKHAM et al., 1990: 411 (list). - PETRESCU, 1993: 379, 380, figs. 8a-k, 9a-h. (descr. adult ♂, Illustr. ♀, new record: Jamaica Is.). - CAMP *et al.*, 1998: 138 (list).

HOLOTYPE: ♀ (MHN Gr. Antipa 64) Key West, Fla., among roots of *Thalassa*, 24°33'50"N, 81°45'00"W, 3-V-64. **PARATYPES**, from the type locality, 2 ♀♀, 2 ♂♂, 2 juvs. (MHN Gr. Antipa 64a).

Distribution.— Key West, Cuba, Jamaica, Quintana Roo; 2-3 m, night zooplankton.

Recognition characters.— Carapace without denticulations.

Remarks.— This species differs from *V. minor* Zimmer, 1944, the only other known species from the Caribbean Sea, by the lack of teeth on the carapace.

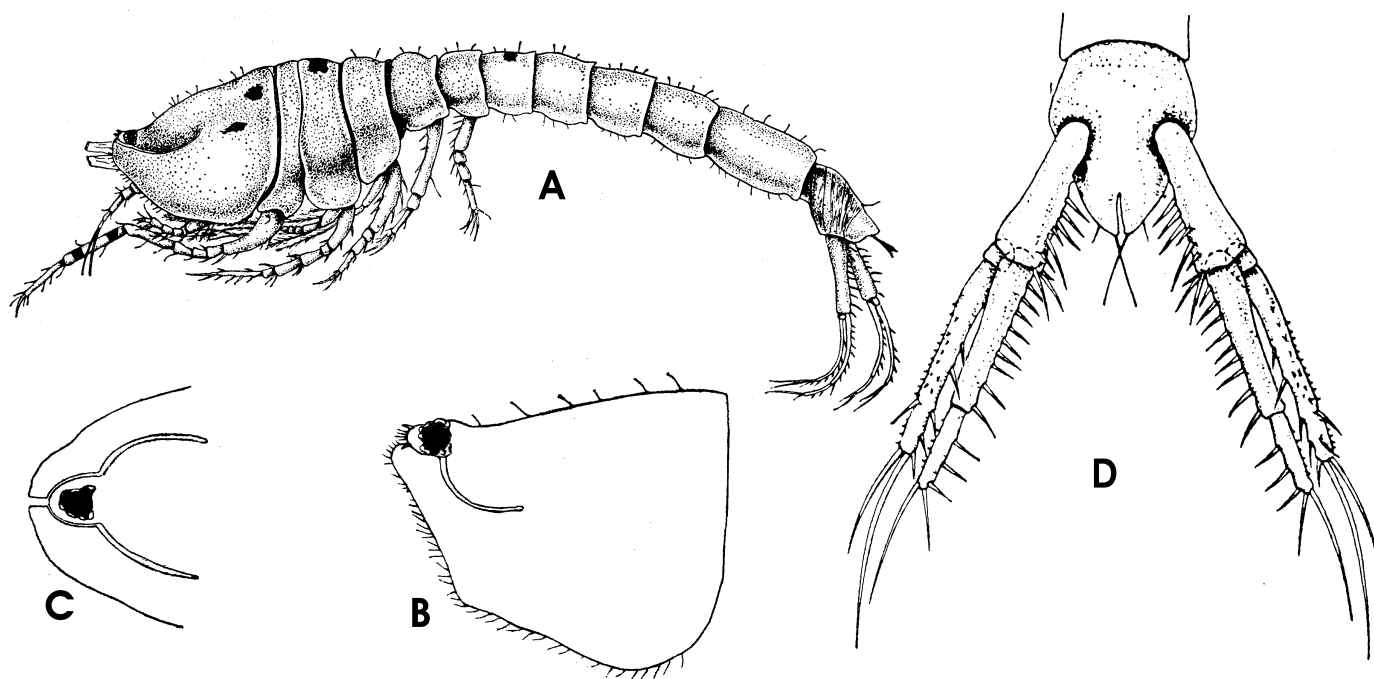


Fig. A-D. *Vaunthompsonia floridana* Băcescu, 1971. ♀. **A**, habitus in lateral view. **B**, carapace in lateral view. **C**, ocular lobe and frontal lobe from above. **D**, last abdominal segment and uropods.

Vaunthompsonia minor Zimmer, 1944

Vaunthompsonia cristata CALMAN, 1907: 29 (he referred to this species, “not without some hesitation”, 20 males from Cruz Bay, St. Jan). - ZIMMER, 1940: 264 (nec *Vaunthompsonia cristata* Bate, 1858).

Vaunthompsonia cf. cristata – PETRESCU, 2002: 160-164, figs. 9, 10 (description adult female). – PETRESCU, 2003: 120 (Bahamas, Honduras). - PETRESCU, 2004: 90 (Cuba). *Vaunthompsonia minor* - ZIMMER, 1944: 121-124, figs. 1-9 (descr. marsupial ♀, adult ♂). - FAGE, 1951: 26 (he suggested that *V. minor* and *V. cristata* could be the same species). - JONES, 1969: 154 (list). - BĂCESCU, 1971: 21 (key). - VALENTIN, 1982: 17 (Ischia, Italy; this record requires confirmation). - DONATH-HERNÁNDEZ, 1988: 45, 46 (new record: Quintana Roo). - BĂCESCU, 1988: 128 (catalog, desig. LECTOTYPE). - ORTIZ & LALANA, 1988: 15 (list). - MARKHAM *et al.*, 1990: 411 (list). - CAMP *et al.*, 1998: 138 (list).

LECTOTYPE: “ein ♀ im Brutkleid (typus); Nordende von Loggerhead Key, Florida, 5 m. Von Algen abgewaschen. 4.VIII. 1926. C.R. Shoemaker, Stat. 13, Access. 93400” (USNM 92037).

ADDITIONAL TYPE SPECIMENS: “Zahlreiche ♂♂ im Hochzeitskleid (hierbei der Typus), Südsüdwestlich der Tortugas, Florida, 11.VIII. 1930. Planktongang, Oberfläche. Elektrisches Licht. W.L. Schmitt, Access 111.167” (USNM 92038).

Distribution.– Bahamas, Tortugas Is. and Loggerhead Keys (Florida); Cuba, Martinique, Virgin Is, Quintana Roo, Belize, Honduras. 0-5 –62 m.

Recognition characters.– Carapace with a mid-dorsal double row of teeth (absent in adult males).

Remarks.– Petrescu (2002) considered that there are not major differences between *C. minor* and *C. cristata* Bate, 1858, and suggested that the former must be referred to as *Vaunthompsonia cf. cristata* Bate, 1858.

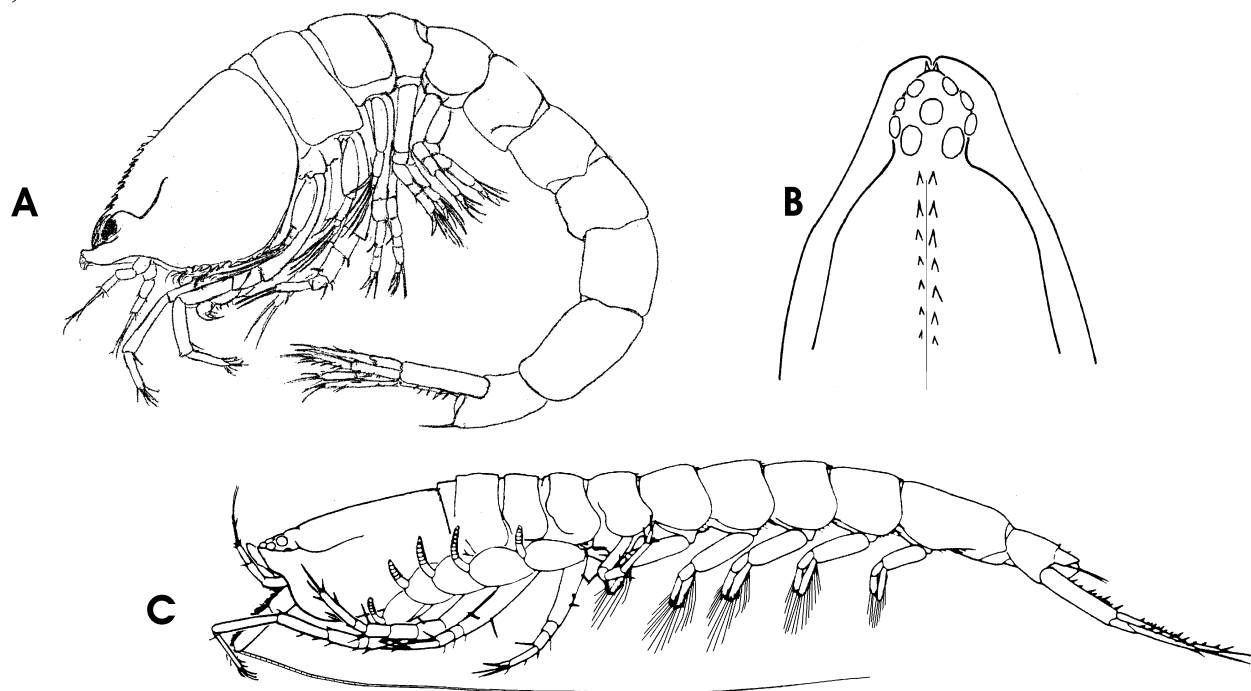


Fig. A-C. *Vaunthompsonia minor* Zimmer, 1944. **A-B,** ♀. **A,** in lateral view. **B,** anterior part of carapace in dorsal view. **C,** adult ♂ in lateral view (**C,** modified from Torleiv. Brattegard's unpublished manuscript).

Subfamily Macrocumatinae Watling, 1977

Bodotriidae having the following features: (1) exopods beyond the first pair of pereopods, (2) uropodal endopod bi-articulated, (3) female with at least three articles on the antennae, (4) male with relatively short antennae and 0, 2 or 3 pairs of pleopods.

Currently, this subfamily includes 4 genera and 6 species. Except for *Spelaeocuma guanche* Corbera, 2002 from the Canary Islands, the other five species are found along the Atlantic coast of North America.



Genus *Mancocuma* Zimmer, 1943

Mancocuma ZIMMER, 1940: 253, 254, 279, 309 (*nomen nudum*). – ZIMMER, 1943: 153-154 (diagnosis), fig. 1 (descrip. ♀, ♂).

Type species: *Macocuma stelliferum* Zimmer, 1943.

Mancocuma alterum Zimmer, 1943

Mancocuma altera ZIMMER, 1940: 253, 254, 279, 309 (*nomen nudum*). – ZIMMER, 1943: 156-157, fig. 1 (descr. ♀, ♂). – ZIMMER, 1980: 4-7, figs. 20-27 (comparison with *M. stelliferum*). BĂCESCU, 1988: 98 (catalog).

Nec *Mancocuma altera* LEDOYER, 1972: 783-787, figs. 1, 2. (= *Mancocuma stelliferum* Zimmer, 1943).

Distribution.– Chesapeake Bay southward to northeastern Florida (mouth of Nassau River), up to 18 m depth.

Recognition characters.– Exopods present on pereopods 1-4 in both sexes, those on pereopod 4 of female being minute and uniarticulate. **Adult male:** antenna relatively short with antennal flagellum about twice as long as peduncle; flagellum with pad-like “adhesive” setae, curved inward for clasping female during amplexus; abdomen with pair of reduced pleopods on the first two segments.

Remarks.– *Mancocuma* contains just two species (*M. stelliferum* Zimmer, 1943 and *M. alterum* Zimmer, 1943), both of which are presently known only from the Atlantic seaboard of North America. Differences between these two species are blurred. Zimmer (1980) reported that the male antenna of these two species differs considerably from each other. *M. alterum* exhibits many rows of long sensory setae on its last peduncle article, whereas *M. stelliferum* has only a few sparse setae. *M. stelliferum* in precopulatory phase showing how the male antenna is used in clasping the female abdomen is illustrated below.

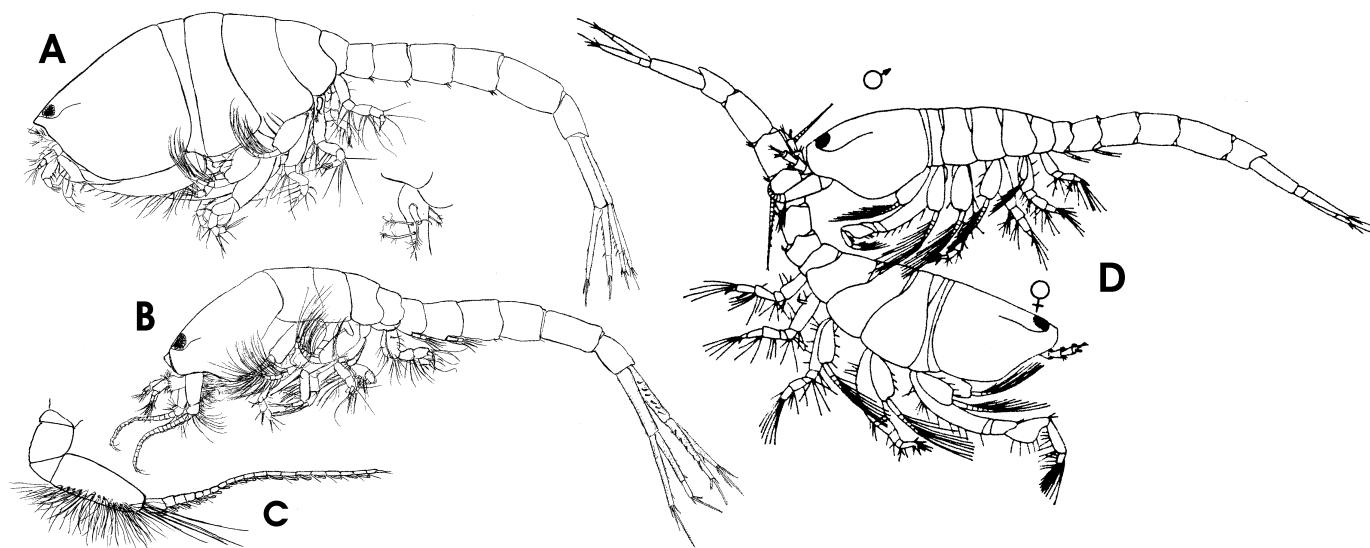
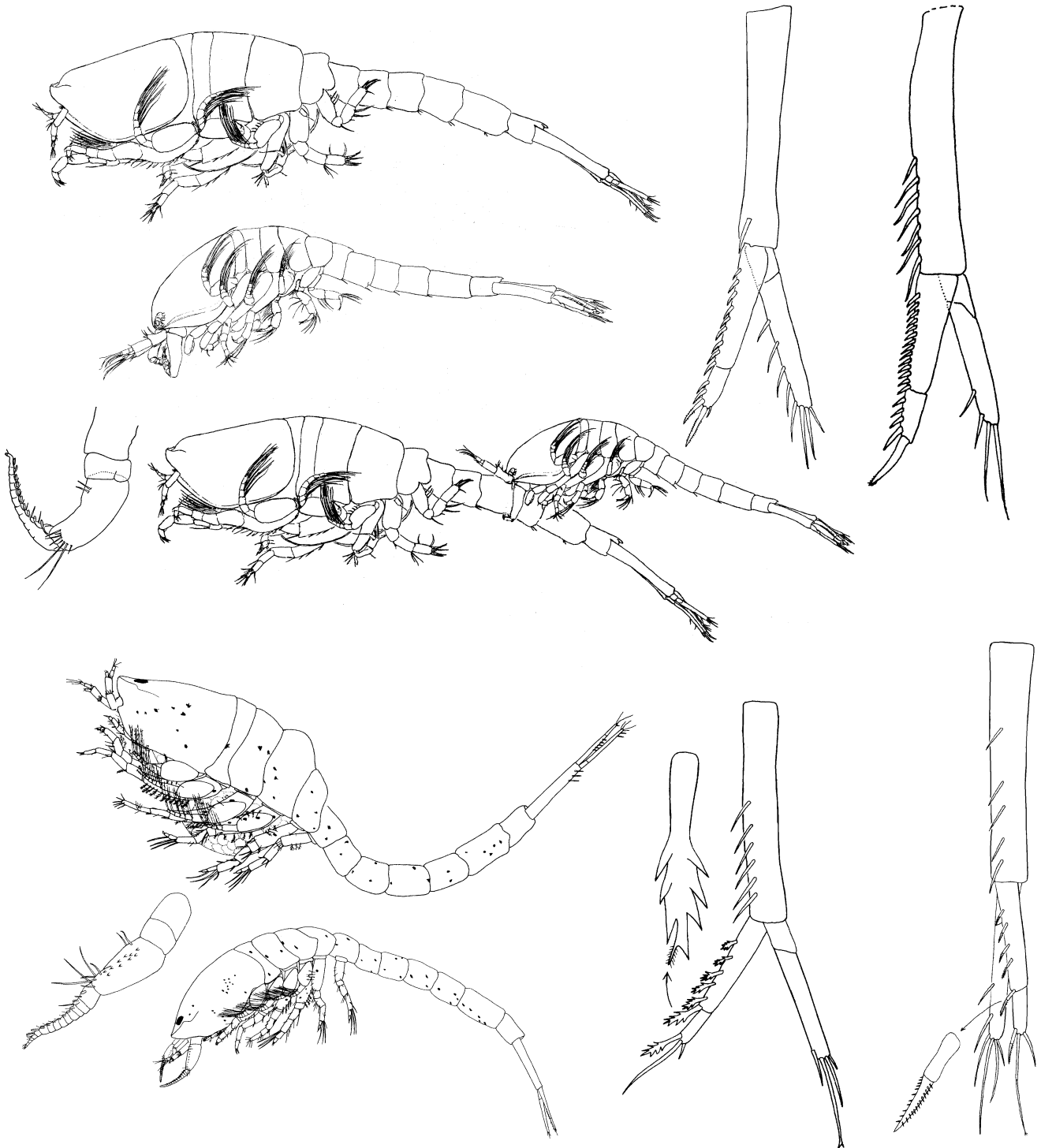


Fig. A-D. *Mancocuma alterum* Zimmer, 1943. **A**; ovigerous ♀, habitus in lateral view. **B-C**, adult ♂. **B**, habitus in lateral view. **C**, antenna. **D**, male and female in precopula (after Gnewuch & Croker, 1973).

Genus *Spilocuma* Watling, 1977

This genus differs from all other Bodotriidae in its lack of pleopods in the male. Other diagnostic characters are: (1) exopod on pereopods 1-3 and a rudimentary exopod on pereopod 4 in both sexes, (2) male distinctly smaller than female, (3) male antenna with strongly reduced flagellum (adapted for grasping), and (4) third maxilliped with distal external angle of basis not produced.

The genus *Spilocuma* contains two species, both recorded from the shallow waters of the eastern Gulf of Mexico.



Spilocuma salomani Watling, 1977

Spilocuma salomani WATLING, 1977: 596-598, figs. 1-13 (descr. adult ♀, ♂). - SALOMAN & NAUGHTON, 1978: 68 (list). - SALOMAN, 1981: 99-103, figs. 1, 2; tabs. 1, 2 (biology). - COREY, 1984: 514, 515, fig. 2 (the mean fecundity reported apparently was wrong calculated). - BĂCESCU, 1988: 99. - DONATH-HERNÁNDEZ, 1988: 46 (Veracruz, new record; some differences with original description are mentioned). - RAKOCINSKI *et al.*, 1991, 693 (new records: Horn Is., West Ship Is., Mississippi, station data no available). - MODLIN, 1992: 83-90, fig. 3; tab. 1 (biology, new record: Dauphin and Sand Islands, Alabama). - RAKOCINSKI *et al.*, 1996: 350 (table). - CAMP *et al.*, 1998: 138 (list).

HOLOTYPE: ♂ (USNM 156320), off Panama City Beach, Florida, 85°46'W, 30°10'N; 3 m.

PARATYPES: from type locality, 7 ♀♀, 4 ♂♂ (USNM 156321).

Distribution.— Panama City Beach, Perdido Key, Dauphin and Sand Islands, Horn and West Ship Islands (USA), Veracruz (Mexico); 0-3 m.

Recognition characters.— **Adult female:** without a dorsal keel on the third thoracic segment.

Uropod: endopod with two articles, basal article armed along inner margin with 9-12 pectinate setae, distal article with 3 lateral and 1 terminal serrated setae. **Adult male:** uropod, endopod basal article with 12-15 pectinate setae, distal article with 3 lateral and 1 terminal pectinate setae.

Remarks.— see *S. Watlingi*.

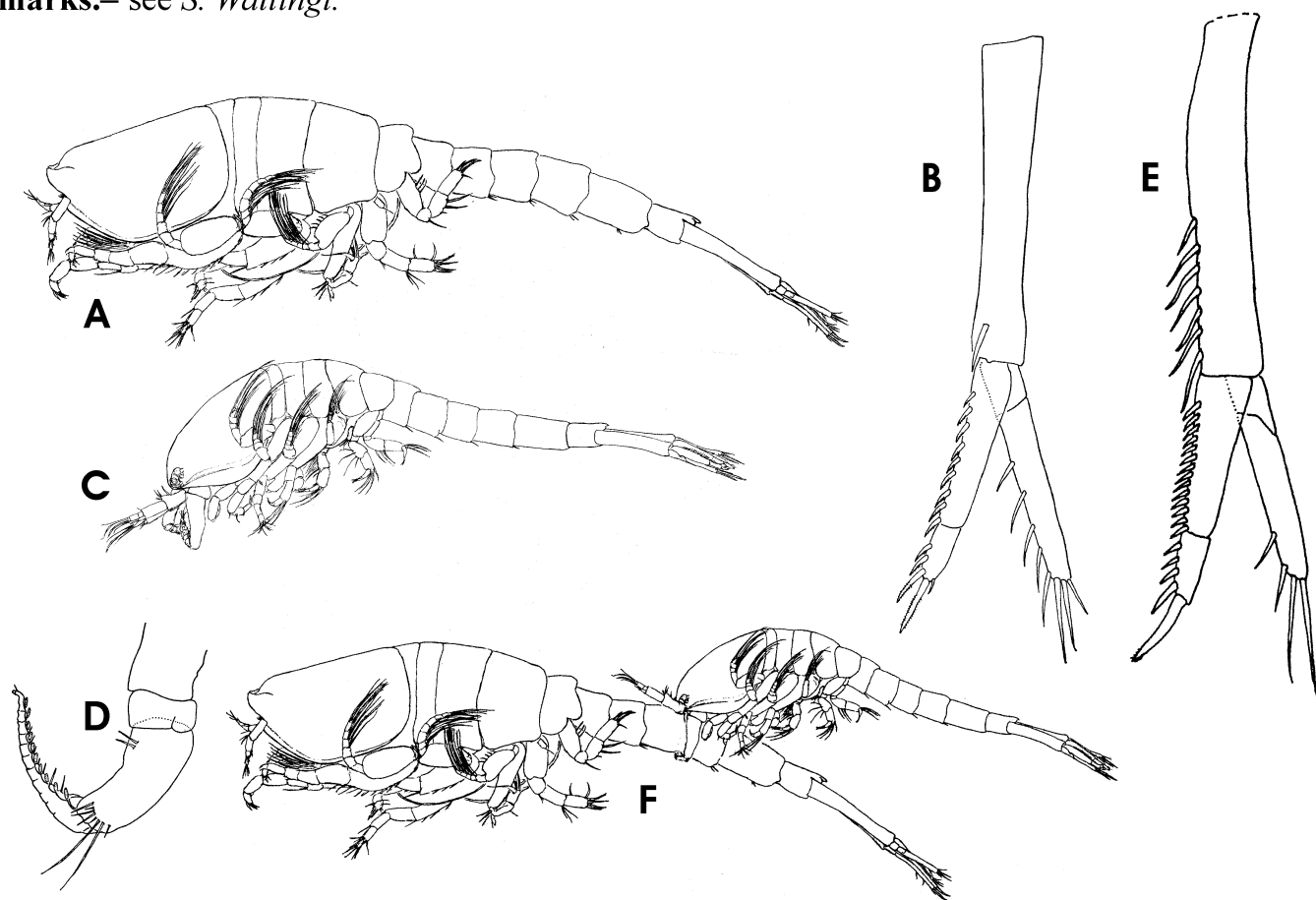


Fig. A-F. *Spilocuma salomani* Watling, 1977. **A-B,** adult ♀. **A,** habitus in lateral view. **B,** uropod. **C-E,** adult ♂. **C,** habitus in lateral view. **D,** first antenna. **E,** uropod. **F,** male and female in precopula. (**B-E,** after Watling, 1977).

Spilocuma watlingi Omholt & Heard, 1979

Spilocuma watlingi OMHOLT & HEARD, 1979: 184-194, figs. 1a-e, 2a-g, 3a-c, 4a,b, 5a-d; tab. 1 (descr. ovigerous ♀, adult ♂, compar. with *S. salomani*). - BĂCESCU, 1988: 100. - HOPKINS, VALENTINE & LUTZ, 1989: 113, 115, 43e-f (key). - RAKOCINSKI *et al.*, 1991: 693 (new records: West Ship Island, Mississippi, station data no available). - MODLIN, 1992: 83-90, fig. 2; tab. 1 (biology, new record: Dauphin and Sand Islands, Alabama). - RAKOCINSKI *et al.*, 1996: 350 (table). - CAMP *et al.*, 1998: 138 (list).

HOLOTYPE: Ovigerous ♀ (USNM: 171296), Southern end of Dauphin Island, Alabama (30°14'21"N, 88°04'42"W), 1-1.5 m. PARATYPES: from type locality, 7 adult ♀♀ and 8 ♂♂ (USNM 171297).

Distribution.— Dauphin and Sand Islands, Ship Island (0.5-3 m). Perdido Key.

Recognition characters.— **Adult female:** Third thoracic segment exhibiting a distinct keel dorsally. Uropod: endopod basal article with 4-6 stout serrate setae along inner margin; endopod distal article with 1 subterminal serrate seta and 2 terminal ones. **Adult male:** Dorsal keel absent on thoracic segment 3. Uropod: endopod basal article with 5-6 stout pronged setae on inner margin; endopod distal article with 1 lateral pronged seta and 2 terminal strong simple setae.

Remarks.— *S. watlingi* can be distinguished from *S. salomani* mainly by: (1) the presence of a dorsal keel on the third thoracic segment of ovigerous females, and (2) by having fewer spines on the Inner margin of both articles of the uropodal endopod.

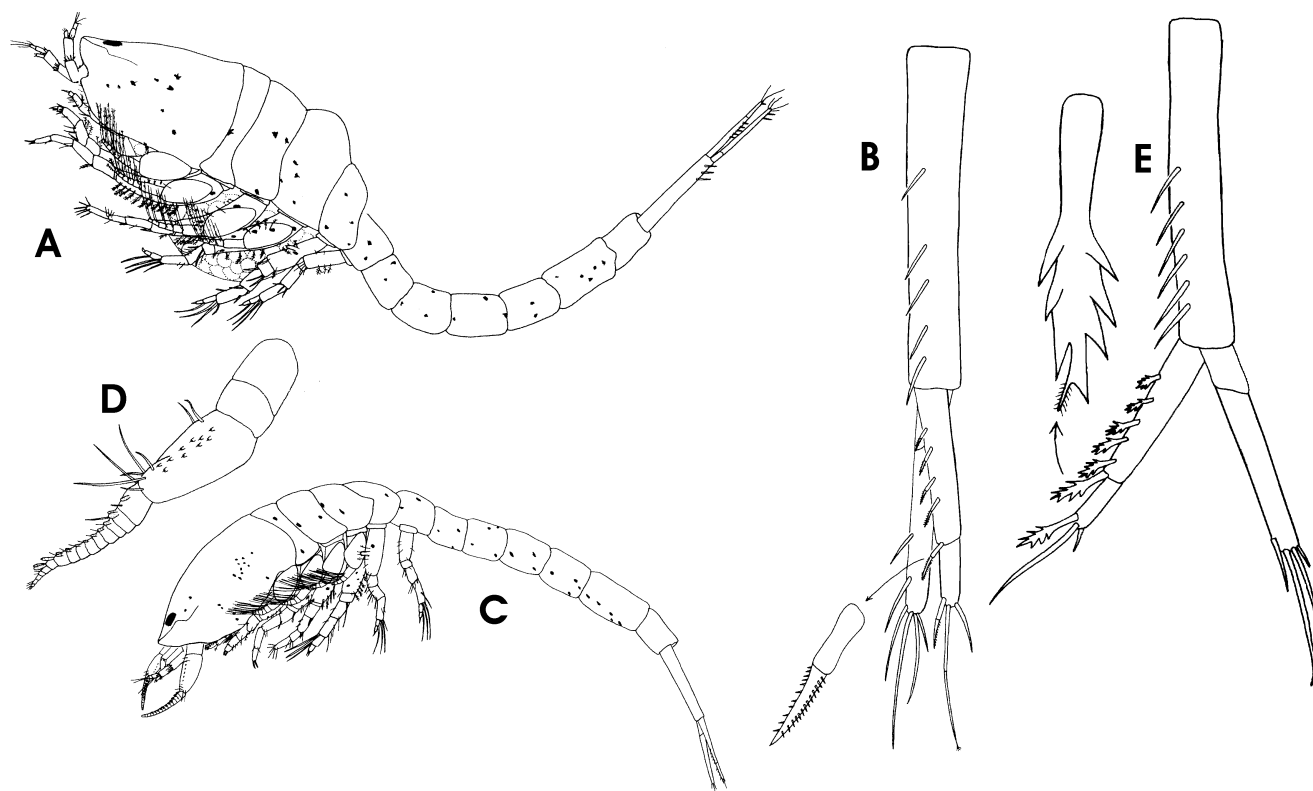


Fig. A-E. *Spilocuma watlingi* Omholt & Heard, 1979. **A-B**, ovigerous ♀. **A**, habitus in lateral view. **B**, uropod. **C-E**, adult ♂. **C**, habitus in lateral view. **D**, first antenna. **E**, uropod.

