

**Key to the Aoridae Reported from the
Southern California Bight, SCAMIT, Edition 14**

D. Pasko 18May2017 (Rev. 01Oct2024)

INFRAORDER COROPHIIDA

Superfamily Aoroidea

FAMILY AORIDAE

Subfamily Ampithoinae

Aoroides columbiae Walker 1898

Aoroides exilis Conlan & Bousfield 1982

Aoroides inermis Conlan & Bousfield 1982

Aoroides intermedia Conlan & Bousfield
1982

Aoroides secunda Gurjanova 1938

Aoroides spinosa Conlan & Bousfield 1982

Aoroides sp A SCAMIT 1996 §

Bemlos audbettius (J. L. Barnard 1962)

Bemlos concavus (Stout 1913)

Bemlos macromanus Shoemaker 1925

Columbaora cyclocoxa Conlan & Bousfield
1982

Grandidierella japonica Stephensen 1938

Paramicrodeutopus schmitti (Shoemaker
1942)

Key to the SCB Aoridae¹

1. Uropod 3 uniramous; female gnathopod 2 transverse, weakly parachelate.....
..... *Grandidierella japonica*
- Uropod 3 biramous; female gnathopod 2 not parachelate 2
2. Mandibular palp slender, article 3 cylindrical; antenna 1 accessory flagellum a minute button
..... *Aoroides*.....7
- Mandibular palp robust, article 3 broadened; antenna 1 accessory flagellum multi-segmented
..... 3
3. Mandibular palp, article 3 nearly twice as long as article 2; male gnathopod 1 merus produced
into elongated distal tooth/process; male coxa 1 circular, enlarged to encircle head; female
coxa 1 distinctly smaller than coxa 2 *Columbaora cyclocoxa*
- Mandibular palp, article 3 subequal to or shorter than article 2; male gnathopod 1 subchelate
or carpochelate; male coxa 1 not circular, not grossly enlarged; female coxa 1 subequal to or
only slightly smaller than coxa 2 4
4. Accessory flagellum 2–3 articles; male gnathopod 2 carpochelate; female gnathopod 1, article
5 produced into postero-distal tooth; gnathopod 2, carpus bell-shaped (proximally narrow,
distally broadened), hind margin short..... *Paramicrodeutopus schmitti*
- Accessory flagellum of 8 articles; male gnathopod 2 subchelate; female gnathopod 1, article 5
not distally produced into acute tooth; gnathopod 2 carpus elongate, relatively narrow,
anterior and hind margins nearly parallel..... *Bemlos*...5
5. Male coxa 1 produced strongly forward; male sternum with 6 ventral processes (pereonites
(2–7); epimeron 1–3 without oblique ridge and weak distal tooth *Bemlos audbettius*
- Male coxa 1 weakly produced; male sternum with 0 or 2 ventral processes (pereonites 2–3);
epimeron 1–3 with oblique ridge and relatively strong distal tooth..... 6
6. Male sternum with 2 ventral processes (pereonites 2–3); telson emarginate; male gnathopod 1
transverse; female gnathopod 2 oblique, finely toothed *Bemlos macromanus*
- Male sternum without ventral processes; telson posterior margin straight; male gnathopod 1
oblique; female gnathopod 2 transverse..... *Bemlos concavus*
7. Male 8
- Female 14
8. Gnathopod 1 basis posterior margin bare 9
- Gnathopod 1 basis posterior margin setose..... 13

9. Uropod 2 peduncle lacking distal median process between rami or process exceedingly small (<1/6 rami) and difficult to view; mandibular palp, article 2 bare..... 10
- Uropod 2 peduncle with distal median process between rami clearly visible ($\geq 1/5$ rami); mandibular palp, article 2 with 1 or more distal setae 11
10. Antennae and gnathopod 1 basis with dense, plumose setae; gnathopod 2, article 5 with 3–6 setal bundles along anterior margin *Aoroides secunda*
- Antennae and gnathopod 1 basis with simple setae; gnathopod 2, article 5 bare along anterior margin *Aoroides* sp A
11. Gnathopod 1 carpus dorsally with only one or two distal setae, dorsal marginal clusters of multiple setae absent *Aoroides columbiae*
- Gnathopod 1 carpus dorsally with multiple (4–15) setal groups or clusters of setae 12
12. Gnathopod 1 carpus dorsally with 8-15 setal clusters, gnathopod 2 carpus and propodus with long setae; body speckled with clusters of concentrated pigment in pereonite hind corners *Aoroides inermis*
- Gnathopod 1 carpus dorsally with 5–7 setal bundles, gnathopod 2 carpus and propodus with only short setae; body speckled but rarely or weakly with concentrated spots in pereonite hind corners *Aoroides intermedius*
13. Gnathopod 1 basis anterior margin with sparse, short setae; gnathopod 2 carpus with dense setal clusters dorsally, setae longer than article width; body diffusely pigmented throughout *Aoroides spinosus*
- Gnathopod 1 basis anterior margin with numerous, long setae; gnathopod 2 carpus with sparse thin setal clusters dorsally, setae shorter than article width; head and mid-dorsal areas of pereonites 6 and 7 bare, while remainder of body generally pigmented *Aoroides exilis*
14. Uropod 2 peduncle lacking distal median process between rami or process exceedingly small (<1/6 rami) and difficult to view 15
- Uropod 2 peduncle with distal median process between rami clearly visible ($\geq 1/5$ rami) 16
15. Uropod 3 rami subequal, both rami bare; rami subequal to peduncle; gnathopod 2 palm transverse *Aoroides secunda*
- Uropod 3 inner ramus distinctly shorter than outer, rami with 1-2 spines; rami distinctly longer (>2x) than peduncle; gnathopod 2 palm distinctly oblique *Aoroides* sp A
16. Gnathopod 1 basis anterior margin with multiple long setae distally; mandibular palp, article 2 with one or more distal setae 17
- Gnathopod 1 basis anterior margin bare or with only a single distal cluster of short setae; mandibular palp, article 2 bare 19
17. Gnathopod 1 basis with many long setae anterodistally; marginal teeth along outer plate of maxilliped strongly serrated (practically visible with dissection scope), lower teeth with 1–4 cusps each; body pigmented in broad bands, with parts of head and pereonites 6 and 7 dorsally bare *Aoroides columbiae*
- Gnathopod 1 basis with few long setae anterodistally; marginal teeth along outer plate of maxilliped weakly serrated (typically not visible with dissection scope), lower teeth with 0–1 cusps each; body pigmentation typically speckled 18
18. Pereopod 7 basis narrow; marginal teeth along outer plate of maxilliped with lower teeth smooth (below the upper 3); body speckled with clusters of concentrated pigment in pereonite hind corners *Aoroides inermis*
- Pereopod 7 basis broad; marginal teeth along outer plate of maxilliped with 0–2 cusps on lower teeth; body speckled but rarely or weakly with concentrated spots in pereonite hind corners *Aoroides intermedius*

