

California Valviferan Isopods

(Crustacea, Isopoda, Valvifera)

by

Timothy D. Stebbins

Presented to SCAMIT
13 February 2012



City of San Diego Marine Biology Laboratory
Environmental Monitoring & Technical Services Division • Public Utilities Department

Suborder Valvifera

Valviferan Characters

- Unique possession of opercular uropods (valves) covering the pleopods
- Pleon of 1-5 segments (≤ 4 free somites plus pleotelson)
- Antenna 1 flagellum reduced (1 large or a few vestigial articles)
- Mandibles without palps
- Well developed coxal plates on pereopods
- Penes positioned on pleonite 1 or articulation between pleonite 1 and pereonite VII

World Valvifera

- 11 families
 - Antarcturidae*, Arcturidae*, Arcturididae, Austrarcturellidae, Chaetiliidae*, Holidoteidae, Holognathidae*, Idoteidae*, Pseudidotheidae, Rectarcturidae, Xenarcturidae
- ~591 valid species (as of 4/2011)

California Valvifera

- 5 families*
- 13 genera
- ~37 species (35 confirmed)

California Valvifera*

Family Arcturidae

- Idarcturus allelomorphus* Menzies & Barnard, 1959
- Idarcturus hedgpethi* Menzies, 1951
- Neastacilla californica* (Boone, 1918)

Family Antarcturidae

- Antarcturidae incertae sedis tannerensis* (Schultz, 1966) †

Family Chaetiliidae

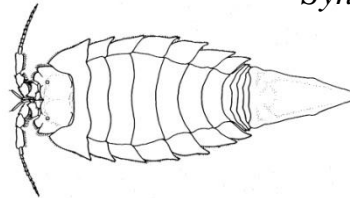
- Saduria entomon* (Linnaeus, 1758)

Family Holognathidae

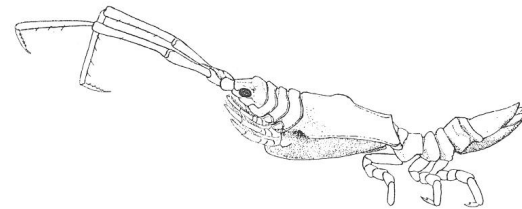
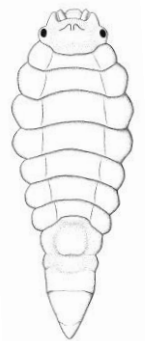
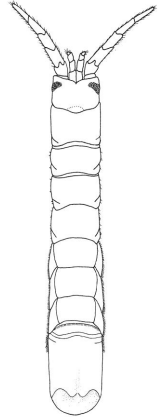
- Cleantioides occidentalis* (Richardson, 1899)

Family Idoteidae

- Colidotea findleyi* Brusca & Wallerstein, 1977
- Colidotea rostrata* (Benedict, 1898)
- Colidotea wallersteini* Brusca, 1983 ‡
- Edotia sublittoralis* Menzies & Banard, 1959
- Edotia* sp. B MEC, 1984
- Erichsonella crenulata* Menzies, 1950
- Eusymmerus pseudoculata* (Boone, 1923)
- Idotea fewkesi* Richardson, 1905
- Idotea metallica* Bosc, 1802
- Idotea ochotensis* Brandt, 1851
- Idotea rufescens* Fee, 1926
- Idotea urotoma* Stimpson, 1864



- Pentidotea aculeata* Stafford, 1913
- Pentidotea kirchanskii* (Miller & Lee, 1970)
- Pentidotea montereyensis* Maloney, 1933
- Pentidotea resecata* (Stimpson, 1857)
- Pentidotea schmitti* (Menzies, 1950)
- Pentidotea stenops* Benedict, 1898
- Pentidotea wosnesenskii* Brandt, 1851
- Stenosoma wetzerae* (Ormsby, 1991)
- Synidotea angulata* Benedict, 1897
- Synidotea berolzheimeri* Menzies & Miller, 1972
- Synidotea calcarea* Schultz, 1966
- Synidotea consolidata* (Stimpson, 1857)
- Synidotea harfordi* Benedict, 1897
- Synidotea laevidorsalis* (Miers, 1881) ‡
- Synidotea laticauda* Benedict, 1897
- Synidotea magnifica* Menzies & Barnard, 1959
- Synidotea media* Iverson, 1972
- Synidotea pettiboneae* Hatch, 1947
- Synidotea ritteri* Richardson, 1904

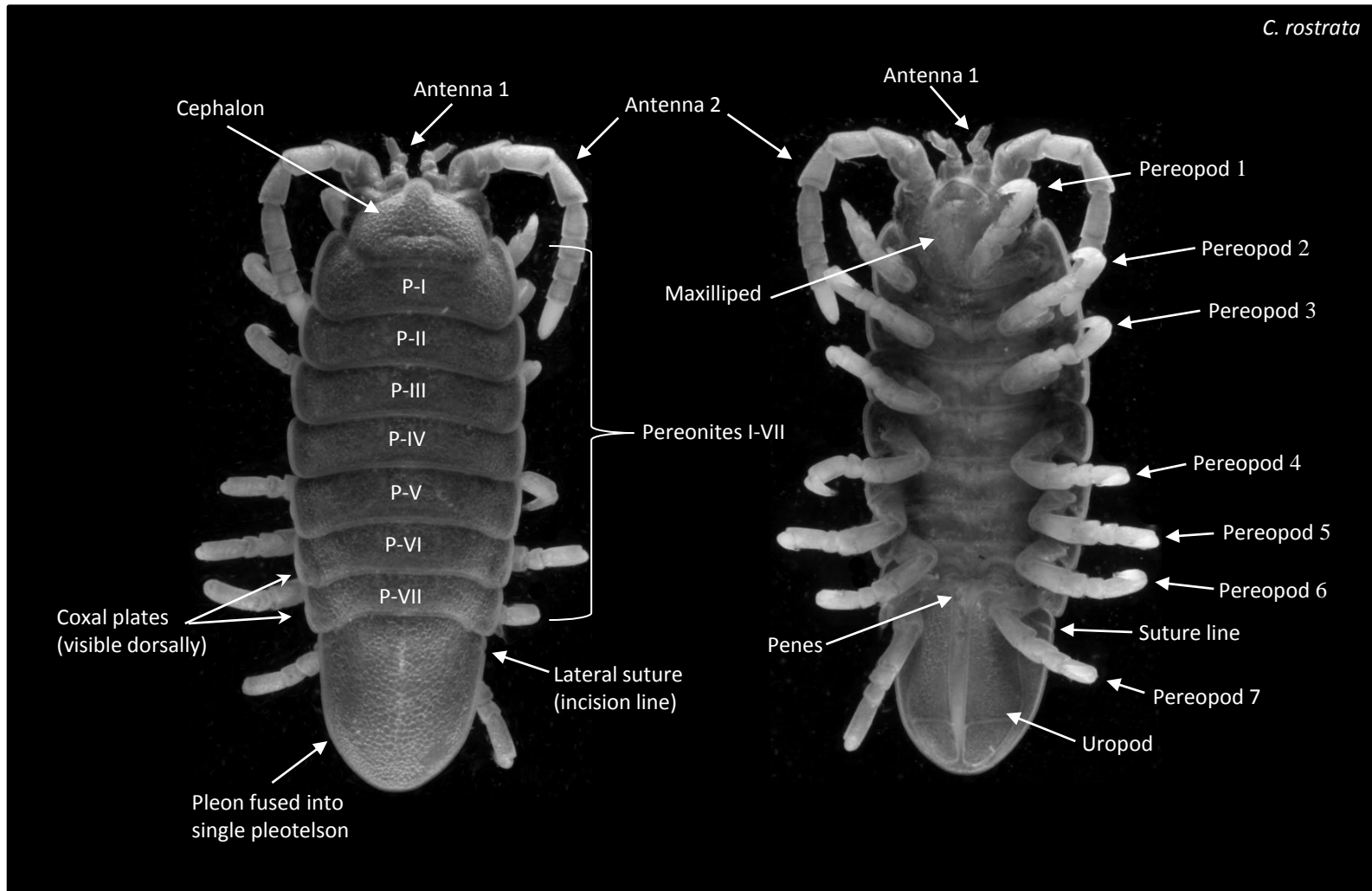


* Includes 10 Southern California Bight species presently not listed by SCAMIT

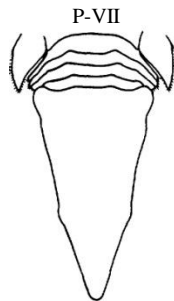
† Temporary name: original genus '*Microarcturus*' is a *nomen nudum* and not valid

‡ Not confirmed in California

General Body Plan (Idoteid)

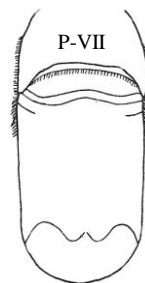


Key Characters – Pleonal Fusion



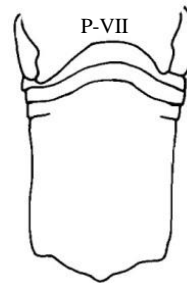
5 segments
(PF = 4+0)

Saduria
(Chaetiliidae)



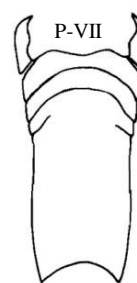
4 segments
(PF = 3+1)

Cleantioides
(Holognathidae)



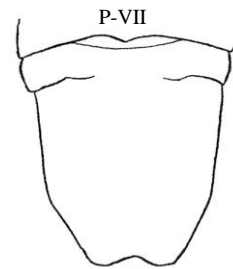
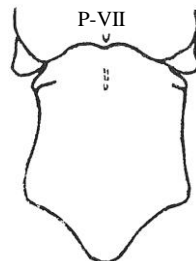
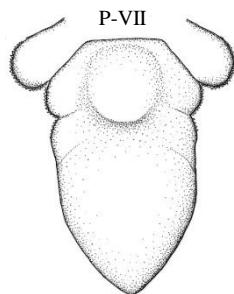
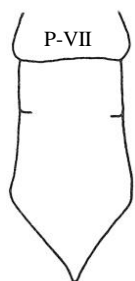
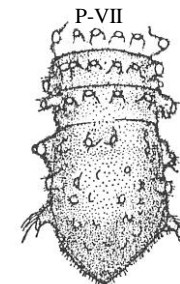
3 segments
(PF = 2+1)

Idotea, Pentidotea
(Idoteidae)



3 segments
(PF = 2+0)

*Neastacilla, Antarcturidae incertae sedis**
(Arcturidae & Antarcturidae)



1 segment
(PF = 0+1)

Colidotea, Edotia, Eusymmerus, Synidotea
(Idoteidae)



1 segment
(PF = 0+0)

Idarcturus, Erichsonella, Stenosoma
(Arcturidae & Idoteidae)

Key Characters – Maxillipedal Palp

5 palp articles



Idarcturus, Neastacilla
(Arcturidae)



Saduria
(Chaetilidae)

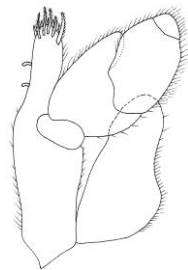


Pentidotea
(Idoteidae)

4 palp articles



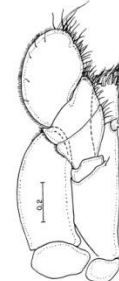
Antarcturidae
*incertae sedis**



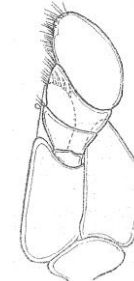
Cleantioides
(Holognathidae)



Colidotea
(Idoteidae)



Erichsonella
(Idoteidae)



Eusymmerus
(Idoteidae)



Idotea
(Idoteidae)

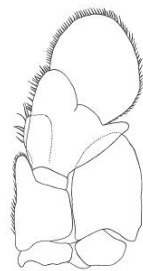


Stenosoma
(Idoteidae)

3 palp articles



Edotia
(Idoteidae)

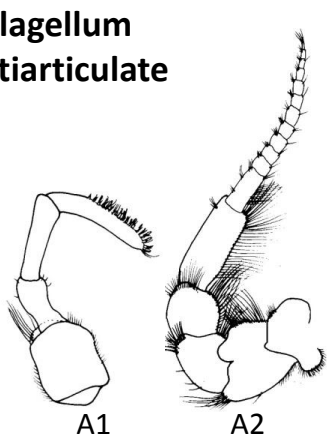


Synidotea
(Idoteidae)

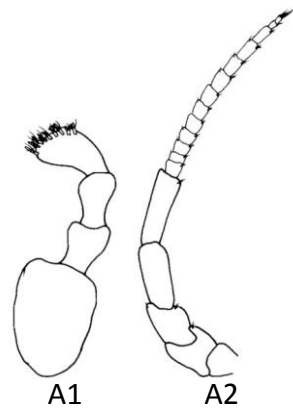
* Formerly = the *nomen nudum* 'Microarcturus'

Key Characters – Antennae

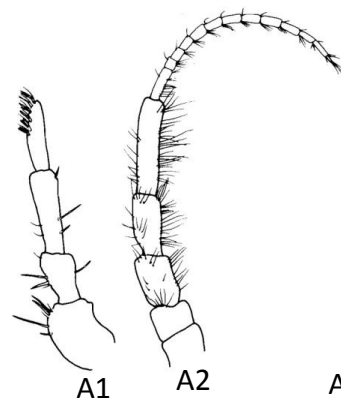
**A2 flagellum
multiarticulate**



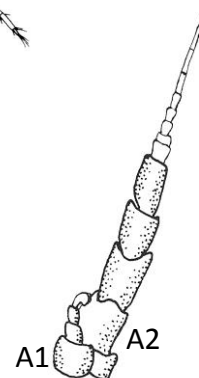
Saduria



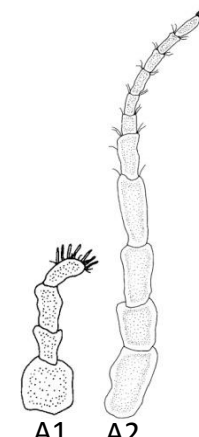
Idotea
Pentidotea



Synidotea

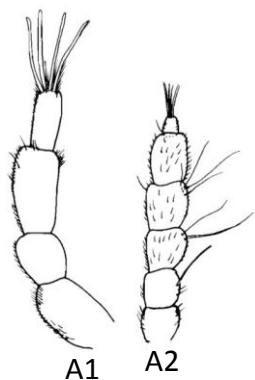


Colidotea

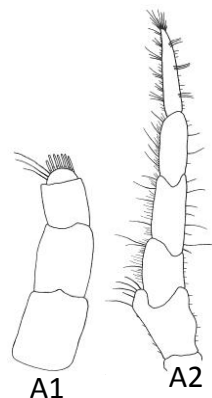


Stenosoma

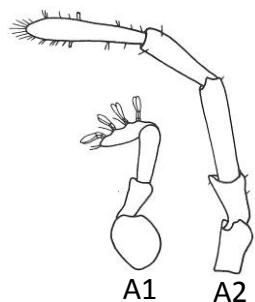
**A2 flagellum
uniarticulate**



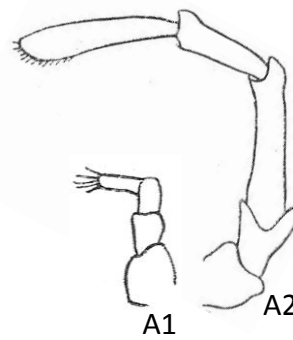
Edotia



Cleantioides

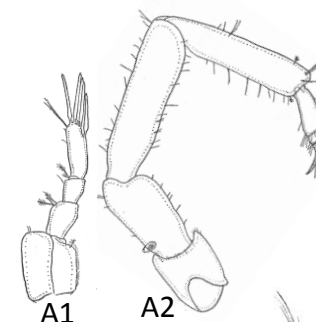


Erichsonella



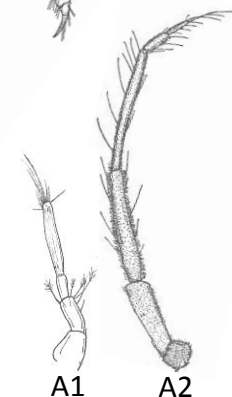
Eusymmerus

**A2 flagellum with
3 articles**



Idarcturus

Neastacilla
(not shown)

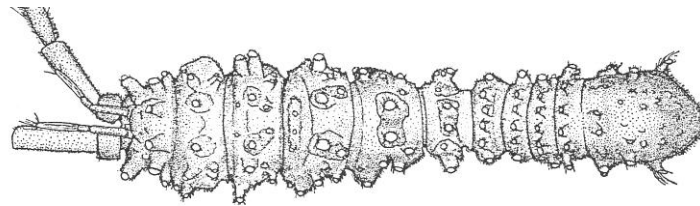


Antarcturidae incertae sedis
(formerly = 'Microarcturus')

Family Antarcturidae

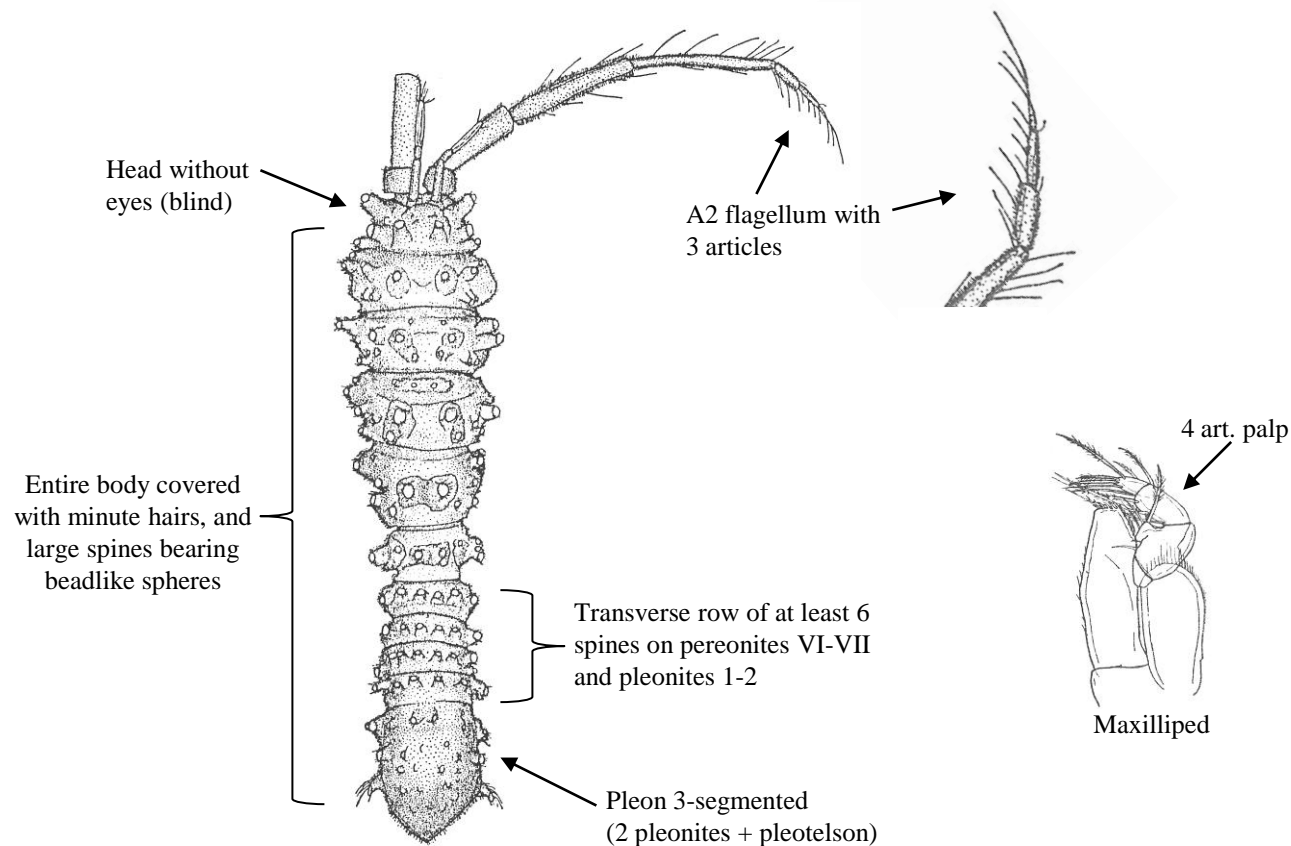
California antarcturids

- ❖ 1 genus
 - '*Microarcturus*' = *nomen nudum*; genus originally erected without a type species
 - California species belongs in an as yet undiagnosed new genus
- ❖ 1 species
 - Temporary name = *Antarcturidae incertae sedis tannerensis*
- ❖ Key characters
 - Blind
 - Body hairs and spines
 - Pleon of 3 segments
 - 3-articulate A2 flagellum
 - 4-articulate maxillipedal palp



Antarcturidae incertae sedis tannerensis (Schultz, 1966)** Formerly known as *Microarcturus tannerensis*

SCB species†

Distribution/Habitat: Tanner Canyon and Basin, southern California; 1298-1335 m.