FAMILY LEUCONIDAE SARS, 1878

Genus *Eudorella* Norman, 1867

Eudorella monodon Calman, 1912

Eudorella sp. A

Genus *Leucon* Kröyer, 1846

Leucon americanus Zimmer, 1943

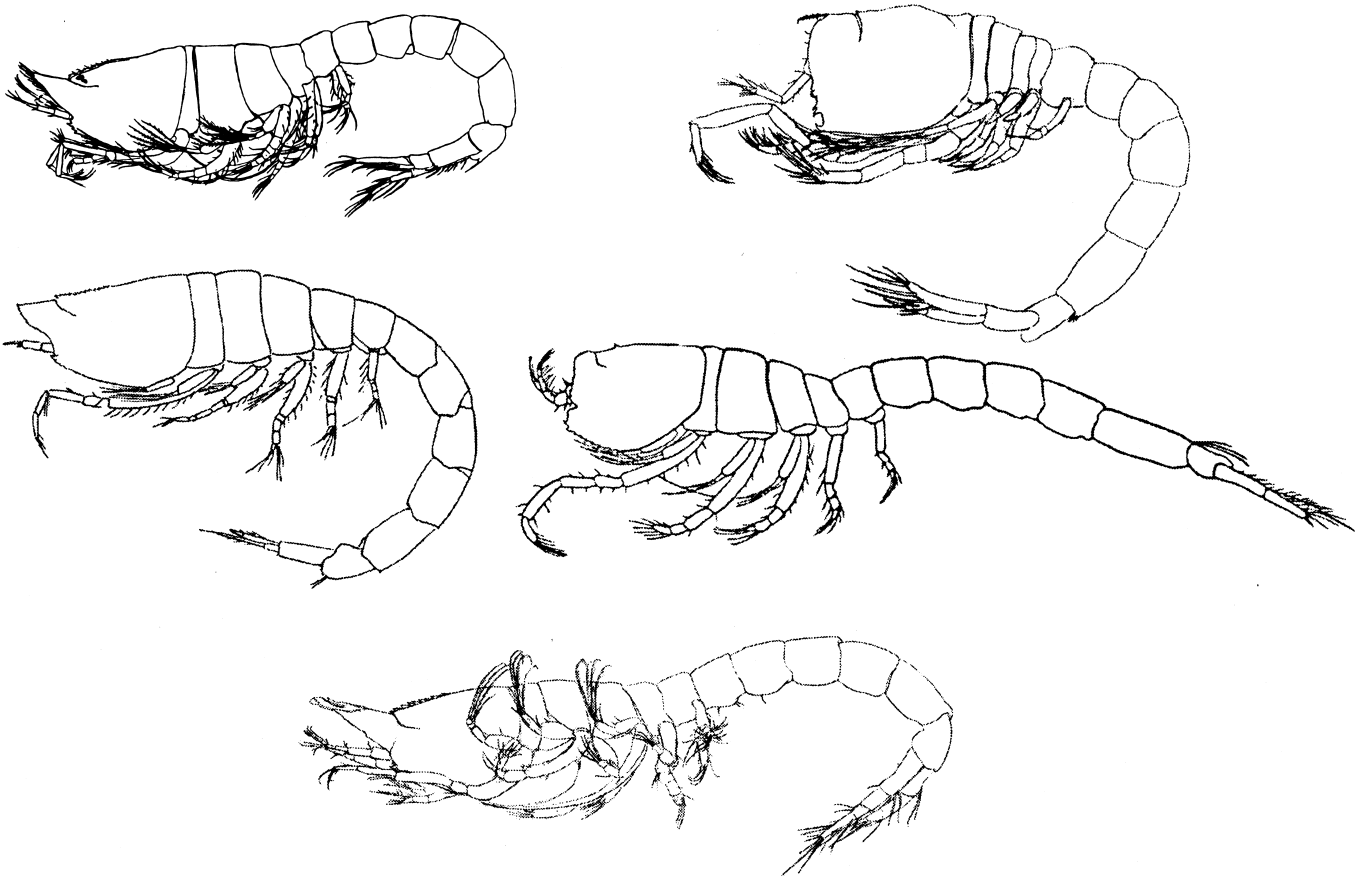
Leucon sp. A.

Leucon sp. B

FAMILY LEUCONIDAE SARS, 1878

At present the Leuconidae contains 12 genera and over 125 described species. The family is characterized by the (1) apparent absence of a telson (which like bodotriids and nannastacids is greatly reduced and fused with last abdominal segment), (2) males usually with two pairs of pleopods (occasionally one or none), (3) inner ramus of pleopods lacking external process, (4) male usually having five, rarely three, pairs of thoracic exopods, (5) mandible with broad base, (6) uropodal endopod composed of two, rarely one, articles, (7) second antenna of adult male composed of short to medium length articles, and (8) branchial apparatus lacking gill plates, and with or without gill supports.

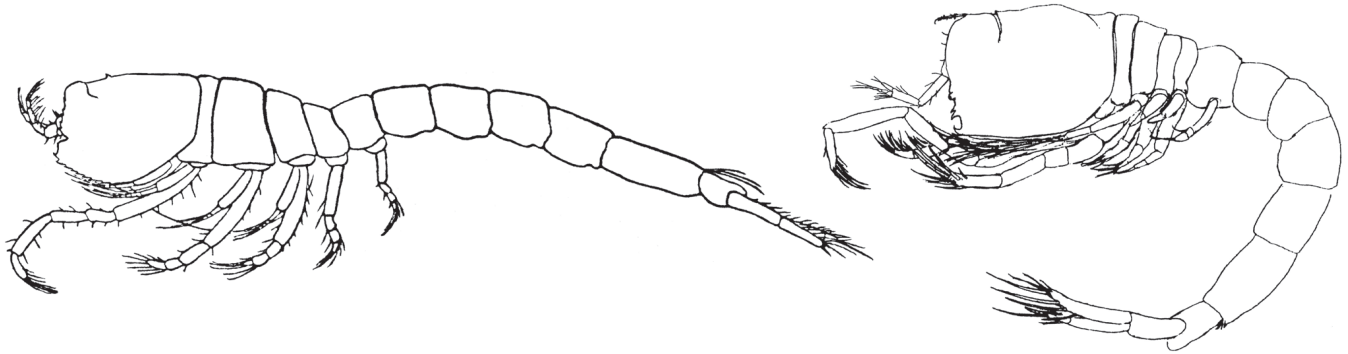
Leuconids are largely a deep-water group and several species representing at least six genera occur in the deeper shelf and slope waters off Florida (I. Petrescu and R. Heard, personal observations). Although more species are probably present, currently only four species representing two genera are recognized from Florida waters in depths of less than 100m.



Genus *Eudorella* Norman, 1867

The genus *Eudorella* is characterized by having (1) the anterior margin of cephalothorax with the pseudorostrum indistinct, curved backwards with siphonal opening dorsally, (2) and the antennal notch armed with a strong anterior tooth; and (3) antennule with article 2 broad, distinctly wider than article 3; inner flagellum short, not extending to distal third of outer flagella article 1.

Most of other members of this genus occur in cold water and deep-sea (<200 m) habitats (Jones); however, at least two species occur along the Florida coast in depths of less than 100m and one of the species is common resident of northern Gulf estuaries.



Eudorella monodon Calman, 1912

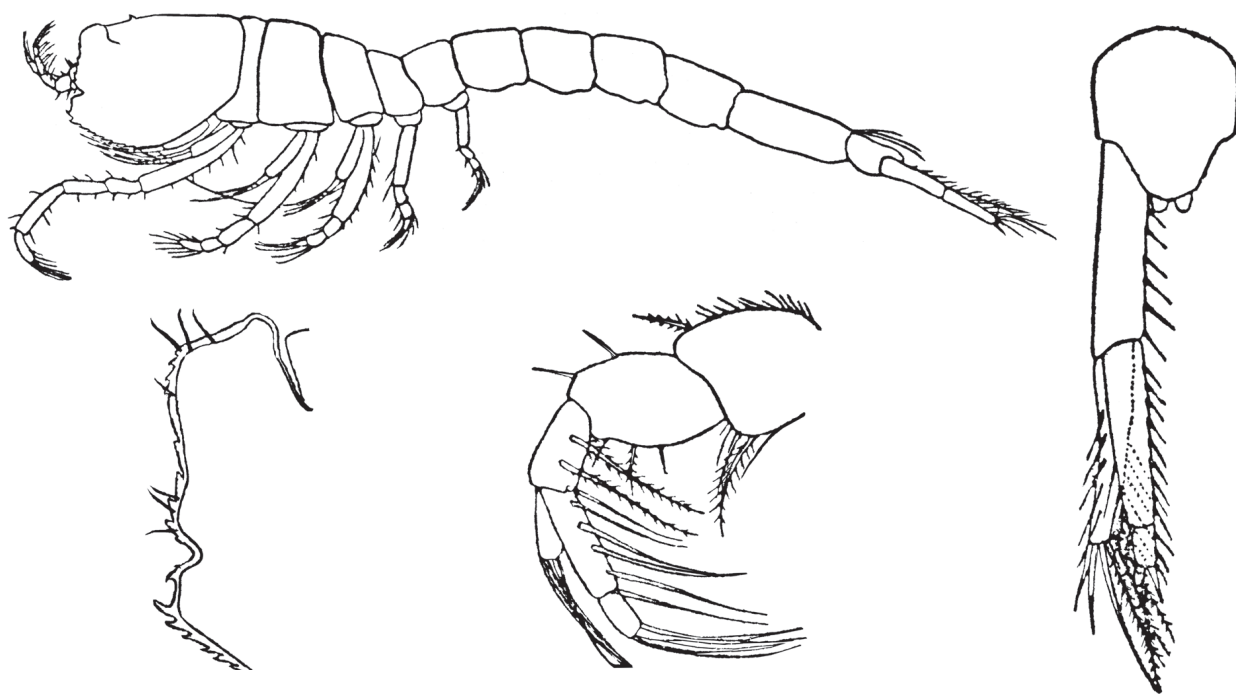
Synonymy: *Eudorella monodon* - CALMAN, 1912: 622, 623, figs. 21-24 (descr. ovigerous ♀). - STEBBING, 1913: 75, 78 (catalog). - ZIMMER, 1940: 264 (list). - BARNARD & GIVEN, 1960: 163 (key). - JONES, 1969: 159 (list). - FARREL, 1979: 409, 412, tabs. 2, 3 (new record: Timbalier Bay, Louisiana). - MODLIN & DARDEAU, 1987: 291-296, fig. 3, tabs 2, 3 (seasonal and spatial distribution in the Mobile Bay estuary, new record). - BACESCU, 1988: 138 (catalog). - DONATH-HERNANDEZ, 1988: 49, 50 (new record, Gulf of Campeche).- HOPKINS, VALENTINE & LUTZ, 1989: 113, 115, figs. 44c-d. - WATLING, 1991: 579 (key).

Syntypes: 2 ♀♀ (USNM 44111), beach near Calcasieu Pass, Louisiana.

Recognition characters: Adult female. Carapace with small, but distinct dorsal tooth just posterior to siphonal opening. Uropod with inner margin of peduncle having 5 - 6 setae, first article of endopod with 8 - 10 setae on inner margin.

Distribution/Ecology. Northern Gulf of Mexico inshore and near shore coastal areas of eastern Mexico (Bay of Campeche), Louisiana, Mississippi, Alabama, and western Florida Panhandle (T. Hansknecht, pers. obser.). It is known from mesohaline estuaries and bays and inner Continental Shelf waters on soft muddy or fine sandy silt substrata at depths of 2.5 to 63 m.

Remarks: This species was originally described from the coastal waters of Louisiana (Calman 1913; Farrel 1979, but since has been collected from eastern Mexico (Donath-Hernandez 1988), Alabama (Modlin & Dardeau 1987) and in Pensacola and St. Andrew Bays in Northwest Florida (T. Hansknecht, per. comm. 2007). It represents to be one of the few species of *Eudorella* known to tolerate warm temperate estuarine conditions; most other members of the genus occur in cold water and deep-sea habitats.



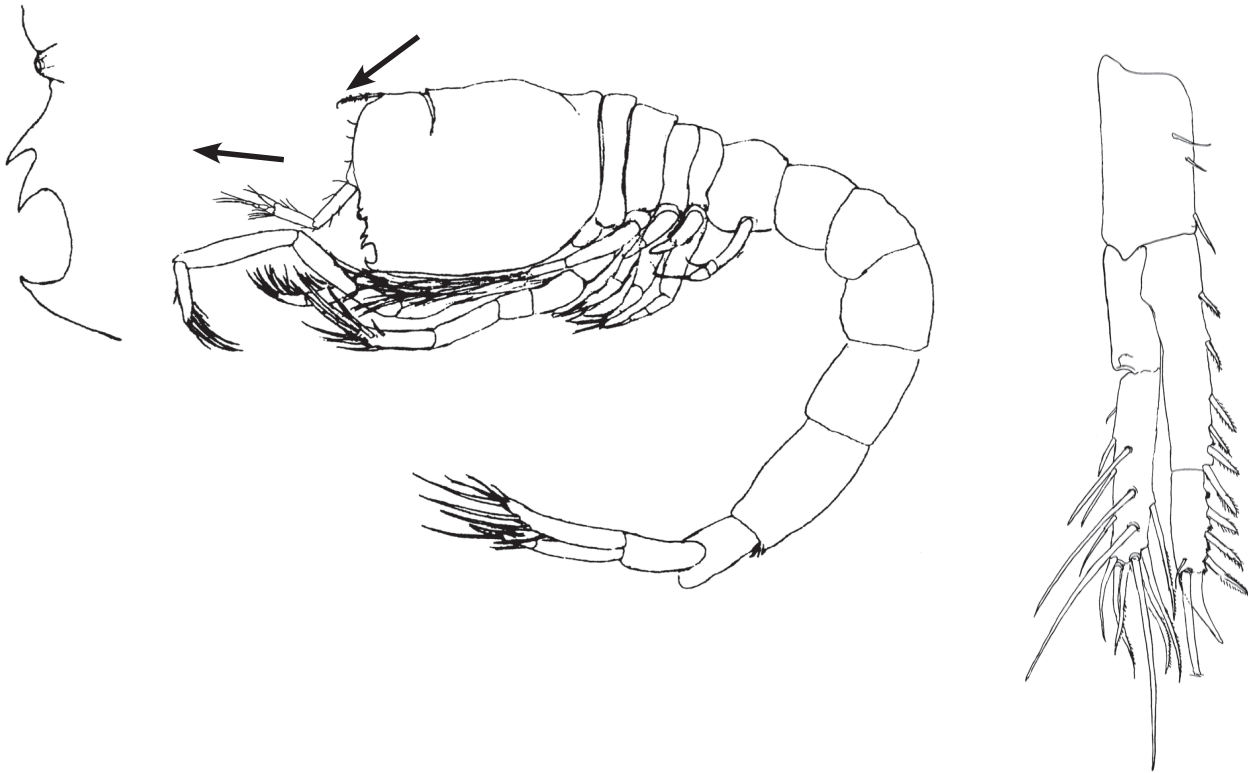
Eurodrella sp. A

Synonyms: none

Recognition characters: Subadult male. Carapace lacking blunt dorsal tooth posterior to siphonal opening, dorsal frontal region with anteriorly directed setulate seta. Uropod with inner margin of peduncle having 1 - 3 setae, first article of endopod with 5 - 6 setae on inner margin.

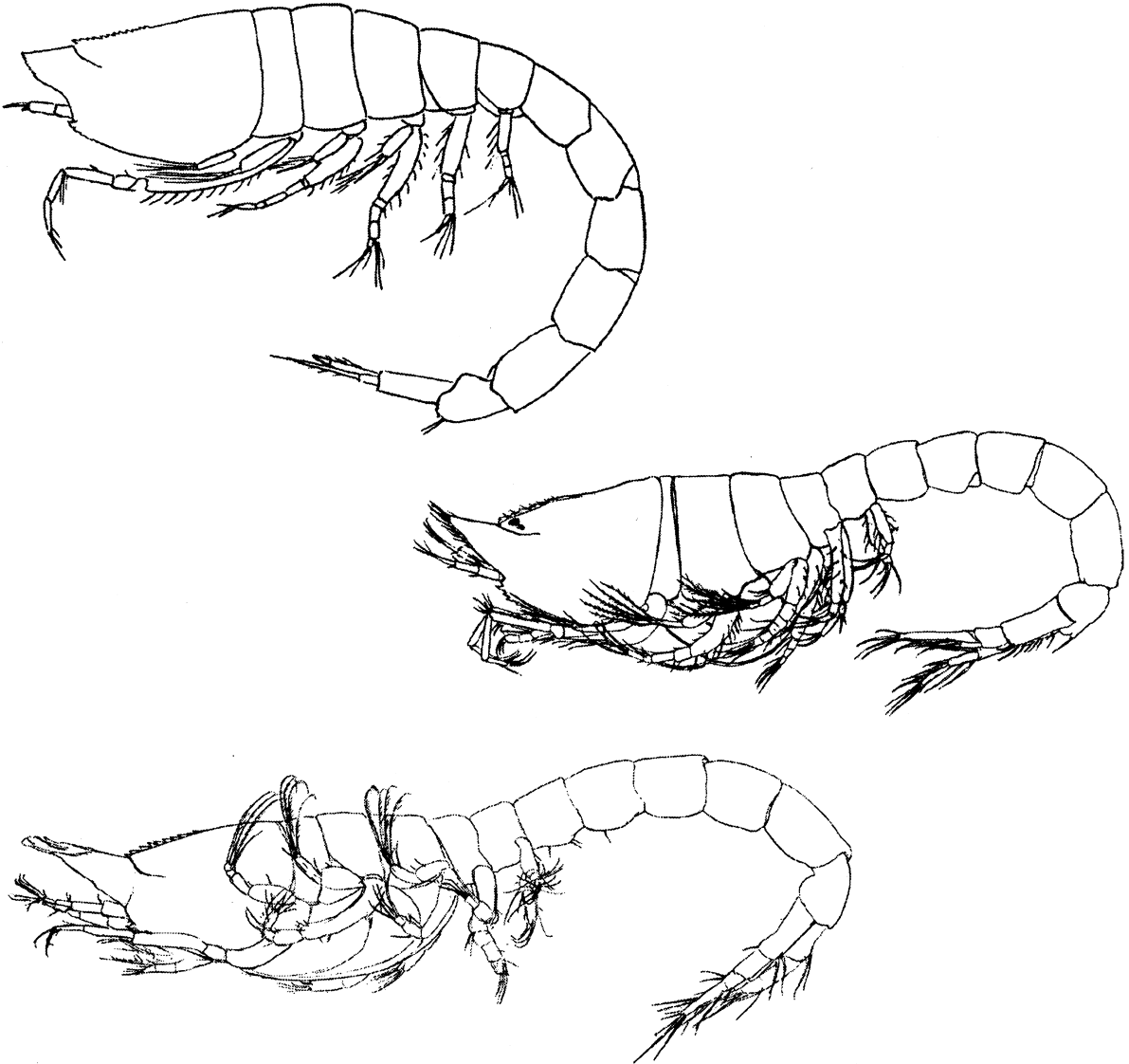
Distribution/Ecology. Eastern Gulf of Mexico, known only from a single sub adult male specimen collected of the Florida southwestern shelf off Charlotte Harbor (29 16.72' N – 83 12.81'W) on soft fine sand substrata at a depth of 90 m..

Remarks: This taxonomic status of this apparently undescribed species remains unknown until additional adult specimens of both sexes can be made available for study.



Genus *Leucon* Kröyer, 1846

This large genus, which contains over 70 described species, is represented world wide in coastal, shelf, and deep-sea environments. It is distinguished by having (1) the anterior margin of pseudorostrum distinct, subacute, directed forward with efferent or siphonal opening anteriorly or anterodorsally Carapace of female with mid-dorsal ridge armed with small spines; spines absent on males.



Leucon americanus Zimmer, 1943

Synonymy: *Leucon americanus* - ZIMMER, 1943: 141: 159,160 (descr. subadult ♀, adult ♂). - WIGLEY, 1964: 99, fig. 21 (key). - JONES, 1969: 159 (list). - VAN ENGEL, 1972: 145 (Chesapeake Bay, new records). - WATLING, 1979: 5, 10, 19, fig. 11 (key). - ZIMMER, 1980: 10,11, figs. 37-48 (English translation of 1943 Zimmer's description; new records: Long Island, NY). *Leucon* (*Leucon*) *americanus* - BĂCESCU, 1988: 152 (catalog, design LECTOTYPE). - WATLING, 1991: 570 (key).

Lectotype: ♂ (USNM 92102), Chesapeake Bay.

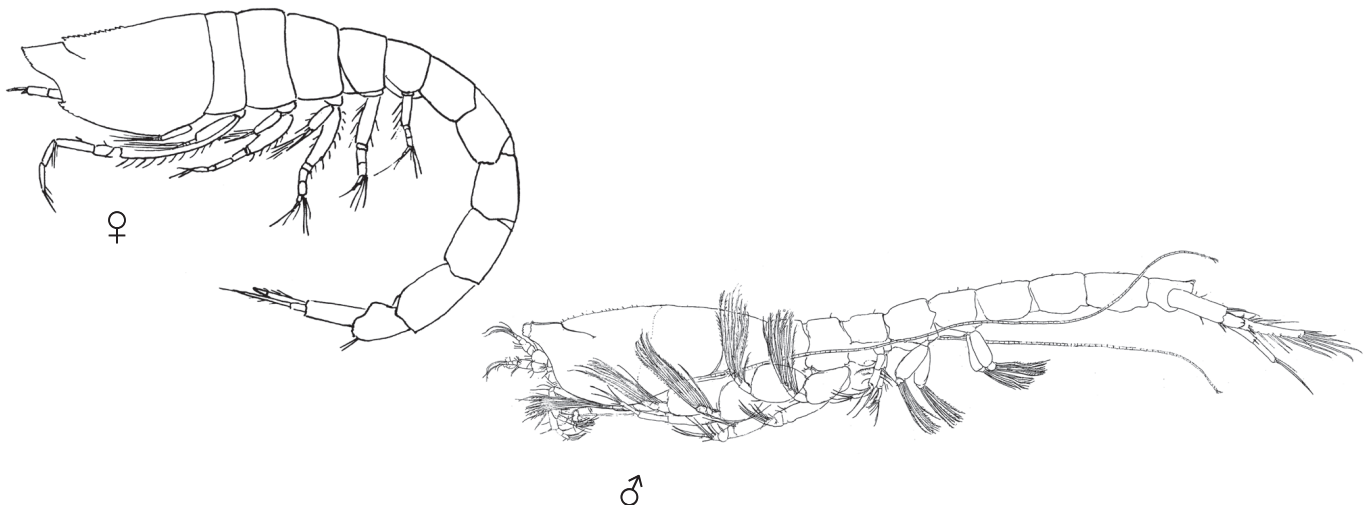
Recognition characters: Carapace of female with mid-dorsal ridge armed with small spines; spines absent on males. Pseudorostrum relatively stout, straight, not upturned, directed anteriorly. Uropod with exopod distinctly longer endopod; endopod with distal article having 0-2 spiniform setae (excluding inner terminal seta) on inner margin; exopod with dorsolateral surface bearing 4 to 5 setae on of surface with lateral margin bearing 3 long setae, inner margin with row of 4-5 long setulate setae.

Distribution: East coast of the United States (from Massachusetts NE Florida). 2.5-47 m, surface (Wigley 1964; Watling 1979; Zimmer 1943, 1980, present study).

Remarks: This species was originally described from Chesapeake Bay (Zimmer 1943), but has since then been recoreded from New England to South Carolina.. In Florida it usually occurs in the near shore waters of northeastern coast; it may be replaced in by another species (Maloney 199-?, unpublished MS thesis) in southeastern Florida.. Unfortunately, specimens from southeastern Florida were unavailable for study during the preparation of this guide.

Leucon americanus can be distinguished from its smaller sized and deeper water relative, *Leucon* sp. B, which at present is known only form the eastern Gulf of Mexico, by its short, relatively shorter and more truncate pseudorostrum and the setation of the uropods (see Key above).

There are some size and setation differences in the shallow water populations of *Lecuon americanus* from the type locality (Chesapeake Bay) and to those specimens previously attributed to this species from northern Gulf of Mexico, including the Florida Panhandle. Based on the differences in the setation of the uropod (see key above) and slightly turned up pseudorostrum, we tentatively treat the northern Gulf of Mexico (GOM) population as a similar, but distinct species



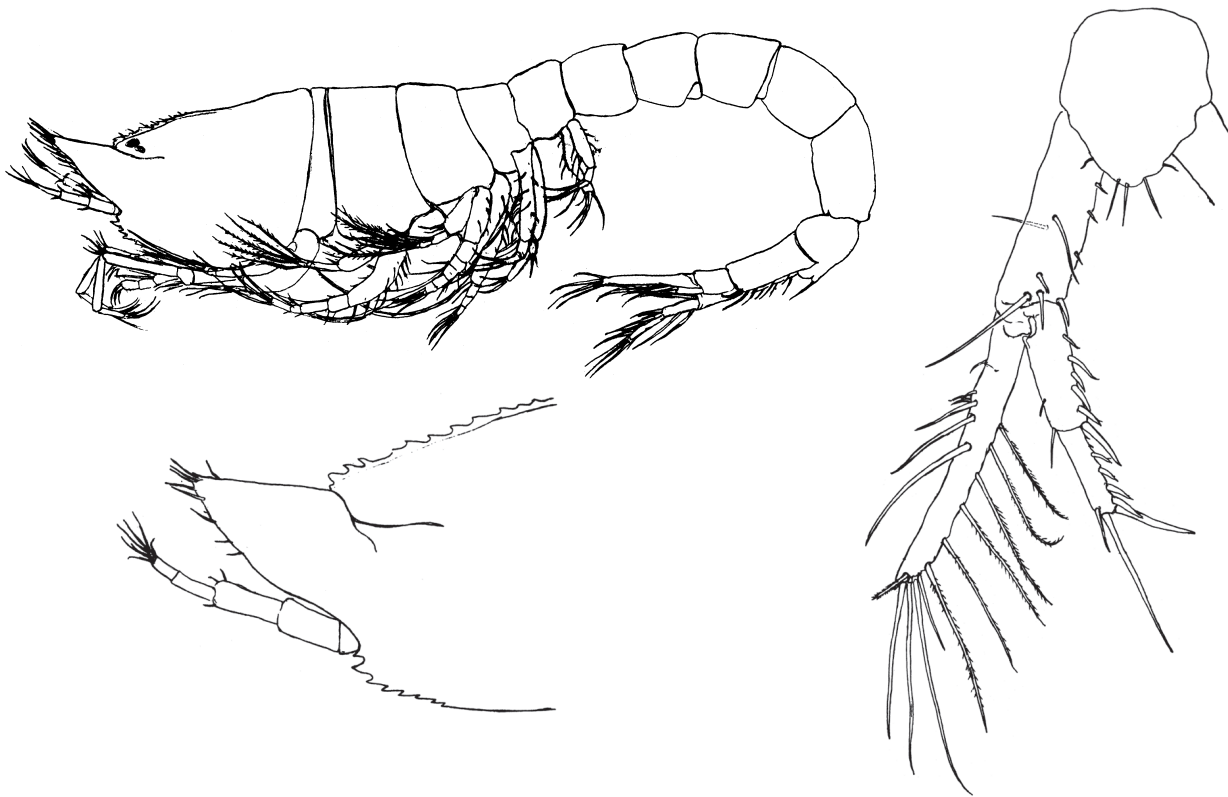
Leucon sp. A

Synonyms: *Leucon americanus* - MODLIN & DARDEAU, 1987: 291-296, fig. 3, tabs 2,3 (seasonal and spatial distribution in the Mobile Bay estuary, new record). - HOPKINS, VALENTINE & LUTZ, 1989: 113, 115, figs. 44a-b (key).

Recognition characters: Superficially similar to *L. americanus* in general size and shape of carapace. Carapace of female with mid-dorsal ridge armed with small spines; spines absent on adult males. Pseudorostrum relatively stout, slightly turned up, directed anteriorly. Uropod with exopod distinctly longer endopod; endopod with distal article having 3-4 spiniform setae (excluding inner terminal seta) on inner margin; exopod with mid lateral margin bearing 3 long setae, inner margin with row of 6-7 long setulate setae.

Distribution: Mississippi to NW Florida Gulf of Mexico, 1-10m. Modlin and Dardeau 1987; R. Heard and T. Hansknecht, per. obser.)

