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REVISION OF THE CUMACEAN FAMILY LEUCONIDAE

Les Watling

ABSTRACT

The family Leuconidae currently contains 99 species. With the exception of Epileucon, all genera in the family were established by 1907. All new species have been subsequently assigned to those genera, gradually producing genera distinguishable on the basis of single characters. In this paper Epileucon is reduced to a subgenus of Leucon as proposed by Băcescu (1988), and the species of Leucon are further apportioned among the subgenera Leucon Kroyer, Macraleurcon, new subgenus, Crymoleucon, new subgenus, and Alytoleucon, new subgenus. In addition, the new genera Ommatoleucon, Austroleucon, Nippoleucon, and Bytholeucon are proposed, and the genus Coricuma Watling and Breedy is added to this family. The new genus Americuma, with unclear family affiliations, is proposed for a species previously assigned to Heteroleucon. Complete diagnoses are provided for all genera and keys are given to all genera and species.

The Leuconidae is one of the oldest of all cumacean families, having been established by Sars in 1878 for the genera Leucon and Eudorella. Eudorellopsis was created by Sars in 1882 to accommodate two previously described species. Additional species from the North Atlantic and Mediterranean region gradually swelled the contents of these genera, due especially to the efforts of Sars (13 species). In the early 1900's, as material from various expeditions became available, many more new species were described. However, only a few belonged to the new genera described by Zimmer (Pseudoleucon) in 1903 and Calman (Hemileucon, Heteroleucon, and Paraleucon) in 1907. These genera accommodated all subsequent new species until Jones (1956) proposed Epileucon. The family presently contains 99 species assigned (occasionally with doubt) to those eight genera.

Bishop (1981a) described a number of new species which he assigned to Epileucon. He noted that the original diagnosis of Epileucon was based on a character (“absence of a serrated dorsal crest on the carapace of the female,” Jones, 1956) that did not show stability even in the type species. However, based on an extensive examination of deep Atlantic leuconids, the genus was re-diagnosed using a suite of characters, chief among them being the presence on pereionite 5 of at least one pair of anteriorly curved ventral teeth (Bishop, 1981a). All other characters were acknowledged by Bishop to occur also in some or several species of Leucon. Băcescu (1988) rejected the genus Epileucon, suggesting that the characters proposed were not significant and did not define all species in the genus. Instead, he proposed that Leucon should be divided into the subgenera Leucon and Epileucon, recognizing that the species in this genus could be segregated into discrete groups. In the following account, several other subgenera are proposed, each of which are hypothesized to be a phylogenetic lineage within the genus.

With the exception of Epileucon, there have been no new genera created for the 60+ species described since 1907. For most of the shallow northern hemisphere species, this has not been a problem, since they fit quite comfortably into the genera established earlier for species from this region. For species from Asia and the South Pacific, Central America, and the deep sea, use of the established genera has been problematic. In several cases the generic diagnoses have been so stretched that only one or two characters continue to hold a genus together. Occasionally, the few members of a genus do not look even remotely alike. In this paper, several new genera are created in order to deal with these problems and all genera are re-diagnosed.

KEY TO GENERA OF LEUCONIDAE

1. Distinct eye lens and/or pigment present ............. 2
   - Eyelobe without lens or pigment ................................ 3
2. Eyelobe extending to end of pseudostrum, uropod endopod 2-articulate .... Coricuma
   - Eyelobe not reaching end of pseudostrum, uropod endopod uniarticulate .... Ommatoleucon
3. Exopods on pereiopods 1 and 2 only in \( \delta \) and 
\( \delta \) Heteroleucon
   - Exopods on pereiopods 1–3 in \( \varphi \) and 1–4 in \( \delta \) 4
4. Uropod endopod uniarticulate 5
   - Uropod endopod 2-articulate 6
5. Pereiopod 2 article 3 < one-fourth as long as 
   wide; \( \delta \) antenna 2 with seta brush on both 
   anterior and posterior margins of peduncle 
   article 5; \( \delta \) without pleopods 7 Austroleucon
   - Pereiopod 2 article 3 half as long as wide; \( \delta \) 
   antenna 2 with seta brush only on anterior 
   margin of peduncle articles 4 and 5; \( \delta \) with 1 
   pair of pleopods Paraleucon
6. Efferent orifice anterior or anterodorsal 7
   - Efferent orifice distinctly dorsal, pseudorostral 
   lappets bent posteriorly and directed dorsally 
   Hemileucon
7. Pereiopod 2 article 3 nearly as long as wide 
   Bytholeucon
   - Pereiopod 2 article 3 much shorter than wide 
   or lost 8
8. Antenna 1 not geniculate or weakly geniculate 
   - Antenna 1 geniculate between peduncle articles 
   1 and 2 10
9. \( \delta \) without pleopods, \( \delta \) antenna 2 not reaching 
   end of pereion 9 Nippoleucon
   - \( \delta \) with 2 pairs of pleopods, \( \delta \) antenna 2 ex- 
   tending along pleon 8 Leucon
10. Uropod endopod and exopod subequal, an-
    terolateral corner of carapace strongly angular 
    - Uropod endopod much shorter than exopod, 
      anterolateral corner of carapace obtuse 5
11. Antenna 1 geniculate between peduncle articles 
    1 and 2 7
    - Antenna 1 geniculate between peduncle articles 
      2 and 3 Eudorellopsis
    - Antenna 1 geniculate between peduncle articles 
      1 and 2 Eudorella

