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## Chapter 9. Suborder Sphaeromatidea

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### Abstract

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Diagnoses and illustrated keys are provided for eight families and 124 genera of the Isopoda suborder Sphaeromatidea. Paravireiidae fam. nov. is erected for the genus *Paravireia* Chilton, 1925. The ecology and distribution of each taxon are discussed with citation of literature critical for further investigation and identification to species.

### Keywords

Ancinidae, Basserolidae, Bathynataliidae, Paravireiidae, Plakarthriidae, Serolidae, Sphaeromatidae, Tecticipitidae, new family, dichotomous keys

### Introduction

Sphaeromatidea Wägele, 1989 have the pleonites fused to some degree and differ from the other large group of the former “Flabellifera” in having the uropodal rami lateral to the margin of the pleotelson and folding down alongside the branchial space, whereas in Cymothoidea the uropodal rami are ventral to the pleotelson and articulating from side to side along a vertical axis inside the branchial space.

Brandt and Poore (2003) separated superfamily Seroloidea (four families) from Sphaeromatoidea (three families) but the morphological criteria for doing so were weak. The small families Bathynataliidae and Basserolidae are similar to the larger Serolidae, and the small families Ancinidae and Tecticipitidae are similar to the much larger Sphaeromatidae. However, the relationships of Plakarthriidae and the enigmatic *Paravireia* (for which we erect Paravireiidae fam. nov.) are problematic. The superfamilies are not recognised here. The smaller families have diagnostic maxillula and maxilla being somewhat more reduced than in the Sphaeromatidae. These characters are not used in the key because of the difficulty of dissection – and are unnecessary.

Wetzer et al. (2013) provisionally found using molecular data (16S, 18S genes) that Sphaeromatidea was not monophyletic but part of a larger clade including Serolidae and Valvifera. Later, Wetzer et al. (2018) concluded that Sphaeromatidea (represented by Serolidae, Ancinidae, Plakarthriidae and many genera of Sphaeromatidae) was monophyletic. The largest family Sphaeromatidae is highly diverse, and the Plakarthriidae was doubtfully embedded within it.

*Diagnosis.* Head free from, or fused to pereonite 1. Pereopodal coxal dorsal plates present (secondarily reduced in some species); coxal dorsal plate of pereopod 1 fused to tergite, or free from tergite (*Plakarthrium*); coxal plate 7 present, or absent (coxal dorsal plate 6 and pleonal epimera 1 or 2 in contact); coxal ventral plates 1–7 (medial extension of coxa replacing sternite) obsolete (not distinguished from sternite), or extending to midpoint (well defined and separated by suture). Pleonites 1–5 variously fused, occasionally fused to pleotelson, pleonites 1–3 sometimes indicated by lateral sutures. Pleotelson underside vaulted, branchial chamber defined by ridges along mesial margin of lateral edge (except in Sphaeromatidae “Cassidiniinae”); ventrolateral margins of pleon and pleotelson narrow, or broad and flattened. Telsonic region of pleotelson elongate, anus situated anteriorly on pleotelson. Penial processes mesial, closer to midpoint than to pereopods. Mandibular lacinia mobilis present on both sides, or present on left side, reduced and fused with spine row on right, or absent; molar usually a cylindrical process with trititative flat end, or absent; palp present, or absent (*Plakarthrium*). Maxilla trilobed. Maxillipedal endite reaching at least distal margin of palp article 2, usually distally truncate and setose. Pereopods 1–3 usually ambulatory (pereopod 1 sometimes subchelate or subprehensile), directed anteriorly; pereopods 4–7 directed posteriorly. Pleopods 1 and 2 biramous. Uropod attached anterolaterally on pleotelson or on posterior margin of pleotelson; peduncle not operculate; rami lateral to margin of pleotelson, articulating in longitudinal axis and folding alongside branchial chamber.

**Key to families of Sphaeromatidea**

1. Pereopod 1 ambulatory, propodus not expanded or ovate ..... 2
- Pereopod 1 subprehensible or subchelate, propodus dilated, ovate ..... 4
2. Uropod absent. Body vaulted. Coxal dorsal plates and pleonal epimera with setal fringe (fig. 9.5) .....  
..... Paravireiidae fam. nov. ... p. 370
- Uropod present. Body vaulted or flat. Coxal dorsal plates and pleonal epimera rarely with setal fringe ..... 3
3. Coxal dorsal plate 1 free from pereonite, separated by suture. Pleon and pleotelson completely surrounded,  
laterally by coxal plates 7 and posteriorly by uropods (fig. 9.4) ..... Plakarthriidae ... p. 369
- Coxal dorsal plate 1 fused to pereonite, without visible suture. Pleon and pleotelson not completely  
surrounded laterally by coxal dorsal plates 7; pleotelson sometimes enclosed by lateral uropods (figs 9.9–  
9.21) ..... Sphaeromatidae ... p. 382
4. Pereonite 7 not visible dorsally, submerged, without coxal dorsal plates (short segment following pereonite 6  
is pleonite 1) (figs 9.2, 9.6, 9.7) ..... 5
- Pereonites 1–7 visible, separate dorsally (figs 9.1, 9.3, 9.22) ..... 6
5. Pleopods 1–3 with rectangular peduncles, with terminal rami. Maxillipedal palp of 1 article (fig. 9.2) .....  
..... Basserolidae ... p. 366
- Pleopods 1–3 narrow, tapering, directed laterally, rami distal and subdistal. Maxillipedal palp of 3 articles,  
second more or less cordiform (rarely 2-articled) (fig. 9.8a, e, f) ..... Serolidae ... p. 371
6. Pleon rectangular over most of length. Uropods attached on posterior margin of pleotelson (fig. 9.3) .....  
..... Bathynataliidae ... p. 367
- Pleotelson more or less triangular or pentagonal. Uropods attached anterolaterally to pleotelson ..... 7
7. Head fused medially to pereonite 1. Uropod without endopod; exopod long (fig. 9.1) ..... Ancinidae ... p.365
- Head free from pereonite 1. Uropod biramous (fig. 9.22) ..... Tecticipitidae ... p. 430

**Contributions of the authors**

NLB was the leading author for Sphaeromatidae while GCBP was the leading author for all other families.

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**Credits**

Most line illustrations in this chapter are tracings of figures assembled from the literature, all more or less simplified, undertaken by GCBP using Adobe Illustrator®. Others, listed below, are reprinted directly with permission of the publisher and/or author or are in the public domain. The references cited can be found in sections dealing with relevant families.

Fig. 9.1a, Poore (1990). Fig. 9.2a, Guedes-Silva et al. (2019); b, c, Shimomura (2008). Fig. 9.3a, Kensley (1978); b, Poore (2005); c, Kensley (1979). Fig. 9.4, Poore and Brandt (2001). Fig. 9.5, Brokeland et al. (2001). Fig. 9.6a, Moreira (1971); b, Kussakin (1967); c, j, Menzies (1962); d, Moreira (1976); e, Storey and Poore (2009); f, Kensley (1978); g, Vanhöffen (1914); h, Wägele (1994); i, Brandt (1992); k, Harrison and

Poore (1984); l, Sheppard (1933). Fig. 9.7a, Bruce (2009); b, Moreira (1974); c, Wägele (1994); d, Bruce (2009); e, f, j, k, Wägele (1994); g–i, Poore (1987); l, Moreira (1971). Fig. 9.9a, Müller (1995); b, d, e, Bruce (1994c); c, Harrison (1984); f, Wetser and Bruce (1999); g, h, Bruce (2003); i, k, l, Bruce (1994a); j, Richardson (1910); m, n, Harrison and Holdich (1984); o, p, Bruce and Holdich (2002); q, Bruce (1994). Fig. 9.10a, Khalaji-Pirbalouty and Bruce (2021); b, Brandt (1998); c, d, Bruce (1994b); e, f, Harrison and Holdich (1982b); g, h, Bruce (1994a); i, j, Holdich and Harrison (1981); k, l, Kussakin and Maljutina (1993); m, n, Harrison and Holdich (1984); o, Kussakin (1979). Fig. 9.11a, b, Harrison and Holdich (1984); c, d, Holdich and Harrison (1983); e, Brandt and Wägele (1989); f, Baker (1926); g, h, Schotte and Kensley (2005); i, j, Bruce (1994c); k, l, Holdich and Harrison (1980); m, n, Harrison and Holdich (1982a); o, p, Kensley and Bruce (2001). Fig. 9.12a, Hurley and Jansen (1977); b, c, Harrison and Holdich (1982a); d, e, Messana (1990); f, g, Bruce (1994b); h, i, Holdich and Harrison (1983); j, Brandt and Wägele (1989); k, l, Menzies and Glynn (1968); m, n, Harrison and Holdich (1982b); o, p, Baker (1926). Fig. 9.13a, Khalaji-Pirbalouty and Bruce (2014); b, c, Menzies and Miller (1955); d, e, Harrison and Holdich (1982a); f, Hurley and Jansen (1977); g, h, Bruce (1993); i, j, n, o, Bruce (2003); k, l, Bruce (1992); m, Nishimura (1976). Fig. 9.14a, b, Harrison (1984); c, d, k, l, o, p, Harrison

and Holdich (1982b); e, f, m, n, Harrison and Holdich (1984); g, h, Bruce (2004c); i, j, Müller (1991); q, r, Javed and Ahmed (1988). Fig. 9.15a, Buss and Iverson (1981); b, c, Bruce (2001); d, Kensley (1978); e, f, Bruce (2003); g, h, Harrison and Holdich (1982b); i, Harrison and Holdich (1984); j, k, Harrison (1984); l, m, Holdich and Harrison (1981b). Fig. 9.16a, b, Bruce (2009); c, d, Bruce and Wetzer (2008); e, f, k, l, Harrison and Holdich (1984); g, h, Holdich and Harrison (1983); i, j, Loyola e Silva (1966); m, n, Holdich and Harrison (1981a); o, Bruce (2001); p, Glynn (1968). Fig. 9.17a, b, Holdich and Harrison (1981b); c, d, Eleftheriou et al. (1980); e, f, Harrison (1984); g, Bruce (1994a); h, i, Harrison and Holdich (1984). Fig. 9.22a, Kussakin (1979).

## Ancinidae Dana, 1852

Figure 9.1

Ancinidae comprise two small genera from quite different habitats: *Ancinus* from sand beaches of the New World and *Bathycopea* from shelf and bathyal environments (Loyola e Silva, 1971). Their family status was confirmed by Bruce (1993). Iverson (1982) provided a more extensive diagnosis but treated the group as a subfamily of Sphaeromatidae.

Because of the homology of the uropod to that of some Sphaeromatidae and because the absence of the exopod in this family is rare, we treat the only ramus of the uropod as its exopod.

**Diagnosis.** Body oval, vaulted; head medially fused with pereonite 1; pereonites 1–7 visible dorsally, separated by sutures. Coxal dorsal plates 2–7 delimited from tergite by suture; plate 7 similar to dorsal coxal plate 6. Pleon with

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pleonite 1 almost hidden dorsally, pleonites 2–5 fused, indicated laterally by none or one suture. Pleotelson broad, triangular. Antennular and antennal peduncles cylindrical, not part of margin of body. Mandibular incisor cultrate, with or without cusps. Maxillula mesial endite small, with 1 simple seta; lateral endite with 7–12 spines, some serrate. Maxilla mesial endite small; second and lateral endites with long setae. Maxillipedal palp of 5 free articles. Pereopod 1 subchelate, propodus swollen, palm with row of close-set robust setae. Pereopod 2 subchelate in males only. Pleopods 1–3 peduncles subquadrate, with terminal rami. Uropods attached anterolaterally to pleotelson; uniramous (exopod only), attached to anterolateral pleotelson.

## Key to genera of Ancinidae

1. Uropodal exopod styliform, acute. Pleopod 1 uniramous (fig. 9.1a) ..... *Ancinus*
- Uropodal exopod laminar. Pleopod 1 biramous (fig. 9.1b, c) ..... *Bathycopea*

## *Ancinus* H. Milne Edwards, 1840

**Diagnosis.** Mandibular molar process absent. Maxilla with 2 endites. Pleopod 1 uniramous (exopod only). Pleopod 3 without transverse suture. Uropod styliform.

Intertidal, subtidal. Tropical Atlantic, Western Indo-Pacific, Tropical Eastern Pacific. 10 species (Kensley and Schotte, 1987; Rocha-Ramírez et al., 2010; Guedes-Silva et al., 2019; rediagnosis, key to species).

## *Bathycopea* Tattersall, 1905

**Diagnosis.** Mandibular molar process present. Maxilla with 3 endites. Pleopod 1 biramous. Pleopod 3 with transverse suture. Uropod laminar.

Shelf–abyssal (17–4070 m). Temperate Northern Atlantic,

Tropical Atlantic, Temperate Northern W Pacific, Tropical Eastern Pacific, Temperate Southern Africa, Temperate Australasia. 6 species (Shimomura, 2008; rediagnosis, key to species).

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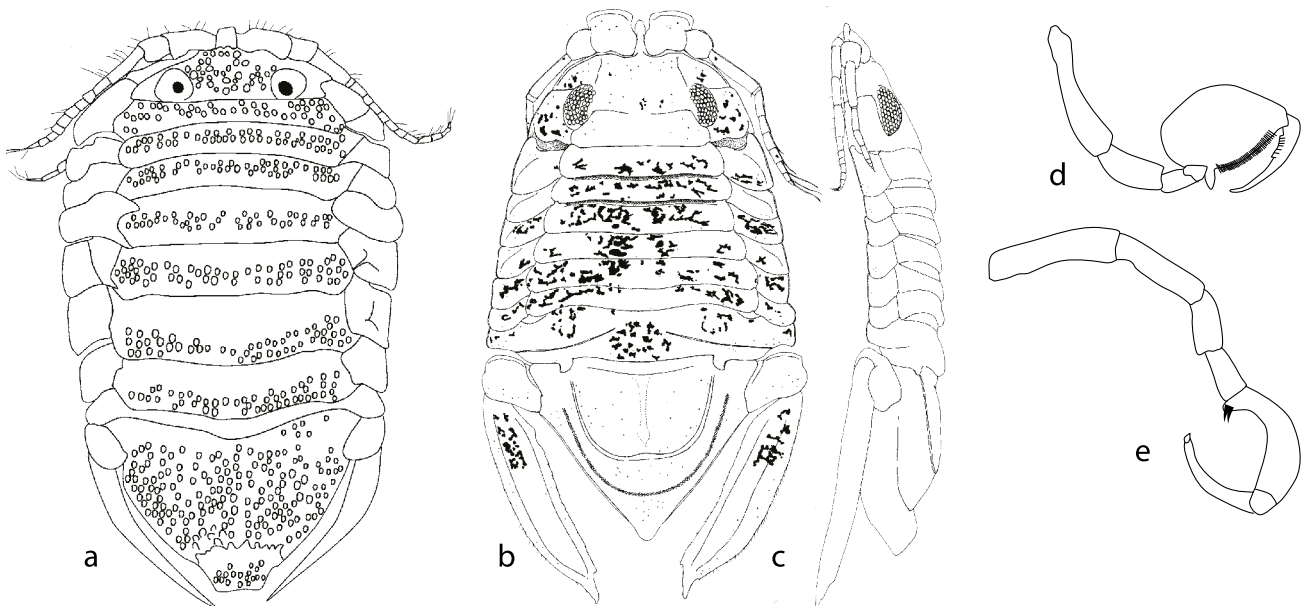


Figure 9.1. Ancinidae. a, *Ancinus velella* Guedes-Silva, Paiva, Maida and Souza-Filho, 2019; b, c, *Bathycopea oculata* Shimomura, 2008; d, e, *Ancinus*, pereopods 1, 2 (male).

## Basserolidae Brandt and Poore, 2003

Figure 9.2

Pereopod 1 lacks the complex robust setae along the propodal palm seen in serolids, and pleopods 1–3 have a quadrate peduncle, not the transverse triangular form seen in serolids. Brandt and Poore (2003) removed the only genus from Serolidae.

**Diagnosis.** Body almost evenly oval, flat, margin defined by head, coxal plates and pleon, slight interruptions between coxal plates and pleon; head fused medially with pereonite 1; pereonite 7 not visible dorsally, submerged; pereonites 5–7 ventral coxal plates meeting in midline. Coxal dorsal plates 2–6 delimited from tergite by suture, 4–6 weakly so; plate 7 not visible dorsally. Pleon with pleonite 1 visible dorsally, without epimera; pleonites 2 and 3 free, with prominent epimera; pleonal sternites 1–3 present. Pleotelson broad, laterally oval. Antennular and antennal peduncles flattened, not part of margin of body. Maxillula mesial endite short, with 1 seta, lateral endite with 5 or 6 distal setae. Maxilla mesial endite obscure, without setae, second endite with

1 simple seta, lateral endite with 2 simple setae. Mandibular incisor triangular; molar process absent. Maxillipedal palp of 1 short article. Pereopod 1 subchelate, propodus barely tapering, palm straight with row of well-spaced robust setae. Pereopod 2 not sexually dimorphic. Pleopods 1–3 peduncles subquadrate, with terminal rami. Uropods attached on posterior margin of pleotelson; biramous, with mesially expanded peduncle.

### *Basserolis* Poore, 1985

Shelf (115–200 m). Temperate SE Australia. 2 species (Poore, 1985, 1990).

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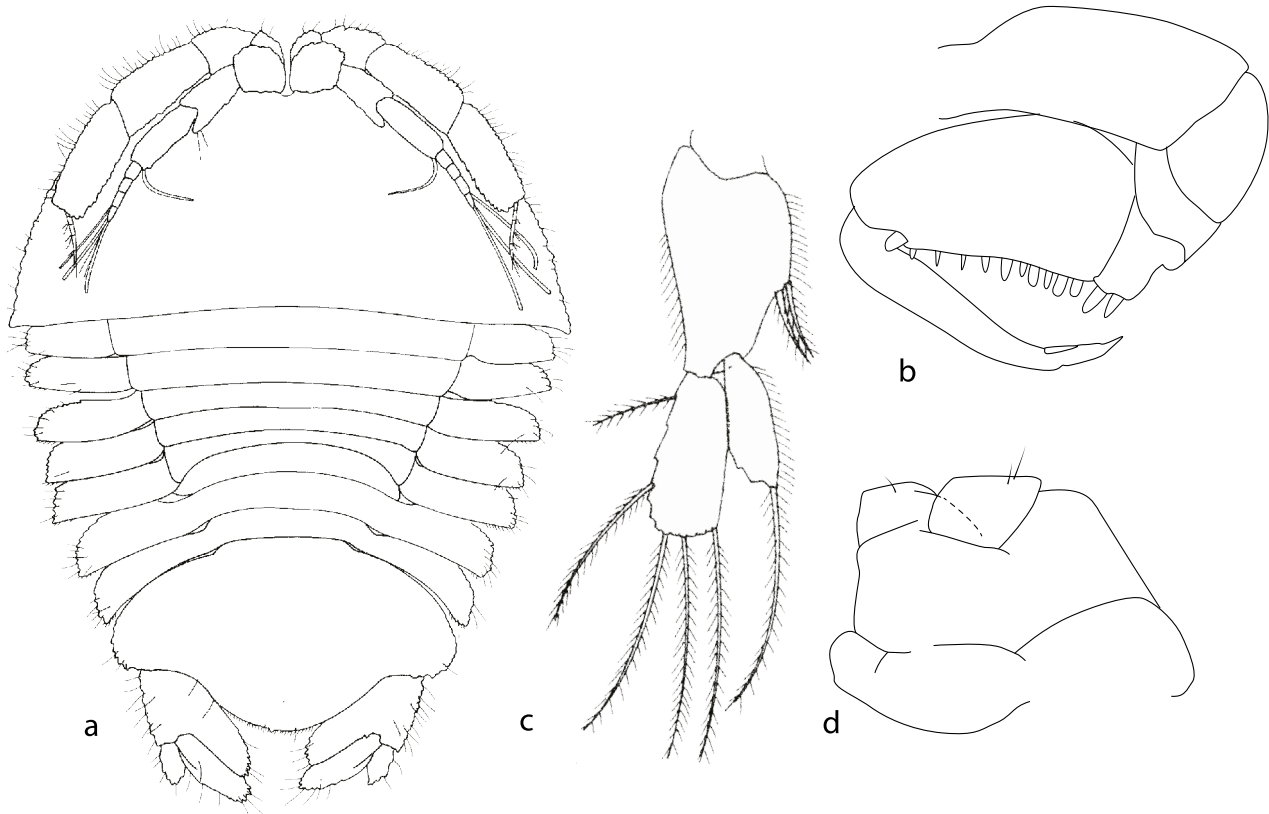


Figure 9.2. Basserolidae. a, *Basserolis franklinae* Poore, 1990; b, pereopod 1; c, pleopod 1; d, maxilliped.

### Bathynataliidae Kensley, 1978

Figure 9.3

Bathynataliids are a diverse family of four Southern Hemisphere species in three genera. The head embedded in the surrounding pereonite 1 resembles that of serolids, but the two families differ in the number of free pleonites.

**Diagnosis.** Body elongate–oval, flat or vaulted, with rectangular pleotelson; head fused medially with pereonite 1; pereonites 1–7 visible dorsally, separated by sutures; pereonites 5–7 sternites and ventral coxal plates fused together at midline. Coxal dorsal plates 2–7 delimited from tergite by suture; plate 7 visible but shorter than coxal plate 6, or not visible dorsally. Pleon of 4 free pleonites (or pleonites 1, 2 fused dorsally) and fused pleonite 5–pleotelson, or of 5 free pleonites (with slight movement) and pleotelson; pleonal sternites 1–3 absent.

Pleotelson scarcely tapering, uropods attached posteriorly. Antennular and antennal peduncles cylindrical, not part of margin of body. Mandibular incisor multicuspid; molar process absent. Maxillula mesial endite minute, with 1 short simple seta; lateral endite usually with 11 large setae. Maxilla mesial endite with few plumose setae; second and lateral endites each with 2 long setae or lateral endite absent. Maxillipedal palp of 3 articles, fused articles 2–3 oval. Pereopod 1 subchelate, propodus barely tapering, palm straight with row of well-spaced robust setae, or subchelate, propodus about as wide as long, palm straight with few robust setae. Pereopod 2 not sexually dimorphic. Pleopods 1–3 peduncles subquadrate, with terminal rami. Uropods attached on posterior margin of pleotelson; biramous, or with knob-like rami fused to peduncle.

### Key to genera of Bathynataliidae

1. Body deeply vaulted; middorsal pereonites and coxae with blunt projections (fig. 9.3a) ..... *Bathynatalia*
- Body almost evenly oval, margin defined by head, coxal plates and pleon; without projections ..... 3
2. Eyes absent. Pleon comprising 5 free pleonites and pleotelson (fig. 9.3c). Pereopod 7 absent ..... *Brianaudea*
- Eyes minute. Pleon comprising 4 free pleonites and fused pleonite 5–pleotelson (fig. 9.3b). Pereopod 7 present .....

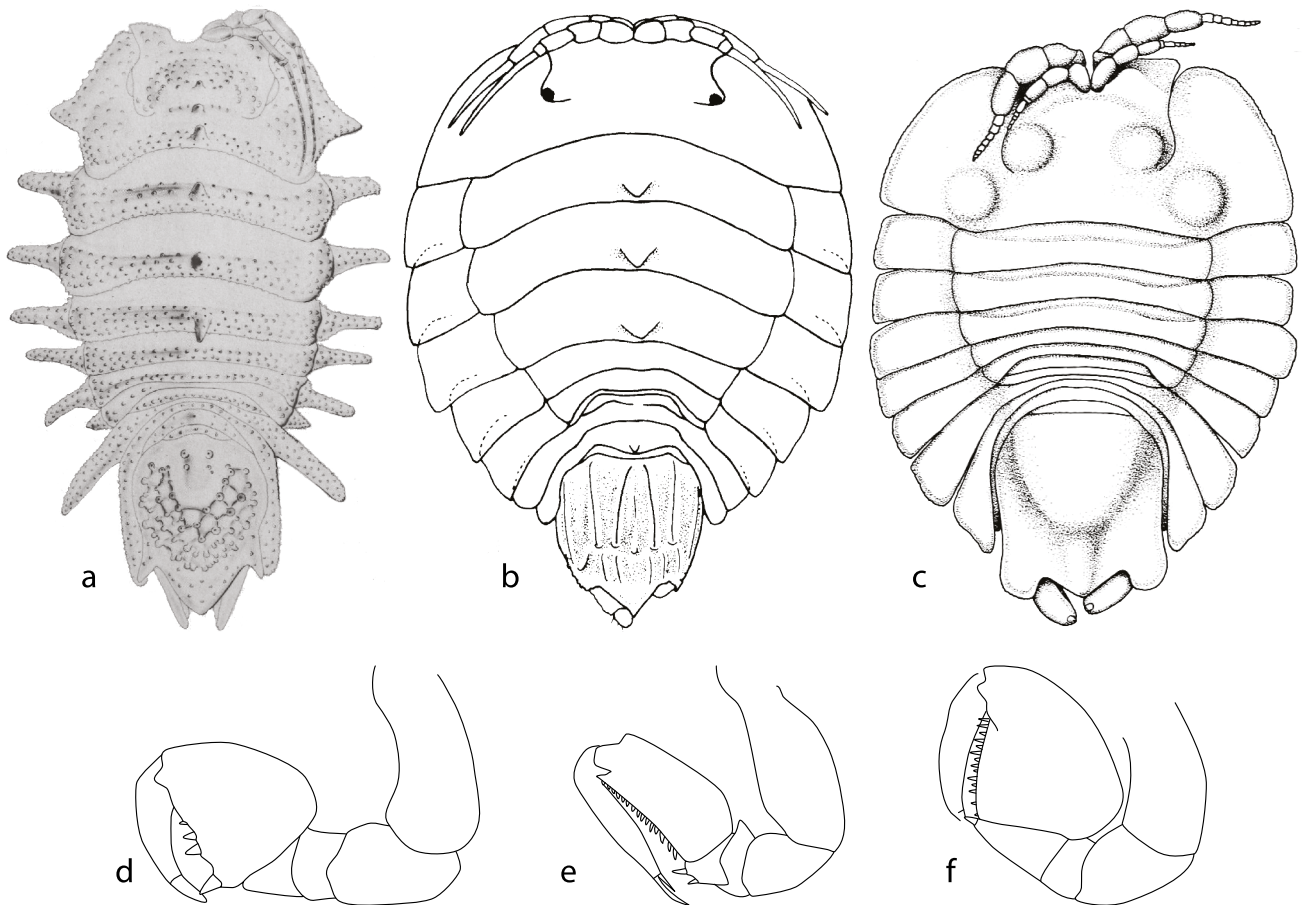


Figure 9.3. Bathynataliidae. a, *Bathynatalia gilchristi* Barnard, 1957; b, *Biremia kensleyi* Poore, 2005; c, *Brianaudea louwae* (Kensley, 1979). Pereopod 1: d, *Bathynatalia*; e, *Biremia*; f *Brianaudea*.

#### ***Bathynatalia* Barnard, 1957**

**Diagnosis.** Body elongate–oval, with blunt lateral coxal spines; middorsal line of head and pereonites 1–4 with middorsal erect spines. Coxal dorsal plate 7 visible but shorter than coxal plate 6. Pleon of 5 free pleonites (with slight movement) and pleotelson. Eyes absent. Maxillipedal palp of 3 articles, fused articles 2–3 cordiform. Pereopod 1 propodus about as broad as long, palm straight, with few simple robust setae. Pereopod 7 present; of male not sexually differentiated. Pleopod 1 operculate, indurate. Pleopod 4 endopod simply triangular, not

bilobed. Uropod attached sublaterally at about midlength of pleotelson, with knob-like rami fused to peduncle.

Slope (840–850 m). Western Indo-Pacific, Temperate Southern Africa (Coast of South Africa). 1 species (Barnard, 1957: species description; Kensley, 1978: redescription, family diagnosis).

#### ***Biremia* Bruce, 1985**

**Diagnosis.** Body almost evenly oval, margin defined by head, coxal plates and pleon, slight interruptions between coxal plates

and pleon; middorsal line with short triangular middorsal processes on posterior margin of pereonites 2–4. Coxal dorsal plate 7 not visible dorsally. Pleon of 4 free pleonites (or pleonites 1, 2 fused dorsally) and fused pleonite 5–pleotelson. Eyes minute. Maxillipedal palp of 3 articles, fused articles 2–3 cordiform. Pereopod 1 propodus barely tapering, palm straight, with few simple robust setae. Pereopod 7 present; of male not sexually differentiated. Pleopod 1 laminar, like pleopod 2. Pleopod 4 endopod simply triangular, not bilobed. Uropod attached sublaterally at about midlength of pleotelson; biramous (small rami present).

Shelf, slope (150–458 m). Central Indo-Pacific (Great Barrier Reef, Qld, Australia). 2 species (Bruce, 1985: description; Poore, 2005: second species).

### ***Brianaudea* Boyko, 2021**

*Diagnosis.* Body almost evenly oval, margin defined by head, coxal plates and pleon, slight interruptions between coxal plates and pleon; middorsal line smooth in lateral view. Coxal dorsal plate 7 not visible dorsally. Pleon of 5 free pleonites (with slight movement) and pleotelson. Eyes absent. Maxillipedal palp of 3 articles, fused articles 2–3 cordiform. Pereopod 1 propodus about as broad as long, palm straight, with few simple robust setae. Pereopod 7 absent in adult; of male not sexually differentiated. Pleopod 1 operculate, indurate. Pleopod 4 endopod simply triangular, not bilobed. Uropod attached sublaterally at about midlength of pleotelson; cylindrical (with minute exopod).

Slope (850 m). Western Indo-Pacific (KwaZulu-Natal, South Africa). 1 species (Kensley, 1979: species description; Boyko, 2021: replacement name for *Naudea* Kensley, 1979).

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## **Plakarthriidae Hansen, 1905**

Figure 9.4

Isopods of the single genus *Plakarthrium*, with three species in cool temperate Southern Hemisphere locations, are flattened, almost limpet-like inhabitants of shallow macroalgal communities. They are unique in that the margin of the body is defined entirely by flattened limbs, antennulae, antennae, pereopodal coxae and uropods. The head is free from pereonite 1 and, unlike most isopods, the first coxal plate is free from the pereonal tergite.

*Diagnosis.* Body oval, flat, margin defined by plates of antennulae, antennae, coxae and uropods; head free from pereonite 1; pereonites 1–7 visible dorsally, separated by sutures. Coxal dorsal plates 1–7 delimited from tergite by suture; plate 7 expanded posteriorly, similar to coxal plate 6, visible dorsally. Pleotelson rectangular, flattened, pleonites 1, 2 fully or laterally demarcated, enclosed by coxae 7 laterally, uropods attached posteriorly. Antennular and antennal peduncles laminar, defining margin of body. Mandibular incisor with 2 blunt teeth; molar process absent. Maxillula with single endite, with 7 terminal stout setae. Maxilla with single endite, with 8 terminal stout setae. Maxillipedal palp of 5 free articles. Pereopod 1 ambulatory, palm with few setae. Pereopod

2 not sexually dimorphic. Pleopods 1–3 peduncles subquadrate, with terminal rami. Uropods attached on posterior margin of pleotelson; biramous, contiguous, terminal.

### ***Plakarthrium* Chilton, 1883**

Subtidal (6–49 m). Temperate South America, Temperate Australasia, Southern Ocean (subantarctic islands, Antarctic Peninsula). 3 species (Wilson et al., 1976: rediagnosis of family, family placement; Poore and Brandt, 2001: description of third species).

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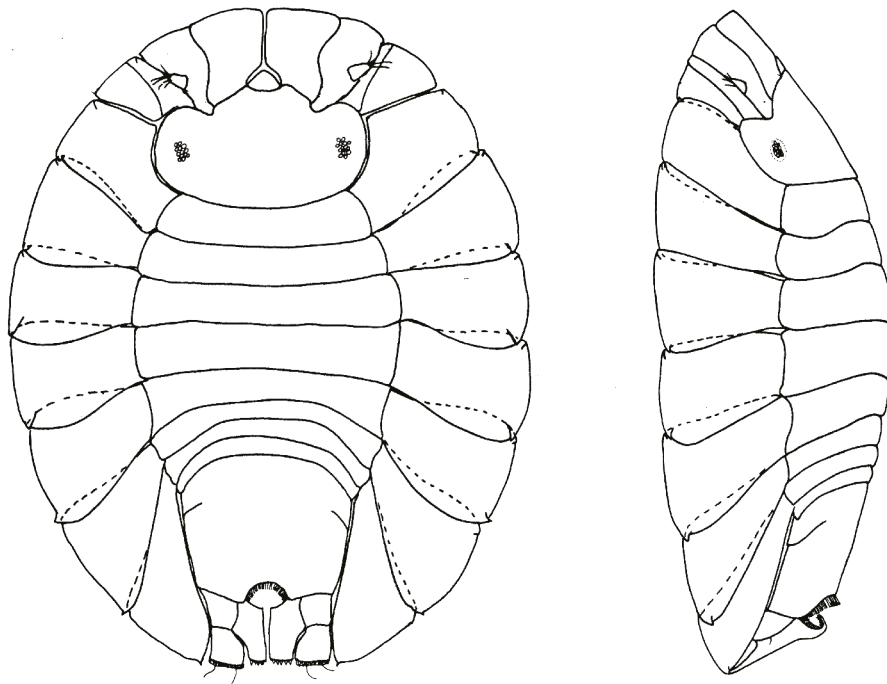


Figure 9.4. Plakarthriidae. *Plakarthrium australiense* Poore and Brandt, 2001.

### Paravireiidae fam. nov.

Figure 9.5

The enigmatic genus *Paravireia* Chilton, 1925 long been recognised as similar to Sphaeromatidae but has not been placed in any of the families of Sphaeromatidea. Brökeland et al. (2001) described a third species and discussed relationships of the genus but left *Paravireia* as *incertae sedis*. In their morphological cladistic analysis, Brandt and Poore (2003) found the genus to be on a separate clade from one including Ancinidae, Sphaeromatidae and Tecticipidae. We erect a new family for *Paravireia*, realising that Wetzer et al. (2013) provisionally found (using molecular data) that Sphaeromatidea was not monophyletic but part of a larger clade including Serolidae and Valvifera. The new family differs from other sphaeromatoids in having four free pleonites (plesiomorphic), lacking uropods (apomorphic), and the maxilla consisting of a simple lobe with a distally attached small endite, wholly unlike that of any other Sphaeromatidea and of similar form (homoplasious) to that seen in Aegidae and Cymothoidae.

(<http://zoobank.org/urn:lsid:zoobank.org:act:7E22261E-0DA9-41F4-ACB5-E6C0451A4A6A>)

Type genus. *Paravireia* Chilton, 1925 by present designation.

**Diagnosis.** Body oval, vaulted; head free from pereonite 1; pereonites 1–7 visible dorsally, separated by sutures. Coxal dorsal plates 1–7 not delimited from tergite by suture; plate 7 similar to dorsal coxal plate 6. Pleon with 4 free pleonites dorsally. Pleotelson broad, laterally oval. Antennular and antennal peduncles cylindrical, not part of margin of body.

Mandibular incisor tricuspid; molar process present. Maxillula mesial endite with 3 simple seta; lateral endite with 5 large and 1 small spines, 4 serrate setae. Maxilla simple, with mesial endite smaller than lateral endite, neither with long setae. Maxillipedal palp of 5 partly fused articles. Pereopod 1 ambulatory, palm with few setae. Pereopod 2 ambulatory. Pleopods 1–3 peduncles subquadrate, with terminal rami. Uropods absent. (fig. 9.5).

#### *Paravireia* Chilton, 1925

Estuarine, marine, intertidal, supratidal in empty barnacle shells. Temperate Northern Atlantic (Canary Islands), Temperate Australasia (New Zealand). 3 species (Chilton, 1925; Jansen, 1973: second species from New Zealand; Brökeland et al., 2001: rediagnosis, third species from Canary Islands, discussion of relationships).

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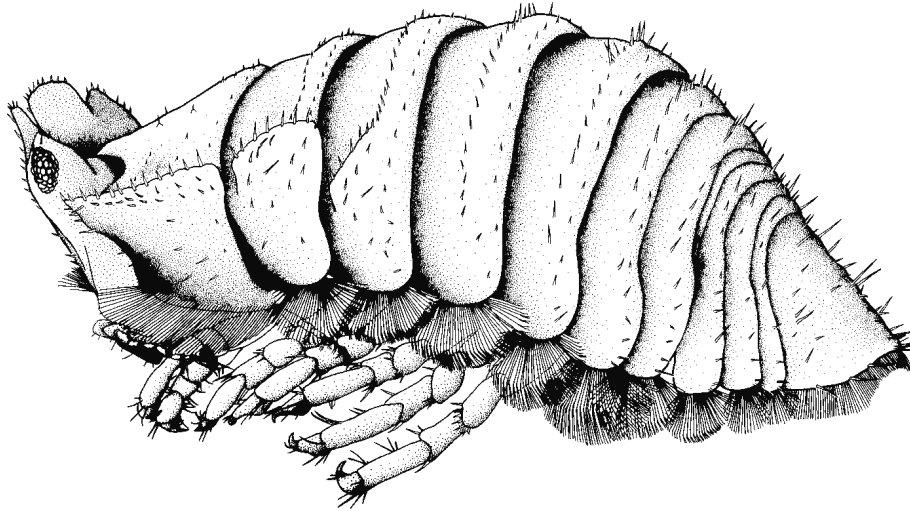


Figure 9.5. Paravireiidae. *Paravireia holdichi* Brökeland, Wägele and Bruce, 2001. Habitus.