Family Arcturidae

California arcturids

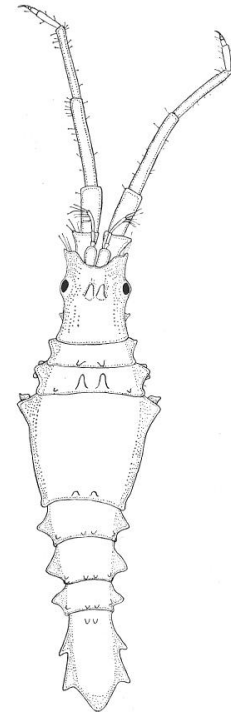
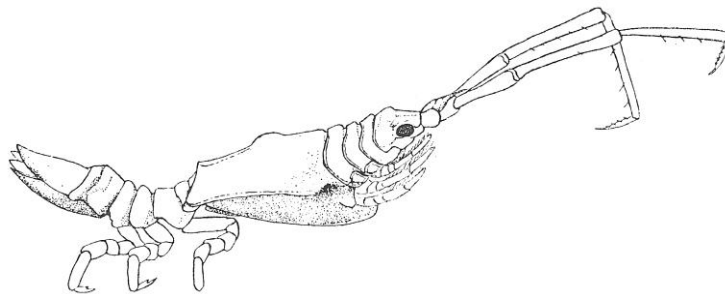
❖ 2 genera

- *Idarcturus*
- *Neastacilla*

❖ 3 species

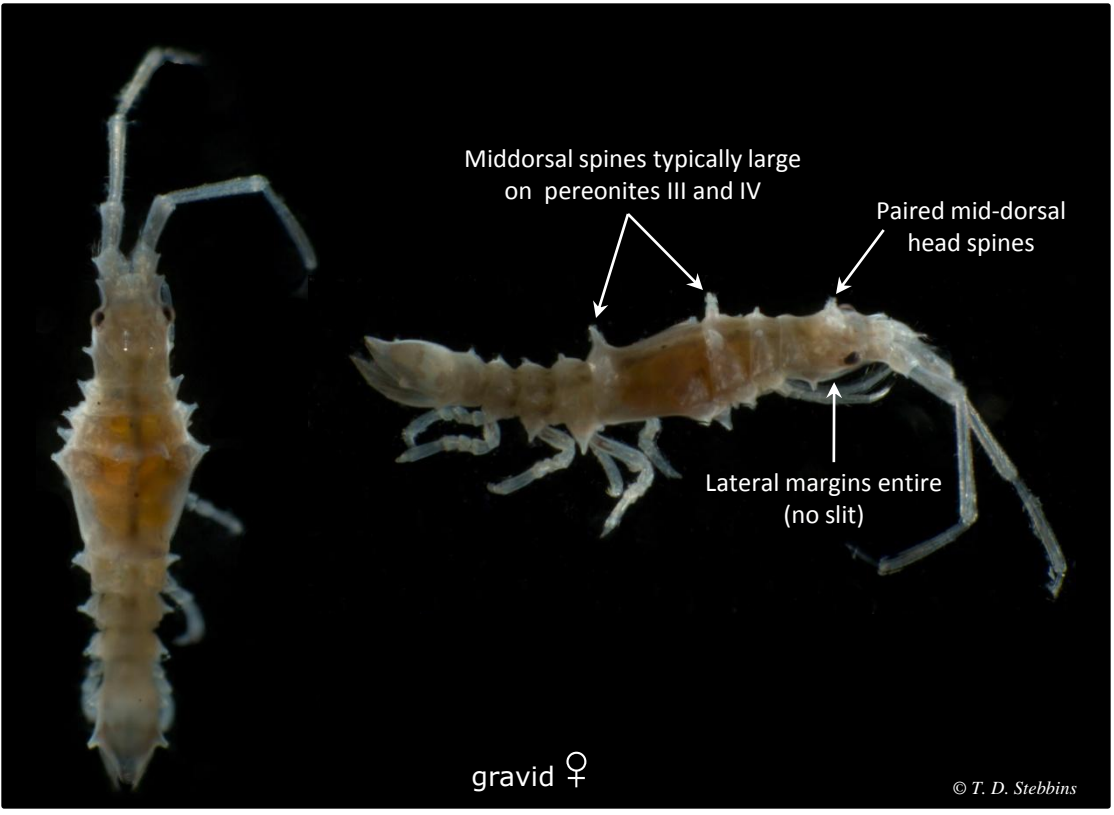
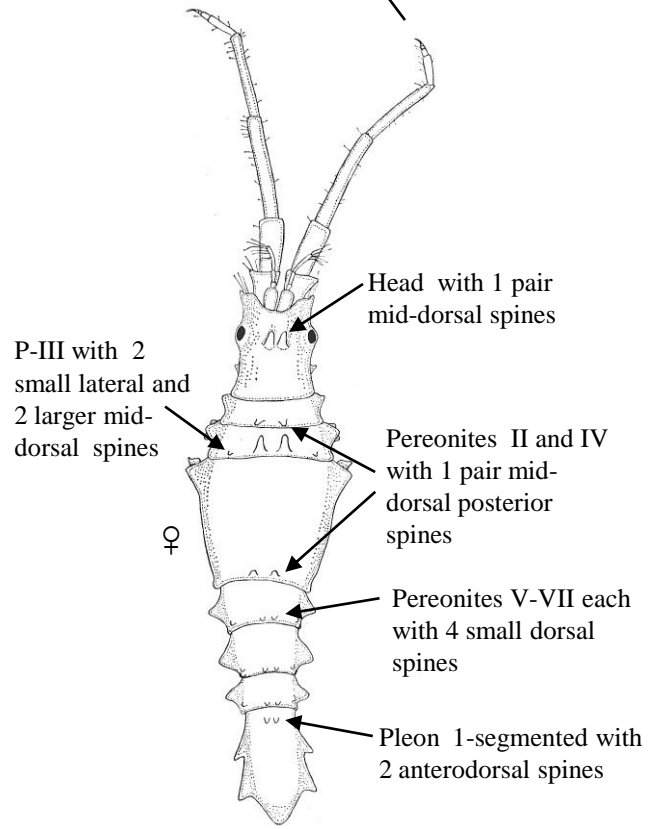
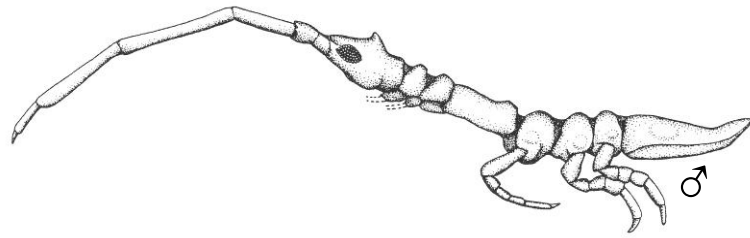
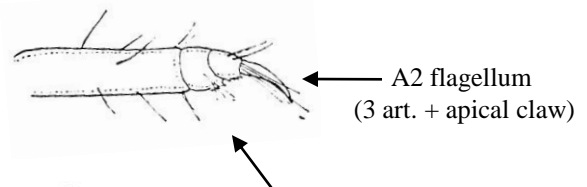
❖ Key characters

- Degree of fusion of head and pereonite I (complete vs. incomplete)
- Fusion of pleon / pleotelson (1 vs. 3 segments)
- Morphology of A2 flagellum (with or without blade-like setae)
- Morphology and placement of tubercles and spines



Idarcturus allelomorphus Menzies & Barnard, 1959

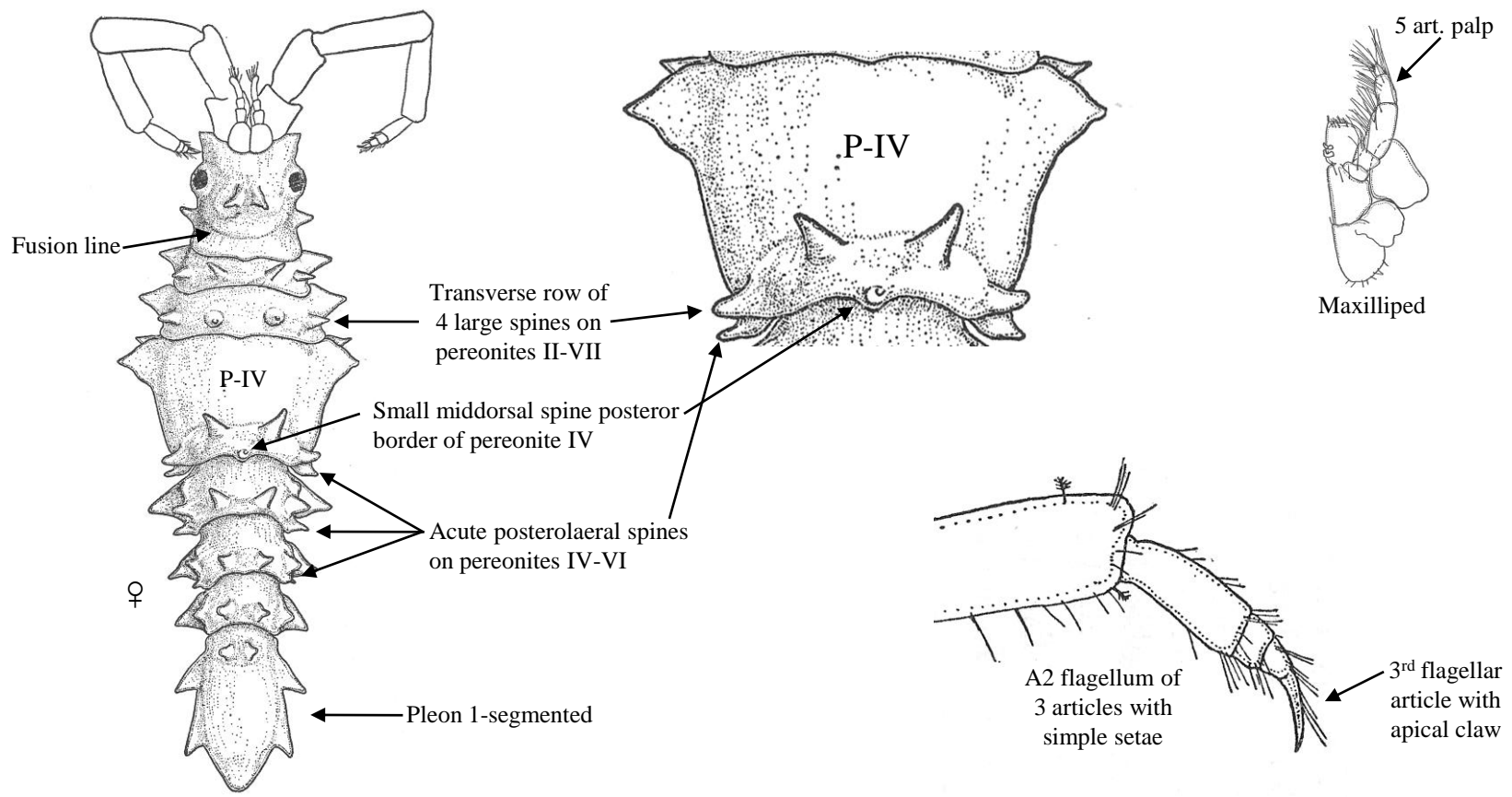
SCB species



Distribution/Habitat: Monterey to Pt Loma, CA, including Cortes and Tanner Banks; 12-92 m, on soft bottoms.

Idarcturus hedgpethi Menzies, 1951

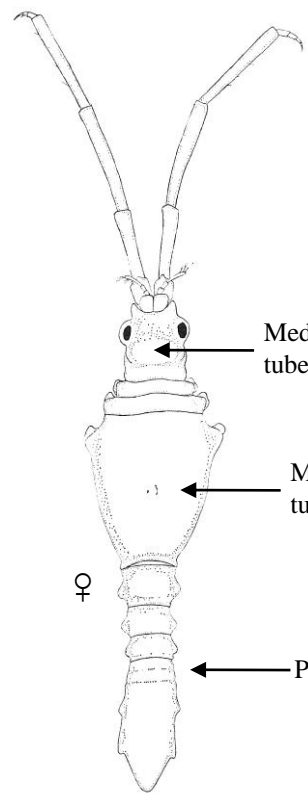
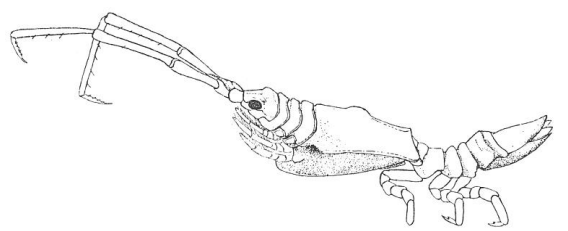
SCB species



Distribution/Habitat: Tomales Bay, CA; low intertidal, on seaweeds and hydroids.

Neastacilla californica (Boone, 1918)

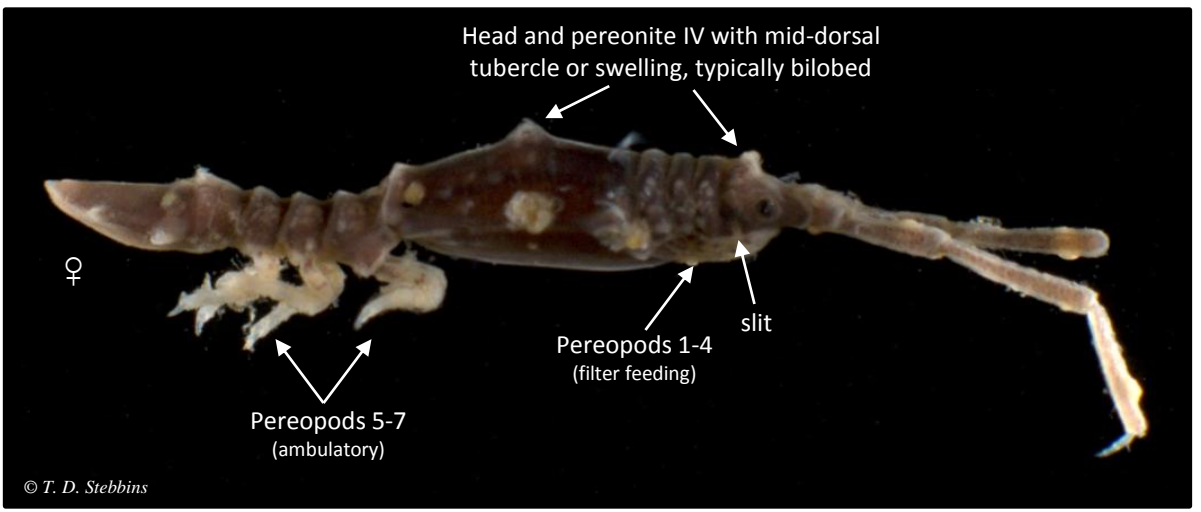
SCB species



Medial bilobed tubercle or swelling

Medial bilobed tubercle (swelling)

Pleon with 3 segments



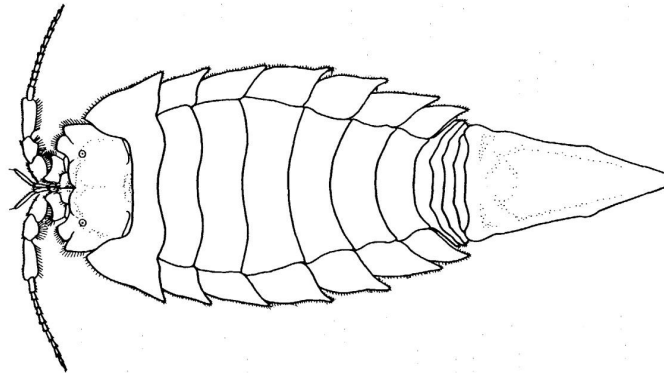
© T. D. Stebbins

Distribution/Habitat: Point Conception to Pt Loma, CA, and Gulf of California; shallow to 99 m, on seaweed and soft bottoms.

Family Chaetiliidae

California chaetiliids

- ❖ 1 genus
 - *Saduria*
- ❖ 1 species
- ❖ Key characters
 - 5-segmented pleon
 - Uropods biramous
 - 5-articulate maxillipedal palp



Saduria entomon (Linnaeus, 1758)

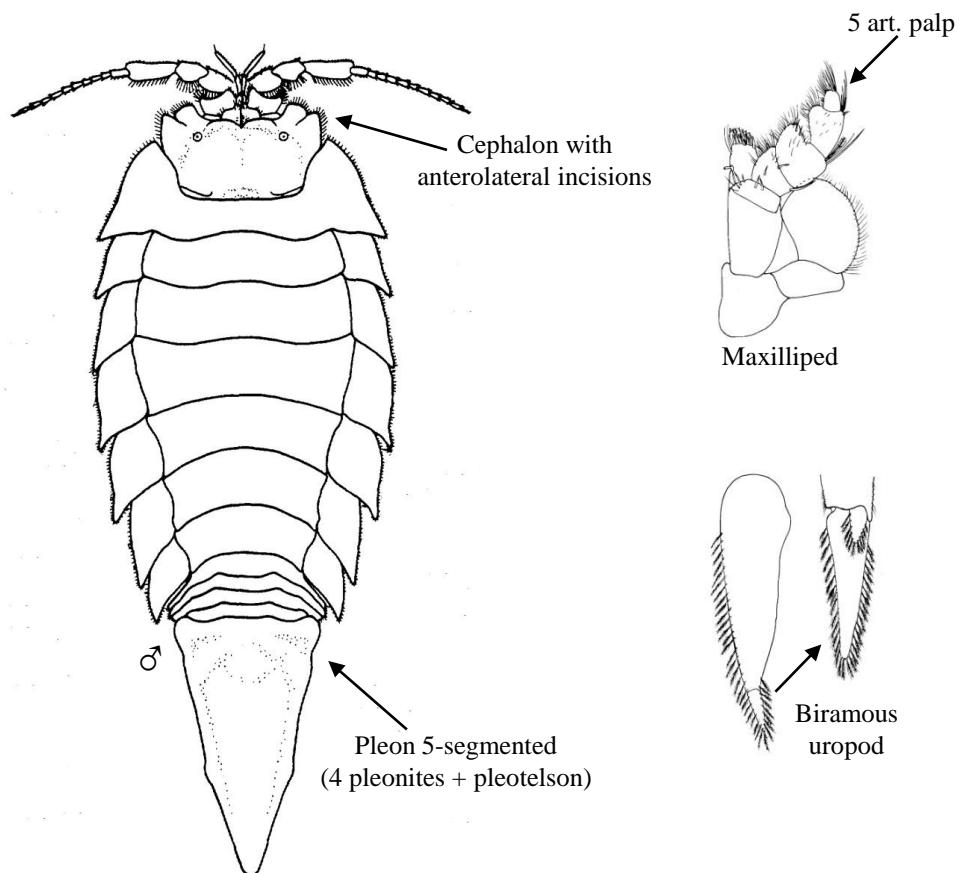


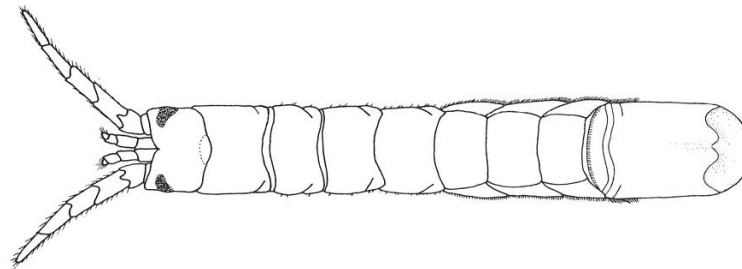
Photo from <http://www.acquariodigenova.it/waves/virtual/saduria.htm>

Distribution/Habitat: Circumpolar, south to Pacific Grove, CA along western coast of North America; intertidal to 30 m.