**KEY TO SUBGENERA OF THE GENUS LEUCON**

Leucon Kroyer, 1846

Fig. 1a–c

Type Species.—Cuma nasica Kroyer, 1841.

Diagnosis. — Branchial siphon normal; 
   antenna 1 accessory flagellum rudimentary; 
   pereionite 5 without ventral teeth; uropod 
   endopod terminal seta not fused to distal 
   article.

Additional Species.—L. (L.) acutirostris Sars, 
1865; L. (L.) affinis Fage, 1951; L. (L.) 
americatus Zimmer, 1943; L. (L.) armatus 
Given, 1961; L. (L.) assimilis Sars, 1887; 
L. (L.) fulvus Sars, 1865; L. (L.) homorhynchus 
Bishop, 1981b; L. (L.) kobjakovae Lomakina, 
1955; L. (L.) laticaudus Lomakina, 1952; L. (L.) 
magnadentatus Given, 1961; L. (L.) mediterraneus 
Sars, 1879; L. (L.) minor Lomakina, 1955; L. (L.) 
nasicoides Liljeborg, 1855; L. (L.) nathorsti Ohlin, 
1901; L. (L.) panamensis Jones, 1969; L. (L.) 
profundus Hansen, 1920; L. (L.) robustus 
Hansen, 1920; L. (L.) serratus 
Norman, 1879; L. (L.) simanensis Gamó, 
1962; L. (L.) subnasica Given, 1961; L. (L.) 

**KEY TO FEMALES OF LEUCON**

1. Uropod exopod clearly longer than endopod
   - Uropod exopod shorter than or as long as 
     endopod 2
2. Pereiopod 2 article 3 distinct 3
   - Pereiopod 2 article 3 indistinct 5
3. Pseudorostral lobes upturned 4
   - Pseudorostral lobes directed horizontally 8
   - Pseudorostral lobes directed horizontally 
     americanus
4. Carapace with about 10 dorsal serrations an-
   teriorly simanensis
   - Carapace with about 4 dorsal serrations an-
     teriorly varians
5. Carapace with dorsal serrations extending onto 
   posterior one-third 6
   - Carapace with dorsal serrations only on an-
     terior two-thirds acutirostris
6. Carapace with dorsolateral spines on frontal lobe _robustus_
- Carapace without dorsolateral spines on frontal lobe _serratus_

7. Pereiopod 1 article 5 longer than article 6 _8_
- Pereiopod 1 articles 5 and 6 subequal in length _15_

8. Uropod endopod broadened _laticauda_
- Uropod endopod normally elongate _9_

9. Pereiopod 2 article 3 present _panamensis_
- Pereiopod 2 article 3 not present _10_

10. Pseudorostral lobes subtriangular to acute distally, carapace with dorsal serrations absent from posterior third _11_

- Pseudorostral lobes subquadrate (blunt) distally, carapace with dorsal serrations throughout length _13_

11. Pereiopod 1 basis with large serrations _magnadentata_
- Pereiopod 1 basis without large serrations _12_

12. Pereiopod 1 basis with several plumose setae along margin _subnasica_
- Pereiopod 1 with few setae of any kind along margin _minor_

13. Uropod peduncle shorter than endopod _armatus_
- Uropod peduncle as long as endopod _14_

14. Carapace and following pereionites strongly...
convex dorsally  
- Carapace and following pereionites not arched dorsally