## Serolidae Dana, 1852

Figures 9.6–9.8

Serolids are flattened benthic isopods with greatest diversity in the Southern Hemisphere but extending into equatorial regions in deep water (Brandt, 1991; Wägele, 1994). Serolids are distinguished from other sphaeromatideans by having the peduncles of pleopods 1–3 directed laterally from midventral sternites and often triangular or tapering. Many species, especially from deep water, have spectacular acute extensions of the coxal plates and pleonal epimera. Two foundation studies (Nordenstam, 1933; Sheppard, 1933) reviewed the anatomy and taxonomy of the family, then comprising one genus. Sheppard (1933) provided a key to the 37 species then known. Bastida and Torti (1973) reviewed and provided a key to the 27 species from Argentina. Several additional genera were diagnosed in two major reviews (Brandt, 1988; Wägele, 1994); Held (2000) provided partial molecular support for their classification. Bruce (2009) discussed relationships between some genera and provided a key to seven genera from the Indo-West Pacific. Two attempts at phylogenies of Serolidae based on morphological characters are only partly resolved, the first of 14 genera (Brandt, 1991) and another of 20 genera (Wägele, 1994). In a PhD thesis, Costa (2017) reviewed 15 genera and 53 species from the Atlantic. She recognised but did not name new species and a new genus.

Identifying lateral extensions is critical in the taxonomy of serolid genera. The head of serolids is deeply embedded in

pereonite 1 and fused to it medially. Viewed dorsally, pereonites 1–6 and pleonites 2 and 3 are variously produced laterally or posterolaterally as coxal dorsal plates and as pleonal epimera. Pereonite 7 is invisible dorsally and does not have a coxal dorsal plate; the most posterior coxal dorsal plate is the sixth. The tergite of pleonite 1 is visible dorsally, usually as a narrow segment, and lacks epimera; pleonites 2 and 3 are free, their epimera sometimes produced posteriorly to enclose the anterior pleotelson. Posterior pereonites (5–7) and pleonite 1 are variously fused middorsally (figs 9.6, 9.7). In ventral view (fig. 9.8a), pereonal sternites are variously fused and coxal plate 7 is absent. The sternites of pleonites 1–3 have a midventral plate, sometimes with a medial keel, separating the peduncles of pleopods 1–3. Pleopod 4 has an operculiform endopod.

Serolids are sexually dimorphic, the male being relatively broader than the female; pereopod 2 is modified as a subchelate clasping limb and the dactylus of pereopod 7 is also sometimes modified from the typical linear shape (see Poore, 1987 for examples).

**Diagnosis.** Body more or less oval, flat, margin defined by flattened dorsal coxal plates 1–6 and pleonal epimera 2, 3; head medially fused with pereonite 1; pereonite 7 tergite not visible dorsally. Coxal dorsal plates 2–4 or more delimited from tergite by suture, 5 and 6 weakly so if at all, or 1–6 not delimited from tergite by suture (rare); coxal plate 7 absent. Pleon with pleonite

1 visible dorsally, without epimera; pleonites 2 and 3 free, with epimera, sometimes prominent; pleonal sternites 1–3 present. Pleotelson usually more or less triangular or semicircular or pentagonal, uropods usually attached anterolaterally. Antennular and antennal peduncles flattened, not part of margin of body. Mandibular incisor with obsolete teeth; molar process absent. Maxillula mesial endite minute, with 1 short simple seta; lateral endite usually with 11 large setae. Maxilla with prominent mesial endite with plumose setae; second and lateral endites with 2 or 3 long serrate setae (rarely lateral endite absent).

Maxillipedal palp of 3 articles, fused articles 2–3 cordiform, or of 1 short and 1 oval article (rare). Pereopod 1 subchelate, propodus oval, palm convex, with row of close-set robust setae. Pereopod 2 sexually dimorphic, subchelate in male. Pleopods 1–3 peduncles narrow, tapering, directed laterally, rami distal and subdistal. Uropods attached anterolaterally to pleotelson, or on posterior margin of pleotelson; endopod fused to peduncle (laminar, sometimes reduced or absent), exopod usually laminar (sometimes absent or styliform).

### Key to genera of Serolidae

1. Uropods on posterolateral angle of pleotelson, uropods and pleonites forming part of continuous oval body outline (fig. 9.7l) ..... *Thysanoserolis*
- Uropods mediolateral or anterolateral, not forming part of body outline ..... 2
2. Coxal dorsal plate 6 far exceeding posteriorly pleonal epimera 2 and 3 (e.g., fig. 9.6b, g); sometimes pleonites 2, 3 without epimera visible in dorsal view (fig. 9.6j, l) ..... 3
- Coxal dorsal plate 6 not exceeding or almost level posteriorly with pleonites 2 and 3 and their epimera (e.g., fig. 9.7c, d) ..... 13
3. Coxal dorsal plates 1–6 with distinct attenuated projections, directed laterally on anterior pereonites, directed posteriorly on posterior pereonites; coxal dorsal plate 6 reaching or well exceeding posterior margin of pleotelson. Pleonal epimera 2, 3 similarly attenuated (figs 9.6b, e, g) ..... 4
- Coxal dorsal plates 1–6 squarish or triangular, without distinct projections; pereopod 6 coxal dorsal plate not or barely exceeding posterior margin of pleotelson. Pleonal epimera 2, 3 triangular or not visible in dorsal view (e.g., fig. 9.6j) ..... 6
4. Pereonites smooth in lateral view. Head sculptured between eyes. Pleotelson middorsal keel with prominent teeth, sometimes attenuated posteriorly, dentate laterally (fig. 9.6g) ..... *Ceratoserolis*
- Pereonites with medial spines visible in lateral view. Head with spine or smooth in lateral view. Pleotelson middorsal keel smooth, posterior margin truncate ..... 5
5. Coxal dorsal plates 1–5 interacting only by means of key-like lobes, coxal plate 6 exceeding pleotelson by at least pleotelson length. Middorsal spines absent or obscure. Pleotelson without ridges and keels (fig. 9.6e) ..... *Brucerolis*
- Coxal dorsal plates 1–5 coxal dorsal plates slot into each other without aperture between, coxal plate 6 exceeding pleotelson by less than pleotelson length. Middorsal spines prominent. Pleotelson with ridges or keels (fig. 9.6b) ..... *Acutiserolis*
6. Body with continuous oval margin. Antennal peduncle articles 4, 5 each about twice as long as wide. Eyes absent. Pereopod 7 absent in adult (fig. 9.6j). Uropod with endopod only (fig. 9.8g) ..... *Glabroserolis*
- Body with at least coxal plate 6 projecting from margin. Antennal peduncle articles 4, 5 each at least 4 times as long as wide. Eyes present. Pereopod 7 present in adult. Uropod with 2 rami ..... 7
7. Pleotelson with concave posterolateral margin and narrow triangular apex ..... 8
- Pleotelson with convex posterolateral margin and broad triangular apex or apical notch ..... 9
8. Pleotelson with sublateral ridges over anterior half ending in small tooth. Coxal dorsal plate 6 not reaching base of uropod. Pleonal epimera 1, 2 short, square. Uropod not visible in dorsal view (fig. 9.6h) ..... *Cristaserolis*
- Pleotelson with flattened plate-like ridges laterally. Coxal dorsal plate 6 exceeding base of uropod. Pleonal epimera 2, 3 acute, overlapping pleotelson. Uropod visible in dorsal view (fig. 9.6i) ..... *Frontoserolis*
9. Uropod peduncle as long or longer than rami (fig. 9.8h). Pleonal epimera 2, 3 not or scarcely visible in dorsal view. Pleotelson with obsolete dorsolateral carinae (fig. 9.6l) ..... *Leptoserolis*

- Uropod peduncle much shorter than half length of rami (fig. 9.8i). Pleonal epimera 2, 3 usually clearly visible in dorsal view. Pleotelson usually with prominent dorsolateral sculpture ..... 10
- 10. Pleonites 1, 2 and pleotelson as long as head plus pereon in midline; pereonites 5–pleonite 1 fused middorsally. Eyes minute, oval. Pereopods 1–6 coxal plates margins contiguous. Pleotelson with obsolete sublateral ridges (fig. 9.7a) ..... *Myopiarolis*
- Pleonites 1, 2 and pleotelson as long as pereonites 2–6 in midline; pereonites 5, 6 free middorsally. Eyes half as long as head, reniform. Pereopods 1–6 coxal plates apices diverging, especially posteriorly. Pleotelson with sublateral plates and ridges ..... 11
- 11. Pereonites with middorsal spines on posterior margins. Pleotelson with 2 pairs of lateral plates, first with rounded margin, second with submedial tooth. Pleonal epimeron 2 much longer than epimeron 3 (fig. 9.6a) ...  
..... *Acanthoserolis*
- Pereonites without middorsal spines on posterior margins. Pleotelson with submarginal carinae or plates. Pleonal epimera 2, 3 of similar lengths ..... 12
- 12. Pleotelson with flattened plate-like ridges laterally. Pleonal epimera 2, 3 extending posteriorly, enclosing anterior half of pleotelson. Uropod attached near midpoint of pleotelson lateral margin (fig. 9.7f) ..... *Serolella*
- Pleotelson with oblique ridges laterally. Pleonal epimera 2, 3 not extending posteriorly, not enclosing anterior half of pleotelson. Uropod attached well posterior to midpoint of pleotelson lateral margin (fig. 9.7j) ..... *Serolis*
- 13. Uropodal endopod fused to peduncle. Pleonites 2, 3 without epimera. Pleotelson with sharp epimeral tooth (fig. 9.7k) ..... *Spinoserolis*
- Uropodal endopod free from peduncle. Pleonites 2, 3 with epimera reaching body margin. Pleotelson without epimeral tooth ..... 14
- 14. Eyes absent ..... 15
- Eyes present ..... 17
- 15. Pleotelson with broad truncate posterior margin. Uropod attached anteriorly, its mesial margin in dorsal groove on pleotelson lateral margin (fig. 9.7d) ..... *Sedorolis*
- Pleotelson tapering to rounded or narrow apex. Uropod attached near midlength of pleotelson lateral margin, visible or not ..... 16
- 16. Coxal dorsal plate 6 and pleonal epimera 2, 3 reaching to midlength of pleotelson. Uropodal rami of similar lengths (fig. 9.6f) ..... *Caecoserolis*
- Coxal dorsal plate 6 and pleonal epimera 2, 3 reaching slightly along sides of pleotelson. Uropodal exopod minute (figs 9.6c, 9.8j) ..... *Atlantoserolis*
- 17. Pleonites 2, 3 with small epimera, usually exceeded posteriorly by coxal dorsal plate 6 ..... 18
- Pleonites 2, 3 with posteriorly directed epimera, usually extending more posteriorly than coxal dorsal plate 6 ..... 19
- 18. Maxillipedal palp of 1 short and 1 oval article (fig. 9.8e). Pleotelson tapering from base to narrow rounded apex. Eye oval. Uropod not visible in dorsal view (fig. 9.6d) ..... *Brazilserolis*
- Maxillipedal palp of 3 segments, fused articles 2–3 cordiform (fig. 9.8f). Pleotelson tapering from parallel-sided anterior half to narrow truncate apex. Eye reniform. Uropod visible in dorsal view (fig. 9.6k) .....  
..... *Heteroserolis*
- 19. Coxal dorsal plate 6 and pleonal epimera 2, 3 similar, each considerably more produced than the one before. Head with 3 similar prominent lobes along posterior margin. Pleotelson with 2 pairs of triangular dorsal plates (fig. 9.7c) ..... *Paraserolis*
- Coxal dorsal plate 6 and pleonal epimera 2, 3 similar or dissimilar, similarly produced posteriorly. Head without or with 1 prominent lobe on posterior margin. Pleotelson smooth or without 2 pairs of triangular dorsal plates ..... 20

20. Pleotelson with 3–7 longitudinal carinae. Uropod reaching halfway along posterolateral margin of pleotelson (fig. 9.7e) ..... *Septemserolis*
- Pleotelson without longitudinal carinae. Uropod reaching nearly to apex of pleotelson ..... 21
21. Head with median tubercle on posterior margin. Coxal dorsal plate 6 completely overlapping pleonal epimera 2, 3 in male, partially in female (fig. 9.7g–i). Pereopod 1 propodus with alternating complex bifid setae and scales, both flagellate, along margin (fig. 9.8d) ..... *Serolina*
- Head without median tubercle on posterior margin. Coxal dorsal plate 6 not overlapping pleonal epimera 2, 3 (fig. 9.7b). Pereopod 1 propodus with flagellate robust setae and simple setae along margin (fig. 9.8c) ..... *Neoserolis*

### ***Acanthoserolis* Brandt, 1988**

*Diagnosis.* Body oval, increasingly incised between triangular posteriorly directed coxal plates 2–6; middorsal line with short triangular middorsal processes on posterior margin of head, pereonites 2–4 and pleonites 1–3, evident in lateral view. Coxal dorsal plates 2–5 delimited from tergite by suture; 1–6 increasingly produced posteriorly; plate 6 reaching almost as far posteriorly as pleonal epimeron 2 and posterior margin of pleotelson. Pleonal epimeron 2 longer than coxal dorsal plate 6; epimeron 3 short. Pleotelson posterior margin broadly rounded; with 2 middorsal triangular keels, one behind other; dorsal surface with 2 pairs of lateral plates, first with rounded margin, second with submedial tooth. Eyes reniform. Mandible left lacinia mobilis slender. Maxillipedal epipod fused to basis; palp of 3 articles, fused articles 2–3 cordiform. Pereopod 1 propodus with alternating flagellate cylindrical setae and flagellate plate-like setae. Pereopod 2 of male subchelate; palm of propodus with robust setae surrounding an oval palm. Pereopod 7 of male not sexually differentiated. Male pleopod 2 endopod without distal stem supporting appendix masculina. Pleopod 4 endopod bilobed. Uropod attached posterolaterally, pair almost meeting in midline; biramous, rami of similar lengths or exopod shorter.

Shelf (36–136 m). Temperate South America (Atlantic). 2 species (Moreira, 1971: figures of type species; Brandt, 1988). Costa (2017) synonymised *Acanthoserolis* with *Serolis*, a decision not followed here.

### ***Acutiserolis* Brandt, 1988**

*Diagnosis.* Body deeply incised between extremely long, attenuating, posteriorly directed coxal and epimeral plates; middorsal line dominated by strong middorsal spine (prominent in lateral view) on posterior margin of head, pereonites 2–4 and pleonites 1–3. Coxal dorsal plates 2–5 with proximal anterior margins straight, slotting into grooves on preceding coxae, with no aperture between; plate 6 extending posterior to pleotelson by about half its length; plate 6 with blunt process on anterior margin slotting into groove on coxa 5 and isolating an oval aperture. Coxal ventral plates 2–4 meeting in midline, with pair of contiguous teeth on anteromesial corners of sternites 2, smaller pair on sternites 3. Pleonal epimera 2, 3 smaller than extension of pereonite 6 coxal dorsal plate, extending posteriorly along pleotelson lateral margins. Pleotelson posterior margin truncate; with sharp middorsal keel, upturned posteriorly;

dorsal surface with sublateral sharply defined longitudinal keels ending acutely, and obscure irregularities along a submarginal posterolateral ridge. Eyes contiguous with head margin posteriorly, 3 times as long as wide, with concave mesial margin. Mandible left lacinia mobilis expanded, half as wide as mandibular incisor. Maxillula inner lobe a simple expanded plate, outer lobe with ~11 robust terminal setae. Maxillipedal palp of 3 articles, fused articles 2–3 cordiform. Pereopod 1 propodus with alternating flagellate cylindrical setae and flagellate plate-like setae. Pereopod 2 of male subchelate; palm of propodus with robust setae surrounding an oval palm. Pereopod 7 of male sexually differentiated, propodus broader than in female, with felt of fine scale setae, dactylus simple, curved. Pleopod 4 endopod simply triangular, not bilobed. Uropod attached sublaterally at about midlength of pleotelson; biramous, rami of similar lengths or exopod shorter.

Slope, bathyal (400–2267 m). Southern Ocean 7 species (Kussakin, 1967: type species; Poore and Storey, 2009: figures of type species).

### ***Atlantoserolis* Wägele, 1994**

*Diagnosis.* Body almost evenly oval, margin defined by head, coxal plates and pleon, slight interruptions between coxal plates and pleon; middorsal line smooth in lateral view. Coxal dorsal plates 2–4 or 2–5 delimited from tergite by suture; 2–5 contiguous; plate 6 overlapping but not extending posteriorly far beyond pleonal epimera 2, 3. Pleonal epimera 2, 3 smaller than extension of pereonite 6 coxal dorsal plate, not extending posteriorly along pleotelson lateral margins. Pleotelson posterior margin narrowly rounded; with short median carina; dorsal surface smooth. Eyes absent. Maxillipedal palp of 3 articles, fused articles 2–3 cordiform. Pereopod 1 propodus with few simple robust setae. Pereopod 2 of male subchelate; heel indistinct, palm straight, with few robust setae. Pereopod 7 of male not sexually differentiated. Male pleopod 2 endopod with distal stem supporting appendix masculina. Pleopod 4 endopod simply triangular, not bilobed. Uropod attached sublaterally at about midlength of pleotelson; biramous, peduncle longer than endopod; exopod minute.

Slope–abyssal (834–5024 m). Temperate Northern and Tropical W Atlantic, Temperate South America. 4 species (Menzies, 1962: figures of type species; Wägele, 1994; Brandt et al., 2014).

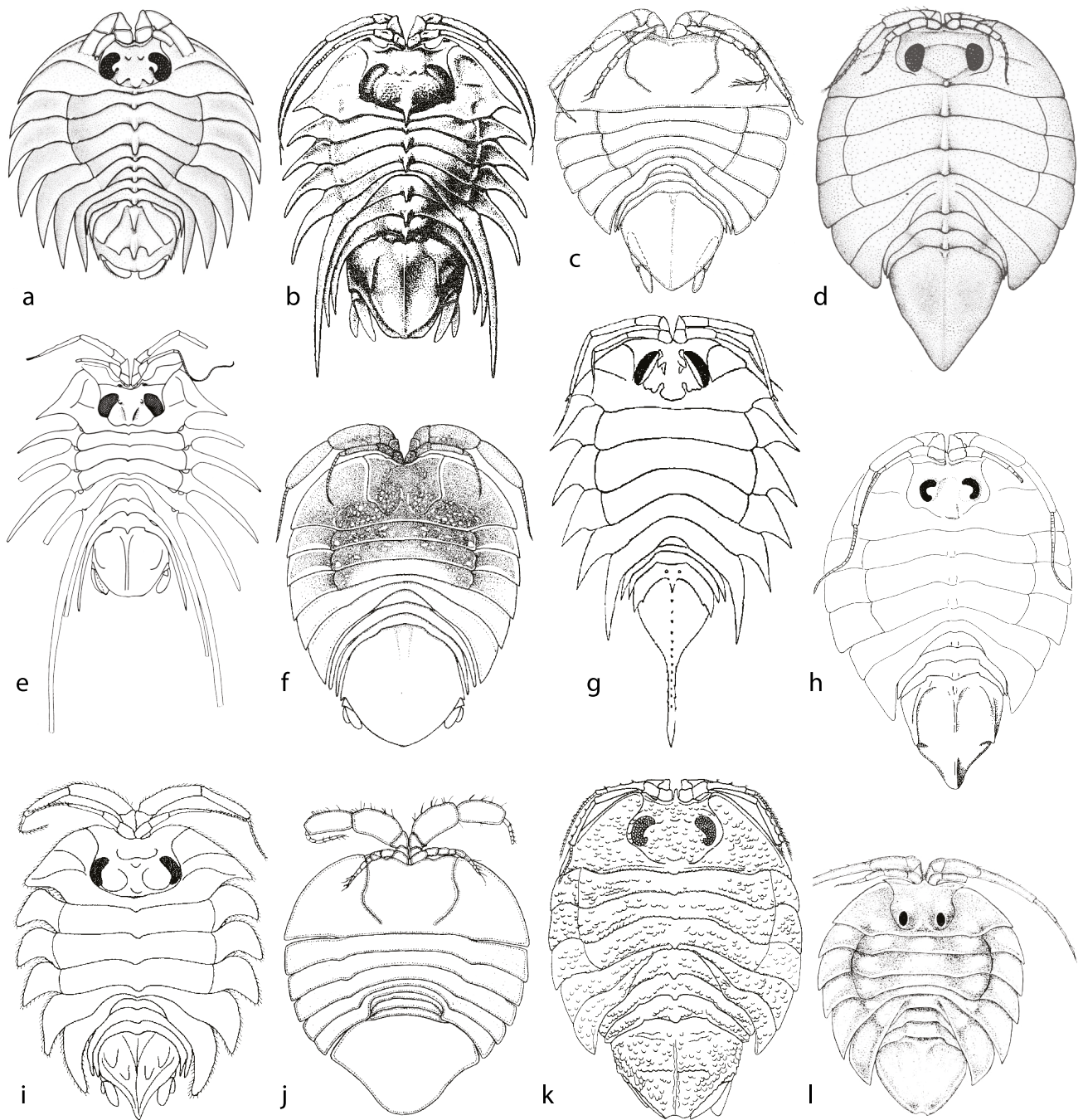


Figure 9.6. Serolidae. a, *Acanthoserolis polaris* (Richardson, 1911); b, *Acutiserolis spinosa* (Kussakin, 1967); c, *Atlantoserolis vema* (Menzies, 1962); d, *Brazilserolis mirabilis* (Moreira, 1976); e, *Brucerolis brandtae* Storey and Poore; f, *Caecoserolis brinki* (Kensley, 1978); g, *Ceratoserolis meridionalis* (Vanhöffen, 1914); h, *Cristaserolis convexa* (Cunningham, 1871); i, *Frontoserolis waegelei* (Brandt, 1988); j, *Glabroserolis specialis* Menzies, 1962; k, *Heteroserolis australiensis* (Beddard, 1884); l, *Leptoserolis orbiculata* (Sheppard, 1933).

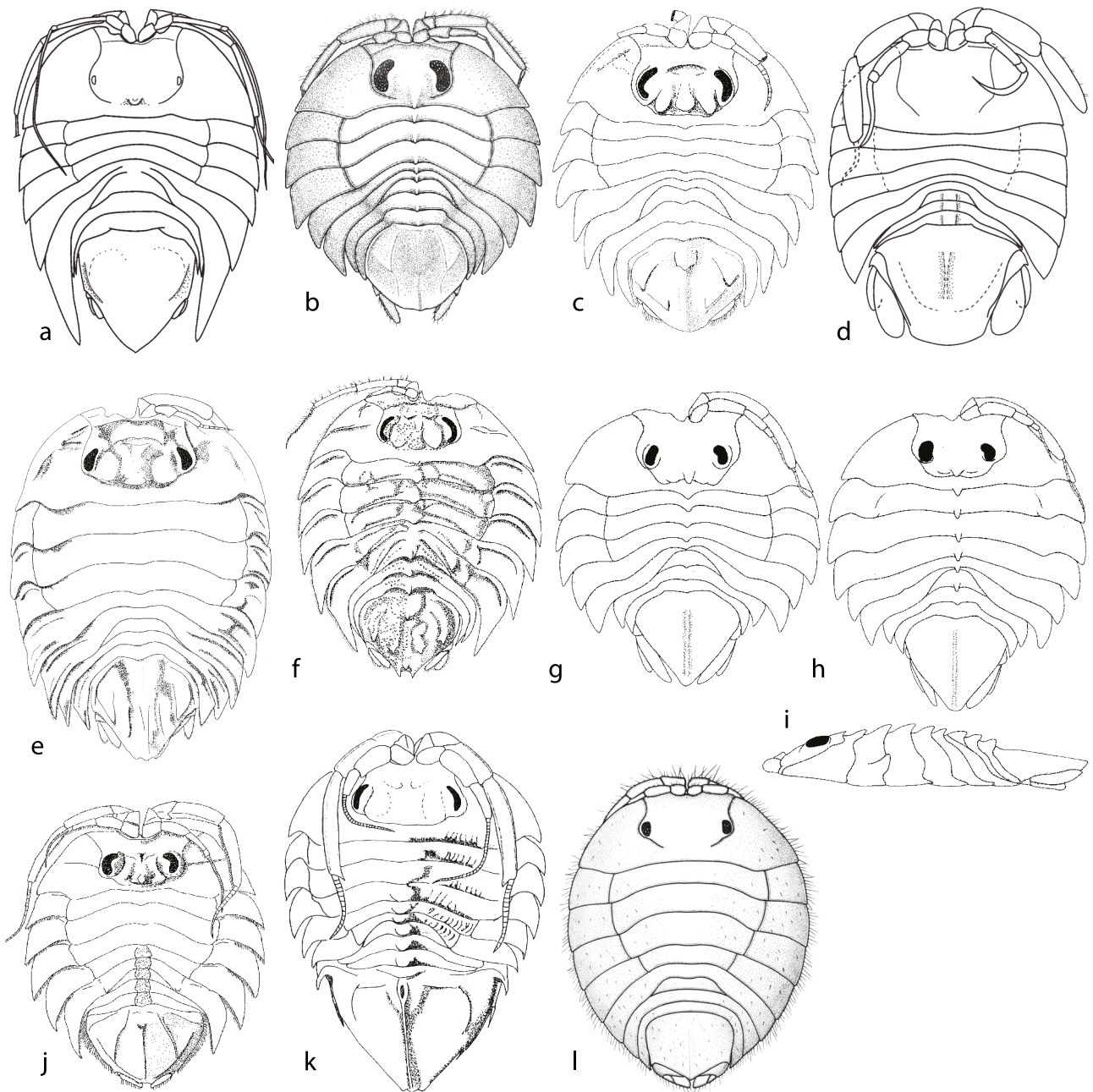


Figure 9.7. Serolidae. a, *Myopiarolis systir* Bruce, 2009; b, *Neoserolis exigua* (Nordenstam, 1933); c, *Paraserolis polita* (Pfeffer, 1887); d, *Sedorolis simplex* Bruce, 2009; e, *Septemserolis septemcarinata* (Miers, 1875) ; f, *Serolella pagenstecheri* (Pfeffer, 1887); g–i, *Serolina acaste* Poore, 1987 (male, female, lateral); j, *Serolis paradoxa* (Fabricius, 1775); k, *Spinoserolis latifrons* (White, 1847); l, *Thysanoserolis completa* (Moreira, 1971).

#### ***Brazilserolis* Wägele, 1994**

**Diagnosis.** Body almost evenly oval, margin defined by head, coxal plates and pleon, slight interruptions between coxal plates and pleon; middorsal line smooth in lateral view. Coxal dorsal plates contiguous, without intermediate gaps; plate 6 overlapping and extending well posterior of pleonal epimera 2 and 3. Pereonites 5–7 fused middorsally. Pleonal epimera 2, 3

smaller than extension of pereonite 6 coxal dorsal plate, not extending posteriorly along pleotelson lateral margins. Pleotelson posterior margin narrowly rounded; with short median carina; dorsal surface smooth. Eyes oval. Maxillipedal palp of 1 short and 1 oval article. Pereopod 1 propodus with alternating flagellate cylindrical setae and flagellate plate-like setae. Pereopod 2 of male subchelate; heel indistinct, palm straight, with few robust setae. Pereopod 7 of male not sexually

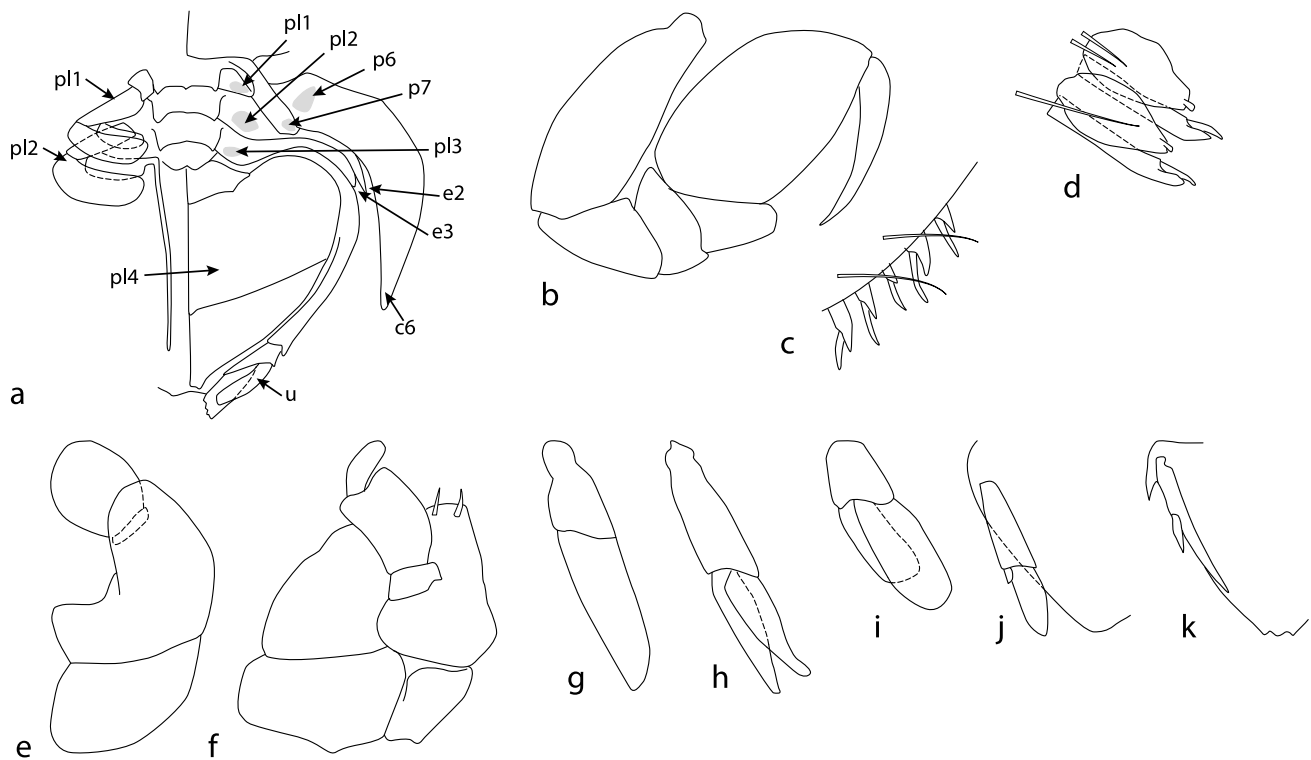


Figure 9.8. Serolidae. a, ventral view of posterior pereon and pleotelson, right pleopods 1, 2 (pleopod 2 with appendix masculina), left pleopod 4, *Serolis*; b, pereopod 1 (generic). Pereopod 1 palm marginal setae: c, *Neoserolis*; d, *Serolis*. Maxilliped: e, *Brazilserolis*; f, *Heteroserolis*. Left uropod: g, *Glabroserolis*; h, *Leptoserolis*; i, *Myopiarolis*. Right uropod, pleotelson margin (ventral view): j, *Atlantoserolis*; k, *Spinoserolis*. c6, coxal dorsal plate 6 extension; e2, e3, pleonal epimera 2, 3; p6, p7, attachment of bases of pereopods 6, 7; pl1–pl4, pleopods 1–4 or sites of attachment; u, uropod.

differentiated. Male pleopod 2 endopod with distal stem supporting appendix masculina. Pleopod 4 endopod simply triangular, not bilobed. Uropod attached ventrally, not visible in dorsal view; biramous, exopod half as long as endopod.

Shelf (136 m). Tropical Atlantic. 2 species (Bastida and Torti, 1970: second species; Moreira, 1976: type species; Wägele, 1994).

#### ***Brucerosolis* Poore and Storey, 2009**

**Diagnosis.** Body deeply incised between extremely long, attenuating, posteriorly directed coxal and epimeral plates; middorsal line with short triangular middorsal processes on posterior margin of head, pereonites 2–4 and pleonites 1–3, evident in lateral view. Coxal dorsal plates 2–6 with anterior blunt process slotting into groove on preceding coxae, isolating an oval aperture between coxae, coxal plate 5 with an intermediate anterior process meeting a similar posterior process on coxal plate 4, so subdividing intercoxal aperture; plate 6 extending posterior to pleotelson by more than twice its length. Coxal ventral plates 2–4 meeting in midline, with transverse ridges on mesial, anterior and posterior margins outlining a transverse depression. Pleonal epimera 2, 3 smaller than extension of pereonite 6 coxal dorsal plate, extending posteriorly along pleotelson lateral margins. Pleotelson posterior

margin truncate; with horizontal obscure middorsal keel; dorsal surface with flattened plate-like ridges laterally. Eyes contiguous with head margin posteriorly, twice as long as wide, reniform. Mandible left lacinia mobilis expanded, half as wide as mandibular incisor. Maxillula inner lobe a simple expanded plate, outer lobe with ~11 robust terminal setae. Maxillipedal palp of 3 articles, fused articles 2–3 cordiform. Pereopod 1 propodus with alternating flagellate cylindrical setae and flagellate plate-like setae. Pereopod 2 of male subchelate; palm of propodus with U-shaped row of robust setae. Pereopod 7 of male sexually differentiated, propodus broader than in female, with felt of fine scale setae, dactylus simple, curved. Male pleopod 2 endopod without distal stem supporting appendix masculina. Pleopod 4 endopod simply triangular, not bilobed. Uropod attached sublaterally at about midlength of pleotelson; biramous, rami of similar lengths or exopod shorter.

Slope–abyssal (315–3839 m). Central Indo-Pacific, Temperate Australasia, Southern Ocean (S Indian Ocean east to S Atlantic). 10 species (Poore and Storey, 2009: type species; Storey and Poore, 2009: key to species).

#### ***Caecoserolis* Wägele, 1994**

**Diagnosis.** Body almost evenly oval, margin defined by head, coxal plates and pleon, slight interruptions between coxal

plates and pleon; middorsal line smooth in lateral view. Coxal dorsal plates contiguous, without intermediate gaps; plate 6 overlapping but not extending posteriorly far beyond pleonal epimera 2, 3. Pleonal epimera 2, 3 smaller than extension of pereonite 6 coxal dorsal plate, extending posteriorly along pleotelson lateral margins. Pleotelson posterior margin broadly rounded; without middorsal keel; dorsal surface smooth. Eyes absent. Mandible left lacinia mobilis two thirds as wide as incisor. Maxillipedal palp of 3 articles, fused articles 2–3 cordiform. Pereopod 1 propodus with alternating flagellate cylindrical setae and flagellate plate-like setae. Pereopod 2 of male subchelate; palm of propodus with U-shaped row of robust setae. Pereopod 7 of male not sexually differentiated. Male pleopod 2 endopod without distal stem supporting appendix masculina. Pleopod 4 endopod simply triangular, not bilobed. Uropod attached sublaterally at about midlength of pleotelson; biramous, rami of similar lengths or exopod shorter.

Slope (680 m). Temperate Southern Africa. 1 species (Kensley, 1978: figure of type species; Wägele, 1994; Bruce, 2009: rediagnosis, figures of type species).

#### ***Ceratoserolis* Brandt, 1988**

*Diagnosis.* Body oval, incised between triangular posteriorly directed coxal and epimeral plates; middorsal line smooth in lateral view; head sculptured between eyes. Coxal dorsal plates 1–3 or more with posterior lobe keying into groove on following plate; plate 6 overlapping and extending well posterior of pleonal epimera 2 and 3. Pleonal epimera 2, 3 smaller than extension of pereonite 6 coxal dorsal plate, extending posteriorly along pleotelson lateral margins. Pleotelson apex acute, sometimes attenuated; with middorsal toothed keel; dorsal surface with flattened plate-like ridges laterally. Eyes reniform, narrow. Maxillipedal palp of 3 articles, fused articles 2–3 cordiform. Pereopod 1 propodus with alternating flagellate cylindrical setae and flagellate plate-like setae. Pereopod 2 of male subchelate; palm of propodus with U-shaped row of robust setae. Pereopod 7 of male not sexually differentiated. Male pleopod 2 endopod without distal stem supporting appendix masculina. Pleopod 4 endopod simply triangular, not bilobed. Uropod attached sublaterally at about midlength of pleotelson; biramous, rami of similar lengths or exopod shorter.

Shelf–bathyal (20–3017 m). Southern Ocean. 4 species (Wägele, 1986: polymorphism of type species; Brandt, 1988: validation of name; Held, 2003: cryptic species).

#### ***Cristaserolis* Brandt, 1988**

*Diagnosis.* Body almost evenly oval, margin defined by head, coxal plates and pleon, slight interruptions between coxal plates and pleon; middorsal line smooth in lateral view. Coxal dorsal plates 2–4 delimited from tergite by suture; contiguous, without intermediate gaps; plate 6 overlapping and extending well posterior of pleonal epimera 2 and 3. Pleonal epimera 2, 3 smaller than extension of pereonite 6 coxal dorsal plate, not extending posteriorly along pleotelson lateral margins. Pleotelson with concave posterolateral margin and narrow triangular apex; with obsolete middorsal keel; dorsal surface with sublateral ridges over anterior half ending in small tooth.

Eyes reniform. Mandible left lacinia mobilis expanded, half as wide as mandibular incisor. Maxillipedal palp of 3 articles, fused articles 2–3 cordiform. Pereopod 1 propodus with alternating flagellate cylindrical setae and flagellate plate-like setae; carpus of male with dense field of setae. Pereopod 2 of male subchelate; palm of propodus with robust setae surrounding an oval palm. Pereopod 7 of male not sexually differentiated. Male pleopod 2 endopod with distal stem supporting appendix masculina. Pleopod 4 endopod simply triangular, not bilobed. Uropod attached ventrally, not visible in dorsal view; biramous, exopod half as long as endopod.

Shelf–bathyal (12–3017 m). Temperate South America, Southern Ocean (Atlantic). 6 species (Bastida and Torti, 1970: figure of type species; Brandt, 1988; Wägele, 1994: figures).