Remarks: During the preparation of this guide, we established or discovered reliable records for this apparently undescribed species in Mississippi and Northwest Florida waters (R. Heard and T. Hansknecht, per. obser.) It was previously reported as *Leucon americanus* from Alabama coastal water by Modlin and Dardeau (1987) and Hopkins et al. 1989. As mentioned under the remarks for *Leucon ameicanus*, there are differences in the setation and the orientation of the pseudorostrum between populations of *Lecuon americanus* from the type locality (Chesapeake Bay) and those from eastern and northwestern Florida. Whether a single variable species or a complex of cryptic species resembling *L. americanus* is represented in Florida coastal waters remains the subject for future detailed morphological and molecular studies.



Leucon sp. B

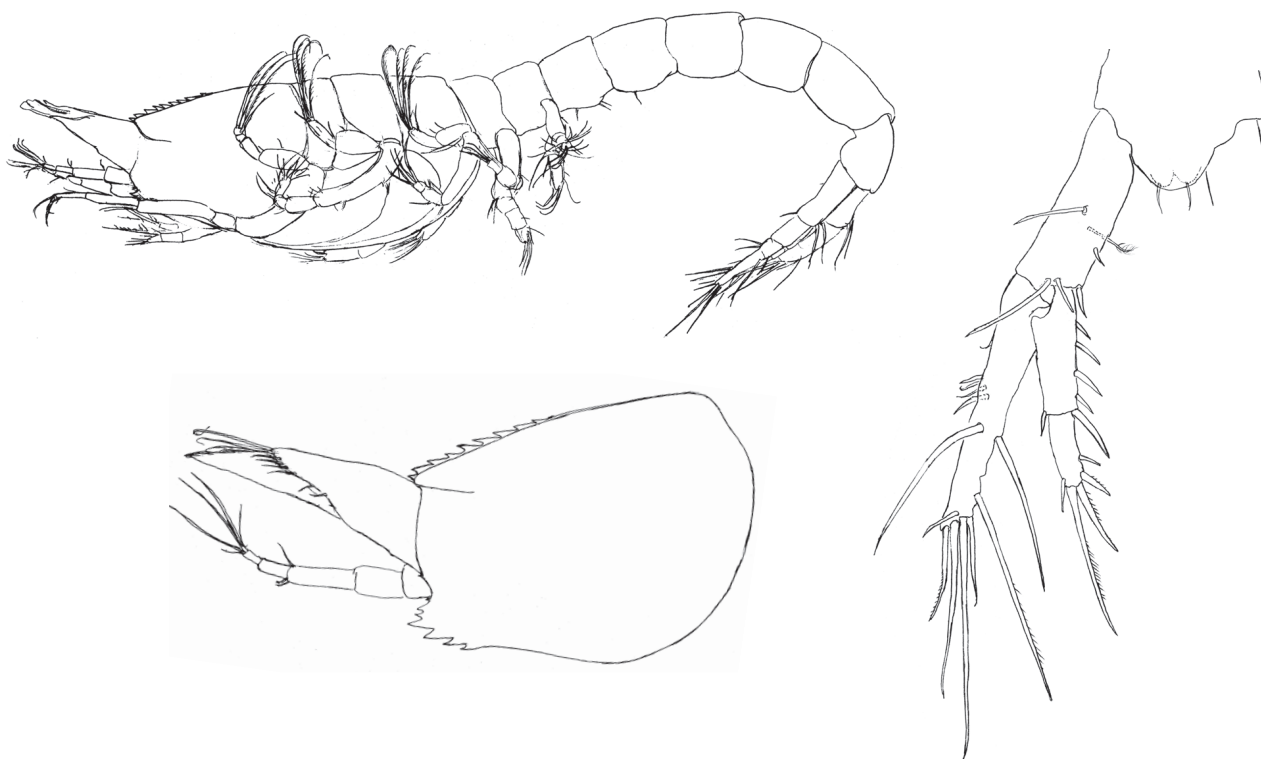
Synonymy: none

Recognition characters: Small species off shore, carapace length mm. Pseudorostrum distinct, subacute, directed forward with efferent or siphonal opening anterodorsally

Mid-dorsal ridge of female 8-9 acutely tipped small spines. Uropod with exopod distinctly longer than endopod; endopod with distal article having 1-2 spiniform setae (excluding inner subapical seta) on inner margin; exopod with mid lateral margin usually bearing 1 long setae; distal half of inner lateral margin with 2-3 long setulate setae.

Distribution/Ecology: Continental shelf of eastern Gulf of Mexico. Presently known from the off Mobile Bay (29 45 28.6' N, 87 46 30.3' W) to the southwest Florida shelf (25 16.90' N, 83 43.18' W) on very fine to coarse sand substrata at depths ranging from 28 to 88 m.

Remarks: The adult female of *Leucon* sp. B is distinctly smaller, usually less than 0.5 mm carapace length) than that of *L. americana* and *Leucon* sp. A, which usually have adult carapace lengths greater than 0.6 mm. Morphologically *Leucon* sp. B is distinguished from these two other species by having a narrower, more acute pseudorostrum and fewer setae on the uropodal exopod and endopod.



FAMILY NANNASTACIDAE BATE, 1866

Almyracuma group

Genus *Almyracuma* Jones & Burbank, 1959

Almyracuma bacesuci Petrescu & Heard, 2006*

Procampylaspis group

Genus *Procampylaspis*

Procampylaspis sp. A

Campylaspis group

Genus *Campylaspis* Sars, 1865.

Campylaspis heardi Muradian-Ciamician, 1980*

Campylaspis sp. A

Campylaspis sp. B

Campylaspis sp. C

Campylaspis sp. D

Campylaspis sp. E

Campylaspis sp. F

Campylaspis sp. G

Genus *Cubanocuma* Băcescu & Muradian, 1977.

Cubanocuma gutzui Băcescu & Muradian, 1977*

Genus *Normjonesia* Petrescu & Heard, 2001

Normjonesia danieli Petrescu & Heard, 2001*

Cumella group

Genus *Cumella* Sars, 1865

Cumella caribbeana Băcescu, 1971*

Cumella clavicauda Calman, 1911*

Cumella coralicola Băcescu, 1971*

Cumella garrityi Băcescu & Muradian, 1977*

Cumella pilosa Băcescu, 1971*

Cumella serrata Calman, 1911*

Cumella tripunctata Băcescu, 1971*

Cumella vicina Zimmer, 1944*

Cumella sp. A

Cumella sp. B

Cumella sp. C

Cumella sp. D

Cumella sp. E

Cumella sp. F

Cumella sp. G

Genus *Elassocumella* Watling, 1991

Elassocumella micropus (Zimmer, 1943)*

Genus *Schizotrema* Stebbing, 1912

Schizotrema agglutinanta (Băcescu, 1971)*

Schizotrema sp. A

Genus *Styloptocuma* Băcescu & Muradian, 1974

Styloptocuma heardi (Băcescu, 1979)*

* Previously reported from Florida waters

FAMILY NANNASTACIDAE BATE, 1866

The Nannastacidae, which represents one of the largest, most highly derived, and most diverse of the cumacean families, presently contains 30 genera representing over 360 species. Nannastacids are characterized by (1) the apparent lack of telson, which as in the bodotriids and leuconids, is vestigial and fused with the sixth abdominal segment, (2) the absence of pleopods, (3) five, rarely 4 or 3, pairs of exopods on the male and usually 3, rarely none or 4, pairs on the female, or present on first two pereopods and absent on maxilliped 3, (4) mandible typical or with styliform molar process, (5) uropod with uniramous endopod, (6) antenna with long flagella articles (over twice as long as wide), and branchial apparatus lacking gill plates and with or without gill supports.

Although no subfamilies have been formally recognized, based on several characters including the development of the antennae, the molar process of the mandibles, the first and second maxillipeds, the family appears to be paraphyletic. Based on these morphological features, we tentatively divide the nannastacids into four morphological groups, the *Almyracuma*, *Campylaspis* (see Petrescu & Heard 2001), *Cumella* /*Nannastacus*, and the *Procampylaspis* groups, all of which are represented in Florida waters.

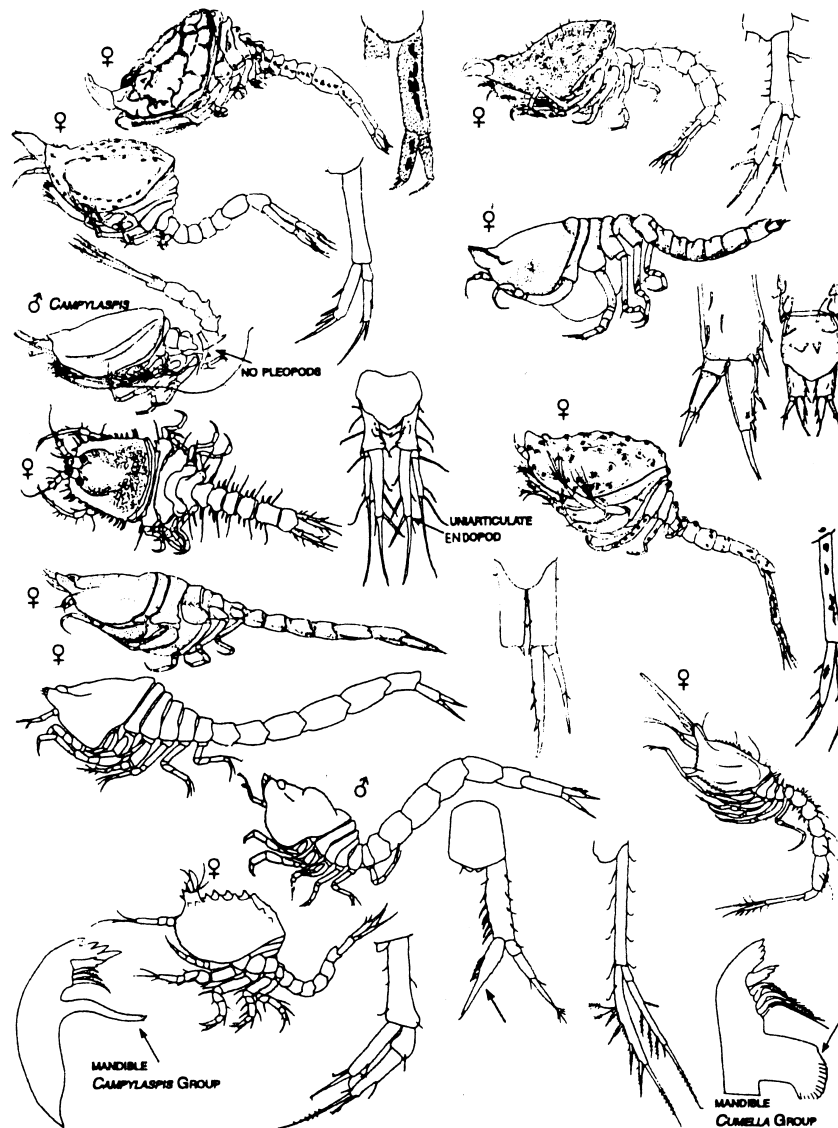
The "*Campylaspis* group" contains nine genera (*Bathycampylaspis* Mühlenhardt-Siegel, 1996; *Campylaspenis* Băcescu & Muradian, 1974; *Campylaspides* Fage, 1929; *Campylaspis*; *Cubanocuma*; *Floridocuma* Băcescu & Muradian, 1974; *Normjonesia*; *Paracampylaspis* Jones, 1984; and *Pavlovskeola* Lomakina, 1955). The group is distinguished from other members of the family Nannastacidae by a combination of characters, including (1) a greater length to body ratio (greater than 1:3), the apparent lack of a mid-dorsal ridge or crest, (2) a mandible having a styliform molar process (pars molaris), (3) maxilla 2 reduced and without endites, (4) maxilliped 1 with the carpus lacking spines, and (5) maxilliped 2 with a bulky propodus and distinctive dactyl as typified in *Campylaspis*. In Florida inshore to mid-shelf the large genus *Campylaspis* and two endemic monotypic genera, *Cubanocuma* and *Normjonesia*, are represented.

The genus *Procampylaspis* has affinities with the *Campylaspis* group, but is unique because of the presence of a pronged, rake-like dactylus on the second maxilliped. The members of this large genus are mostly confined to the depths of greater than 200 meters. Other distinctive characters of *Procampylaspis* include (1) a carapace usually covered with small bristle-like and curved setae to which fine sediment or detritus become attached, (2) an uncharacteristically elongate ischium (nearly as long as carpus) on the first pereopod, and (3) a broad uropodal endopod. A single species belonging to this genus is known from Florida mid shelf waters

Cumella/*Nannastacus* group is characterized by having mandibles with a subcylindrical molar process and usually containing species exhibiting a high degree of sexual dimorphism, often making it difficult to match males and females in mixed groups of species. The males have long, well-developed antenna and, with the possible exception of monotypic genus *Elassocumella* for which the male is unknown, well-developed exopods are present on maxilliped 3 and pereopods 1-4. Females, except for *Elassocumella*, have exopods on maxilliped 3 and pereopods 1-2. In Florida waters the *Cumella*/*Nannastacus* group is represented by the genera *Cumella*, *Elassocumella*, *Schizotrema*, and *Styloptocuma*.

The genus *Almyracuma* in many ways resembles members of the *Cumella/Nannastacus* group, but the male antenna is greatly reduced and not involved in the mating process. Instead the third maxilliped and the first pereopod are greatly enlarged as an adaptation for clasping the female during amplexus and subsequent mating. *Almyracuma* further differs from the members of the *Cumella/Nannastaicus* group by having only 3 pairs of exopods on the pereopods of the male.

In Florida waters nannastacids are the largest cumacean family occurring from near shore to depths of less than 100 m. Within this depth range, nine genera containing 31 species, 15 nominal species and 16 apparently new species, are treated in this guide. Based on examination of additional material, the number of species actually occurring in Florida near shore and shelf waters may well be over 50 species, most of which appear to be referable to the genus *Cumella sensu lato* (R. Heard, per. observations).



Almyracuma bacescui Petrescu & Heard, 2005

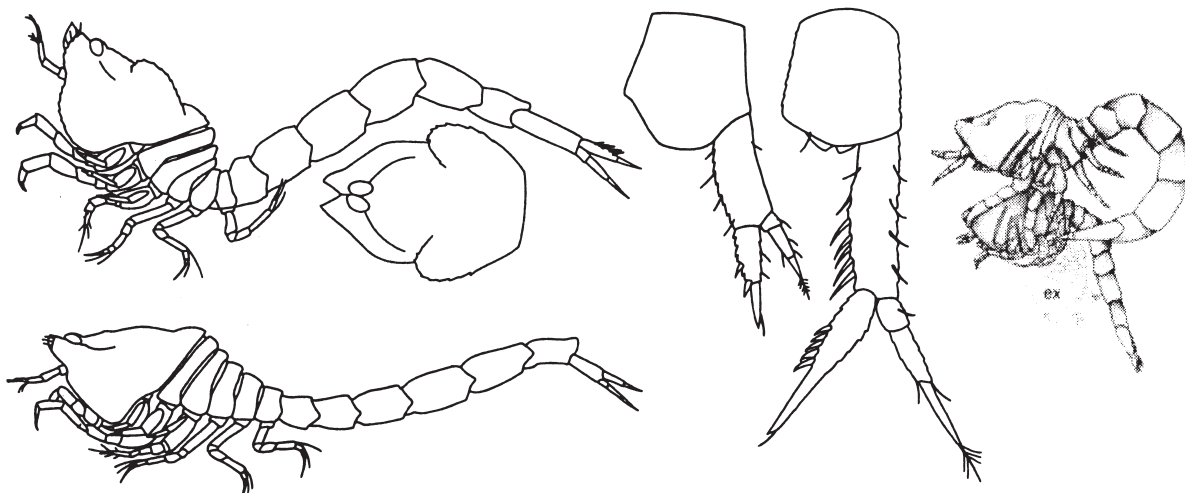
Almyracuma bacescui Petrescu & Heard, 2004: 104-108, figs 4,5 – *Almyracuma proximoculi*.-STEARNS & DARDEAU, 1990: 98, fig. 6, tab. 1 (vertical migration, new record: Fowl River estuary, Alabama). - HOPKINS, VALENTINE & LUTZ, 1989: 113, 118, figs. 44e-f (key). BĂCESCU, 1992: 176 (catalog).–*Almyracuma* sp. McBEE & BREHM, 1979: 213 (in list of benthic fauna found in Simmons Bayou, Mississippi).– HEARD, 1992: 31, fig. 33 ("very similar to *A. proximoculi*", "Gulf of Mexico from Florida (St. Marks) to Louisiana."). BĂCESCU, 1992: 176 (catalog).– Horlick & Subrahmanyam. – HORLICK & SUBRAHMANYAM, 1983: 82 (list, new record: St. Marks, Fla.).

HOLOTYPE: female USNM 1068553 " Louisiana, salinity not detectable (< 1 ‰), 17.02.1982". Numerous PARATYPES: (USNM 10668554), MHN "Gr. Antipa" CUM 1582; GCRL 2267, 2268, 2269 2270, 2271.

Distribution.– Tampa Bay, FL northwestward to Lake Pontchartrain, LA. Salinity range < 1 ‰ to 25 ‰. Depth range 05 to 9 m.

Recognition characters.– Maxilla with movable endites. Maxilliped 1 with carpus bearing 5 flattened setae along inner margin, dactyl well-developed. **Female:** Carapace without dorsolateral "wing-like" processes. **Male:** carapace having a pair of dorsolateral short "wing-like" processes, vestigial (rudimentary) antenna. Maxilliped 3 and first pair of pereopods large, strongly developed for clasping female during amplexus (see figure of mating pair of *A. proximoculi* below). Exopods present on maxilliped 3 and first 2 pereopods in **both** sexes.

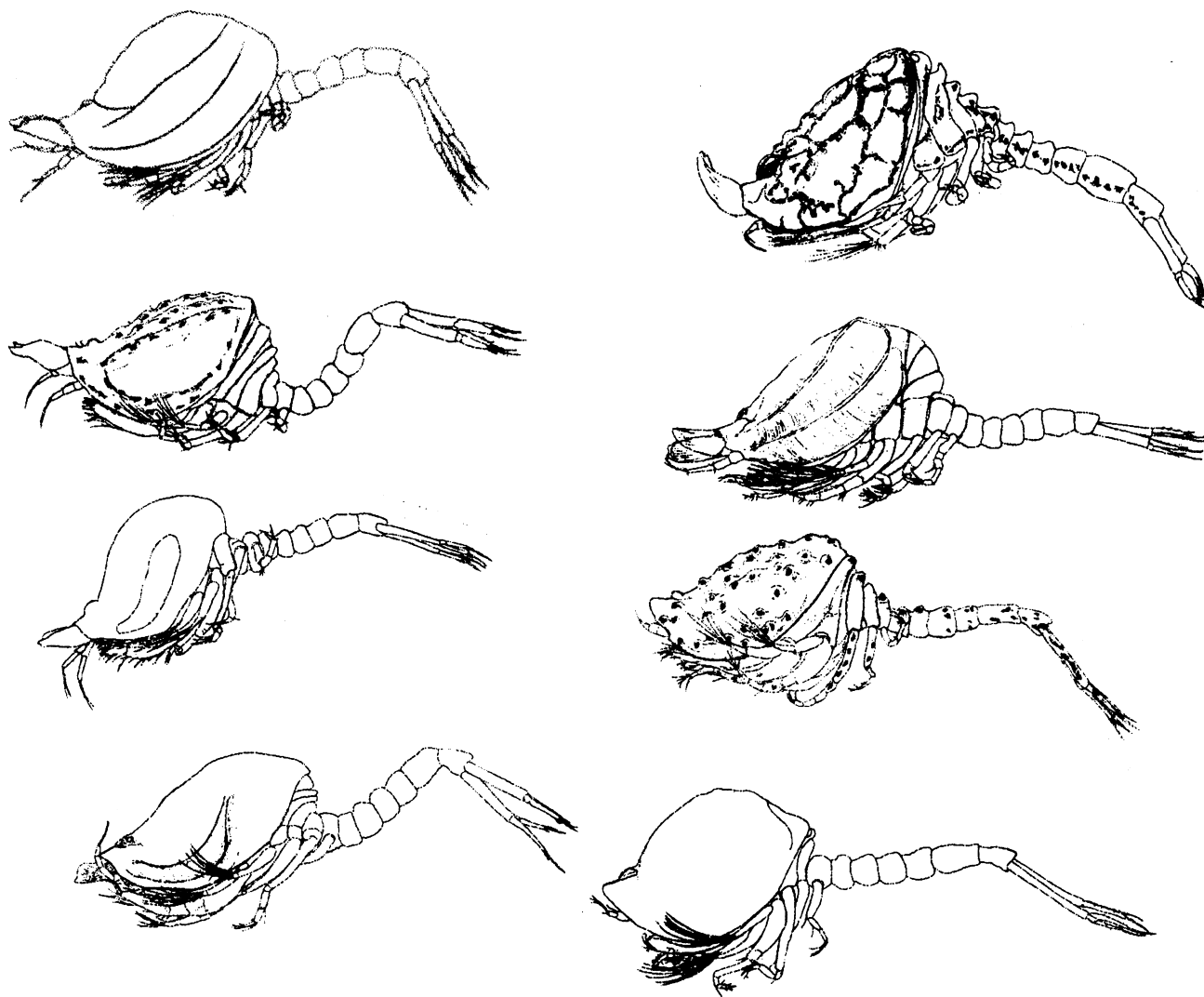
Remarks.– *Almyracuma bacescui*, the second known member of the genus, was recently described from the inshore waters of the northern and eastern Gulf of Mexico, including West Florida (Petrescu & Heard 2005). This euryhaline species has been collected in tidal freshwater as well as open bays with salinities above 25‰. The other species, *A. proximoculi*, is reported in fresh and brackish water habitats along the US East coast from Vermont to North Carolina (see Petrescu & Heard 2005).



Genus *Campylaspis* Sars, 1865

The genus *Campylaspis* appears to be paraphyletic assemblage representing well over 100 species. Members of the genus are known worldwide over wide range of depths from shallow inshore waters to the abyss. The genus is characterized by a mandible with a styliform molar process, maxilliped 2 having basis fused with ischium, propodus geniculate (articulated at right angle with carpus). Males have 5 pairs of well-developed exopods; females have 3 pairs.

In Florida waters there is one described species, *Campylaspis heardi* Muradian-Ciamician, 1980, and at least seven apparently undescribed species. Also there are several additional undescribed species that occur on outer shelf and upper slope off Florida's Atlantic and Gulf coasts.



Campylaspis heardi Muradian-Ciamician, 1980

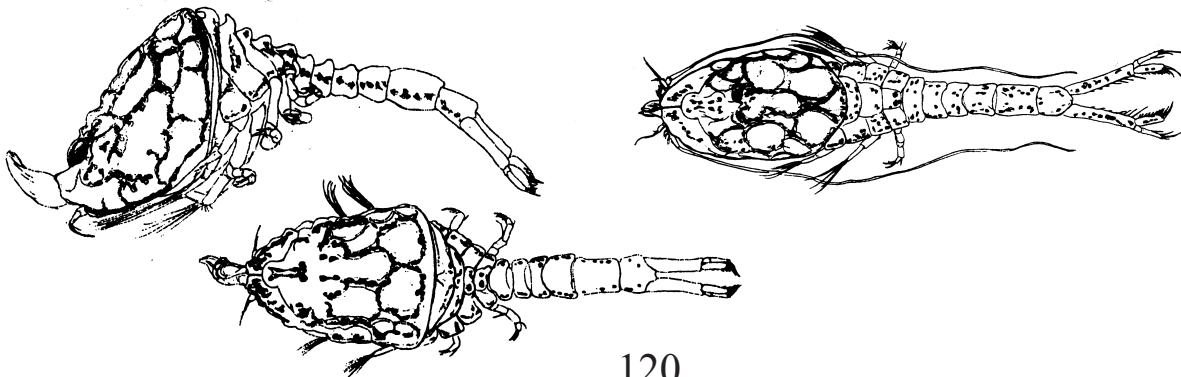
Synonymy.— *Campylaspis (Bacescua) heardi* - MURADIAN-CIAMICIAN, 1980 adult female. - DONATH-HERNANDEZ, 1988: 49, figs. 1980: 84, figs. 89-103 (descr. male; new records: Quintana Roo, 89-103 (descr. adult Gulf of Campeche). - MARKHAM et al., 1990: 411, 412 (list). - PETRESCU, 1992: 275 (catalog). PETRESCU & male, ILIFFE, 1992: 298-300, figs. 9a-g, 10a-d (descr. adult new record: Andros Island, Bahamas). PETRESCU, ILIFFE & SÂRBU, 1993: 393 (new record: Jamaica Island). PETRESCU, 2002: 164 (new record: Belize). PETRESCU: 121 (new record: Honduras). *Campylaspis heardi* BACESCU, 1992: 190 (catalog).
HOLOTYPE: adult female MHN "Gr. Antipa 49221, "BLM MAFLA St. 2531, 29° 47' 58.9", 86° 09' 28.9" 45m, coarse sand,, Gulf of Mexico, Sept 1977, . **PARATYPES:** from type locality, 1 adult , 1 juvenile MHN female "Gr. Antipa 413a.

Distribution.— Northeastern **Gulf of Mexico**, Bahamas, Jamaica, Quintana Roo, Gulf of Campeche, Belize, Honduras. 2-164 m, night zooplankton.

Recognition characters.— **Female:** Body pigmented with reddish granules. Carapace with depressions, 7 hexagonal and pentagonal in shape and 2 lateral, depressions surrounded and clearly outlined with pigmented carinae. First free pereonites with medio-dorsal bifid crest. Maxilliped 2 with spiniform setae of dactylus shorter than robust seta of propodus. Maxilliped 3 with merus longer than basis. Pereopods with robust articles. Pereopod 1 with basis shorter than half of appendage, merus second longest article. Pereopod 2 with dactylus as long as carpus and twice as long as propodus. Uropod with broad peduncle, with few fine setae, twice as long as last pleonite and enopod. Endopod slightly longer than exopod, with 3 stout micro serrate spiniform setae on inner margin, exopod and endopod with short stout terminal spiniform seta.

Male: As in female body pigmented with reddish granules, pigmented carinae outline depressions on carapace. Carapace not vaulted with shallower and not completely pentagonal or hexagonal in dorsal shape. Antenna 2 with flagellum extending beyond uropodal peduncle. Uropodal peduncle with serrate margins, 2.6 longer than last pleonite, with 3 plumose setae on distal end, exopod, , with 2 plumose setae on inner margin; , endopod slightly longer than exopod, shorter than ½ of peduncle, with 10 micro serrate spiniform setae on inner margin, terminal micro serrate spiniform setae longer than in female.

Remarks.— The distinctive pigmentation patterns and ornamentation of carapace easily distinguish this species from the other species known from Florida waters.

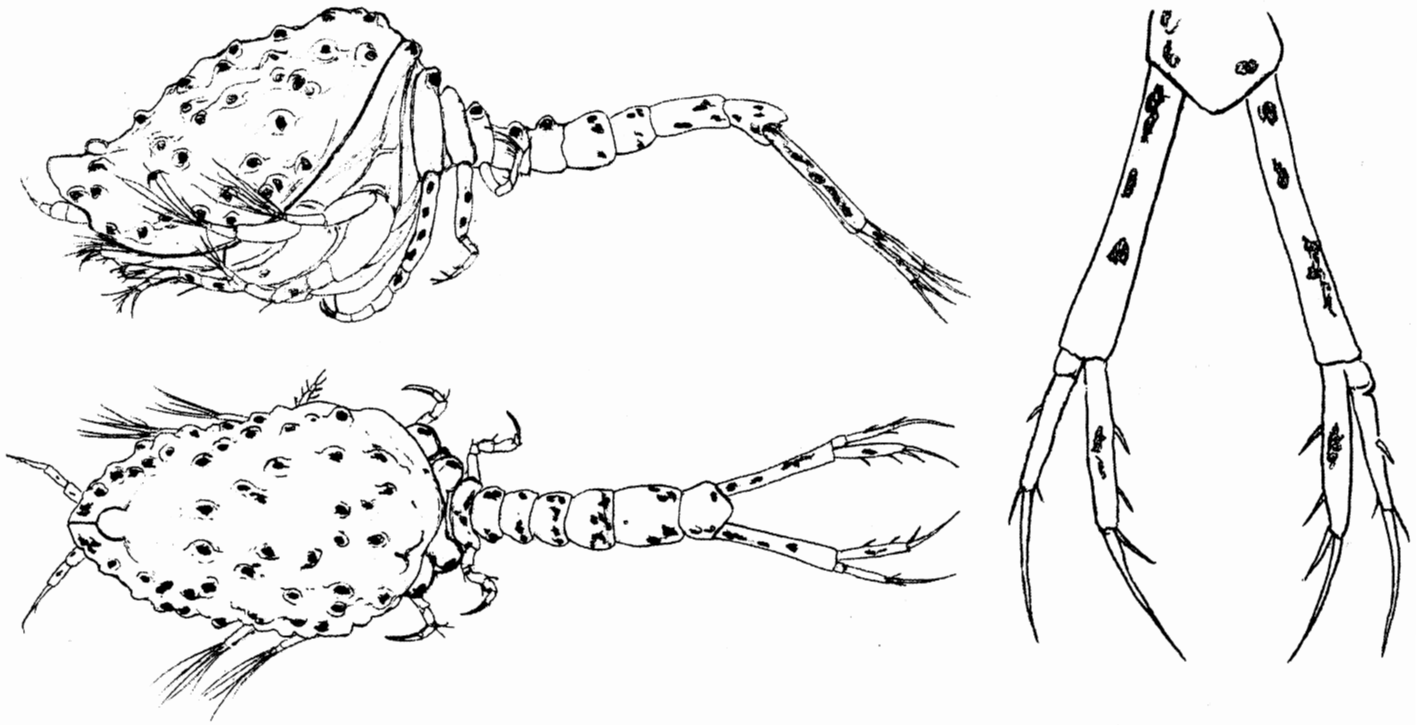


Campylaspis sp. A

Recognition characters.- Body covered with small pigmented tubercles. Carapace with sides rounded, convex, without carina. Uropod with peduncle less than 1.5 longer than endopod, inner margin lacking distinct setae; endopod with 3 setae on inner margin, second setae **not** extending distally past bases of subterminal and terminal setae, terminal seta nearly as long rest of ramus; exopod with 1 small lateral seta, 2 terminal seta (outer slender seta about 1/3 length of inner seta), 1 small subterminal seta on inner margin.