Family Holognathidae

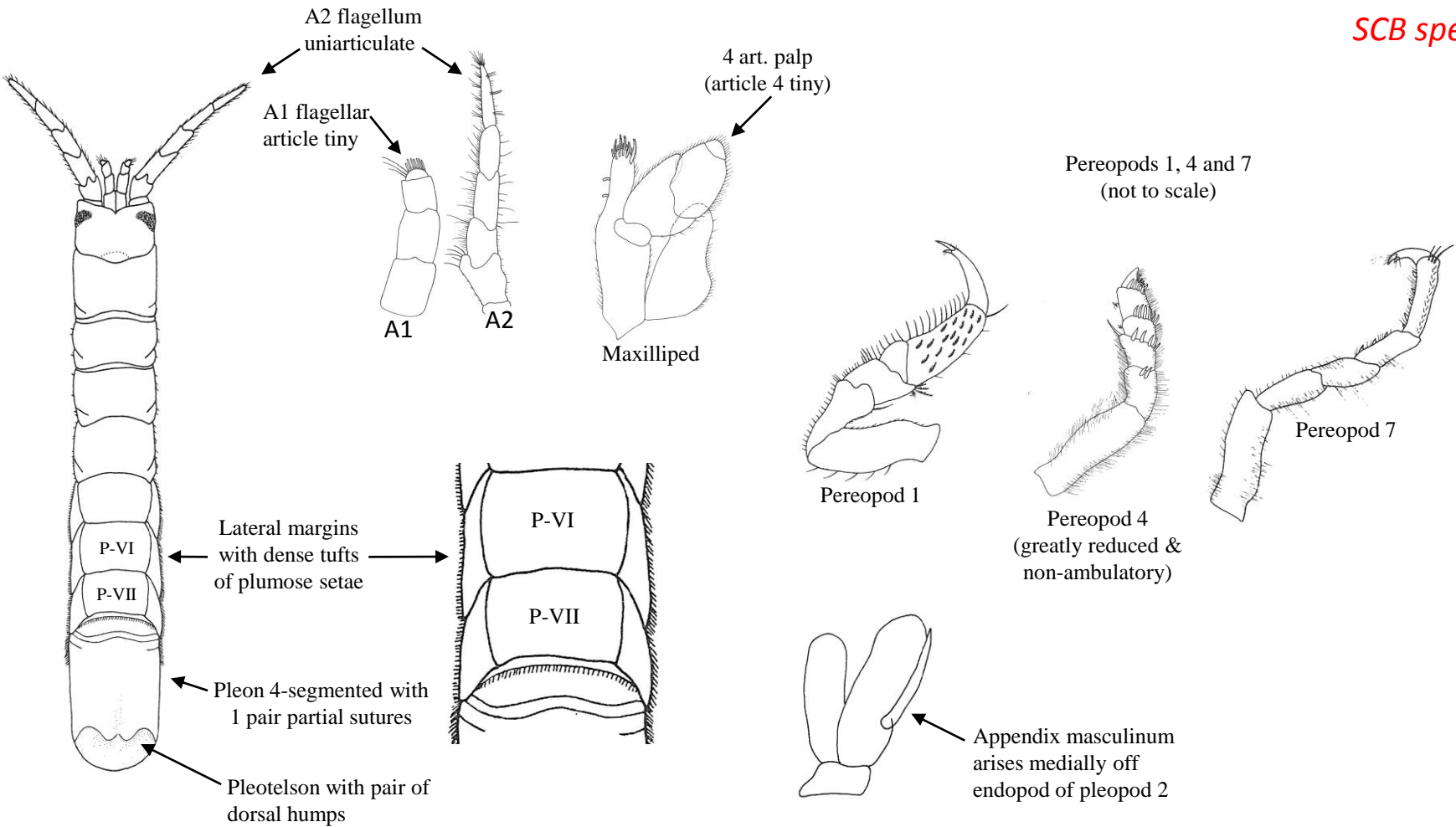
California holognathids

- ❖ 1 genus
 - *Cleantioides*
- ❖ 1 species
- ❖ Key characters
 - Pleon 4-segmented with posterior dorsal humps
 - Lateral tufts of plumose setae
 - A1 and A2 flagellum morphology
 - Reduced pereopod 4



Cleantioides occidentalis (Richardson, 1899)

SCB species



Distribution/Habitat: Southern California to Ecuador and Galapagos Islands; intertidal to 50 m.

Family Idoteidae

California idoteids

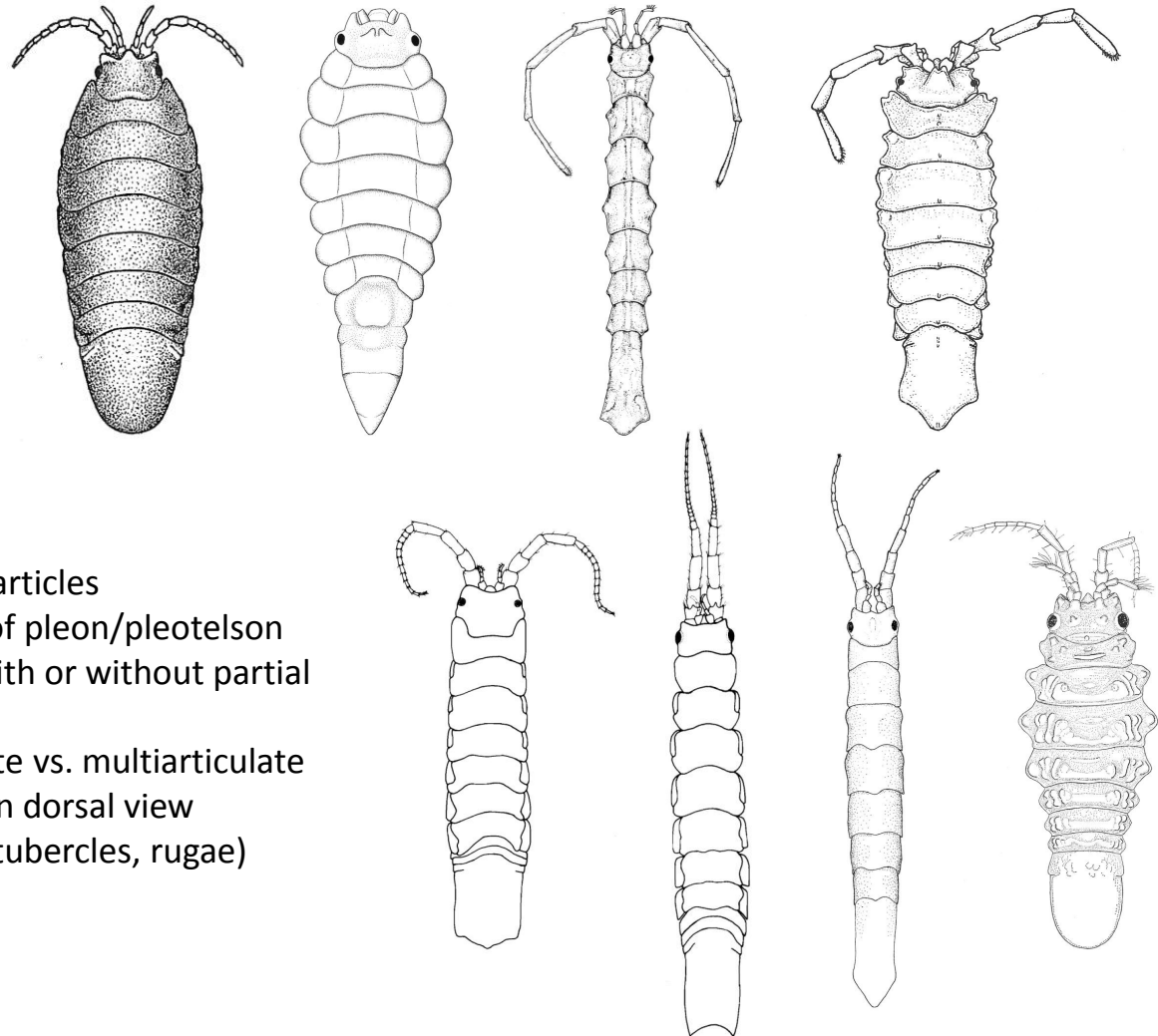
❖ 8 genera

- *Colidotea*
- *Edotia*
- *Erichsonella*
- *Eusymmerus*
- *Idotea*
- *Pentidotea*
- *Stenosoma*
- *Synidotea*

❖ 32 species

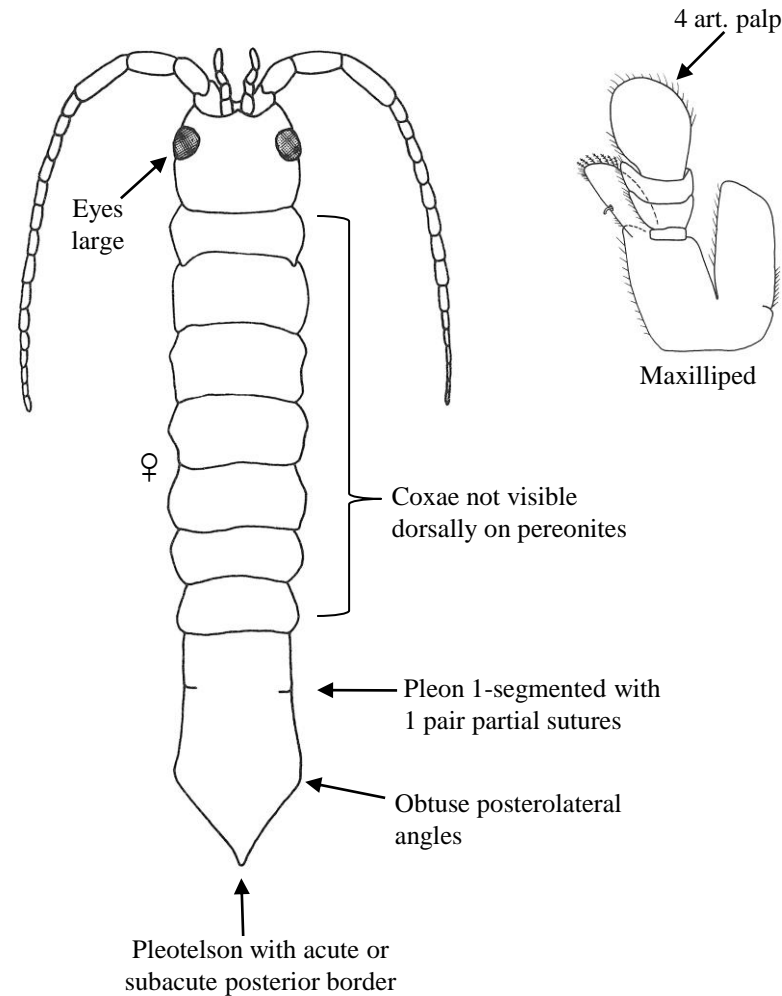
❖ Key characters

- Maxillipedal palp of 3-5 articles
- Shape and morphology of pleon/pleotelson (e.g., 1 or 3 segments, with or without partial sutures)
- A2 flagellum uniarticulate vs. multiarticulate
- Visibility of coxal plates in dorsal view
- Dorsal sculpturing (e.g., tubercles, rugae)



Colidotea findleyi Brusca & Wallerstein, 1977

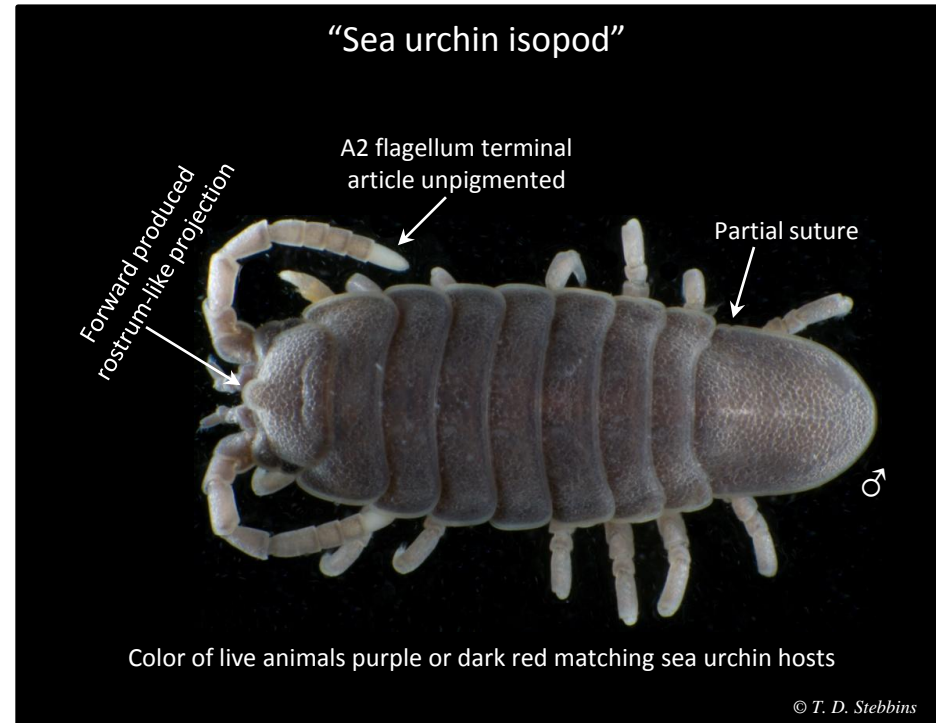
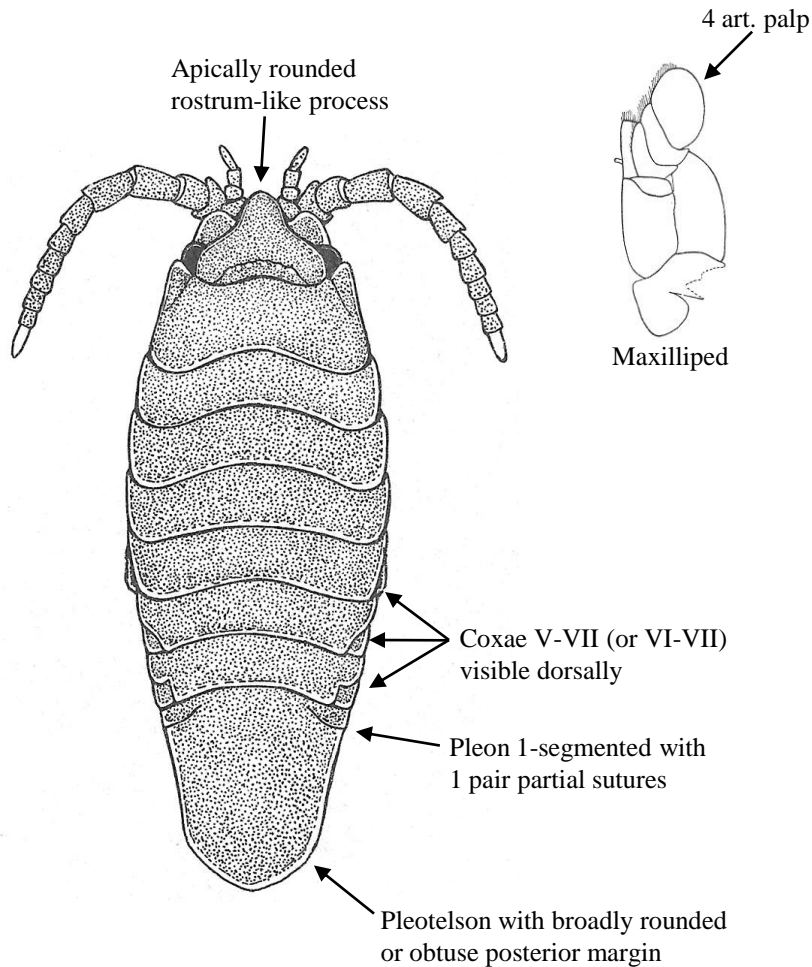
SCB species†



Distribution/Habitat: San Diego, CA (rare) to NW Baja California, and Northern Gulf of California; intertidal to ~1m, common on *Sargassum*.

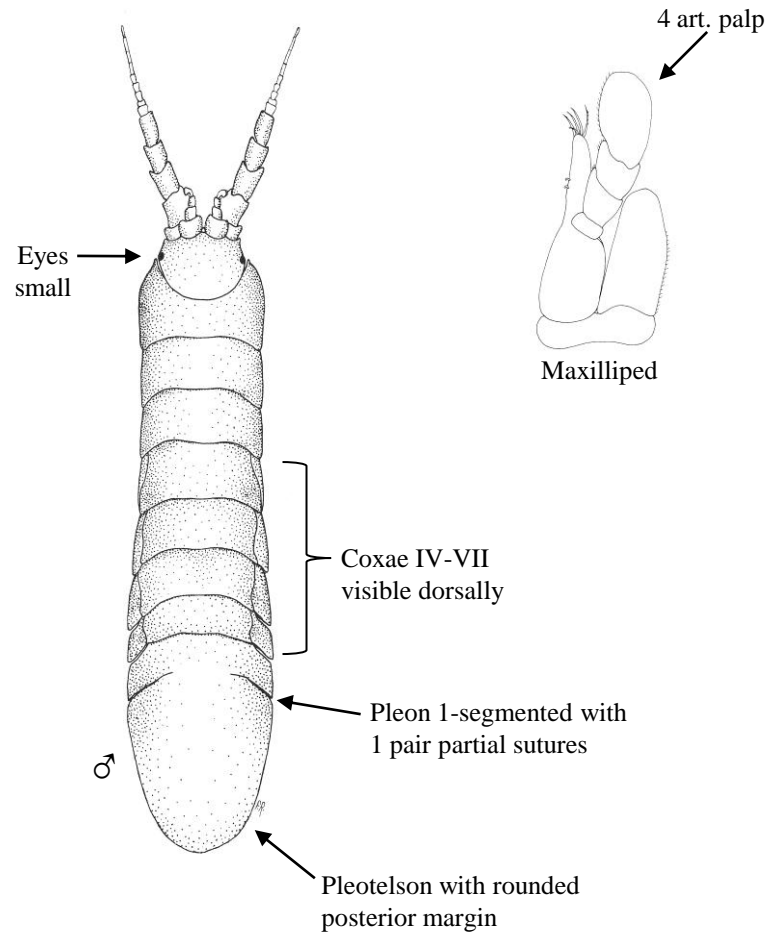
Colidotea rostrata (Benedict, 1898)

SCB species†



Distribution/Habitat: Northern CA (rare) to NW Baja California; intertidal to shallow subtidal, commensal amongst spines of purple and red sea urchins (*Strongylocentrotus* spp.)

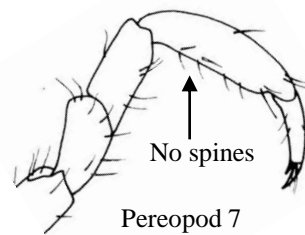
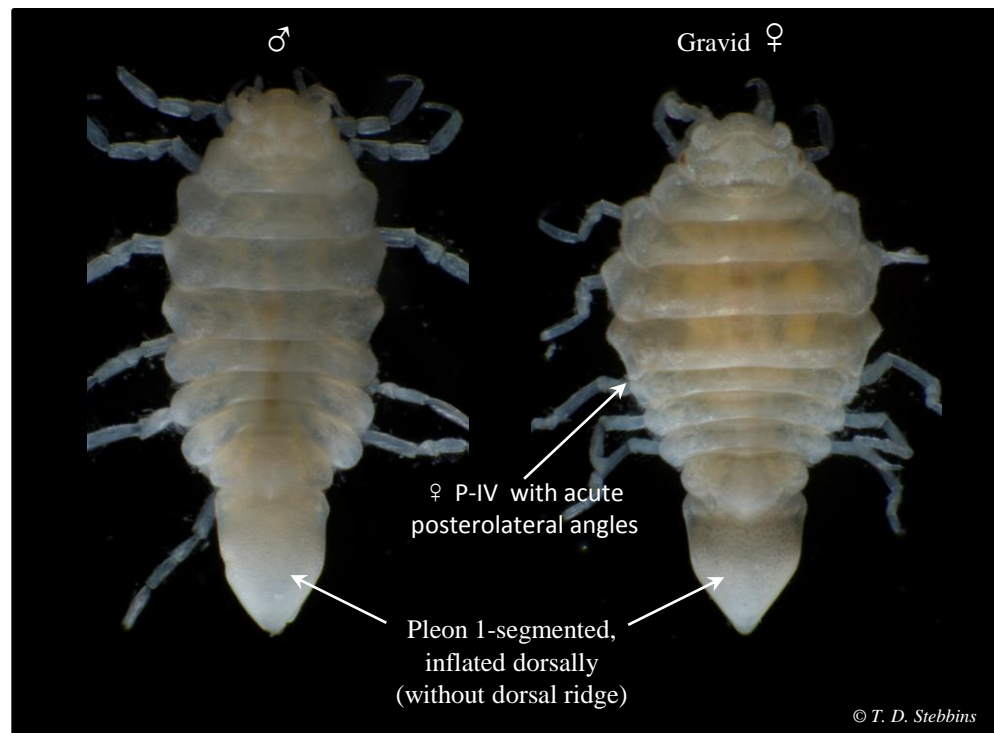
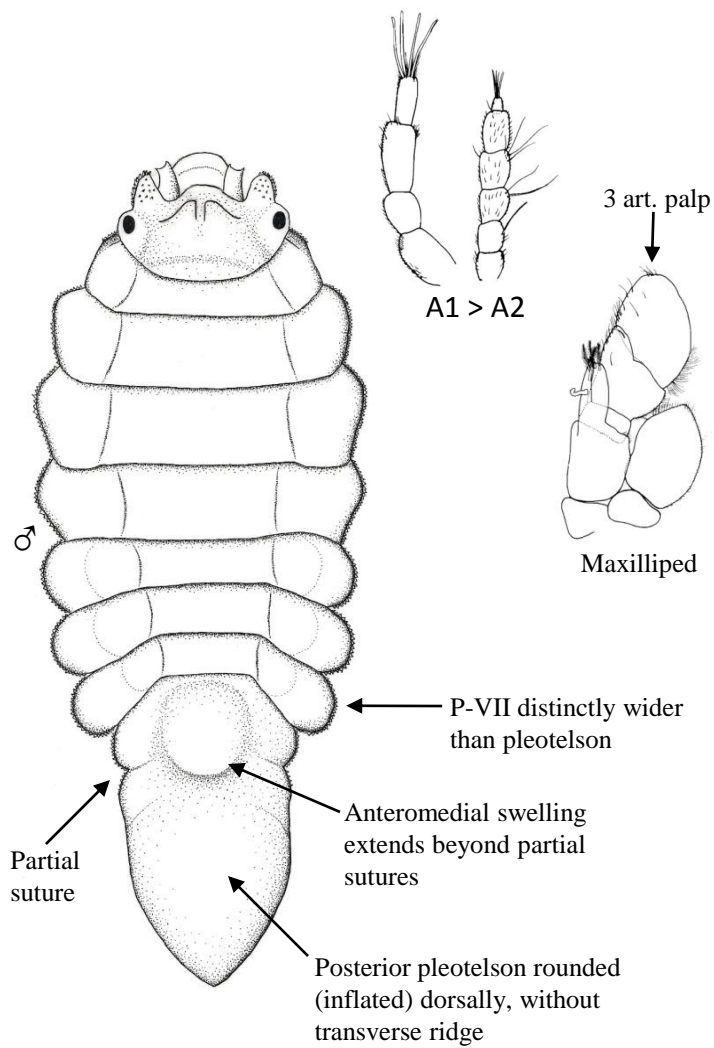
Colidotea wallersteini Brusca, 1983



Distribution/Habitat: Northwest Baja California (Punta Clara, south Rio Santo Tomás; Guadalupe Island, Melpomene Cove); intertidal.