#### ***Frontoserolis* Brandt, 1991**

*Diagnosis.* Body incised between triangular posteriorly directed coxal plates; middorsal line with short triangular middorsal processes on posterior margin of head, pereonites 2–4 and pleonites 1–3, evident in lateral view. Coxal dorsal plates not contiguous; plate 6 overlapping and extending well posterior of pleonal epimera 2 and 3. Pleonal epimera 2, 3 smaller than extension of pereonite 6 coxal dorsal plate, extending posteriorly along pleotelson lateral margins. Pleotelson with concave posterolateral margin and narrow triangular apex; with middorsal keel; dorsal surface with flattened plate-like ridges laterally. Eyes reniform. Maxillipedal palp of 3 articles, fused articles 2–3 cordiform. Pereopod 1 propodus with alternating flagellate cylindrical setae and flagellate plate-like setae. Pereopod 2 of male subchelate; heel prominent, palm concave, with few robust setae. Male pleopod 2 endopod without distal stem supporting appendix masculina. Pleopod 4 endopod simply triangular, not bilobed. Uropod attached sublaterally at about midlength of pleotelson; biramous, exopod half as long as endopod.

Slope, bathyal. Southern Ocean. 6 species (Brandt, 1991; 1992: figure of type species; Wägele, 1994: rediagnosis; Brandt, 2003: sixth species).

#### ***Glabroserolis* Menzies, 1962**

*Diagnosis.* Body almost evenly oval, margin defined by head, coxal plates and pleon, slight interruptions between coxal plates and pleon; middorsal line smooth in lateral view. Coxal dorsal plates not delimited from tergite by suture; contiguous, without intermediate gaps; plate 6 contiguous with pleotelson. Pleonites 2, 3 without epimera. Pleotelson posterior margin broadly rounded; without middorsal keel; dorsal surface smooth. Eyes absent. Antenna articles 4 and 5 each about twice as wide as long as wide. Maxillipedal epipod fused to basis; palp of 3 articles, fused articles 2–3 cordiform; palp article 2 rectangular. Pereopod 1 propodus with alternating flagellate cylindrical setae and flagellate plate-like setae. Pereopod 7 absent in adult; of male not sexually differentiated. Pleopod 4 endopod simply triangular, not bilobed. Uropod attached ventrally, not visible in dorsal view; with knob-like rami fused to peduncle.

Abyssal (4885 m). Temperate Southern Africa. 2 species (Menzies, 1962: figure of type species; Brandt et al., 2014: figures of 2 species).

***Heteroserolis* Brandt, 1991**

*Diagnosis.* Body almost evenly oval, margin defined by head, coxal plates and pleon, slight interruptions between coxal plates and pleon; middorsal line smooth in lateral view, or with posteriorly directed tubercles on head and most pereonites. Coxal dorsal plates contiguous, without intermediate gaps; plate 6 overlapping but not extending posteriorly far beyond or not overlapping pleonal epimera 2, 3. Pereonites 5–7 fused middorsally. Pleonal epimera 2, 3 smaller than extension of pereonite 6 coxal dorsal plate, not extending posteriorly along pleotelson lateral margins. Pleotelson posterior margin narrow, excavate; with middorsal keel; dorsal surface sometimes tuberculate. Eyes reniform. Maxillipedal palp of 3 articles, fused articles 2–3 cordiform. Pereopod 1 propodus with alternating flagellate cylindrical setae and flagellate plate-like setae. Pereopod 2 of male subchelate; palm of propodus with U-shaped row of robust setae. Pereopod 7 of male not sexually differentiated. Male pleopod 2 endopod with distal stem supporting appendix masculina. Pleopod 4 endopod simply triangular, not bilobed. Uropod attached sublaterally at about midlength of pleotelson; biramous, rami of similar lengths or exopod shorter.

Shelf, slope (18–792 m). Temperate Northern Atlantic, Temperate Northern Pacific (N American coasts), Central Indo-Pacific, Temperate Australasia. 10 species (Harrison and Poore, 1984; key to 6 species; Brandt, 1992; comparison of 3 genera; 1999: description of *H. mcgrayi*; Bruce, 2009: description of *H. pellucida*). Two species from E and W coast of USA (Menzies and Frankenberg, 1966; Richardson, 1905; Hessler, 1972).

***Leptoserolis* Brandt, 1988**

*Diagnosis.* Body almost evenly oval, margin defined by head, coxal plates and pleon, slight interruptions between coxal plates and pleon; middorsal line smooth in lateral view. Coxal dorsal plates contiguous, without intermediate gaps; plate 6 overlapping but not extending posteriorly far beyond pleonal epimera 2, 3. Pleonal epimera 2, 3 not visible in dorsal view. Pleotelson triangular, with acute or excavate apex; with middorsal keel; dorsal surface with sublateral carinae. Eyes reniform. Mandible left lacinia mobilis slender. Maxillipedal epipod fused to basis; palp of 3 articles, fused articles 2–3 cordiform. Pereopod 1 propodus with alternating flagellate cylindrical setae and flagellate plate-like setae. Pereopod 2 of male subchelate; palm of propodus with U-shaped row of robust setae. Pereopod 7 of male not sexually differentiated. Male pleopod 2 endopod with or without distal stem supporting appendix masculina. Pleopod 4 endopod simply triangular, not bilobed. Uropod attached sublaterally at about midlength of pleotelson; biramous, peduncle as long or longer than rami.

Intertidal, shelf (0–162 m). Temperate South America, Southern Ocean (Atlantic coasts). 5 species (Sheppard, 1933: figure of type species; Brandt, 1988; Wägele, 1994: figures).

***Myopiarolis* Bruce, 2009**

*Diagnosis.* Body almost evenly oval, margin defined by head, coxal plates and pleon, slight interruptions between coxal plates and pleon; middorsal line smooth in lateral view. Coxal dorsal

plates margins contiguous, without intermediate gaps; plate 6 overlapping but not extending posteriorly far beyond pleonal epimera 2, 3. Pleonal epimera 2, 3 not visible in dorsal view. Pleotelson triangular, with acute or excavate apex; with middorsal keel; dorsal surface with sublateral carinae. Eyes reniform. Mandible left lacinia mobilis slender. Maxillipedal epipod fused to basis; palp of 3 articles, fused articles 2–3 cordiform. Pereopod 1 propodus with alternating flagellate cylindrical setae and flagellate plate-like setae. Pereopod 2 of male subchelate; palm of propodus with U-shaped row of robust setae. Pereopod 7 of male not sexually differentiated. Male pleopod 2 endopod with or without distal stem supporting appendix masculina. Pleopod 4 endopod simply triangular, not bilobed. Uropod attached sublaterally at about midlength of pleotelson; biramous, peduncle as long or longer than rami.

Slope, bathyal (700–3184 m). Western and Central Indo-Pacific, Southern Ocean. 9 species (Bruce, 2009: diagnosis, key to 5 species; Spong and Bruce, 2015: new species).

***Neoserolis* Wägele, 1994**

*Diagnosis.* Body almost evenly oval, margin defined by head, coxal plates and pleon, slight interruptions between coxal plates and pleon; middorsal line with short triangular middorsal processes on posterior margin of pereonites 1–6, pleonites 2, 3. Coxal dorsal plates contiguous, without intermediate gaps; plate 6 not overlapping pleonal epimera 2, 3. Pleonal epimera 2, 3 slightly smaller than coxal dorsal plate 6, extending posteriorly along pleotelson lateral margins. Pleotelson posterior margin broadly rounded; with middorsal keel; dorsal surface with flattened plate-like ridges laterally, or smooth. Eyes reniform. Mandible left lacinia mobilis slender. Maxillipedal epipod fused to basis; palp of 3 articles, fused articles 2–3 cordiform. Pereopod 1 propodus with setae similar, slender, bifid. Pereopod 2 of male propodus rectangular. Pereopod 7 of male not sexually differentiated. Male pleopod 2 endopod without distal stem supporting appendix masculina. Pleopod 4 endopod simply triangular, not bilobed. Uropod attached sublaterally at about midlength of pleotelson; biramous, rami of similar lengths or exopod shorter.

Shelf (1–545 m). Temperate South America, Southern Ocean (Atlantic coasts). 4 species (Moreira, 1974: figures of type species; Wägele, 1994).

***Paraserolis* Wägele, 1994**

*Diagnosis.* Body incised between triangular posteriorly directed coxal plates; middorsal line smooth in lateral view; head with row of 3 lobes. Coxal dorsal plates not contiguous; plate 6 not overlapping pleonal epimera 2, 3. Pleonal epimera 2, 3 similar to extension of pereonite 6 coxal dorsal plate, extending posteriorly along pleotelson lateral margins. Pleotelson posterior margin broadly rounded; with middorsal keel; dorsal surface with flattened plate-like ridges laterally. Eyes reniform. Maxillipedal epipod free; palp of 3 articles, fused articles 2–3 cordiform. Pereopod 1 propodus with alternating flagellate cylindrical setae and flagellate plate-like setae. Pereopod 2 of male subchelate; palm of propodus with U-shaped row of robust setae. Pereopod 7 of male not sexually

differentiated. Male pleopod 2 endopod without distal stem supporting appendix masculina. Pleopod 4 endopod simply triangular, not bilobed. Uropod attached sublaterally at about midlength of pleotelson; biramous, rami of similar lengths or exopod shorter.

Intertidal–slope (0–700 m). Temperate South America, Southern Ocean (Atlantic Sector). 1 species (Wägele, 1994).

#### ***Sedorolis* Bruce, 2009**

*Diagnosis.* Body almost evenly oval, margin defined by head, coxal plates and pleon, slight interruptions between coxal plates and pleon; middorsal line smooth in lateral view. Coxal dorsal plates contiguous, without intermediate gaps; plate 6 overlapping and extending well posterior of pleonal epimera 2 and 3. Pleonal epimera 2, 3 smaller than extension of pereonite 6 coxal dorsal plate, not extending posteriorly along pleotelson lateral margins. Pleotelson rectangular, posterior margin broadly convex; without middorsal keel; dorsal surface smooth. Eyes absent. Mandible left lacinia mobilis two thirds as wide as incisor. Maxillula inner lobe a simple expanded plate, outer lobe with ~11 robust terminal setae. Maxillipedal palp of 3 articles, fused articles 2–3 cordiform. Pereopod 1 propodus with setae similar, slender, bifid. Pereopod 2 of male subchelate; heel indistinct, palm straight, with few robust setae. Pereopod 7 of male not sexually differentiated. Male pleopod 2 endopod with distal stem supporting appendix masculina. Pleopod 4 endopod simply triangular, not bilobed. Uropod attached anteriorly, mesial margin in dorsal groove on pleotelson lateral margin; biramous, exopod half as long as endopod.

Slope (440–570 m). Central Indo-Pacific (New Caledonia). 1 species (Bruce, 2009).

#### ***Septemserolis* Wägele, 1994**

*Diagnosis.* Body almost evenly oval, margin defined by head, coxal plates and pleon, slight interruptions between coxal plates and pleon; middorsal line smooth in lateral view. Coxal dorsal plates 2–5 contiguous; plate 6 not overlapping pleonal epimera 2, 3. Pleonal epimera 2, 3 similar to coxal dorsal plate 6, scarcely extending posteriorly beyond base of uropod. Pleotelson posterior margin narrow, excavate; with short median carina; dorsal surface with 3 pairs of sublateral carinae. Eyes reniform. Mandible left lacinia mobilis two thirds as wide as incisor. Maxillipedal epipod fused to basis; palp of 3 articles, fused articles 2–3 cordiform. Pereopod 1 propodus with alternating flagellate cylindrical setae and flagellate plate-like setae. Pereopod 2 of male subchelate; heel prominent, palm concave, with few robust setae. Pereopod 7 of male sexually differentiated, propodus broader than in female, with felt of fine scale setae, dactylus simple, curved. Male pleopod 2 endopod without distal stem supporting appendix masculina. Pleopod 4 endopod simply triangular, not bilobed. Uropod attached sublaterally at about midlength of pleotelson; biramous, rami of similar lengths or exopod shorter.

Intertidal–shelf (0–700 m). Southern Ocean. 3 species (Wägele, 1994; Leese et al., 2010: distribution).

#### ***Serolella* Pfeffer, 1891**

*Diagnosis.* Body oval, increasingly incised between triangular posteriorly directed coxal plates 2–6; middorsal line smooth in lateral view. Coxal dorsal plates contiguous, without intermediate gaps; plate 6 overlapping but not extending posteriorly far beyond pleonal epimera 2, 3. Pleonal epimera 2, 3 smaller than extension of pereonite 6 coxal dorsal plate, extending posteriorly along pleotelson lateral margins. Pleotelson posterior margin narrowly rounded, or posterior margin narrow, excavate; with short median carina; dorsal surface with flattened plate-like ridges laterally. Eyes reniform, narrow. Maxillipedal palp of 3 articles, fused articles 2–3 cordiform. Pereopod 1 propodus with alternating flagellate cylindrical setae and flagellate plate-like setae. Pereopod 2 of male subchelate; palm of propodus with U-shaped row of robust setae. Pereopod 7 of male sexually differentiated, propodus broader than in female, with felt of fine scale setae, dactylus simple, curved. Male pleopod 2 endopod without distal stem supporting appendix masculina. Pleopod 4 endopod simply triangular, not bilobed. Uropod attached sublaterally at about midlength of pleotelson; biramous, rami of similar lengths or exopod shorter, or with knob-like rami fused to peduncle.

Shelf, slope (26–970 m). Southern Ocean. 4 species (Wägele, 1994: rediagnosis, figures).

#### ***Serolina* Poore, 1987**

*Diagnosis.* Body oval, increasingly incised between triangular posteriorly directed coxal plates 2–6; middorsal line smooth in lateral view, or with posteriorly directed tubercles on head and most pereonites. Coxal dorsal plates not contiguous, or 2–5 contiguous; plate 6 completely overlapping pleonal epimera 2, 3 in male, partially in female. Pereonites 5–7 fused middorsally. Pleonal epimera 2, 3 smaller than extension of pereonite 6 coxal dorsal plate, not extending posteriorly along pleotelson lateral margins. Pleotelson posterior margin narrowly rounded; with middorsal keel; dorsal surface smooth, or with sublateral carinae. Eyes reniform. Mandible left lacinia mobilis two thirds as wide as incisor. Maxillipedal epipod fused to basis; palp of 3 articles, fused articles 2–3 cordiform. Pereopod 1 propodus with alternating flagellate cylindrical setae and flagellate plate-like setae. Pereopod 2 of male subchelate; palm of propodus with U-shaped row of robust setae. Pereopod 7 of male sexually differentiated, propodus broader than in female, with felt of fine scale setae, dactylus simple, curved. Male pleopod 2 endopod with distal stem supporting appendix masculina. Pleopod 4 endopod simply triangular, not bilobed. Uropod attached anterolaterally on pleotelson; biramous, rami of similar lengths or exopod shorter.

Subtidal, shelf (1–200 m). Central Indo-Pacific, Temperate Australasia. 12 species (Poore, 1987: diagnosis, key to species).

#### ***Serolis* Leach, 1818**

*Diagnosis.* Body oval, increasingly incised between triangular posteriorly directed coxal plates 2–6; middorsal line smooth in lateral view. Coxal dorsal plates 2–5 delimited from tergite by suture; 1–6 increasingly produced posteriorly; plate 6

overlapping and extending well posterior of pleonal epimera 2 and 3. Pleonal epimera 2, 3 smaller than extension of pereonite 6 coxal dorsal plate, not extending posteriorly along pleotelson lateral margins. Pleotelson posterior margin broadly rounded; with middorsal keel; dorsal surface with sublateral carinae. Eyes reniform. Mandible left lacinia mobilis two thirds as wide as incisor. Maxillipedal epipod fused to basis; palp of 3 articles, fused articles 2–3 cordiform. Pereopod 1 propodus with alternating flagellate cylindrical setae and flagellate plate-like setae. Pereopod 2 of male subchelate; palm of propodus with U-shaped row of robust setae. Pereopod 7 of male sexually differentiated, propodus broader than in female, with felt of fine scale setae, dactylus simple, curved. Male pleopod 2 endopod without distal stem supporting appendix masculina. Pleopod 4 endopod bilobed. Uropod attached posterolaterally, pair almost meeting in midline; biramous, rami of similar lengths or exopod shorter.

Shelf–bathyal (64–2930 m). Tropical Atlantic, Temperate South America, Southern Ocean. 11 species (Brandt, 1988: rediagnosis, redescription; 2003; Leese et al., 2008: distribution).

#### ***Spinoserolis* Brandt, 1988**

**Diagnosis.** Body oval, increasingly incised between triangular posteriorly directed coxal plates 2–6; middorsal line with posteriorly directed tubercles on head and most pereonites. Coxal dorsal plates not contiguous; plate 6 shorter than coxal plate 5. Pleonal epimera 2, 3 extensions absent. Pleotelson posterior margin narrow, excavate; with middorsal keel; dorsal surface smooth. Eyes reniform. Mandible left lacinia mobilis two thirds as wide as incisor. Maxillipedal palp of 3 articles, fused articles 2–3 cordiform. Pereopod 1 propodus with alternating flagellate cylindrical setae and flagellate plate-like setae. Pereopod 2 of male subchelate; palm of propodus with U-shaped row of robust setae. Pereopod 7 of male not sexually differentiated. Pleopod 4 endopod simply triangular, not bilobed. Uropod attached anterolaterally on pleotelson; peduncle and endopod fused, exopod minute.

Subtidal–slope (1–400 m). Temperate Southern Africa. 2 species (Brandt, 1988; Wägele, 1994: description of type species).

#### ***Thysanoserolis* Brandt, 1991**

**Diagnosis.** Body almost evenly oval, margin defined by head, coxal plates and pleon, slight interruptions between coxal plates and pleon; middorsal line smooth in lateral view. Coxal dorsal plates 2–4 or 2–5 delimited from tergite by suture; contiguous, without intermediate gaps; plate 6 overlapping and extending well posterior of pleonal epimera 2 and 3. Pleonal epimera 2, 3 similar to extension of pereonite 6 coxal dorsal plate, extending posteriorly along pleotelson lateral margins. Pleotelson rectangular, posterior margin broadly convex; with short median carina; dorsal surface smooth. Eyes minute. Mandible left lacinia mobilis two thirds as wide as incisor. Maxillipedal palp of 3 articles, fused articles 2–3 cordiform; article 2 ovate, with distomesial setae. Pereopod 1 propodus with setae similar, slender, bifid. Pereopod 7 of male not sexually differentiated. Male pleopod 2 endopod with distal

stem supporting appendix masculina. Pleopod 4 endopod simply triangular, not bilobed. Uropod attached on posterolateral angle of pleotelson, uropods and pleonites forming part of continuous body outline; biramous, exopod half as long as endopod.

Shelf, slope (33–430 m). Central Indo-Pacific, Temperate South America, Southern Ocean. 3 species (Brandt, 1991; 1992: commentary; Bruce, 2009: commentary, third species).

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## Sphaeromatidae Latreille, 1828

Figures 9.9–9.21

The family Sphaeromatidae is commonly encountered in shallow-water marine environments. While morphologically diverse they are easily recognised, often by the compact shape but more reliably by the fusion of the pleonites and relatively simple walking legs. They are often brightly coloured and somewhat calcified, unlike cirrolanid ‘sea lice’, for example. Few species attain lengths greater than 10 mm – many are smaller than this, 3–5 mm long, and about 30 mm is the greatest length found. The males of many species are ornately sculptured, showing considerable sexual dimorphism. Others can be smooth, even quite flat. Family diagnoses can be found in Bruce (1993) and Wetzer et al. (2018) and form the basis of the diagnosis here.

Sphaeromatidae are the largest family of free-living isopods, with 99 genera, of which six are exclusively freshwater (Wetzer et al., 2013, 2018). Species number almost 700, and numerous

genera and countless species remain undescribed. Sphaeromatids are primarily shallow-water, with most species found on the continental shelf. Only 22 species of Sphaeromatidae have been recorded from depths of 400 metres or more (Bruce, 1994a, 1997; Calderon-López and Doti, 2025) and of these six extend to depths greater than 1000 metres, a number that remains unchanged to date. Sphaeromatidae are predominately found on hard substrata such as rocky shores and coral reefs, as well as sedimentary sea-floor habitats. Hard substrata are rarely sampled in deep water, but museum collections indicate that there is diverse sphaeromatid fauna on such habitats in deep water that is, as yet, unreported.

Wetzer et al. (2013) showed that the family is monophyletic based on an analysis based on an 18S rDNA dataset. Attempts to divide Sphaeromatidae into groups started with Hansen (1905), who recognised what he termed the platybranchiate,

hemibranchiate and eubranchiata genera, the three groups later raised to subfamilies by Hurley and Jansen (1977). “Platybranchiatinae” were characterised by the endopods and exopods of pleopods 4 and 5 lacking thickened transverse ridges, pleopods 3 and 4 without a transverse suture, and pleopod 5 exopod with a partial suture. “Hemibranchiatinae” were characterised by the endopods of pleopods 4 and 5 with thickened transverse ridges, pleopods 3–5 exopods usually with a transverse suture. “Eubranchiatinae” have endopods and exopods of pleopods 4 and 5 with thickened transverse ridges, pleopods 3 and 4 exopods usually without a transverse suture, and pleopod 5 exopod with partial or complete suture. Because these subfamily names are not based on a genus name, Iverson (1982) replaced them with Cassidininae Iverson, 1982, Sphaeromatinae Latreille, 1825 and Dynameninae Bowman, 1981 respectively. He listed 20, 20 and 31 genera in each subfamily respectively. Harrison (1984a) discussed the importance of the marsupium in sphaeromatid classification, but because generic identification depends almost entirely on adult male features, the number of oostegites and anterior and posterior brood pouches contribute little to generic diagnoses and nothing to the diagnoses here.

After discussion of the validity of these subfamilies (Bruce, 1995, 1997, 2003; Kussakin and Maljutina, 1993), Wetzer et al. (2018) used a 16S and 18S rDNA dataset from 44 species in 33 genera to show that the subfamilies are artificial. They recognised only two subfamilies, Sphaeromatinae (comprising three subclades) and Dynameninae (also comprising three subclades plus *Campecopea*), and a third *Gnorimosphaeroma* clade. The morphology of each clade and subclade were diagnosed, paraphrased here in the boxed text. Few of the clades and subclades can be diagnosed well from each other and do not help in providing key characters for identification of genera. In addition, three other “groups” of genera were morphologically characterised but not included in the analysis because there were no available sequences. Twelve genera could not be placed in any of Wetzer et al.’s (2018: 23) proposed genus-groups.

Care, as always, is needed with dichotomous keys, on two counts. This key relies on having mature male specimens. Individuals with brood pouches are certainly not males but those with ornate sculpture almost certainly are; however, not all males are sculptured. Males can be confidently identified by the presence of paired penial processes or a fused penial process on the posterior ventral margin of pereonite 7 between the last pereopods and the presence of a pair of appendices masculinae, narrow rods attached to the mesial margins of the endopods of pleopod 2.

Further caution is needed because the generic diagnoses given adhere to the characterisation of the type species. It is widely recognised among isopod taxonomists brave enough to tackle Sphaeromatidae that several of the larger genera include species that should be elsewhere. Some relatively large genera such as *Cerceis* H. Milne Edwards, 1840, *Oxinasphaera* Bruce, 1997, *Paracassidina* Baker, 1911 and *Sphaeroma* Bosc, 1802 display either perceivable apomorphic characters or a uniform appearance and can be assumed to be monophyletic. Other genera, notably *Cymodoce* Leach, 1814, the group of genera *Cilicæa* Leach, 1818–*Cilicæopsis* Hansen, 1905–*Paracilicæa* Stebbing, 1910, *Exosphaeroma* Stebbing, 1900, *Cymodopsis*

Baker, 1926 and *Ischyromene* Racovitza, 1908, all contain species so dissimilar from the type species that they would be better housed in new genera. Further, many undescribed species cannot be placed in any existing genus. For all these reasons, caution must be taken in making a generic identification; ideally the keyed specimen/s should be checked against the generic diagnoses, and if possible detailed description of the genera in the literature cited. Splitting into more genera is inevitable in the future when revisions are undertaken (Wetzer et al., 2013).

The key to males of marine and estuarine genera below started from that of Harrison and Ellis (1991) but has been much modified. Their illustrated key relied on males of 81 genera. Some generic names have been updated and 18 more recent names added here. Six genera found only in fresh water are not included in the key but are appended below. Some estuarine genera can be found in coastal freshwater streams. *Ischyromene* appears twice in the key.

Pleonite 1 is usually free from the remaining pleon (fused pleonites 2–5) but is sometimes visible only laterally, hidden under the posterior margin on pereonite 7 and revealed only when the animal is more curled than flat. Partial sutures, lateral or posterior, on the pleon refer to those between pleonites 2–5. Pleonite 6 is part of the pleotelson, as in all isopods. Coxal dorsal plates refer to the lateral expansion of the coxae covering the bases (first mobile article) of pereopods 1–7 that are more or less fused to the pereonal tergite (a non-hinging suture may be visible dorsally or laterally between the tergite of pereonites 2–7 and the coxal dorsal plate).

*Diagnosis.* Body oval, vaulted, or flat; head free from pereonite 1; pereonites 1–7 visible dorsally. Coxal dorsal plates 2–7 delimited from tergite by weak non-articulating suture (sometimes not); dorsal coxal plate 7 similar, usually smaller, to dorsal coxal plate 6. Pleon with pleonite 1 usually present, often hidden dorsally; pleonites 2–5 fused mesially, indicated laterally by 0–3 sutures, occasionally fused to pleotelson. Antennular and antennal peduncles cylindrical, not part of margin of body, or flattened, defining anterior margin of body. Mandibular incisor process multicuspid; left incisor mobilis short, wide. Maxillipedal palp of 5 free articles. Pereopod 1 usually ambulatory. Pereopods 2–7 ambulatory. Uropodal endopod fused to peduncle (lamellar, sometimes reduced or absent), exopod usually lamellar (sometimes absent, cylindrical or styliform).

*Implicit generic characters.* Body vaulted, without setae, coxal and other margins smooth. Head with rostrum visible dorsally, rostrum simple, separating antennular bases; with anterior margin simple, not produced. Eyes lateral. Pereonite 6 simple, without bosses, processes or marginal extensions. Pereonite 7 as wide as pereonite 6, forming part of body outline, without dorsal bosses, processes or marginal extensions. Coxal dorsal plates tapering, rounded, coxal plates 2–6 overlapping the one behind. Pleonite 1 entire, free from pleonite 2, posterior margin even; pleon with 2 partial sutures visible on fused part; sutures (except first) running to posterior or posterolateral margin, all separate, sutures long; dorsal surface smooth; posterior margin without process; pleon posterior margin entire. Pleotelson vaulted, anteriorly as wide or almost as wide as pleon, without

### Subfamilies and genus-groups proposed by Wetzer et al. (2018)

**Sphaeromatinae.** Pleon consisting of pleonites 1–3 fused medially segments (2 sutures visible on fused part). Epistome extended prominently anteriorly and elongate. Pleopod 1 rami not operculate. Pleopods 4 and 5 exopods and endopods with thickened transverse ridges.

*Sphaeroma* subclade. Body dorsal surfaces smooth or nodular, without setae, able to conglobate. Pleotelson posterior margin rounded broadly, without exit channel. Maxillipedal palp articles 2–4 mesial margins not or weakly lobate. Penial processes set apart basally. Uropodal rami lamellar, subequal.

*Exosphaeroma* subclade. Body dorsal surfaces smooth, without setae, able to conglobate. Pleotelson posterior margin rounded broadly, without exit channel. Maxillipedal palp articles 2–4 mesial margins not lobate. Penial processes set apart basally. Pleopods 4 and 5 exopods and endopods with or without thickened transverse ridges. Uropodal rami lamellar, subequal.

*Cymodoce* subclade. Body dorsal surfaces of males with nodular ornamentation or granular or with ridges or tubercles, densely setose. Maxillipedal palp articles 2–4 mesial margins extended, forming finger-like lobes. Penial processes in contact basally, long (extending to pleopod rami). Pleopod 2 appendix masculina elongate. Uropod with either endopod or exopod reduced.

**Dynameninae.** Pleotelson posterior margin complex, with sinuses, excisions, upturned, tubular; rarely simple. Maxillipedal palp articles 2–4 mesial margins lobate. Penial processes in contact basally. Pleopods 4 and 5 exopods and endopods with thickened transverse ridges.

*Campeopea*. Strongly sexually dimorphic. Pleonal sutures short. Maxillipedal palp articles 2–4 mesial margins weakly lobate. Pleopods 1–3 exopods lateral margins smooth. Pleopod 2 appendix masculina inserted basally or sub-basally. Uropodal exopod absent.

*Ischyromene* subclade. Not or weakly sexually dimorphic. Pleonal sutures short. Antennular peduncle article 2 longer than half article 1; article 3 as long as article 2. Pereopods secondary unguis with 2 accessory cusps. Pleopods 1–3 exopods lateral margins smooth. Pleopod 1 rami operculate, exopod and mesial margin of endopod indurate. Pleopod 2 appendix masculina inserted basally or sub-basally, longer than and extending beyond endopod. Pleopods 3 and 4 exopods without transverse suture.

*Cerceis* subclade. Pleonal sutures long. Antennular article 3 longer than article 2. Pleopods 1, 2 (sometimes 3) exopods lateral margins serrate, especially distally (usually). Pleopod 1 rami not operculate. Pleopod 2 appendix masculina inserted near midpoint of mesial margin or distally.

*Dynamenella* subclade. Pleonal sutures (except first) running to posterior margin. Antennular article 3 longer than article 2. Pleopods 1–3 exopods lateral margins smooth. Pleopod 1 rami not operculate.

**Gnorimosphaeroma.** Pleonal sutures running to lateral margin. Pleotelson posterior margin simple, arcuate, without exit channel. Pleopods 4 and 5 exopods and endopods without thickened transverse ridges. Uropodal rami lamellar, exopod shorter.

Three marine genus-groups lacked molecular data and therefore could not be assigned to any clade. These genera were characterised morphologically, and Wetzer et al. (2018) listed the included genera.

**Cassidina-group.** Body margins expressed laterally (not ventrally) giving an overall flat appearance. Head lateral margins expanded, not set into pereonite 1. Epistome visible in dorsal view. Pereonites with coxal extensions. Pleonal sternite prominent. Pleon of 3 segments, laterally unfused. Antennular peduncle articles 1 and 2 flattened. Maxillipedal palp article 2 expanded, articles 3 and 4 finger-like medial lobes, article 5 elongate. Pereopod 1 modified, with 1 or more elongate articles and elongate dactylus; accessory unguis slender. Pleopod 1 rami subequal in width, distally rounded, usually collinear (from Bruce, 1994).

**Leptosphaeroma-group:** Epistome not visible in dorsal view. Head set into pereonite 1, not laterally expanded. Pereonites without coxal extensions. Pleonal sternite absent. Pleonites all fused and pleon with a single segment, laterally unfused. Antennular peduncle articles 1 and 2 flattened, forming continuous outline. Maxillipedal palp articles with weak medial lobes. Pereopods all ambulatory. Penial processes partly or wholly fused. Pleopod 1 endopod subequal, more reduced than exopod; pleopod 2 appendix masculina basal (from Bruce, 1994).

**Moruloidea-group:** Antenna with peduncular articles 4 and 5 robust, reflexed. Male pereopod 1 propodus with inferoproximal lobe (“heel”). Uropodal exopod reduced. Rugose and heavily calcified dorsum. Pereon folds “purse”-like at pereonite 5, with coxal plate 5 overlapping both anteriorly and posteriorly.

dorsal process. Antennular peduncle articles not flattened, with first articles not meeting medially; article 1 apices not produced, inferior margin without hard cuticular spines; article 2 without anterodistal lobe; with articles 2 and 3 colinear; longer than peduncle article 3. Antennal peduncle articles all colinear (or curving regularly), less robust than antennula, peduncle articles of similar thickness. Epistome anteriorly flush with head, not projecting. Mandibular incisor multicuspid; palp of 3 articles. Pereopod 1 ambulatory; propodus not club-shaped; merus simple, lower margin straight, not swollen. Pereopods 2 and 3 of similar proportions; pereopods 2, 3 propodal palm without proximal lobe. Pereopods 1–3 ischium upper margin without long stiff slender setae. Pereopod 5 of male similar to other

pereopods. Penial processes entirely separate, tapering smoothly from base. Pleopods 1–3 exopods lateral margins smooth. Pleopod 1 rami not operculate; endopod usually of similar proportions to exopod. Pleopod 2 appendix masculina inserted basally or sub-basally, with straight margins, longer than and extending beyond endopod. Pleopod 3 exopod with transverse suture, endopod without transverse ridges. Uropodal rami flattened, not forming part of continuous body outline; peduncle-endopod lamellar, endopods not in contact posteriorly; exopod inserted laterally near anterolateral angle of peduncle-endopod, lamellar, similar in length to endopod, lateral margin finely serrate or smooth.