- 19. Anterior margin of gnathopod 2 basis nearly bare, but for a few short distal setae; gnathopod 1, medial margin of propodus with three or fewer setal bundles, typically similar in length; oostegite large, notably longer than coxal gill; body pigmented in broad bands, with parts of head and pereonites 6 and 7 dorsally bare *Aoroides exilis*
- Anterior margin of gnathopod 2 basis bearing multiple short setae; gnathopod 1, medial margin of propodus with five or more setal bundles, proximal setae typically shorter than distal groups; oostegite relatively small, generally not exceeding coxal gill; body diffusely speckled throughout *Aoroides spinosus*

ⁱ This key was adopted from Myers & Lowry 2003; Conlan & Bousfield 1982; Cadien 2004 and 2023.

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Barnard, J.L. 1962. Benthic Marine Amphipoda of Southern California: 1. Families Aoridae, Photidae, Ischyroceridae, Corophiidae, Podoceridae. *Pacific Naturalist* 3(1): 3-72.

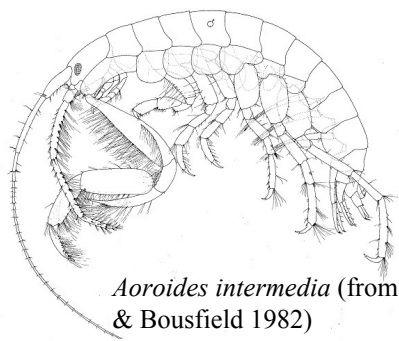
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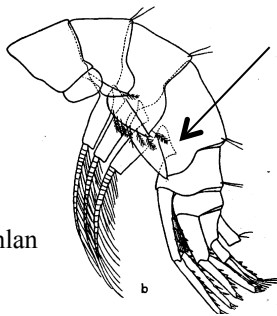
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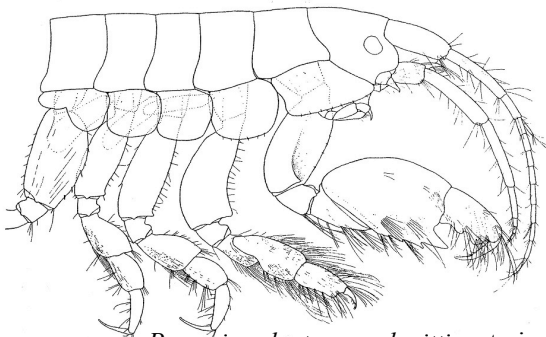
Aoroides intermedia (from Conlan & Bousfield 1982)



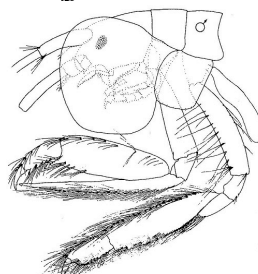
Bemlos macromanus; pereonite 7 and pleonites of male. Arrow indicates pleonite 3 oblique ridge and tooth (from Shoemaker 1925)



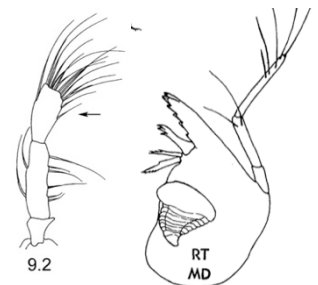
Bemlos sp, ventral process of sternum (pereonites 2-4) (from Meyers & Lowry 2003)



Paramicrodeutopus schmitti; anterior of male (from Shoemaker 1942)



Columbaora cyclocoxa male (from Conlan & Bousfield 1982)



Robust vs. slender mandibular palp: *Neomegamphopus* (left) and *Aoroides* (right). (from Meyers & Lowry 2003)

Aoroides secunda Gurjanova.

From Ariyama (2004). Nine species of the genus *Aoroides* (Crustacea: Amphipoda: Aoridae) from Osaka bay, Central Japan. Publications of the Seto Marine Biological Laboratory 40: 1-66