Edotia sublittoralis Menzies & Barnard, 1959

SCB species



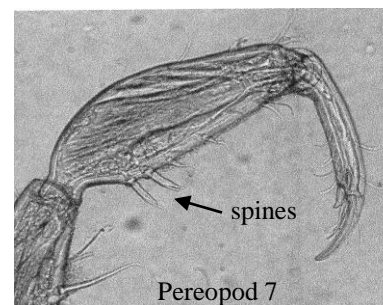
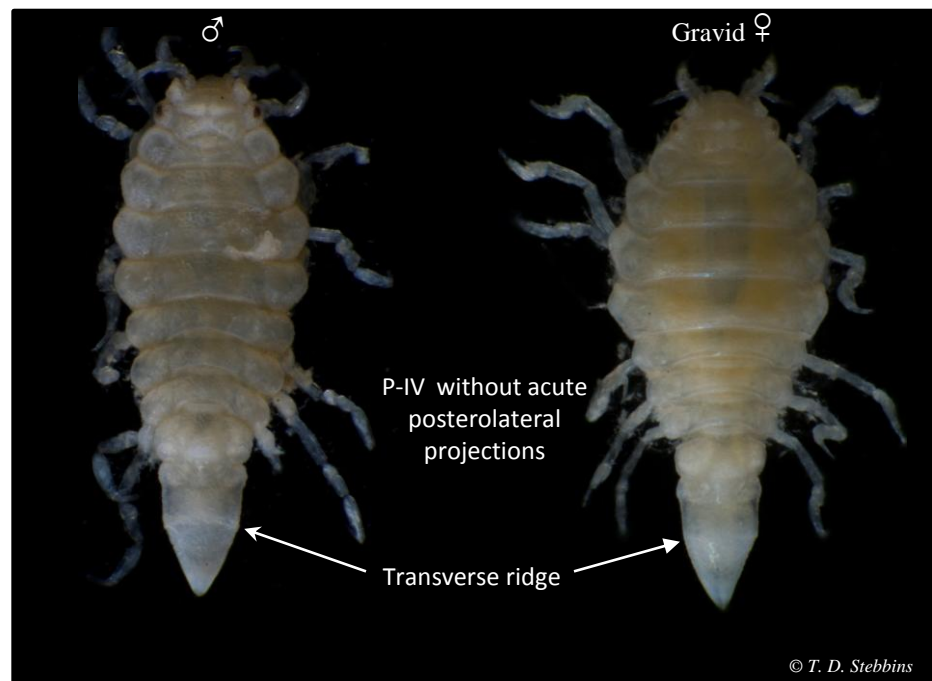
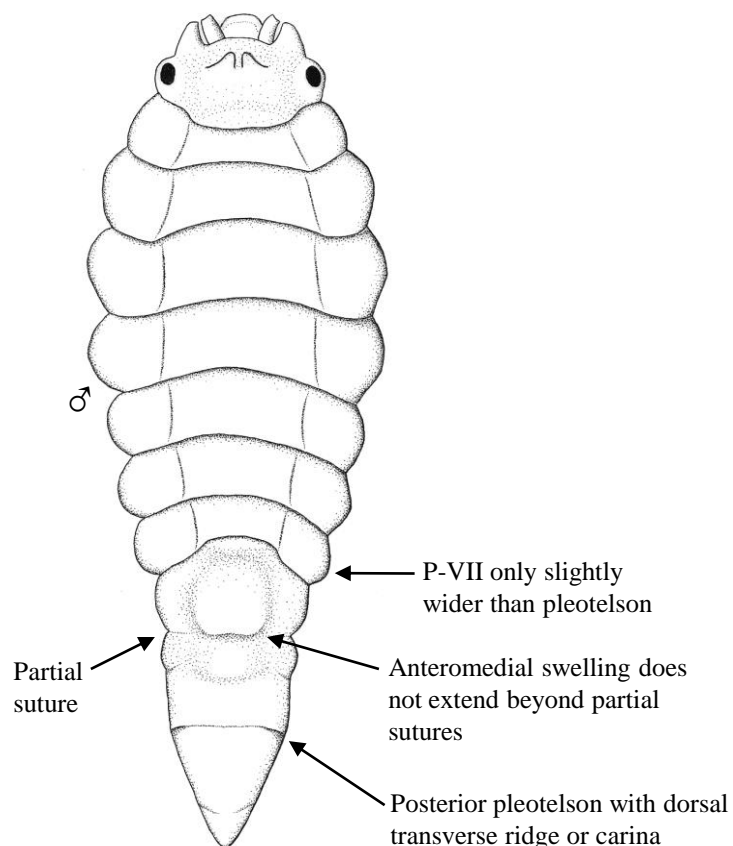
Note: Propodus of pereopods with setae, but without large proximal spines on inferior margins (compare to *Edotia* sp. B)

Distribution/Habitat: Vancouver Island, BC to NW Baja California (1 record off Costa Rica); ~14-46 m with one record from depth > 100 m off San Diego, sandy sediments with silt.

Edotia sp. B MEC 1984*

* *Edotia* sp. B presently being described by T. Stebbins

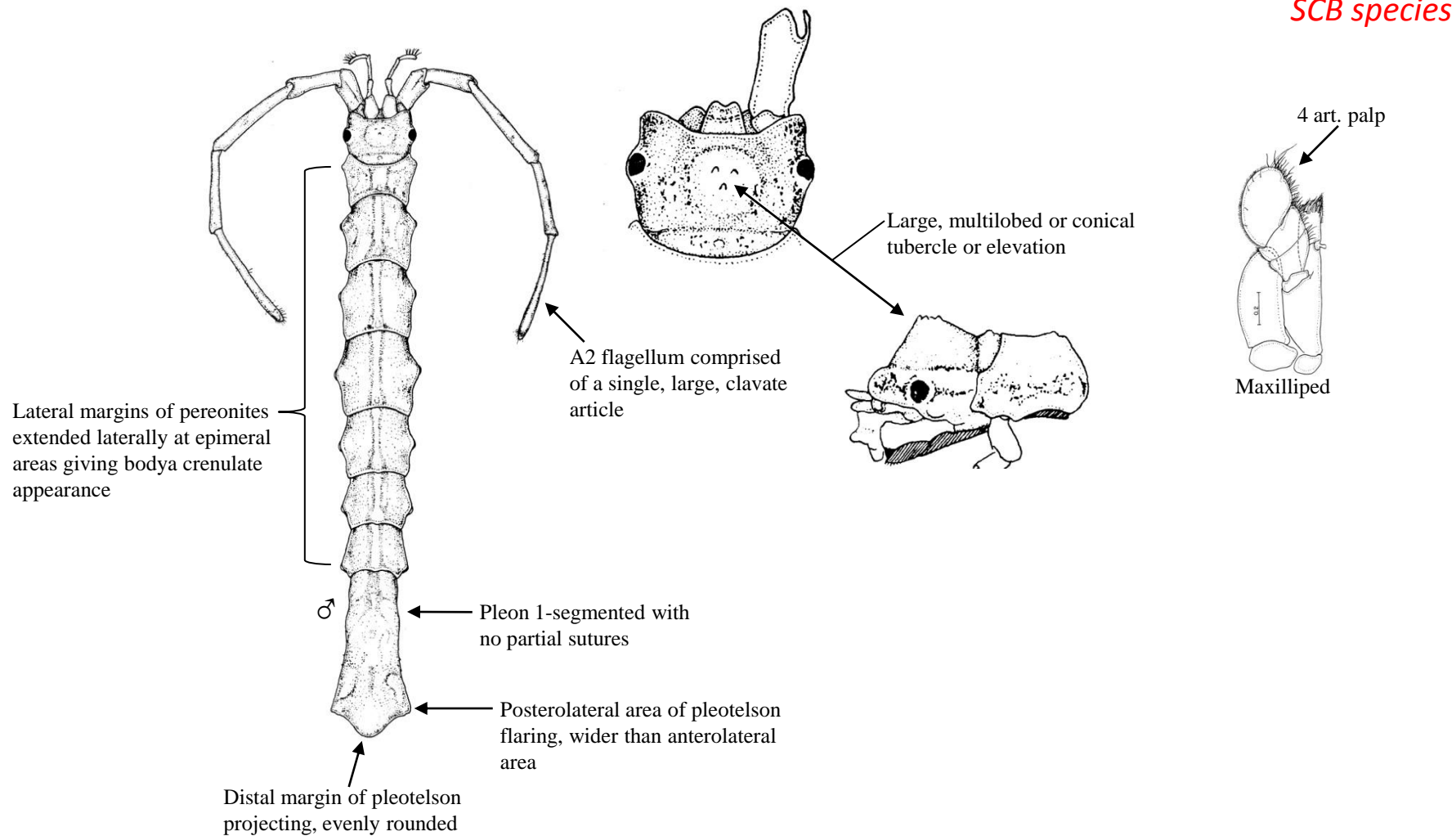
SCB species



Note: Propodus of pereopods with 2 large proximal spines along inferior margins (compare to *Edotia sublittoralis*)

Distribution/Habitat: Southern California to NW Baja California; ~24-62m, sandy sediments with silt.

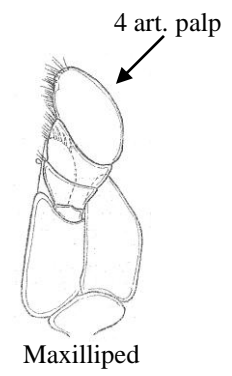
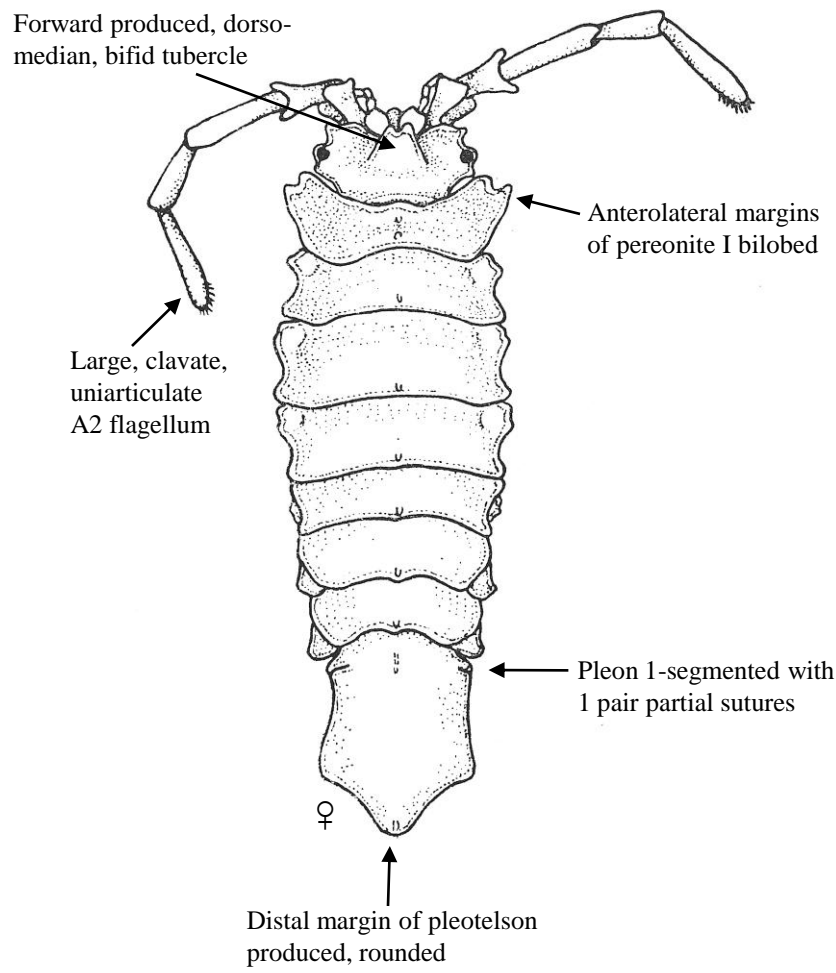
Erichsonella crenulata Menzies, 1950



Distribution/Habitat: Southern California; intertidal to shallow subtidal, on eelgrass (*Zostera*).

Eusymmerus pseudoculata (Boone, 1923)

SCB species†

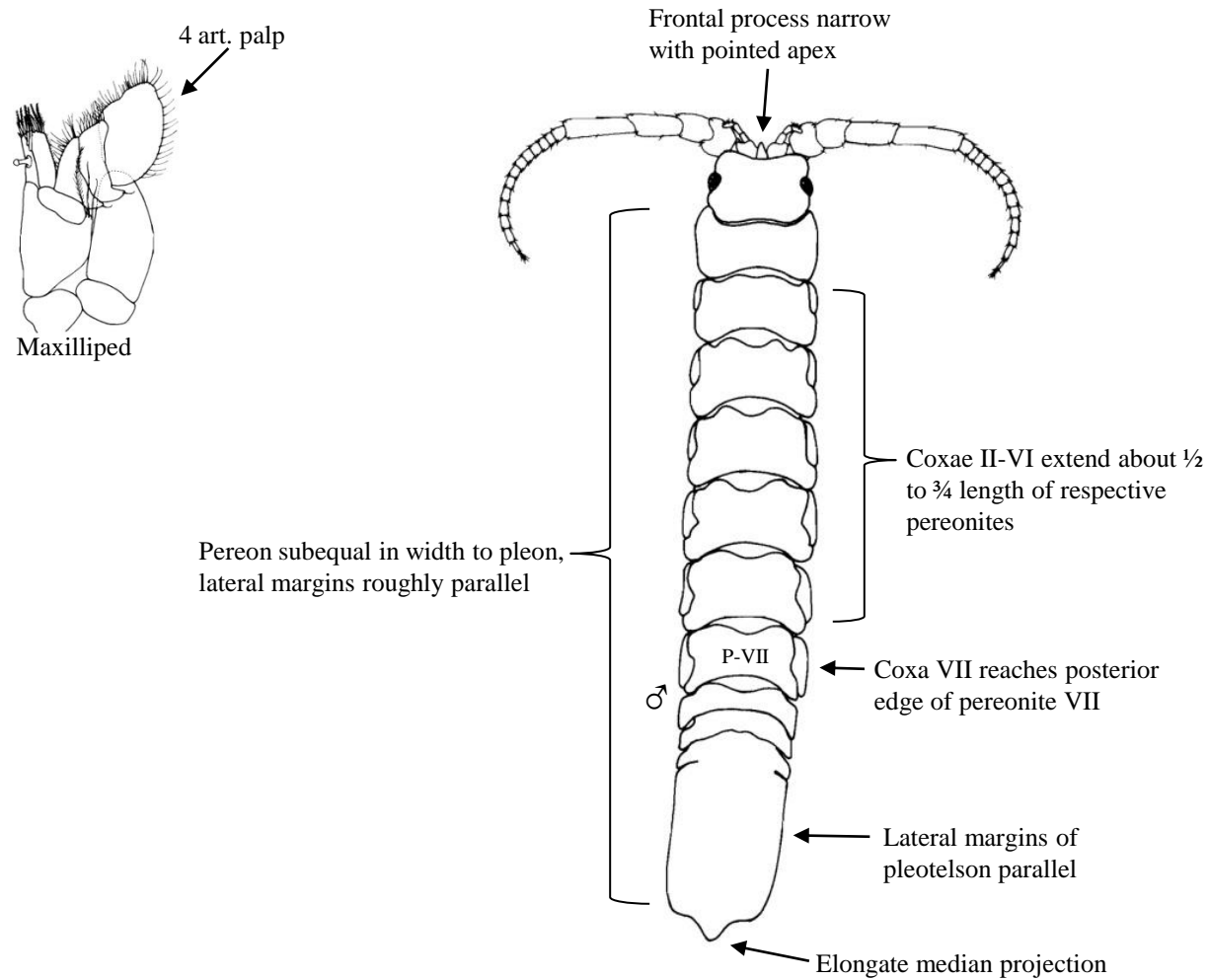


Distribution/Habitat: Point Conception, CA to USA / Mexico border; intertidal to 18 m.

† Presently not listed by SCAMIT

Idotea fewkesi Richardson, 1905

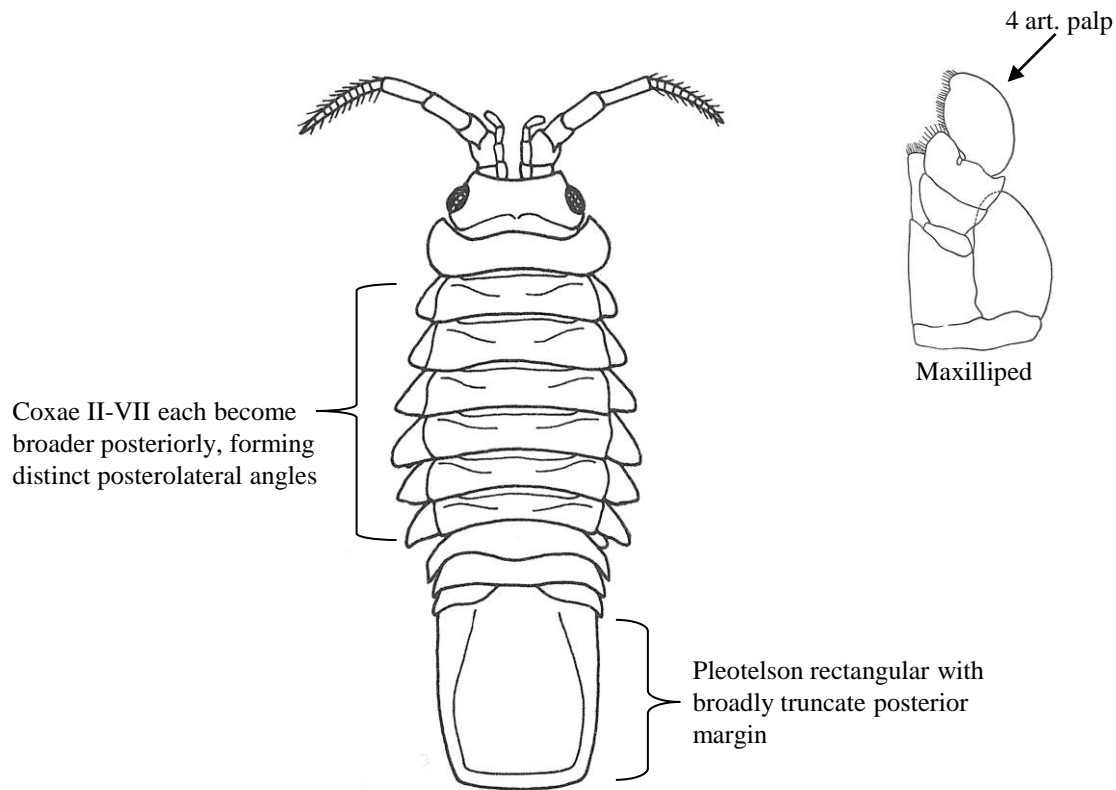
SCB species



Distribution/Habitat: Alaska to southern California; shallow water.