### Key to adult males of marine and estuarine genera of Sphaeromatidae

1. Antennular peduncle article 1 or articles 1 and 2 flat, with expanded anterior and/or anterolateral lobes forming anterior margin of body ..... 2
  - Antennular peduncle articles 1 and 2 cylindrical or slightly flattened, without lobes forming anterior margin of body ..... 15
2. Pereopod 1 carpus and dactylus scythe-shaped; merus with long setose lobe on upper margin (fig. 9.19o) ..... *Paracassidina*
  - Pereopod 1 ambulatory or weakly prehensile; merus sometimes with a short lobe on upper margin (not as above) (fig. 9.19r) ..... 3
3. Antennular peduncle article 1 alone expanded anteriorly as plate, meeting medially (fig. 9.19a) ..... *Amphoroidea*
  - Antennular peduncle articles 1 and 2 flat, expanded as anterior and/or anterolateral lobes meeting medially or not (e.g. figs 9.9b, 9.15a) ..... 4
4. Antennular peduncle articles 1 separated by epistome ..... 5
  - Antennular peduncle articles 1 in contact ..... 8
5. Uropodal exopod minute, immobile, not obvious (fig. 9.17a, b) ..... *Syncassidina*
  - Uropodal exopod mobile, obvious ..... 6
6. Uropodal exopod almost as long as endopod. Pleotelson longer than uropod (fig. 9.16o) ..... *Stathmos*
  - Uropodal exopod immersed in uropod body. Pleotelson about as long as uropod ..... 7
7. Antennular peduncle article 1 longer than wide; epistome visible in dorsal view extending anteriorly beyond antennula (fig. 9.19d) ..... *Cassidina*
  - Antennular peduncle articles 1 and 2 lobed anteriorly beyond epistome ..... 8
8. Antennular peduncle articles 1 and 2 lobes truncate or subtruncate anteriorly. Uropodal exopod half as long as uropod body (fig. 9.10i) ..... *Chitonopsis*
  - Antennular peduncle articles 1 and 2 lobes narrow, produced anteriorly. Uropodal exopod one quarter as long as uropod body (fig. 9.9b) ..... *Agostodina*
9. Pleon without sutures (fig. 9.15l) ..... 10
  - Pleon with 2 or more sutures running to lateral or posterior margin (figs 9.10k, 9.13m) ..... 12
10. Uropodal endopods meeting or nearly so in midline posterior to pleotelson apex (fig. 9.15a) ..... *Paraleptosphaeroma*
  - Uropodal endopods not meeting in midline posterior to pleotelson apex ..... 11

11. Uropodal exopod triangular, lying anterior to endopod. Pleotelson without terminal foramen. Pereonite 1 enclosing head (fig. 9.15l, m) ..... *Platysphaera*
- Uropodal exopod lying alongside endopod. Pleotelson with terminal foramen. Pereonite 1 not enclosing head laterally (fig. 9.9f) ..... *Beatricesphaera*
12. Uropodal endopods meeting in midline posterior to pleotelson apex. Pleon with 2 sutures reaching lateral margin (fig. 9.13m) ..... *Leptosphaeroma*
- Uropodal endopods not meeting in midline posterior to pleotelson apex. Pleon without or with 1 suture reaching lateral margin, 1 or 2 reaching posterior margin ..... 13
13. Pleon with first suture reaching lateral margin; second suture reaching posterior margin (fig. 9.10k, l). Appendix masculina spatulate, much longer than pleopod 2 endopod (fig. 9.20i) ..... *Chitonosphaera*
- Pleon with 1 or 2 pairs of sutures reaching posterior margin. Appendix masculina not spatulate ..... 14
14. Pleon with 2 pairs of sutures reaching posterior margin (fig. 9.11i, j). Pleopods 4 and 5 rami lamellar, without transverse ridges (fig. 9.21g, h). Appendix masculina apex folded, distally forming groove (fig. 9.20l) ..... *Discidina*
- Pleon with 1 pair of sutures reaching posterior margin (fig. 9.9c). Pleopods 4 and 5 both rami with thickened transverse ridges (fig. 9.21e, f). Appendix masculina narrow ..... *Amphoroidella*
15. Dorsal surface of head with 2 long, slender, anterolateral processes, 1 each side of epistome in dorsal view. Epistome narrow, greatly extended anteriorly, about twice length of processes (fig. 9.10c, d) ..... *Ceratocephalus*
- Head without long anterior processes. Epistome not as above ..... 16
16. Head produced into a substantial rounded cone about one third body length. Pereonites with transverse rows of conical projections. Pleotelson with 2 prominent domes, apex indistinctly trilobed, with indistinct ventral exit channel (fig. 9.9k, l) ..... *Bregmotypta*
- Characters not so combined ..... 17
17. Pereopod 5 greatly enlarged, smooth, with swollen carpus and propodus, 1.5 times as long as other pereopods (fig. 9.19u). Body tuberculate dorsally (fig. 9.13k, l) ..... *Kranosphaera*
- Pereopod 5 similar to other pereopods. Body smooth or variously sculptured ..... 18
18. Mandible with incisor process greatly elongate, flat, deeply bifid (fig. 9.19x) ..... *Hemisphaeroma*
- Mandible with incisor process short (fig. 9.19y, z) ..... 19
19. Pleopod 1 endopod of male comprising basal part and long filamentous thread (about 5 times length of exopod) (figs 9.20e, 9.14i, j) ..... *Paracassinopsis*
- Pleopod 1 endopod lamellar or indurate ..... 20
20. Dorsal surface of body ornamented with small mushroom-headed tubercles each topped with a cluster of stemmed spheres. Epistome deeply bifid, projecting anteriorly beyond head in dorsal view (fig. 9.9j) ..... *Botryias*
- Body not covered with large, prominent, spherical, tuberculate processes (if tuberculate, tubercles not spherical). Epistome, if bifid, with rounded distal tips ..... 21
21. Uropod a single broad plate alongside pleotelson, without exopod (fig. 9.18h) ..... *Scutuloidea*
- Uropod with exopod (may be minute, not obvious or housed in a notch on endopod external margin) ..... 22
22. Antennular peduncle article 1 of male with anterodistal angle extended laterally as long, narrow, flat lobe (figs 9.9m, n, 9.19c) (incipient lobe in female) ..... *Calcipila*
- Antennular peduncle article 1 without anterodistal lateral lobe (usually cylindrical, sometimes a flat plate) ..... 23

23. Pleopods 1 and 2 or 1–3 (especially pleopod 2, fig. 9.20a, f, s) exopods with lateral (obsolete on some pleopods in some genera) or few distolateral teeth. Appendix masculina attached at midpoint of pleopod 2 endopod (fig. 9.20s) ..... 24
- Pleopods 1–3 exopods without lateral teeth. Appendix masculina usually attached basally to pleopod 2 endopod (fig. 9.20i, j, l, m) ..... 32
24. Pereonite 7 with pronounced dorsal extension directed posteriorly, forming broad, finger-like process (fig. 9.12o, p) or flat, broad shield covering pleotelson (fig. 9.12, m, n) ..... *Haswellia*
- Pereonite 7 with posterior margin similar to preceding pereonites, without posterior extension ..... 25
25. Body extremely flattened (c. 5 times as wide as deep), smooth ..... 26
- Body not extremely flattened (less than 3 times as wide as deep). Pleotelson (at least) with 1 or more tubercles or ridges ..... 27
26. Uropod with rami styliiform, extending well beyond pleotelson apex (fig. 9.15i). Pleopods 1–3 exopods with lateral teeth (fig. 9.20r). Pleotelson deeply notched ..... *Platycerceis*
- Uropod with rami lamellar, extending just beyond pleotelson apex (fig. 9.9a). Pleopods 1 and 2 exopods with lateral teeth (fig. 9.20a) ..... *Afrocerceis*
27. Uropodal exopod narrow, usually cylindrical, not flattened, at least twice as long as reduced endopod; endopod not reaching level of pleotelson apex (figs 9.11g, h, 9.14k, l) ..... 28
- Uropod with rami flattened; endopod not reduced, reaching level of pleotelson apex (fig. 9.12d) ..... 29
28. Pleotelson apex with notch bearing pronounced median tooth extending posteriorly beyond level of notch opening (fig. 9.11g, h) ..... *Discerceis*
- Pleotelson apex with deep complex toothed notch which either lacks median tooth or has a median tooth that does not extend posteriorly beyond the level of notch opening (fig. 9.14k) ..... *Paracerceis*
29. Pleotelson bidomed, rectilinear in lateral view, without median ridge (fig. 9.12d, e) ..... *Eterocerceis*
- Pleotelson with 3 longitudinal ridges, or with median ridge or smooth or with pair of sublateral tubercles ..... 30
30. Head anterior margin not extended. Median rostral process directed anteroventrally. Epistome visible in dorsal view when head is rotated dorsally to bring mouthparts forwards (fig. 9.19k) ..... *Pseudocerceis*
- Head anterior margin extended forwards. Median rostral process apex directed posteroventrally. Epistome never visible in dorsal view ..... 31
31. Head anterior margin flattened dorsoventrally. Uropodal exopod acute (fig. 9.10e, f). Antennular peduncle article 1 with posterior angle elongate, acute (fig. 9.19e) ..... *Cerceis*
- Head anterior margin conical, blunt, not flattened dorsoventrally. Uropodal exopod distally serrate (fig. 9.12f, g). Antennular peduncle article 1 with posterior angle blunt (fig. 9.19h) ..... *Exocerceis*
32. Pereonite 6 with 1 median or pair of spine-like projections (figs. 9.9o, 9.11k, l) or if without projection, ischium of pereopods 5–7 elongate, 5–7 times as long as wide). Uropodal endopod minute or absent ..... 33
- Pereonite 6 without posterior spine-like projection. Uropodal endopod usually well developed ..... 34
33. Pereonite 6 without or with 1 median spine-like projection (fig. 9.9o, p). Ischium of pereopods 5–7 elongate, 5–7 times as long as wide. Pleopods 4, 5 with both rami without thickened transverse ridges ..... *Campecopea*
- Pereonite 6 with pair of spine-like projections (fig. 9.11k, l). Ischium of pereopods 5–7 not elongate. Pleopods 4, 5 with both rami with thickened transverse ridges (fig. 9.21e, f) ..... *Dynamene*
34. Pereonite 7 with dorsal posterior margin bearing 1 median, spine-like process directed posteriorly (fig. 9.17h, i) ..... 35
- Pereonite 7 with posterior margin similar to that of preceding pereonites, or with 2 lobes or transverse ridges or 2 short acute processes, but not with 1 median spine ..... 37

35. Pleotelson with subapical foramen connected to apex by narrow slit (fig. 9.15d) ..... *Parisocladius*  
 – Pleotelson without subapical foramen (may have an open notch) ..... 36
36. Pleotelson apex entire, acute, or weakly emarginate; with a longitudinal ventral groove (fig. 9.13f) .....  
 ..... *Isocladius*  
 – Pleotelson apex with terminal notch bearing median tooth (fig. 9.17h, i) ..... *Zuzara*
37. Uropodal peduncle cylindrical, endopod absent or stub-like; exopod cylindrical (rami not especially flattened) ..... 38  
 – Uropod with peduncle-endopod and/or rami broadly flattened ..... 47
38. Coxal plates 1, 2 triangular, directed laterally; coxal plates 2–5 and pleonite 2 with spine-like ventral process (fig. 9.11o, p) ..... *Dynameniscus*  
 – Coxal plates rounded or truncate, without spike-like process ..... 39
39. Pleon with prominent median process (fig. 9.10m–p) ..... 40  
 – Pleon without median process or with broad plate-like extension ..... 42
40. Pleotelson posterior margin with median notch only (fig. 9.18k). Appendix masculina attached distally to pleopod 2 endopod (fig. 9.20g) ..... *Cassidias*  
 – Pleotelson posterior margin notch with or without median tooth (fig. 9.18k). Appendix masculina attached basally to pleopod 2 endopod (fig. 9.20j) ..... 41
41. Pleotelson apical notch wide, with broad short median tooth (fig. 9.18l) ..... *Cilicaea*  
 – Pleotelson apical notch wide, smoothly rounded, without median tooth (fig. 9.18m) ..... *Cilicaeopsis*
42. Uropod attached at anterolateral angle of pleotelson, posterior margin of pleotelson extending well beyond peduncle (figs. 9.11a, 9.15g) ..... 43  
 – Uropod attached at posterolateral angle of pleotelson, posterior margin of pleotelson almost transverse (e.g., fig. 9.18g) ..... 44
43. Pleotelson apex with short tube directed dorsally, ventrally and posteriorly enclosed. Uropodal endopod stub-like; exopod, sinusoidal, blunt (fig. 9.15g, h) ..... *Pistorius*  
 – Pleotelson apex tapering, acute, without tube. Uropodal endopod absent; exopod straight, acute (fig. 9.11a, b) ..... *Cymodetta*
44. Pereonite 7 not reaching lateral margins in dorsal view. Uropodal exopod styliiform, curved, twice length of peduncle in male (fig. 9.18g) (rami similar in female). Slope depths only ..... *Naesicoepea*  
 – Pereonite 7 reaching lateral margins in dorsal view. Uropodal exopod cylindrical. Subtidal–slope depths ..... 45
45. Pleon with tubercles on posterior margin. Pleotelson with pair of sublateral longitudinal curved triangular ridges (fig. 9.12k, l) ..... *Geocerceis*  
 – Pleon without tubercles on posterior margin. Pleotelson with or without bosses or ridges, none curved ..... 46
46. Pleotelson with pair of sublateral longitudinal elongate bosses; posterior margin with small median notch and 2 small sublateral notches (figs 9.14c, d, 9.18q) ..... *Neonaesa*  
 – Pleotelson with pair of sublateral bosses; posterior margin with terminal notch with median tooth (fig. 9.14m, n) ..... *Paracilicaea*
47. Antennular peduncle article 1 with row of ventrally directed teeth, similar teeth on epistome (fig. 9.19i) .....  
 ..... *Oxinasphaera*  
 – Antennular peduncle article 1 without row of ventrally directed teeth ..... 48
48. Dorsal surface highly rugose, with angular tubercles. Pleotelson with solid tuberculate process, directed posteriorly. Pleon with pair of prominent dorsal elongate submedian keels (fig. 9.10g, h) ..... *Cercosphaera*  
 – Dorsal surface with distinct tubercles. Pleotelson without posteriorly directed solid tuberculate process. Pleon without pair of prominent dorsal elongate submedian keels ..... 49

49. Pleon with broad medial plate-like extension. Uropodal exopod cylindrical, acute (fig. 9.16a, b) .... *Pooredoce*  
 – Pleon without broad medial plate-like extension. Uropodal exopod usually lamellar ..... 50
50. Pleotelson posterior margin with broad, flat, triangular extension longer than main dome of pleotelson. Uropod with rami subequal, lamellar, distally expanded, with rounded, serrulate margins extending beyond pleotelson apex. Head with broad, dense, anterior patch of short setae (fig. 9.16g, h) ..... *Ptyosphaera*  
 – Pleotelson posterior margin without flat acute extension or short extension. Uropod not so expanded. Head without dense, anterior patch of setae (may bear sparse setae over entire surface) ..... 51
51. Pleotelson posterolateral margin curled ventrally to meet (or almost meet) in ventral midline, forming closed, cylindrical tube, directed posteriorly (fig. 9.11e). Uropodal rami lamellar; endopod well-formed ..... 52  
 – Pleotelson apex either without enclosed foramen, or with foramen directed anterodorsally, dorsally or posterodorsally, but never with foramen directed posteriorly in the form of a tube. Uropods various ..... 53
52. Antennular articles 1 and 2 robust; article 3 slender, articulating at right angles (fig. 9.19g). Pereopod 2 slender, narrower than pereopod 3 ..... *Diclidocella*  
 – Antennular articles 1–3 colinear (figs 9.11e, 9.19f). Pereopod 2 as wide as pereopod 3 ..... *Cymodocella*
53. Coxal dorsal plate 6 twice length of tergite, covering or almost covering pereopod 7 coxal plate in lateral view (fig. 9.12c). Uropodal rami subequal, lamellar (fig. 9.12b) ..... 54  
 – Coxal dorsal plate 6 not covering coxal plate 7, at most overlapping it partially ..... 55
54. Pleotelson apex with enclosed foramen directed posterodorsally. Coxal plate 6 overlapping pleon, not reaching ventral margin, pereonite 7 longer than pereonite 6 (fig. 9.12b, c) ..... *Dynamenopsis*  
 – Pleotelson apex with deep, narrow, vertical slit. Coxal plates 6 and 7 both reaching ventral margin, pereonite 7 as long as pereonite 6 (fig. 9.14q, r) ..... *Paraimene*
55. Body globular, highly domed, smooth. Pleonal epimeron 2 (first clearly visible) reaching ventrally well beyond epimera 3 and 4. Pleotelson highly domed. Uropodal exopod longer than endopod (fig. 9.17g) ..... *Xynosphaera*  
 – Body not especially domed. Uropodal exopod rarely longer than endopod. Other characters not so combined ..... 56
56. Uropod not visible in dorsal view; exopod minute (fig. 9.15e, f) ..... *Pedinura*  
 – Uropod visible alongside pleotelson; exopod various ..... 57
57. Pereonite 7 not reaching lateral margins of body. Pereonite 6 and pleon juxtaposed laterally (fig. 9.18a) ..... *Artopoles*  
 – Pereonite 7 reaching lateral margins of body in dorsal view ..... 58
58. Uropodal rami flattened, forming part of continuous body outline; exopod more or less embedded in peduncle (fig. 9.10i) ..... 59  
 – Uropodal rami lamellar, not forming part of continuous body outline ..... 60
59. Appendix masculina arising from long proximal lobe of pleopod 2 endopod, much longer than endopod, acute (fig. 9.20h) ..... *Cassidinidea*  
 – Appendix masculina arising sub-basally on pleopod 2 endopod, as long or longer than endopod, spatulate (figs. 9.13a, 9.20o) ..... *Heterodina*
60. Appendix masculina abruptly reflexed midlength (fig. 9.20n). Apex of pleotelson with narrow, deep, Y-shaped slit or foramen, usually lined with small teeth (fig. 9.18b) ..... *Dynoides*  
 – Appendix masculina not reflexed midlength. Apex of pleotelson with or without foramen, not lined with small teeth ..... 61

61. Penial processes proximally fused to midlength (fig. 9.19l). Appendix masculina with acute tip extending beyond endopod of pleopod 2 (fig. 9.20j). Apex of pleotelson with small elliptical foramen (fig. 9.10q) ..... *Cliamenella*
- These characters not combined ..... 62
62. Pleotelson incorporating all pleonites (except sometimes pleonite 1), with at most 1 lateral suture (Figs 9.9g; 9.13p). Head produced as lobe in front of eyes, antennulae and antennae. Pleopod 1 semi-operculate, indurate (fig. 9.20d) ..... 63
- Pleonite 1, pleon (usually with 2 lateral sutures) and pleotelson completely separated by dorsal sutures. Head rarely produced as lobe in front of eyes, antennulae and antennae. Pleopod 1 not operculate (except *Ischyromene*, indurate mesially) ..... 66
63. Body extremely flat, scale-like. Uropodal endopods meeting posterior to pleotelson apex (fig. 9.13p, q) ..... *Maricoccus*
- Body flat or vaulted. Uropodal endopods not meeting posterior to pleotelson apex ..... 64
64. All pleonites completely fused to pleotelson, with 1 lateral suture visible laterally (fig. 9.9g, h). Antennular peduncle article 2 extended distally so that article 3 articulates on posterior margin (fig. 9.19b) ..... *Austrasphaera*
- Pleon with free pleonite 1, remaining pleonites fused to pleotelson (1 lateral suture visible) ..... 65
65. Pleotelson with distinct apical foramen (fig. 9.13n, o). Pereopods 2 and 3 propodus without basal heel ..... *Margueritta*
- Pleotelson apex entire, without apical foramen (fig. 9.13g, h). Pereopods 2 and 3 propodus with heel (fig. 9.19s) ..... *Juletta*
66. Body flattened or weakly vaulted; coxal plates directed laterally (fig. 9.9d, e). Estuarine ..... *Apemosphaera*
- Body not flattened, strongly vaulted; coxal plates directed ventrally ..... 67
67. Pleotelson with median subapical foramen connected to apex by narrow slit (slit may be closed) (figs 9.12a, 9.16j) ..... 68
- Pleotelson without subapical foramen (ventral groove in some) ..... 72
68. Pereonite 6 twice as long as pereonite 5 in dorsal midline, with posterior margin bilobed. Pereonite 7 with pair of triangular submedial posterior projections (fig. 9.12a) ..... *Dynamenoides*
- Pereonite 6 subequal in length to pereonite 5 in dorsal midline, not posteriorly bilobed. Pereonite 7 without short, acute, posterior projections (fig. 9.13d, e) ..... 69
69. Dorsal surface of entire body covered with large separate tubercles (fig. 9.16i, j). Pleopods 4 and 5 exopods flat, membranous; endopod with transverse ridges (fig. 9.21i, j) ..... *Sphaeramene*
- Entire body not covered with large separate tubercles (pleotelson may bear large tubercles). Pleopods 4 and 5 rami with thickened transverse ridges (fig. 9.21e, f) ..... 70
70. Pleopod 1 operculate (covering other pleopods) with inner half of triangular endopod noticeably thickened (fig. 9.20c). Penial processes blunt, adjacent but separate from base (fig. 9.19m) ..... *Ischyromene* (part)
- Pleopod 1 endopod not obviously thickened (fig. 9.20b). Penial processes tapering, fused along half length (fig. 9.19l) ..... 71
71. Pleotelson ventral margins with out-turned ridges not meeting posteriorly (pleotelson apices may meet) (fig. 9.14o, p; shaded in fig. 9.18s, t). Appendix masculina narrow, extending well beyond pleopod 2 endopod (fig. 9.20q) ..... *Paradella*
- Pleotelson ventral margins with out-turned ridges meeting posteriorly (fig. 9.11m, n; shaded in fig. 9.18o, p), or without out-turned ridges. Appendix masculina broad basally, tapering, extending to or beyond pleopod 2 endopod (fig. 9.20m) ..... *Dynamenella*

72. Antenna robust, peduncle article 5 reflexed. Coxal plate 5 larger than other coxal plates, appearing to overlap plates of both pereonite 4 and pereonite 6 when animal folded. Eyes obvious, dorsal (fig. 9.14a, b) ..... *Moruloidea*
- Antenna not robust, not reflexed. Coxal plate 5 not appearing to overlap those of both pereonites 4 and 6 when animal folded. Eyes various ..... 73
73. Antennular peduncle article 1 with posterodistal angle extended as acute process (fig. 9.19j). Uropod with both rami styliform (fig. 9.15j, k) ..... *Platynympha*
- Antennular peduncle article 1 with distal angles blunt. Uropodal rami not styliform ..... 74
74. Pereonite 7 with pair of posterior submedian lobes. Pleotelson apex with prominent median projection and basal short tubercle each side. Uropodal rami subequal, rounded (fig. 9.18e). Pleopods 4 and 5 rami with transverse ridges (fig. 9.21e, f) ..... *Holotelson*
- Pereonite 7 with posterior margin simple. Pleotelson apex without long, thick median process (if apex appears tridentate, pleopods 4 and 5 exopods without transverse ridges). Uropods various ..... 75
75. Pereonites 2–7, pleon and pleotelson with dense dorsal mat of setae (fig. 9.13i, j) ..... *Koremasphaera*
- Pereonites 2–7, pleon and pleotelson without dense dorsal mat of setae ..... 76
76. Pleotelson apex tridentate in dorsal view (sometimes weakly so; with notch bearing median tooth) (fig. 9.9q) ..... 77
- Pleotelson apex not tridentate, with or without median tooth ..... 79
77. Uropodal exopod half length of endopod; endopod not reaching pleotelson apex. All coxal plates acute, separate (fig. 9.9q) ..... *Cassinella*
- Uropodal exopod longer than half length of endopod. Coxal plates not all acute and separate ..... 78
78. Body smooth; pleon and pleotelson each with 1 boss each side of midline. Uropodal exopod twice length of endopod, scimitar-like, with acute, out-turned tip. Pereonite 1 lateral margin with truncate posteroventral lobe. Coxal plate 5 extending ventrally further than other coxal plates (fig. 9.13b, c) ..... *Heteruropus*
- Pleotelson, pleon and posterior region of pereon usually with tubercles, ridges and long setae. Uropodal exopod lanceolate, shorter than or extending just beyond endopod. Pereonite 1 lateral margin with acute or narrowly rounded posteroventral angle. Coxal plate 5 not extended ventrally more than other coxal plates (fig. 9.11c, d) ..... *Cymodoce*
79. Pereopod 2 heavily calcified, modified for clasping (i.e. subterminal articles broad, flattened, with pronounced inferior spines) (figs 9.15b, c, 9.19p, t). Pereopods 3–7 slender ..... *Parasphaeroma*
- Pereopod 2 not heavily calcified or modified for clasping, slender or flattened anterior to posterior. Pereopods 3–7 various ..... 80
80. Uropodal exopod with prominent subterminal notch; endopod lateral margin not serrate (figs 9.14e, f, 9.18r). Pleopod 3 endopod with several transverse ridges (fig. 9.21b) ..... *Neosphaeroma*
- Uropodal exopod without prominent subterminal notch; endopod lateral margin serrate (fig. 9.16k). Pleopod 3 endopod flat, without transverse ridges (fig. 9.21a) ..... 81
81. Pereopods 1–3 each with ischium and merus (and propodus in *Sphaeroma*), superior margins each with dense row of long, stiff, setae (fig. 9.19q). Penial processes short ..... 82
- Pereopods 1–3 each with ischium and merus superior margins each without dense row of long, stiff, setae (if pereopods bear many long setae over all surfaces, penial processes long) ..... 83
82. Maxillipedal palp articles 3, 4 without mesial lobes, margins straight (figs 9.16k, l, 9.19w) ..... *Sphaeroma*
- Maxillipedal palp articles 3, 4 with mesial lobes (fig. 9.19v) ..... *Lekanesphaera*
83. Pleotelson apex smoothly rounded, distal margin medially upturned, anterior surface with several prominent tubercles each side of midline (fig. 9.16c–f) ..... *Pseudosphaeroma*
- Pleotelson apex not upturned in lateral view, ornamentation various or absent ..... 84

84. Pleopod 1 operculate (covering other pleopods) with inner of triangular endopod noticeably thickened (fig. 9.20c). Pleotelson with pronounced apical notch (fig. 9.13d, e). Pleopods 4 and 5 rami with thickened transverse ridges (fig. 9.21e, f) ..... *Ischyromene* (part)
- Pleopod 1 with inner half of endopod not noticeably thickened (fig. 9.20b). Pleotelson with or without apical notch. Pleopods 4 and 5 exopods with or without transverse ridges ..... 85
85. Pleon with 1 or 2 suture lines reaching ventrolateral margins. Pleotelson apex smoothly rounded, without apical notch (fig. 9.18d) ..... *Gnorimosphaeroma*
- Pleon with suture lines reaching posterior or posterolateral margins (if lines reach posterolateral angles, pleotelson with vertical ventral apical notch not obvious in dorsal view) ..... 86
86. Pleopods 4 and 5 rami both with transverse ridges. (fig. 21e, f). Pleotelson posterior margin almost truncate (figs 9.9b, 9.16m) ..... 87
- Pleopods 4 and 5 exopods lamellar, without transverse ridges; endopods sometimes with transverse ridges (fig. 21a–d, g–j). Pleotelson posterior margin usually rounded or pointed (figs 9.12h, j, 9.16p), truncate in *Waiteolana* ..... 88
87. Uropodal endopod broad, free mesial margin concave; exopod short, narrow, acute (fig. 9.10b) ..... *Cassidinopsis*
- Uropodal rami narrow, apically rounded, subequal or exopod slightly longer than endopod (figs 9.16m, n, 9.18i) ..... *Sphaeromopsis*
88. Eyes minute, not obvious. Pereopods 3–6 robust, hirsute (fig. 9.17c, d). Mandible without palp or with apical seta ..... *Tholozodium*
- Eyes obvious. Pereopods not especially robust. Mandible with 3-articled palp (fig. 9.19x–z), usually visible each side of epistome ..... 89
89. Body flattened. Pleon with 2 short sutures converging on posterior margin (fig. 9.16p) ..... *Striella*
- Body vaulted. Pleon with 2 long sutures reaching posterolateral margin ..... 90
90. Pleotelson with single or double median boss; with posteriorly produced lobe over ventrally directed groove (fig. 9.18n). Pleon dorsal surface smooth (fig. 9.11f) ..... *Cymodopsis*
- Pleotelson without dorsal ornamentation; without or with incomplete ventral exit channel. Pleon dorsal surface smooth or tuberculate ..... 91
91. Body surface tuberculate. Uropodal endopod with distal notch (fig. 9.17e, f). Mandibular molar reduced to thin acute blade (fig. 9.19z) ..... *Waiteolana*
- Body surface smooth or setose. Uropodal endopod acute distally, rounded or truncate. Mandibular molar not reduced ..... 92
92. Pleopods 4 and 5 with both rami flat, thick, without transverse ridges (figs 9.12h, i, 9.21g, h). Estuarine or freshwater ..... *Exosphaeroides*
- Pleopods 4 and 5 endopods usually with obvious transverse ridges; exopods flat (fig. 9.21c, d, i, j). Marine ..... 93
93. Pleonite 1 with 2 submedian flat lobes (often concealed by pereonite 7), directed posteriorly (fig. 9.18c; not visible in fig. 9.12j). Without dense dorsal setae. Uropodal exopod simple ..... *Exosphaeroma*
- Pleonite 1 without 2 posteriorly directed submedian flat lobes. Usually densely setose dorsally. Uropodal exopod sometimes apically falcate (figs 9.9i, 9.18j) ..... *Benthosphaera*

### *Afrocerceis* Müller, 1995

*Diagnosis.* Body flat, coxae without visible sutures, directed laterally, dorsal surfaces smooth, unable to conglobate; not or weakly sexually dimorphic. Head with ventral rostrum; with anterior margin produced, overriding antennules. Eyes more

dorsal than lateral. Coxal plates truncate. Pleonite 1 narrower than remainder of pleon, not extending to pleon lateral margins. Pleotelson flat; posterior margin with shallow median indentation, with incomplete ventral groove or channel; ventrolateral margins simple. Antennular peduncle articles 1 and 2 robust, article 3 slender, with first articles meeting medially;

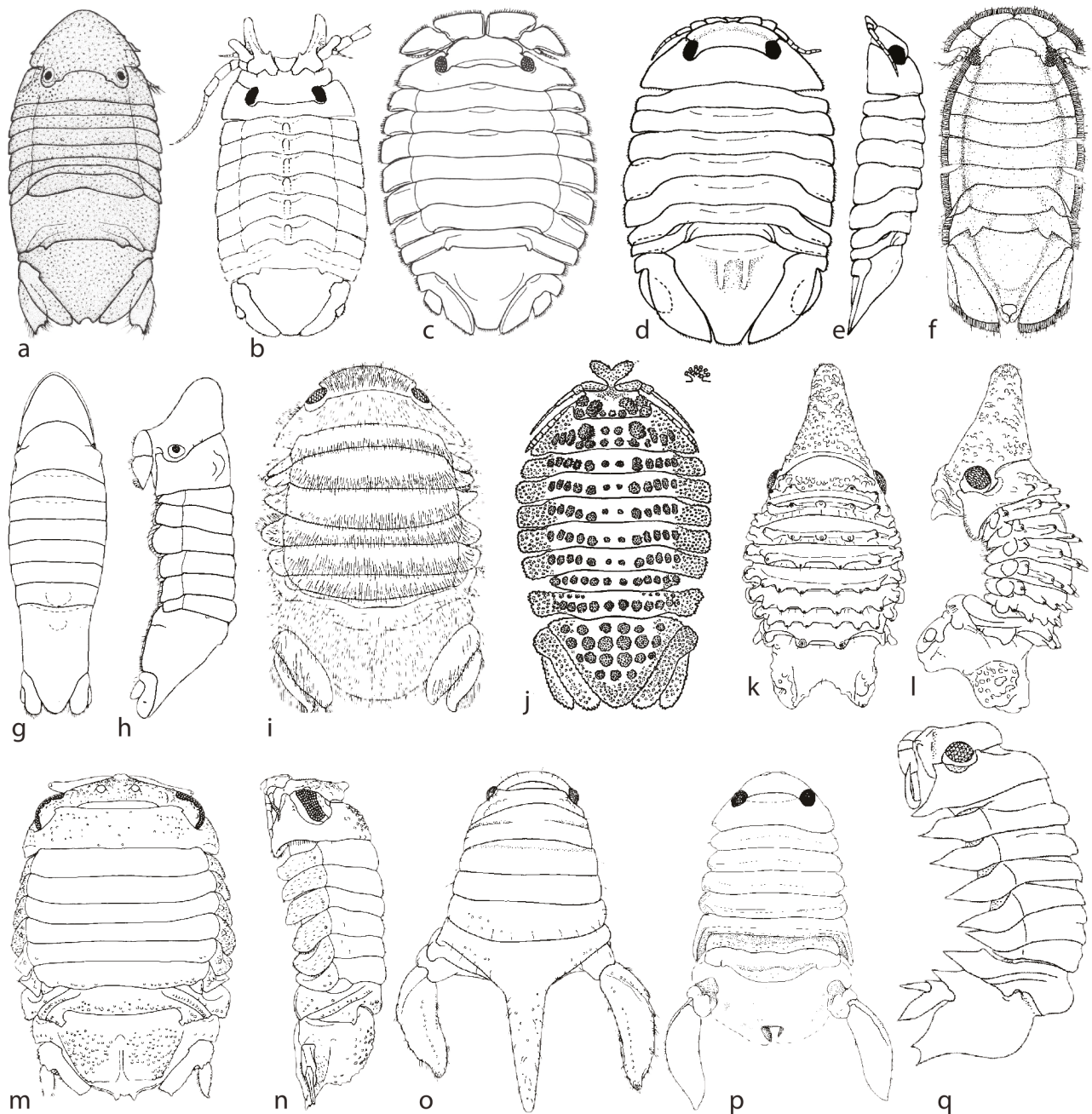


Figure 9.9. Sphaeromatidae. Dorsal and lateral views. a, *Afrocerceis kenyensis* Müller, 1995; b, *Agostodina munta* Bruce, 1994; c, *Amphoroidella elliptica* (Baker, 1908); d, e, *Apemosphaera naranagi* Bruce, 1994; f, *Beatricesphaera ruthae* Wetzer and Bruce, 1999; g, h, *Austrasphaera berentsae* Bruce, 2003; i, *Benthosphaera reburra* Bruce, 1999; j, *Botryias fructiger* Richardson, 1910 (tubercle figured separately); k, l, *Bregmotypta pavicula* Bruce, 1994; m, n, *Calcipila cornuta* Harrison and Holdich, 1984; o, *Campecopea hirsuta* (Montagu, 1804); p, *Campecopea lusitanica* (Nolting, Reboreda and Wägele, 1998); q, *Cassidinella incisa* Whitelegge, 1901.

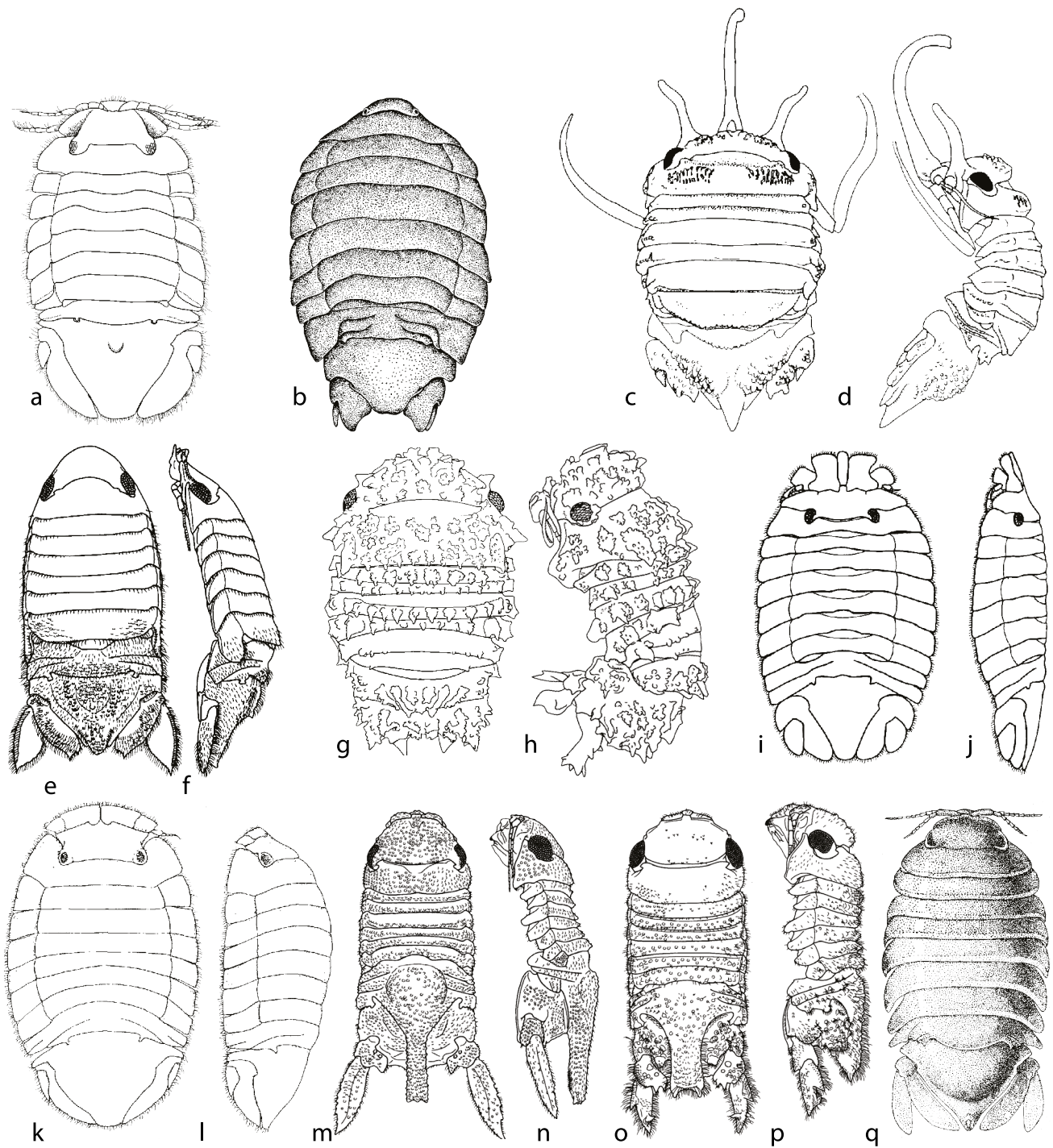


Figure 9.10. Sphaeromatidae. Dorsal and lateral views. a, *Cassidinidea ovalis* (Say, 1818); b, *Cassidinopsis emarginata* (Guérin-Méneville, 1843); c, d, *Ceratocephalus grayanus* Woodward, 1877; e, f, *Cerceis pustulosa* Harrison and Holdich, 1982; g, h, *Cercosphaera wirritin* Bruce, 1994; i, j, *Chitonopsis spatulifrons* Whitelegge, 1902; k, l, *Chitonosphaera lata* (Nishimura, 1968); m, n, *Cilicaea calcarifera* Harrison and Holdich, 1984; o, p, *Cilicaeopsis granulata* (Whitelegge, 1902); q, *Cliamenella fraudatrix* (Kussakin, 1962).