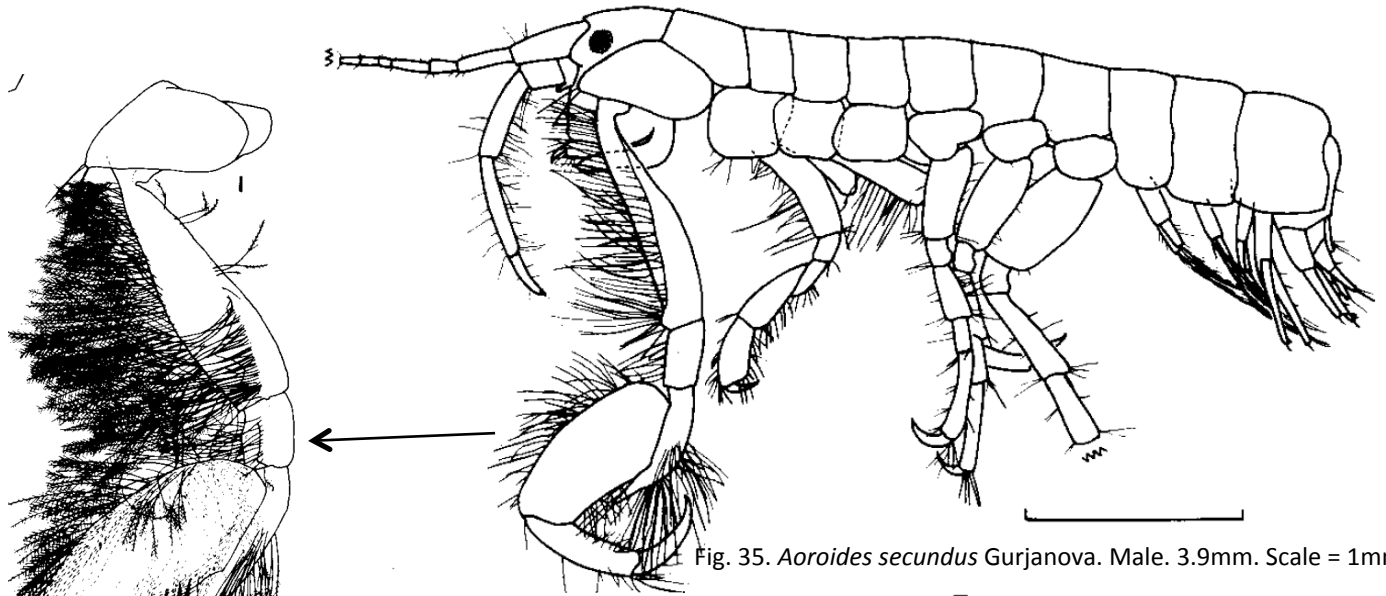


Fig. 35. *Aoroides secundus* Gurjanova. Male. 3.9mm. Scale = 1mm

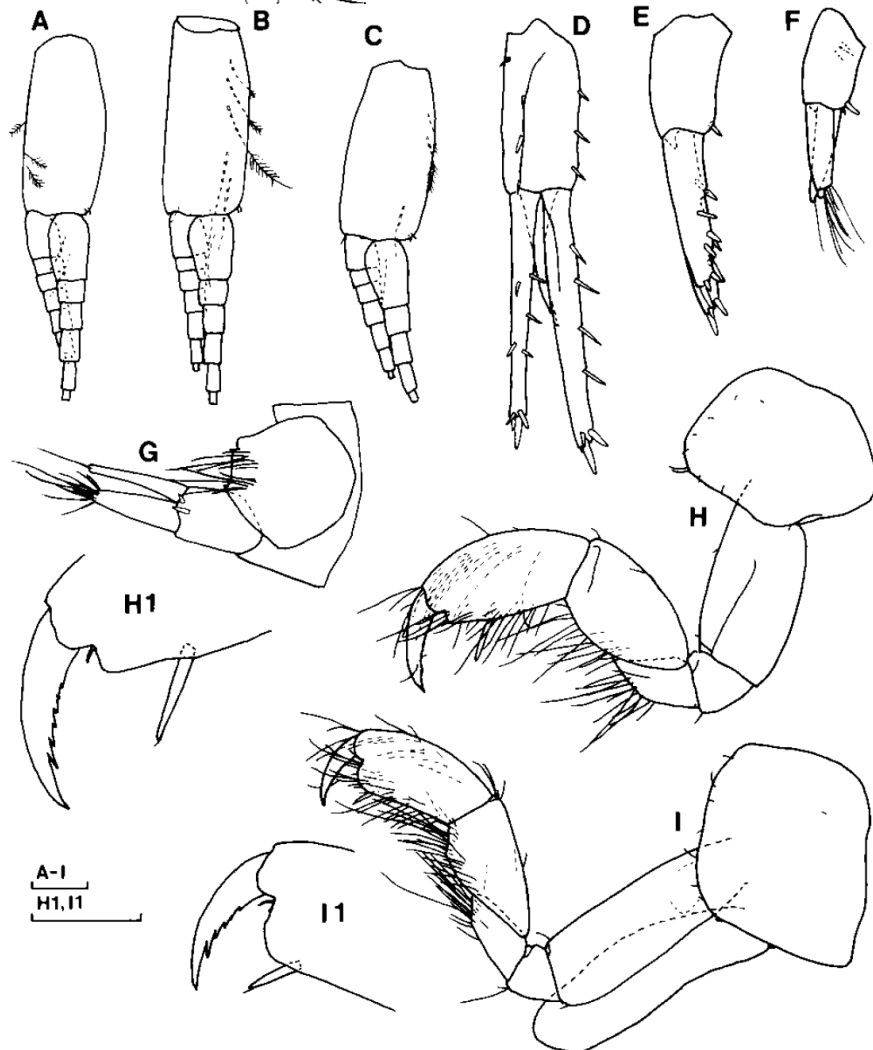
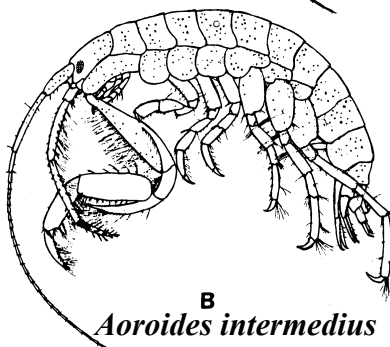
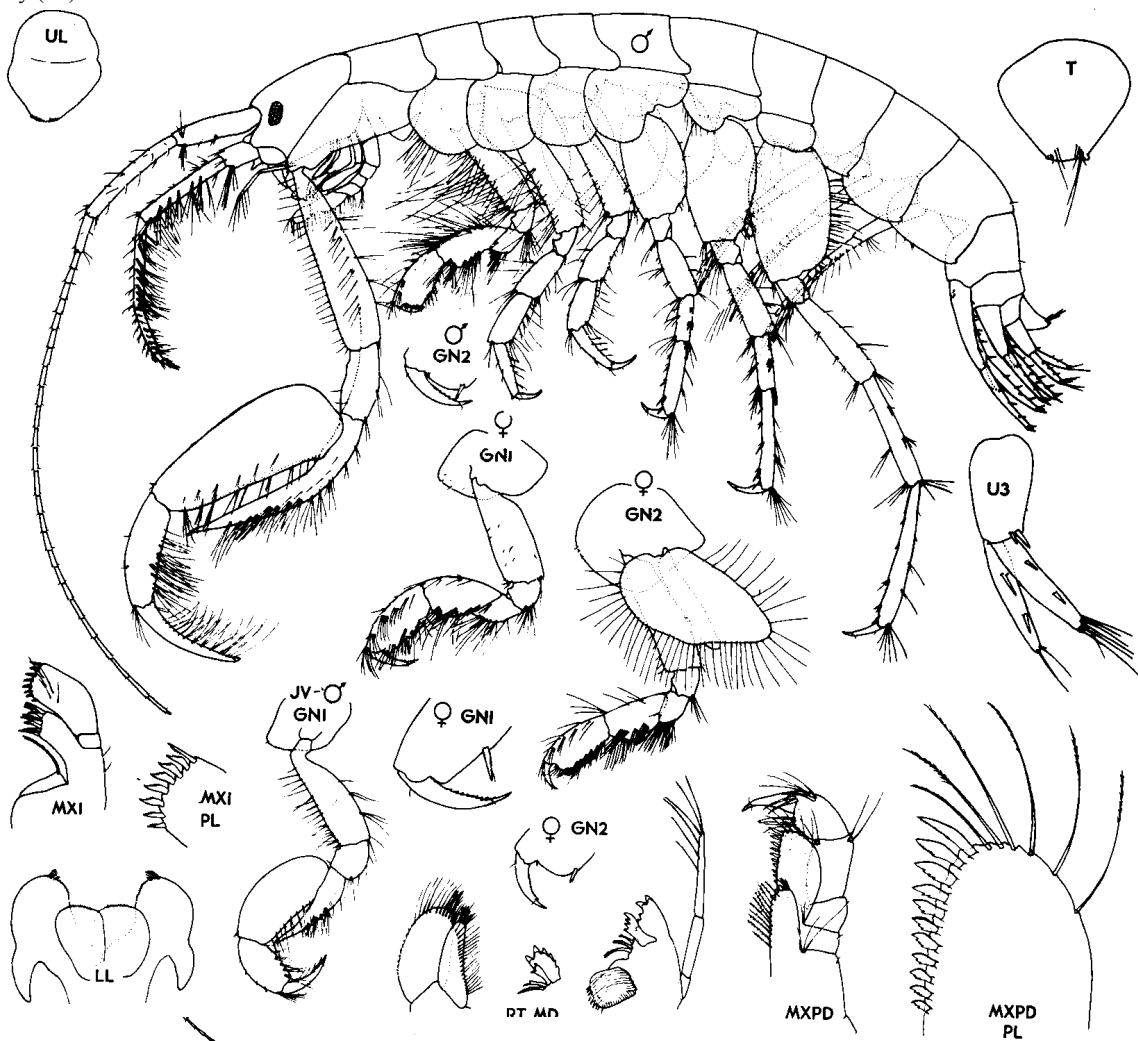