15. Antenna 1 peduncle article 3 at least as long as main flagellum
- Antenna 1 peduncle article 3 shorter than main flagellum

16. Uropod exopod extending only to distal margin of endopod basal article
- Uropod exopod extending beyond distal margin of endopod basal article

17. Carapace with dorsolateral tooth behind frontal lobe
- Carapace without this tooth

18. Uropod exopod inner margin with numerous (>10) setae
- Uropod exopod inner margin lightly (<9) setose

19. Uropod peduncle inner margin heavily setose along length
- Uropod peduncle inner margin sparsely setose

20. Pereiopod 2 article 4 with strong seta at distal corner
- Pereiopod 2 article 4 with at most 1 plumose seta at distal corner

21. Uropod exopod with dense cluster of long setae distally
- Uropod exopod sparsely setose distally

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**Epileucon Jones, 1956**

Fig. 1d–g

**Type Species.** — *Epileucon galatheae* Jones, 1956.

**Diagnosis (emended).** — Branchial siphon normal; antenna 1 accessory flagellum at least half length of main flagellum first article; pereionite 5 with at least 1 pair of ventral teeth or single midventral tooth; uropod endopod terminal seta not fused to distal article.


**KEY TO FEMALES OF LEUCON (EPILEUCON)**

(abbreviated and emended from Bishop, 1981a)

1. Pseudorostrum long (<0.5 times carapace length)
- Pseudorostrum relatively short (<0.5 times carapace length)

2. Pseudorostral lobes distally subacute
- Pseudorostral lobes distally bluntly rounded

3. Sternite of fifth pereionite with at least 4 spiniform teeth
- Sternite of fifth pereionite with 1 or 2 spiniform teeth

4. Peduncle of uropod with 3 or 4 setae on medial margin
- Peduncle of uropod with 5–8 setae on medial margin

5. Sternite of fifth pereionite with single midventral tooth
- Sternite of fifth pereionite with paired teeth

6. Uropod exopod longer than endopod basal article
- Uropod exopod shorter than endopod basal article

7. Pereiopod 1 dactylus about one-half length of propodus
- Pereiopod 1 dactylus about two-thirds length of propodus

8. Carapace anteroventral corner with protruding tooth
- Carapace anteroventral corner indistinct, marked by a sinus

9. Pereiopod 2 dactylus with 3 or 4 plumose setae
- Pereiopod 2 dactylus with more than 6 plumose setae

10. Pereionite 4 pleural plate with more than 6 plumose setae
- Pereionite 4 pleural plate ventrally rounded

11. Pereiopod 2 article 5 with several (>4) plumose setae
- Pereiopod 2 article 5 with 1 or 2 plumose setae

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**Macrauloleucon**, new subgenus

Fig. 1h, i

**Type Species.** — *Leucon spinulosus* Hansen 1920.

**Etymology.** — Combination of Greek makros, long, aulos, pipe tube, and leucon, the stem genus, referring to the unusually long branchial siphon exhibited by these species.

**Diagnosis.** — Branchial siphon greatly elongate; antenna 1 accessory flagellum extending beyond midlength of main flagellum first article; pereionite 5 without ventral teeth; uropod endopod terminal seta not fused to distal article.

**Key to Species of Leucon (Macrauleucon)**

1. Pseudorostrum and frontal lobe with long spines
   - Pseudorostrum with low spines, none on frontal lobe
   2
2. Pereionites 2 and 3 with dorsal and dorsolateral spines
   - Pereionites 2 and 3 without spines

*Crymoleucon*, new subgenus

**Type Species.** — *Leucon tener* Hansen, 1920.

**Etymology.** — From Greek krymos, icy cold, for the waters in which the members of this subgenus are found or appear to have been derived, and *leucon*, the stem genus.

**Diagnosis.** — Branchial siphon normal; antenna 1 accessory flagellum extending at least to midlength of main flagellum first article; pereionite 5 without ventral teeth; uropod endopod terminal seta not fused to distal article.


**Key to Females of Leucon (Crymoleucon)**

1. Antenna 1 accessory flagellum extending well beyond main flagellum basal article
   - Antenna 1 accessory flagellum equal in length or shorter than main flagellum basal article
   4
2. Uropod exopod shorter than endopod basal article
   - Uropod exopod equal to or longer than endopod basal article
   3
3. Antennal notch obsolete; carapace middorsal teeth not extending to posterior margin
   - Antennal notch strong; carapace middorsal teeth continuous from eyelobe to posterior margin

*Inexcavatus* Zimmer, 1907.