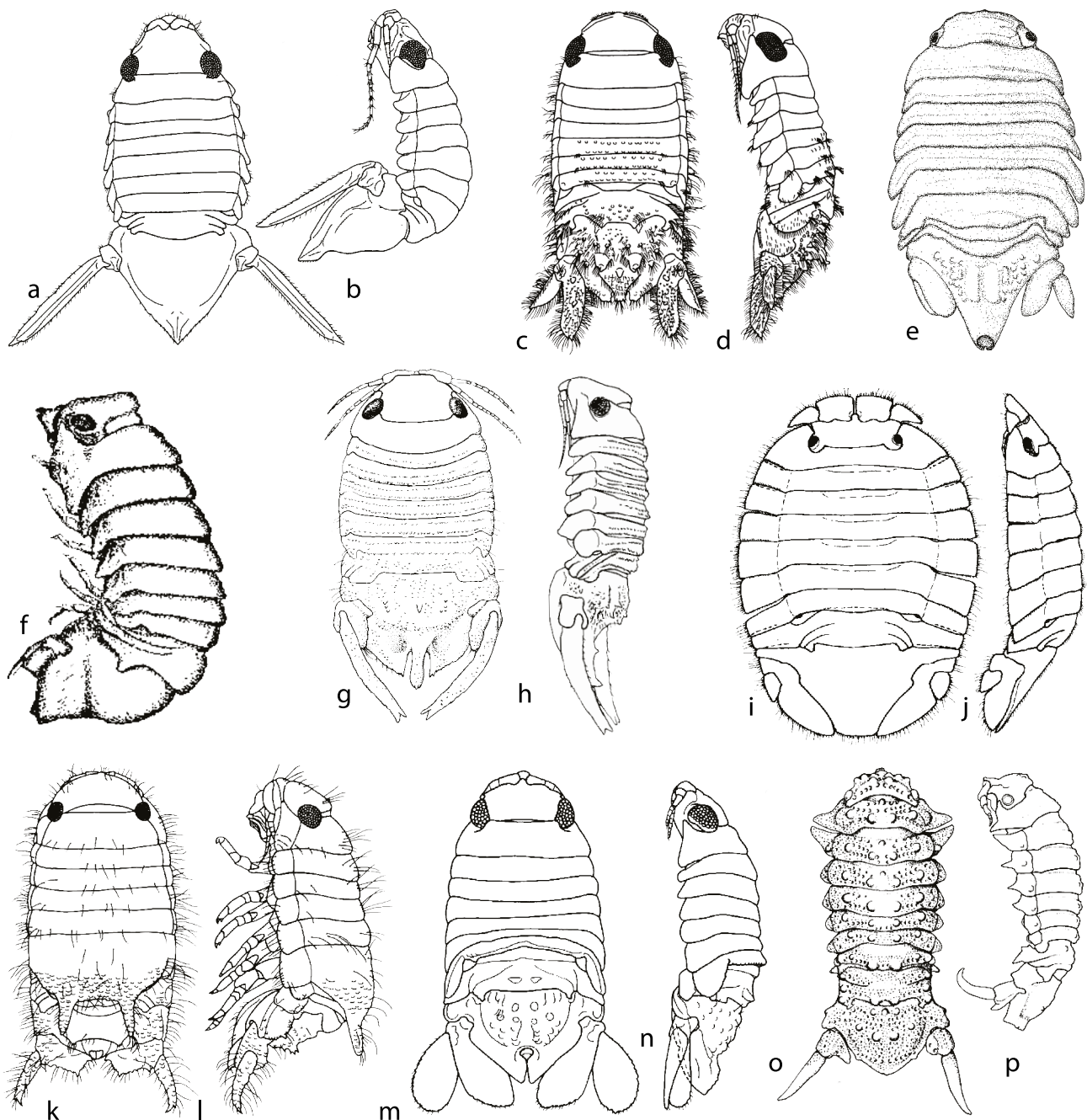


Figure 9.11. Sphaeromatidae. Dorsal and lateral views. a, b, *Cymodetta gracilipes* Holdich and Harrison, 1983; c, d, *Cymodoce bipapilla* Harrison and Holdich, 1984; e, *Cymodocella tubicauda* Pfeffer, 1887; f, *Cymodopsis latifrons* Baker, 1926; g, h, *Discerceis kensleyi* Schotte, 2005; i, j, *Discidina banawarra* Bruce, 1994; k, l, *Dynamene curalii* Holdich and Harrison, 1980; m, n, *Dynamenella trachydermata* Harrison and Holdich, 1982; o, p, *Dynameniscus carinatus* (Richardson, 1900).

article 2 with anterior and posterior acute processes; article 3 as long as or shorter than article 2; flagellum shorter than peduncle. Epistome acute anteriorly. Mandibular molar process surface smooth, surrounded with basal fine setae. Maxillipedal palp articles 2–4 mesial margins lobate, article 2 not expanded. Penial processes in contact basally, short (not extending beyond pleopod

peduncles). Pleopods 1, 2 exopods lateral margins serrate, especially distally. Pleopod 2 appendix masculina inserted near midpoint of mesial margin, about as long as endopod. Pleopod 4 exopod without transverse suture, with thickened transverse ridges; endopod with thickened transverse ridges. Pleopod 5 exopod with incomplete transverse suture, with thickened

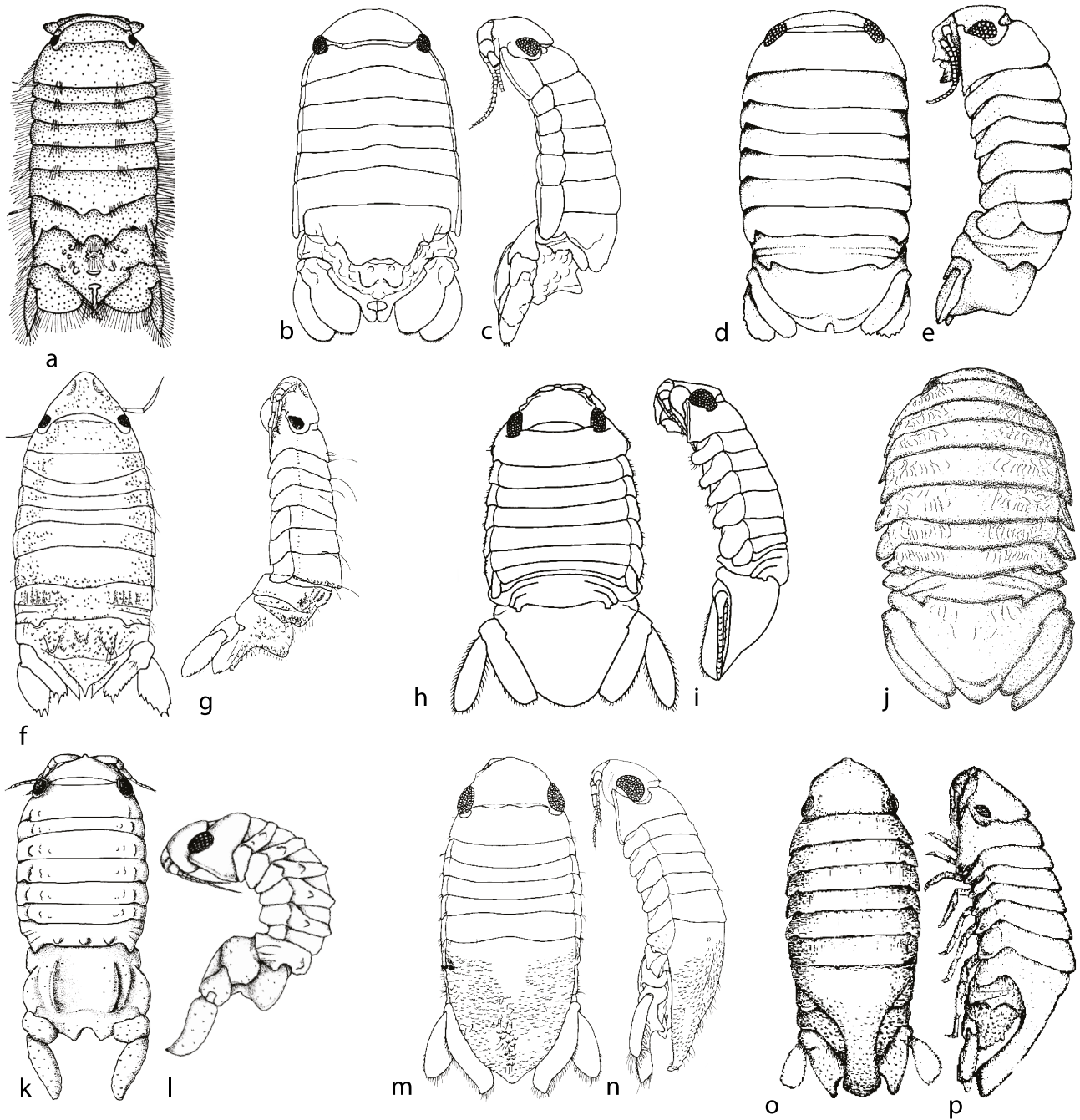


Figure 9.12. Sphaeromatidae. Dorsal and lateral views. a, *Dynamenoides vulcanata* Hurley and Jansen, 1977; b, c, *Dynamenopsis obtusa* Baker, 1908; d, e, *Eterocerceis somala* Messana, 1990; f, g, *Exocerceis nasuta* (Whitelegge, 1902); h, i, *Exosphaeroides fluvialis* Holdich and Harrison, 1983; j, *Exosphaeroma gigas* (Leach 1818); k, l, *Geocerceis barbarae* Menzies and Glynn, 1968; m, n, *Haswellia carnea* (Haswell, 1881); o, p, *Haswellia intermedia* Baker, 1926.

transverse ridges, with 2 discrete scale patches; endopod with thickened transverse ridges. Uropodal endopod broadly rounded distally; exopod with 2 or 3 distal teeth.

Intertidal, subtidal. Tropical East Africa (Kenya) and India (Dutta et al., 2019). 1 species (Müller, 1995).

#### **Agostodina Bruce, 1994**

*Diagnosis.* Body flat, coxae without visible sutures, directed laterally, dorsal surfaces smooth, coxal and other margins with fringe of short setae, unable to conglobate; not or weakly sexually dimorphic. Rostrum truncate, separating antennular

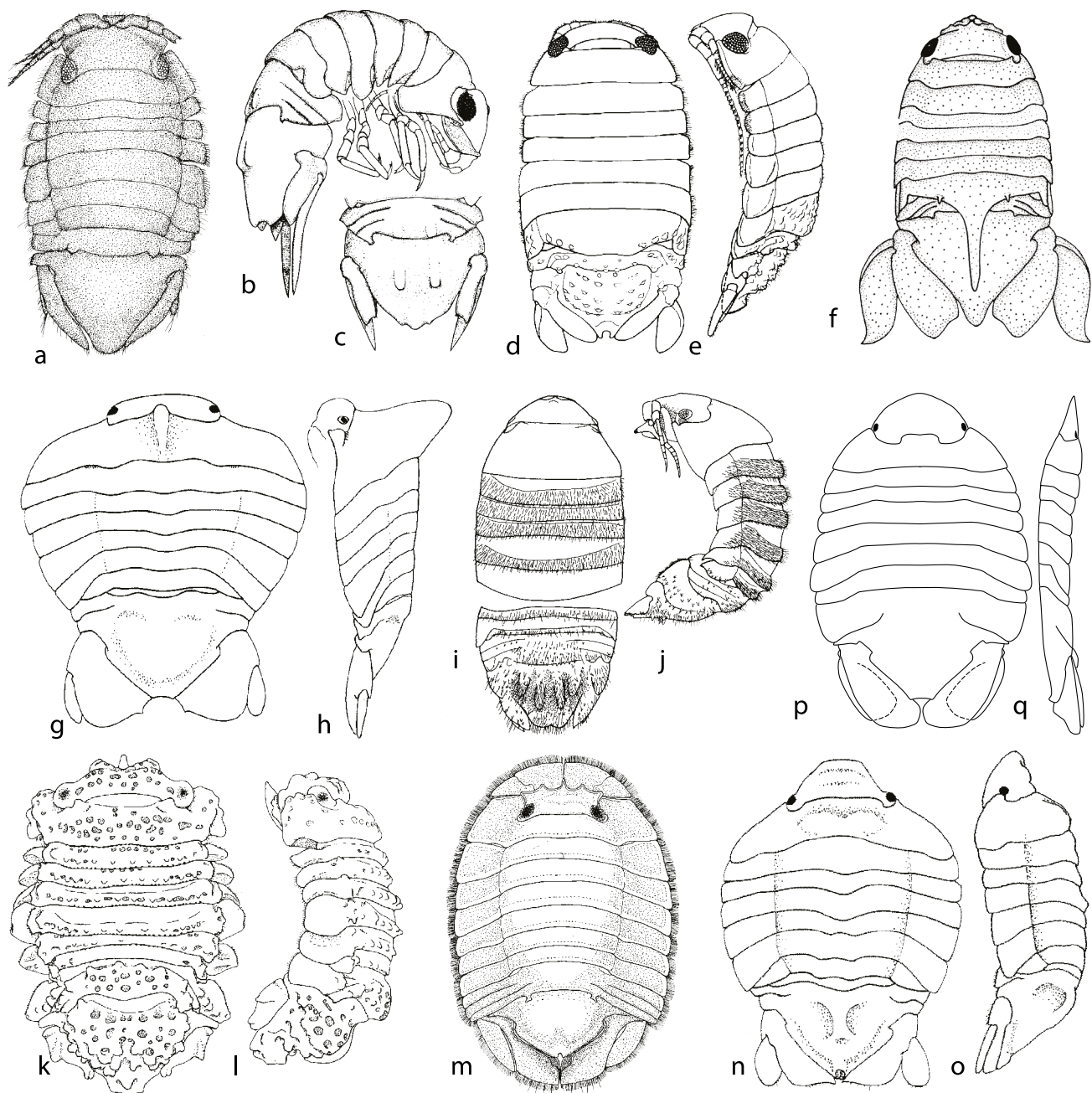


Figure 9.13. Sphaeromatidae. Dorsal and lateral views. a, *Heterodina qeshmensis* Khalaji-Pirbalouty and Bruce, 2014; b, c, *Heteruropus faxoni* (Richardson, 1905); d, e, *Ischyromene polytyla* Harrison and Holdich, 1982; f, *Isocladus armatus* (H. Milne Edwards, 1840); g, h, *Juletta miranda* Bruce, 1993; i, j, *Koremasphaera colonus* Bruce, 2003; k, l, *Kranosphaera haptomela* Bruce, 1992; m, *Leptosphaeroma gottschei* Hilgendorf, 1885; n, o, *Margueritta sylviae* Bruce, 1993; p, q, *Maricoccus brucei* Poore, 1994.

bases (with epistome). Eyes more dorsal than lateral. Coxal plates truncate. Pleonite 1 fused medially to pleonite 2, narrower than remainder of pleon, not extending to pleon lateral margins; pleon with 1 partial suture visible on fused part. Pleotelson flat, narrower anteriorly than pleon; posterior margin simple, arcuate, without exit channel; ventrolateral margins forming

ridge. Antennular peduncle articles 1 and 2 flat, expanded as anterior and/or anterolateral lobes, with first articles separated by prominent epistome; article 1 produced anteriorly; article 2 with distinct anterodistal lobe; article 3 much shorter than article 2; flagellum shorter than peduncle. Epistome extended prominently anteriorly and elongate, wide anteriorly. Mandibular

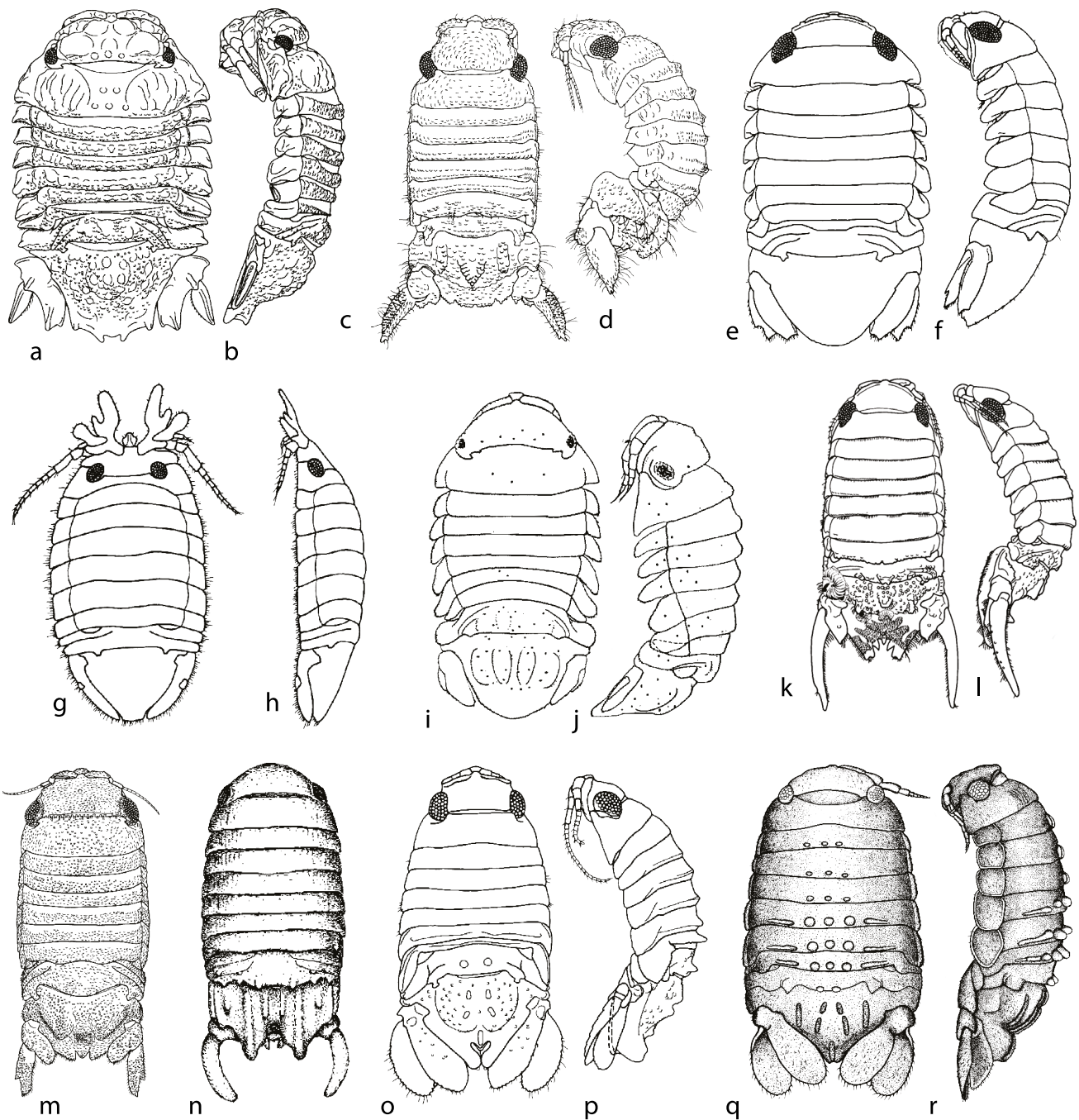


Figure 9.14. Sphaeromatidae. Dorsal and lateral views. a, b, *Moruloidea lacertosa* Baker, 1908; c, d, *Neonaesa rugosa* Harrison and Holdich, 1982; e, f, *Neosphaeroma australe* (Whitelegge, 1902); g, h, *Paracassidina pectinata* Baker, 1911; i, j, *Paracassidopsis sculpta* Nobili, 1906; k, l, *Paracerceis sculpta* (Holmes, 1904); m, n, *Paracilicæa pubescens* (H. Milne Edwards, 1840); o, p, *Paradella diana* (Menzies, 1962); q, r, *Paraimene tuberculata* Javed and Ahmed, 1988.

molar process surface smooth with palisade of spines on proximal margin. Maxillipedal palp articles 2–4 mesial margins lobate, article 2 expanded. Pereopod with elongate propodus. Penial processes set apart basally, short (not extending beyond pleopod peduncles), straight. Pleopod 2 appendix masculina

spatulate terminally. Pleopod 4 exopod without transverse suture, without thickened transverse ridges; endopod without thickened transverse ridges. Pleopod 5 exopod with incomplete transverse suture, without thickened transverse ridges, with 3 discrete scale patches; endopod without thickened transverse

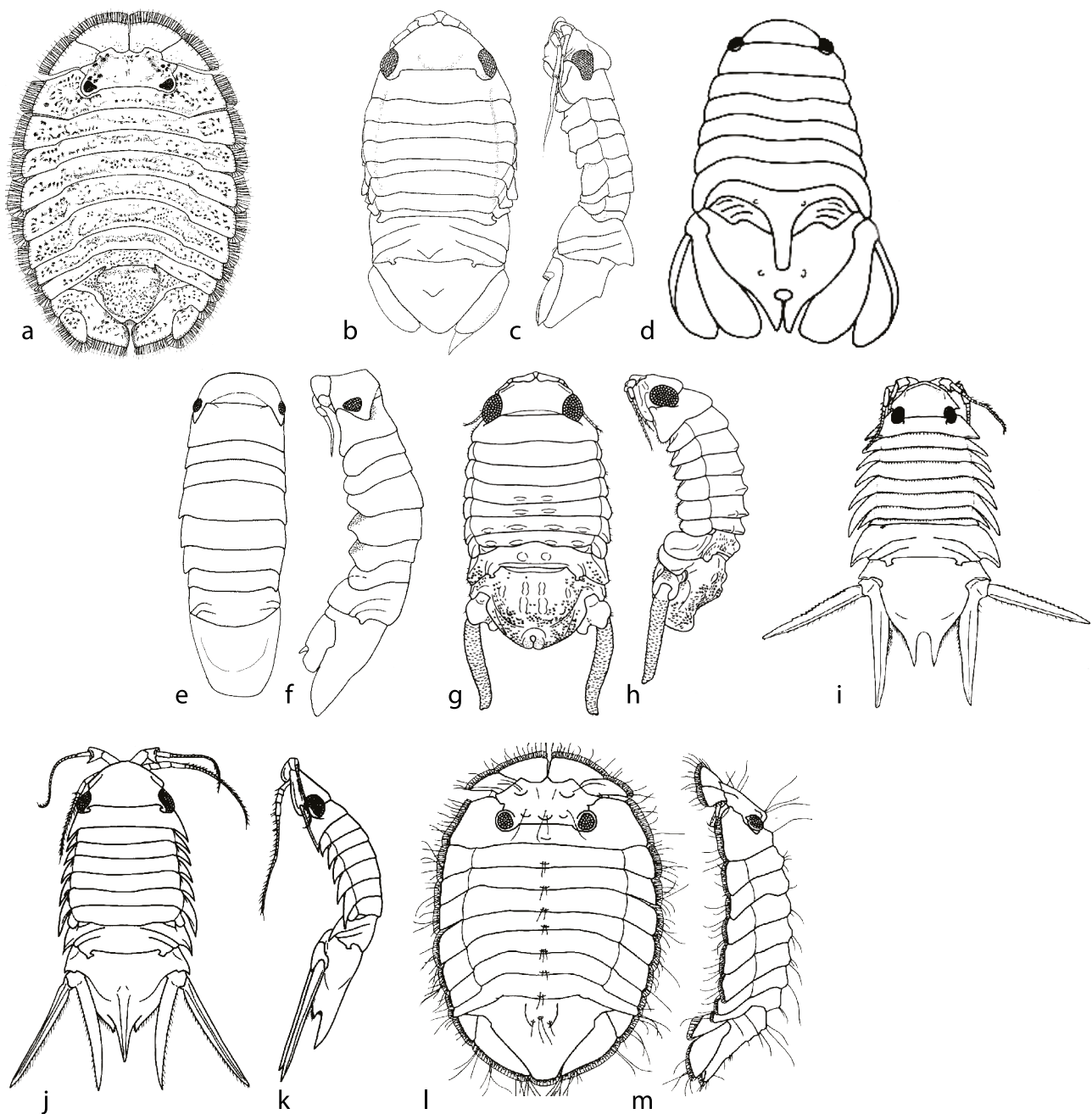


Figure 9.15. Sphaeromatidae. Dorsal and lateral views. a, *Paraleptosphaeroma glynni* Buss and Iverson, 1981; b, c, *Parasphaeroma prominens* Stebbing, 1902; d, *Parisocladus perforatus* (H. Milne Edwards, 1840); e, f, *Pedinura flindersia* Bruce, 2003; g, h, *Pistorius bidens* Harrison and Holdich, 1982; i, *Platycerceis hyalina* Baker, 1926; j, k, *Platynympha longicaudata* (Baker, 1908); l, m, *Platysphaera membranata* Holdich and Harrison, 1981.

ridges. Uropodal rami forming part of continuous body outline; uropodal endopod rounded broadly distally; exopod inserted near midpoint of lateral margin of peduncle-endopod, reduced, mobile, rounded broadly distally.

Shelf. Central Indo-Pacific (Australian NW shelf). 2 species (Bruce, 1994c).

#### ***Amphoroidea* H. Milne Edwards, 1840**

*Diagnosis.* Body vaulted weakly, dorsal surfaces smooth, unable to conglobate; not or weakly sexually dimorphic. Rostrum acute, not separating antennular bases. Coxal plates truncate. Pleonite 1 narrower than remainder of pleon, not extending to pleon lateral margins. Pleotelson flat; posterior

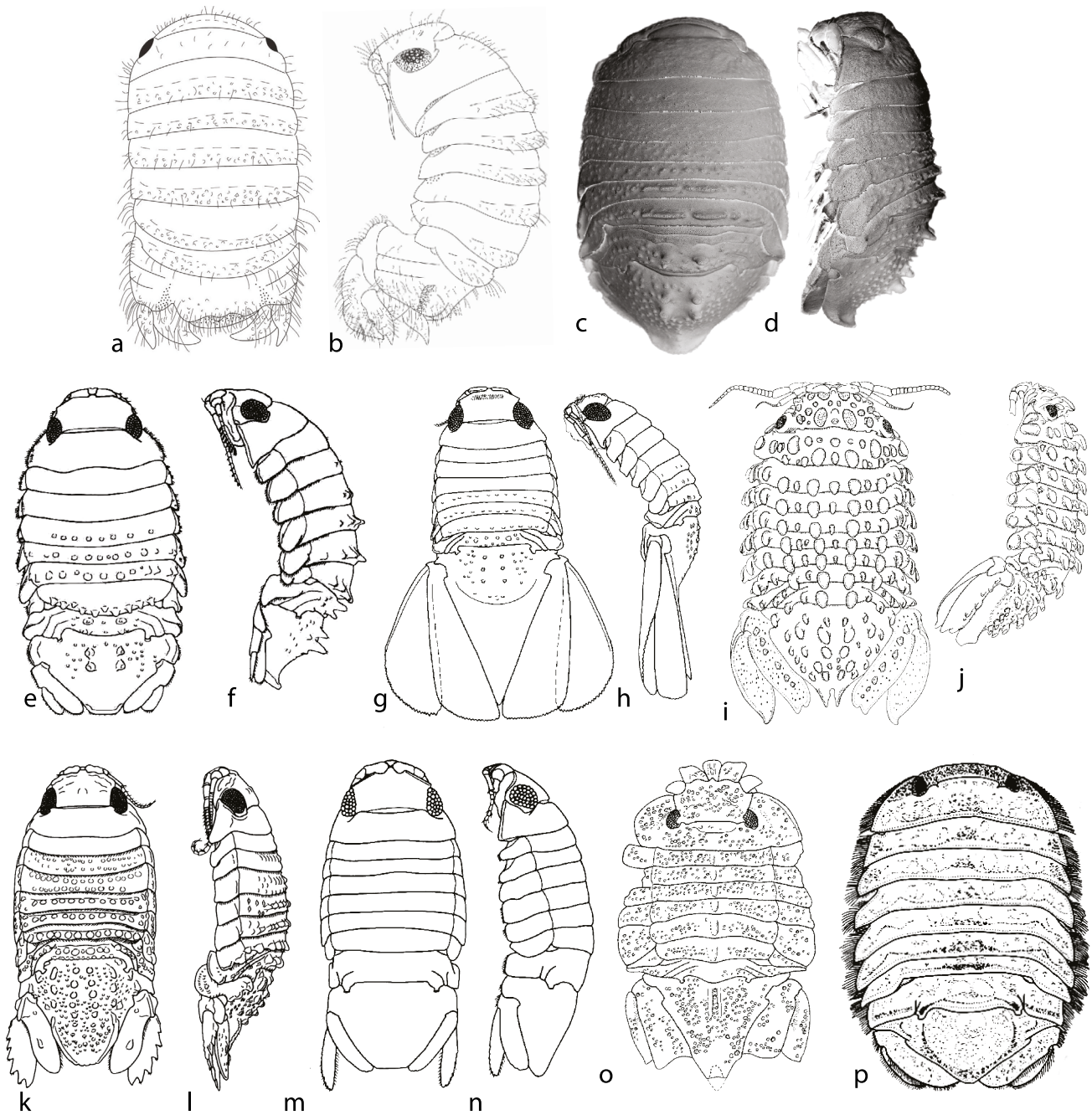


Figure 9.16. Sphaeromatidae. Dorsal and lateral views. a, b, *Pooredoce garyi* Bruce, 2009; c–f, *Pseudosphaeroma* sp.; g, h, *Ptyosphaera alata* (Baker, 1926); i, j, *Sphaeramene flausinae* Loyola e Silva, 1966; k, l, *Sphaeroma walkeri* Stebbing, 1905; m, n, *Sphaeromopsis amathitis* Holdich and Jones, 1973; o, *Stathmos coronatus* Barnard, 1940; p, *Striella balani* Glynn, 1968.

margin with shallow median indentation, with incomplete ventral groove or channel or with small triangular (widest posteriorly) notch; ventrolateral margins simple. Antennular peduncle article 1 expanded anteriorly as part of anterior margin, with first articles meeting medially; article 3 as long as or shorter than article 2; flagellum shorter than peduncle. Epistome wide anteriorly. Mandibular molar process surface

with transverse ridges or smooth, surrounded with basal fine setae. Maxillipedal palp articles 2–4 mesial margins not lobate, article 2 not expanded. Pereopod 2 more slender and longer than pereopods 1 and 3. Penial processes in contact basally, short (not extending beyond pleopod peduncles), straight. Pleopod 3 exopod without transverse suture. Pleopod 4 exopod without transverse suture, with thickened transverse ridges;

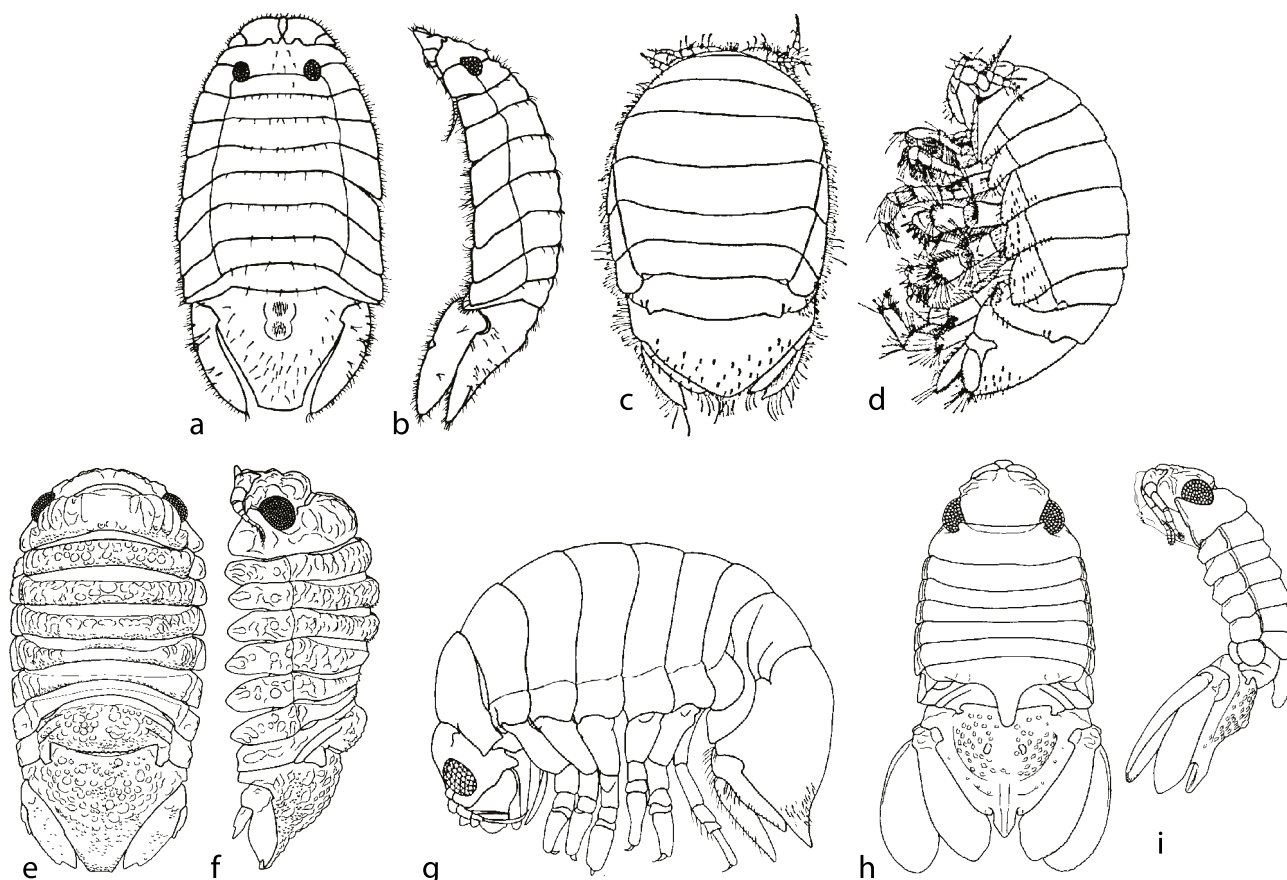


Figure 9.17. Sphaeromatidae. Dorsal and lateral views. a, b, *Syncassidina aestuaria* Baker, 1928; c, d, *Tholozodium ocellatum* Eleftheriou, Holdich and Harrison, 1980; e, f, *Waiteolana gibbera* Harrison, 1984; g, *Xynosphaera colemani* Bruce, 1994; h, i, *Zuzara curtispina* Harrison and Holdich, 1984.

endopod with thickened transverse ridges. Pleopod 5 exopod without transverse suture, with thickened transverse ridges, with 3 discrete scale patches; endopod with thickened transverse ridges. Uropodal endopod truncate distally; exopod acute distally.

Intertidal, subtidal. Temperate South America, Temperate Australasia (Australia, New Zealand, Chile). 7 species (Baker, 1911: figure of *Amphoroidea elegans* Baker, 1911; Hale, 1929: key to 2 Australian species; Menzies, 1962: rediagnosis, figure of type species; Hurley and Jansen, 1977: rediagnosis, key to 3 New Zealand species).

#### ***Amphoroidella* Baker, 1908**

**Diagnosis.** Body weakly vaulted, dorsal surfaces smooth, unable to conglobate; not or weakly sexually dimorphic. Rostrum not separating antennular bases. Eyes more dorsal than lateral. Coxal plates truncate. Pleon with 1 partial suture visible on fused part. Pleotelson flat; posterior margin simple, arcuate, without exit channel. Antennular peduncle articles 1 and 2 flat, expanded as anterior and/or anterolateral lobes, with first articles meeting medially; article 3 as long as or shorter

than article 2. Epistome wide anteriorly. Maxillipedal palp articles 2–4 mesial margins lobate. Pleopod 2 appendix masculina inserted basally or sub-basally. Pleopod 3 exopod without transverse suture. Pleopod 4 exopod without transverse suture, with thickened transverse ridges; endopod with thickened transverse ridges. Pleopod 5 exopod with transverse suture, with thickened transverse ridges, with 2 discrete scale patches; endopod with thickened transverse ridges. Uropodal rami forming part of continuous body outline; endopod distally acute; exopod embedded and flush with margin of endopod.

Intertidal, subtidal. Temperate Australia. 1 species (Baker, 1908; Harrison, 1984b: rediagnosis).

#### ***Apemosphaera* Bruce, 1994**

**Diagnosis.** Body flat, coxae without visible sutures, directed laterally, dorsal surfaces smooth, unable to conglobate. Head with rostrum (small) visible dorsally, not separating antennular bases. Eyes more dorsal than lateral. Coxal plates truncate, coxal plate 5 overlapping coxal plates 4 and 6 when folded. Pleonite 1 fused medially to pleonite 2, narrower than remainder of pleon, not extending to pleon lateral margins; sutures (except

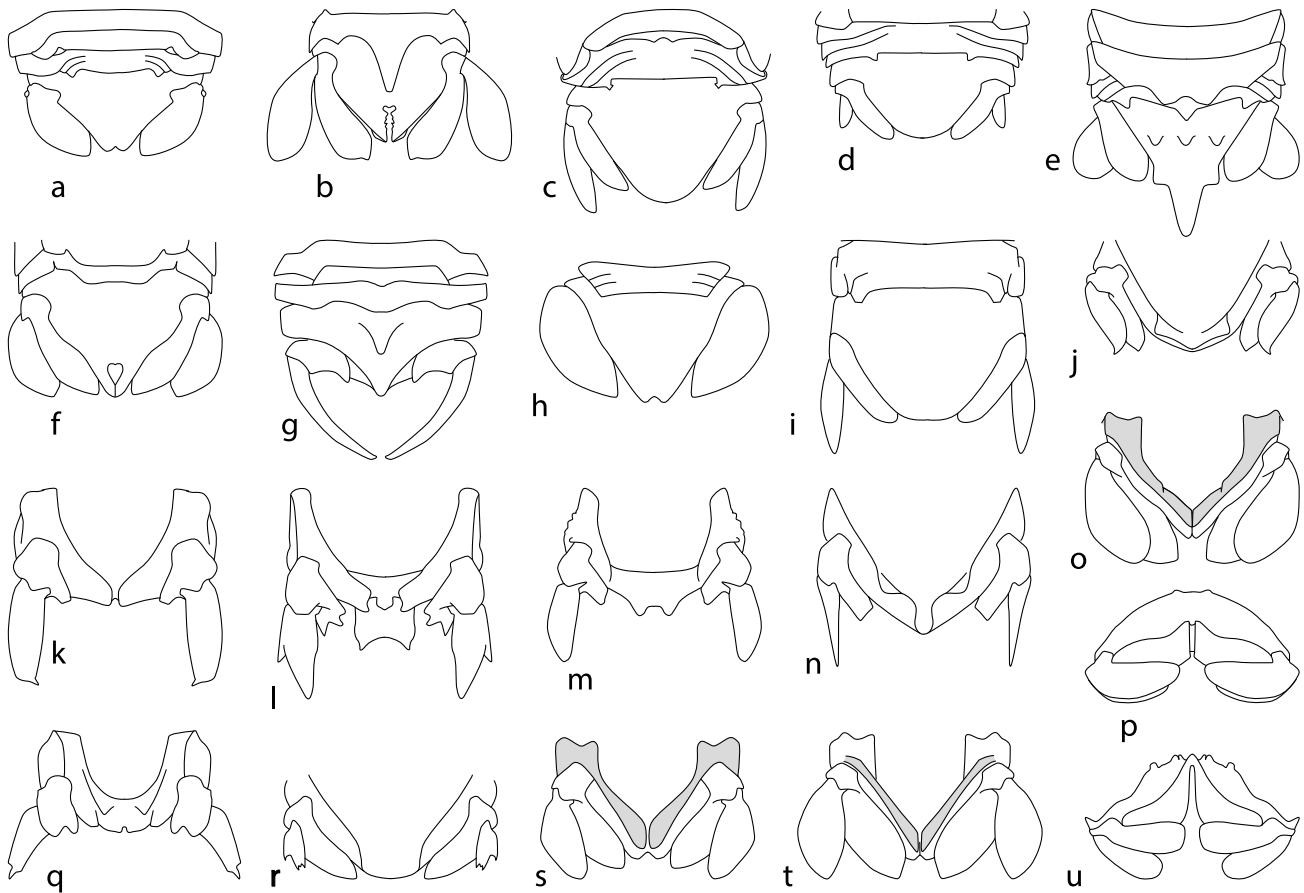


Figure 9.18. Sphaeromatidae. Pleon, pleotelson, uropods (dorsal views). a, *Artopoles* (with pereonites 6, 7); b, *Dynoides*; c, *Exosphaeroma* (with pereonite 7, pleonite 1 visible); d, *Gnorimosphaeroma*; e, *Holotelson* (with pereonites 6, 7); f, *Ischyromene*; g, *Naesicopea* (with pereonite 7); h, *Scutuloidea*; i, *Sphaeromopsis*. Pleotelson, uropods (ventral views). j, *Benthosphaera*; k, *Cassidias*; l, *Cilicaea*; m, *Cilicaeopsis*; n, *Cymodopsis*; o, *Dynamenella* (plus posterior view); q, *Neonaesa*; r, *Neosphaeroma*; s, t, *Paradella* (2 spp.). Pleotelson, uropods (posterior view). u, *Paraimene*.

first) running to posterior or posterolateral margin. Pleotelson flat, narrower anteriorly than pleon; posterior margin simple, arcuate, without exit channel; ventrolateral margins simple. Antennular peduncle articles articles 1, 2 robust, article 3 slender, longer than article 2; flagellum about as long as peduncle. Epistome extended prominently anteriorly and elongate, wide anteriorly. Mandibular molar process surface with transverse ridges. Maxillipedal palp articles 2–4 mesial margins lobate, article 2 not expanded. Penial processes in contact basally, short (not extending beyond pleopod peduncles). Pleopod 4 exopod with transverse suture, without thickened transverse ridges; endopod with thickened transverse ridges (4 very weak). Pleopod 5 exopod with transverse suture, without thickened transverse ridges, with 2 discrete scale patches; endopod with thickened transverse ridges. Uropodal endopod acute distally; exopod reduced, mobile, broadly rounded distally.