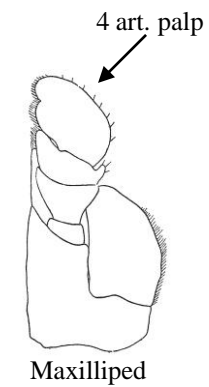
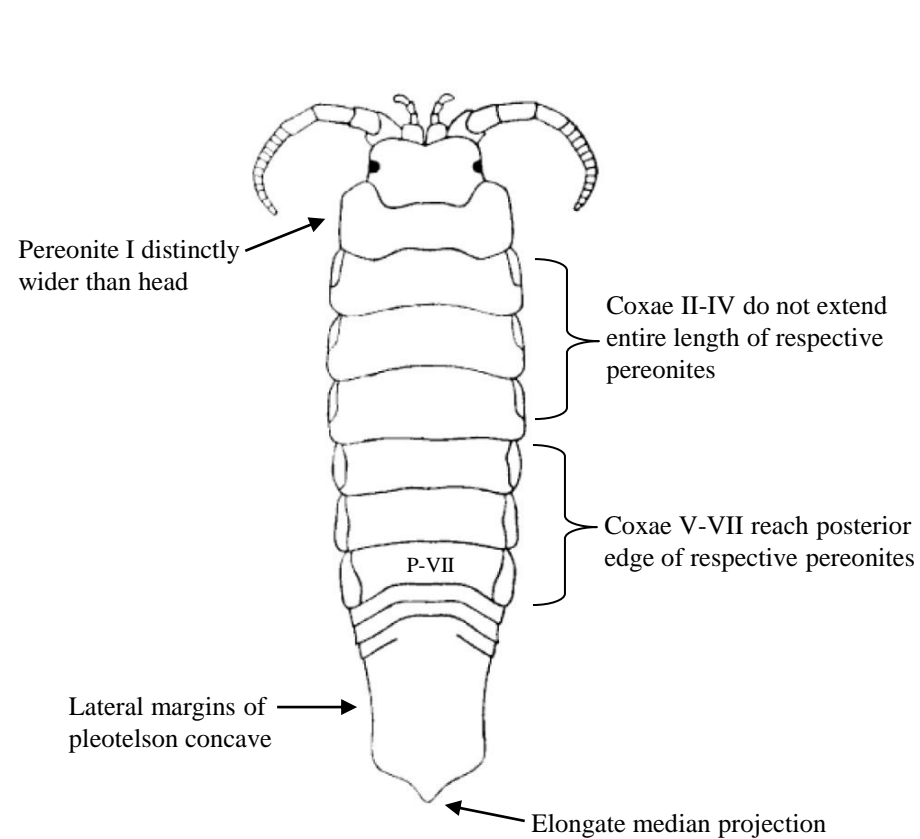
Idotea metallica Bosc, 1802

SCB species†



WoRMs image (author: BIOMARE Newsletter)

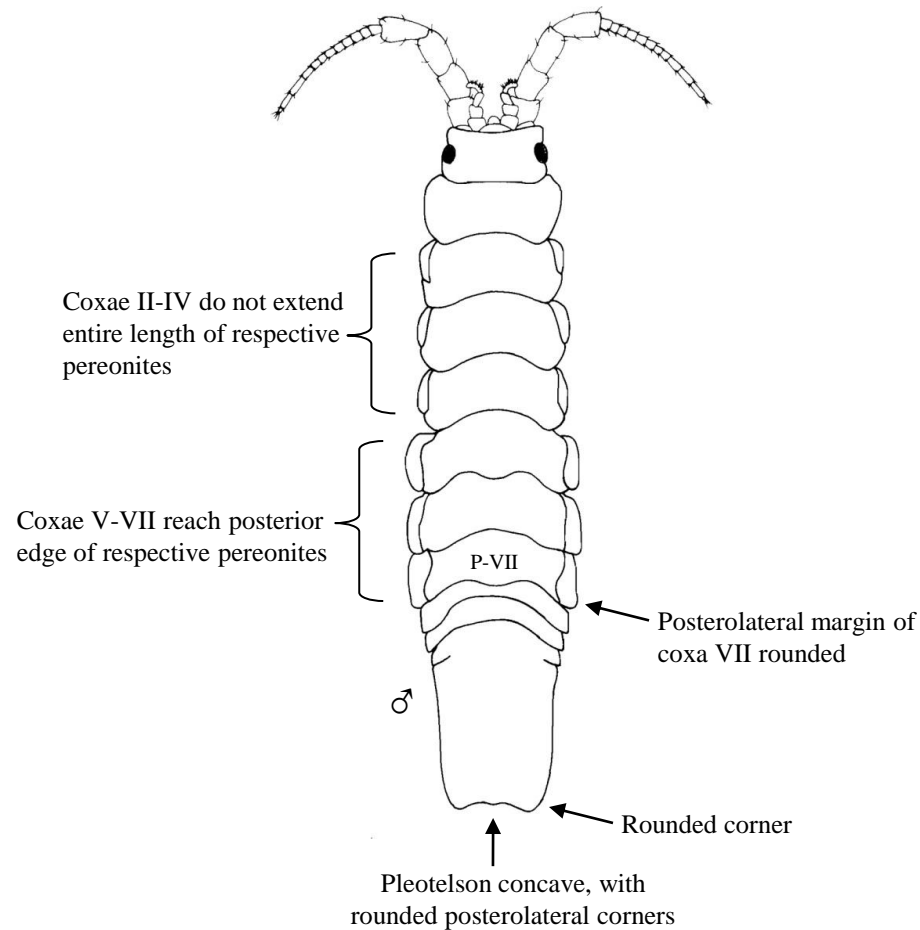
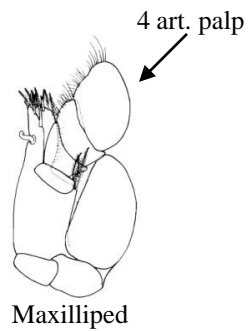
Distribution/Habitat: Cosmotropical, occurring rarely in southern California and Gulf of California during warm periods; pelagic, attached to floating seaweed.

Idotea ochotensis Brandt, 1851

Distribution/Habitat: Alaska to northern California; intertidal to 36 m.

Idotea rufescens Fee, 1926

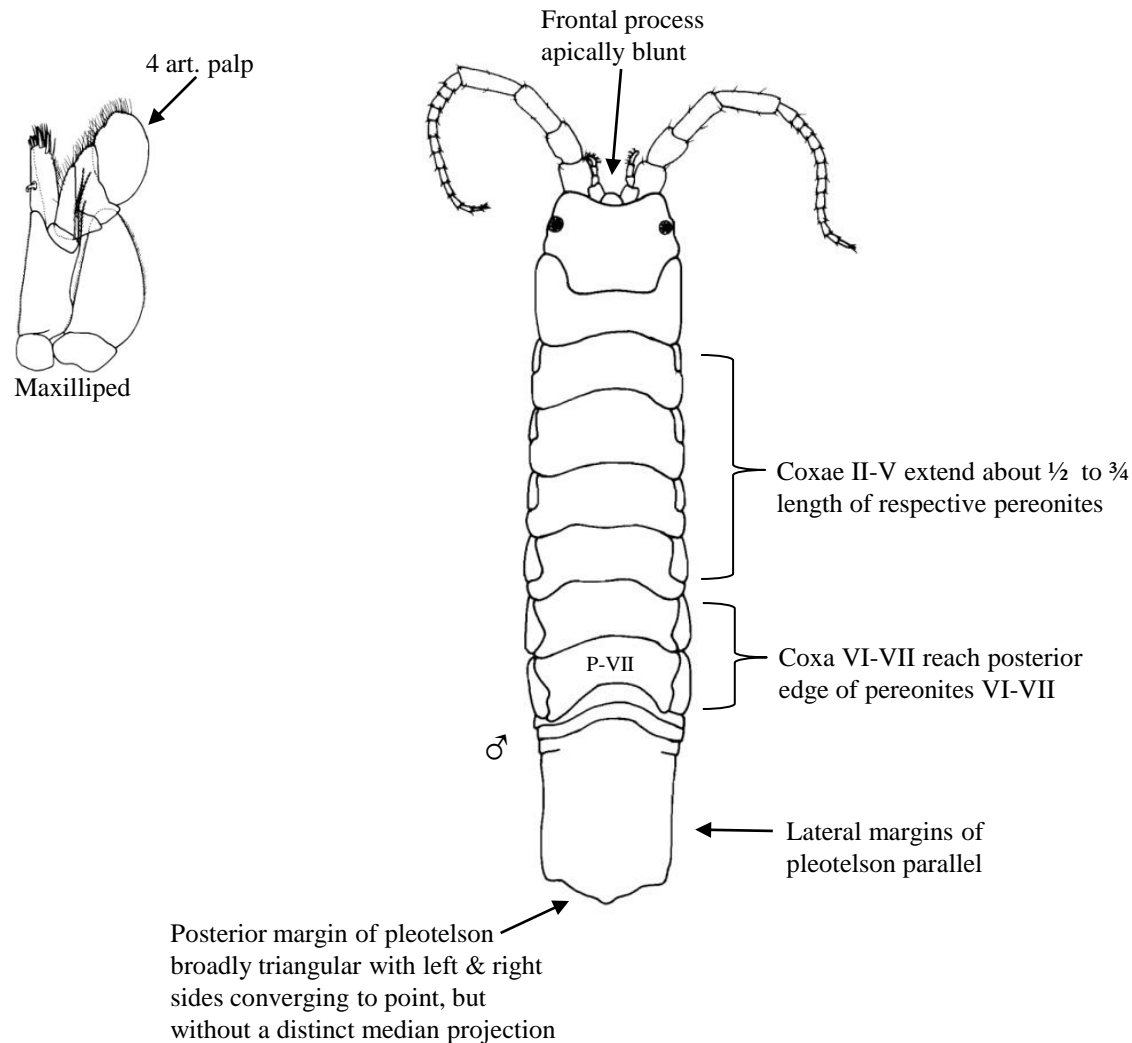
SCB species



Distribution/Habitat: British Columbia to central western Baja California; intertidal to 82 m.

Idotea urotoma Stimpson, 1864

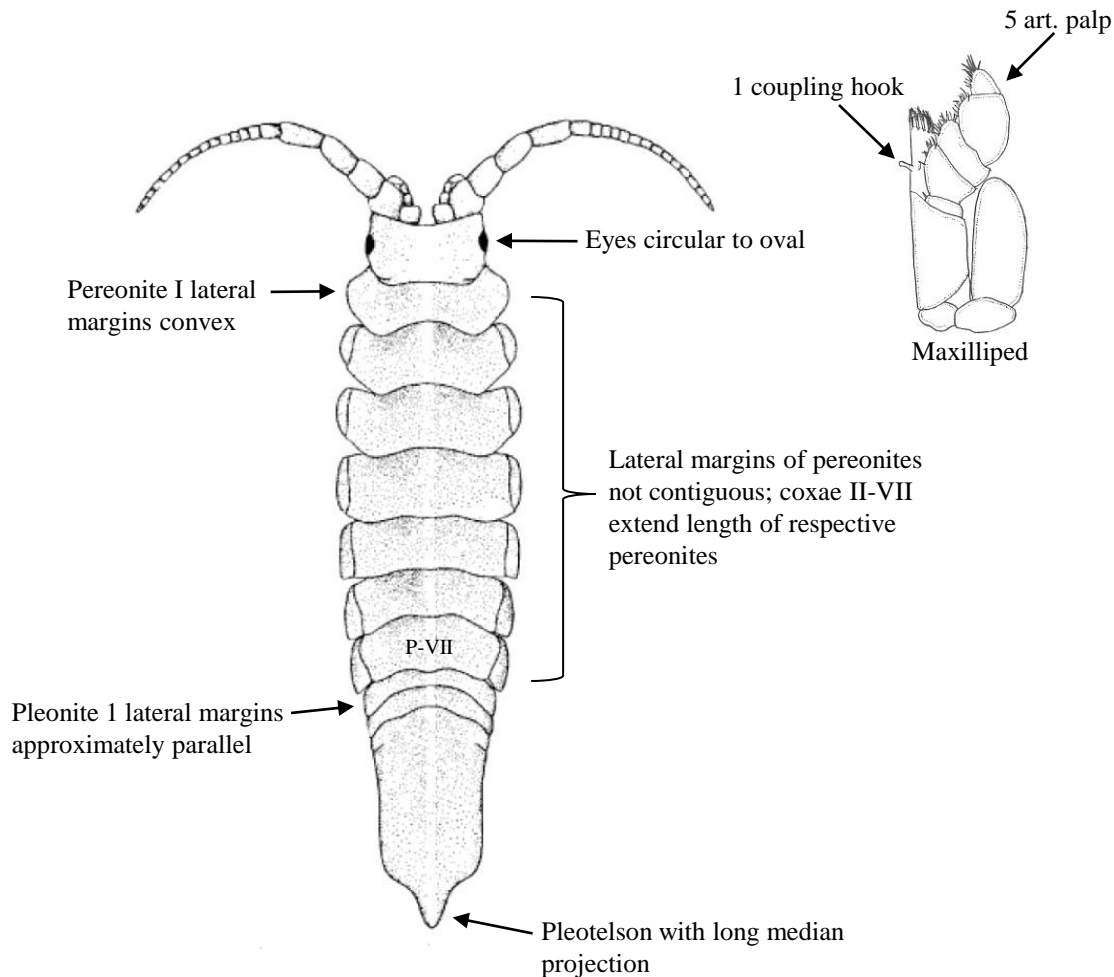
SCB species



Distribution/Habitat: Alaska to western Baja California, and southern Gulf of California; intertidal to shallow subtidal.

Pentidotea aculeata Stafford, 1913** Listed as *Idotea aculeata* in SCAMIT Ed. 6

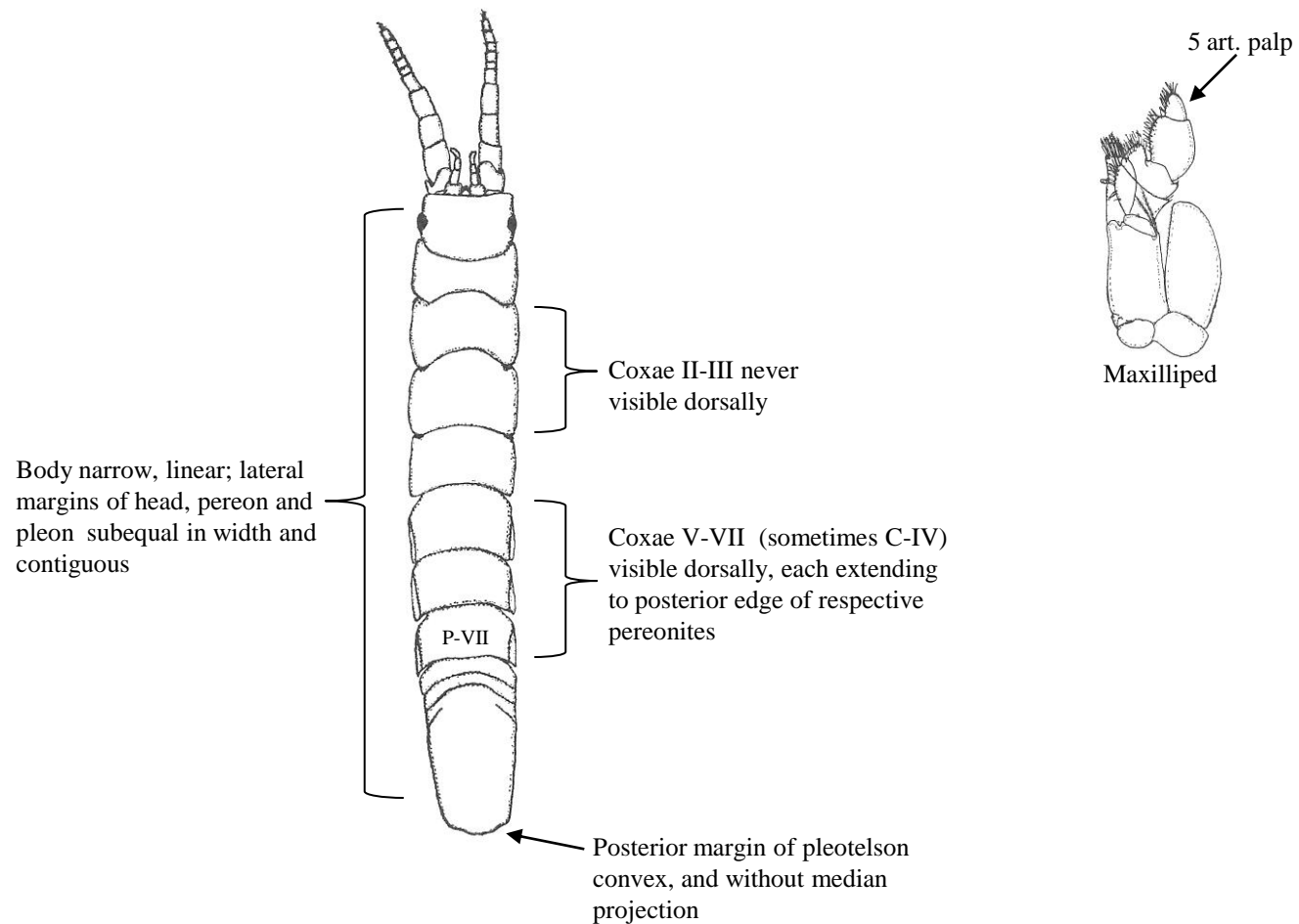
SCB species



Distribution/Habitat: NW Canada to western Baja California, and Gulf of California; intertidal.

Pentidotea kirchanskii (Miller & Lee, 1970)

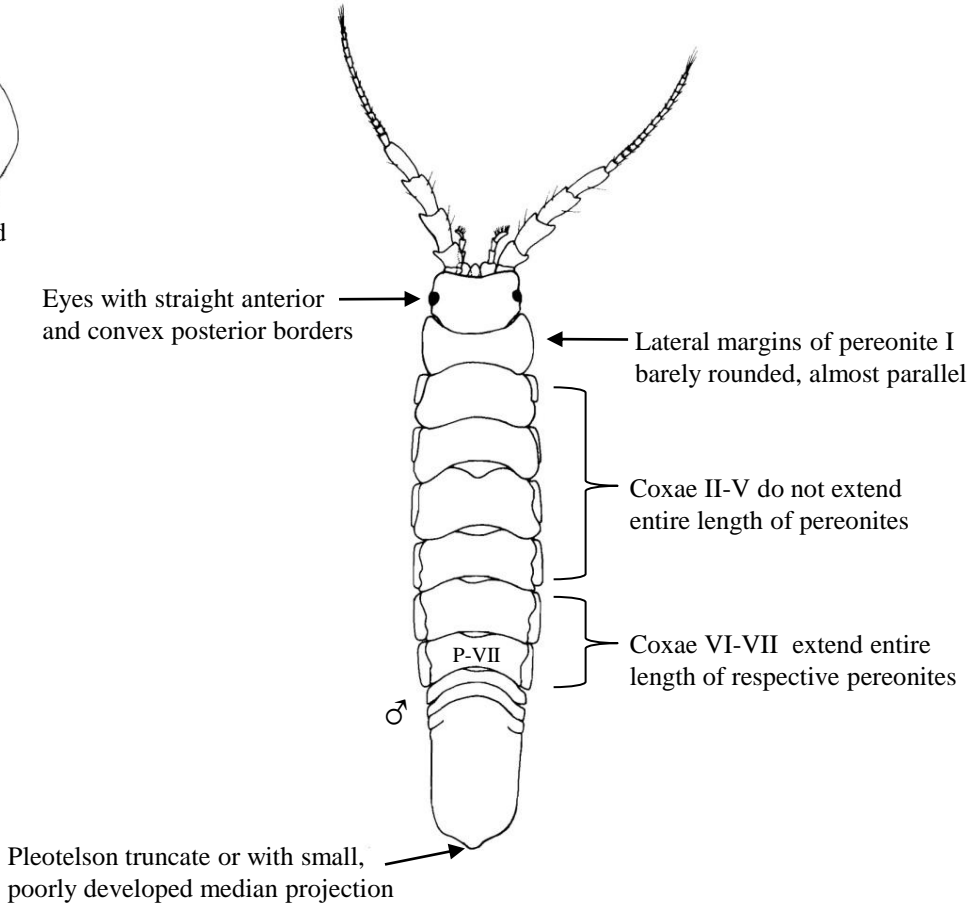
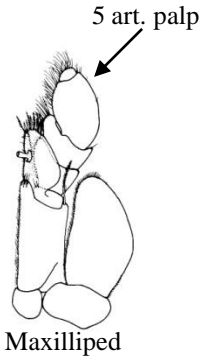
SCB species†



Distribution/Habitat: Oregon to southern California; intertidal, on surfgrass (*Phyllospadix*).