**Remarks.** — The genus *Epileucon* was originally created by Jones (1956) for the species *E. galatheae*, which had the characters of the genus *Leucon*, but differed from all known species by the absence of a serrated dorsal crest. Bishop (1981a) noted that some specimens of *E. galatheae* in fact possessed several small dorsal teeth or serrations on
the carapace. He stated “the supposed distinction between Epileucon and Leucon is therefore eroded” (p. 354). Bishop then redefined the genus Epileucon, using as the primary character the presence of ventral teeth on pereionite 5. In addition, many other characters were listed, the combination of which was considered to be unique to species of Epileucon. However, any one or more, but not all, of these characters could be found in some species of Leucon. Băcescu (1988) rejected the genus Epileucon, suggesting that the additional features provided by Bishop were not significant at the generic level and were not to be seen on all the species presumed to constitute the genus. Instead, he divided the species of Leucon into two subgenera, Leucon and Epileucon, depending on whether or not they possessed ventral teeth on pereionite 5. Bishop (1981a) reexamined several species and the details mentioned above regarding the presence or absence of ventral teeth are taken from his paper. On this basis, L. bishopi is moved out of the subgenus Epileucon. In this paper, other subgenera are proposed which reflect the common possession of selected features by groups of species of Leucon. In each case, it is not felt that these features are of sufficient significance to warrant the erection of new genera, but rather are hypothesized as representing evolutionary patterns within the genus. However, it is possible that the features used to diagnose each subgenus will be found to be homoplasious upon the discovery of additional species.

Ommatoleucon, new genus

Fig. 2a–e

Type Species. — Leucon ocularis Hale, 1945.

Etymology. — From Greek ommatos, eye, referring to the presence of a lens on the eyelobe, and leucon, the stem genus.

Diagnosis. — Pseudorostrum projecting anteriorly, slightly shortened in male; antenna 1 weakly geniculate between peduncle articles 1 and 2; male antenna 2 with brush of setae on anterior margin of peduncle articles 4 and 5; male antenna 2 flagellum extending well along pleon; female with exopods on pereiopods 1–3; male with exopods on pereiopods 1–4; pereiopod 2 article 3 much shorter than wide in male, lost in female; uropod endopod uniarticulate; male with 2 pairs of pleopods; pigmented eye with single lens present in both sexes.

Additional Species. — No others.

Remarks. — The presence of a pigmented eye with a lens distinguishes this genus from all other members of the family. Ommatoleucon ocularis was originally placed in the genus Leucon principally on the basis of its general body shape and the presence of two pairs of pleopods in the male. Its eye and the uniarticulate uropod endopod also made it unique among the members of Leucon.

Hemileucon Calman, 1907

Fig. 2f–i

Type Species. — Hemileucon uniplicatus Calman, 1907a.

Diagnosis. — Pseudorostrum projecting anteriorly, shorter in male; antenna 1 geniculate between peduncle articles 1 and 2; male antenna 2 with brush of setae on anterior margin of peduncle articles 4 and 5; male antenna 2 flagellum not extending beyond pereion; female with exopods on pereiopods 1–3; male with exopods on pereiopods 1–4; pereiopod 2 article 3 distinct; uropod endopod 2-articulate; male without pleopods.

Additional Species. — H. comes Calman, 1907a.

Key to the Species of Hemileucon

1. Carapace with lateral ridge extending forward from near posterior margin to beginning of pseudorostral lobes; pseudorostral lobes not upturned uniplicatus
   Carapace with oblique lateral ridge extending dorsoventrally; pseudorostrum upturned in H. comes

Austroleucon, new genus

Fig. 2j–m

Type Species. — Hemileucon levis Hale, 1945.

Etymology. — Austr-, from Australia, and leucon, the stem genus.

Diagnosis. — Pseudorostrum projecting anteriorly, equal in male and female; antenna 1 slightly geniculate between peduncle articles 1 and 2; male antenna 2 with brush of setae on anterior margin of peduncle articles 5 and posterior margins of peduncle articles 4 and 5; male antenna 2 flagellum
not extending beyond pereion; female with exopods on pereiopods 1–3; male with exopods on pereiopods 1–4; pereiopod 2 article 3 much shorter than wide; uropod endopod uniarticulate; male without pleopods.

Additional Species.—No others.