Estuarine. Central Indo-Pacific (NT, Australia). 1 species (Bruce, 1994c).

#### ***Artopoles* Barnard, 1920**

**Diagnosis.** Body flat, coxae without visible sutures, directed laterally, dorsal surfaces smooth, coxal and other margins with fringe of short setae, unable to conglobate. Head with rostrum visible dorsally or without rostrum, not separating antennular bases. Eyes more dorsal than lateral. Pereonite 7 narrower than pereonite 6, coxa 6 in contact with pleon. Coxal plates truncate. Pleonite 1 fused medially to pleonite 2, narrower than remainder of pleon, not extending to pleon lateral margins. Pleotelson flat; posterior margin narrowed posteriorly, without exit channel or with small triangular (widest posteriorly) notch; ventrolateral margins simple. Antennular peduncle articles 1 and 2 robust, flattened strongly (compressed dorsoventrally but not part of anterior margin), article 3 slender; article 1 with lower distal angle produced; article 2 with distinct anterodistal lobe; article 3 as long as or shorter than article 2; flagellum shorter than peduncle. Epistome projecting anteriorly, not conspicuous dorsally, narrow anteriorly. Mandibular molar

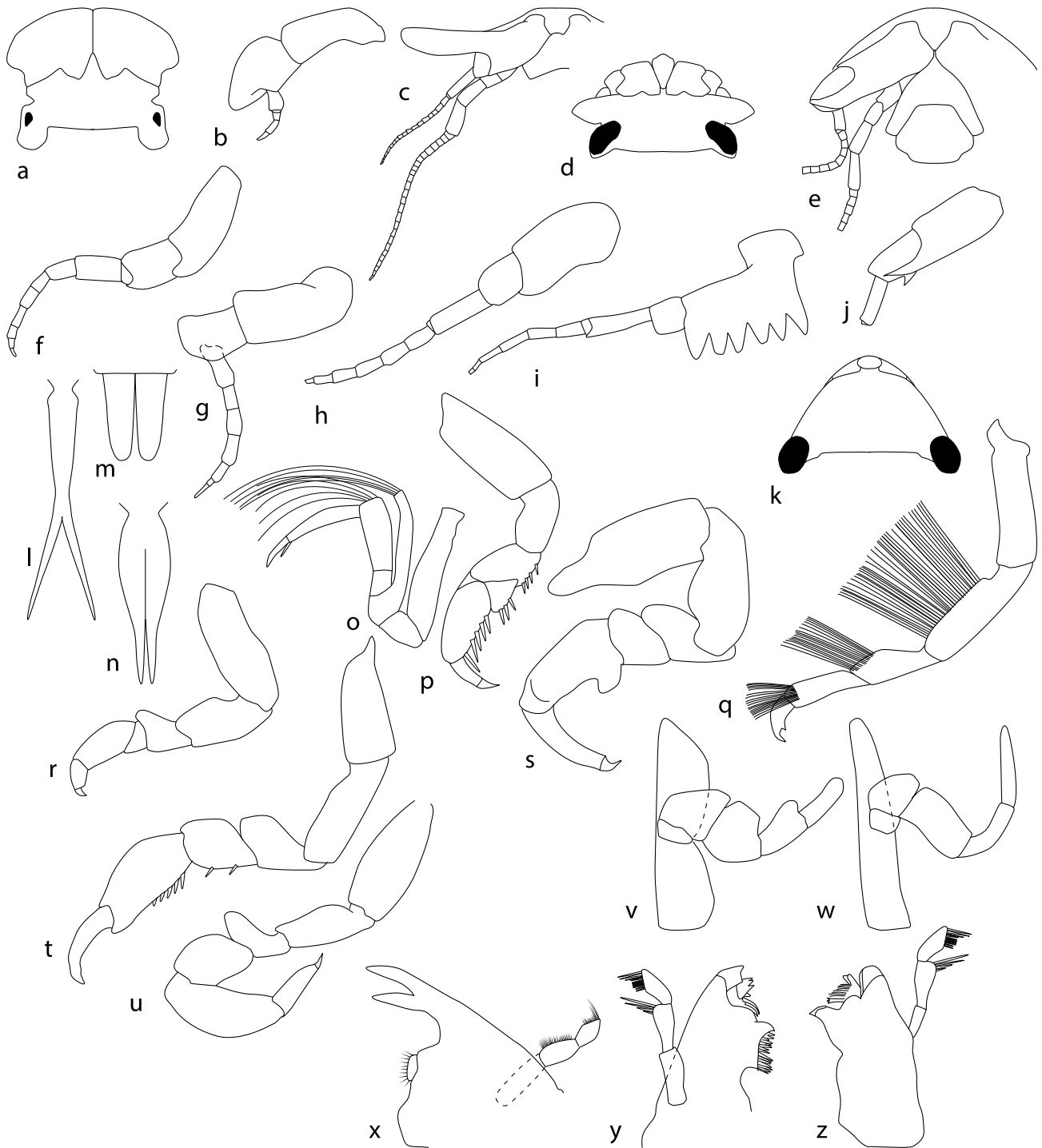


Figure 9.19. Sphaeromatidae. Antennula. a, *Amphoroidea* (articles 1, with head, dorsal view); b, *Austrasphaera*; c, *Calcipila* (male, with antenna, ventral view); d, *Cassidina* (with epistome, head, dorsal view); e, *Cerceis* (with antenna, rostrum, epistome, ventral view); f, *Cymodocella*; g, *Diclidocella*; h, *Exocerceis*; i, *Oxinasphaera*; j, *Platynympha*; k, *Pseudocerceis* (with head, rostrum, epistome, dorsal view). Penial processes. l, *Cliamenella*; m, *Ischyromene*; n, *Sphaeromopsis*. Pereopod 1. o, *Paracassidina*; p, *Parasphaeroma*; q, *Sphaeroma*; r, *Sphaeromopsis*. Pereopod 2. s, *Julietta*; t, *Parasphaeroma*. Pereopod 5. u, *Kranosphaera*. Maxilliped (setae not shown). v, *Lekanesphaera*; w, *Sphaeroma*. Mandible. x, *Hemisphaeroma*; y, *Pooredoce*; z, *Waiteolana*.

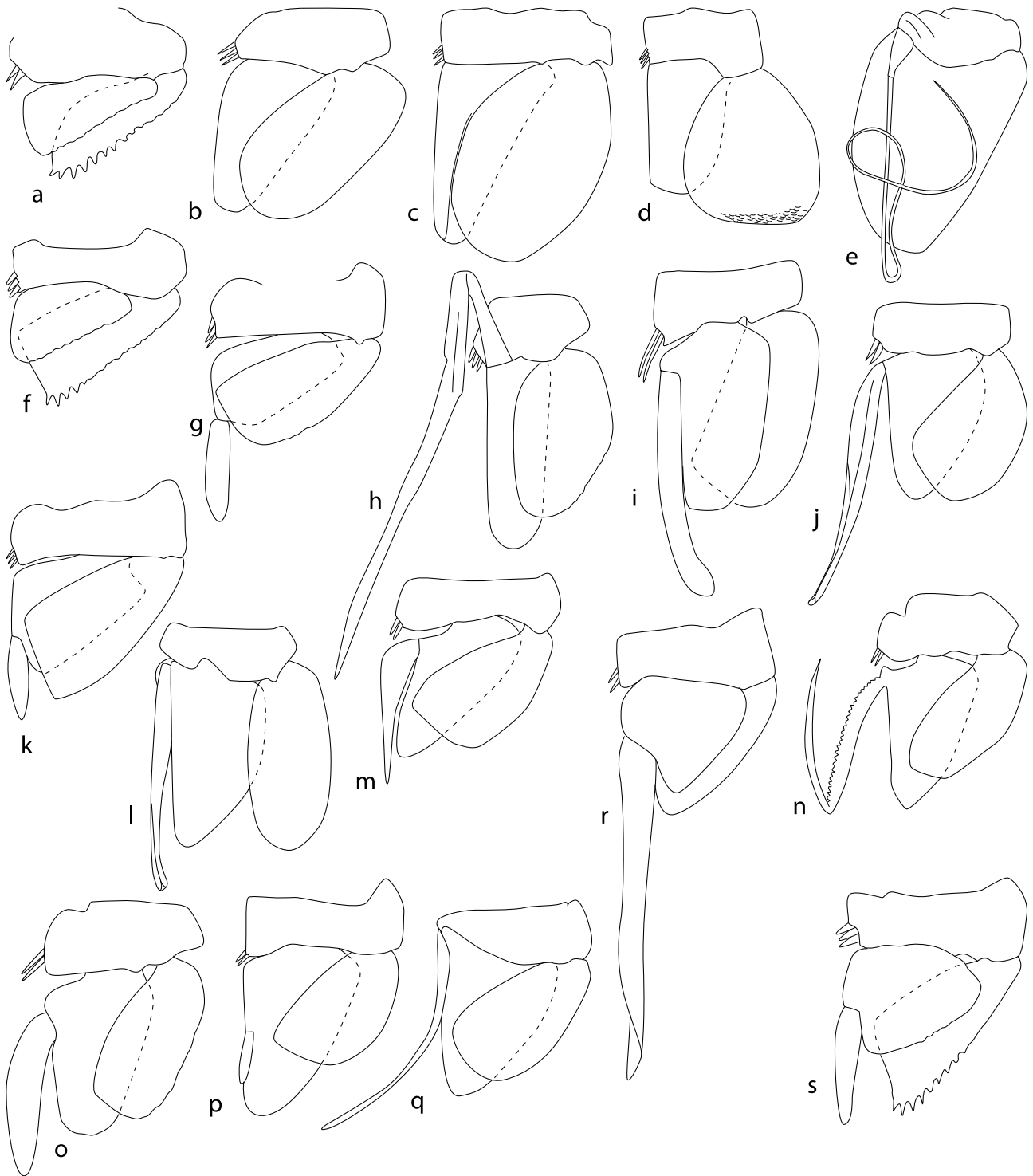


Figure 9.20. Sphaeromatidae. Pleopod 1 (marginal setae not shown). a, *Afrocerceis*; b, *Gnorimosphaeroma*; c, *Ischyromene*; d, *Maricoccus*; e, *Paracassidinopsis*; f, *Pseudocerceis*; Male pleopod 2 with appendix masculina (marginal setae not shown) g, *Cassidias*; h, *Cassidinidea*; i, *Chitonosphaera*; j, *Cliamenella*; k, *Discerceis*; l, *Discidina*; m, *Dynamenella*; n, *Dynoides*; o, *Heterodina*; p, *Neonaesa*; q, *Paradella*; r, *Platycerceis*; s, *Pseudocerceis*.

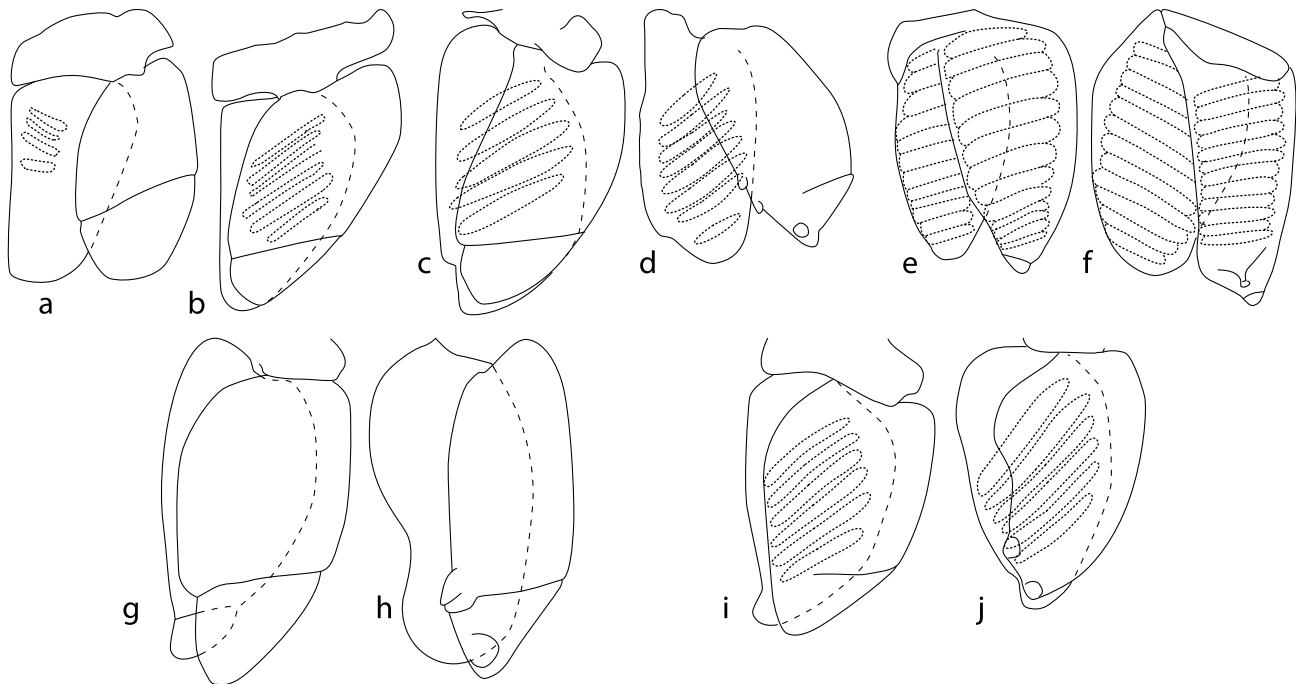


Figure 9.21. Sphaeromatidae. Pleopod 3 (marginal setae not shown). a, *Gnorimosphaeroma*; b, *Neosphaeroma*. Pleopods 4, 5 (marginal setae not shown). c, d, *Benthosphaera*; e, f, *Dynamene*; g, h, *Exosphaeroides*; i, j, *Exosphaeroma*.

process surface smooth, surrounded with basal fine setae. Maxillipedal palp articles 2–4 mesial margins lobate, article 2 expanded. Pereopod 1 lower margin swollen. Penial processes close-set basally. Pleopod 3 exopod without transverse suture. Pleopod 4 exopod without transverse suture, without thickened transverse ridges; endopod with thickened transverse ridges, or with obsolete transverse ridges. Pleopod 5 exopod with transverse suture, with thickened transverse ridges, with 2 discrete scale patches; endopod with thickened transverse ridges, or with obsolete transverse ridges. Uropodal endopod broadly rounded or acute distally; exopod minute, immobile.

Shelf. Temperate Southern Africa. 2 species (Bruce, 2001).

#### ***Austrasphaera* Bruce, 2003**

**Diagnosis.** Body vaulted, narrow, 3–4 times as long as wide, dorsal surfaces smooth, unable to conglobate; not or weakly sexually dimorphic. Rostrum not separating antennular bases; head with anterior margin produced, overriding antennules, such that antennules are directed posteroventrally. Coxal plates tapering, rounded or coxal plates truncate. Pleon with all pleonites fused to pleotelson; sutures absent. Pleotelson posterior margin simple, arcuate, without exit channel or with incomplete ventral groove or channel; ventrolateral margins forming ridge. Antennular peduncle articles 1 and 2 robust, article 3 slender, articles 1 and 2 flattened strongly (compressed dorsoventrally but not part of anterior margin); article 2 about as long as article 1, extended distally so that article 3 articulates on posterior margin; with article 3 offset posteriorly, article 3 as long as or shorter than article 2; flagellum shorter than

peduncle. Epistome narrow anteriorly. Mandibular incisor unicuspid; molar process surface smooth, surrounded with basal fine setae. Maxillipedal palp articles 2–4 mesial margins not lobate, article 2 not expanded. Pereopod 1 with elongate propodus. Penial processes set apart basally, short (not extending beyond pleopod peduncles). Pleopod 1 rami operculate, mesial margin of endopod and exopod indurate. Pleopod 2 appendix masculina massive, spatulate. Pleopod 3 exopod without transverse suture. Pleopod 4 exopod without transverse suture, with thickened transverse ridges; endopod with thickened transverse ridges. Pleopod 5 exopod with transverse suture, with thickened transverse ridges, with 3 discrete scale patches; endopod with thickened transverse ridges. Uropodal endopod distally broadly rounded; exopod reduced, mobile, broadly rounded distally.

Subtidal (2–23 m). Temperate Australia. 2 species (Bruce, 2003).

#### ***Beatricesphaera* Wetzer and Bruce, 1999**

**Diagnosis.** Body vaulted weakly, dorsal surfaces smooth, with sparse setae, coxal and other margins with membrana cingula (membranous setose fringe), unable to conglobate; not or weakly sexually dimorphic. Head without rostrum, antennular bases not separated. Eyes more dorsal than lateral. Pereonite 7 narrower than pereonite 6, coxa not reaching as ventrally as coxa 6. Coxal plates truncate. Pleon comprising a single unit; sutures absent. Pleotelson with subapical circular foramen connected to posterior by narrow slit (female entire); ventrolateral margins simple. Antennular peduncle articles 1

and 2 flat, expanded as anterior and/or anterolateral lobes, with first articles meeting medially; article 3 as long as or shorter than article 2; flagellum shorter than peduncle, shorter than peduncular article 3. Epistome wide anteriorly. Mandibular incisor unicuspid; molar process surface with transverse ridges. Maxillipedal palp articles 2–4 mesial margins not lobate, article 2 not expanded. Pereopod 2 more slender and longer than pereopods 1 and 3. Penial processes in contact basally, short (not extending beyond pleopod peduncles). Pleopod 2 appendix masculina tapering to point. Pleopod 3 exopod without transverse suture. Pleopod 4 exopod with incomplete transverse suture, without thickened transverse ridges; endopod without thickened transverse ridges. Pleopod 5 exopod without transverse suture, with thickened transverse ridges (weak and irregular), with 2 discrete scale patches; endopod without thickened transverse ridges. Uropodal rami forming part of continuous body outline; uropodal endopod broadly rounded distally; exopod reduced, mobile, broadly rounded distally.

Subtidal. Tropical Atlantic (Caribbean). 1 species (Wetzer and Bruce, 1999).

#### ***Botryias* Richardson, 1910**

*Diagnosis.* Body vaulted weakly, dorsal surfaces ornamented with small mushroom-headed tubercles each topped with a cluster of stemmed spheres, unable to conglobate. Head without rostrum. Eyes absent. Pereonite 7 narrower than pereonite 6, coxa not reaching as ventrally as coxa 6, without dorsal bosses, processes or marginal extensions. Coxal plates truncate, coxal plates 2–7 not overlapping. Pleonite 1 as wide as remainder of pleon, extending to pleon lateral margins; pleon with 1 partial suture visible on fused part; dorsal surface tuberculate. Pleotelson tuberculate; posterior margin simple, arcuate, without exit channel; ventrolateral margins simple. Antennular peduncle articles 1 and 2 robust, article 3 slender; longer than article 2; flagellum shorter than peduncle. Epistome extended prominently anteriorly and bifid, wide anteriorly. Mandibular incisor unicuspid. Penial processes in contact basally, short (not extending beyond pleopod peduncles), straight. Uropodal endopod broadly rounded distally; exopod similar in length to endopod, broadly rounded distally.

Slope (330 m). Central Indo-Pacific (Philippines). 1 species (Richardson, 1910; Wetzer et al., 2018).

#### ***Bregmotypta* Bruce, 1994**

*Diagnosis.* Body dorsal surfaces with nodular ornamentation, unable to conglobate. Head with anterior margin produced into a substantial rounded cone about one third body length. Pereonite 6 with bosses. Pereonite 7 with dorsal bosses. Pleonite 1 as wide as remainder of pleon, extending to pleon lateral margins. Pleotelson with paired submedian bosses; posterior margin with ventral thickened rim, with simple rectangular or rounded notch; ventrolateral margins simple. Antennular peduncle articles 1 and 2 robust, article 3 slender; longer than article 2; flagellum shorter than peduncle. Epistome narrow anteriorly. Mandibular incisor unicuspid;

molar process surface smooth, surrounded with basal fine setae. Maxillipedal palp articles 2–4 mesial margins extended, forming finger-like lobes, article 2 not expanded. Penial processes in contact basally, long (extending to pleopod rami). Pleopod 2 appendix masculina swollen basally (flask-shaped). Pleopod 4 exopod with transverse suture, without thickened transverse ridges; endopod with thickened transverse ridges. Pleopod 5 exopod with transverse suture, without thickened transverse ridges, with 3 discrete scale patches; endopod with thickened transverse ridges. Uropod attached anterolaterally to pleotelson, cylindrical (not especially flattened); peduncle-endopod round in section, truncate distally; exopod cylindrical, reduced, mobile, truncate distally.

Subtidal (23 m). Temperate SE Australia. 1 species (Bruce, 1994a).

#### ***Benthosphaera* Bruce, 1994**

*Diagnosis.* Body dorsal surfaces smooth, without setae or densely setose, able to conglobate; not or weakly sexually dimorphic. Pereonite 7 narrower than pereonite 6, coxa not reaching as ventrally as coxa 6. Pleonite 1 narrower than remainder of pleon, not extending to pleon lateral margins. Pleotelson posterior margin simple, arcuate, without exit channel; ventrolateral margins simple. Antennular peduncle articles 1 and 2 robust, article 3 slender; article 3 longer than article 2; flagellum shorter than peduncle. Epistome projecting anteriorly, not conspicuous dorsally, wide anteriorly. Mandibular molar process surface smooth, surrounded with basal fine setae. Maxillipedal palp articles 2–4 mesial margins lobate, article 2 not expanded. Penial processes in contact basally, long (extending to pleopod rami). Pleopod 2 appendix masculina narrowed abruptly distally. Pleopod 3 endopod with transverse ridges. Pleopod 4 exopod with transverse suture, without thickened transverse ridges; endopod with weakly thickened transverse ridges. Pleopod 5 exopod with transverse suture, without thickened transverse ridges, with 3 discrete scale patches or with 4 discrete scale patches; endopod with thickened transverse ridges. Uropodal endopod truncate distally or broadly rounded or acute; exopod falcate distally.

Shelf, slope (150–1117 m). Central Indo-Pacific, Temperate E and NE Australia. 3 species (Bruce, 1994a: diagnosis, key to 4 species).

#### ***Calcipila* Harrison and Holdich, 1984**

*Diagnosis.* Body dorsal surfaces granular, unable to conglobate; adult female unknown. Head with anterior margin very steep. Pleon with 1 partial suture visible on fused part. Pleotelson tuberculate; with submedian tubercles and weak median tooth between; ventrolateral margins forming ridge. Antennular peduncle articles 1 and 2 robust, article 3 slender; article 1 of male with anterodistal angle extended as long, narrow, flat lobe longer than remaining antennular peduncle (incipient lobe in female). Maxillipedal palp articles 2–4 mesial margins extended, forming finger-like lobes. Penial processes set apart basally, short (not extending beyond pleopod peduncles).

Pleopod 4 exopod with transverse suture, without thickened transverse ridges; endopod with thickened transverse ridges. Pleopod 5 exopod with transverse suture, without thickened transverse ridges, with 3 discrete scale patches; endopod with thickened transverse ridges. Uropodal endopod truncate distally; exopod shorter than endopod, acute distally.

Subtidal. Temperate SE Australia. 1 species (Harrison and Holdich, 1984).

### ***Campeopea* Leach, 1814**

*Diagnosis.* Body dorsal surfaces granular, with sparse setae, coxal and other margins with fringe of short setae, able to conglobate; strongly sexually dimorphic. Rostrum not separating antennular bases. Pereonite 6 simple, without bosses, processes or marginal extensions, or with single process directed posteriorly. Pereonite 7 narrower than pereonite 6, coxa not reaching as ventrally as coxa 6. Pleonite 1 entire, free from pleonite 2 or wholly fused to pleonite 2, as wide as remainder of pleon, extending to pleon lateral margins; pleon comprising a single unit; sutures absent. Pleotelson posterior margin with ventral thickened rim, without exit channel and with incomplete ventral groove or channel or with triangular (widest anteriorly) foramen; ventrolateral margins forming ridge. Antennular peduncle article 1 robust, longer and more solid than 2 and 3 combined; article 3 longer than article 2; flagellum about as long as peduncle. Epistome narrow anteriorly. Mandibular molar process surface with transverse ridges. Maxillipedal palp articles 2–4 mesial margins lobate (weakly), article 2 not expanded. Penial processes close-set basally, short (not extending beyond pleopod peduncles). Pleopod 4 exopod with incomplete transverse suture, without thickened transverse ridges; endopod without thickened transverse ridges. Pleopod 5 exopod without transverse suture, without thickened transverse ridges, with 3 discrete scale patches; endopod without thickened transverse ridges. Uropod articulating at anterior dorsolateral position; peduncle without endopod; exopod curved laterally, exceeding telson apex, acute distally.

Intertidal. Temperate Northern NE Atlantic. 4 species (Bruce and Holdich, 2002: rediagnosis, key to 4 species).

### ***Cassidias* Richardson, 1906**

*Diagnosis.* Body dorsal surfaces granular, with sparse setae, unable to conglobate; strongly sexually dimorphic (female with smaller pleotelsonic ornamentation). Head without rostrum. Pleonite 1 as wide as remainder of pleon, extending to pleon lateral margins. Pleotelson with prominent median process; posterior margin with ventral thickened rim, with simple rectangular or rounded notch; ventrolateral margins forming ridge. Antennular peduncle article 1 robust, longer and more robust than 2 and 3 combined; article 3 longer than article 2; flagellum about as long as peduncle. Epistome acute anteriorly (with indistinct tubercle in middle). Mandibular molar process surface smooth with palisade of spines on proximal margin. Maxillipedal palp articles 2–4 mesial margins lobate, article 2 not expanded. Penial processes set apart basally, short (not extending beyond pleopod peduncles), straight. Pleopod 2 appendix masculina inserted distally, about as long as endopod.

Pleopod 4 exopod without transverse suture, with thickened transverse ridges; endopod with thickened transverse ridges. Pleopod 5 exopod without transverse suture, with thickened transverse ridges, with 3 discrete scale patches; endopod with thickened transverse ridges. Uropod attached posteriorly, at sides of pleotelson posterior margin; peduncle without endopod; exopod cylindrical, longer than endopod, with hard distal terminal spike.

Subtidal, shelf. Central Indo-Pacific, Temperate South America, Temperate Southern Africa (Australia, Argentina, South Africa). 3 species (Bruce, 2003).

### ***Cassidina* H. Milne Edwards, 1840**

*Diagnosis.* Body vaulted weakly, dorsal surfaces smooth, unable to conglobate; weakly sexually dimorphic. Rostrum truncate, separating antennular bases (with epistome). Eyes more dorsal than lateral, or lateral. Coxal plates truncate. Pleonite 1 fused medially to pleonite 2, narrower than remainder of pleon, not extending to pleon lateral margins; pleon with 1 partial suture visible on fused part; sutures running to lateral margin. Pleotelson flat; posterior margin simple, arcuate, without exit channel; ventrolateral margins simple. Antennular peduncle articles 1 and 2 flat, expanded as anterior and/or anterolateral lobes, with first articles separated by prominent epistome; article 1 produced anteriorly (longer than wide); article 3 as long as or shorter than article 2; flagellum shorter than peduncle. Epistome extended prominently anteriorly and elongate (shorter than head length), wide anteriorly. Mandibular molar process surface smooth with palisade of spines on proximal margin. Maxillipedal palp articles 2–4 mesial margins lobate, article 2 expanded. Pereopod 1 ambulatory, with elongate propodus. Penial processes set apart basally, short (not extending beyond pleopod peduncles), straight. Pleopod 2 appendix masculina basally about as long as endopod. Pleopod 4 exopod without transverse suture, without thickened transverse ridges; endopod without thickened transverse ridges. Pleopod 5 exopod without transverse suture, without thickened transverse ridges, with 3 discrete scale patches; endopod without thickened transverse ridges. Uropodal rami forming part of continuous body outline; uropodal endopod narrowly rounded distally; exopod inserted near midpoint of lateral margin of peduncle-endopod, reduced, mobile, narrowly rounded distally.

Shelf (18–110 m). Temperate Australasia (New Zealand). 1 species (Bruce, 1994c: rediagnosis).

### ***Cassidinella* Whitelegge, 1901**

*Diagnosis.* Body dorsal surfaces smooth, without setae or densely setose, unable to conglobate; not or weakly sexually dimorphic. Head with ventral rostrum. Pereonite 7 narrower than pereonite 6, coxa not reaching as ventrally as coxa 6. Coxal plates ventrally acute, 2–7 not overlapping. Pleonite 1 narrower than remainder of pleon, not extending to pleon lateral margins; dorsal surface with medial dorsal boss. Pleotelson with median dorsal boss or with paired submedial bosses; posterior margin trilobate; ventrolateral margins simple. Antennular peduncle articles 1 and 2 robust, article 3 slender, articles not flattened or articles 1 and 2 flattened strongly (compressed dorsoventrally).

but not part of anterior margin); article 2 without anterodistal lobe, or with distinct anterodistal lobe; with articles 2 and 3 colinear or article 3 offset posteriorly, article 3 as long as or shorter than article 2; flagellum shorter than peduncle. Epistome wide anteriorly. Mandibular incisor unicuspid; molar process surface smooth, surrounded with basal fine setae. Maxillipedal palp articles 2–4 mesial margins lobate, article 2 not expanded. Penial processes set apart basally, short (not extending beyond pleopod peduncles). Pleopod 2 appendix masculina about as long as endopod. Pleopod 4 exopod with transverse suture, without thickened transverse ridges; endopod with thickened transverse ridges. Pleopod 5 exopod with transverse suture, without thickened transverse ridges, with 4 discrete scale patches; endopod with thickened transverse ridges. Uropodal endopod acute distally; exopod reduced, mobile, acute distally.

Shelf (27–204 m). Temperate SE Australia. 2 species (Bruce, 1994b: rediagnosis, key to 2 species).

### ***Cassidinidea* Hansen, 1905**

*Diagnosis.* Body flat, coxae without visible sutures, directed laterally, dorsal surfaces smooth or with nodular ornamentation, coxal and other margins with fringe of short setae, unable to conglobate; not or weakly sexually dimorphic. Head without rostrum. Eyes more dorsal than lateral. Coxal plates truncate. Pleonite 1 fused medially to pleonite 2, narrower than remainder of pleon, not extending to pleon lateral margins; fused part of pleon with acute lateral margin; sutures absent. Pleotelson flat; posterior margin simple, arcuate, without exit channel; ventrolateral margins simple. Antennular peduncle article 1 robust, longer and more robust than 2 and 3 combined; article 3 longer than article 2; flagellum shorter than peduncle. Epistome extended prominently anteriorly as flat, anteriorly convex lobe, wide anteriorly. Mandibular molar process surface smooth with palisade of spines on proximal margin. Maxillipedal palp articles 2–4 mesial margins not lobate, article 2 not expanded. Pereopod 1 with elongate propodus. Penial processes fused along most or entire length. Pleopod 2 appendix masculina basally with straight margins. Pleopod 4 exopod with transverse suture, without thickened transverse ridges; endopod without thickened transverse ridges. Pleopod 5 exopod with transverse suture, without thickened transverse ridges, with 2 discrete scale patches; endopod without thickened transverse ridges. Uropodal rami forming part of continuous body outline; endopod acute distally; exopod reduced, mobile, narrowly rounded distally.

Estuarine, marine, intertidal, subtidal. Tropical Atlantic, Western and Central Indo-Pacific, Temperate Southern Africa. 13 species (some doubtful) (Bruce, 1994c: rediagnosis; Schotte and Kensley, 2005: rediagnosis; Khalaji-Pirbalouty and Bruce, 2021: redescription of type species, distribution of New World species, species list).

### ***Cassidinopsis* Hansen, 1905**

*Diagnosis.* Body dorsal surfaces smooth, able to conglobate; not or weakly sexually dimorphic. Head without rostrum. Coxal plates truncate. Pleonite 1 narrower than remainder of pleon, not extending to pleon lateral margins. Pleotelson

posterior margin simple, arcuate, with incomplete ventral groove or channel. Antennular peduncle article 1 robust, longer and more robust than 2 and 3 combined, with first articles meeting medially; article 3 as long as or shorter than article 2; flagellum about as long as peduncle. Epistome acute anteriorly. Mandibular molar process surface with transverse ridges. Maxillipedal palp articles 2–4 mesial margins lobate (scarcely on 4), article 2 not expanded. Pereopod 2 more slender and longer than pereopods 1 and 3. Penial processes in contact basally, short (not extending beyond pleopod peduncles). Pleopod 2 appendix masculina about as long as endopod. Pleopod 3 exopod without transverse suture. Pleopod 4 exopod with transverse suture, with thickened transverse ridges; endopod with thickened transverse ridges. Pleopod 5 exopod without transverse suture, with thickened transverse ridges, with 2 discrete scale patches; endopod with thickened transverse ridges. Uropodal endopod obliquely truncate distally, forming concavity with end of telson; exopod inserted near midpoint of lateral margin of peduncle-endopod, reduced, mobile or shorter than endopod, acute distally.

Intertidal–shelf. Temperate Australasia, Southern Ocean. (New Zealand, Subantarctic Australia). 3 species (Brandt, 1998: redescription of female of type species).

### ***Ceratocephalus* Woodward, 1877**

*Diagnosis.* Body dorsal surfaces coarsely pitted or granular, unable to conglobate; strongly sexually dimorphic. Head with anterior margin with 2 long, slender, anterolateral processes in male. Pereonite 7 narrower than pereonite 6. Pleotelson posterior margin produced. Antennular peduncle article 1 robust, longer and more robust than 2 and 3 combined. Epistome produced in male as upturned spike over half as long as body, twice length of head anterolateral processes. Maxillipedal palp articles 2–4 mesial margins extended, forming finger-like lobes. Penial processes close-set basally, long (extending to pleopod rami). Pleopod 4 exopod with transverse suture, without thickened transverse ridges; endopod with thickened transverse ridges. Pleopod 5 exopod with transverse suture, with thickened transverse ridges, scale patches distally continuous; endopod with thickened transverse ridges. Uropodal endopod oblique distally with subdistal tooth; exopod reduced, mobile, acute distally.

Subtidal. Temperate SE Australia. 1 species (Bruce, 1994b: redescription).

### ***Cerceis* H. Milne Edwards, 1840**

*Diagnosis.* Body dorsal surfaces smooth or with nodular ornamentation, with sparse setae, coxal and other margins with fringe of short setae, unable to conglobate; not or weakly sexually dimorphic. Head with ventral rostrum; with anterior margin produced, overriding antennules. Coxal plates tapering, rounded or coxal plates truncate. Pleonite 1 posterior margin with single flush median lobe, as wide as remainder of pleon, extending to pleon lateral margins. Pleotelson weakly bi-domed; with posteriorly produced narrow lobe over excision; ventrolateral margins forming ridge. Antennular peduncle articles 1 and 2 robust, article 3 slender, with first articles meeting medially;

article 1 with produced acute distal angles; article 3 as long as or shorter than article 2; flagellum shorter than peduncle. Epistome acute anteriorly. Mandibular molar process surface with transverse ridges. Maxillipedal palp articles 2–4 mesial margins lobate, article 2 not expanded. Penial processes close-set basally, short (not extending beyond pleopod peduncles), straight. Pleopods 1, 2 (sometimes 3) exopods lateral margins serrate, especially distally. Pleopod 2 appendix masculina inserted near midpoint of mesial margin, with straight margins or swollen basally (“flask-shaped”), about as long as endopod or longer than and extending beyond endopod. Pleopod 4 exopod without transverse suture, with thickened transverse ridges; endopod with thickened transverse ridges. Pleopod 5 exopod with transverse suture, with thickened transverse ridges, with 3 discrete scale patches; endopod with thickened transverse ridges. Uropodal endopod acute distally; exopod falcate distally.

Intertidal–shelf. Temperate Northern Atlantic, Temperate Northern Pacific, Western and Central Indo-Pacific, Temperate Australasia. 16 species (Harrison and Holdich, 1982b: rediagnosis).