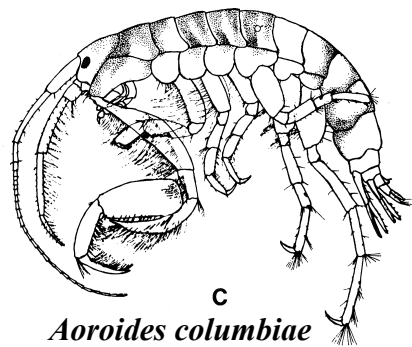
Fig. 38. *Aoroides secunda* Gurjanova. Male(1), 3.9mm: A-C, pleopods 1-3; D-F, uropods 1-3; G, telson and right uropod 3 (dorsal view). Female(1), 3.6mm: H, gnathopod 1; H1, palm and article 7 of gnathopod 1; I, gnathopod 2 (oostegite omitted); I1, palm and article 7 of gnathopod 2. Scale: 0.1mm.

Aoroides spinosa Conlan and Bousfield 1982

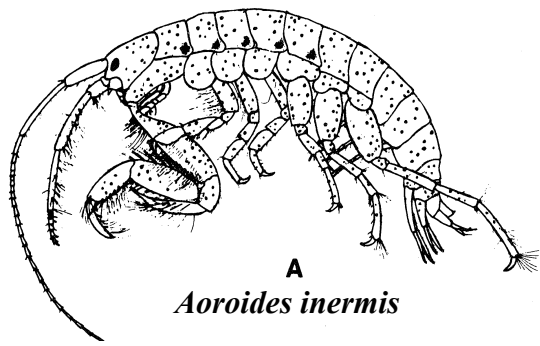
From Conlan and Bousfield (1982) Studies on amphipod crustaceans of the Northeastern Pacific region. I. 3. The superfamily Corophioidea in the North Pacific region. Family Aoridae: systematics and distributional ecology. National Museums of Canada, Publications in Biological Oceanography (10): 77-101



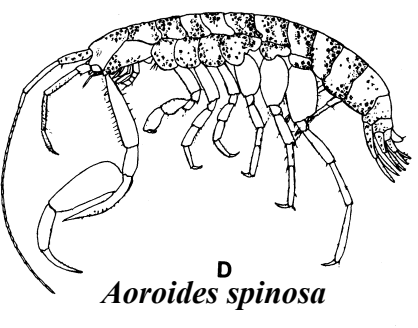
B
Aoroides intermedius



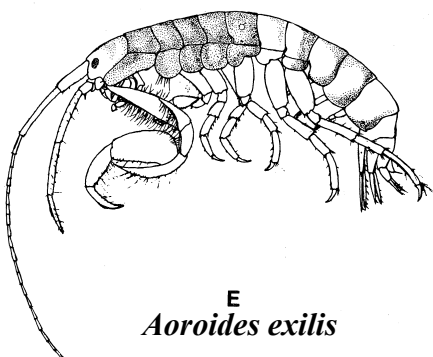
C
Aoroides columbiae



A
Aoroides inermis



D
Aoroides spinosa



E
Aoroides exilis

Bemlos audbettius

(from JL Barnard 1962)