Distribution: SW Florida shelf off Florida Bay in depths of 20-60m.

Remarks.- *Campylaspis* sp. A belongs to the *verrucosa* group of Jones (1984), which contains about 30 nominal species worldwide.

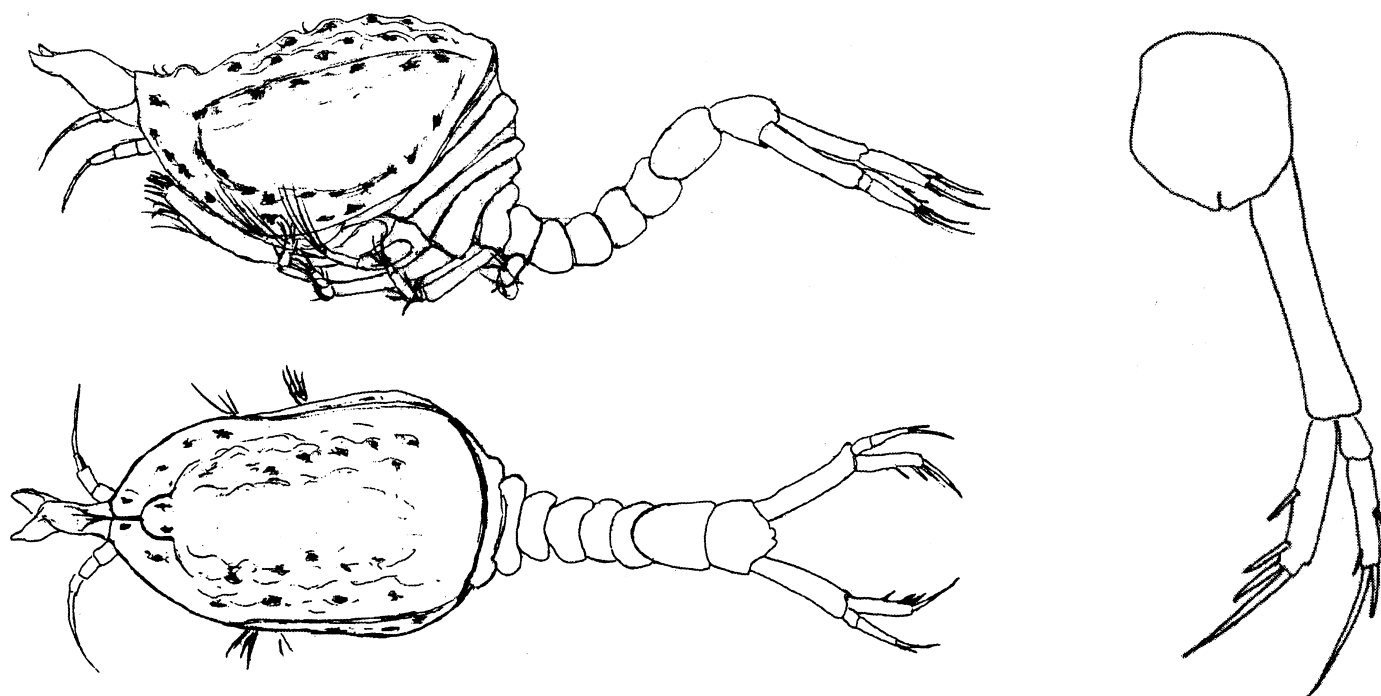


Campylaspis sp. B

Recognition characters.-Carapace with sides shallowly concave with dorsolateral carina, small pigmented tubercles present dorsally and along margins of shallow lateral concavities. Uropod with peduncle about 1.5 longer than endopod, inner margin lacking distinct setae; endopod with 3 setae on inner margin, second setae extending distally well past bases of subterminal and terminal setae, terminal seta nearly as long rest of ramus; exopod with 1 small lateral seta, 2 terminal seta (outer less than half length of inner), 1 subterminal seta on inner margin.

Distribution.- Southwest Florida shelf in depths 20-100 m.

Remarks.- *Campylaspis* sp. B is one of most common species occurring on the SW Florida shelf. It appears to have its main affinities to the *verrucosa*-group of Jones 1974); If, however, the shallow lateral concavity on each side of the carapace is homologous with a sulcus it, maybe intermediate between *verrucosa* and *sulcata* groups.

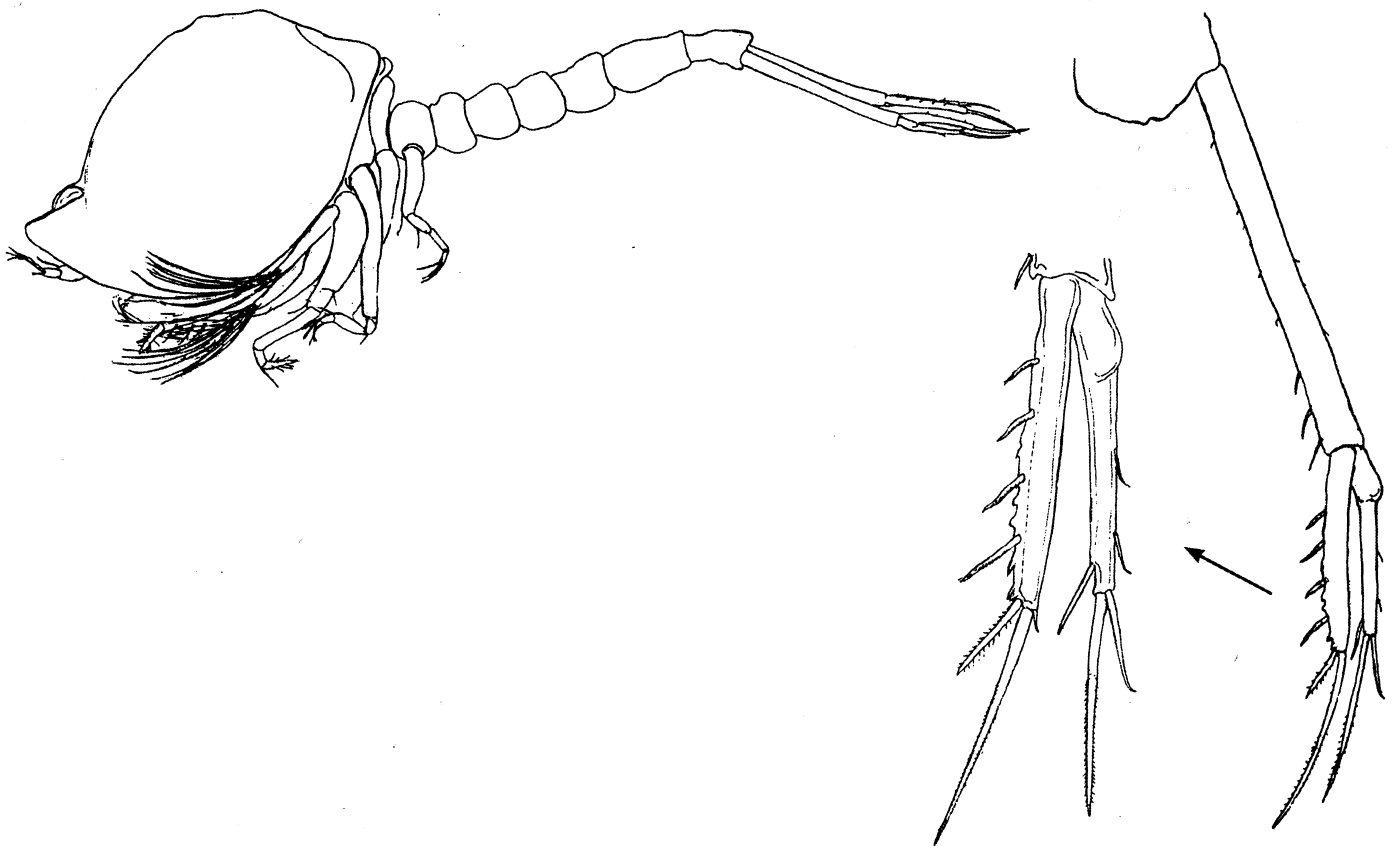


Campylaspis sp. C

Recognition characters.- Carapace relatively smooth and rounded with pair of inconspicuous dorso-ventral carina near posterior margin. Uropod with peduncle relatively long and narrow, about twice as long as endopod, inner margin with 7-8 setae along inner margin, 3 distal most setae distinct, becoming larger distally; endopod with inner margin having 5 narrow spiniform setae becoming larger distally, distal most subapical, less than half length terminal seta, terminal seta over $2/3$ length of rest of endopod; exopod with 2 small lateral seta, 1 subapical seta on inner margin and 2 terminal setae, outer being about half length of inner.

Distribution.- Southwest Florida shelf in depths of 40-80 m.

Remarks.-*Campylaspis* sp. C appears to belong to the *rubicunda*-group of Jones (1974), which is presently composed of more than 25 species and characterize by having smooth the carapace "smooth, without lateral depressions, and with at most a pair of low rounded protuberances or with small granulations." There is another species belonging to this group found along the Florida East coasts, but it is only known from depths greater than 100 m.

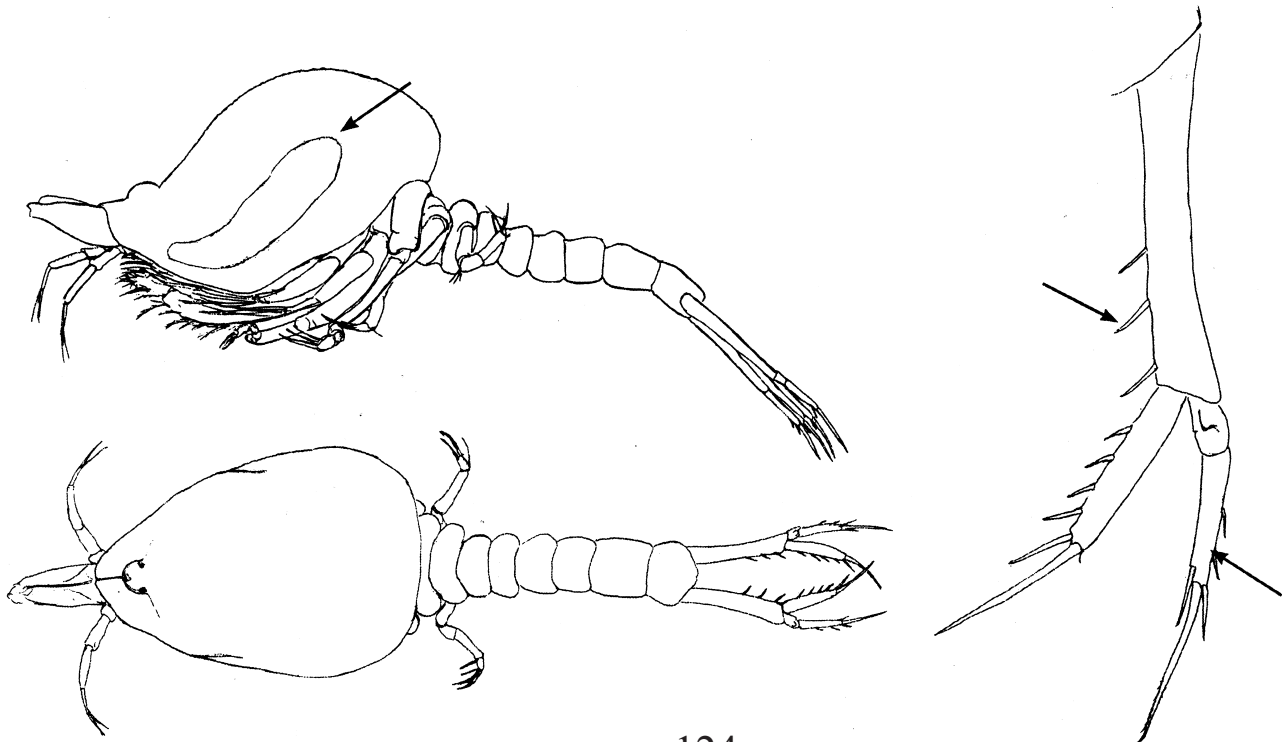


Campylaspis sp. D

Recognition characters.-Carapace high, dorsally inflated, with sulcus running laterally from near ventral margin just below ocular lobe dorsolaterally into posterior 1/3 of cephalothorax; sulcus with rounded margins, widest posteriorly. Uropod with peduncle with 3 or 4 narrow spiniform setae on distal half of inner margin; endopod with 5 narrow spiniform setae increasing in length distally, forth setae extending to, or just beyond, bases of fifth subdistal seta and inner terminal seta, inner terminal setae nearly as long as rest of ramus, out terminal seta minute; exopod with 2 lateral setae and 1 well-developed subapical seta on inner margin, 1 well-developed subdistal seta on inner margin, 2 terminal setae (outer seta about 1/3 length of inner seta), larger inner terminal seta subequal in length to rest of ramus.

Distribution.- Southwest Florida shelf in depths of 40-80 m.

Remarks.- This species superficially resembles *Campylaspis caribbeana* Petrescu, 2002, which is known only from Belize, and *Campylaspis* sp. G, which like *Campylaspis* sp. D is known from the shelf waters of Southwest Florida (present study). *Campylaspis* sp. D is distinguished from *Campylaspis* sp. G by the sulcus having rounded margins and being widest posteriorly; whereas, in *Campylaspis* sp. G the sulcus is constricted posteriorly. Also in and the forth seta on the uropodal endopod extends to or beyond the bases of the 5th seta and the terminal seta; in *Campylaspis* sp. G and 4th seta on the uropodal endopod does not extend to or beyond the bases of the subapical 5th seta and terminal seta. *Campylaspis* sp. D differs from *Campylaspis caribbeana* by having a more dorsally inflated carapace and differences setation and morphology of the uropod. The presence of a lateral depression or sulcus on either side of the carapace places *Campylaspis* sp. D, along with *Campylaspis caribbeana* and *Campylaspis* sp. G, within the *sulcata*-group proposed by Jones (1974). This relatively large group, which contains over 25 nominal species, is widely distributed throughout the world's oceans.

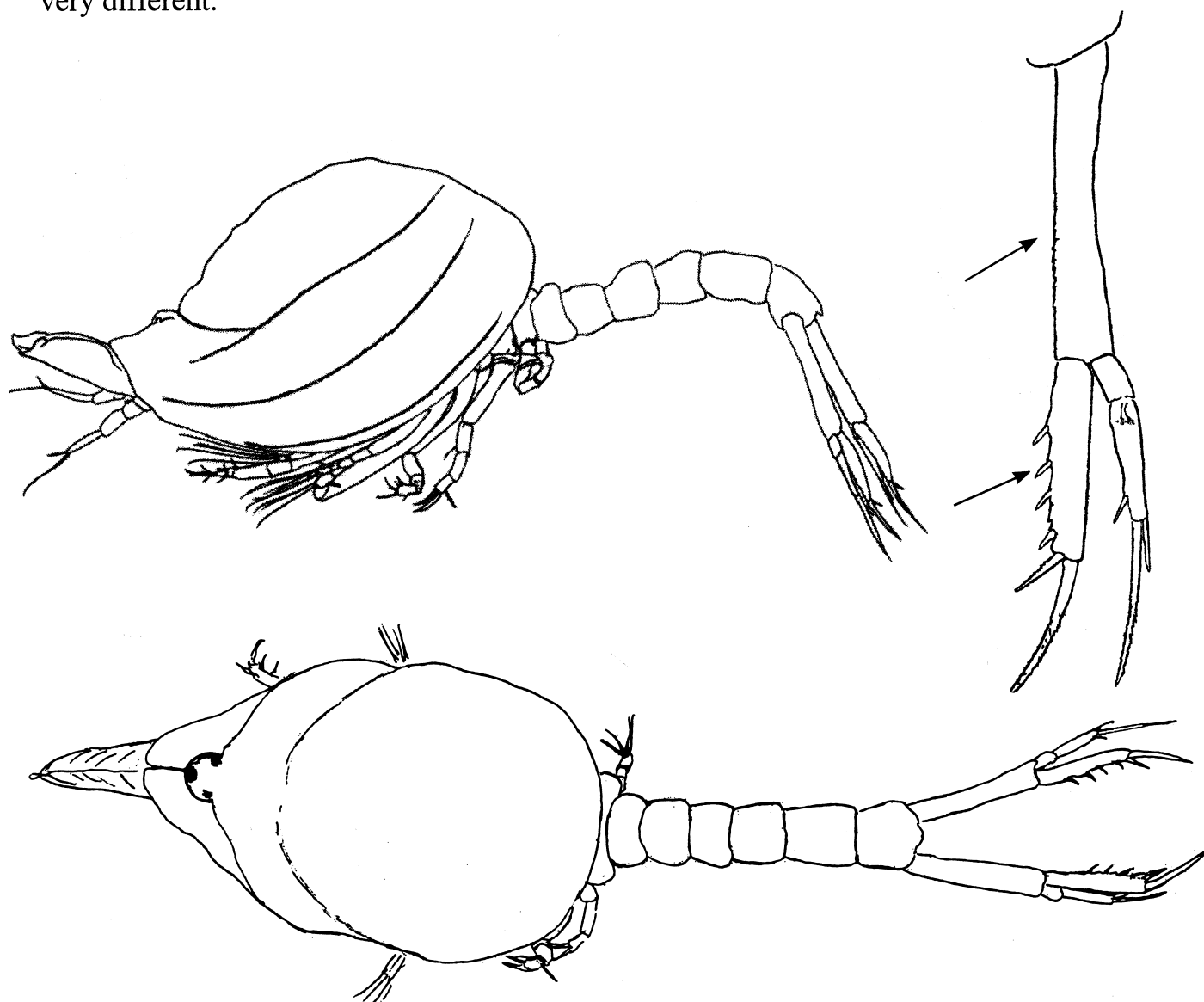


Campylaspis sp. E

Recognition characters.- Carapace dorsally convex with 3 lateral ridges (1 dorsolateral merging with posterior part of frontal lobe, 1 lateral, and 1 ventrolateral) bordering 2 large shallow lateral grooves. Uropod with peduncle having inner margin lacking distinct setae; excluding inner terminal seta, endopod having inner margin with 4 stout spiniform setae (not noticeably increasing in size distally), inner terminal seta more than twice length of distal most lateral seta.

Distribution.-Southwest Florida Shelf in depths of 34-80m.

Remarks.-Because its carapace has three lateral ridges, including the one along ventrolateral margin, and tubercles are not present, *Campylaspis* sp E. appears to belong to the *costa*-group. The carapace of this apparently new species is reminiscent of the deep-water species *C. bicarinata* Jones, 1974, but the uropods of these two species are very different.



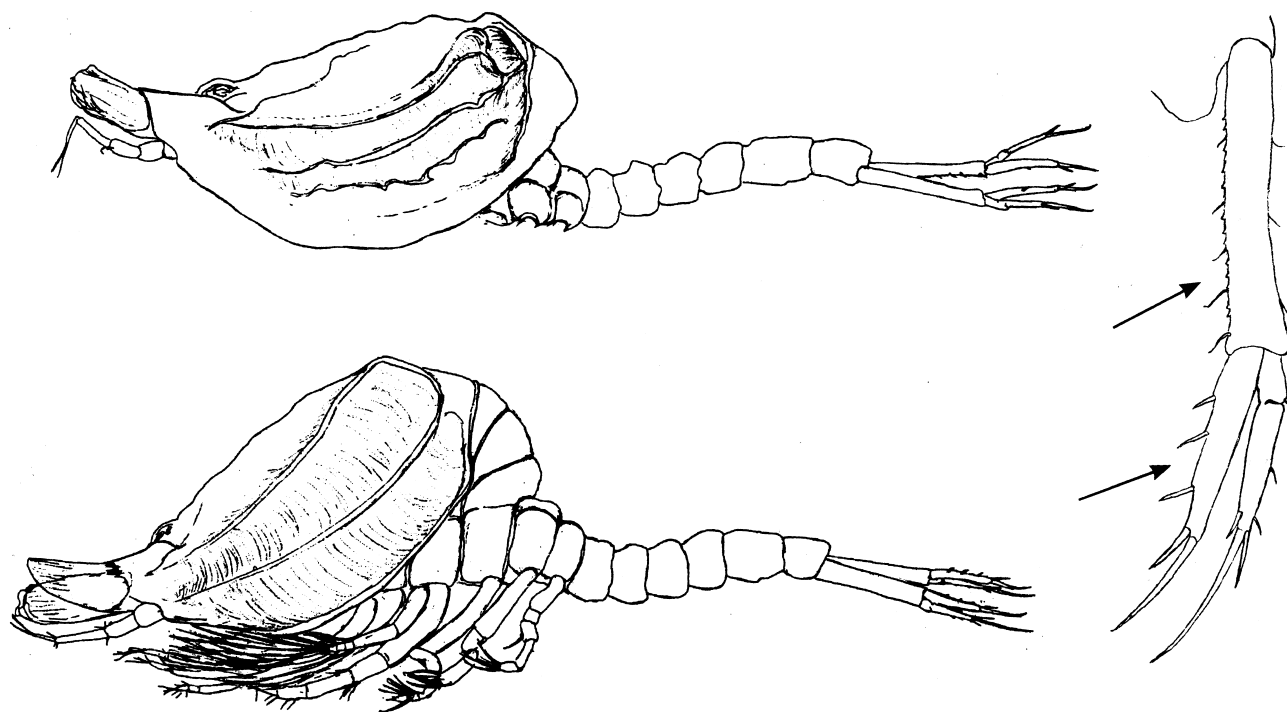
Campylaspis sp. F

Recognition characters.- Carapace relatively flat dorsally with 3 well-developed lateral, carinate ridges (1 dorsolateral merging with posterior part of frontal lobe, 1 lateral, and 1 ventrolateral) bordering 2 shallow grooves (fourth weakly-developed ridge may be present in late stage adult?) with 2 large shallow lateral grooves. Uropod with peduncle having inner margin with 3-4 setae (increasing in length distally); excluding inner terminal seta, endopod having inner margin with 3 narrow spiniform setae (increasing in length distally), inner terminal seta less than twice length of distal most lateral seta.

Distribution.- Southwest Florida shelf 40-80 m.

Remarks.- *Campylaspis* sp. F as illustrated here may in fact represent two closely related cryptic species. For the present, however, we tentatively consider them two different growth stages of the same species. Figure A (4 wavy or irregular lateral ridges) may represent a later stage of development than the form depicted in Figure B.

Campylaspis sp. F like *Campylaspis* sp. E appears to belong to the *costata*-group of Jones (1974).

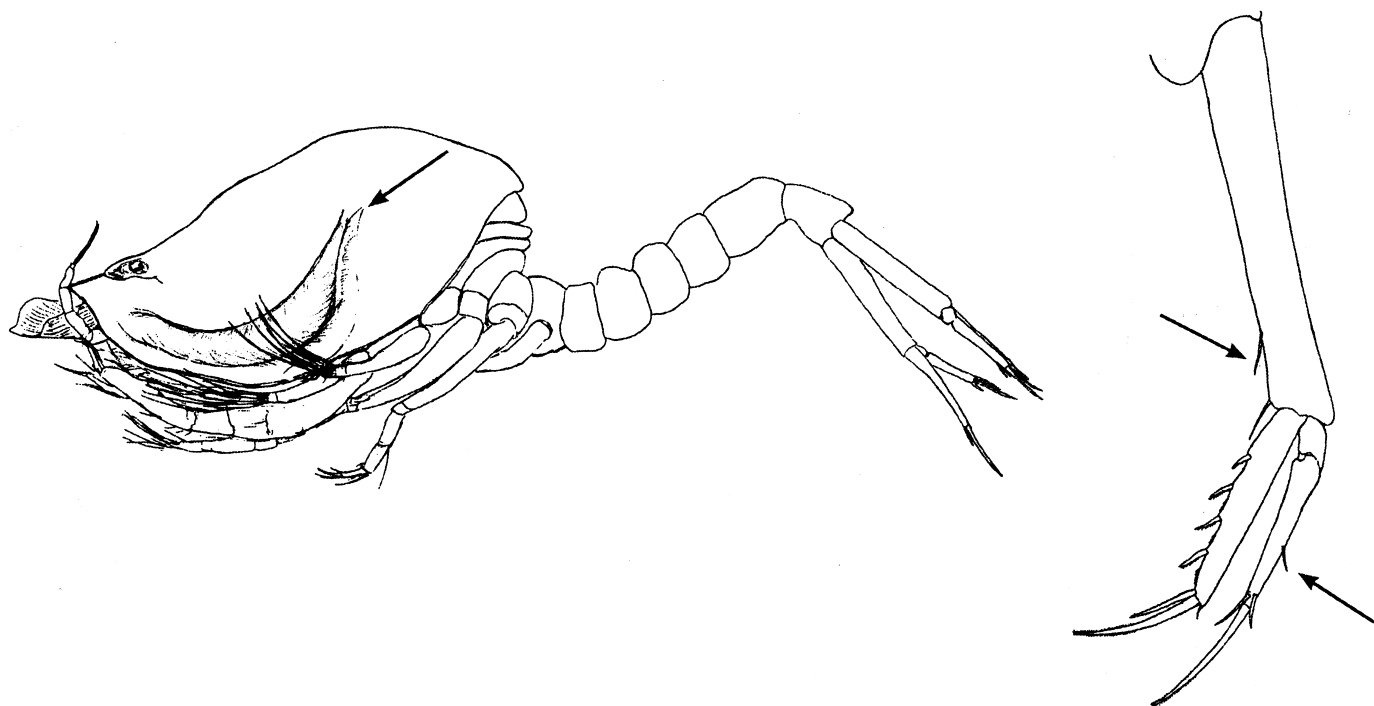


Campylaspis sp. G

Recognition characters.- Carapace having sulcus with margins angular, acute, narrowing and attenuated posteriorly. Uropod with peduncle bearing 2 thin setae on distal half of inner margin; exopod with single small seta on lateral margin and with 2 small and 1 large terminal setae; endopod with 5 spiniform setae on inner margin, 4th seta not extending to base of 5th subapical seta and terminal seta, 2 terminal setae, inner large terminal seta about 2/3 length remaining ramus, outer terminal seta minute.

Distribution.- Southwest Florida shelf in depths 20-80 m.

Remarks.- This species superficially resembles *Campylaspis caribbeana* Petrescu, 2002, which is known only from Belize, and *Campylaspis* sp. E (present study) known from the Southwest Florida the inner and mid continental shelf. *Campylaspis* sp. G is distinguished from both *C. caribbeana* and *Campylaspis* sp. D by having a sulcus that is narrow and attenuated posteriorly and by differences in the number and shape of the setae on the uropods. At present *Campylaspis* sp. G, *Campylaspis caribbeana*, and *Campylaspis* sp. D are the only members of the *sulcata*-group known from the shallow waters of the American Mediterranean.