Pentidotea montereyensis Maloney, 1933

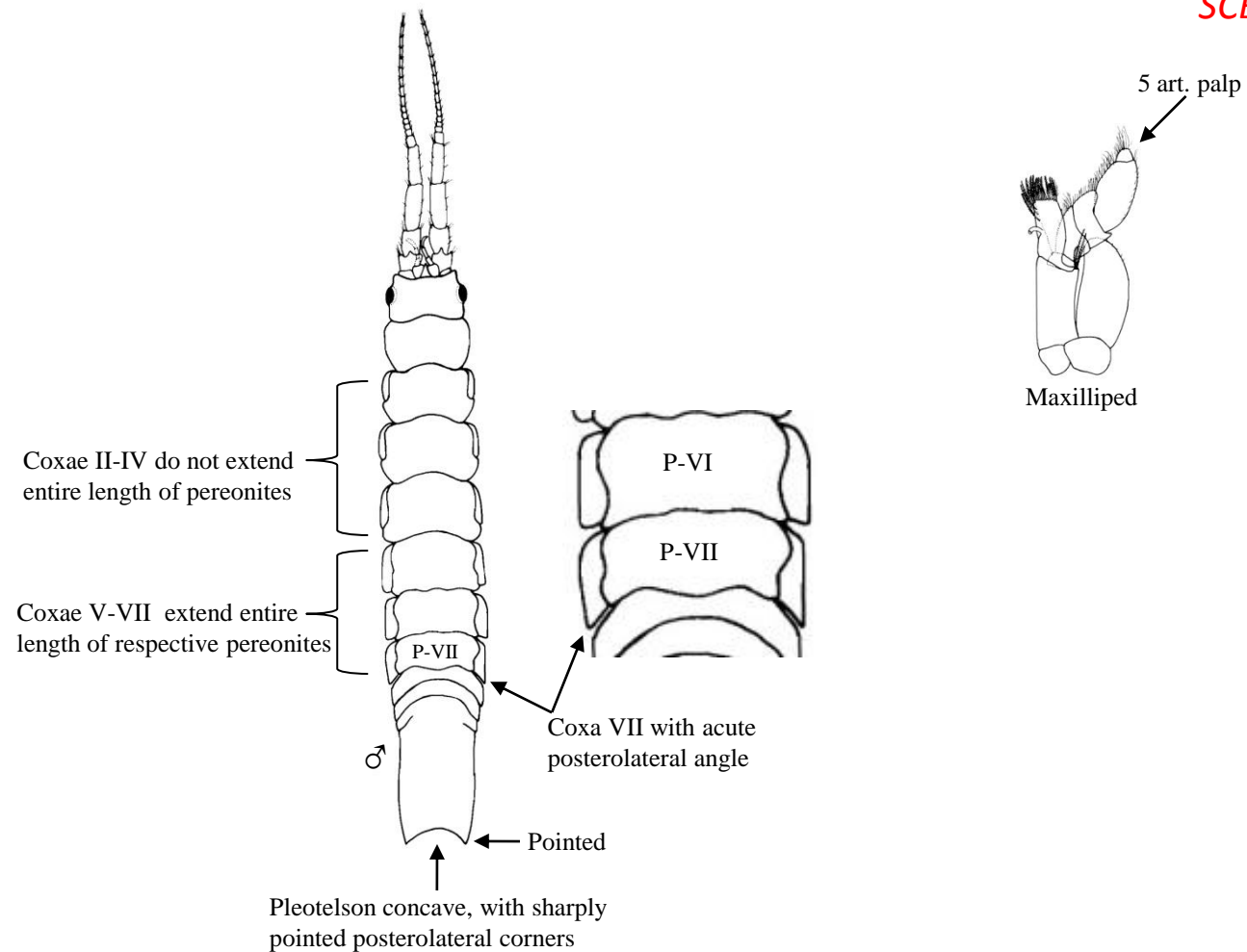
SCB species



Distribution/Habitat: NW Canada to western Baja California; intertidal, common on surfgrass (*Phyllospadix*).

Pentidotea resecata (Stimpson, 1857)

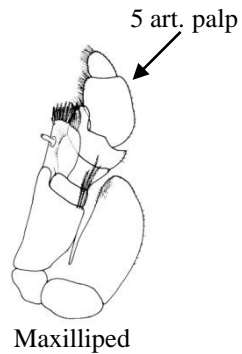
SCB species



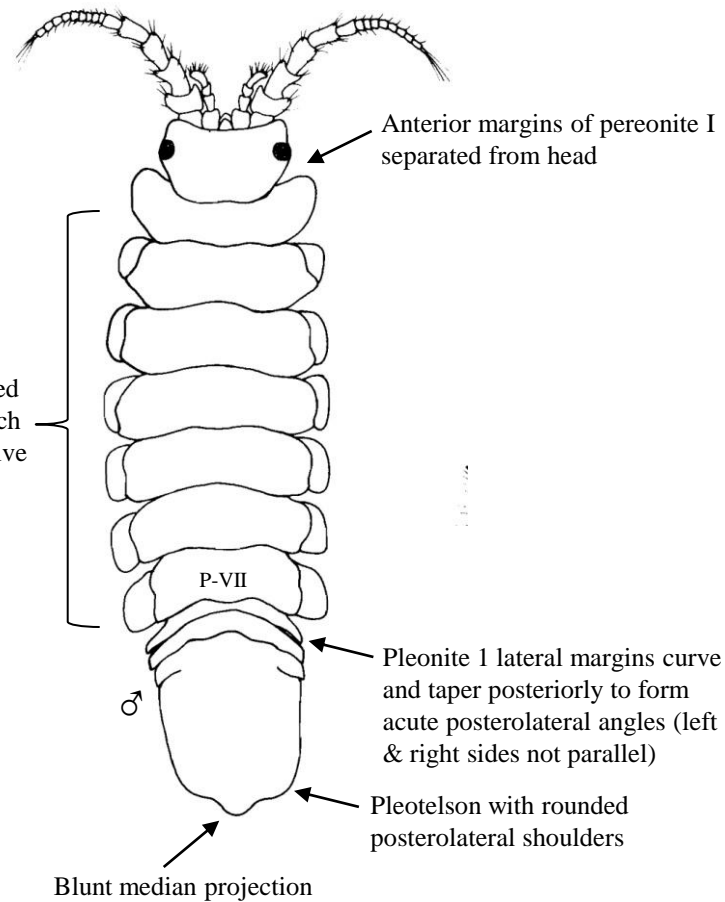
Distribution/Habitat: Alaska to SW Baja California; intertidal to subtidal, often occurring in kelps (e.g., *Macrocystis*, *Egregia*) and eelgrass (*Zostera*).

Pentidotea schmitti (Menzies, 1950)

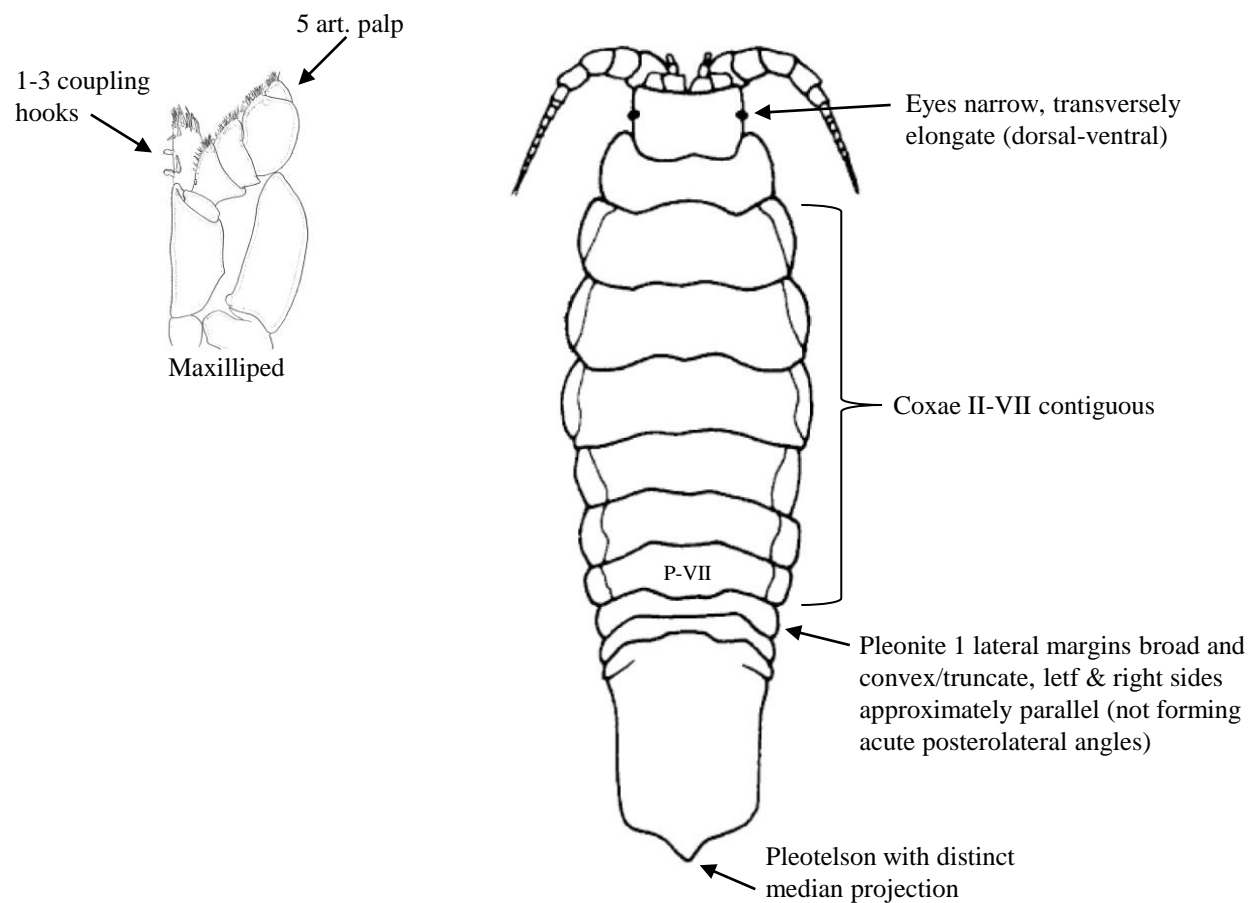
SCB species†



Pereonites widely separated laterally; coxae II-VII reach posterior edges of respective pereonites



Distribution/Habitat: NW Canada to NW Baja California, and Gulf of California; intertidal to shallow subtidal.

Pentidotea stenops Benedict, 1898SCB species[†]

Distribution/Habitat: Alaska to western Baja California, and 1 record from Gulf of California; intertidal to shallow subtidal.

Pentidotea wosnesenskii Brandt, 1851

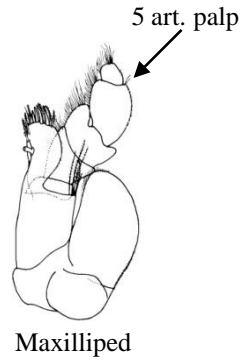
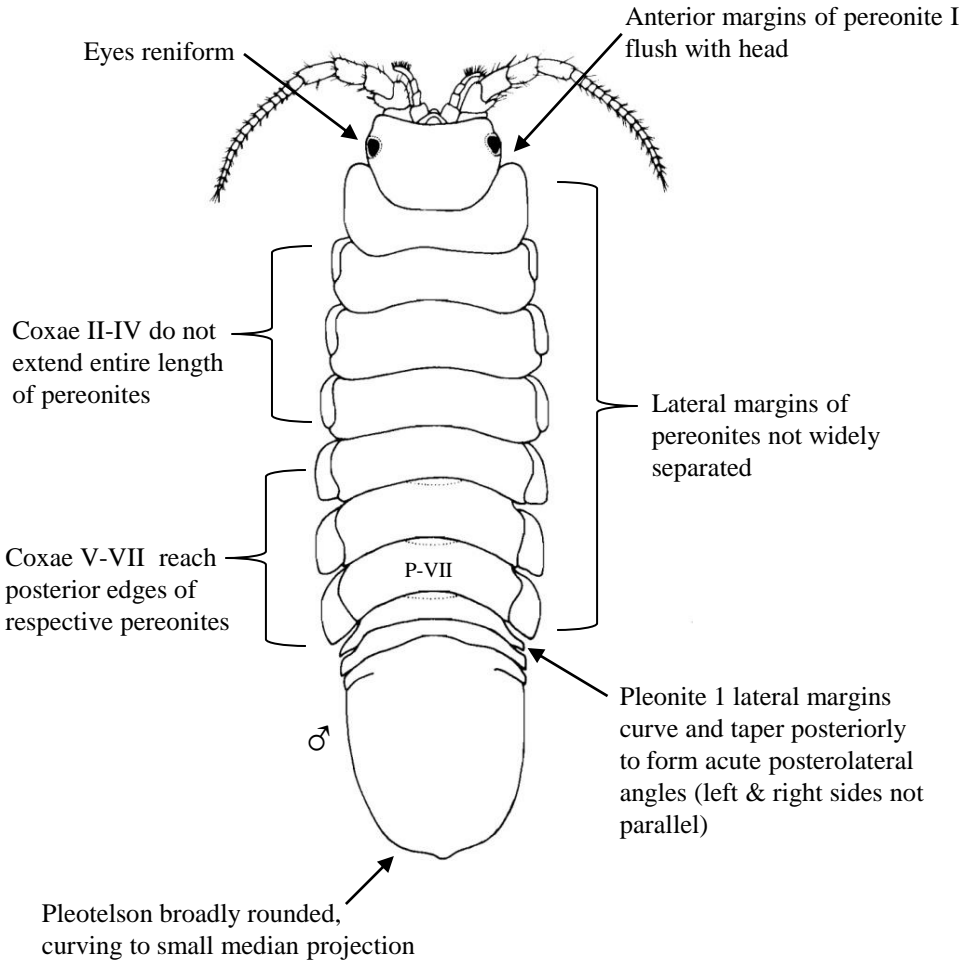
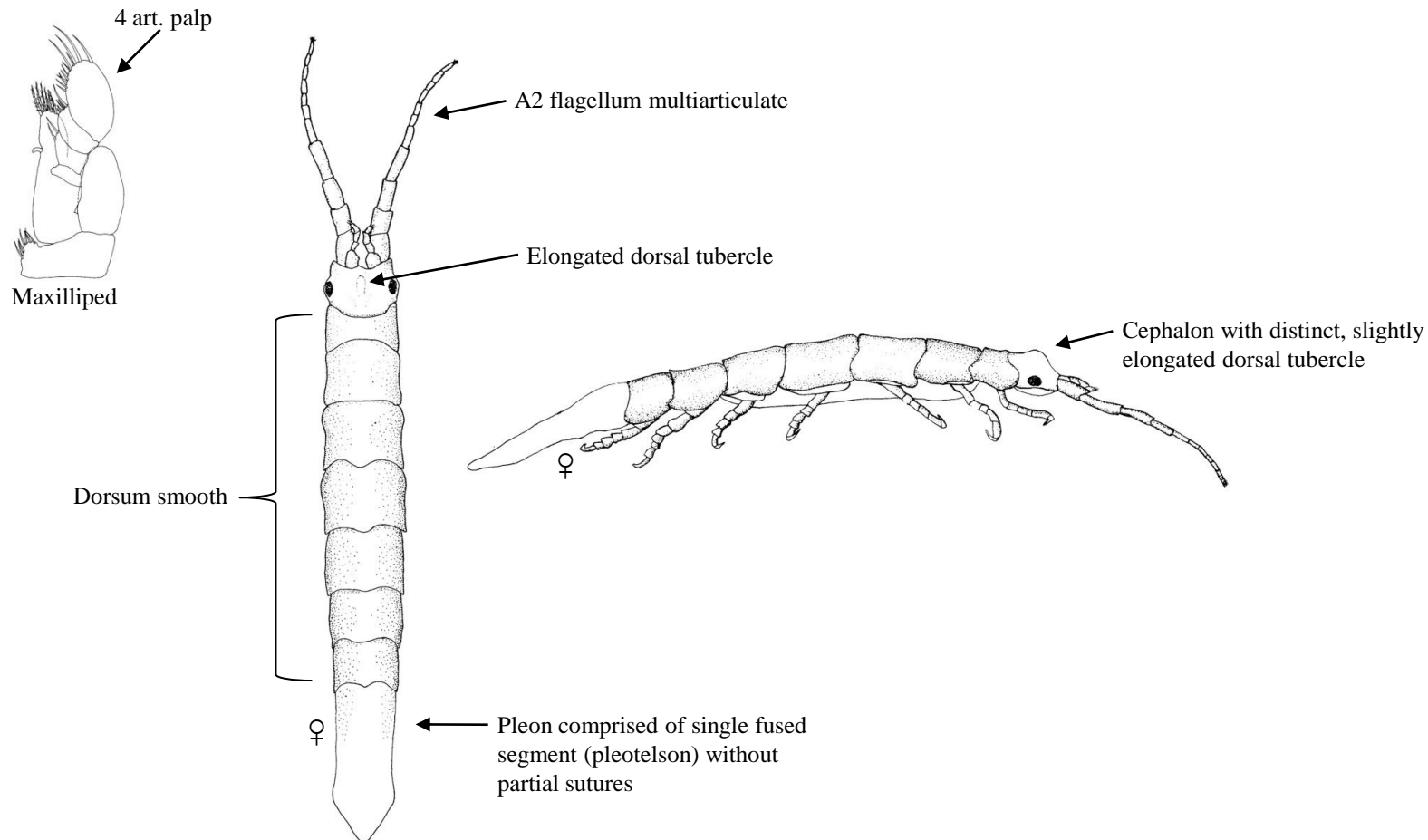


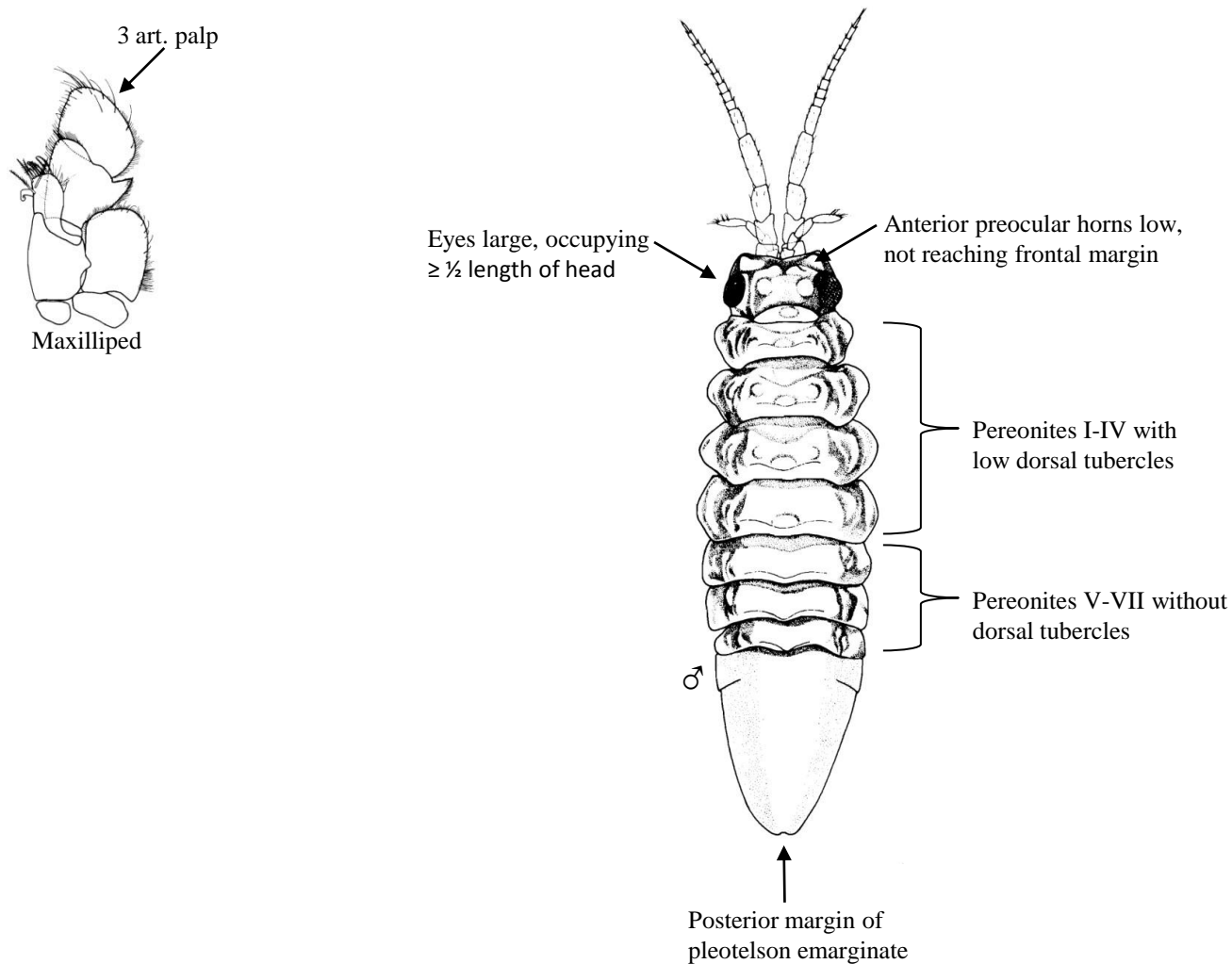
PHOTO: E. Eugenia Patten © California Academy of Sciences

Distribution/Habitat: Alaska to San Francisco, CA; intertidal to shallow subtidal.