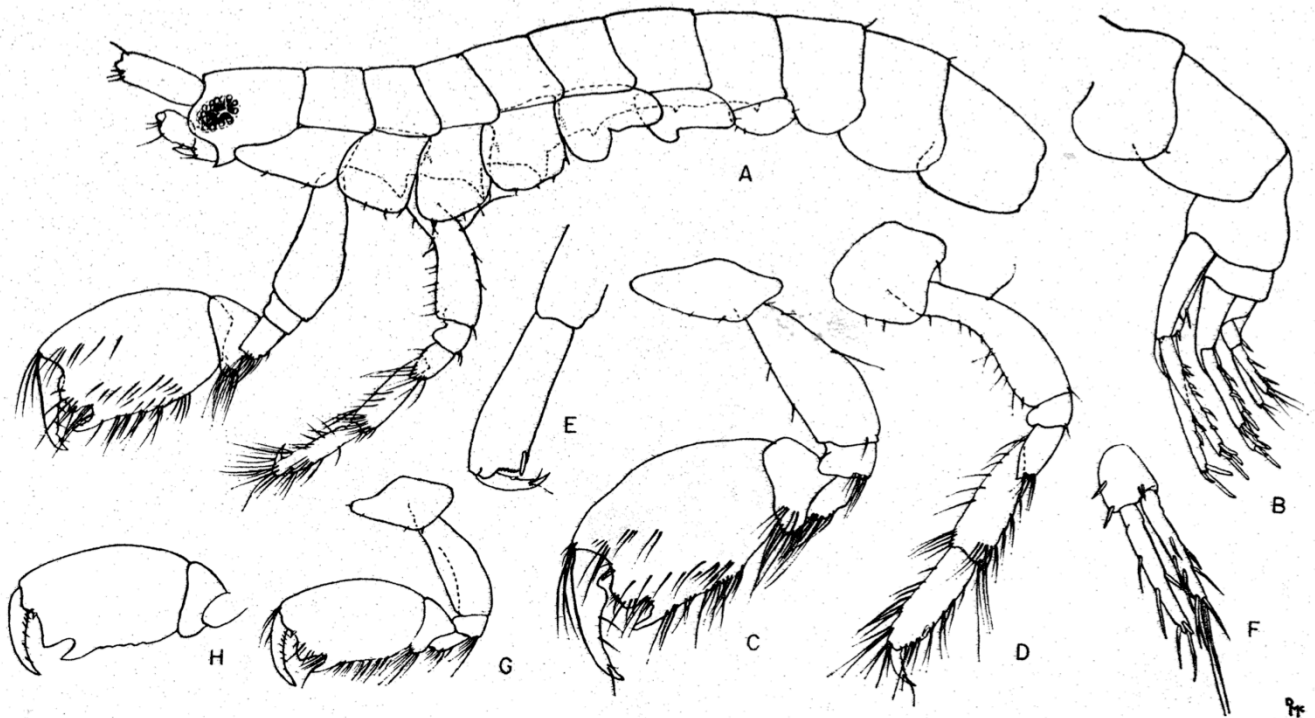


Fig. 1. *Bemlos audbettius*, n. sp. Male, holotype, 3.8 mm, sta. 5167: A, lateral view, peraeon and mesosome, minus antennae and pereopods; E, end of gnathopod 2. Male, 3.5 mm, sta. 5166: B, urosome; C,D, gnathopods 1, 2; F, uropod 3. Young male, 3.0 mm, sta. 5585: G,H, gnathopod 2.

Bemlos concavus

(from JL Barnard 1962)

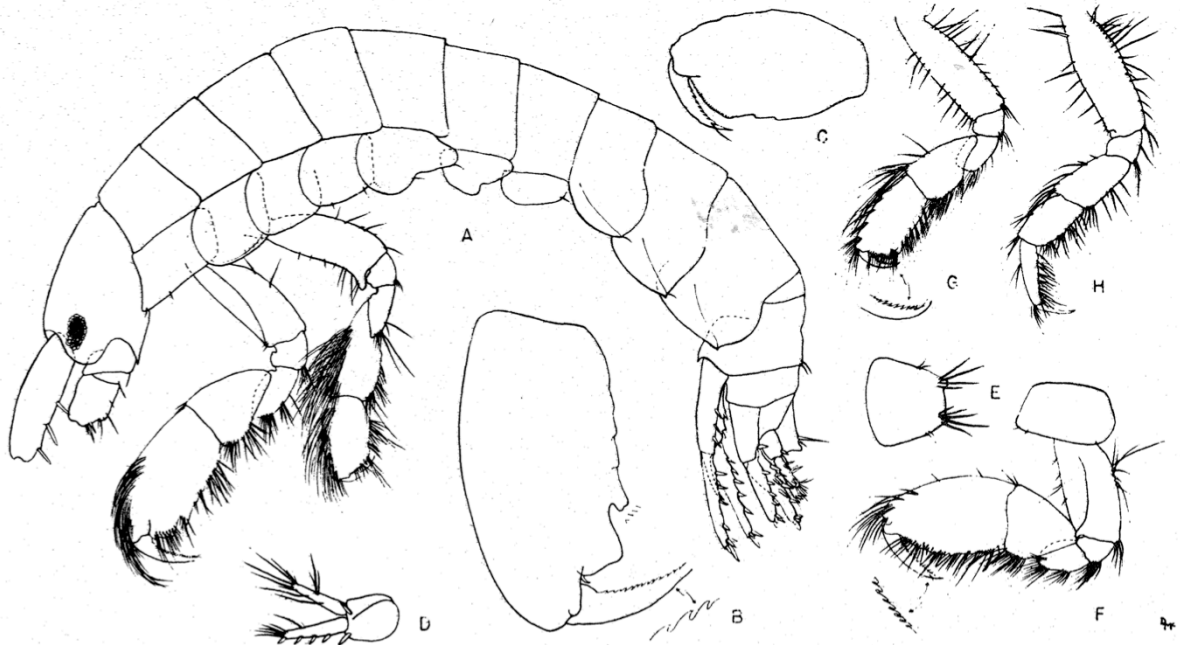


Fig. 2. *Lembo concavus* Stout. Male, 6.0 mm, sta. 5562: A, lateral view, minus antennae and pereopods: B, enlargement of gnathopod 1, palmar tooth broken; C, gnathopod 2; D, uropod 3; E, telson. Female, F,G, gnathopods 1, 2; H, pereopod 1.

(from K Conlan 1982)

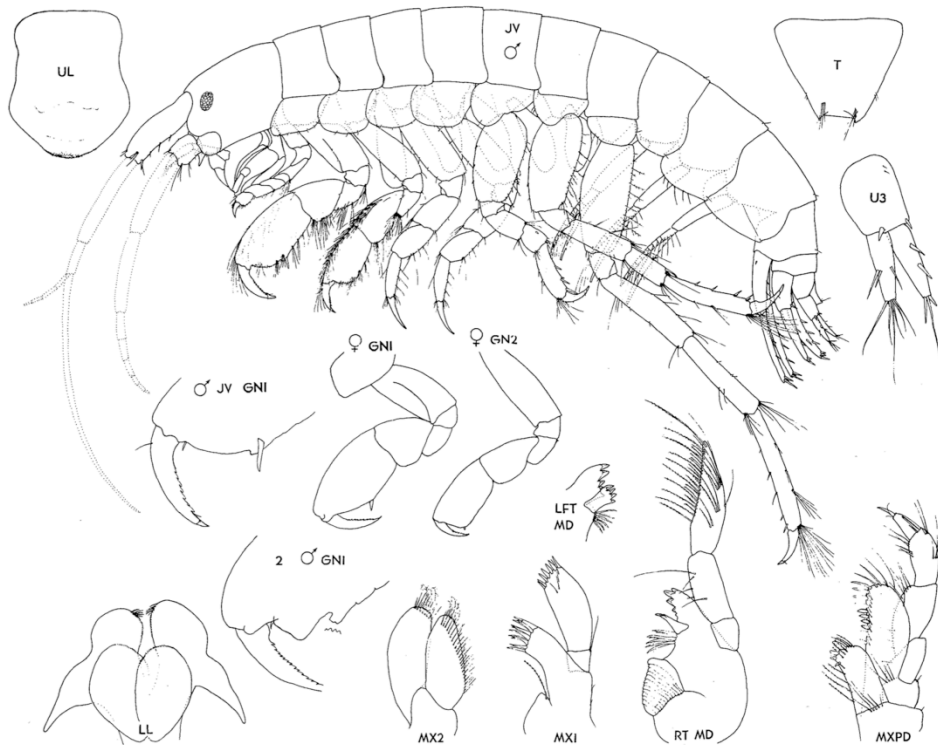


Figure 2. *Lembo (Lembo) concavus* Stout ♂ 4.0 mm, ♀ approx. 5 mm, mouth of San Josef Bay, Barkley Sound, Vancouver Is., B.C. 18 July 1959