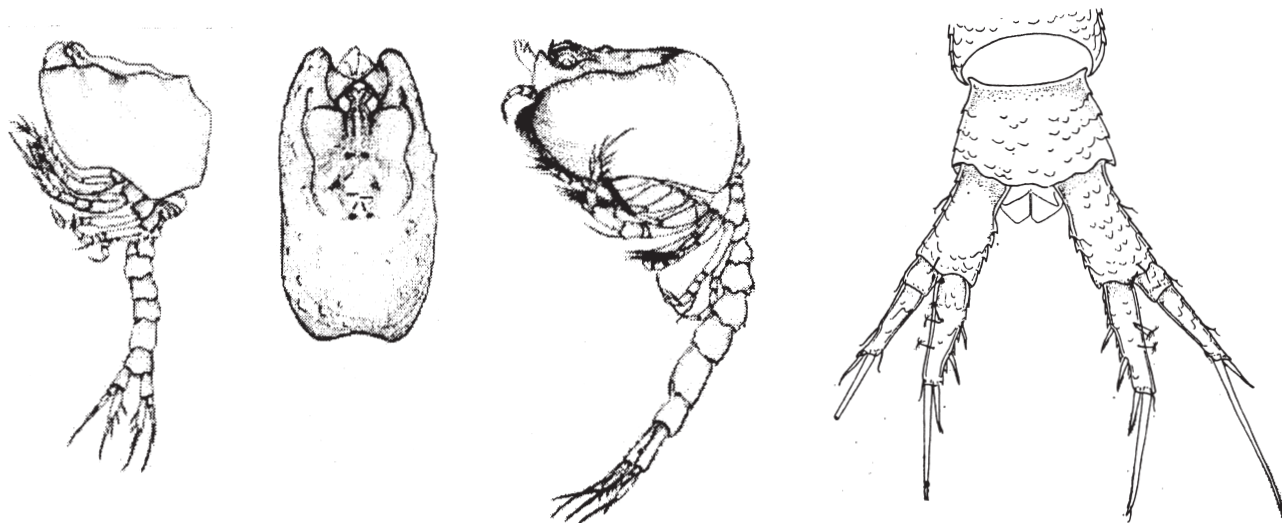
Cubanocuma gutzui Bacescu & Muradian, 1977

Cubanocuma gutzui - BĂCESCU &). - ORTIZ, adult MURADIAN, 1977b: 4-8, figs. 1, 2a-i, 3aj (descr. adult & LALANA, 1988: 15 (list). - BĂCESCU, 1992: 211 (catalog). - PETRESCU, 1992: 276 (catalog), PETRESCU, 2003: 121 (new records: Bahamas, Honduras).- HEARD ET AL, 2005 (new records from Gulf of Mexico, Southeast Florida, Turks and Caicos, Cayman Islands, British Virgin Islands)
HOLOTYPE: MHN Gr. Antipa 49168, adult off Batabano, Cuba, 3 m depth, muddy sand with *Thalassia*.

Distribution.— Cuba, Bahamas, Bermuda, southeastern Florida and Gulf coast. Depth range 1-12.5m.

Recognition characters.— **Female:** Carapace about $\frac{1}{2}$ of entire body length, orientation of lateral and posterior regions causing it to appear very high; anterodorsal half of surface surrounded by carina ending beneath pseudorostral lobes, dorsal surface with large low tubercles; pseudorostrum very short, strong eye lobe with 3 eyes. Antennal notch weakly indicated. Antenna 1 with basal article $\frac{2}{3}$ length of entire peduncle, main flagellum with 2 aesthetascs. Antenna 2 as in *Campylaspis*. First 5 thoracic limbs (maxilliped 3 and pereopods 1-4) with exopods. Uropod with peduncle slightly longer than pleotelson, without setae, subequal with exopod and endopod having long apical setae, endopod with 2 setae on inner margin. **Male:** Carapace similar to female, except with peduncle of antenna 2 bearing numerous rows of lanceolate aesthetascs. First 4 thoracic limbs (maxilliped 3 and pereopods 1-3) with exopods.

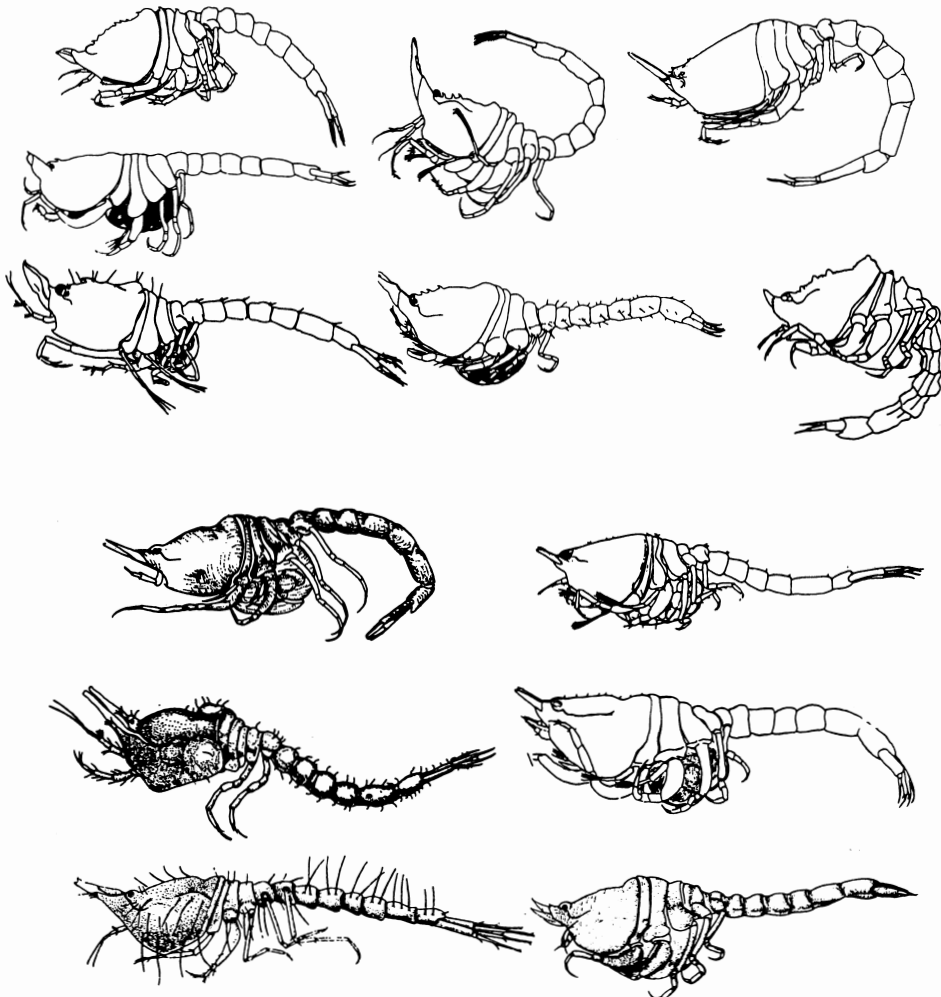
Remarks.—This monotypic genus *Cubanocuma* resembles *Campylaspis* by having the same type of carapace, maxillipeds, pereopods, and uropods; it differs mainly in setation of antenna 2 and by having the male with 4 instead of 5 pairs of exopods. *Cubanocuma gutzui* appears to be confined to the warm waters of the northwestern Atlantic. It also superficially resembles the monotypic genus *Normjonesia*, which is also endemic to the warm waters of the northwestern Atlantic (i.e., Gulf of Mexico). *Normjonesia*, which is known from a greater depth, differs from *Cubanocuma* by having dorsal ring of spines on the carapace and the pereopods of the female lacking exopods.



Genus *Cumella* Sars, 1865

In the warm waters of northwestern Atlantic, the cosmopolitan genus *Cumella sensu lato* represents one the largest and most diverse group of shallow water nannastacids. Many of its members exhibit a high degree of sexual dimorphism and often making it difficult to match males and females of the same species. As now constituted *Cumella* probably represents paraphyletic assemblage, which upon further study may require the designation several new genera from Florida waters.

In general the carapace is usually not greatly swollen nor vaulted posteriorly as in members of the *Campylaspis* Group. In Florida waters, with the exception of *C. tripuntata*, the carapace does not bulge over anterior most pereonites. The surface is smooth or with groves, or with spines, or tubercles, and a mid-dorsal carina is usually present. The anterolateral angles of carapace usually produced and distinct. The mandible has a truncate molar process and often is distally expanded (not styliform) with grinding surface. Other characters include the (1) antennular peduncle having article 2 lacking distal process or tubercle on dorsal margin, (2) maxilla having 3 moveable endites, (3) first maxilliped with 5 articles (terminal article small, but not minute), and (4) second maxilliped has the propodus **not** geniculate at articulation with carpus. As in the genus *Campylaspis*, the first three pereopods of the female and first four in the male have exopods.



Cumella caribbeana Băcescu, 1971

Cumella (Cumewingia) caribbeana . - 1 ♂, 2 juveniles. - BĂCESCU, 1971: 16, 17, figs. 6a-f, 7a-e. (descr. adult WATLING, 1991: 752 (design. *C. caribbeana* type species of the subgenus *Cumewingia*). - PETRESCU & , newILIFFE, 1992: 295, figs. 7a-d (brief descr. adult record: Andros Island, Bahamas). *Cumella caribbeana* BĂCESCU, 1992: 214 (catalog).

HOLOTYPE, ♂ (MHN Gr. Antipa 152, missing: Tavernier Key, Fla. (25°02'N, 80°30'W), summer 1960, subtidal. PARATYPES, from type locality, 2 juveniles (MHN Gr. Antipa 153, missing). Other material: MHN Gr. Antipa juveniles 256187 (from Bahamas).

Distribution.- Florida Keys, Bahamas.

Recognition characters.— Male: Pseudorostrum with pair of very large lenses. Eye lobe with two lateral pairs of lenses surrounding the frontal lense. Antenna 2 with robust and very setose basis, its long flagellum reaches half of uropod. Maxilliped 3 and pereopods 1, 2 with basis half of appendage. Maxilliped 3 with a short outer distal prolongation, propodus second longest article. Pereopods 1 and 2 with hyaline crest on outer margin of basis, carpus second longest article, dactylus with stout terminal setae, dactylus of second pair twice as long as propodus. Maxilliped 3 and pereopods 1-4 with exopods. Uropodal peduncle longer than last pleonite and uropodal rami, with 6 setae on inner margin. Endopod longer than exopod, with 5 stout setae on inner margin. **Female: unknown.**

Remarks.— *Cumella caribbeana* is known only from the male. It is characterized by having a pair of lenses on pseudorostrum, a feature which lead Băcescu (1971) to place it in the new subgenus *Cumewingia*. The type locality for this species is in the Florida Keys (Tavernier Key).

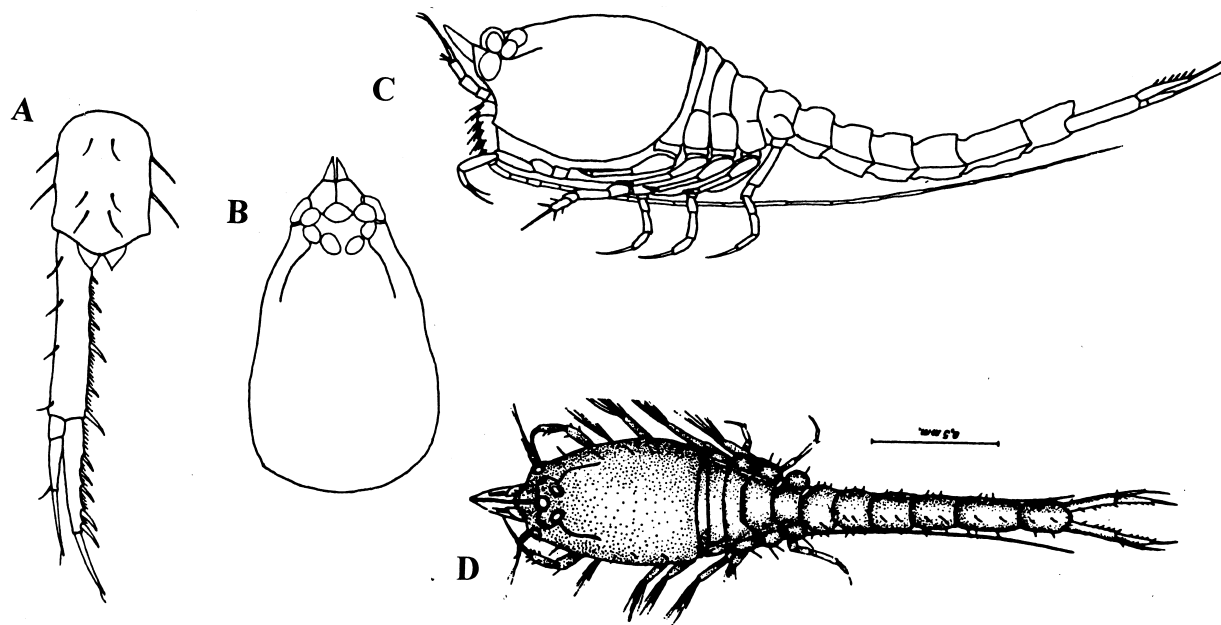


Figure. A, telson and uropod; B, dorsal view of carapace showing ocular lenses; C, lateral view of body; D, dorsal view of body (from Băcescu 19071).

Cumella clavicauda Calman, 1911

Cumella clavicauda - CALMAN, 1911: 344). - 346, 347, pl. 32, figs. 7-10 (descr. adult).- STEBBING 1913: 179, 181(key), (catalog). - ZIMMER, 1940: 264 (list).- ZIMMER, 1944: 132 (adult, differ. with Zimmer's descr.; new records: Cuba, **Tortugas, Florida**, South-West Florida (25°49'N, 82°08'30"W - 25°46'N, 82°07'30"W)). - JONES, 1969: 160 (list). - BĂCESCU & MURADIAN, 1977a: , from, adult 95-98, figs. 5a-e, 6a-c (descr. ovigerous Curaçao Island).- ORTIZ & LALANA, 1988: 15 (list). - DONATH-HERNADEZ, 1988: 46, 47, figs. , new record: Islas Los Roques (1a-j (descr. adult Venezuela), Quintana Roo). - MARKHAM et al., 1990: 412 (list). - PETRESCU, 2002 : 171-172, fig. 15a-e (new record: Belize). PETRESCU, 2003: 122 (new record: Andros Island, Bahamas, Honduras). PETRESCU, 2004: 91 (list).
Cumella (Cumewingia) clavicauda - WATLING, 1991: 752 (list).- ?*Cumella vicina* DONATH-HERNADEZ, from Quintana Roo).1988: 48, 49
 2 SYNTYPES: (UZMK, BMNH, "Cruz Bay, St. Jan [Danish West Indies]").

Distribution: Reported from Florida, Cuba, Virgin Islands, Curaçao Island, Los Roques Islands, Quintana Roo, Belize. 0.5-4 m, surface.

Remarks.— *Cumella clavicauda sensu lato* appears to represent a circum tropical complex of species related to *C. forficula* Calman, *C. vicina* Zimmer, and *Cumella* sp. E. There appear to be several other apparently undescribed species occurring in the warm waters of the American Mediterranean (R. Heard, per. observations). Unfortunately, Calman's (1911) original description, which was based on two males from St. Jan, Danish West Indies, is brief and sparsely illustrated (see his figures below) and a detailed redescription of male and supplemental description of the female is needed.

Because of the distinctly different morphology the uropods of the male (presence of triangular teeth on inner margin of peduncle and endopod), the material described by Băcescu and Muradian (1977b) as *C. clavicauda* from Curaçao appears to represent a new species. Petrescu (2002) has mentioned and illustrated the carapaces of two different forms attributable to *C. clavicauda* from Belize. An examination of collections from Florida waters during the preparation of this guide, suggests the presence of at least three different species possibly be attributed to this enigmatic species.

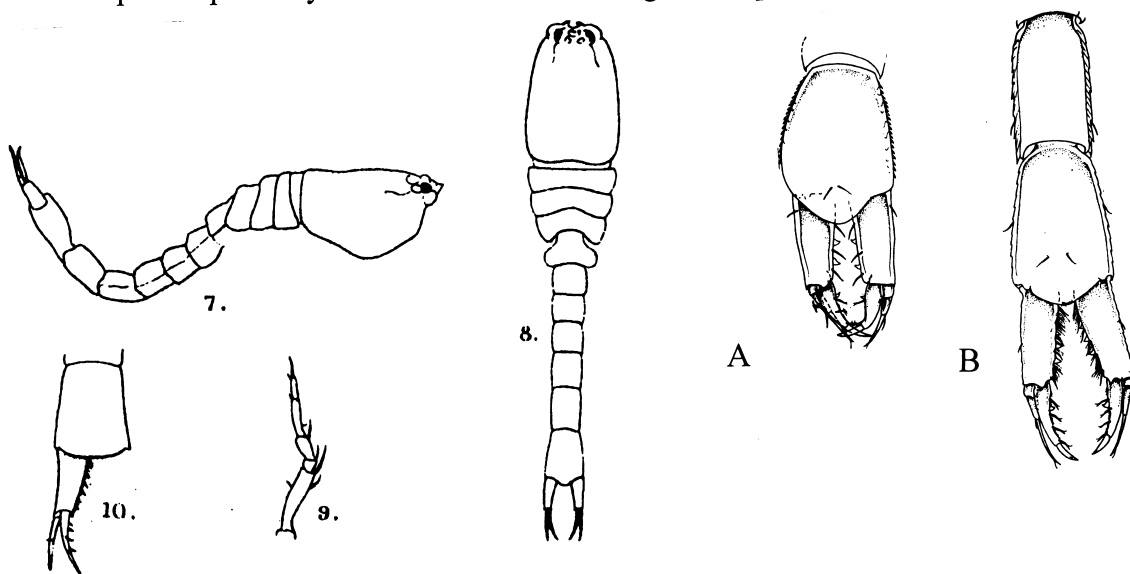


Figure. *Cumella clavicauda* "7-10"(modified from Calman 1911); "7" & "8" male, lateral and dorsal aspects; "9", pereopod 5; "10" pleonite 6 and left uropod; A-B (from Băcescu and Muradian (1977b); A & B, male and female uropod, respectively.

Cumella coralicola Băcescu, 1971

Cumella coralicola - BĂCESCU,). - BĂCESCU 1971: 12, figs. 4a-e (descr. & MURADIAN, 1977a: 100 (new record: Bonaire Island). - BĂCESCU, 1992: 216 (catalog). PETRESCU, 2004: 91 (new record: Cuba). -*Cumella* (*Cumella*) *coralicola* - WATLING, 1991: 752 (list).

MHN Gr. HOLOTYPE: preparatory female Antipa no. 62, missing, Tavernier Key, Florida., subtidal, coral debris, 08.1960. Other material: MHN. Gr. Antipa CUM 1547 (from Cuba).

Distribution.- Tavernier Key, Florida; Cuba, zone A; Bonaire Island. 1.5m.

Recognition characters.— **Female:** less flattened carapace, whole body covered with very long, longer than diameter of segments, sticky, simple setae, long pseudorostrum. Pereopod 1 with carpus subequal with propodus. Pereopod 2 with dactylus 1.5 as long as propodus. Pereopods 3-5 progressively longer, with strong terminal seta. Maxilliped 3 and pereopods 1, 2 with weakly developed, short exopods. Uropods as long as last pleonite with outer and inner setae on peduncle, exopods little shorter than endopods, rami with terminal robust sensory setae.

Male: unknown.

Remarks.— Combination of two pigmented lateral eye lenses, slender exopods and presence of long simple setae on body and appendages distinguishes this species from all other known species from the region.

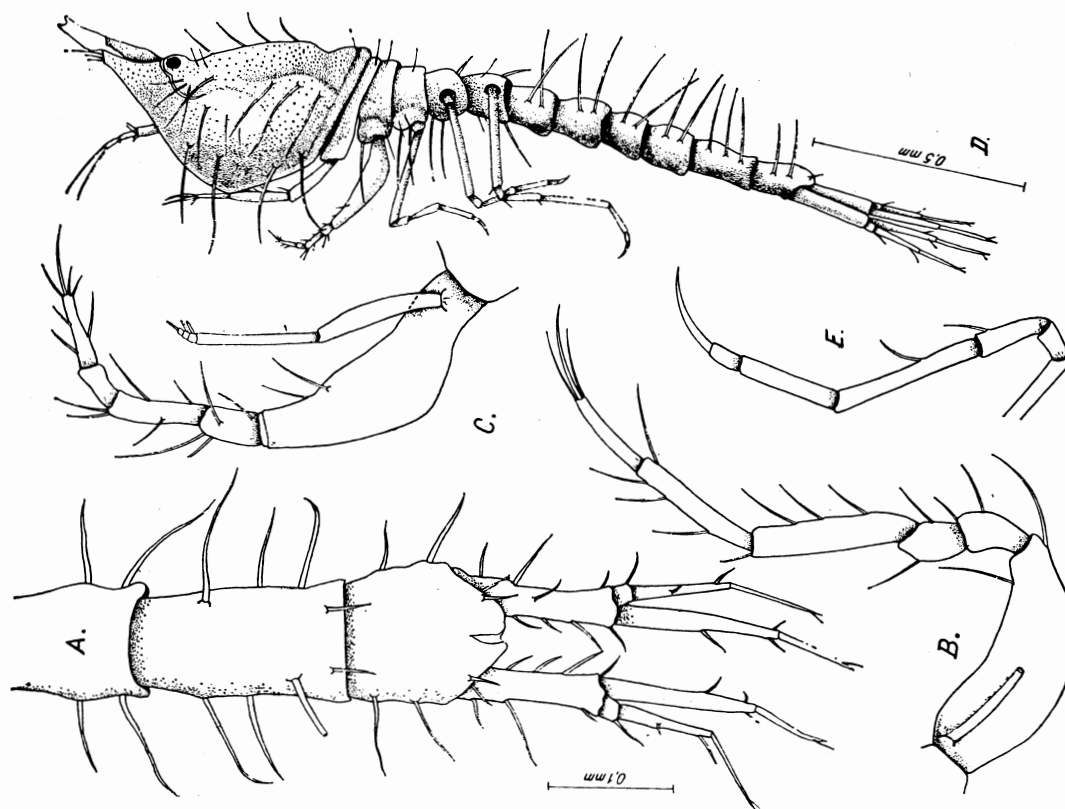


Fig. 4. *Cumella coralicola* n. sp. ♀ A, posterior part of the abdomen, seen from above; B, Isthmus pereopod; C, id. II; D, the whole animal, in profile; E, V-th pereopod (Orig.).

Figure (4) from original description by Băcescu (1971).

Cumella garritii Băcescu and Muradian, 1976

Cumella garritii (misspelling) - BĂCESCU & . -, adult MURADIAN, 1977a: 89-92, figs. 1a-f, 2a-d (descr. marsupial PETRESCU, 1996: 168-172, fig. 9a-d (short descr., female).- *Cumella garritii* - DONATH-HERNANDEZ, 1988: 47 ("eyes lobe with 7 large lenses"; new record: Quintana Roo). - MARKHAM et al., 1990: 412 (list). - BĂCESCU, 1992: 218 (catalog). - PETRESCU, 1992: 277 (catalog).- *Cumella (Cumella) garritii* - WATLING, 1991: 752 (list). -*Cumella (Cumewingia) garritii* - PETRESCU, 2002: 173-174, fig. 16 (very short descr., new record: Belize). - PETRESCU, 2003: 122 (new records: Bahamas, Honduras). - PETRESCU, 2004: 91 (new record: Cuba).
HOLOTYPE: MHN Gr. Antipa noadult 49066, Tampa Bay, Fla., 7 m. PARATYPES: from type locality, MHN Gr. Antipa no. 49067.

Distribution: Florida, Quintana Roo, Bahamas, Belize, Honduras, Cuba. 7 m.

Recognition characters.— Female. Carapace relatively smooth with posterodorsal depression; siphon distinctly longer than pseudorostrum. Carapace and body somites relatively smooth, lacking numerous long setae. Uropod, peduncle inner margin pectenate with 3-4 small setulate spiniform; endopod, including terminal seta, longer than peduncle, inner margin pectenate with 2, 1 medial and 1 subterminal, small setulate setae. **Male.** Carapace with dorsal margin relatively smooth and straight. Pseudorostrum short, eye lobe with 5 central lenses. Uropod, peduncle with inner margin pectinate with 6-8 small setulate setae; endopod, including terminal seta shorter than peduncle, inner margin pectenate with 5 setulate setae, terminal seta less than ½ length of ramus.

Remarks.- *Cumella garritii* appears to be a common species in Florida waters (R. Heard, per. obser.) and it also has been reported from Cuba, the western Gulf of Mexico, Bahamas, and northern Caribbean.

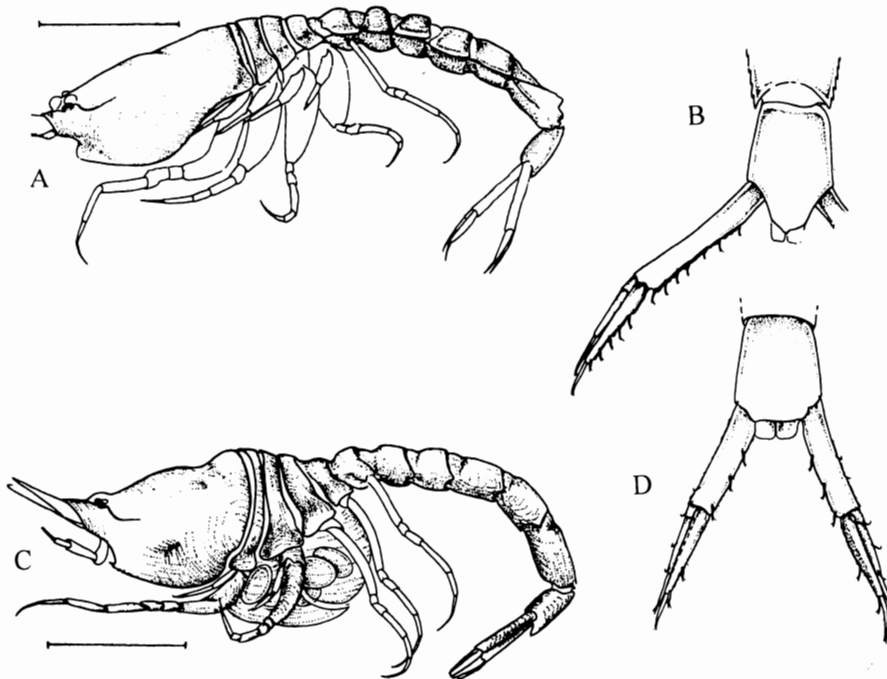


Figure. A, male lateral aspect; B, pleonite and uropod; C, ovigerous female lateral aspect; D, pleonite 6 and uropods (modified from Băcescu and Muradian 1976)

Cumella pilosa Băcescu, 1971

Cumella pilosa - BĂCESCU,). - BĂCESCU, 1992: 222 (catalog).1971: 9-12, figs. 3a-e (descr. - *Cumella* (*Cumella*) *pilosa* - WATLING, 1991: 752.
(MHN Gr. Antipa no. 61, HOLOTYPE: lost).

Distribution.— Known only from the type locality, Tavernier Key, Florida, subtidal, summer 1960.

Recognition characters.— **Female:** Carapace elongate, eye lobe with 6 minute lenses in 2 rows, 4 anterior and 2 posterior, 2 pigmented patches in between 2 posterior lenses; another pigment patch on frontal lobe just posterior to eye lobe. Carapace covered with numerous simple setae.; pleon with setae much longer and curved. Antenna 1 with main flagellum having 3 articles; accessory flagellum minute, uniarticulate. Uropods straight with peduncle as long as last pleonite, longer than uropodal rami, with 6-7 setae, exopod 2/3 length of endopod with long terminal setulate (sensory) seta about as long as ramus, ramus with 5 small marginal setae; endopod with 2 setae on inner margin, terminal setulate (sensory) seta over $\frac{3}{4}$ length of ramus.

Remarks.— Female with numerous simple setae on the carapace and distinctive eye lobe bearing two rows of minute lenses distinguish this species from other members of the genus known from Florida waters.

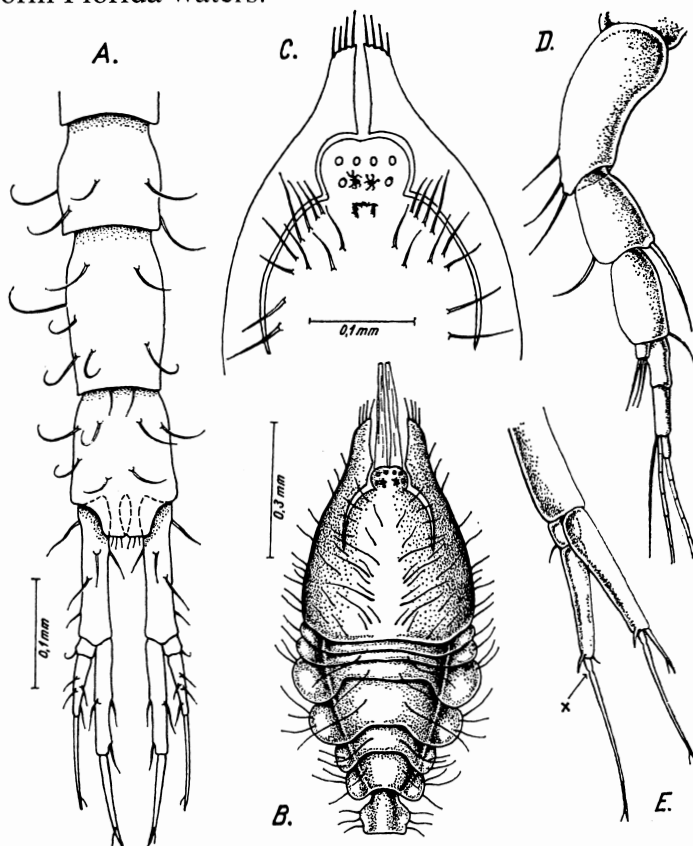


Fig. 3. *Cumella pilosa* n. sp. ♂♀. A, terminal part of a subad. ♀ = 2 mm; B, cephalothorax seen from above; C, its anterior part, enlarged; D, antenna; E, uropod of a ♂_j = 2.2 mm (Orig.)

Figure (3) from the original description by Băcescu (1971).