Remarks.—Austroleucon levis was originally placed in the genus Hemileucon on the basis of its lack of pleopods and shortened antenna 2 flagellum. The form of antenna 2, however, differs from that seen in the species of Hemileucon. The latter have a typical male antenna 2 with a strong brush of setae on the anterior margin of peduncle articles 4 and 5. Such a setal orientation assures the reception of sensory information while the male is swimming through the water. In Austroleucon the setal brush on the anterior margin of peduncle articles 4 and 5 is augmented by a strong brush on the posterior margin of peduncle article 5. A change in the function of antenna 2 during the mate pursuit process seems likely. Additionally, Austroleucon differs from Hemileucon by its possession of a uniarticulate uropod endopod.

Nippoleucon, new genus

Type Species.—Hemileucon enoshimensis Gamô, 1967.
Etymology. — *Nippon-* , from Japan, and *leucon* , the stem genus.

**Diagnosis.** — Pseudorostrum projecting anteriorly, shorter in male; antenna 1 not geniculate; male antenna 2 without brush of setae on peduncle articles 4 and 5, peduncle article 5 subdivided by several annulations, each division with grazing tooth and setal bundle on posterior margin; male antenna 2 flagellum not extending beyond carapace posterior margin; female with exopods on pereiopods 1–3; male with exopods on pereiopods 1–4; pereiopod 2 article 3 very short; uropod endopod 2-articulate; male without pleopods.

**Additional Species.** — *N. hinumensis* (Gamó, 1967).

**Remarks.** — The two species assigned to this genus were originally placed in the genus *Hemileucon*. Continuing the modification of the male antenna 2 seen in *Austroleucon*, in *Nippoleucon* the peduncular articles have become modified into grasping-like structures. The brush of setae is completely missing from peduncular articles 4 and 5; peduncle article 5 is ringed with several annulations, each subdivision bearing a recurved flexible tooth and a small cluster of setae; the flagellum is still present but consists of less than 12 articles.

**Key to Species of Nippoleucon**

1. Uropod exopod inner margin with plumose setae; carapace and appendages generally devoid of scales ____________________________ *enoshimensis*

- Uropod exopod inner margin with long simple setae; carapace and appendages generally covered with scales ____________________________ *hinumensis*

**Coricuma** Watling and Breedy, 1988

*Type Species.* — *Coricuma nicoyensis* Watling and Breedy, 1988.

**Diagnosis (emended).** — Pseudorostrum projecting anteriorly over pseudorostral lobes.

**Additional Species.** — No others.

**Remarks.** — Since this species seemed to have the characters of both the Bodotriinae and the Leuconidae, it was tentatively assigned to the former by Watling and Breedy (1988). However, many of the features it exhibits are the result of reductions and I have felt it necessary to reevaluate its placement. In particular, the number of exopods is reduced, the mandible has no molar, and there are only 6 articles in pereiopod 3. On the basis of the presence of a strongly developed eyelow and the reduced number of exopods, the genus was placed in the Bodotriinae. On the other hand, the number of pleopods, the lack of an internal process on the pleopod inner ramus, and truncate mandible (not elongate as originally described), could have justified its placement in the Leuconidae. While the strongly developed eyelow remains a problem, and certainly necessitates a reevaluation of the characters defining the family, the high degree of similarity of the male antenna 2 grasping structure to that seen in *Nippoleucon* suggests strong affinities to the Leuconidae. A reduced male antenna 2 is seen in other families, for example, in the Lampropsidae (e.g., *Lamprops* [see Sars, 1900]), and Bodotriidae Manucocuminae (*Spilocuma* Watling, 1977). In both *Lamprops* and *Spilocuma* the antennal modifications are on the anterior margin, whereas in *Nippoleucon* and *Coricuma* the grasping structures are modifications of the posterior margin, suggesting that this function for the antennae has arisen independently.

*Heteroleucon* Calman, 1907a

*Fig. 3a–d*

*Type Species.* — *Heteroleucon akaroensis* Calman, 1907a.