Bemlos macromanus

(from JL Shoemaker 1925)

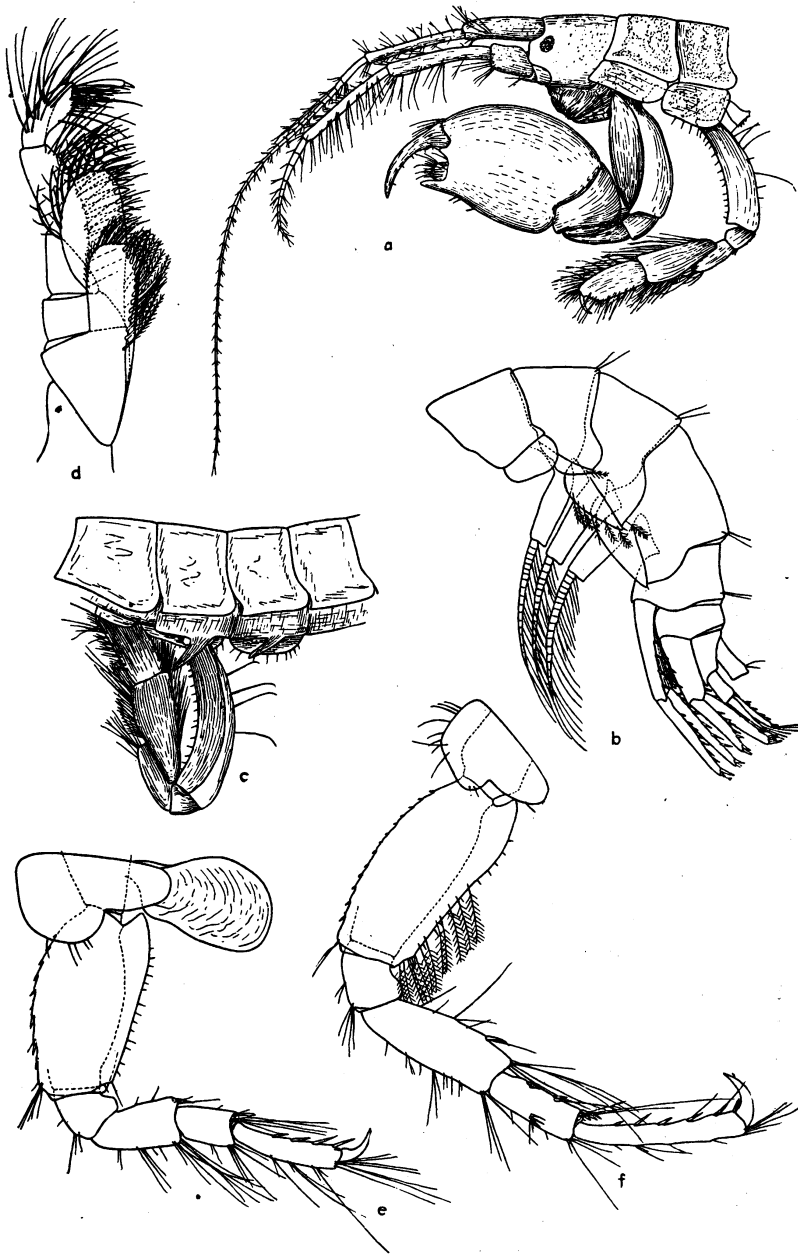


Fig. 10. *Bemlos macromanus*, new species

MALE.—a, head, first two thoracic segments, gnathopods and antennae; b, abdomen, uropods and telson; c, conical appendages on the ventral surface of second and third thoracic segments; d, maxilliped; e, peraeopod 3; f, peraeopod 4.

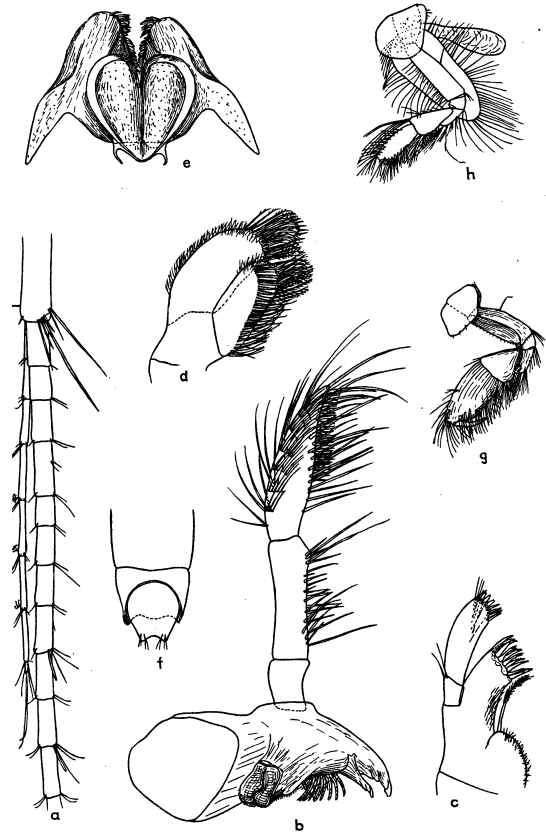


Fig. 11. *Bemlos macromanus*, new species

MALE.—a, antenna 1 showing accessory flagellum; b, mandible; c, maxilla 1; d, maxilla 2; e, telson; f, gnathopod 1; g, gnathopod 2.

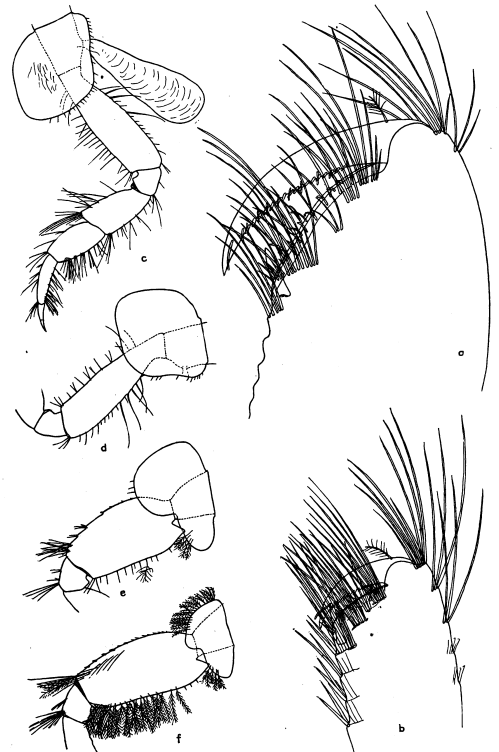


Fig. 13. *Bemlos macromanus*, new species

FEMALE.—a, gnathopod 1 showing palm and teeth of finger; b, gnathopod 2, showing fine teeth of palm and teeth of finger; c, peraeopod 1; d, peraeopod 2; e, peraeopod 3; f, peraeopod 4.