Stenosoma wetzeri (Ormsby, 1991)SCB species[†]

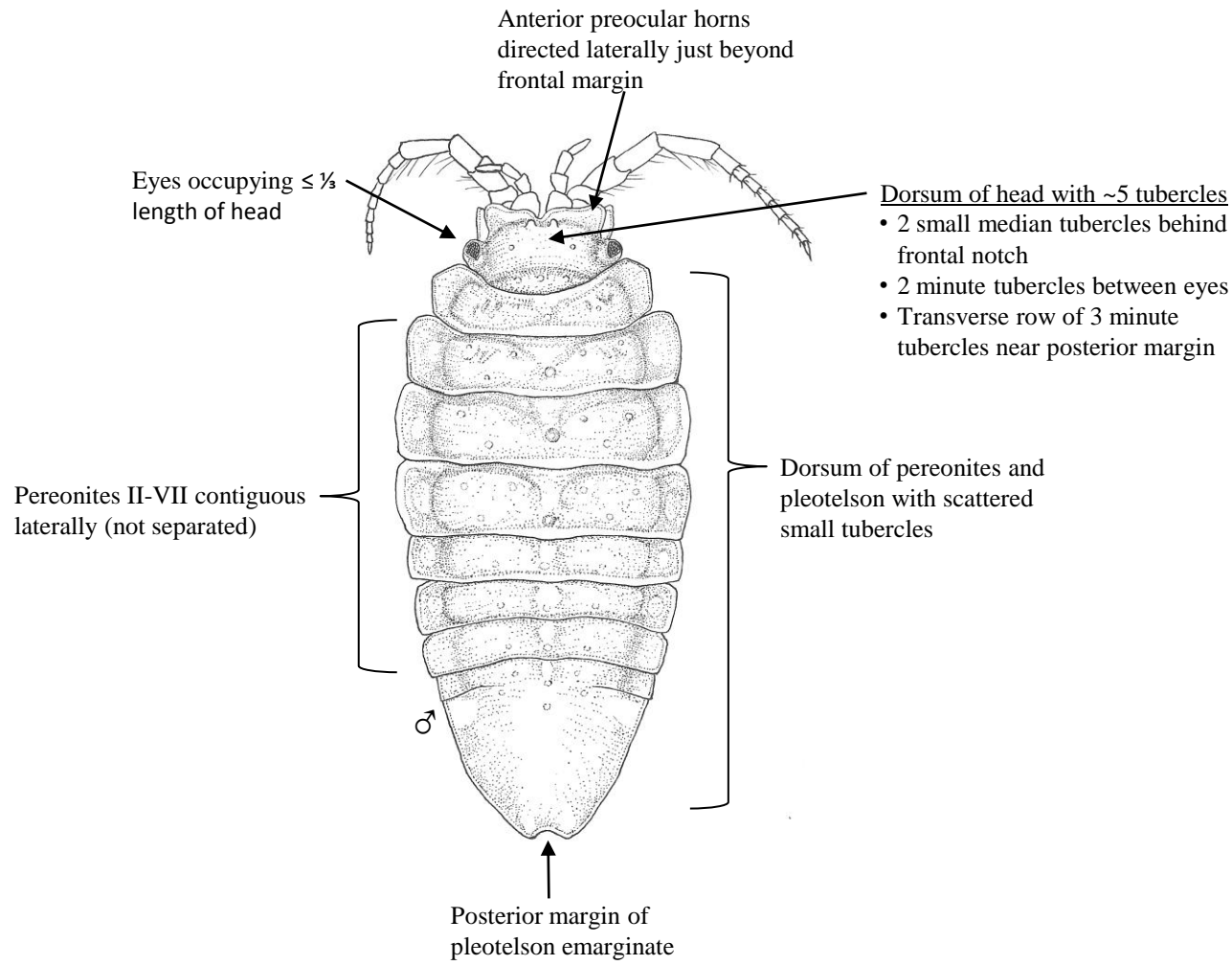
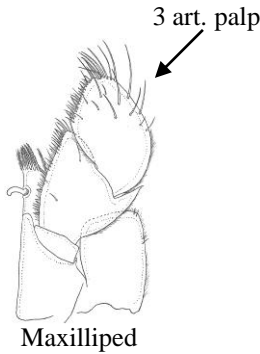
Distribution/Habitat: Catalina Island, southern CA and Guaymas, Gulf of California; to 13 m, on rocks and brown algae (*Sargassum*, *Cystoseira*).

Synidotea angulata Benedict, 1897



Distribution/Habitat: British Columbia to northern California; 60-76 m.

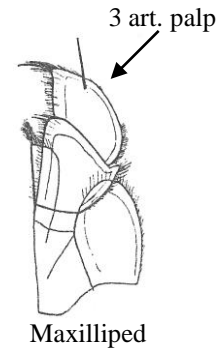
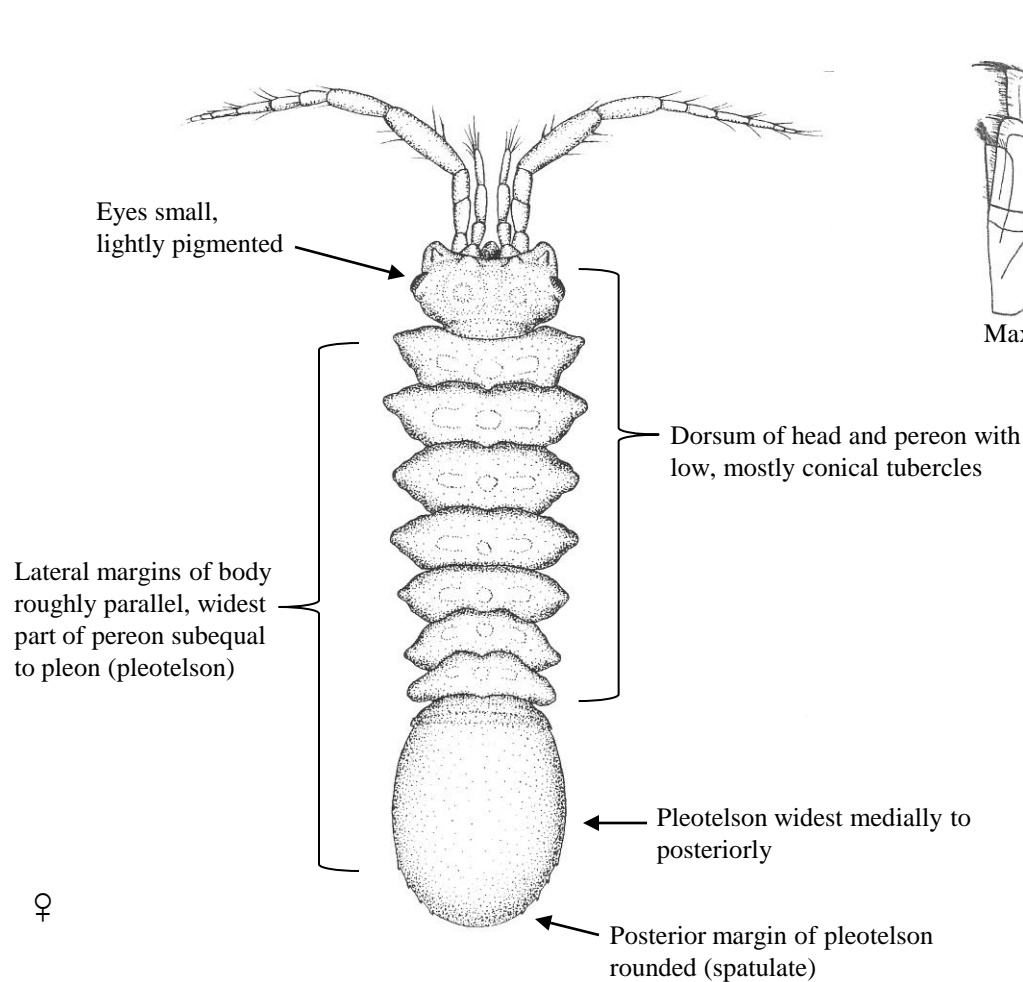
Synidotea berolzheimeri Menzies & Miller, 1972



Distribution/Habitat: Sonoma County to San Luis Obispo, CA; intertidal, on hydroids (*Aglaophenia*).

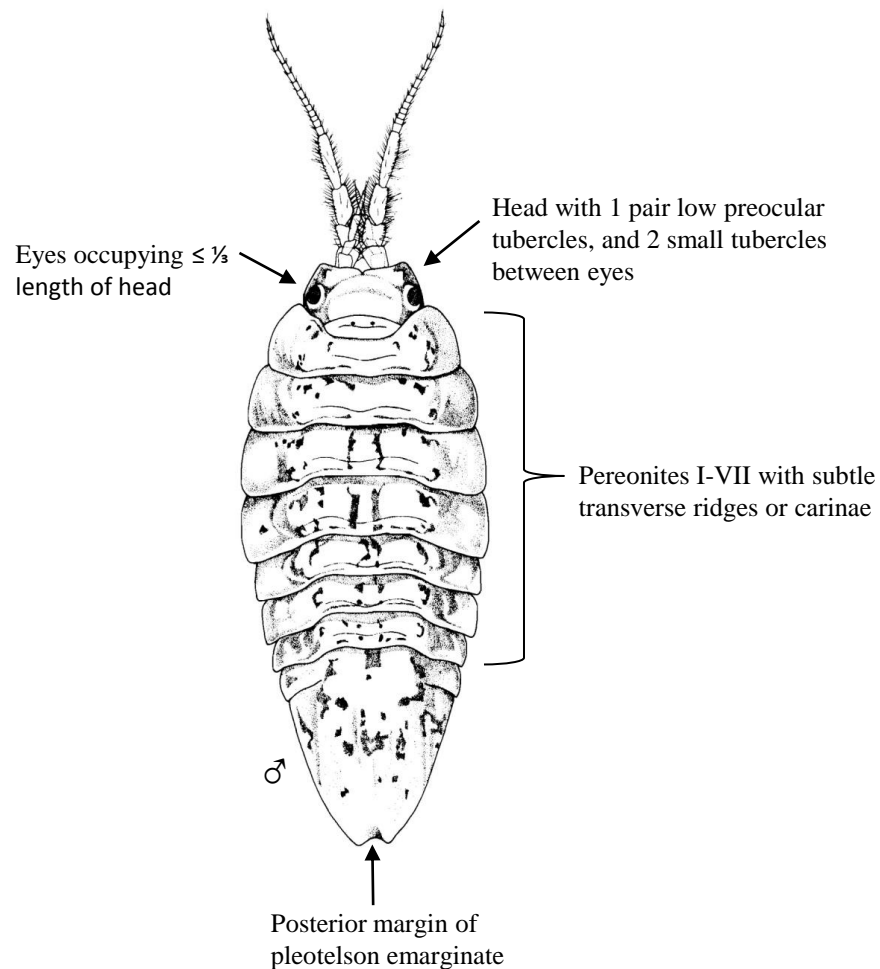
Synidotea calcarea Schultz, 1966

SCB species



Distribution/Habitat: Tanner and Santa Rosa Canyons, CA; 54-813 m.

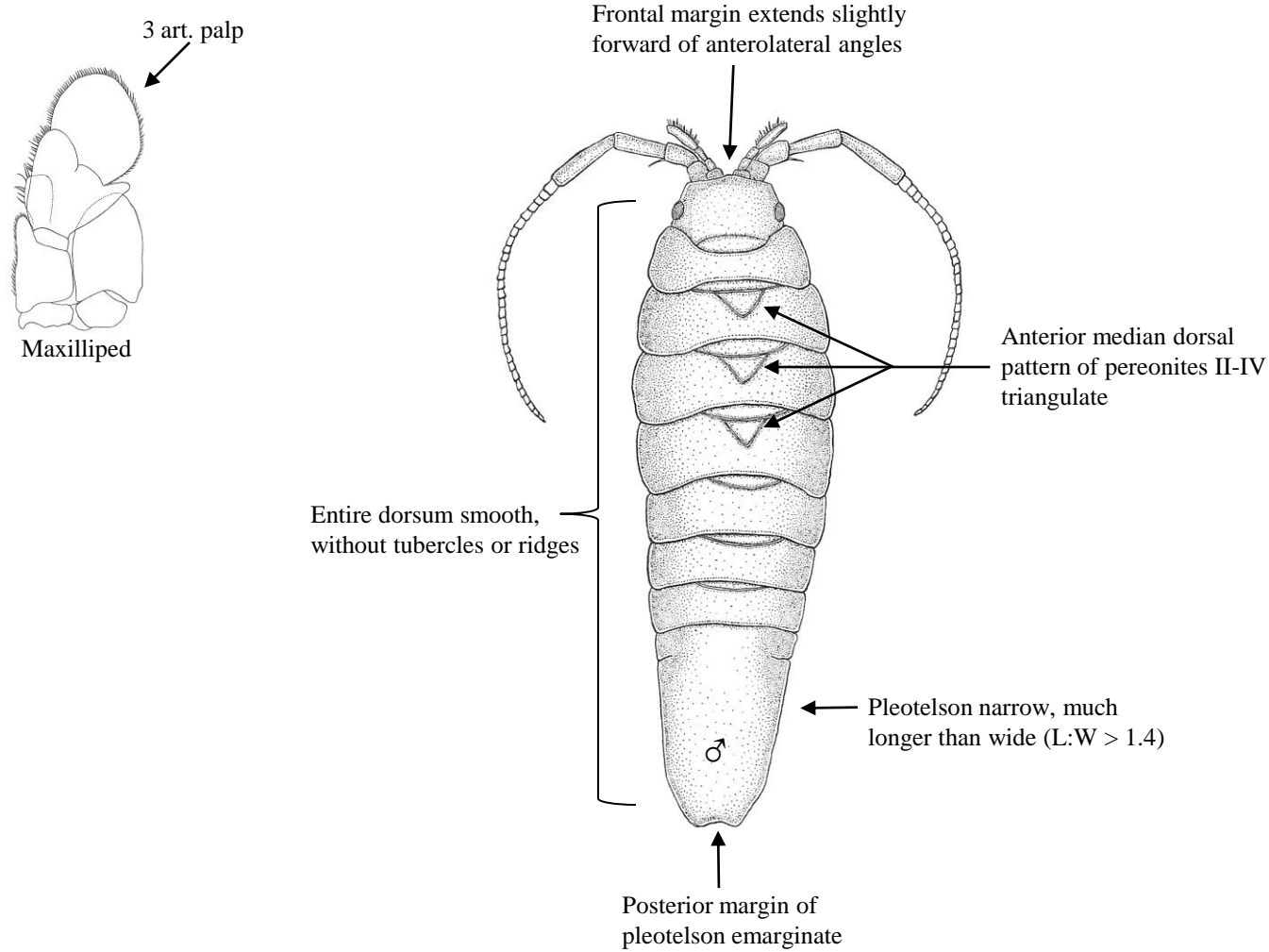
Synidotea consolidata (Stimpson, 1857)



Distribution/Habitat: Southern Alaska to central California; intertidal to 20 m.

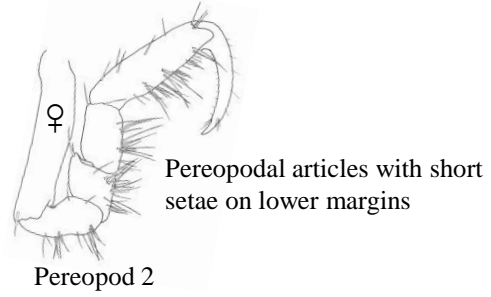
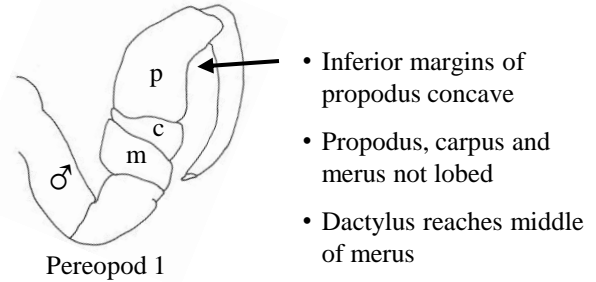
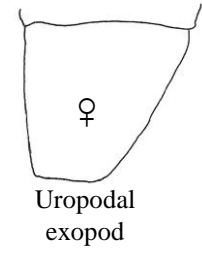
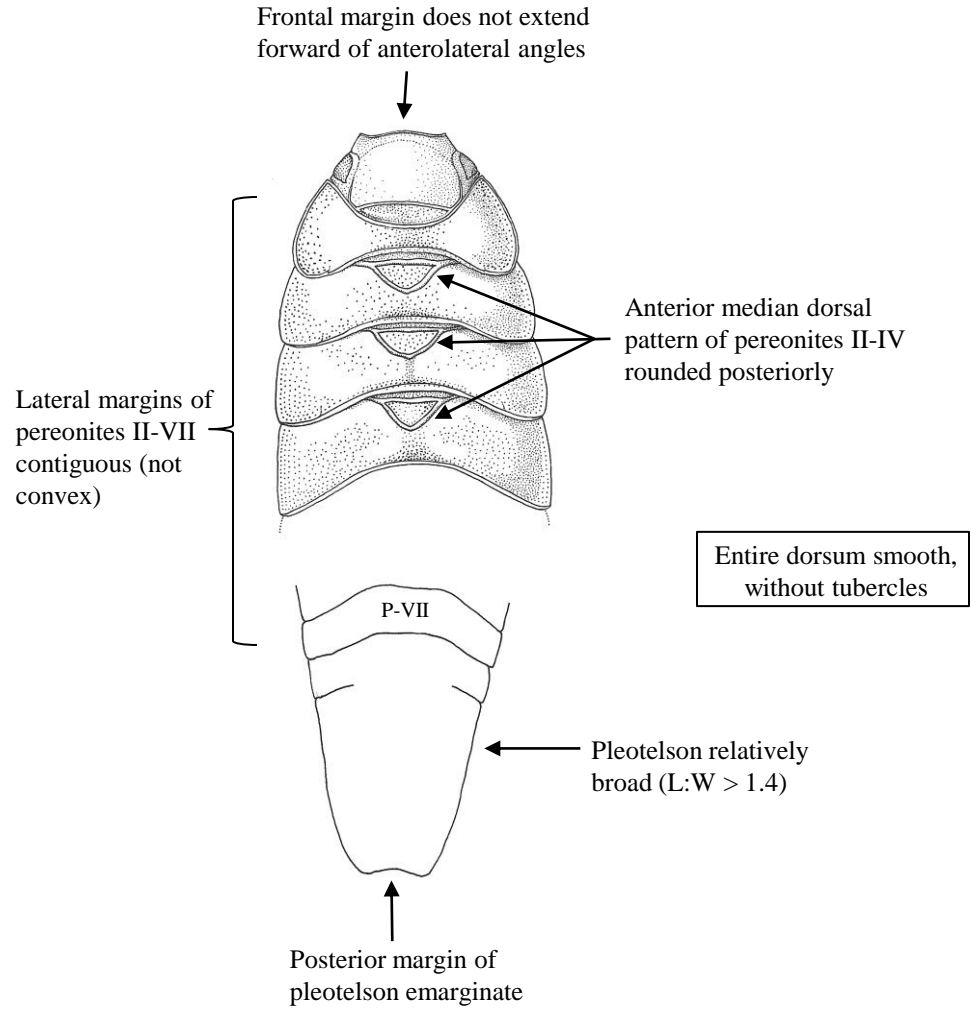
Synidotea harfordi Benedict, 1897