**Diagnosis.** — Pseudorostrum projecting anterodorsally, shorter in male; antenna 1 weakly geniculate between peduncle articles 1 and 2; male antenna 2 with brush of setae on anterior margin of peduncle articles 4 and 5; male antenna 2 flagellum not extending beyond posterior margin of carapace; female with exopods on pereiopods 1 and 2; male with exopods on pereiopods 1
Fig. 3. Heteroleucon akaroensis (from Calman, 1907a): a, 9 carapace, side view; b, antenna 1; c, pereiopod 2; d, e carapace, side view, and antennae 1 and 2. Americuma heardi (from Bacescu, 1979): e, antenna 1; f, pereiopod 2; g, uropod. Bytholeucon hiscensis (from Bishop, 1981b): h, antenna 1; i, pereiopod 2; j, uropod. Paraleucon suteri (from Calman, 1907a): k, carapace, side view; l, antenna 1; m, pereiopod 2; n, uropod; o, e antenna 2. Pseudoleucon japonicus (from Gamo, 1964): p, carapace, side view; q, antenna 1; r, pereiopod 2; s, uropod. (Drawings not to same scale.)

and 2; pereiopod 2 article 3 short; uropod endopod uniarticulate; male without pleopods.

Additional Species. —No others.

Remarks. —A male from the Natural History Museum, London (BMNH.1907. viii.27.79), with fully developed antenna 2 was examined. The setal brush was seen to consist of setae arranged in five distinct rows on article 4 and 6 rows on article 5. Each row extended only slightly from the anterior onto the lateral margin of the peduncle article and did not appear to be present on the medial margin.

Bytholeucon, new genus
Fig. 3h–j

Type Species. —Paraleucon (?) hiscensis Bishop, 1981b.
**Etymology.** —From Greek bythos, the depths of the sea, and leucon, the stem genus.

**Diagnosis.** —Pseudorostrum projecting anteriorly, slightly shorter in male; antenna 1 geniculate between peduncle articles 1 and 2; antenna 2 of mature male unknown but in immature male brush of setae seen developing on anterior margin of peduncle articles 4 and 5; antenna 2 flagellum elongate in immature male; female with exopods on pereiopods 1–3; male with exopods on pereiopods 1–4; pereiopod 2 article 3 very short; uropod endopod distinctly 2-articulate; subadult male with (?)0 or 1 pair of pleopods.

**Additional Species.** —B. ultraabyssalis (Gamo, 1987).

**Remarks.** —Bytholeucon hiscens was tentatively assigned to Paraleucon by Bishop (1981b) on the basis of the late appearance of a single pair of pleopods in the one male known that is mature enough to show definitive characters. Besides the very great geographic and depth differences in the distribution of Paraleucon suteri (shallow waters of New Zealand) and the species of Bytholeucon (deep sea in the Atlantic and Pacific), the latter are distinguished also by the long antenna 2 flagellum in the male and short pereiopod 2 article 3. When a mature male is found, the relationship of Bytholeucon to Paraleucon can be better assessed.

**Pseudoleucon** Zimmer, 1903

**Type Species.** —Pseudoleucon sorex Gamo, 1964.

**Remarks.** —While both sexes are known for P. sorex, the male is incompletely described and needs to be reexamined.

**KEY TO THE SPECIES OF PSEUDOLEUCON**

1. Carapace with forwardly directed oblique ridge extending from dorsal margin to posterior limit of pseudorostral lobe
   — Carapace without oblique ridge

**Eudorella Norman, 1867**

**Type Species.** —Eudora truncatula Bate, 1856.

**Diagnosis.** —Pseudorostrum directed dorsally in both male and female; antenna 1 geniculate between peduncle articles 2 and 3; male antenna 2 with brush of setae on anterior margin of peduncle articles 4 and 5; male antenna 2 flagellum extending nearly to end of pleon; female with exopods on pereiopods 1–3; male with exopods on pereiopods 1–4; pereiopod 2 article 3 lost; uropod endopod 2-articulate; male with 2 pairs of pleopods.

Remarks.—There are several pairs, or groups, of closely related species in this genus. While Băcescu (1988) considered E. difficilis Blake, 1929, to be a good species, Watling (1979) suggested it was probably synonymous with E. pusilla. Since the type of E. difficilis has been lost, this issue may never be fully resolved. My own collections from the type locality, however, have produced no specimens that differ from the E. pusilla collected elsewhere on the east coast of the United States. Other very closely related species pairs include: E. gracilior and E. sordida (from South Georgia); E. groenlandica and E. spitzbergensis (Greenland, and Kara and Laptev Seas, respectively); E. gracilis and E. parvula (Spitsbergen and the Davis Straits, respectively); E. splendida and E. similis (Antarctic and Subantarctic, respectively); and E. pacifica and E. tridentata (boreal Pacific). Several species appear to be very close to E. truncatula, namely, E. intermedia (Davis Strait to Bay of Biscay, 2,000–5,000 m), E. gottliebi (eastern Mediterranean, 49–238 m), and E. nana (Mediterranean, 37–300 m). The distributions of the latter three species lie well within the geographic range from which E. truncatula has been recorded. Clearly, there is a problem with closely related species in this genus. Since the variability in none of these species has been studied, the validity of the closely related species cannot be assessed.