Columbaora cyclocoxa
(from Conlan & Bousfield 1982)

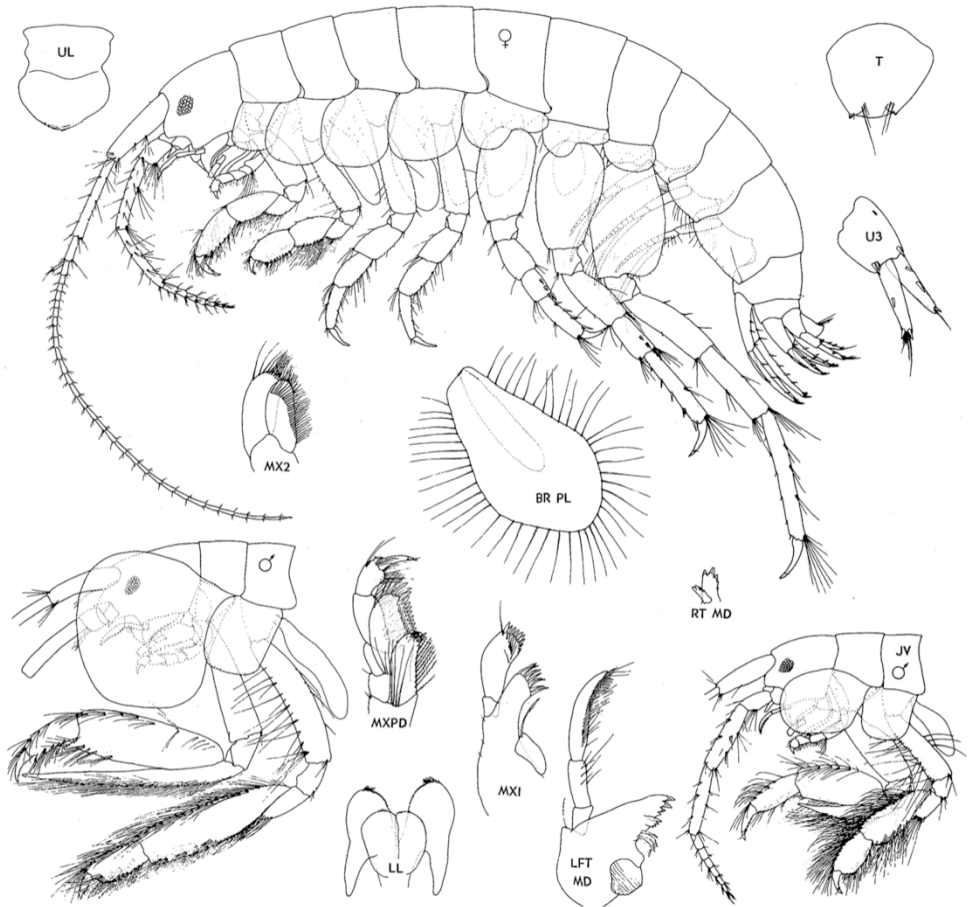
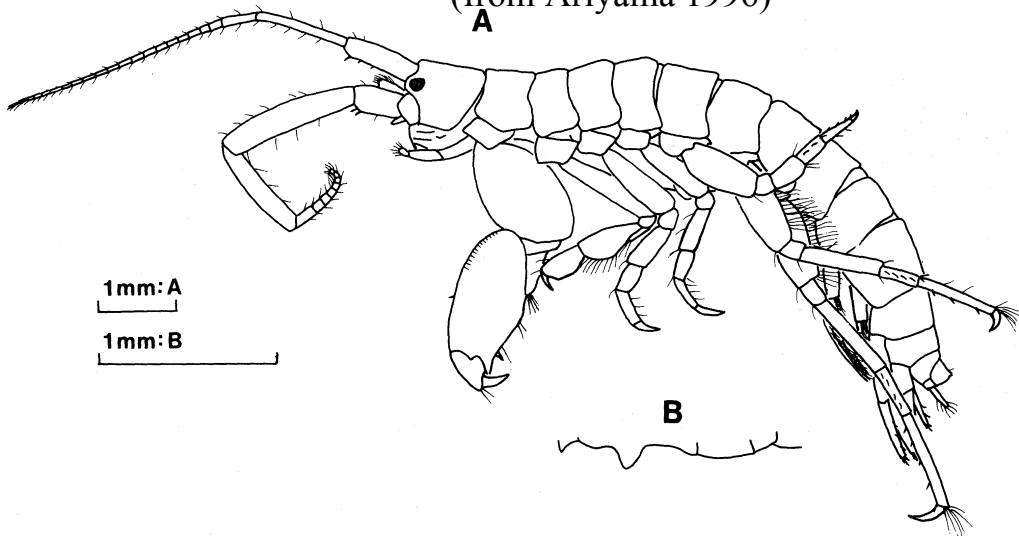


Figure 3. *Columbaora cyclocoxa* n. gen., n.sp. holotype ♂ 6.5 mm, allotype ♀ 7.0 mm, Klokachef Is., Chichagof Is., Alaska, 24 July 1961; paratype juvenile ♂ 4.0 mm, Codfish Pass, Miles Is., B.C. 5 August 1964

Grandidierella japonica

(from Ariyama 1996)