Cumella cf. serrata Calman, 1911

Cumella serrata - CALMAN, 1911: 344). -female, adult male(key), 348, 349, pl. 32, figs. 19-24 (descr. adult STEBBING, 1913: 179, 182 (catalog) - ZIMMER, 1940: 264 (list).- ZIMMER, 1944: 135 (new records: Cuba, **Tortugas (Fla.)**). - JONES, 1969: 160. - ORTIZ & LALANA, 1988: 15 (list). - DONATH-HERNANDEZ, 1988: 48 (brief descr. new records: "Islas Los Roques", Venezuela). - BĂCESCU, 1992: 226 (catalog). - *Cumella (Cumewingia) serrata* - WATLING, 1991: 752 (list). - PETRESCU & STERRER, 2001: 106-112, figs 63-95 (descr., new record: Bermuda). - PETRESCU, 2002: 187-189 (new record: Belize).
SYNTYPES: (UZMK, BMNH) "Cruz Bay, St. Jan [Danish West Indies]".

Distribution.- Tortugas, Florida, Virgin Islands, Los Roques Island, Cuba, Belize, Bermuda.

Recognition characters.— **Female:** carapace less than 1/3 of total length. Dorsal edge slightly convex, with about 6 curved teeth. Ocular lobe prominent, with two lateral pairs of pigmented lenses. Long pseudorostrum. Antenna 1 with peduncular article 2 twice length of article 3. Antenna 2, with 1 article with 2 robust pappose setae. Maxilliped with robust basis with a short outer process and 9 setae on inner distal corner, 2 outer spines on merus, propodus second longest article. Uropodal peduncle 1.7 times longer than last pleonite, twice longer than endopod, with 4 setae interspersed with numerous fine ones, exopod shorter, with long terminal sensitive seta, endopod with 4 setae on inner margin interspersed with fine ones. **Male:** Carapace less than 1/3 of total length, lacking dorsal teeth. Eye lobe with 7 lenses, 1 additional pair on pseudorostrum. Last pleonite, shorter than previous one, not inflated. Main flagellum of antenna 2 as long as body. Uropodal peduncle 1.5 longer than last pleonite, 1.6 longer than endopod, 6 stout setae interspersed with fine ones on its inner margin, same number on endopod, more than 2 times longer than exopod.

Remarks.— *Cumella serrata* appears to have affinities with *C. hirsuta* (Hansen, 1895) and *C. ocellata* Băcescu (1992). It differs by having the basis and merus of maxilliped 3 having more setae and pereopods 1 and 2 with strong stout setae on outer margin of basis. The based on the eye structure *C. serrata* belongs to subgenus *Cumewingia* Băcescu 1971. During the preparation of this guide, specimens examined from a shallow reef area off Ft. Lauderdale. Except for the uneven and irregularly spaced teeth on the carapace and more strongly developed spines on the pereonites, the Florida specimens appeared to be quite similar to type material described by Calman (1911) from St. Jan Island, in the Danish West Indies. The specific status of *Cumella* sp. aff. *C. serrata* sensu Zimmer (1944), which was reported from of the Florida Southwest coast, remains unresolved.

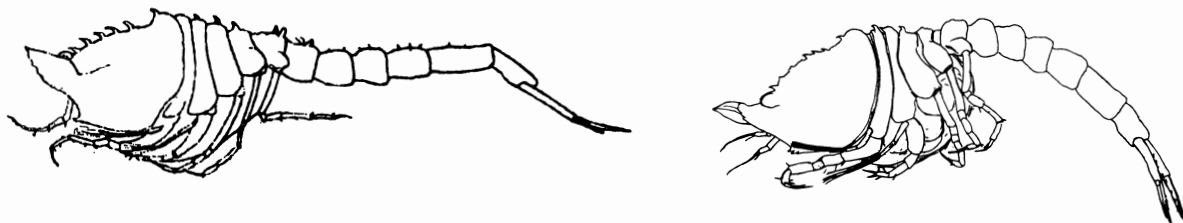


Figure. **Left**, adult female (from Calman 1911); **Right**, adult female from Florida SE Florida (off Ft. Lauderdale)

Cumella tripunctata Băcescu, 1971

Cumella tripunctata), -- BĂCESCU, 1971: 7-9, figs. 2a-h (descr. BACESCU, 1992: 227 (catalog). - PETRESCU, 1992: 277 (catalog).

(MHN Gr. Antipa no. HOLOTYPE: 49172), Among roots of *Thalassia*, **Key West, Fla.** (24°33'50"N - 81°45'00" W), 3.05.1964.

Distribution.— Key West, Florida, among roots of *Thalassia*.

Recognition characters.— **Female:** Carapace less than $\frac{1}{4}$ of total length, a pair of large protuberances in posterolateral part, other one, smaller, on basis of ocular lobe, pseudorostral lobes, long and truncate, two lateral pigmented patches, no distinct lenses. Fifth pleonite twice longer than previous ones, with 3 black-brown patches (1 dorsal, 2 dorsal lateral), the most distinct character of the species. Antenna 1 with distal article of peduncle strangled, main flagellum, 3- articulated, accessory ones, minute, with 1 article. Maxilliped 3 with a strong outer prolongation of merus, carpus and propodus subequal, robust terminal seta of dactylus. Pereopod 1 with a pigmented patch on basis, propodus slightly longer than carpus, terminal robust seta longer than dactylus. Pereopod 2 with basis shorter than half of appendage, carpus second longest article. Pereopods 4, 5 with robust terminal setae. Uropods rugous, peduncle longer than last pleonite and its rami, endopod twice longer than exopod, with 2 setae on inner margin, short terminal seta.

Remarks.— The inflated dorsolateral bulges on the carapace with larger posterior most one overlapping the first pereonite and the presence of three pigmented patches on fifth pleonite make *C. tripunctata* unique among the other presently known species of *Cumella* from Florida waters

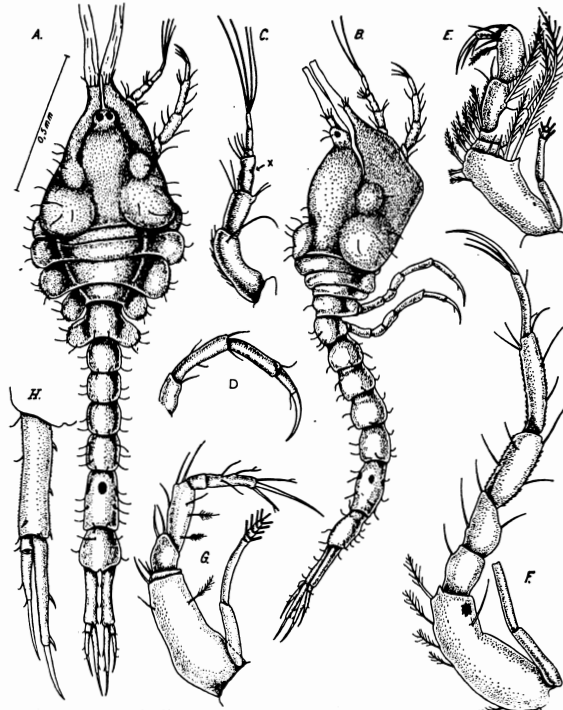


Fig.2. *Cumella tripunctata* n. sp., ♀ = 2,1 mm. A, Body seen from above; B, in profile; C, Antenna: x, strangulation; D, IV-th pereopod; E, III-rd maxilliped; F, I-st pereopod; G, II-nd pereopod; H, enlarged uropod (Orig.).

Figure (2) from original description by Băcescu (1971).

Cumella vicina Zimmer, 1944

Cumella vicina - ZIMMER, 1944:). - JONES, 1969: 161. - ? DONATH-HERNADEZ, 132-135, figs. 27-30 (descr. adult from Quintana Roo; 1988: 48, 49 (2 *C. clavicauda* Băcescu & Muradian, 1977 = *C. vicina* Zimmer 1944???). - ORTIZ & LALANA, 1988: 15 (list). - MARKHAM et al., 1990: 412 (list).

Cumella (Cumella) vicina - WATLING, 1991: 752 (list).

Cumella (Cumewingia) vicina - PETRESCU, ILIFFE & SÂRBU, 1994: 363. figs. 10a-e, 11a-e (descr., adult, new record; male, figs Jamaica). - PETRESCU, 2002: 189-192, figs 27,28 (descr., female, new record: Belize). PETRESCU, 2003: 124 (new record: Bahamas).

HOLOTYPE: USNM, "Gößere Zahl von im Hochzeitskleid (hierbei der Typus), Südsüdwestlich der Tortugas, Florida, Oberfläche, elektrisches Licht, 11.VIII. 1930. W.L. SCHMITT, Access. 111167".

Distribution.- Tortugas, South-West Florida (25°49'N, 82°08'30"W - 25°46'N, 82°07'30"W), Cuba, Jamaica, Bahamas, Belize, Curaçao, Quintana Roo.

Recognition characters(sensu Petrescu 2002).- **Female:** Carapace granulous with 4 dorsal strong tubercles (1 on posterior elevation, 1 median and 2 on eye lobe), median dorsal crest, 2 separated groups of lenses, 3 ones each, no median, no frontal lenses present, pseudorostrum lobes meeting in front of ocular lobe, elevations marked notch. Pereon with dorsal tubercle on 2nd and 3rd segments. Pleon with elevated posterior half and strong lateral ridge. Uropod with stout peduncle (1.6 times longer than large), shorter than last pleonite, fine pectinate setae on inner margin, 1.5 times longer than exopod, endopod fused with terminal robust spiniform seta, slightly curved, 2 setae interspersed with very fine ones on inner margin. **Male:** Carapace smooth, without tubercles or crests, large ocular lobe with 7 lenses, as in female, but also with a pair of lenses on pseudorostrum, large antennal notch, antero-ventral corner acute. Uropodal peduncle shorter than 6th pleonite, shorter than endopod with terminal seta, up to 6 setae on inner margin, endopod longer than exopod, both rami fused with terminal seta, endopod little curved, 5-6 setae on inner margin.

Remarks.- There are some differences among the males described from Florida, Belize: and Jamaica. The male uropod of *C. vicina* described and figured by Zimmer (1944) appears different from those reported for this species in Jamaican and Belize waters by Petrescu et al. (1991 and Petrescu (2002), respectively. Based on material from the SW Florida shelf examined during the preparation of this guide there appear to be 2 or 3 other species in this complex that could be confused with *C. vicina sensu* Zimmer (1944). None of the large number of specimens examined from Florida waters during the preparation of this guide resembled the Belize material described as *C. vicina* by Petrescu (2002). This suggests the possibility that specimens from Belize represent a new species.

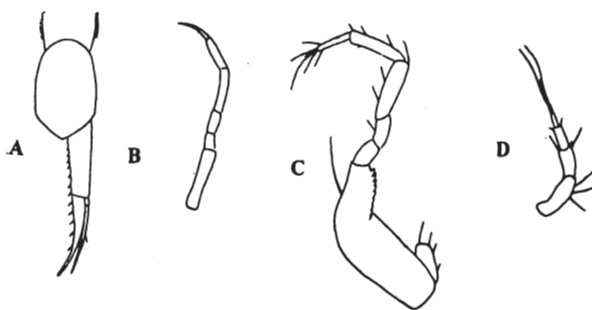


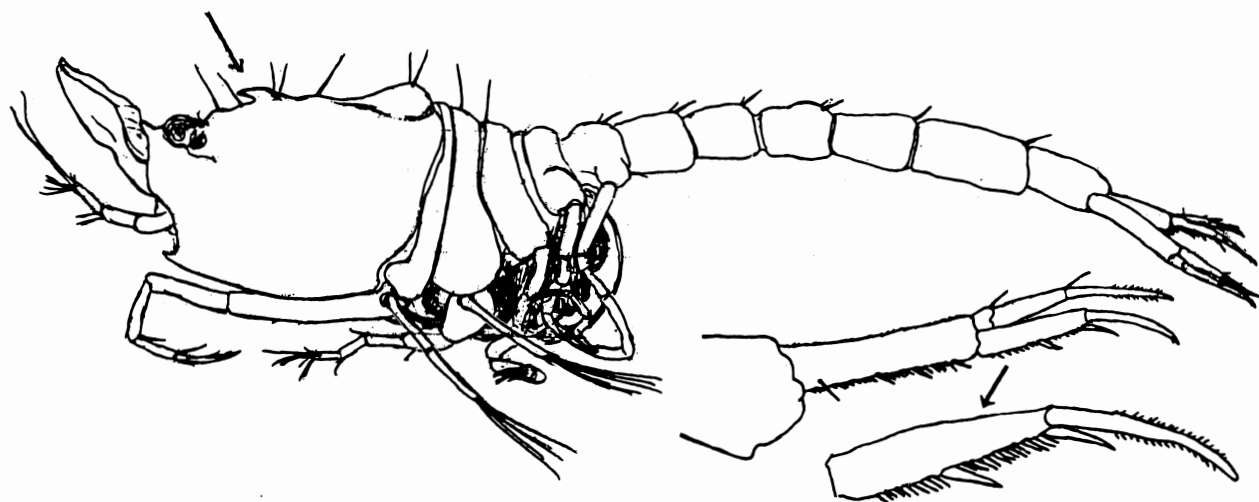
Figure. Zimmer's original illustrations. A, pleotelson and uropod; B, pereopod 5, pereopod 1, antenna 1

Cumella sp. A

Recognition characters.- Dorsal surface of carapace irregular with dorsal posterior bulge, distinct anterior curved tooth located near posterior margin of frontal lobe, anterolateral margin forming an acute process. Pseudorostrum weakly-developed, short, not extending above ocular lobe; siphon distinctly longer than pseudorostrum. Surface of carapace with dorsal and dorsolateral setae. Uropod with inner margins of peduncle and endopod pectinate. Peduncle with 3-4 marginal small spiniform setae on inner margin. Endopod with 2 well-developed spiniform setae, one medial and subterminal, on inner margin; terminal seta finely pectinate, over $\frac{3}{4}$ length of remaining part of endopod.

Distribution.- Off Ft. Lauderdale Beach, 15-20 m on sand substrata.

Remarks.- This apparently new species is characterized by an anteriorly curved tooth near the posterior margin of the frontal lobe, a short pseudorostrum with a well-developed siphon, and the uropodal endopod having a finely pectinate terminal spiniform seta.

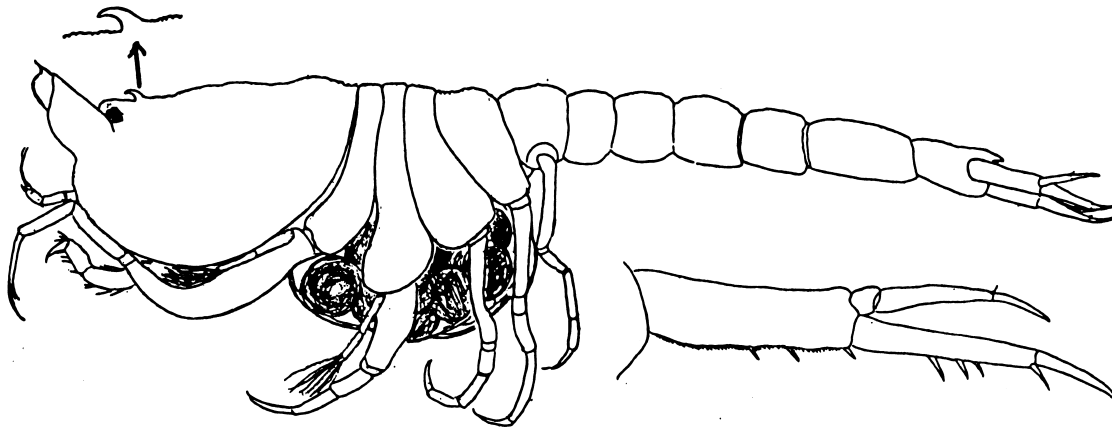


Cumella sp. B

Recognition characters. - Dorsal tooth located immediately behind ocular lobe, pseudorostrum well-developed extending well beyond ocular lobe; siphon distinctly shorter than pseudorostrum. Surface of carapace lacking long dorsal and lateral setae. Uropod with endopod having inner margin armed with 4 spiniform setae, 3 medial and 1 subterminal; length of terminal seta slightly less than half that of endopod

Distribution.- Southwest Florida mid shelf.

Remarks.- Like *Cumella* sp A, this specie appears to be undescribed. There are two or three similar species or forms that occur on both the Gulf and Atlantic coasts of Florida, the main differences among them being the number and placement of the spiniform setae on the inner margins of the uropodal peduncle and endopod. Whether or not these they represent a single variable species or complex of cryptic species awaits further detailed morphological and molecular comparisons.

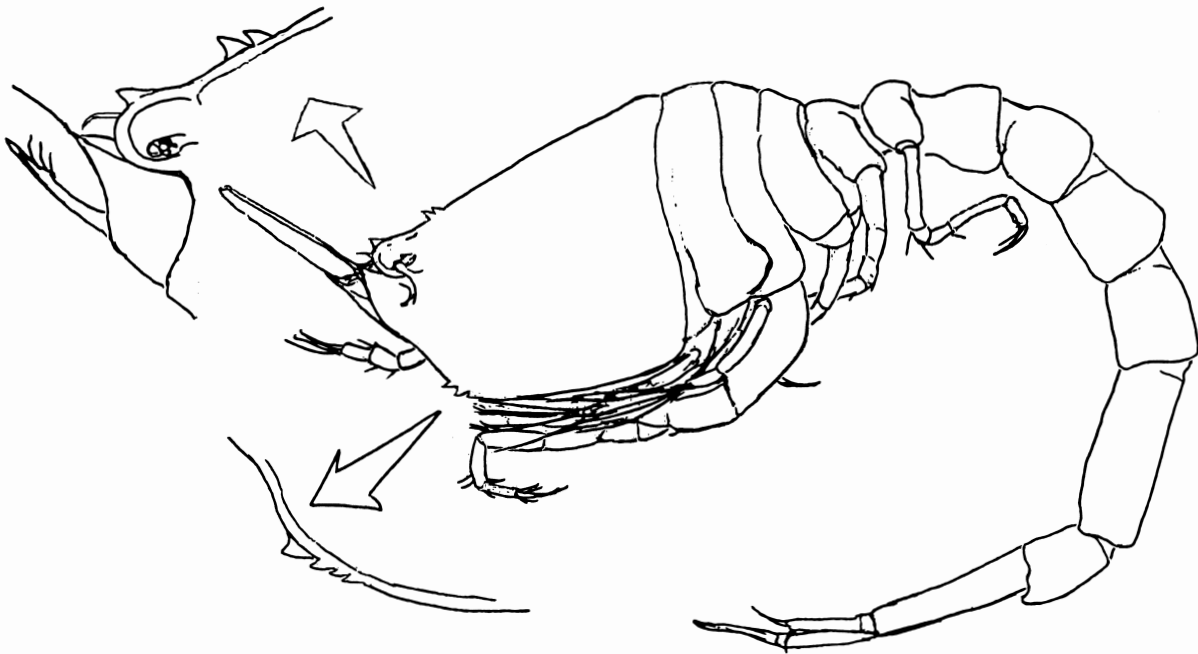


Cumella sp. C

Recognition characters.- Carapace with 3 dorsal teeth, not evenly spaced, 2 on dorsal lobe separated from 1 on ocular lobe. Pseudorostrum reduced, weakly developed, not extending dorsally above ocular lobe; siphon long, narrow, bipartite (divided into long narrow twin siphons). Sixth pleonite less than $\frac{1}{2}$ length of 5th pleonite. Uropodal peduncle lacking spineform or setulate setae on inner margin, about twice long as 6th pleonite. Inner margin of endopod lacking spiniform or setulate setae.

Distribution.- Inner and mid shelf waters of SW Florida.

Remarks.- The presence of a single dorsal tooth on the ocular lobe and two dorsal teeth on the anterior part of the frontal lobe distinguishes this species from other species of *Cumella* known from Florida. The uropods and the last 2 pleonites (5 & 6) resemble those of *Cumella* sp. G, indicating that the two species may be related. Besides the presence of teeth on the carapace, *Cumella* sp. C differs from *Cumella* sp. G by having a distinctively longer siphon.

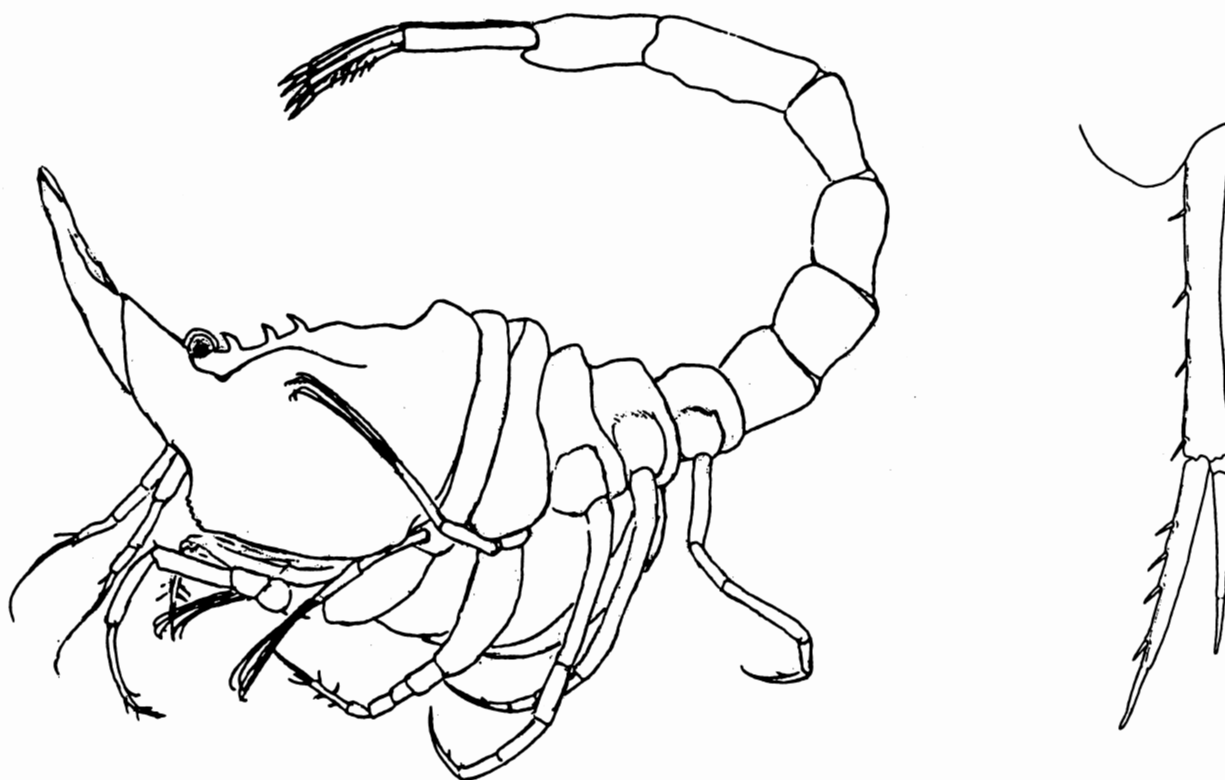


Cumella sp. D

Recognition characters. - Carapace with 3 dorsal teeth evenly spaced, confined to dorsal lobe. Pseudorostrum extending anterodorsally well-beyond the ocular lobe; siphon undivided. Sixth pleonite (= pleotelson) about $\frac{3}{4}$ length of 5th pleonite. Uropodal peduncle about as long as, or shorter than, last pleonite (= 6th pleonite), inner margin with 4 narrow spiniform setae; endopod with inner margin bearing 4 narrow spiniform setae, terminal spiniform seta less than $\frac{1}{2}$ length of remaining ramus; exopod styliform with only terminal spiniform seta.

Distribution.- SW Florida mid- shelf. 50-80 m.

Remarks.- This species may be related to *Cumella serrata*, but it is smaller, has fewer dorsal teeth (confined to frontal lobe), and has a relatively larger pseudorostrum and siphon. The uropods are fairly similar to those of *C. serrata sensu* Calman (1911) and *C. cf. serrata* illustrated from Florida waters in this guide.

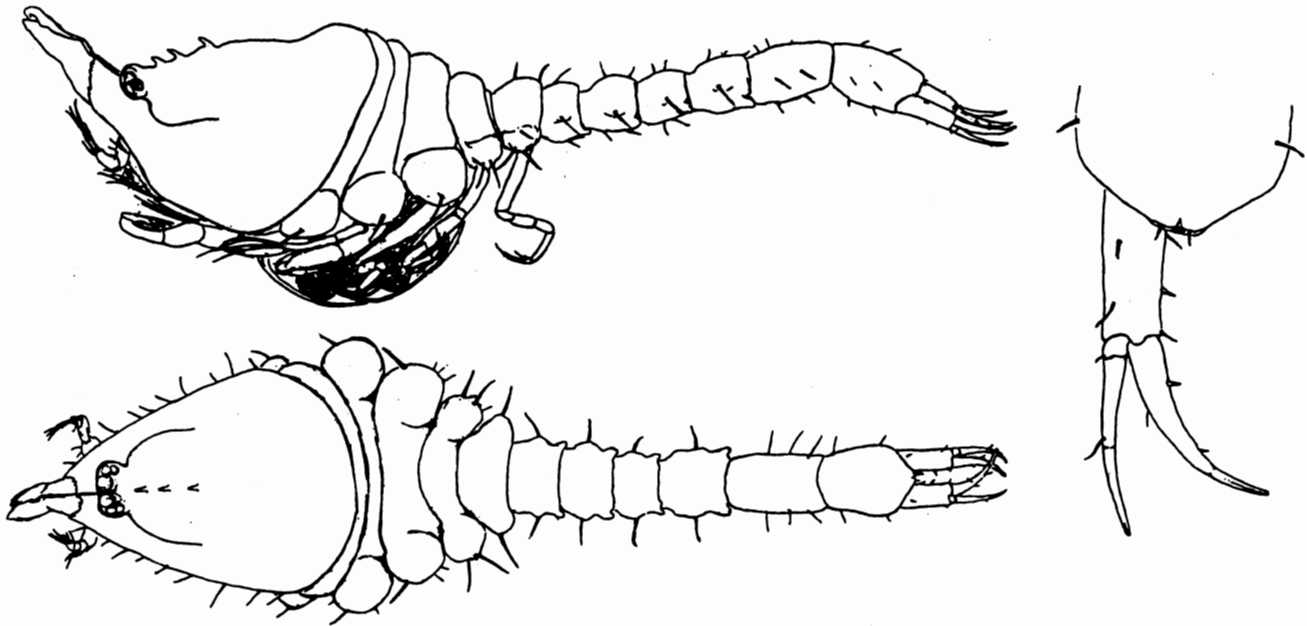


Cumella sp. E

Recognition characters.- Carapace with 3 dorsal spines on frontal lobe; pseudorostrum extending dorsally above eye lobe. Pleonite 6 widest posteriorly, about equal in length to pleonite 5. Uropod with peduncle shorter than last pleonite; endopod curved medially with 2 small setae on inner concave margin.

Distribution.- SW Florida shelf in depths of 40-50 m.

Remarks.- Because it has a short distally broadened sixth pleonite and a strongly curved endopod partially fused with the terminal spiniform seta, *Cumella* sp. E appears to belong to the *Cumella clavicauda*-*vicina* complex. The male of *Cumella* sp. E is unknown so no further comparisons with *C. clavicauda sensu* Calman and *C. vicina sensu* Zimmer are relevant.

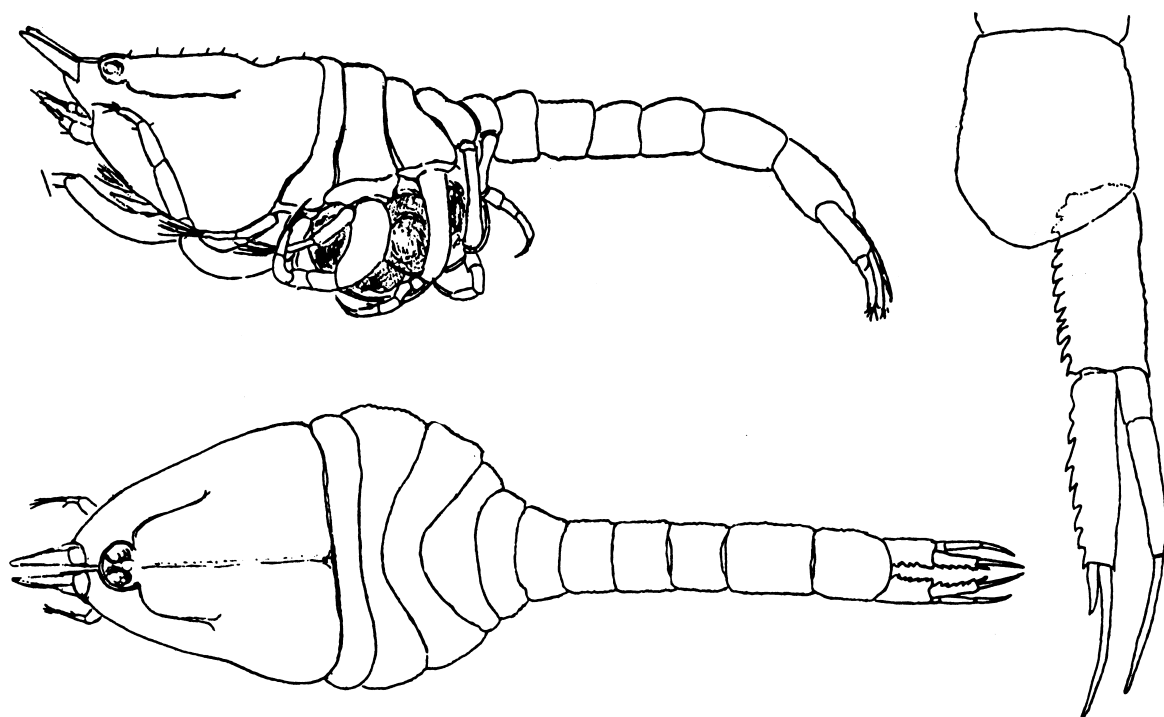


Cumella sp. F

Recognition characters.- Dorsal region of carapace (in lateral view) with shallow depression just behind frontal lobe; pseudorostrum short, not extending dorsally above eyelobe. Uropodal peduncle stout, slightly more than twice as long as wide; both peduncle and endopod with inner margins bluntly serrate and lacking spiniform or situlate setae. Endopod with 2 terminal spiniform setae, inner about 1/3 length of outer, outer over 2/3 length of rest of ramus (e.g., endopod excluding terminal setae).