**KEY TO FEMALES OF EUDORELLA**

1. Uropod endopod terminal seta articulated with distal article ...... 2
2. Uropod rami equal in length aequiremis
3. Uropod exopod at least slightly shorter than endopod
4. Uropod exopod much shorter than endopod basal article
5. Uropod exopod about as long as or longer than endopod basal article
6. Carapace anteroventral corner with strong downward pointing tooth above sinus dentata
7. Carapace anteroventral corner with smooth or microdentate lobe above sinus
8. Pereiopod 1 article 6, 5–6 times as long as wide, antennule both flagella with naked margins gracilior
9. Pereiopod 1 article 6, 2–3 times as long as wide, antennule accessory flagellum with plumose setae distally on margin
10. Carapace pseudorostral lobes with many long setae; antennule accessory flagellum three-fourths length of main flagellum basal article hirsuta
11. Carapace pseudorostral lobes with few short setae; antennule accessory flagellum less than one-half length main flagellum basal article monodon
12. Uropod exopod clearly longer than endopod basal article
13. Uropod exopod only as long as endopod basal article
14. Uropod endopod terminal seta fused to terminal article
15. Uropod endopod terminal seta articulated with distal article
16. Uropod peduncle with long, slender terminal seta between insertion of endopod and exopod; exopod with at least 7 setae on inner margin in adult
17. Uropod peduncle without long slender terminal seta; exopod with only 3 or 4 setae on inner margin in adult
18. Antennule main flagellum basal article with plumose setae, pereiopod 2 dactyl with setae on distal one-third
19. Antennule main flagellum basal article naked on margins, pereiopod 2 article 5 about 1.5 times length article 4
20. Uropod exopod distinctly shorter than endopod basal article
1. Carapace with single, nearly horizontal ridge; terminal seta of uropod endopod 2 times longer than distal article
   - Carapace with 2 obliquely curving ridges; uropod endopod terminal seta as long as or shorter than distal article

2. Uropod exopod about as long as or longer than endopod basal article
   - Uropod exopod only slightly longer than endopod basal article

3. Uropod exopod extending to end of endopod distal article
   - Uropod exopod tapering, with setae along entire length of inner margin, including on distal article;
     pseudorostral lobes with few short setae

4. Uropod endopod 2-articulate; male with 2 pairs of pleopods.
   - Uropod endopod uniarticulate; male unknown.

5. Carapace with anterolateral horns; pleotelson terminally triangular
   - Carapace without anterolateral horns; pleotelsonic somite broadly rounded posteriorly

6. Uropod endopod with few setae on inner margin, including on distal article; pseudorostral lobes with few short setae
   - Uropod endopod with many more than 12 setae

   Notes: 1 Includes E. sordida. 2 Includes E. spitzbergensis. 3 Includes E. parvula. 4 Includes E. similis. 5 Includes E. tridentata. 6 E. intermedia, E. gottliebi, and E. nana may all be variants of E. truncatula. The key also does not consider E. rochfordi as the details of its uropod endopod are not known.

Eudorellopsis Sars, 1882
Type Species.—Leucon deformis Krøyer, 1846.

Diagnosis.—Pseudorostrum directed dorsally in both male and female; antenna 1 geniculate between peduncle articles 1 and 2; male antenna 2 with brush of setae on anterior margin of peduncle articles 4 and 5; male antenna 2 flagellum extending well along pleon; female with exopods on pereiopods 1–3; male with exopods on pereiopods 1–4; pereiopod 2 article 3 lost; uropod endopod 2-articulate; male with 2 pairs of pleopods.

Additional Species.—E. biplicata Calman, 1912; E. derzhavini Lomakina, 1952; E. integra (Smith, 1879); E. longirostris Given, 1961; E. resima Calman, 1907b; E. uschakovi Lomakina, 1955.