#### ***Cercosphaera* Bruce, 1994**

*Diagnosis.* Body dorsal surfaces with nodular ornamentation; not or weakly sexually dimorphic. Head with anterior margin produced, overriding antennules. Pereonite 7 forming part of body outline (almost as wide). Coxal plates truncate. Pleonite 1 as wide as remainder of pleon, extending to pleon lateral margins; sutures short; dorsal surface with pair of prominent elongate submedian keels; posterior margin with 2 distinct submedian lobes. Pleotelson with posteriorly directed median process over posterior margin; posterior margin with ventral thickened rim, with posteriorly directed solid tuberculate process; ventrolateral margins forming ridge. Antennular peduncle article 1 robust, longer and more robust than 2 and 3 combined; article 1 anterodistal margin produced; article 3 as long as or shorter than article 2; flagellum about as long as peduncle. Epistome narrow anteriorly. Mandibular incisor unicuspid; molar process surface smooth, surrounded with basal fine setae. Maxillipedal palp articles 2–4 mesial margins lobate, article 2 not expanded. Penial processes in contact basally, long (extending to pleopod rami) (folding into groove on mesial margin of pleopod 1 endopod). Pleopod 4 exopod with transverse suture, without thickened transverse ridges; endopod with thickened transverse ridges. Pleopod 5 exopod with transverse suture, without thickened transverse ridges, scale patches distally continuous; endopod with thickened transverse ridges. Uropod attached anterolaterally to pleotelson, cylindrical (not especially flattened); peduncle-endopod lamellar (nodulose), broadly rounded distally (variously notched); exopod reduced, mobile, acute distally.

Subtidal, shelf (1–52 m). Temperate S Australia. 3 species (Bruce, 1994a: diagnosis, key to 3 species).

#### ***Chitonopsis* Whitelegge, 1902**

*Diagnosis.* Body flat, coxae without visible sutures, directed laterally, dorsal surfaces smooth, coxal and other margins with fringe of short setae, unable to conglobate; not or weakly

sexually dimorphic. Rostrum truncate, separating antennular bases (with epistome). Eyes more dorsal than lateral. Coxal plates truncate. Pleonite 1 fused medially to pleonite 2, narrower than remainder of pleon, not extending to pleon lateral margins; pleon with 1 partial suture visible on fused part; sutures running to lateral margin. Pleotelson flat, narrower anteriorly than pleon; posterior margin simple, arcuate, without exit channel; ventrolateral margins simple. Antennular peduncle articles 1 and 2 flat, expanded as anterior and/or anterolateral lobes, with first articles separated by prominent epistome; article 1 produced anteriorly (wider than long); article 2 with distinct anterodistal lobe; article 3 as long as or shorter than article 2; flagellum shorter than peduncle. Epistome extended prominently anteriorly and elongate (longer or subequal to head length), wide anteriorly. Mandibular molar process surface smooth with palisade of spines on proximal margin. Maxillipedal palp articles 2–4 mesial margins lobate, article 2 expanded. Pereopod 1 with elongate propodus. Penial processes in contact basally, short (not extending beyond pleopod peduncles), straight. Pleopod 2 appendix masculina spatulate terminally. Pleopod 4 exopod without transverse suture, without thickened transverse ridges; endopod without thickened transverse ridges. Pleopod 5 exopod without transverse suture, without thickened transverse ridges, with 3 discrete scale patches; endopod without thickened transverse ridges. Uropodal rami forming part of continuous body outline; uropodal endopod narrowly rounded distally; exopod inserted near midpoint of lateral margin of peduncle-endopod, reduced, mobile, narrowly rounded distally.

Estuarine, marine, intertidal–shelf. Central Indo-Pacific, Temperate Australasia. 3 species (Holdich and Harrison, 1981b: rediagnosis, key to 3 Australian species; Bruce, 1994c: rediagnosis, key to 3 species).

#### ***Chitonosphaera* Kussakin and Malyutina, 1993**

*Diagnosis.* Body vaulted weakly, dorsal surfaces smooth, coxal and other margins with fringe of short setae, unable to conglobate. Rostrum acute, not separating antennular bases. Eyes more dorsal than lateral. Coxal plates truncate. Pleon with 2 partial sutures visible on fused part; first suture reaching lateral margin; second suture reaching posterior margin. Pleotelson posterior margin simple, arcuate, with incomplete ventral groove or channel. Antennular peduncle articles 1 and 2 flat, expanded as anterior and/or anterolateral lobes, with first articles meeting medially; article 3 as long as or shorter than article 2; flagellum shorter than peduncle. Epistome acute anteriorly. Maxillipedal palp articles 2–4 mesial margins not lobate. Pleopod 2 appendix masculina spatulate terminally. Pleopod 3 exopod with incomplete transverse suture. Pleopod 4 exopod with transverse suture, without thickened transverse ridges; endopod without thickened transverse ridges. Pleopod 5 exopod without transverse suture, without thickened transverse ridges; endopod without thickened transverse ridges. Uropodal rami forming part of continuous body outline; endopod narrowly rounded distally; exopod subtriangular, narrowly rounded distally.

Intertidal, subtidal. Temperate Northern W Pacific (Japan, China, Vietnam). 2 species (Kussakin and Malyutina, 1993).

***Cilicæa* Leach, 1818**

*Diagnosis.* Body dorsal surfaces with nodular ornamentation, with sparse setae, able to conglobate; strongly sexually dimorphic. Coxal plates 2–7 not overlapping. Pleonite 1 as wide as remainder of pleon, extending to pleon lateral margins; posterior margin with process directed posteriorly. Pleotelson with paired submedial bosses; with rectangular or rounded notch bearing median tooth. Antennular peduncle articles 1 and 2 robust, article 3 slender, longer than article 2; flagellum about as long as peduncle. Epistome wide anteriorly. Mandibular incisor unicuspid. Maxillipedal palp articles 2–4 mesial margins extended, forming finger-like lobes, article 2 not expanded. Penial processes close-set basally, short (not extending beyond pleopod peduncles). Pleopod 2 appendix masculina reflexed, folded back on itself, about twice as long as endopod. Pleopod 4 exopod with transverse suture, without thickened transverse ridges; endopod with thickened transverse ridges. Pleopod 5 exopod with transverse suture, without thickened transverse ridges, with 4 discrete scale patches or with 5 discrete scale patches; endopod with thickened transverse ridges. Uropod attached posteriorly, at sides of pleotelson posterior margin; peduncle endopod reduced, stub-like; exopod cylindrical, longer than endopod, distally with hard terminal spike or narrowly rounded.

Subtidal, shelf. Western and Central Indo-Pacific, Temperate Australasia. 15 accepted species (Harrison and Holdich, 1984: rediagnosis, list of species, some doubtful).

***Cilicæopsis* Hansen, 1905**

*Diagnosis.* Body dorsal surfaces with nodular ornamentation or granular, with sparse setae, able to conglobate; strongly sexually dimorphic. Coxal plates 2–7 not overlapping. Pleonite 1 as wide as remainder of pleon, extending to pleon lateral margins; posterior margin with process directed posteriorly. Pleotelson with paired submedial bosses or tuberculate; with simple rectangular or rounded notch; ventrolateral margins forming ridge. Antennular peduncle articles 1 and 2 robust, article 3 slender, longer than article 2; flagellum about as long as peduncle. Epistome wide anteriorly. Mandibular incisor unicuspid. Maxillipedal palp articles 2–4 mesial margins extended, forming finger-like lobes, article 2 not expanded. Penial processes fused basally or separate, long (extending to pleopod rami). Pleopod 2 appendix masculina tapering to point. Pleopod 4 exopod with transverse suture, without thickened transverse ridges; endopod with thickened transverse ridges. Pleopod 5 exopod with transverse suture, without thickened transverse ridges, with 4 discrete scale patches; endopod with thickened transverse ridges. Uropod attached posteriorly, at sides of pleotelson posterior margin; peduncle-endopod reduced, stub-like; exopod cylindrical, longer than endopod, rounded narrowly distally.

Subtidal, shelf, slope (1–411 m). Central Indo-Pacific, Temperate Australasia. 13 species, plus many undescribed species (Harrison and Holdich, 1984: rediagnosis, list of species).

***Cliamenella* Kussakin and Malyutina, 1987**

*Diagnosis.* Body dorsal surfaces smooth, able to conglobate. Pleotelson domed; posterior margin narrowed posteriorly, with

subapical foramen connected to apex by narrow slit. Antennular peduncle articles 1–3 of similar stoutness (or tapering); article 3 as long as or shorter than article 2; flagellum shorter than peduncle. Maxillipedal palp articles 2–4 mesial margins not lobate. Penial processes fused along basal half to two thirds of length. Pleopod 3 exopod without transverse suture. Pleopod 4 exopod without transverse suture, without thickened transverse ridges; endopod with thickened transverse ridges. Pleopod 5 exopod without transverse suture, without thickened transverse ridges, with 3 discrete scale patches; endopod with thickened transverse ridges. Uropodal endopod narrowly rounded distally; exopod narrowly rounded distally.

Shelf, bathyal. Temperate Northern W Pacific. 1 species (Kussakin, 1979; Kussakin and Malyutina, 1987: redescription).

***Cymodetta* Bowman and Kühne, 1974**

*Diagnosis.* Body dorsal surfaces smooth, unable to conglobate; not or weakly sexually dimorphic. Pleonite 1 narrower than remainder of pleon, not extending to pleon lateral margins; dorsal surface of male smooth, of female with paired tubercles. Pleotelson of male smooth dorsally, of female with paired tubercles; posterior margin produced, without exit channel. Antennular peduncle articles 1 and 2 robust, article 3 slender, with first articles meeting medially; article 3 longer than article 2; flagellum about as long as peduncle. Epistome narrow anteriorly. Maxillipedal palp articles 2–4 mesial margins lobate, article 2 expanded. Penial processes close-set basally, long (extending to pleopod rami). Pleopod 2 appendix masculina with distal part reflexed. Pleopod 4 exopod with transverse suture, without thickened transverse ridges; endopod without thickened transverse ridges. Pleopod 5 exopod with transverse suture, without thickened transverse ridges, with 2 discrete scale patches; endopod without thickened transverse ridges. Uropod attached anterolaterally to pleotelson, cylindrical (not especially flattened); peduncle without endopod; exopod cylindrical, exceeding telson apex, acute distally.

Estuarine, freshwater. Temperate and tropical eastern Australia. 2 species (Holdich and Harrison, 1983: rediagnosis).

***Cymodoce* Leach, 1814**

*Diagnosis.* Body dorsal surfaces with nodular ornamentation, unable to conglobate; strongly sexually dimorphic. Pleonite 1 as wide as remainder of pleon, extending to pleon lateral margins; posterior margin with 2 distinct submedian lobes. Pleotelson with paired submedial bosses or with paired longitudinal carinae; posterior margin with ventral thickened rim, with 2 longitudinal bilateral grooves; ventrolateral margins forming ridge. Antennular peduncle articles 1 and 2 robust, article 3 slender, longer than article 2; flagellum shorter than peduncle. Epistome acute anteriorly. Mandibular incisor unicuspid. Maxillipedal palp articles 2–4 mesial margins extended, forming finger-like lobes, article 2 not expanded. Penial processes set apart basally, long (extending to pleopod rami). Pleopod 2 appendix masculina about as long as endopod. Pleopod 4 exopod with transverse suture, without thickened transverse ridges; endopod with thickened transverse ridges. Pleopod 5 exopod with transverse suture, without thickened

transverse ridges, with 3 discrete scale patches; endopod with thickened transverse ridges. Uropodal endopod truncate or acute distally; exopod lanceolate, similar in length to or shorter than endopod, acute distally.

Estuarine, marine, intertidal–shelf. Temperate Northern Atlantic, Tropical Atlantic, Temperate Northern Pacific, Western and Central Indo-Pacific, Temperate Southern Africa, Temperate Australasia (cosmopolitan, except polar seas). 72 species (Dumay, 1972; Harrison and Holdich, 1984: rediagnosis, list of species; Schotte and Kensley, 2005: rediagnosis, key to 12 Indian Ocean species; Khalaji-Pirbalouty et al., 2013: rediagnosis, list of only 21 species). The genus remains in a confused state with many misplaced species.

### ***Cymodocella* Pfeffer, 1887**

*Diagnosis.* Body dorsal surfaces smooth or with nodular ornamentation, coxal and other margins smooth or with fringe of short setae; not or weakly sexually dimorphic. Coxal plates truncate. Pleonite 1 as wide as remainder of pleon, extending to pleon lateral margins. Pleotelson weakly bi-domed; posterior margin narrowed posteriorly, forming ventrally closed tube directed posteriorly; ventrolateral margins simple. Antennular peduncle article 1 robust, longer and more robust than 2 and 3 combined; article 3 as long as or shorter than article 2; flagellum shorter than peduncle, shorter than peduncular article 3. Epistome narrow anteriorly. Mandibular incisor multicuspid, or unicuspid; molar process surface smooth, surrounded with basal fine setae. Maxillipedal palp articles 2–4 mesial margins lobate, article 2 not expanded. Penial processes close-set basally, short (not extending beyond pleopod peduncles), straight. Pleopod 1 rami operculate, mesial margin of endopod and exopod indurate. Pleopod 2 appendix masculina spatulate terminally or narrowed abruptly distally or tapering to point, about as long as endopod or longer than and extending beyond endopod. Pleopod 3 exopod without transverse suture. Pleopod 4 exopod without transverse suture, with thickened transverse ridges; endopod with thickened transverse ridges. Pleopod 5 exopod with incomplete transverse suture, with thickened transverse ridges, with 3 discrete scale patches; endopod with thickened transverse ridges. Uropodal endopod and exopod broadly rounded distally.

Subtidal. Temperate South America (Brazil), Temperate Southern Africa, Temperate Australasia, Southern Ocean. 15 species (Hurley and Jansen, 1977: key to 3 New Zealand species; Harrison and Holdich, 1982a: rediagnosis, distribution; Brandt and Wägele, 1989: redescription of *Cymodocella tubicauda* Pfeffer, 1887; Bruce, 1995: rediagnosis, key to 3 Australian species). Probably only some of the Australasian species belong to this genus.

### ***Cymodopsis* Baker, 1926**

*Diagnosis.* Body dorsal surfaces smooth, able to conglobate; strongly sexually dimorphic. Pereonite 7 as wide as pereonite 6, forming part of body outline or narrower than pereonite 6, coxa not reaching as ventrally as coxa 6. Pleonite 1 as wide as remainder of pleon, extending to pleon lateral margins; dorsal surface smooth, or slightly elevated. Pleotelson with median dorsal process or with paired submedial bosses; posterior

margin rounded broadly or produced, with posteriorly produced lobe over ventrally directed groove. Antennular peduncle articles 1 and 2 robust, article 3 slender, longer than article 2. Epistome flush with head anteriorly, not projecting or projecting anteriorly, not conspicuous dorsally, wide anteriorly or narrow anteriorly. Maxillipedal palp articles 2–4 mesial margins extended, forming finger-like lobes. Pleopod 2 appendix masculina tapering, extending beyond endopod, longer than and extending beyond endopod. Pleopod 4 exopod with transverse suture, without thickened transverse ridges; endopod with thickened transverse ridges. Pleopod 5 exopod without transverse suture, without thickened transverse ridges, with 3 discrete scale patches; endopod with thickened transverse ridges. Uropodal endopod truncate distally or with distal notch; exopod lamellar or styliiform, reduced, mobile, narrowly rounded distally or acute or bifid.

Subtidal, shelf. Temperate Australia. 5 species (Baker, 1926; Hurley and Jansen, 1977: dubious rediagnosis; Wetzler et al., 2018). The monophyly of this genus is entirely uncertain; all species are in need of redescription. The three New Zealand species are here excluded.

### ***Diclidocella* Bruce, 1995**

*Diagnosis.* Body dorsal surfaces smooth or with nodular ornamentation, unable to conglobate; not or weakly sexually dimorphic. Rostrum not separating antennular bases. Pereonite 6 simple, without bosses, processes or marginal extensions, or with bosses. Pereonite 7 narrower than pereonite 6, coxa not reaching as ventrally as coxa 6, without dorsal bosses, processes or marginal extensions or with bosses. Pleonite 1 as wide as remainder of pleon, extending to pleon lateral margins. Pleotelson without dorsal process or with paired submedial bosses or bi-domed weakly; posterior margin narrowed posteriorly, forming ventrally closed tube, directed posteriorly; ventrolateral margins simple. Antennular peduncle articles 1 and 2 robust; article 3 slender, articulating at right angles; article 2 with distinct anterodistal lobe; flagellum shorter than peduncle. Epistome wide anteriorly. Mandibular molar process surface with transverse ridges or smooth, surrounded with basal fine setae. Maxillipedal palp articles 2–4 mesial margins lobate, article 2 expanded. Pereopod 2 more slender and longer than pereopods 1 and 3. Penial processes close-set basally or in contact basally, short (not extending beyond pleopod peduncles), straight. Pleopod 1 rami operculate, mesial margin of endopod and exopod indurate. Pleopod 2 appendix masculina with straight margins or spatulate terminally. Pleopod 3 exopod without transverse suture. Pleopod 4 exopod without transverse suture, with thickened transverse ridges; endopod with thickened transverse ridges. Pleopod 5 exopod without transverse suture, with thickened transverse ridges; endopod with thickened transverse ridges. Uropodal endopod rounded broadly distally; exopod inserted near midpoint of lateral margin of peduncle-endopod, similar in length to endopod, broadly rounded distally.

Subtidal (3–17 m). Temperate Australia. 3 species (Bruce, 1995: key to 3 species).

***Discerceis* Richardson, 1905**

*Diagnosis.* Body dorsal surfaces granular, able to conglobate; strongly sexually dimorphic. Pleonite 1 narrower than remainder of pleon, not extending to pleon lateral margins. Pleotelson tuberculate; with rectangular or rounded notch bearing prominent median tooth. Antennular peduncle article 1 robust, longer and more robust than 2 and 3 combined; article 3 longer than article 2. Epistome narrow anteriorly. Maxillipedal palp articles 2–4 mesial margins extended, forming finger-like lobes. Penial processes set apart basally, short (not extending beyond pleopod peduncles). Pleopods 1, 2 exopods lateral smooth. Pleopod 2 appendix masculina inserted near midpoint of mesial margin. Pleopod 4 exopod without transverse suture, with thickened transverse ridges; endopod with thickened transverse ridges. Pleopod 5 exopod with incomplete transverse suture, with thickened transverse ridges, with 3 discrete scale patches; endopod with thickened transverse ridges. Uropod with minute endopod; exopod cylindrical, much longer than reduced endopod, extending beyond pleotelson apex, truncate or bifid distally.

Intertidal, subtidal. Tropical Atlantic, Tropical Eastern Pacific (Central America). 3 species (Schotte, 2005: rediagnosis, key to species).

***Discidina* Bruce, 1994**

*Diagnosis.* Body flat, coxae without visible sutures, directed laterally, dorsal surfaces smooth, densely setose (short scales and plumose setae), coxal and other margins with sheathed plumed setae, unable to conglobate; not or weakly sexually dimorphic. Rostrum not separating antennular bases. Eyes more dorsal than lateral. Coxal plates truncate. Pleonite 1 narrower than remainder of pleon, not extending to pleon lateral margins. Pleotelson flat; posterior margin simple, arcuate, without exit channel; ventrolateral margins simple. Antennular peduncle articles 1 and 2 flat, expanded as anterior and/or anterolateral lobes, with first articles meeting medially; article 3 as long as or shorter than article 2; flagellum shorter than peduncle. Epistome narrow anteriorly. Maxillipedal palp articles 2–4 mesial margins lobate, article 2 expanded. Penial processes in contact basally, long (extending to pleopod rami), widest near base. Pleopod 1 endopod folded distally, forming a tube. Pleopod 2 appendix masculina enrolled distally, forming a groove. Pleopod 4 exopod with transverse suture, without thickened transverse ridges; endopod without thickened transverse ridges. Pleopod 5 exopod with incomplete transverse suture, without thickened transverse ridges, with 3 discrete scale patches; endopod without thickened transverse ridges. Uropodal rami forming part of continuous body outline; endopod acute distally; exopod embedded and flush with margin of endopod.

Subtidal. Temperate S Australia. 1 species (Bruce, 1994c).

***Dynamene* Leach, 1818**

*Diagnosis.* Body dorsal surfaces smooth or granular, with sparse setae, coxal and other margins with fringe of short setae, able to conglobate; strongly sexually dimorphic. Pereonite 6 with pair of spine-like projections. Pleotelson tuberculate or

smooth; terminating in terminal foramen which may be tube-like. Antennular peduncle article 1 robust, longer and more robust than 2 and 3 combined; article 3 longer than article 2. Epistome narrow anteriorly. Maxillipedal palp articles 2–4 mesial margins lobate. Penial processes set apart basally. Pleopod 3 exopod without transverse suture. Pleopod 4 exopod without transverse suture, with thickened transverse ridges; endopod with thickened transverse ridges. Pleopod 5 exopod without transverse suture, with thickened transverse ridges, with 2 discrete scale patches; endopod with thickened transverse ridges. Uropod with minute endopod, acute distally; exopod longer than endopod, acute distally.

Intertidal, subtidal. Temperate NE Atlantic to Black Sea, Central Indo-Pacific (NE Australia). 8 species (Holdich, 1970: habitats; Holdich and Harrison, 1980: rediagnosis; Vieira et al., 2016: rediagnosis; key to males of 8 species from Atlantic and Black Sea).

***Dynamenella* Hansen, 1905**

*Diagnosis.* Body dorsal surfaces smooth or with nodular ornamentation, with sparse setae, able to conglobate; strongly sexually dimorphic. Pleonite 1 as wide as remainder of pleon, extending to pleon lateral margins; sutures short. Pleotelson tuberculate or smooth; posterior margin with ventral thickened rim, with subapical circular, Y- or T-shaped foramen connected to posterior by narrow slit; ventrolateral margins flattening posteriorly, or directed medially, or with narrow outcurved ridges meeting in posterior midline. Antennular peduncle articles 1 and 2 robust, article 3 slender, longer than article 2; flagellum shorter than peduncle. Epistome narrow anteriorly. Mandibular molar process surface with transverse ridges. Maxillipedal palp articles 2–4 mesial margins lobate, article 2 not expanded. Penial processes fused basally, long (extending to pleopod rami), tapering smoothly from midlength. Pleopod 2 appendix masculina swollen basally (“flask-shaped”), about as long as endopod or longer than and extending beyond endopod. Pleopod 3 exopod with or without transverse suture. Pleopod 4 exopod with or without transverse suture, with thickened transverse ridges; endopod with thickened transverse ridges. Pleopod 5 exopod with transverse suture, with thickened transverse ridges, with 3 discrete scale patches; endopod with thickened transverse ridges. Uropodal endopod broadly rounded distally; exopod inserted laterally near anterolateral angle of peduncle-endopod, broadly rounded distally.

Intertidal, subtidal. Widespread in all oceans, principally tropical and subtropical habitats; absent from cold and polar waters; no records from the eastern Atlantic. 28 species (Harrison and Holdich, 1982a: rediagnosis, distribution; Schotte and Kensley, 2005: rediagnosis, key to 8 Indian Ocean species).

***Dynameniscus* Richardson, 1905**

*Diagnosis.* Body dorsal surfaces with nodular ornamentation, able to conglobate; strongly sexually dimorphic. Coxal plates 1, 2 triangular, directed laterally; coxal plates 2–5, pleonite 2 with spike-like ventral process. Pleotelson tuberculate; posterior margin simple, arcuate, with incomplete ventral groove or channel (visible in ventral view); ventrolateral margins simple.

Antennular peduncle articles 1–3 of similar stoutness (or tapering); article 3 as long as or shorter than article 2; flagellum shorter than peduncle, shorter than peduncular article 3. Epistome narrow anteriorly. Mandibular incisor bicuspid. Maxillipedal palp articles 2–4 mesial margins lobate. Penial processes long (extending to pleopod rami). Pleopod 2 appendix masculina about as long as endopod. Pleopod 3 exopod without transverse suture. Pleopod 4 exopod without transverse suture, without thickened transverse ridges; endopod without thickened transverse ridges. Pleopod 5 exopod with incomplete transverse suture, without thickened transverse ridges, with 3 discrete scale patches; endopod without thickened transverse ridges. Uropod attached anterolaterally to pleotelson, cylindrical (not especially flattened); peduncle-endopod reduced, stub-like; exopod cylindrical, much longer than endopod, acute distally.

Slope (550–1260 m). Temperate Northern and Tropical Atlantic. 1 species (Richardson, 1905: description of type species; Kensley and Bruce, 2001: redescription).

#### ***Dynamenoides* Hurley and Jansen, 1977**

*Diagnosis.* Body dorsal surfaces smooth, able to conglobate; not or weakly sexually dimorphic. Pereonite 6 twice as long as pereonite 5 in dorsal midline, with posterior margin bilobed. Pereonite 7 with pair of triangular submedial posterior dorsal projections. Pleotelson tuberculate or smooth; with subapical circular foramen connected to posterior by narrow slit. Antennular peduncle articles 1 and 2 robust, article 3 slender, as long as or shorter than article 2; flagellum shorter than peduncle. Epistome wide anteriorly. Penial processes set apart basally, short (not extending beyond pleopod peduncles). Pleopod 2 appendix masculina inserted near midpoint of mesial margin, shorter than endopod. Pleopod 3 exopod without transverse suture. Pleopod 4 exopod with thickened transverse ridges; endopod with thickened transverse ridges. Pleopod 5 exopod with thickened transverse ridges; endopod with thickened transverse ridges. Uropodal endopod broadly rounded distally; exopod longer than endopod, acute distally.

Intertidal. Temperate New Zealand. 2 species (Hurley and Jansen, 1977).

#### ***Dynamenopsis* Baker, 1908**

*Diagnosis.* Body dorsal surfaces smooth, able to conglobate; not or weakly sexually dimorphic. Pereonite 7 expanded posteriorly (at least longer than pereonite 6) dorsally. Coxal plates truncate. Pleonite 1 narrower than remainder of pleon, not extending to pleon lateral margins; sutures absent. Pleotelson tuberculate or smooth; with subapical foramen connected to apex by narrow slit. Antennular peduncle articles 1 and 2 robust, article 3 slender, longer than article 2; flagellum shorter than peduncle. Epistome narrow anteriorly. Maxillipedal palp articles 2–4 mesial margins lobate. Penial processes fused basally, long (extending to pleopod rami). Pleopod 2 appendix masculina tapering to point, about as long as endopod. Pleopod 4 exopod without transverse suture, with thickened transverse ridges; endopod with thickened transverse ridges. Pleopod 5 exopod with transverse suture, with thickened transverse ridges, with 3 discrete scale patches; endopod with thickened transverse ridges. Uropodal endopod truncate or broadly

rounded distally; exopod broadly rounded distally.

Intertidal, subtidal. Temperate Southern Africa, Temperate Australasia. 3 species (Baker, 1908; Hurley and Jansen, 1977: rediagnosis, New Zealand species; Harrison and Holdich, 1982a: rediagnosis). Species from Angola doubtful.

#### ***Dynoides* Barnard, 1914**

*Diagnosis.* Body dorsal surfaces smooth or granular, with sparse setae, coxal and other margins with fringe of short setae, able to conglobate; strongly sexually dimorphic. Pleon sutures long; posterior margin with or without median posterior process. Pleotelson tuberculate or smooth; with elongate serrate sinus. Antennular peduncle articles 1–3 of similar stoutness (or tapering); article 3 longer than article 2; flagellum shorter than peduncle. Epistome narrow anteriorly. Mandibular molar process surface with transverse ridges. Maxillipedal palp articles 2–4 mesial margins lobate (weakly), article 2 not expanded. Penial processes fused along basal half to two-thirds of length, long (extending to pleopod rami). Pleopod 2 appendix masculina reflexed, folded back on itself, about twice as long as endopod. Pleopod 3 exopod without transverse suture. Pleopod 4 exopod with transverse suture, without thickened transverse ridges; endopod with thickened transverse ridges. Pleopod 5 exopod with incomplete transverse suture, without thickened transverse ridges, with 2 or 3 discrete scale patches; endopod with thickened transverse ridges. Uropodal endopod broadly rounded distally; exopod broadly rounded distally.

Intertidal–shelf. Tropical Atlantic, Temperate Northern Pacific, Western and Central Indo-Pacific, Tropical Eastern Pacific, Temperate Southern Africa, Temperate Australasia. 19 species (Li, 2000: rediagnosis, key to 16 species; Khalaji-Pirbalouty and Gagnon, 2021: NE Pacific species). *Dynoides* is a genus bedevilled by nomenclatural confusion resulting from the repeated failure of authors to recognise juvenile and immature males as the same species as adults. Some species names are likely junior synonyms of others. *Clanella* Boone, 1923 has been placed in and taken out of synonymy, entirely on the basis of presence or absence of a pleonal process, until sufficient intermediates were shown to occur. *Clanella* is a junior synonym of *Dynoides* (Li, 2000).

#### ***Eterocerceis* Messana, 1990**

*Diagnosis.* Body dorsal surfaces smooth, able to conglobate; not or weakly sexually dimorphic. Head with anterior margin produced, overriding antennules. Rostrum ventral. Pleonite 1 narrower than remainder of pleon, not extending to pleon lateral margins. Pleotelson with prominent submedian pair of smooth ridges, square in lateral view; posterior margin with shallow median indentation, with incomplete ventral groove or channel. Antennular peduncle articles 1 and 2 robust, article 1 with produced acute distal angles; article 3 slender longer than article 2; flagellum about as long as peduncle. Epistome acute anteriorly. Maxillipedal palp articles 2–4 mesial margins lobate. Penial processes close-set basally, short (not extending beyond pleopod peduncles). Pleopods 1, 2 exopods lateral margins serrate, especially distally. Pleopod 2 appendix masculina inserted near midpoint of mesial margin, about as long as endopod. Pleopod 4 exopod without transverse suture,

with thickened transverse ridges; endopod with thickened transverse ridges. Pleopod 5 exopod with incomplete transverse suture, with thickened transverse ridges, with 2 discrete scale patches; endopod with thickened transverse ridges. Uropodal endopod broadly rounded distally; exopod with 2 or 3 distal teeth.

Subtidal. Western Indo-Pacific (Somalia). 1 species (Messana, 1990).

#### ***Exocerceis* Baker, 1926**

*Diagnosis.* Body dorsal surfaces coarsely pitted, able to conglobate; not or weakly sexually dimorphic. Rostrum directed posteroventrally, not separating antennular bases; head with anterior margin produced, overriding antennules. Pleon dorsal surface with 4 or 5 pairs of sublateral granular longitudinal ridges. Pleotelson with 2 large bosses, compressed bilaterally; with apical notch between 2 acute points, third dorsal median point projecting over notch. Antennular peduncle articles 1 and 2 robust, article 3 slender, with first articles meeting medially; article 3 longer than article 2; flagellum shorter than peduncle. Epistome acute anteriorly. Maxillipedal palp articles 2–4 mesial margins extended, forming finger-like lobes. Penial processes set apart basally, short (not extending beyond pleopod peduncles). Pleopods 1, 2 (sometimes 3) exopods lateral margins serrate, especially distally (obsolete except on 2). Pleopod 2 appendix masculina inserted near midpoint of mesial margin. Pleopod 3 exopod without transverse suture. Pleopod 4 exopod without transverse suture, with thickened transverse ridges; endopod with thickened transverse ridges. Pleopod 5 exopod without transverse suture, with thickened transverse ridges, with 2 discrete scale patches. Uropodal endopod serrate distally; exopod deeply serrate distally.

Shelf (20–204 m). Temperate E Australia. 1 species (Bruce, 1994b: rediagnosis, redescription of type species).

#### ***Exosphaeroides* Holdich and Harrison, 1983**

*Diagnosis.* Body dorsal surfaces smooth, able to conglobate; not or weakly sexually dimorphic. Pereonite 7 narrower than pereonite 6, coxa not reaching as ventrally as coxa 6. Pleonite 1 as wide as remainder of pleon, extending to pleon lateral margins. Pleotelson posterior margin rounded broadly, without exit channel; ventrolateral margins forming ridge. Antennular peduncle articles 1 and 2 robust, article 3 slender, longer than article 2; flagellum about as long as peduncle. Epistome narrow anteriorly. Mandibular molar process surface with transverse ridges. Maxillipedal palp articles 2–4 mesial margins lobate, article 2 not expanded. Penial processes close-set basally, short (not extending beyond pleopod peduncles), straight. Pleopod 4 exopod with transverse suture, without thickened transverse ridges; endopod without thickened transverse ridges. Pleopod 5 exopod with transverse suture, without thickened transverse ridges, with 2 discrete scale patches; endopod without thickened transverse ridges. Uropodal endopod broadly rounded distally; exopod broadly rounded distally.

Freshwater, estuarine. Central Indo-Pacific (coastal and karstic streams). 3 species (species from Easter I. doubtful) (Holdich and Harrison, 1983; Kensley, 2003; Jaume and

Queinsec, 2007: species from karstic stream and cave sink 390 m above sea level in Vanuatu).

#### ***Exosphaeroma* Stebbing, 1900**

*Diagnosis.* Body vaulted, dorsal surfaces smooth or coarsely pitted, occasionally rugose; able to conglobate; not or weakly sexually dimorphic. Pleonite 1 as wide as remainder of pleon, extending to pleon lateral margins; posterior margin with 2 submedian directed posteriorly flat lobes. Pleotelson posterior margin simple, arcuate, with incomplete ventral groove or channel; ventrolateral margins forming ridge. Antennular peduncle articles 1 and 2 robust, article 3 slender, longer than article 2; flagellum about as long as peduncle. Epistome widest about midlength. Mandibular molar process surface with transverse ridges. Maxillipedal palp articles 2–4 mesial margins lobate, article 2 not expanded. Pereopods 1–3 ischium upper margin without long stiff slender setae or ischium upper margin with few long stiff slender setae. Penial processes close-set basally, short (not extending beyond pleopod peduncles), straight. Pleopod 4 exopod with incomplete transverse suture, without thickened transverse ridges; endopod with thickened transverse ridges. Pleopod 5 exopod without transverse suture, without thickened transverse ridges, with 3 discrete scale patches or with 4 discrete scale patches; endopod with thickened transverse ridges. Uropodal endopod broadly rounded distally; exopod broadly rounded distally.

Estuarine, marine, intertidal, subtidal (0–100 m). Western Indo-Pacific, Tropical Eastern Pacific, Temperate South America, Temperate Southern Africa, Temperate Australasia, Southern Ocean. 39 species (Brandt and Wägele, 1989: redescription of type species *E. gigas* (Leach, 1818)). Northern and Southern Hemisphere species likely to belong to different genera.

#### ***Geocerceis* Menzies and Glynn, 1968**

*Diagnosis.* Body dorsal surfaces smooth, able to conglobate; strongly sexually dimorphic. Pleon dorsal surface with median and pair of sublateral tubercles. Pleotelson with pair of sublateral longitudinal rounded triangular ridges; posterior margin with deep notch, with incomplete ventral groove or channel; ventrolateral margins forming ridge. Antennular peduncle articles 1 and 2 robust, article 3 slender. Epistome wide anteriorly. Maxillipedal palp articles 2–4 mesial margins extended, forming finger-like lobes. Pleopod 3 exopod without transverse suture. Pleopod 4 exopod without transverse suture, with thickened transverse ridges; endopod with thickened transverse ridges. Pleopod 5 exopod without transverse suture, with thickened transverse ridges, with 2 discrete scale patches; endopod with thickened transverse ridges. Uropod attached posteriorly, at sides of pleotelson posterior margin; peduncle without endopod; exopod cylindrical, longer than endopod, acute distally.

Intertidal, subtidal. Tropical Atlantic (W Atlantic, Caribbean). 1 species (Menzies and Glynn, 1968; Kensley and Schotte, 1989: rediagnosis, figure of male; Monroy-Velázquez and Alvarez, 2016: photo of male, mention of male characters).

***Gnorimosphaeroma* Menzies, 1954**

*Diagnosis.* Body dorsal surfaces smooth or polished in appearance, coxal and other margins smooth, able to conglobate; not or weakly sexually dimorphic. Pleonite 1 as wide as remainder of pleon, extending to pleon lateral margins; sutures (except first) running to ventrolateral margin. Pleotelson posterior margin simple, arcuate, without exit channel; ventrolateral margins forming ridge. Antennular peduncle articles 1 and 2 robust, article 3 slender, longer than article 2; flagellum about as long as peduncle. Epistome narrow anteriorly. Mandibular molar process surface with transverse ridges. Maxillipedal palp articles 2–4 mesial margins lobate. Penial processes close-set basally, short (not extending beyond pleopod peduncles). Pleopod 3 exopod without transverse suture or with incomplete transverse suture. Pleopod 4 exopod without transverse suture, without thickened transverse ridges; endopod without thickened transverse ridges. Pleopod 5 exopod without thickened transverse ridges, with 2 discrete scale patches; endopod without thickened transverse ridges. Uropodal endopod broadly or narrowly rounded distally; exopod inserted laterally near anterolateral angle of peduncle-endopod, exopod shorter than endopod, narrowly rounded distally.

Freshwater, estuarine, subtidal. Temperate Northern Pacific, Western Indo-Pacific. 27 species (14 marine) (Menzies, 1954; Nunomura, 1998: key to 10 species from Japan; Wetzter et al., 2021: redescription of type species, phylogeny, key to 5 species; Tomikawa et al., 2023: review, phylogeny, species list, distribution). In our view the number of described species is excessive.

***Haswellia* Haswell, 1881**

*Diagnosis.* Body dorsal surfaces smooth, able to conglobate; strongly sexually dimorphic. Head with ventral rostrum. Pereonite 7 with single dorsal process directed posteriorly (usually overreaching and sometimes as wide as pleotelson). Coxal plates truncate. Pleotelson with paired submedial bosses or tuberculate; posterior margin trilobate. Antennular peduncle articles 1 and 2 robust, article 3 slender, as long as or shorter than article 2; flagellum shorter than peduncle. Epistome acute anteriorly. Maxillipedal palp articles 2–4 mesial margins lobate. Pleopods 1, 2 (sometimes 3) exopods lateral margins serrate, especially distally. Pleopod 2 appendix masculina inserted near midpoint of mesial margin, about as long as endopod. Pleopod 4 exopod without transverse suture, with thickened transverse ridges; endopod with thickened transverse ridges. Pleopod 5 exopod with transverse suture, with thickened transverse ridges, with 3 discrete scale patches. Uropod endopod lamellar or minute; exopod similar in length to endopod or much longer than reduced endopod.