Distribution.- SW Florida inner shelf. 30-50 m.

Remarks.- This species appears to be undescribed. The bluntly serrate inner margins of the uropodal peduncle and endopod and the lack of spiniform or spinulate setae there upon distinguishes *Cumella* sp. F from all other known species of the genus from Florida waters. *Cumella biserrata* Petrescu, 2002 described from Belize, has somewhat similar uropods, but there are 2 spiniform setae on the inner margin of the endopod. In other respects *Cumella* sp. F and *C. biserrata* are distinctly different.

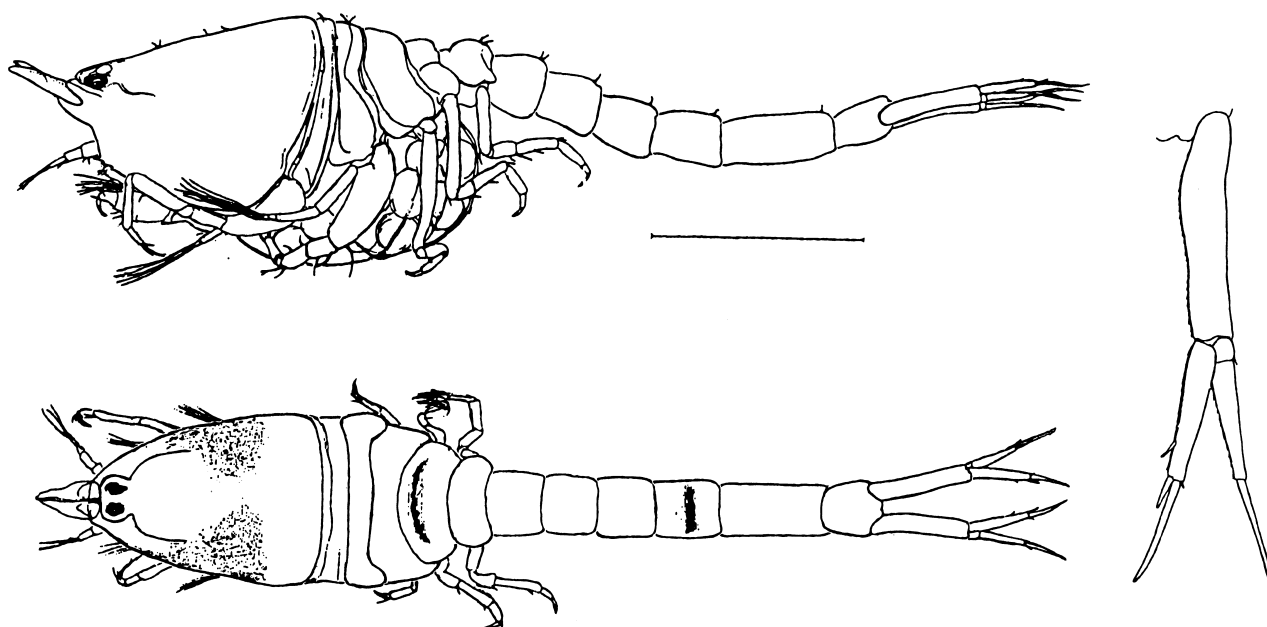


Cumella sp. G

Distribution: shallow shelf waters off Monroe County, Florida; ?SE Gulf of Mexico, Florida shelf.

Recognition characters.- Dorsal region of carapace in lateral view having even, nearly straight, contour (e.g., no bulges or shallow concavities; pseudoroustrum reduced, not extending dorsal above ocular lobe; siphon extending well beyond pseudoroustrum. Uropod: peduncle with inner margin finely pectinate, lacking simple or setulate spiniform setae; endopod with 1 acute spiniform seta on distal 1/3 of inner margin and 2 terminal setae, the outer about 1/3 the length of inner. In preserved specimens darkish pigment on present dorsolateral part of carapace just posterior to frontal lobe and dorsally on pereonite 4 and abdominal (pleonite) 4.

Remarks: The lack of spiniform or setulate setae on a narrow uropodal endopod, characterizes this *Cumella* sp. G. It species appears to be closely related to at least two other apparently undescribed species observed in collections from the SW Florida shelf. The range of variation observed in setation of the uropodal endopods and body pigmentation may encompass one or two species, or there may be a larger group of cryptic species involved.



Genus *Elassocumella* Watling, 1991

Elassocumella micruropus (Zimmer, 1943)

Synonyms: *Cumella micruropus* - ZIMMER, 1943: 161, 162 (descr.). -?ovigerous.- BĂCESCU & MURADIAN, 1977a: 98-100, fi gs. 7a-j (descr. ovigerous female, new record: Bonaire Island). - Zimmer, 1980: 14, 15, fi gs. 52-55 (English translation of 1943 Zimmer's description).- BĂCESCU, 1992: 222 (catalog).25.-*Elassocumella micruropus* - WATLING, 1991: 753 (design. *C. micruropus* Zimmer, 1943 type species of the genus *Elassocumella*). - PETRESCU, 2003: 124 (new record: Grand Cayman). HOLOTYPE (USNM, lost). "30°44'N, 79°26'W (vor der Ostküste von Florida); 1.IV.1885, von Hydroiden, Albatross Stat. 2415".

Distribution.-East coast of Florida (depth?), Bonaire Island (0-1.5 m), Cayman Islands (0.5-2m).

Recognition characters.— Carapace relatively smooth, equal in length to free thoracic segments. Pseudorostral lobes convex, antennal notch weakly marked. Exopods absent on maxilliped 3 and pereopods in female; male unknown. Uropod little shorter than pleotelson, 2 setae on inner margin of peduncle, other 2 on endopod.

Remarks.—The most noticeable character that distinguishes the monotypic genus *Elassocumella* from other nannastacids is the absence of exopods on the pereopods and third maxillipeds of the female. Băuescu and Meradian (1977a) presented excellent illustrations of an adult female specimen attributed to *Elassocumella micruropus* from Bonaire (southern Caribbean). There remains, however, the possibility that a complex of cryptic species may be present in the warm waters of the northwestern Atlantic. Zimmer's (1943) type material is lost and until topotypic material from Southeast Florida can be collected, described in detail, and a neotype designated, the taxonomic status of *E. micruropus* species remains muddled. No male for the genus is presently known.

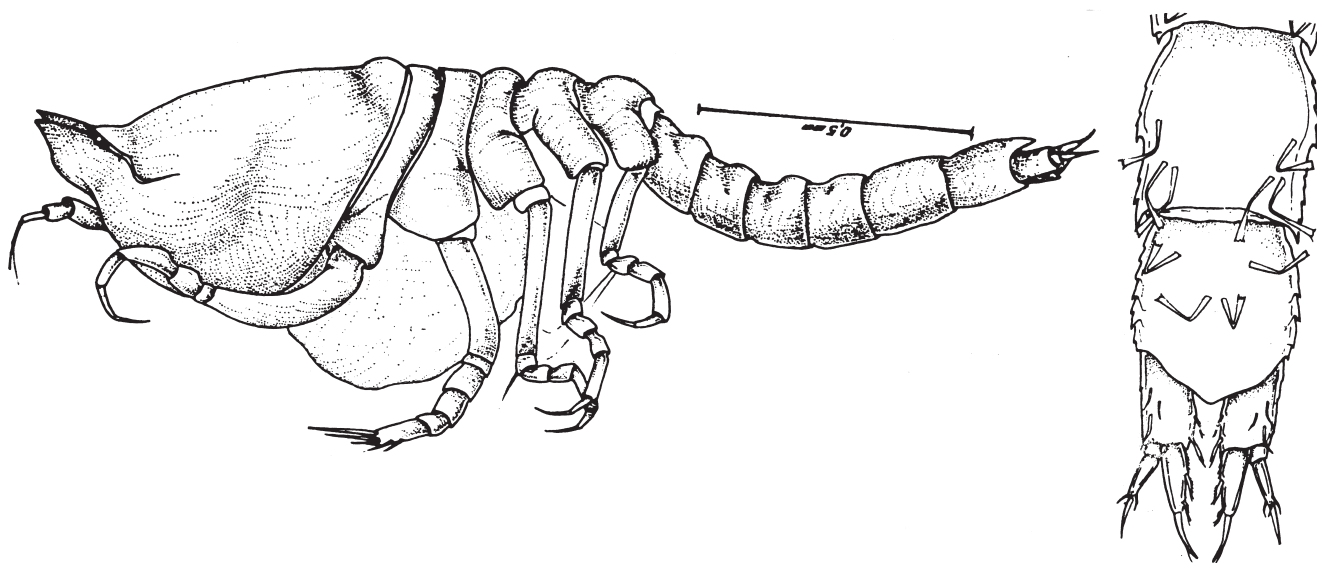


Figure. *Elassocumella micruropus* sensu Băcescu & Muradian (1977a) Lateral view of adult female and dorsal view of uropods

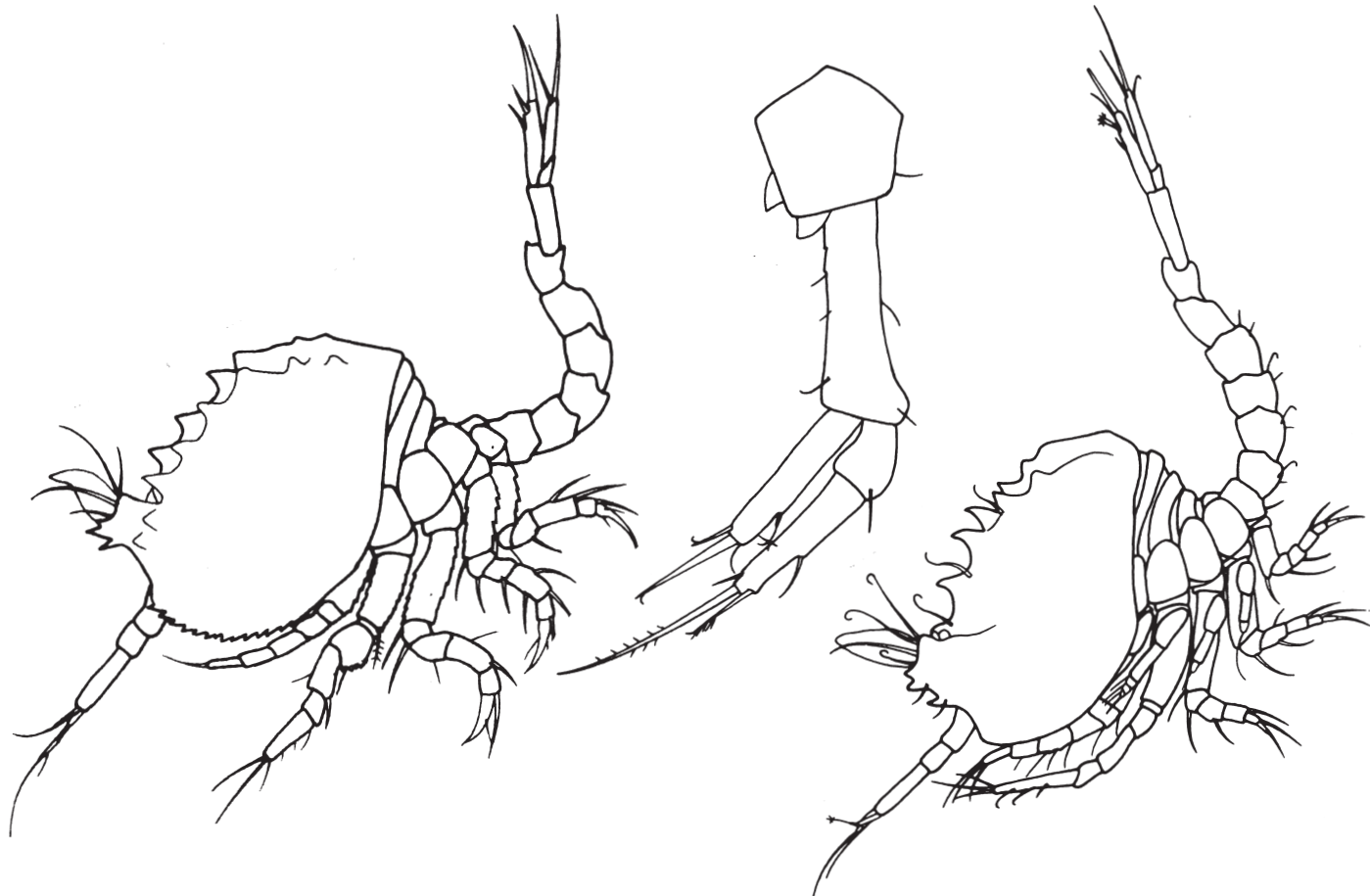
Normjonesia danieli Petrescu & Heard, 2001

Synonyms.— none

Recognition characters.— Carapace deep, partially covering free thoracic segments, longer than 1/3 of body length. Pseudorostrum upturned at nearly right angle, slightly exceeding eye-lobe. Antennule with distal article of peduncle as long as proximal 2 articles combined, with simple setae, lacking aesthetes. Mandible with styliform pars molaris. Maxilla 1 with one branchial filament (palp). Maxilla 2 without endites. Maxilliped 1 with large carpus, apical article minute. Maxilliped 2 with bulky ischiobasis, enlarged carpus, strong propodus with stout seta on distal inner corner, dactyl with 3 apical teeth. Maxilliped 3 with very long terminal simple setae. Pereopods of female lacking exopods; male with exopods on pereopods 1-4. Uropodal peduncle longer than last pleonite and as long as rami.

Distribution.— Known only from the type locality on the mid-shelf of the Eastern Gulf of Mexico at depth of 81 m.

Remarks.—This species superficially resembles *Cubanocuma gutzui* Băcescu & Muradian, 1977, another monotypic genus from the warm waters of the northwestern Atlantic (Băcescu & Muradian, 1977, Heard et al. 2006). *Normjonesia danieli* shares several characters with *C. gutzui*, including its body size and the form of the carapace, first maxilla, first and second maxillipeds, and uropods. *Normjonesia danieli*, however, is readily distinguished from *C. gutzui* by having: (1) distinctly longer pseudorostral lobes, (2) a carapace armed with prominent dorsal teeth, and (3) the absence of exopods on the pereopods of the female.

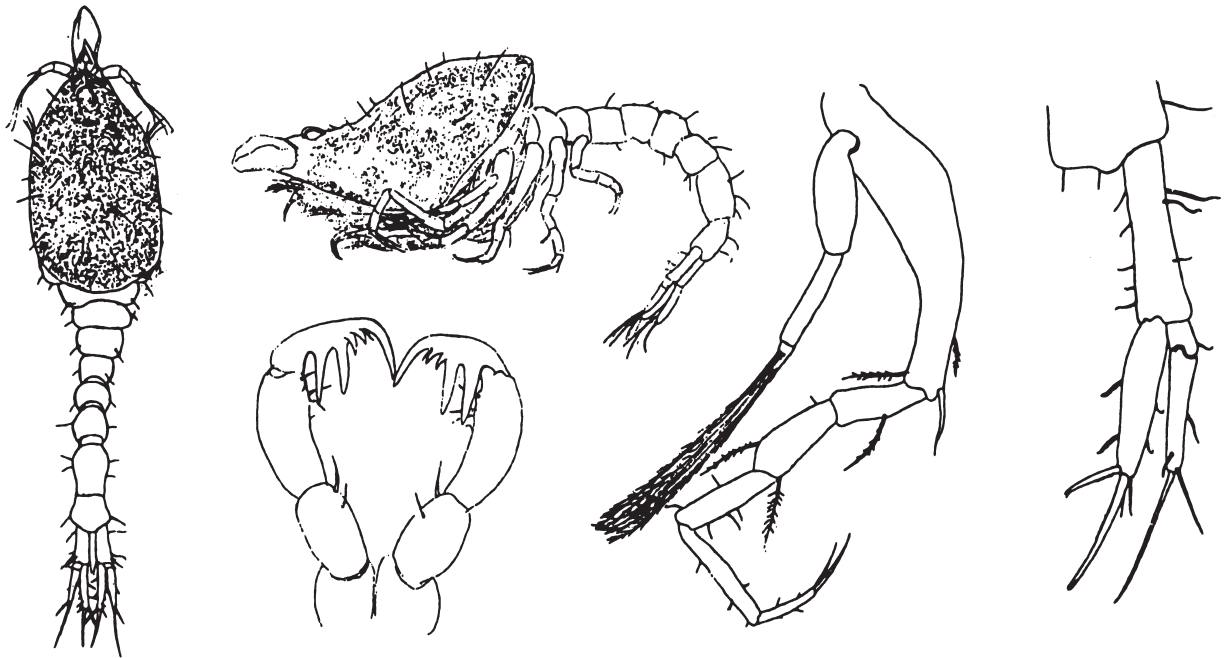


Procampylaspis sp. A

Distribution.- Presently known from the Florida Southwest Continental shelf in depths of 50-100m.

Recognition characters.- Carapace with small bristle-like, curved setae (usually with attached fine sediment or detritus). Maxilliped 2 with dactylus, rake-like, armed with distinctive with prong-like teeth. Pereopod 1 with ischium elongate, equal or subequal to carpus. Uropodal endopod relatively broad

Remarks.- *Procampylaspis* represents a large genus whose species are represented in all the world's oceans. It is characterized by the rake-like dactylus on the second maxilliped and an atypically long ischium on the first pereopod. Members of the genus typically are found in cold water habitats, usually on the continental slope and abyssal plain. The occurrence of *Procampylaspis* sp. A at mid-continental shelf depths off Southwest Florida, is unexpected. Like many other members of the genus the carapace of this apparently undescribed species is covered with fine bits of sediment and detritus.

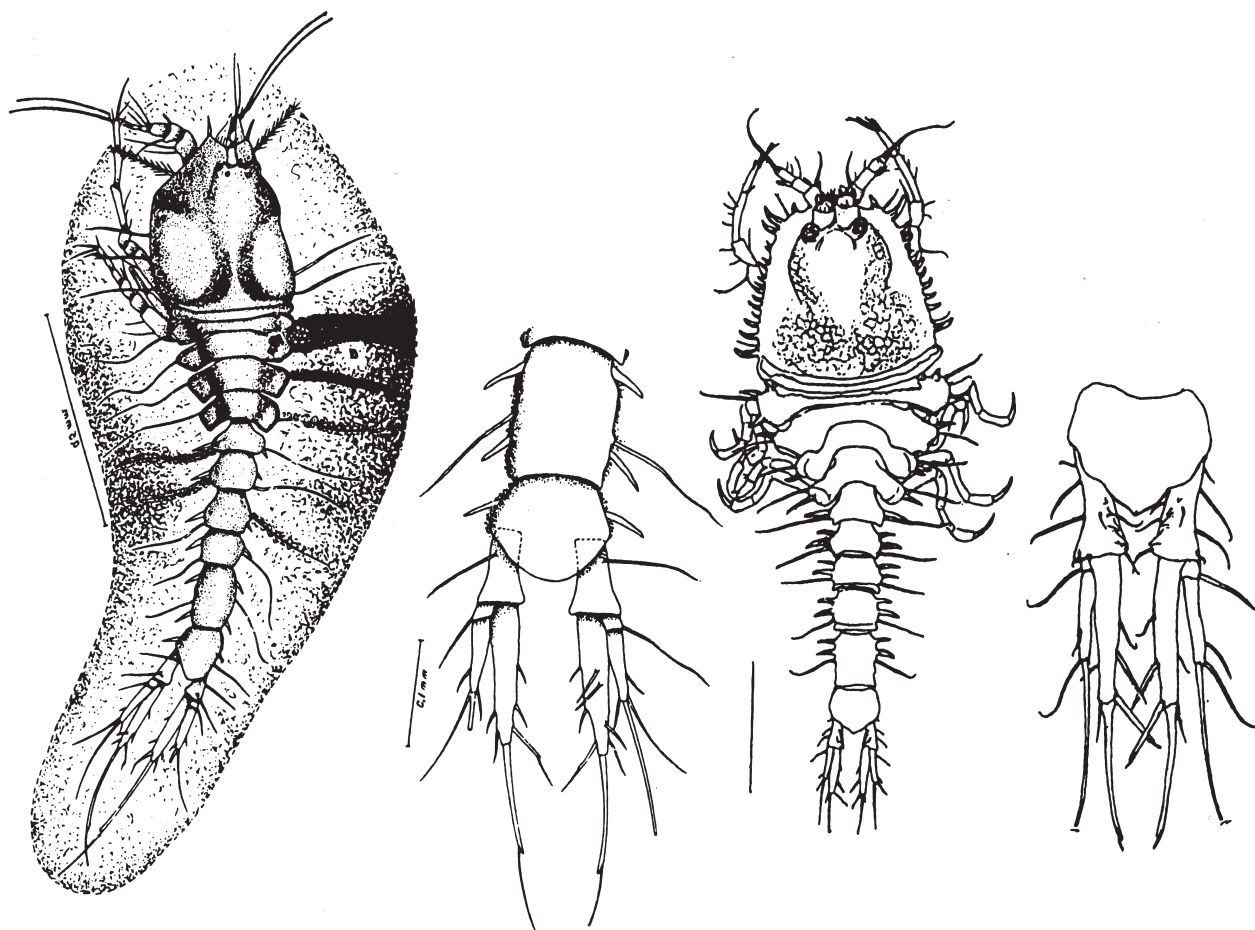


Genus *Schizotrema* Calman, 1911

Recognition characters.- Anterolateral angle of carapace well-developed, eyes divided in two separate groups, pseudorostrum forming two completely separate siphonal openings. Antenna 1 with tubercle on 2nd article of peduncle. Mandible with truncated pars molaris. Maxillule having palp with 2 unequal filaments. Female with exopods on maxilliped 3 and pereopods 1 and 2; male with exopods on maxilliped 3 and pereopods 1-4. Uropodal peduncle equal or longer than pleonite 6.

Remarks.- Most of the known species of *Schizotrema* occur in the tropical Indo-West Pacific region. Three nominal species are presently known from the warm waters of the Western Atlantic and the Caribbean Sea. One of these, *Schizotrema agglutinanta* (Băcescu, 1971), is known only from the Florida Keys. Two other species, *S. watlingi* Petrescu, 2002 and *S. wittmanni* Petrescu & Sterrer, 2001, are currently known from the American Mediterranean region, but not from Florida waters.

An apparently undescribed, spinose species, which we have tentatively attributed to the genus *Schizotrema*, was also collected in the Florida Keys (Long Key).



Schizotrema agglutinanta (Băcescu, 1971)

Synonymy.— *Cumella agglutinanta* - BĂCESCU, 1971: 12-14, fi g. 5a-h (descr.) .— ORTIZ & LALANA, 1988: 15 (list) .— BĂCESCU, 1992: 213 (catalog) .— *Cumella (Cumella) agglutinanta* - WATLING, 1991: 752 (list).— *Cumella bermudensis* PETRESCU, 1990: 12 (*nomen nudum*); BĂCESCU & ILIFFE, 1991: 9-10, fi g. 1.— *Cumella spinosa* BĂCESCU & ILIFFE, 1991: 10-12.— *Cumella sterreri* PETRESCU, 1990: 12 (*nomen nudum*); BĂCESCU & ILIFFE, 1991: 12, fi g.3.— *Schizotrema agglutinanta* (Băcescu, 1971).— PETRESCU & STERRER, 2001:117-123, figs 127- 149.

LECTOTYPE: (MHN Gr. Antipa) Tavernier Key, Florida Keys, Florida.

Distribution.— Florida Keys, Bermuda, Cuba.

Recognition characters.—Female: Carapace slightly less than 1/3 of entire body length, with long lateral setae. Pseudorostral lobes completely separated, upturned; eye lobe with 2 separate groups of omatidia and lenses. Antenna 1 with distal process on peduncle article 2. Pleonites 1-4 each having lateral margins with long simple seta and spiniform setae; pleonite 5 with pair of long simple setae and two pairs of spiniform setae; pleonite 6 with pair of spiniform seta only. Uropodal peduncle long as exopod and slightly shorter than pleonite 6; exopod with long setae on outer margin and simple terminal seta; endopod with one long terminal seta with long distal sensory setule, and 2 long setulate setae on inner margin.

Remarks.—The Florida Keys specimens of *S. agglutinanta sensu* Băcescu (1971) differ from those reported as this species from Bermuda by having long, spiniform setae on the lateral margins of pleonites 1-6.

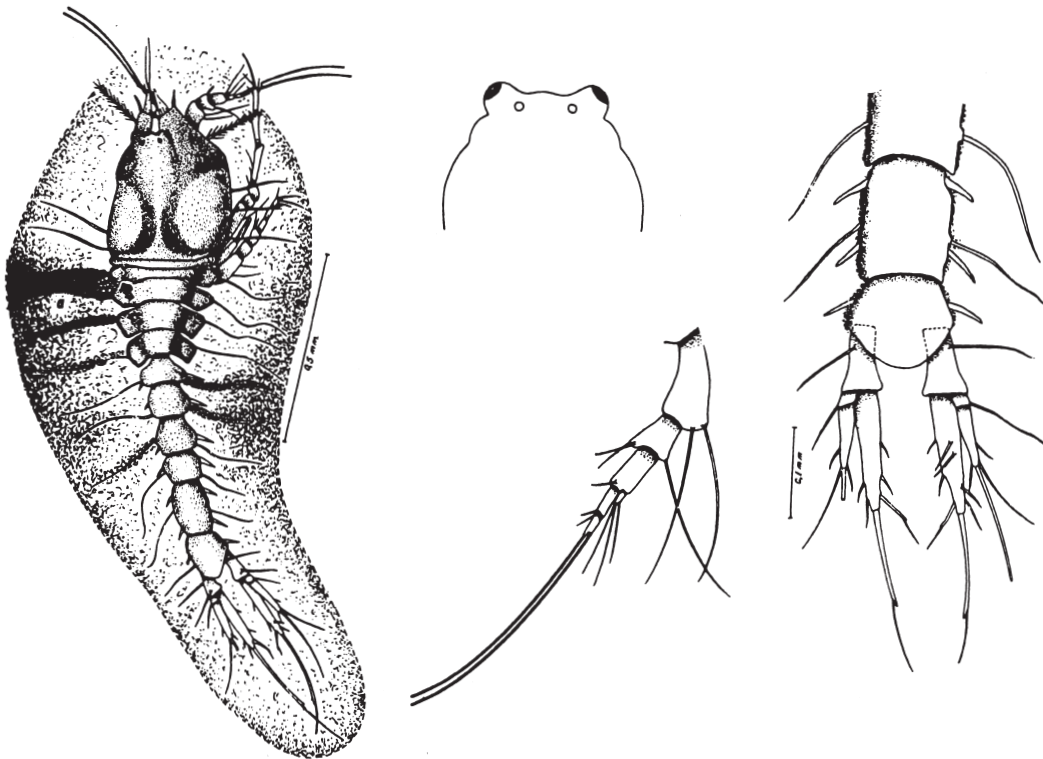


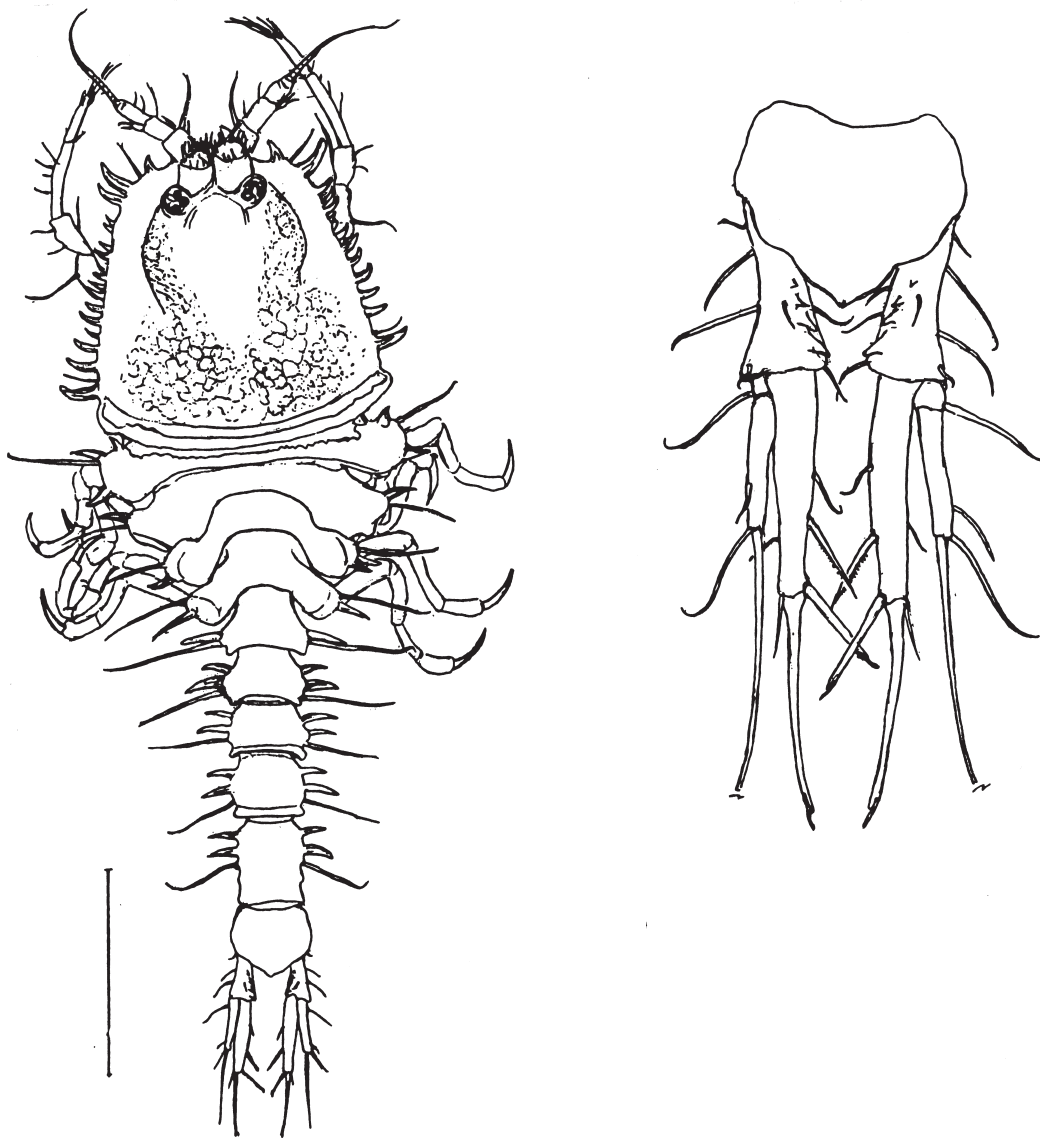
Figure. A, female dorsal view; B, carapace showing paired eyes; C, antenna 1 showing distal process on article 2; D, sixth pleonite and uropods. A-D from Băcescu (1971).