A

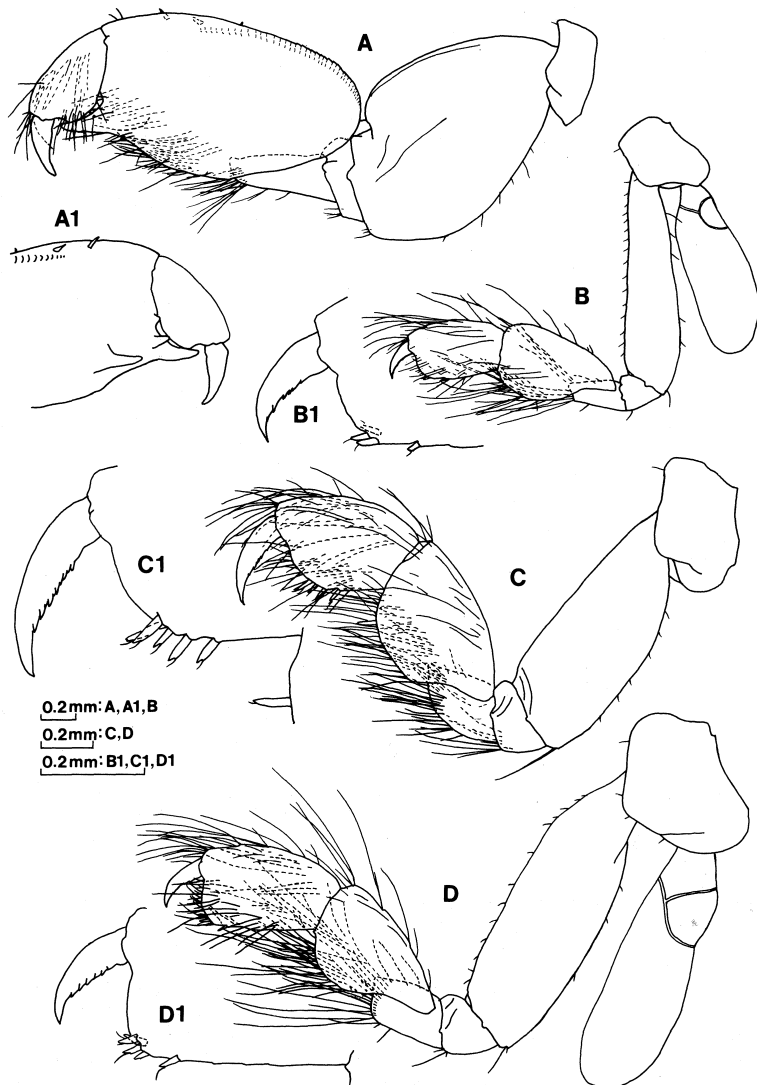


1mm: A

1mm: B

B

Fig. 16. *Grandidierella japonica* Stephensen. Male(1): A, habitus; B, ventral process of pereon segment 1 (lateral view).



0.2mm: A, A1, B

0.2mm: C, D

0.2mm: B1, C1, D1

Fig. 17. *Grandidierella japonica* Stephensen. Male(2): A, gnathopod 1 (outer view); A1, distal part of gnathopod 1 (inner view); B, gnathopod 2; B1, palm and dactyl of gnathopod 2. Female: C, gnathopod 1; C1, palm and dactyl of gnathopod 1; D, gnathopod 2 (oostegite omitted); D1, palm and dactyl of gnathopod 2.

Paramicrodeutopus schmitti

From Shoemaker (1942)

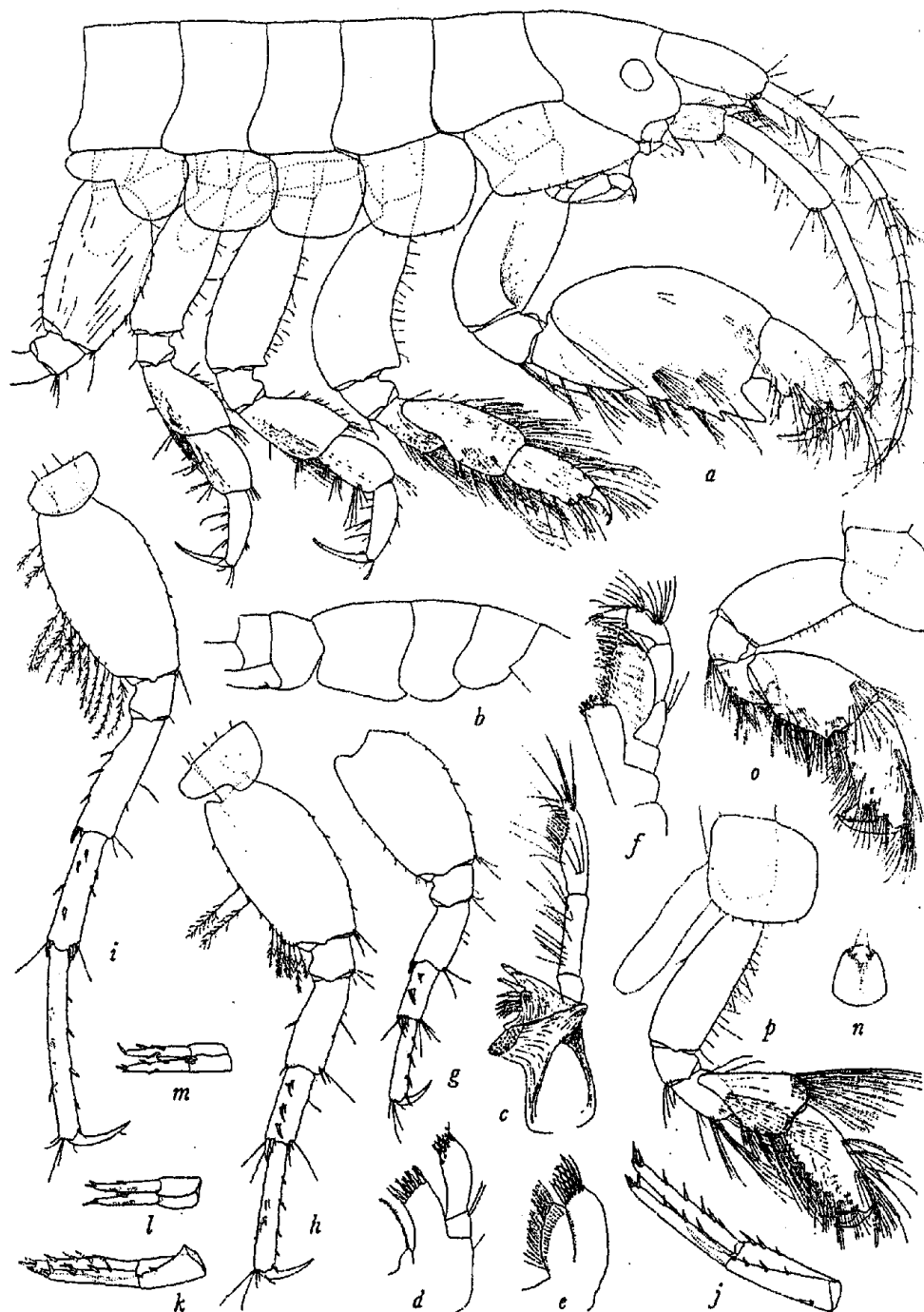


FIG. 6.—*Microdeutopus schmitti*, new species. Male, *a*, front end of animal; *b*, hind end of animal (on smaller scale than front end); *c*, mandible; *d*, maxilla 1; *e*, maxilla 2; *f*, maxilliped; *g*, peraeopod 3; *h*, peraeopod 4; *i*, peraeopod 5; *j*, uropod 1; *k*, uropod 2; *l*, *m*, uropod 3, from below and above; *n*, telson. Female, *o*, gnathopod 1; *p*, gnathopod 2.