Key to females of Eudorellopsis

1. Carapace with lateral horizontal or oblique ridge
   - Carapace without lateral ridge

2. Uropod exopod rectangular with no setae on outer margin; pseudorostral lobes extending somewhat forward, not strictly vertical; carapace more elongate, longer than high
   - Uropod exopod tapering, with setae along outer margin; pseudorostral lobes strictly vertical; carapace boxlike, as long as high

3. Carapace with single, nearly horizontal ridge; terminal seta of uropod endopod 2 times longer than distal article
   - Carapace with 2 obliquely curving ridges; uropod endopod terminal seta as long as or shorter than distal article

4. Uropod exopod distal article expanded, widest midway along its length; endopod basal article nearly devoid of setae
   - Uropod exopod distal article of normal construction, gradually tapering distally; endopod basal article

5. Carapace with anterolateral horns; pleotelson terminally triangular
   - Carapace without anterolateral horns; pleotelsonic somite broadly rounded posteriorly

6. Uropod endopod with few setae on inner margin, including on distal article; pseudorostral lobes with few short setae
   - Uropod endopod with many more than 12 setae

   Notes: 1 Includes E. sordida. 2 Includes E. spitzbergensis. 3 Includes E. parvula. 4 Includes E. similis. 5 Includes E. tridentata. 6 E. intermedia, E. gottliebi, and E. nana may all be variants of E. truncatula. The key also does not consider E. rochfordi as the details of its uropod endopod are not known.

Americuma, new genus

Fig. 3e–g

Type Species.—Heteroleucon heardi Bacescu, 1979.

Etymology.—Amer-, from America, and cuma, the stem group.

Diagnosis.—Pseudorostrum projecting anterodorsally, branchial siphon long; antenna 1 not geniculate; female with exopods on pereiopods 1 and 2; pereiopod 2 article 3 distinct; uropod endopod uniarticulate; male unknown.

Additional Species.—No others.

Remarks.—This species, described from a manca, was originally assigned to the genus Heteroleucon. However, it differs from the only other species of Heteroleucon, H. akaaroeensis from New Zealand, in several important respects: its antenna 1 peduncle article 1 is very elongate, being as long as the remaining articles combined; it has a distinct, elongate pereiopod 2 article 3 distinct; uropod endopod uniarticulate; male unknown.

Mesogacopsis, new genus

Fig. 3h–i

Type Species.—Eudorellopsis sordida Böse, 1888.

Etymology.—Mesos-, from middle, and Gacopsis, the stem group.

Diagnosis.—Pseudorostrum directed anteromedially; antenna 1 geniculate between peduncle articles 1 and 2; male antenna 2 with brush of setae on anterior margin of peduncle articles 4 and 5; male antenna 2 flagellum extending well along pleon; female with exopods on pereiopods 1–3; male with exopods on pereiopods 1–4; pereiopod 2 article 3 lost; uropod endopod 2-articulate; male with 2 pairs of pleopods.

Additional Species.—No others.

Remarks.—This species, described from a manca, was originally assigned to the genus Heteroleucon. However, it differs from the only other species of Heteroleucon, H. akaaroeensis from New Zealand, in several important respects: its antenna 1 peduncle article 1 is very elongate, being as long as the remaining articles combined; it has a distinct, elongate pereiopod 2 article 3 distinct; uropod endopod uniarticulate; male unknown.

Key to females of Mesogacopsis

1. Carapace with lateral horizontal or oblique ridge
   - Carapace without lateral ridge

2. Uropod exopod rectangular with no setae on outer margin; pseudorostral lobes extending somewhat forward, not strictly vertical; carapace more elongate, longer than high
   - Uropod exopod tapering, with setae along outer margin; pseudorostral lobes strictly vertical; carapace boxlike, as long as high

3. Carapace with single, nearly horizontal ridge; terminal seta of uropod endopod 2 times longer than distal article
   - Carapace with 2 obliquely curving ridges; uropod endopod terminal seta as long as or shorter than distal article

4. Uropod exopod 1-articulate; male with 2 pairs of pleopods.
   - Uropod exopod uniarticulate; male unknown.

5. Carapace with anterolateral horns; pleotelson terminally triangular
   - Carapace without anterolateral horns; pleotelsonic somite broadly rounded posteriorly

6. Uropod endopod with few setae on inner margin, including on distal article; pseudorostral lobes with few short setae
   - Uropod endopod with many more than 12 setae

   Notes: 1 Includes E. sordida. 2 Includes E. spitzbergensis. 3 Includes E. parvula. 4 Includes E. similis. 5 Includes E. tridentata. 6 E. intermedia, E. gottliebi, and E. nana may all be variants of E. truncatula. The key also does not consider E. rochfordi as the details of its uropod endopod are not known.
a means of maintaining order within the genera of this family.

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