Schizotrema sp. A

Distribution.—Florida Keys (Long Key)

Recognition characters.—Female: Pseudorostral lobes very short, distinctly separated. Carapace with 10-12 lateral spines on each margin, lacking long lateral setae. Lateral margins of pleonite 1 with pair of long simple setae and one pair of long spines, pereonites 2-4 with lateral margins each having 1 pair of long simple setae and 2 pairs of elongate spines; pleonite 5 lacking long lateral setae and spines. Uropodal peduncle with 3-4 small spines on inner dorsal margin. Male unknown.

Remarks.—Due to the similarity of the lateral spines on the carapace, pereonites, and pleonites, this apparently undescribed species appears to have affinities with *S. depressum* Calman, 1911. *Schizotrema depressum*, which is the type species for the genus, was described from the Gulf of Siam (Calman 1911). It differs from *Schizotrema* sp. A by having the frontal margin of the carapace concave and by the presence of two pairs of lateral spines on the sixth pereonite.



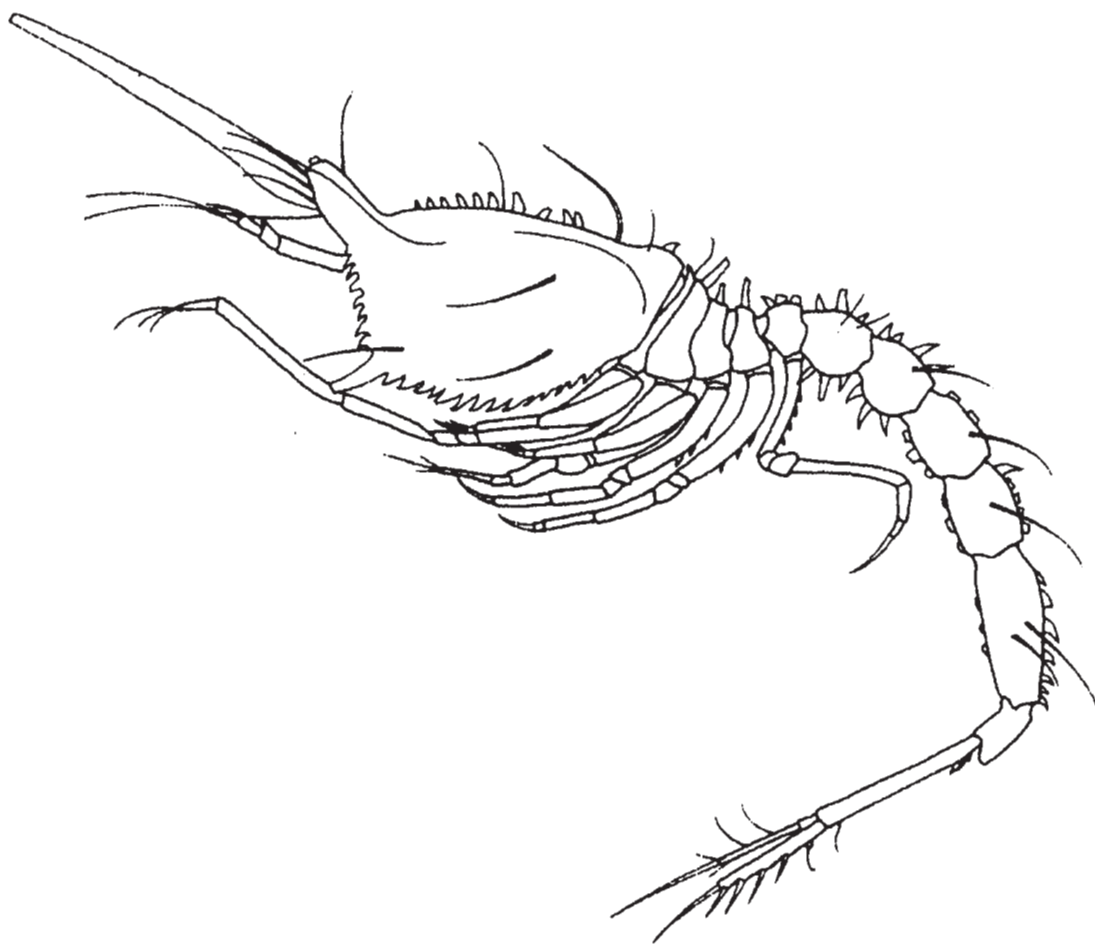
***Styloptocuma heardi* (Băcescu, 1979)**

Heteroleucon heardi - Băcescu, 1979: 95-97, figs. 1a-h. – *Americuma heardi* - Watling, 1991: 580, 581, figs. 3e-g. – *Styloptocuma heardi*- Petrescu & Watling, 2001.

Recognition characters.– Siphon, very long, attenuated, about as long as carapace. Carapace armed with prominent long, sharp spines on mid-dorsal ridge and on ventral margin from just below to base of pseudorostral lobes to near articulation with first pereonite; large spine present on antero-ventral margin. Ocular lobe reaching to end or beyond pseudorostral lobes. Antenna 1 with distodorsal process on article 2 of peduncle. Uropods long and narrow, length about that of last 3 pleonites (4-6)

Distribution.– Eastern Gulf of Mexico (USA), mid shelf depths.

Remarks.– The very long siphon, distinctive spination of the carapace, and long narrow uropods immediately distinguish this species from other Florida nannastacids treated in this guide.



GLOSSARY

Modified in part from various sources, including McLaughlin (1980), Holdich and Jones (1983), Stachowitsch (1992), Williams (1994), Dojiri and Sieg (1997), LeCroy (2000), Heard et al. (2004).

Abdomen - Tagma (body section) between the thorax and telson. It consists of 6 segments (somites); the pleopods are typically attached to the first 5 segments and a pair of uropods is attached to the last abdominal segment. Synonym: pleon.

Abdominal somite - One of the six body segments between thorax and telson. Synonyms: pleomere, pleonite.

Acuminate - Produced into a sharp point.

Acute - Sharply pointed.

Aesthetasc - Simple, tubular, non-rigid, thin-walled, chemosensory seta often found on the antennular main flagellum of cumaceans, and other malacostracan groups. Synonyms: esthetasc, esthete, or olfactory hair.

Ambulatory leg - See *pereopod*.

Antenna (antennae) - Second pair of cephalic or head appendages, referred to as “antenna 2” or “second antenna”. In Cumacea, uniramous, reduced in females but generally well-developed in males (except in *Almyracuma*). In the female there are from 1 to 5 article. In the male there is nearly always a peduncle of 5 articles and a many segmented flagellum. The flagellum normally reaches to the end of the body or beyond it, but in some genera (e.g., *Mancocuma* and *Spilocuma*) is short and modified for clasping the female.

Antenna 1 - See *antennule*.

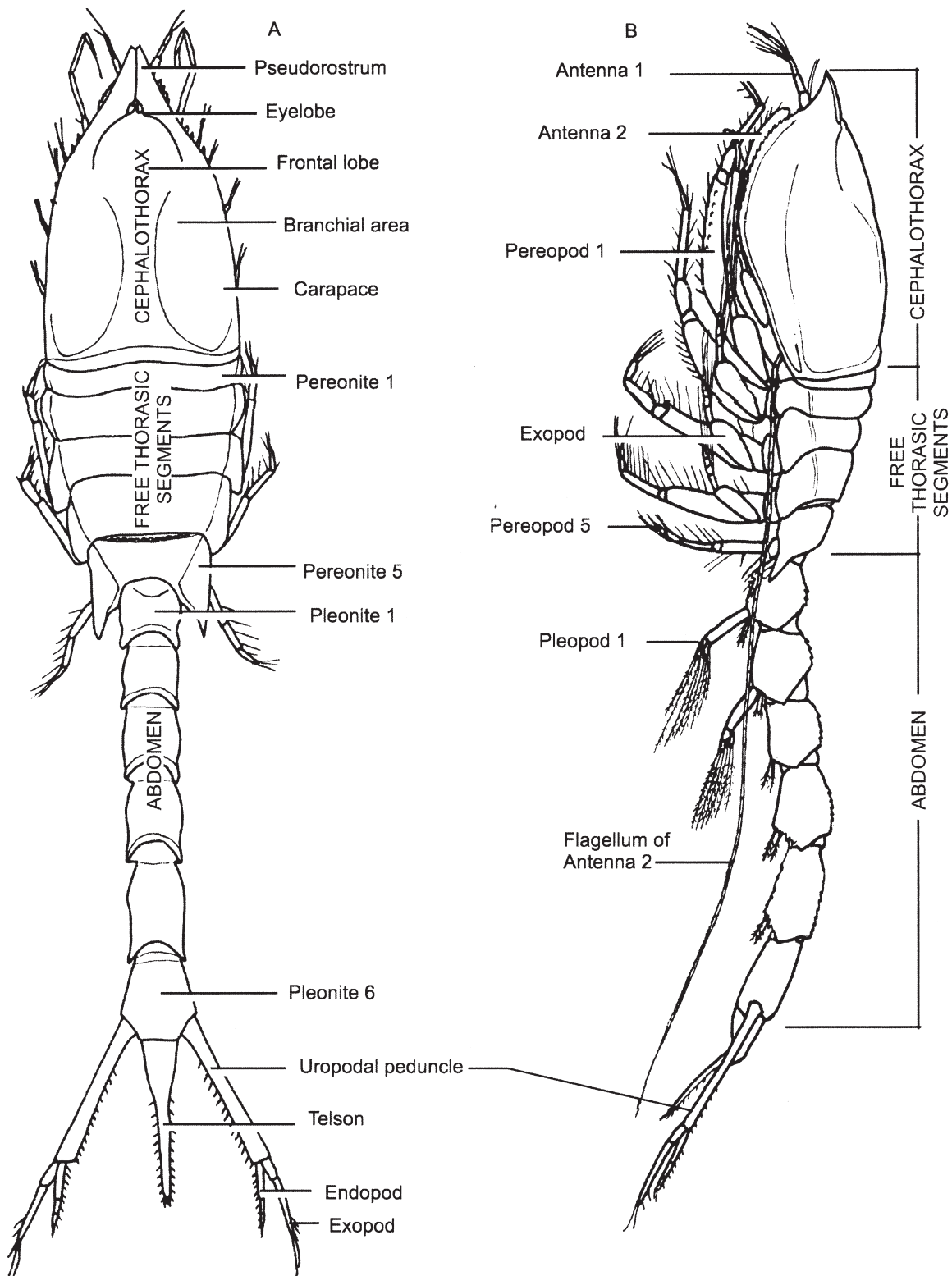
Antenna 2 - See *antenna*.

Antennal notch - On each side of carapace, notch in anterior border below pseudorostrum. Antennules and occasionally antennae project through antennal notch. Lower extension of notch termed anterolateral angle or corner. Synonym: antennal sinus.

Antennal sinus - See *antennal notch*.

Antennule (antennules) - First pair of cephalic (head) appendages; referred to as “antenna 1” or “first antenna” by some specialists. Basically biramous, consisting of proximal three-segmented peduncle bearing a outer (main) and inner (accessory) flagella.

Antepenultimate article - In crustacean referring to third article from the tip of an antennule, antenna, or other multi-articulate appendages.



Glossary reference: Dorsal (A) and lateral (B) aspects of a diastylid illustrating and identifying the basic features of the cumacean body plan. From Sars (1900) modified from Jones (1976)

Anterior - Front end; towards the front.

Anterolateral angle - On each anterolateral margin of carapace, lower extension of antennal notch. Synonym: anterolateral corner

Anterolateral corner – See *anterolateral angle*.

Anus - Posterior opening of digestive tract. Located at end of last (sixth) pleonite or on ventral surface of telson (in the latter case divided telson into preanal and postanal parts). Flanked by pair of anal valves.

Apical - At the apex, tip or distal end; terminal.

Apomorphic - Describing a condition derived from and differing from an ancestral state. Synonyms: advanced, derived. Antonyms: plesiomorphic, primitive, ancient.

Apomorphic character - A character derived from and differing from an ancestral state. Advanced character, derived character.

Article - individual unit or subdivision of an appendage.

Aesthetasc- A long, tubular sensory seta having thin cuticle, found on the antennules. Aesthetascs may have a chemosensory function, because males generally have many more than females. Also referred to as aesthets.

Basis - Second article of thoracopods (maxillipeds and pereopods) or pleopods.

Biarticulate - Composed of two articles.

Bifurcate - Forked.

Biramous - Having two branches or rami. Crustacean limb in which basis bears both exopod and endopod.

Branchial apparatus - Term applied to the epipods of first maxilliped pair (or, in an alternate interpretation, to epipods and exopods). Modified for respiration, the posteriorly directed part extending into branchial cavity and bearing branchial lobules, the anteriorly directed part ("exopod") forming part of exhalant siphon.

Branchial chamber - Cavity between carapace and body wall into which the palp of the maxillule and the epipodite of first maxilliped extend.

Brood plate - See *oostegite*.

Brood pouch - See *marsupium*.

Carapace - Large, shield-like structure covering the head and first three, occasionally the fourth, and rarely the fifth thoracic segments (somites). Extends laterally to enclose branchial chamber and anteriorly to form the pseudorostrum.

Carina - Any keel-like structure or well-defined projecting ridge on the outer surface of exoskeleton.

Carinate - Having at least one laterally compressed, acute ridge, carina, or keel; usually dorsal.

Carpus - Third of five segments (ischium, merus, carpus, propodus, dactylus) of endopod of thoracopod (maxillipeds and pereopods).

Caudal - See *posterior*.

Cephalon - Anterior region of the body bearing the eyes, mouth, antennules, antennae, and 3 pairs of mouth parts (mandible, maxillule, and maxilla). Commonly referred to as the head.

Cephalothorax - In Cumacea, expanded anterior part of the body consisting of the cephalon and the 3 or more thoracomeres covered by the carapace.

Clavate - Club-shaped; broadened distally.

Couplet - Numbered section of a dichotomous key, consisting of a pair of contrasting descriptions.

Coxa - First article of thoracopods (maxillipeds and pereopods) or pleopods. May be more or less fused with ventral surface (sternites) of body.

Cryptic - Hidden, camouflaged.

Cusp - Small tooth or process.

Dactyl(us) - Fifth and most distal of five articles (ischium, merus, carpus, propodus, dactylus) of endopod of thoracopods (maxillipeds and pereopods).

Dendritic - Branching.

Dentate - Toothed.

Derived character - See *apomorphic character*.

Dichotomous - Divided into two parts; used to describe a taxonomic key made up of pairs of contrasting descriptions, each of which serves to divide the larger group of organisms being identified into two, mutually exclusive smaller groups.

Distal - Located away from the body or point of attachment.

Dorsal - Pertaining to the back; refers to the upper or top surface or margin. Synonym: tergal.

Emarginate - Having a shallow marginal depression, slightly concave, hollowed out or indented, crenulate, or incised.

Endite - Inward or medially directed lobe of proximal part of appendage. The spination of the endites of maxillae 1 and 2, and shape of the maxillipedal endites can be an important character in cumacean taxonomy and systematics.

Endopod (endopodite).- Inner ramus of a thoracic or abdominal appendage.

Entire - complete; having a simple, smooth, unmodified margin; not cleft, dentate, or serrate.

Epipod (epipodite) - On first pair of maxillipeds, enlarged lateral lobe of first segment (coxa). Consists of two parts, the first directed posteriorly into branchial chamber and bearing branchial lobules, the second (siphonal lobe) directed anteriorly to form part of siphon (the latter may alternately be interpreted as representing an exopod).

Epistome – On underside of head, a small plate behind the bases of the antennules and in front of the labrum. Reduced and often not used in cumacean taxonomy.

esthete - See *aesthetasc*.

Excavate - Having a deep marginal depression, strongly emarginate, deeply concave.

Exite -Lateral lobe on outer margin of a sympodal or protopodal article.

Exopod (exopodite) - Outer branch (ramus) of biramous appendage. Occasionally the siphonal lobe of first maxillipeds is regarded as an exopodite.

Exoskeleton - Chitinous and calcified outer integument.

Eye - Photosensitive organ on dorsal surface of carapace; generally unpaired and positioned on ocular lobe.

Eye lobe – See *ocular lobe*.

Falcate - Sickle-shaped or hooked.

Flagellum (plural = *flagella*) - Distal division of antennule of antenna (peduncle, flagellum). In antennule, one may distinguish a larger outer (main) and smaller inner (accessory) flagellum. Main flagellum of antennule bears aesthetascs.

Frontal lobe – Bell-shaped area on dorsal surface of carapace. It bears the ocular lobe anteriorly and is limited laterally by the pseudorostral lobes.

Geniculate - Bent and fixed at a right angle, knee-like.

Globular - Round, bulbous, globe-like.

Gnathal lobe - Masticatory endite of mandible. Also called masticatory process.

Habitus - body form.

Hyposphaenium (plural = **hyposphaenia**) - Acute or hook-like process on ventral surface (sternite) of pereion. Present on the males of some Cumacea (e.g., *Iphinoe*).

Incisor process - Cutting process on mandible; widely separated from molar or grinding process. Synonym: ***pars incisiva***.

Inner (accessory) flagellum – Small secondary ramus of antennule. Rarely as long as the main flagellum. In Cumacea has up to four articles but frequently only one and it may be wanting.

Ischium - First of five articles (ischium, merus, carpus, propodus, dactylus) of endopod of thoracopods (maxillipeds and pereopods).

Juvenile(s) - Post manca stage(s) that have not morphologically differentiated sexually.

Labium -A fleshy, bilobed plate, posterior to mouth. Synonym: lower lip.

Labrum - Unpaired, lobe-like structure anterior to and partially covering mouth. Synonym: upper lip.

Lacinia mobilis - Small, articulated process between spine row and incisor process on mandible. Fully developed only on left mandible

Laminar - Thin, flat, plate-like.

Lanceolate - Tapering distally to an acute or subacute tip; lancet-shaped.

Lateral - Outer; towards the outside.

Laterally compressed - Flattened from side to side.

Leg - See ***pereopod***.

Linear - With parallel margins; slender, rod-shaped or subrectangular.

Lower lip -see *labium*.

Manca - Post embryonic stage in Cumacea, Tanaidacea and Isopoda characterized by the lack of last (fifth) pair of pereopods.

Mandible - Third paired appendage of head (cephalon); located between antennae and maxillules. Represents first pair of mouthparts and consists of a molar process, a spine row, a lacinia mobilis, and an incisor process. Palp is absent. The dorsal end of the mandible may be pointed or broadly truncate.

Marsupium - Chamber for holding eggs or recently hatched mancas; formed by overlapping oostegites and located ventrally, between the bases of the pereopods. Synonym: brood pouch.

Maxilla - Fifth paired appendage of head (cephalon); located between maxillules and first maxillipeds. Represents third pair of mouthparts and consists of a protopod, a bilobed endite, and an oval plate (exopod?). In some genera of Nannastacidae the endite is reduced to one lobe or absent.

Maxilla 1. - See *maxillule*.

Maxilliped – One of first three pairs of thoracopods serving as mouthparts and belonging to three thoracic somites fused to head. The first maxilliped has large modified epipodite that extends anteriorly to form the siphon (through which the water leaves the branchial chamber) and extends posteriorly as an expanded respiratory surface (branchial apparatus) often bearing gill-like structures. The second maxilliped has a palp that has become highly modified in some cumaceans (e.g. species of *Campypaspis* and *Procampylaspis*); in the adult female the epipodite of maxilliped 2 has become modified into multifingered-like process posteriorly into the marsupium. The third maxilliped is expanded proximally to partially cover maxillipeds 1 & 2 and the mouthparts.

Maxillule (or Maxilla 1). - Fourth paired appendage of head (cephalon); located between mandibles and maxillae. Represents second pair of mouthparts and consists of base (protopod) with two endites as well as elongate, posteriorly directed palp (endopodite). The palp is uniarticulate and bears 1-2 long terminal setae modified to clean the inner respiratory surface of the carapace. Very rarely the palp is rudimentary.

Medial - Inner; towards the middle.

Median -Central, on the mid-line or at the mid point.

Merus - Second of five articles (ischium, merus, carpus, propodus, dactylus) of endopod of thoracopod (maxillipeds and pereopods).

Molar process - Grinding, subterminal portion of the gnathal lobe of the mandible.
Synonym: *pars molaris*.

Morphology - Shape, form.

Multiarticulate - Composed of many articles.

Natatory - Swimming. Natatory behavior prevalent in the males of most cumacean families, especially those with pleopods and well-developed thoracic exopods.

Ocular lobe (eye lobe)- On anterior section of carapace, small, unpaired median projection of frontal lobe; typically bears eyes.

Oostegite (brood plate) - In adult female, one of the flattened plates projecting from the coxae of third maxilliped and first three pereopod pairs. They overlap to form a brood chamber. The second maxilliped of adult females exhibits a small flattened plate bearing a series of elongate setae extending into the brood chamber.

Oostegite bud - developing oostegites found in preparatory females.

Ovate - oval-shaped.

Ovigerous - Bearing ova or eggs.

Pars incisiva - See *incisor process*.

Pars molaris - see *molar process*.

Peduncle - Typically robust, proximal or basal articles of the antennule, antenna, pleopods and uropods; multiarticulate in antennule and antenna, uniarticulate in pleopods and uropods. Synonyms: sympod, protopod.

Pereon - Anterior portion of trunk with locomotory appendages (pereopods); differs from thorax in excluding the somite of the maxillipeds. Other spellings: pereion, peraeon.

Pereopod - One of five pairs of appendages of pereon. Basically biramous, consisting of basal section (coxa, basis), a five-articulated endopod and a natatory exopod. Number of pereopods bearing exopods is of taxonomic importance. Other spellings: peraeopod, pereiopod. Synonym: walking leg.

Pleomere - One of six segments (somites) of abdomen (pleon). Synonym: pleonite.

Pleon - Posterior division (tagma) of body. Narrow, consisting of six somites (pleonites). Synonym: abdomen.

Pleopod - One of the paired appendages of abdomen (pleon). Typically composed of a basal peduncle and two marginally setose rami. Generally adapted for swimming. Number of pleopods varies in males from none to five. Pleopods are absent in females (except for the monotypic genus *Archaeocuma* which has a single reduce pair).

Pleotelson - Body structure resulting from the fusion of telson with the last (sixth) abdominal somites.

Plesiomorphic -Referring to ancestral or primitive characters or character states.

Plesiomorphic character(s) - A character or characters retained from an ancestral state or condition. "Primitive" characters or character states.

Plumose seta(e) - A feather-like seta that has two dense rows of thin, long setules beginning at the base of the seta and continuing to the tip.

Posterior - Back, end; towards the rear.

Primitive - See *plesiomorphic*.

Produced - Narrowly expanded.

Propodus -Fourth of five articles (ischium, merus, carpus, propodus, dactylus) of endopod of thoracopod (maxillipeds and pereopods).

Protopod- Proximal portion of an appendage, consisting of coxa and basis (less frequently of precoxa, coxa and basis), fused together in some forms. Also referred to as: basal article, basis, peduncle, sympod, sympodite.

Proximal - Located close to the body or point of attachment.

Pseudorostral lobe: - One of the two anterior projections of carapace. May be separated or typically closely adjoining to form the pseudorostrum.

Pseudorostrum - Anterior projection of carapace formed by the two adjoining pseudorostral lobes. The pseudorostrum may be short, long, horizontal, upturned, acute, blunt; etc.

Pyriform -Broadest at the base, pear-shaped.

Ramus (rami) - Branch(es) of an appendage.

Reniform - Kidney-shaped.

Segment - Individual unit (somite) of the body.

Serrate - With a series or row of spines producing a “saw-like” appearance.

Seta (plural = *setae*) - A cuticular outgrowth having recognizable basal articulation. There are many types (e.g., plumose, stout, spiniform, simple, serrate, etc.), but there is no overall standard terminology universally accepted by carcinologists.

Setose - Having setae.

Setulate – Having setulae

Setule – An extension of the shaft of a seta, usually of uniform width from base to tip, and forming an articulated or flexible junction with the shaft.

Sexually dimorphic (sexual dimorphism) - Describes the condition in which males and females of the same species look different from each other. In adult cumaceans includes differences in the shape and sculpturing of the body, the presence of oostegites in females, differences in the shape and setation of the uropods and telson, and a better development of the eyes, antennae, and organs of locomotion in the males (including presence of pleopods, and better developed and/or more numerous thoracic exopods). In the males of the genus *Almyracuma* the third maxilliped and first pereopod are much more robust than in females.

Siphon - Tubular, exhalant respiratory structure consisting of a pair of usually anteriorly directed narrow lobes or attenuations (epipod or exopod) of the first maxillipeds. Water from branchial chamber exits via siphon.

Somite - See *segment*.

Spine - A cuticular outgrowth without a recognizable basal articulation.

Spine row - Row of setae, often setulate or serrate, at base of incisor process of mandible.

Spiniform - Spine-like.

Spinose - Having spines.

Sternal - See *ventral*.

Sternite - Sclerotized ventral surface of a body segment (somite).

Styliform - Very slender, elongate and sharply pointed at the tip.

Subacute - Nearly acute.

Subconical - Nearly conical.

Subcylindrical - nearly cylindrical.

Subequal - Nearly equal.

Suboval - nearly oval.

Subquadrate - Nearly square.

Subrectangular - Nearly rectangular.

Sulcus – Groove, furrow, stria.

Sympod(ite) - See *protopod*.

Systematics - The study of the evolutionary relationships among organisms.

Tagma - Major division of body (e.g., head, thorax, abdomen), each with a distinctive number of somites. Plural: tagmata.

Taxonomy - The identification and formal classification of organisms.

Telson - Posterior most segment of body. May be fused to last (sixth) abdominal somite (pleonite) to form pleotelson. It bears the anus and thus be divided into preanal and postanal parts.

Tergal- See *dorsal*.

Terminal - At the tip or distal end.

Terminal adult - An individual with fully expressed adult morphology and usually has completed its terminal molt.

Thoracomere - Segment or somite of thorax.

Thorax - Tagma between cephalon and abdomen.

Tooth - An acute, non-articulated process. Stout spine-like process.

Transverse - Perpendicular to the longitudinal axis of an article.

Triturative - Having a ridged surface used for grinding or crushing.

Truncate - With distal margin transverse, quadrate, cut-off.

Uniarticulate - Composed of one article. 162

Uniramous - Having one branch (*ramus*).

Upper lip -see *labrum*.

Uropods - Paired appendages of last segment (pleonite) of abdomen (pleon), consisting of a peduncle (protopod, basal article), a 1- to 3-articulate endopod and a 2-articulate exopod. The number of articles of the endopod is an important taxonomic feature.

Urosomite-The sixth (last) abdominal segment which bears the uropods.

Ventral - Refers to the lower or bottom surface or margin; opposite of dorsal. Synonym: sternal.

Vestigial - Greatly reduced, degenerate, poorly developed.

Walking leg - See *pereopod*.

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