SCB species



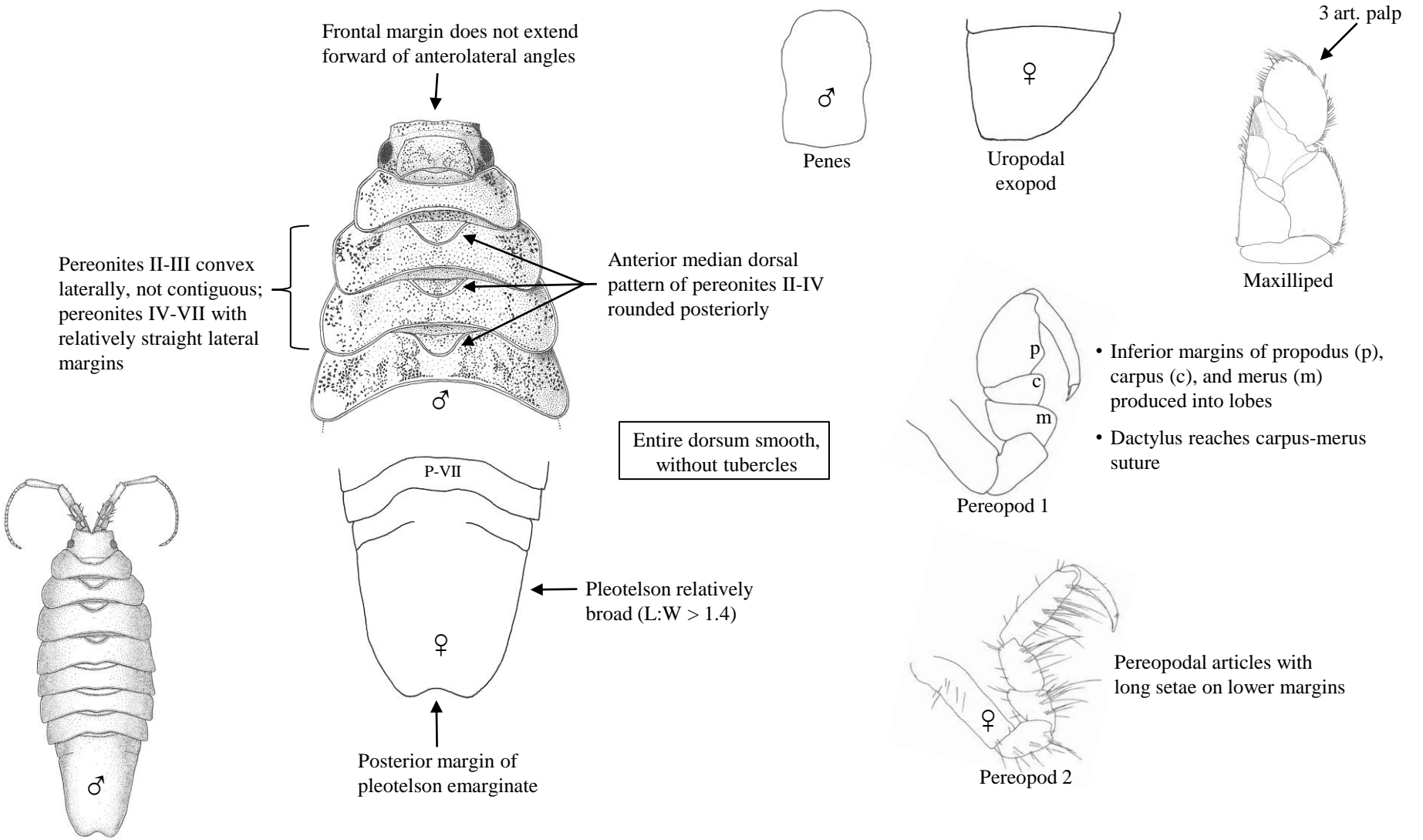
Distribution/Habitat: Oregon to SW Baja California, rare in Gulf of California, one record in Costa Rica, introduced to Japan; intertidal to shallow subtidal.

Synidotea laevidorsalis (Miers, 1881)



Distribution/Habitat: Introduced species presently not confirmed in California; previous records for California considered to be misidentifications of *S. laticauda* (see Poore, 1996)

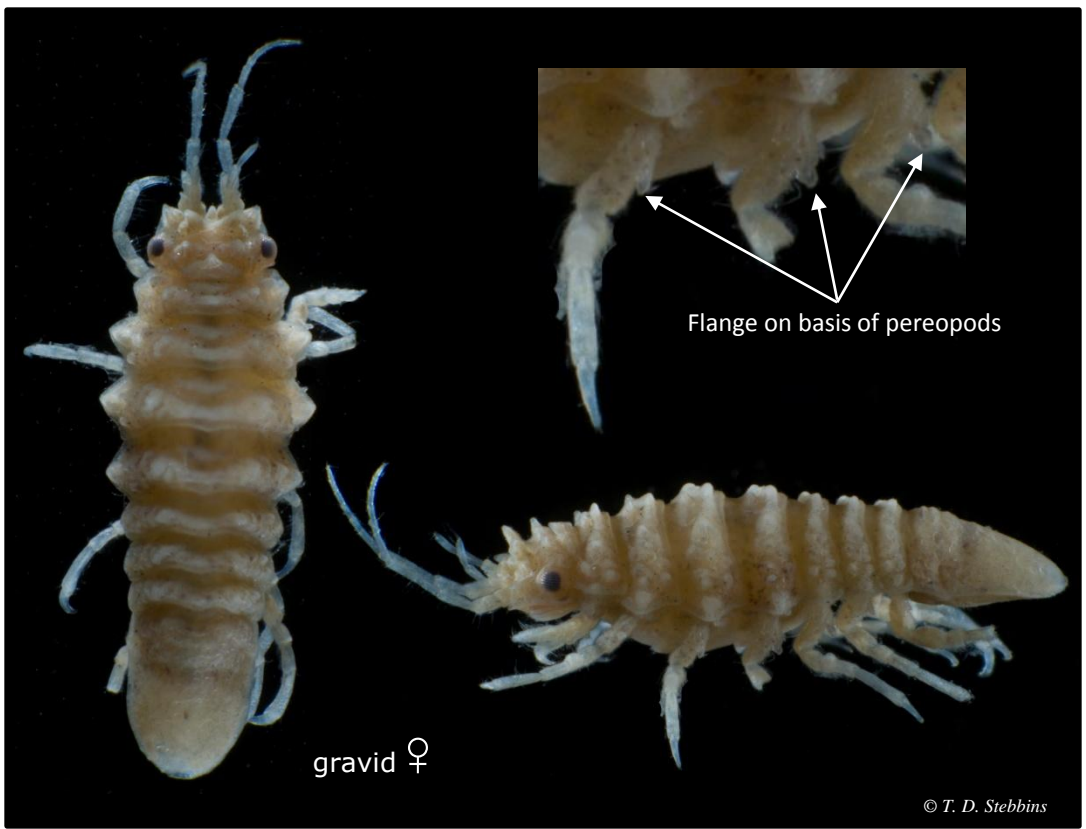
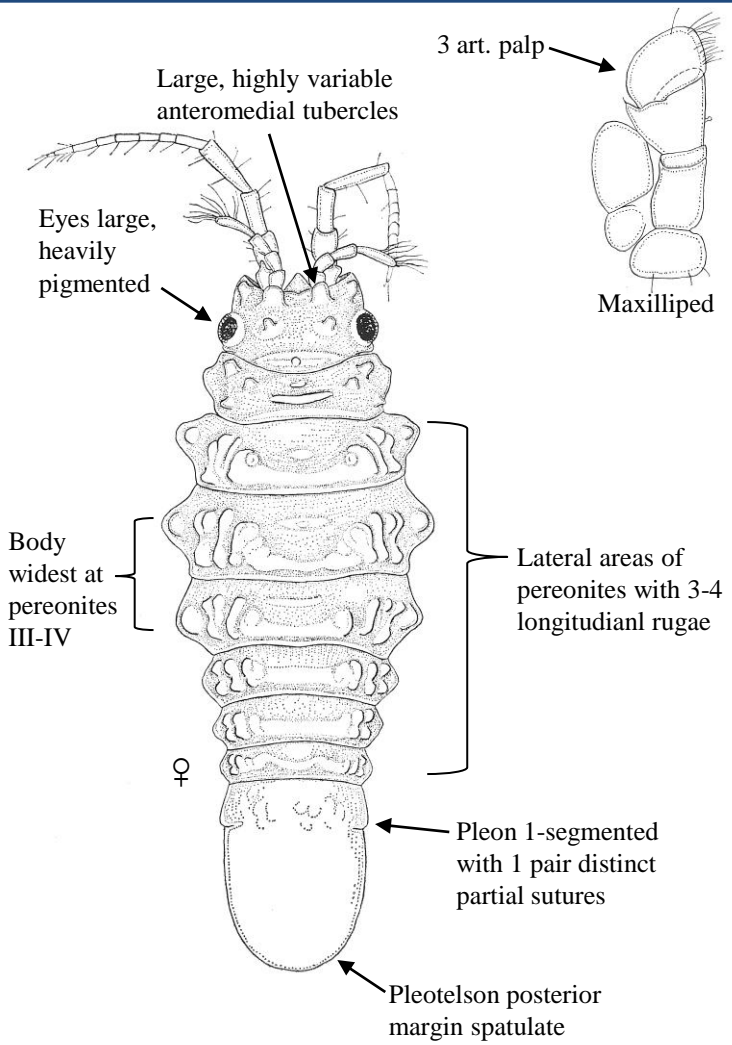
Synidotea laticauda Benedict, 1897



Distribution/Habitat: San Francisco, CA; shallow water, often on floats in bays and estuaries.

Synidotea magnifica Menzies & Barnard, 1959

SCB species

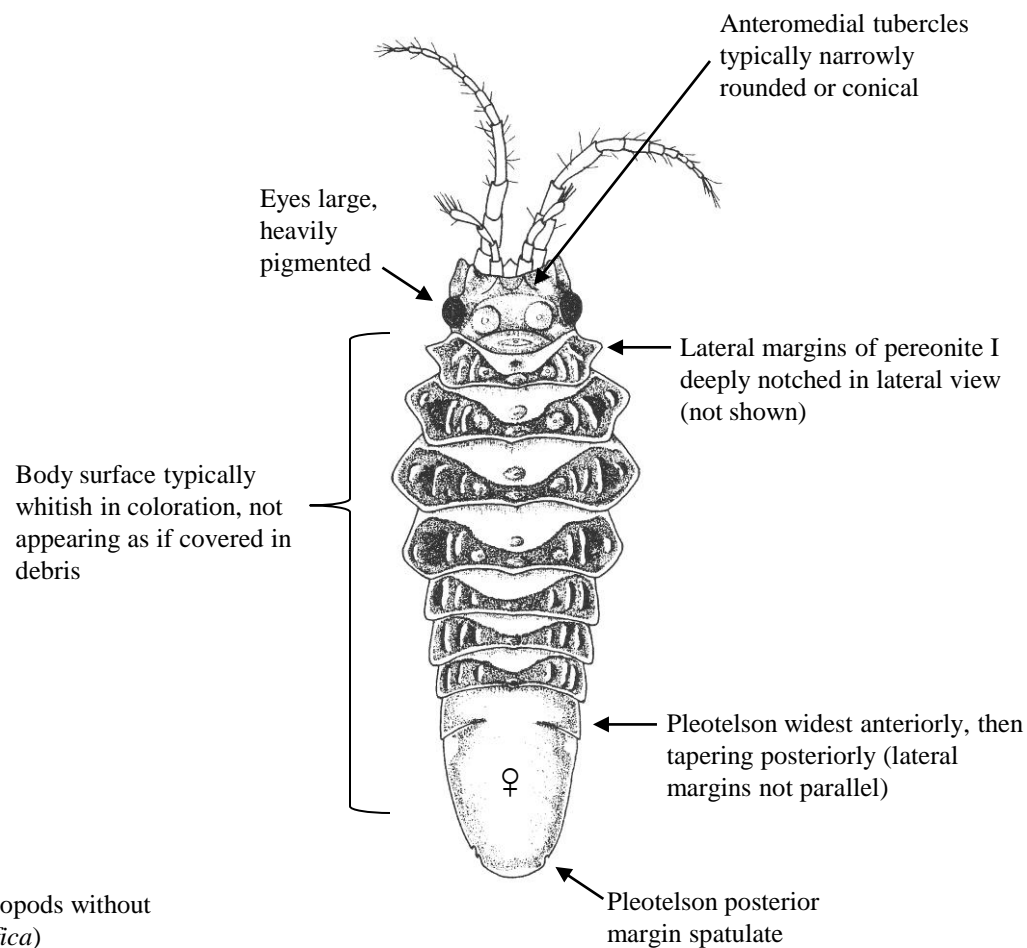
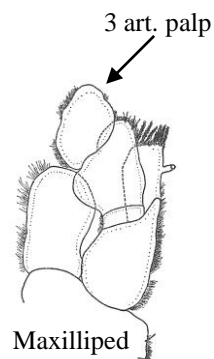


NOTE: Entire body surface rough in appearance, brownish in color

Distribution/Habitat: San Luis Obispo, CA to NW Baja California; subtidal, 29-98 m.

Synidotea media Iverson, 1972

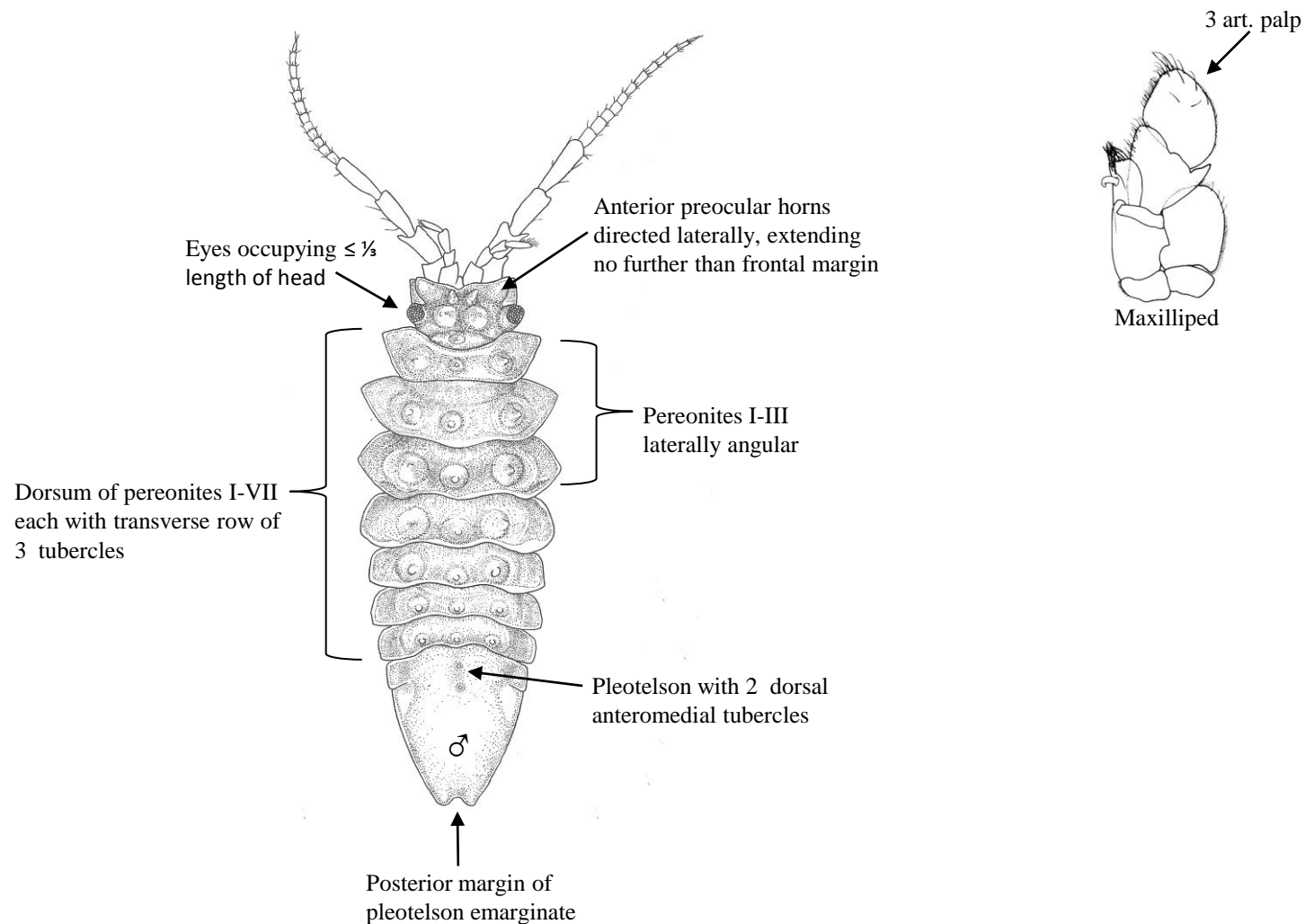
SCB species



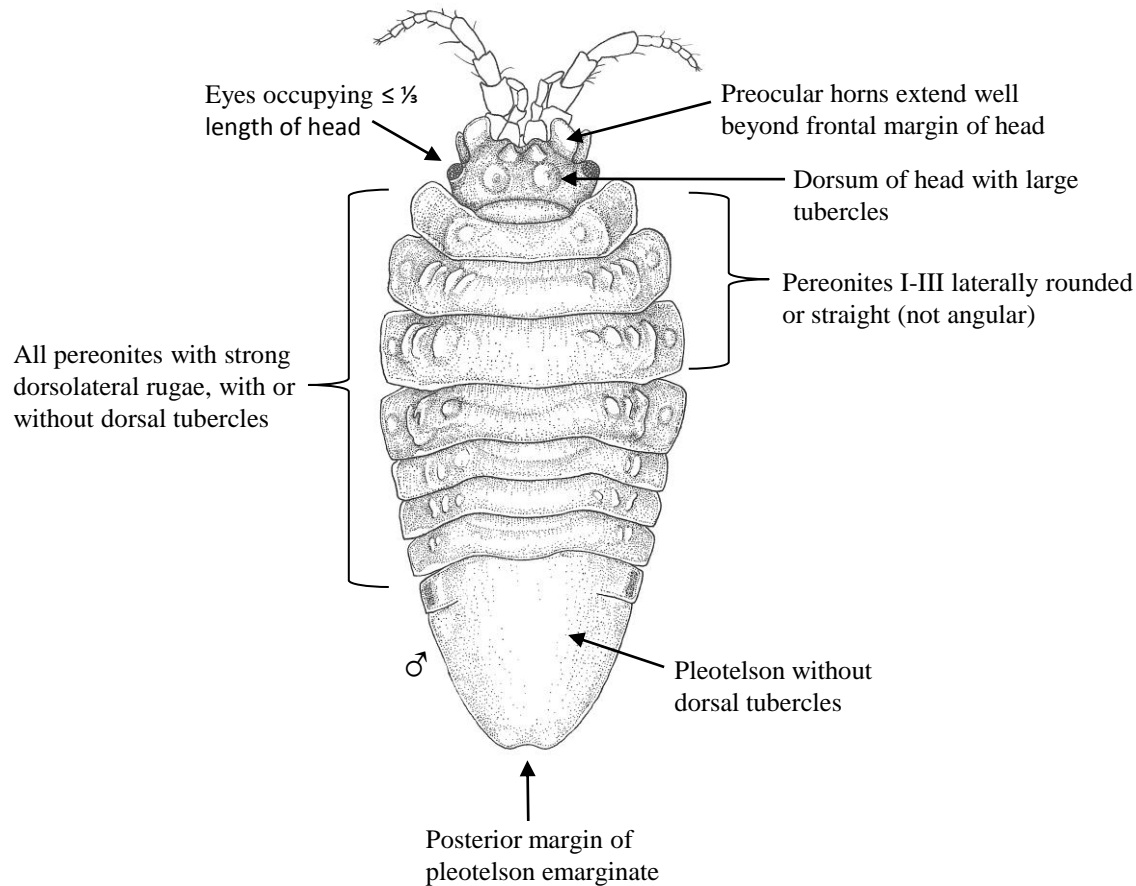
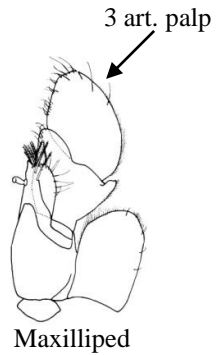
NOTE: Basis of pereopods without flange (see *S. magnifica*)

Distribution/Habitat: Point Soberanes to Santa Maria Basin, CA; 183 m.

Synidotea pettiboneae Hatch, 1947



Distribution/Habitat: British Columbia to central California; on bryozoans and hydroids.

Synidotea ritteri Richardson, 1904SCB species[†]

Distribution/Habitat: British Columbia to southern California, and Guaymas, Gulf of California; on rocks and brown algae (*Sargassum*, *Cystoseira*).