Intertidal, subtidal. Temperate Australasia. 7 species (Baker, 1926: 4 species; 1928: 2 species (Harrison and Holdich, 1982b: rediagnosis, redescription of type species).

***Hemisphaeroma* Hansen, 1905**

*Diagnosis.* Pleotelson posterior margin simple, arcuate, without exit channel; ventrolateral margins laterally expanded,

directed more ventrally than coxae. Mandibular incisor elongate, deeply bicuspid. Maxillipedal palp articles 2–4 mesial margins not lobate. Pereopods 1–3 ischium, merus and propodus upper margins each with rows of long stiff slender setae. Pleopod 3 exopod without transverse suture. Pleopod 4 exopod without thickened transverse ridges; endopod with thickened transverse ridges. Pleopod 5 exopod with transverse suture, without thickened transverse ridges; endopod with thickened transverse ridges.

Probably estuarine or tidal riverine. Central Indo-Pacific (Surabaya, Indonesia). 1 species (Hansen, 1905: poorly known, not figured). Hansen (1905) provided few details of this species; specimens exist in museums; the species needs redescription.

***Heterodina* Schotte and Kensley, 2005**

*Diagnosis.* Body vaulted weakly, dorsal surfaces smooth, coxal and other margins with fringe of short setae or with membrana cingula (membranous setose fringe), unable to conglobate; not or weakly sexually dimorphic. Eyes more dorsal than lateral. Coxal plates truncate. Pleonite 1 wholly fused to pleonite 2; pleon comprising a single unit; sutures (except first) running to posterior or posterolateral margin or sutures absent. Pleotelson flat; posterior margin simple, arcuate, without exit channel; ventrolateral margins simple. Antennular peduncle article 1 robust, longer and more robust than 2 and 3 combined; article 3 longer than article 2; flagellum shorter than peduncle. Epistome extended prominently anteriorly as flat, anteriorly convex lobe, wide anteriorly. Maxillipedal palp articles 2–4 mesial margins not lobate, article 2 not expanded. Penial processes fused basally, long (extending to pleopod rami), tapering smoothly from midlength. Pleopod 1 endopod c. 0.5 as long and 0.5 as wide as exopod. Pleopod 2 appendix masculina sub-basal, stout or flask-shaped, about as long as endopod or longer than and extending beyond endopod. Pleopod 3 exopod without transverse suture. Pleopod 4 exopod without transverse suture, with thickened transverse ridges (very weak); endopod without thickened transverse ridges. Pleopod 5 exopod with incomplete transverse suture, with thickened transverse ridges (very weak), with 2 discrete scale patches; endopod without thickened transverse ridges. Uropodal rami forming part of continuous body outline; endopod narrowly rounded distally; exopod inserted near midpoint of lateral margin of peduncle-endopod, reduced, mobile, narrowly rounded distally.

Subtidal. Tropical Atlantic, Western Indo-Pacific (Belize, Persian Gulf). 3 species (Schotte and Kensley, 2005: diagnosis; Khalaji-Pirbalouty and Bruce, 2014: rediagnosis, key to species).

***Heteruropus* Verhoeff, 1942**

*Diagnosis.* Body dorsal surfaces smooth; not or weakly sexually dimorphic. Pleon dorsal surface with pair of low submedian ridges. Pleotelson with pair of low submedian ridges; with 2 small sublateral notches. Antennular peduncle article 1 robust, longer and more robust than 2 and 3 combined. Epistome wide anteriorly. Maxillipedal palp articles 2–4 mesial margins extended, forming finger-like lobes. Penial processes fused basally, long (extending to pleopod rami).

Pleopod 2 appendix masculina curved, barely reaching beyond apex of ramus, distally acuminate. Pleopod 4 exopod with transverse suture, without thickened transverse ridges; endopod with thickened transverse ridges. Pleopod 5 exopod with 2 discrete scale patches. Uropodal endopod truncate distally; exopod longer than endopod (shorter in female), acute distally.

Intertidal, subtidal. Tropical Atlantic (USA, Florida, Texas, Gulf of Mexico). 1 species (Menzies and Miller, 1955: description of type species; Kensley, 1987: diagnosis as junior synonym *Harrieta* Kensley, 1987).

#### ***Holotelson* Richardson, 1909**

*Diagnosis.* Body dorsal surfaces smooth, able to conglobate; not or weakly sexually dimorphic. Pereonite 7 with pair of posterior submedial dorsal lobes. Pleotelson tuberculate or with 1 or 2 rows of 3 tubercles; apex with prominent median projection and short tubercle each side. Antennular peduncle articles 1 and 2 robust, article 3 slender, longer than article 2; flagellum about as long as peduncle. Epistome wide anteriorly. Maxillipedal palp articles 2–4 mesial margins lobate. Penial processes set apart basally, short (not extending beyond pleopod peduncles). Pleopod 2 appendix masculina inserted near midpoint of mesial margin. Pleopod 3 exopod with or without transverse suture. Pleopods 4, 5 exopods and endopods with thickened transverse ridges. Uropodal endopod rounded broadly distally; exopod rounded broadly distally.

Intertidal, subtidal. Temperate Northern W Pacific (Japan). 4 species (Nunomura, 2004, 2013; Richardson, 1909).

#### ***Ischyromene* Racovitza, 1908**

*Diagnosis.* Body dorsal surfaces smooth or with nodular ornamentation or granular, with sparse setae, coxal and other margins with fringe of short setae, able to conglobate; not or weakly sexually dimorphic. Rostrum not separating antennular bases. Pereonite 7 without dorsal bosses, processes or marginal extensions or posterior margin with posteriorly directed rim. Coxal plates truncate. Pleonite 1 as wide as remainder of pleon, extending to pleon lateral margins; pleon sutures long, extending to pleon posterior margin. Pleotelson posterior margin with ventral thickened rim, forming ventrally open tube directed posteriorly or with short tube directed dorsally, enclosed ventrally and posteriorly or with subapical Y-shaped foramen connected to posterior by narrow slit; ventrolateral margins simple. Antennular peduncle articles 1–3 of similar stoutness (or tapering); article 2 usually shorter than articles 1 or 3; flagellum shorter than peduncle. Epistome narrow anteriorly. Mandibular molar process surface with transverse ridges. Maxillipedal palp articles 2–4 mesial margins lobate, article 2 not expanded. Penial processes in contact basally, short (not extending beyond pleopod peduncles), straight. Pleopod 1 rami operculate, mesial margin of endopod and exopod indurate. Pleopod 2 appendix masculina with straight margins or spatulate terminally, about as long as endopod. Pleopod 3 exopod without transverse suture. Pleopod 4 exopod without transverse suture, with thickened transverse ridges; endopod with thickened transverse ridges. Pleopod 5 exopod with

transverse suture, with thickened transverse ridges, with 3 discrete scale patches; endopod with thickened transverse ridges. Uropodal endopod broadly rounded distally; exopod similar in length to endopod, broadly rounded distally.

Intertidal, subtidal. Temperate Northern Atlantic, Tropical Atlantic, Temperate South America, Temperate Southern Africa, Temperate Australasia. 25 species (Harrison and Holdich, 1982a: rediagnosis, distribution; Schüller and Wägele, 2005a, b: redescription of type species). *Ischyromene* appears twice in the key.

#### ***Isocladus* Miers, 1876**

*Diagnosis.* Body dorsal surfaces smooth, able to conglobate; strongly sexually dimorphic. Pereonite 7 with prominent horizontal long dorsal spine. Pleonite 1 as wide as remainder of pleon, extending to pleon lateral margins. Pleotelson posterior margin with distinct median point, with incomplete ventral groove or channel; ventrolateral margins forming ridge. Antennular peduncle articles 1 and 2 robust, article 3 slender, longer than article 2; flagellum about as long as peduncle. Epistome wide anteriorly. Mandibular molar process surface with transverse ridges. Maxillipedal palp articles 2–4 mesial margins lobate, article 2 not expanded. Penial processes close-set basally, short (not extending beyond pleopod peduncles), straight. Pleopod 4 exopod with transverse suture, without thickened transverse ridges; endopod with thickened transverse ridges. Pleopod 5 exopod with transverse suture, with obsolete thickened transverse ridges, with 2 discrete scale patches; endopod with thickened transverse ridges. Uropodal endopod truncate distally or with shallow concavity; exopod truncate or acute distally.

Intertidal, subtidal. Central Indo-Pacific, Temperate South America, Temperate Southern Africa, Temperate Australasia (New Zealand, S Australia, Chile, Indonesia, Magellan Straits, South Africa, Subantarctica). 17 species (Hurley and Jansen, 1977: rediagnosis, key to 6 New Zealand species; Carvacho, 1997: rediagnosis, list of species). Females are very similar to *Exosphaeroma*.

#### ***Juletta* Bruce, 1993**

*Diagnosis.* Body vaulted weakly, dorsal surfaces smooth, unable to conglobate; not or weakly sexually dimorphic. Pereonite 7 narrower than pereonite 6, coxa not reaching as ventrally as coxa 6. Coxal plates truncate. Pleonite 1 narrower than remainder of pleon, not extending to pleon lateral margins; pleon with all pleonites fused to pleotelson with 1 lateral suture visible. Posterior margin fused medially to pleotelson. Pleotelson flat; posterior margin narrowed posteriorly, without exit channel or with incomplete ventral groove or channel; ventrolateral margins forming ridge. Antennular peduncle articles 1–3 of similar stoutness (or tapering); with article 3 posteriorly offset, article 3 as long as or shorter than article 2; flagellum shorter than peduncle. Epistome wide anteriorly. Mandibular incisor unicuspid; molar process surface smooth, surrounded with basal fine setae. Maxillipedal palp articles 2–4 mesial margins lobate, article 2 not expanded. Pereopods 2, 3 propodal palm with

proximal lobe. Penial processes close-set basally, short (not extending beyond pleopod peduncles), straight. Pleopod 1 rami operculate, mesial margin of endopod and exopod indurate. Pleopod 2 appendix masculina about as long as endopod. Pleopod 3 exopod without transverse suture. Pleopod 4 exopod without transverse suture, with thickened transverse ridges; endopod with thickened transverse ridges. Pleopod 5 exopod with incomplete transverse suture, with thickened transverse ridges, with 3 discrete scale patches; endopod with thickened transverse ridges. Uropodal endopod rounded broadly distally; exopod inserted laterally near anterolateral angle or midpoint of peduncle-endopod, reduced, mobile, rounded broadly distally.

Subtidal. Temperate Australia. 2 species (Bruce, 1993).

### ***Koremasphaera* Bruce, 2003**

*Diagnosis.* Body dorsal surfaces granular, with dense beds of setae across pereonites 2–7 and pleon; not or weakly sexually dimorphic. Rostrum not separating antennular bases. Coxal plates acute posterolaterally. Pleotelson with paired longitudinal carinae; posterior margin simple, arcuate, without exit channel; ventrolateral margins forming ridge. Antennular peduncle articles 1 and 2 robust, article 3 slender, longer than article 2; flagellum shorter than peduncle. Epistome narrow anteriorly. Mandibular molar process surface with transverse ridges. Maxillipedal palp articles 2–4 mesial margins extended, forming finger-like lobes, article 2 not expanded. Penial processes in contact basally, short (not extending beyond pleopod peduncles), tapering smoothly from midlength. Pleopod 2 appendix masculina spatulate terminally. Pleopod 4 exopod with transverse suture, without thickened transverse ridges; endopod without thickened transverse ridges. Pleopod 5 exopod with transverse suture, without thickened transverse ridges, with 2 discrete scale patches; endopod without thickened transverse ridges. Uropodal endopod styliform, acute distally; exopod styliform, with hard distal terminal spine.

Shelf (13 m). Temperate SE Australia. 1 species (Bruce, 2003).

### ***Kranosphaera* Bruce, 1992**

*Diagnosis.* Body dorsal surfaces with nodular ornamentation and coarse pits, unable to conglobate; not or weakly sexually dimorphic. Head without rostrum. Pereonite 7 narrower than pereonite 6, coxa not reaching as ventrally as coxa 6. Coxal plate 5 overlapping coxal plates 4 and 6 when folded. Pleonite 1 narrower than remainder of pleon, not extending to pleon lateral margins. Pleotelson with paired submedial bosses; posterior margin with ventral thickened rim, with incomplete ventral groove or channel; ventrolateral margins simple. Antennular peduncle articles 1 and 2 robust, article 3 slender, longer than article 2; flagellum shorter than peduncle. Epistome extended prominently anteriorly and elongate, produced as cone beyond antennulae. Mandibular incisor unicuspid; molar process surface smooth, surrounded with basal fine setae. Maxillipedal palp articles 2–4 mesial margins extended, forming finger-like lobes, article 2 not expanded. Pereopod 5 of male greatly

enlarged, smooth, with swollen carpus and propodus, 1.5 times as long as other pereopods. Penial processes in contact basally, long (extending to pleopod rami), sinuate. Pleopod 2 appendix masculina tapering evenly to apex, about as long as endopod. Pleopod 4 exopod with transverse suture, without thickened transverse ridges; endopod with thickened transverse ridges. Pleopod 5 exopod with transverse suture, without thickened transverse ridges, with 3 discrete scale patches; endopod with thickened transverse ridges. Uropod attached anterolaterally to pleotelson, cylindrical (not especially flattened); endopod narrowly rounded distally; exopod absent.

Shelf (39–52 m). Central Indo-Pacific (NW Australia). 1 species (Bruce, 1992).

### ***Lekanesphaera* Verhoeff, 1943**

*Diagnosis.* Body dorsal surfaces with ridges or tubercles, able to conglobate; not or weakly sexually dimorphic. Pleonite 1 as wide as remainder of pleon, extending to pleon lateral margins. Pleotelson posterior margin simple, arcuate, without exit channel; ventrolateral margins forming ridge. Antennular peduncle articles 1 and 2 robust, article 3 slender, longer than article 2; flagellum about as long as peduncle. Epistome narrow anteriorly. Mandibular molar process surface with transverse ridges. Maxillipedal palp articles 2–4 mesial margins lobate, article 2 expanded. Pereopods 1–3 ischium and merus upper margins each with rows of long stiff slender setae. Penial processes close-set basally, short (not extending beyond pleopod peduncles). Pleopod 3 exopod without transverse suture. Pleopod 4, 5 exopod with transverse suture, without thickened transverse ridges; endopod with thickened transverse ridges. Uropodal endopod narrowly rounded distally; exopod lateral margin serrate or smooth, acute distally.

Estuarine, marine intertidal. Temperate Northern Atlantic (E Atlantic, Mediterranean, Baltic). 14 species (Jacobs, 1987: rediagnosis, key to 13 species).

### ***Leptosphaeroma* Hilgendorf, 1885**

*Diagnosis.* Body flat, coxae without visible sutures, directed laterally, dorsal surfaces smooth, coxal and other margins with membrana cingula (membranous setose fringe), unable to conglobate; not or weakly sexually dimorphic. Rostrum acute, not separating antennular bases. Eyes more dorsal than lateral. Coxal plates truncate. Pleon with 2 partial sutures visible on fused part; sutures running to lateral margin. Pleotelson flat, narrower than pleon anteriorly; posterior margin with shallow median indentation, with incomplete ventral groove or channel. Antennular peduncle articles 1 and 2 flat, expanded as anterior and/or anterolateral lobes, with first articles meeting medially; article 3 as long as or shorter than article 2; flagellum shorter than peduncle. Epistome acute anteriorly. Maxillipedal palp articles 2–4 mesial margins not lobate. Pereopod 3 more slender than others. Penial processes set apart basally, short (not extending beyond pleopod peduncles). Pleopod 2 appendix masculina spatulate terminally. Pleopod 4 exopod with incomplete transverse suture, without thickened transverse ridges; endopod without thickened transverse ridges. Pleopod 5 exopod without transverse suture, without thickened transverse

ridges, with 3 discrete scale patches; endopod without thickened transverse ridges. Uropodal rami forming part of continuous body outline; uropodal endopod truncate distally, endopods in contact posteriorly; exopod subtriangular, acute distally.

Intertidal. Temperate Northern W Pacific (Japan). 1 species (Nishimura, 1976: redescription).

#### ***Margueritta* Bruce, 1993**

*Diagnosis.* Body vaulted, dorsal surfaces smooth, with sparse setae, coxal and other margins with fringe of short setae, unable to conglobate; not or weakly sexually dimorphic. Pereonite 7 narrower than pereonite 6 or narrower than pereonite 6, coxa not reaching as ventrally as coxa 6. Coxal plates truncate, coxal plates 2–7 not overlapping. Pleonite 1 narrower than remainder of pleon, not extending to pleon lateral margins; pleon fused to pleotelson with 1 lateral suture visible. Pleon posterior margin fused medially to pleotelson. Pleotelson posterior margin with shallow median indentation, forming ventrally open tube or closed tube, directed posteriorly; ventrolateral margins forming ridge. Antennular peduncle articles 1–3 of similar stoutness (or tapering); with article 3 offset posteriorly, article 3 as long as or shorter than article 2; flagellum shorter than peduncle. Epistome wide anteriorly. Mandibular incisor unicuspid; molar process surface smooth, surrounded with basal fine setae. Maxillipedal palp articles 2–4 mesial margins lobate, article 2 not expanded. Penial processes close-set basally, short (not extending beyond pleopod peduncles), straight. Pleopod 1 rami operculate, mesial margin of endopod and exopod indurate. Pleopod 2 appendix masculina spatulate terminally, about as long as endopod. Pleopod 3 exopod without transverse suture. Pleopod 4 exopod without transverse suture, with thickened transverse ridges; endopod with thickened transverse ridges. Pleopod 5 exopod without transverse suture, with thickened transverse ridges, with 2 discrete scale patches; endopod with thickened transverse ridges. Uropodal endopod broadly rounded or acute distally; exopod inserted laterally near anterolateral angle of peduncle-endopod, reduced, mobile (slightly), broadly rounded distally.

Subtidal. Temperate southern Western Australia. 2 species (Bruce, 1993).

#### ***Maricoccus* Poore, 1994**

*Diagnosis.* Body flat, scale-like, coxae without visible sutures, directed laterally, dorsal surfaces smooth, unable to conglobate; not or weakly sexually dimorphic. Head with anterior margin produced, overriding antennules, such that antennules are directed posteroventrally. Eyes more dorsal than lateral (also visible ventrally). Coxal plates truncate. Pleonite 1 wholly fused to pleonite 2; pleon comprising a single unit; sutures absent. Pleon posterior margin fused medially to pleotelson. Pleotelson flat; posterior margin with shallow median indentation, without exit channel; ventrolateral margins simple. Antennular peduncle articles 1 and 2 robust, article 3 slender; article 2 about as long as article 1, extended distally so that article 3 articulates on posterior margin; with article 3 offset posteriorly, article 3 as long as or shorter than article 2; flagellum shorter than peduncle. Epistome wide anteriorly. Mandibular incisor unicuspid; molar process surface smooth, surrounded with basal fine setae. Maxillipedal

palp articles 2–4 mesial margins lobate (2 barely), article 2 not expanded. Penial processes in contact basally, short (not extending beyond pleopod peduncles). Pleopod 1 rami operculate, mesial margin of endopod and exopod indurate. Pleopod 3 exopod without transverse suture. Pleopod 4 exopod without transverse suture, without thickened transverse ridges; endopod without thickened transverse ridges. Pleopod 5 exopod without transverse suture, with thickened transverse ridges, with 2 discrete scale patches; endopod with thickened transverse ridges. Uropodal endopods broadly rounded distally, in contact posteriorly; exopod inserted near midpoint of lateral margin of peduncle-endopod, shorter than endopod, broadly rounded distally.

Shelf. Temperate Australia. 1 species (Poore, 1994).

#### ***Moruloidea* Baker, 1908**

*Diagnosis.* Body dorsal surfaces with nodular ornamentation, able to conglobate or unable to conglobate; not or weakly sexually dimorphic. Head with rostrum visible dorsally or without rostrum; not produced or forming broad semicircular plate. Eyes lateral, or absent. Coxal plate 5 overlapping coxal plates 4 and 6 when folded. Pleon dorsal surface smooth, or with dorsal bosses. Pleotelson without dorsal process or with median dorsal process or with median dorsal boss; posterior margin with ventral thickened rim, with incomplete ventral groove or channel or with small triangular (widest posteriorly) notch; ventrolateral margins forming ridge. Antennular peduncle articles 1 and 2 robust, article 3 slender, longer than article 2; flagellum shorter than peduncle. Antennular peduncle article 5 strongly reflexed (male only), peduncular articles 4 and 5 enlarged. Epistome narrow anteriorly. Mandibular incisor unicuspid; molar process surface with transverse ridges. Maxillipedal palp articles 2–4 mesial margins lobate, article 2 not expanded. Pereopod 1 ambulatory (more compact in male). Penial processes in contact basally, short (not extending beyond pleopod peduncles). Pleopod 4 exopod with transverse suture, with thickened transverse ridges; endopod with thickened transverse ridges. Pleopod 5 exopod with transverse suture, with thickened transverse ridges, with 3 discrete scale patches; endopod with thickened transverse ridges. Uropodal endopod truncate distally, slightly excavate; exopod reduced, mobile, acute distally or falcate.

Shelf, slope. Temperate Australasia, Southern Ocean. 11 species (Kussakin, 1967: diagnosis of *Caecocassidias*; Harrison, 1984b; Brandt, 1998: redescription of *C. patagonicus*; Bruce, 2003: rediagnosis; Calderón López and Doti, 2025: rediagnosis). *Caecocassidias* Kussakin, 1967 is considered here as a subjective junior synonym of *Moruloidea* (new synonym).

#### ***Naesicopea* Stebbing, 1893**

*Diagnosis.* Body vaulted weakly, dorsal surfaces granular; strongly sexually dimorphic. Head without rostrum, antennular bases not separated; with anterior margin produced, overriding antennules. Eyes absent. Pereonite 7 narrower than pereonite 6, coxa not reaching as ventrally as coxa 6. Coxal plate 5 overlapping coxal plates 4 and 6 when folded. Pleonite 1 posterior margin with single flush median lobe, narrower than remainder of pleon, not extending to pleon lateral margins.

Pleon posterior margin entire. Pleotelson with median dorsal process; posterior margin simple, arcuate; ventrolateral margins simple. Antennular peduncle articles 1 and 2 robust, article 3 slender; article 2 with distinct anterodistal lobe; article 3 as long as or shorter than article 2; flagellum shorter than peduncle. Epistome wide anteriorly. Uropod attached posteriorly, at sides of pleotelson posterior margin; peduncle-endopod reduced, stub-like; exopod cylindrical, much longer than peduncle-endopod, cylindrical, curving medially and meeting posteriorly, acute distally, meeting posteriorly.

Slope (1958 m). Central Indo-Pacific (Papua New Guinea). 1 species in need of redescription (Beddard, 1886).

### ***Neonaesa* Harrison and Holdich, 1982**

*Diagnosis.* Body dorsal surfaces granular, with sparse setae, able to conglobate; strongly sexually dimorphic. Pleonite 1 as wide as remainder of pleon, extending to pleon lateral margins; pleon sutures short. Pleotelson with median dorsal boss and with paired submedial bosses; with median notch and 2 small sublateral notches; ventrolateral margins forming ridge. Antennular peduncle articles 1 and 2 robust, article 3 slender, longer than article 2; flagellum shorter than peduncle. Epistome wide anteriorly. Mandibular incisor multicuspid; molar process surface with transverse ridges. Maxillipedal palp articles 2–4 mesial margins lobate, article 2 not expanded. Penial processes set apart basally, short (not extending beyond pleopod peduncles), straight. Pleopod 2 appendix masculina inserted near midpoint of mesial margin, shorter than endopod. Pleopod 4 exopod with transverse suture, with thickened transverse ridges; endopod with thickened transverse ridges. Pleopod 5 exopod with incomplete transverse suture, with thickened transverse ridges, with 3 discrete scale patches; endopod with thickened transverse ridges. Uropod attached posteriorly, at sides of pleotelson posterior margin; peduncle without endopod; exopod cylindrical, longer than endopod, with hard distal terminal spike.

Subtidal. Indo West-Pacific (coral reefs). 1 species (Harrison and Holdich, 1982b; Müller, 1991: redescription, distribution). More species have been collected in East Africa.

### ***Neosphaeroma* Baker, 1926**

*Diagnosis.* Body dorsal surfaces smooth. Pleotelson posterior margin rounded broadly, without exit channel; ventrolateral margins forming ridge. Antennular peduncle articles 1 and 2 robust, article 3 slender, longer than article 2; flagellum about as long as peduncle. Epistome wide anteriorly. Maxillipedal palp articles 2–4 mesial margins extended, forming finger-like lobes. Pleopod 2 appendix masculina sinuate, extending well beyond endopod. Pleopod 3 endopod with transverse ridges. Pleopod 4 exopod with transverse suture; endopod with thickened transverse ridges. Uropodal endopod acute distally or with distal notch; exopod lateral margin with distal notch, truncate distally.

Subtidal, shelf. Temperate SE Australia. 2 species (Whitelegge, 1901: figs of limbs; Baker, 1926: diagnosis, descriptions of 2 species, third possibly belongs to another genus; Harrison and Holdich, 1984: rediagnosis, species discussion).

### ***Oxinasphaera* Bruce, 1997**

*Diagnosis.* Body dorsal surfaces with hard cuticular spines, densely setose, able to conglobate; strongly sexually dimorphic. Rostrum ornate. Pleonite 1 as wide as remainder of pleon, extending to pleon lateral margins; pleon posterior margin without process or with 2 distinct submedian lobes or with process directed posteriorly. Pleotelson posterior margin with ventral thickened rim, with posteriorly produced narrow lobe over excision or with 2 longitudinal bilateral grooves; ventrolateral margins forming ridge. Antennular peduncle articles 1 and 2 robust, article 3 slender; inferior margin with hard cuticular teeth; article 3 longer than article 2; flagellum shorter than peduncle. Epistome narrow anteriorly. Mandibular molar process surface smooth, surrounded with basal fine setae. Maxillipedal palp articles 2–4 mesial margins extended, forming finger-like lobes, article 2 not expanded. Penial processes in contact basally, short (not extending beyond pleopod peduncles). Pleopod 2 appendix masculina about as long as endopod. Pleopod 4 exopod with transverse suture, without thickened transverse ridges; endopod with thickened transverse ridges. Pleopod 5 exopod with transverse suture, without thickened transverse ridges, with 4 discrete scale patches; endopod with thickened transverse ridges. Uropod attached anterolaterally to pleotelson, cylindrical (not especially flattened); peduncle-endopod round in section, with hard distal terminal spike; exopod inserted near midpoint of lateral margin of peduncle-endopod, cylindrical, reduced, mobile, distally with distal terminal spike.

Subtidal, shelf. Western and Central Indo-Pacific, Temperate Australasia (East Africa to Philippines and New Caledonia in the east). 27 species (Bruce, 1997: diagnosis, descriptions and key to 23 species; Schotte and Kensley, 2005: rediagnosis, key to 5 Indian Ocean species).

### ***Paracassidina* Baker, 1911**

*Diagnosis.* Body flat, coxae without visible sutures, directed laterally or vaulted weakly, dorsal surfaces smooth or with nodular ornamentation, without setae or with sparse setae, coxal and other margins with fringe of short setae, unable to conglobate; not or weakly sexually dimorphic (sometimes dimorphic in antennules and ornamentation). Rostrum truncate, separating antennular bases (with epistome). Eyes more dorsal than lateral. Coxal plates truncate. Pleonite 1 fused medially to pleonite 2, narrower than remainder of pleon, not extending to pleon lateral margins; pleon with 1 partial suture visible on fused part. Pleotelson flat, narrower than pleon anteriorly; posterior margin simple, arcuate, without exit channel; ventrolateral margins simple. Antennular peduncle articles 1 and 2 flat, more or less expanded as anterior and/or anterolateral lobes, with first articles separated by prominent epistome; article 1 produced anteriorly (sometimes bilobed as antlers); article 2 with or without anterodistal lobe; article 3 as long as or shorter than article 2; flagellum shorter than peduncle, shorter than peduncular article 3. Epistome extended prominently anteriorly and elongate, wide anteriorly. Mandibular molar process surface smooth with palisade of spines on proximal margin. Maxillipedal palp articles 2–4

mesial margins lobate or extended, forming finger-like lobes, article 2 expanded. Pereopod 1 with elongate propodus; propodus club-shaped (dilated distally with dactylus subterminal); merus with long setose lobe on upper margin. Pereopods 1–3 ischium upper margin with few long stiff slender setae. Penial processes in contact basally, short (not extending beyond pleopod peduncles), straight. Pleopod 2 appendix masculina spatulate terminally. Pleopod 4 exopod without transverse suture, without thickened transverse ridges; endopod without thickened transverse ridges. Pleopod 5 exopod without transverse suture, without thickened transverse ridges, with 3 discrete scale patches; endopod without thickened transverse ridges. Uropodal rami forming part of continuous body outline; uropodal endopod acute distally; exopod inserted near midpoint of lateral margin of peduncle-endopod, reduced, mobile, narrowly rounded distally.

Intertidal, subtidal, shelf, slope (rare). Central Indo-Pacific, Temperate Australasia. 14 species (Bruce, 1994c: rediagnosis, key to species).

#### ***Paracassidinopsis Nobili, 1906***

*Diagnosis.* Body dorsal surfaces smooth, able to conglobate. Pleon dorsal surface tuberculate, or with 2 pairs of tubercles. Pleotelson with 2 pairs of ridges; posterior margin rounded broadly, with incomplete ventral groove or channel. Antennular peduncle articles 1 and 2 robust, article 3 slender or articles 1–3 of similar stoutness (or tapering); article 3 longer than article 2; flagellum shorter than peduncle. Epistome wide anteriorly. Maxillipedal palp articles 2–4 mesial margins lobate. Penial processes fused basally, long (extending to pleopod rami). Pleopod 1 endopod comprising small basal part and long filamentous thread. Pleopod 2 appendix masculina tapering to point. Pleopod 4 exopod with transverse suture, with thickened transverse ridges; endopod with thickened transverse ridges. Pleopod 5 exopod with thickened transverse ridges; endopod with thickened transverse ridges. Uropodal endopod broadly rounded distally; exopod reduced, mobile, broadly rounded distally.

Intertidal, subtidal. Western and Eastern Indo-Pacific (French Polynesia, Madagascar, Kenya). 2 species (Roman, 1974; Müller, 1991: second species, redescription of type species, synonymy).

#### ***Paracerceis Hansen, 1905***

*Diagnosis.* Body dorsal surfaces smooth, able to conglobate; strongly sexually dimorphic. Pleonite 1 narrower than remainder of pleon, not extending to pleon lateral margins; pleon posterior dorsal surface with pair of low submedian ridges; posterior margin with 2 distinct submedian lobes. Pleotelson with proximal median and submedian tubercles; posterior margin produced, with wide notch bearing median tooth and sometimes pair of teeth. Antennular peduncle articles 1 and 2 robust, article 3 slender, longer than article 2; flagellum longer than peduncle. Epistome narrow anteriorly. Maxillipedal palp articles 2–4 mesial margins lobate. Penial processes set apart basally, short (not extending beyond pleopod peduncles). Pleopods 1, 2 (sometimes 3) exopods lateral margins serrate, especially

distally. Pleopod 2 appendix masculina inserted near midpoint of mesial margin, about as long as endopod. Pleopod 4 exopod without transverse suture, with thickened transverse ridges; endopod with thickened transverse ridges. Pleopod 5 exopod without transverse suture, with thickened transverse ridges, with 3 discrete scale patches; endopod with thickened transverse ridges. Uropod with minute acute endopod; exopod cylindrical, exopod much longer than reduced endopod, extending beyond pleotelson apex, acute distally.

Subtidal. Temperate Northern Atlantic, Tropical Atlantic, Temperate Northern Pacific, Western and Central Indo-Pacific, Tropical Eastern Pacific, Temperate South America, Temperate Australasia. 13 species (Harrison and Holdich, 1982b: rediagnosis; Kensley, 1984: review of 4 species from Western Atlantic; Espinosa-Perez and Hendrickx, 2002: eastern Pacific species). *Paracerceis sculpta* (Holmes, 1904) has been introduced to tropical and temperate Australia, Brazil, Hawaii, Atlantic coast of Europe, Mediterranean and Hong Kong (Hewitt and Campbell, 2001) and to Japan (Ariyama and Otani, 2004).

#### ***Paracilicæa Stebbing, 1910***

*Diagnosis.* Body dorsal surfaces with nodular ornamentation, with sparse setae, able to conglobate; strongly sexually dimorphic. Pleonite 1 as wide as remainder of pleon, extending to pleon lateral margins. Pleotelson without dorsal process or with paired submedian bosses; with 2 small sublateral notches or with rectangular or rounded notch bearing median tooth; ventrolateral margins forming ridge. Antennular peduncle articles 1 and 2 robust, article 3 slender, longer than article 2; flagellum about as long as peduncle. Epistome wide anteriorly. Mandibular incisor unicuspid. Maxillipedal palp articles 2–4 mesial margins lobate, article 2 not expanded. Penial processes close-set basally, long (extending to pleopod rami). Pleopod 4 exopod with transverse suture, without thickened transverse ridges; endopod with thickened transverse ridges. Pleopod 5 exopod with transverse suture, without thickened transverse ridges, with 4 discrete scale patches; endopod with thickened transverse ridges. Uropod attached posteriorly, at sides of pleotelson posterior margin; peduncle-endopod reduced, stub-like; exopod cylindrical, longer than endopod, rounded narrowly distally.

Intertidal, subtidal, shelf, slope (0–454 m). Temperate Southern Africa, Temperate Australasia, Indo-West Pacific (greatest diversity in the Western Indian Ocean). 22 species (several doubtful) (Baker, 1926: figure; Harrison and Holdich, 1984: rediagnosis, history, species list; Benvenuti and Messana, 2000: rediagnosis, key to 20 species; Schotte and Kensley, 2005: rediagnosis, key to 13 Indian Ocean species).

#### ***Paradella Harrison and Holdich, 1982***

*Diagnosis.* Body dorsal surfaces smooth or with nodular ornamentation, without setae or with sparse setae, able to conglobate; strongly sexually dimorphic. Pleonite 7 without dorsal bosses, processes or marginal extensions or with bifid process directed posteriorly. Pleonite 1 as wide as remainder of pleon, extending to pleon lateral margins; merging, pleon

sutures short. Pleotelson tuberculate or smooth; posterior margin with ventral thickened rim, with subapical Y-shaped foramen connected to posterior by narrow slit; ventrolateral margins with broad, low, straight, outfolded ridges not meeting in posterior midline. Antennular peduncle articles 1 and 2 robust, article 3 slender; with articles 2 and 3 colinear, article 3 longer than article 2; flagellum shorter than peduncle. Epistome narrow anteriorly. Mandibular molar process surface with transverse ridges. Maxillipedal palp articles 2–4 mesial margins lobate, article 2 not expanded. Penial processes fused basally, long (extending to pleopod rami), tapering smoothly from midlength. Pleopod 4 exopod without transverse suture, with thickened transverse ridges; endopod with thickened transverse ridges. Pleopod 5 exopod with incomplete transverse suture, with thickened transverse ridges, with 3 discrete scale patches; endopod with thickened transverse ridges. Uropodal endopod broadly rounded distally; exopod broadly or narrowly rounded, or acute, distally.

Estuarine, marine, subtidal (widespread in shallow water habitats, temperate and tropical regions; probably worldwide). 15 species (Harrison and Holdich, 1982a; Bruce and Wetzer, 2004: remarks on difference from *Dynamenella*).

#### ***Paraimene* Javed and Ahmed, 1988**

*Diagnosis.* Body dorsal surfaces smooth or with ridges or tubercles, able to conglobate; strongly sexually dimorphic. Pleon dorsal surface smooth, or tuberculate; posterior margin with pair of sublateral lobes. Pleotelson with 1 or 2 pairs of longitudinal tubercles; with vertical slit visible posteriorly. Antennular peduncle articles 1–3 of similar stoutness (or tapering); article 3 longer than article 2; flagellum shorter than peduncle. Epistome wide anteriorly. Maxillipedal palp articles 2–4 mesial margins lobate. Penial processes close-set basally, short (not extending beyond pleopod peduncles). Pleopod 4 exopod with transverse suture, with thickened transverse ridges; endopod with thickened transverse ridges. Pleopod 5 exopod with transverse suture, with thickened transverse ridges, with 3 discrete scale patches; endopod with thickened transverse ridges. Uropodal endopod and exopod broadly rounded distally.

Intertidal. Tropical Atlantic, Western Indo-Pacific (Pakistan, Iran, Caribbean). 5 species (Javed and Ahmed, 1988: diagnosis; Ortiz et al., 2012: key to species; Arian and Khalaji-Pirbalouty, 2021: rediagnosis, redescription of type species).

#### ***Paraleptosphaeroma* Buss and Iverson, 1981**

*Diagnosis.* Body flat, coxae without visible sutures, directed laterally, dorsal surfaces smooth, coxal and other margins with membranous cingula (membranous setose fringe), unable to conglobate; not or weakly sexually dimorphic. Rostrum not separating antennular bases. Eyes more dorsal than lateral. Coxal plates truncate. Pleon comprising a single unit; sutures absent. Pleotelson flat, narrower than pleon anteriorly; posterior margin with shallow median indentation, with incomplete ventral groove or channel. Antennular peduncle articles 1 and 2 flat, expanded as anterior and/or anterolateral lobes, with first articles meeting medially; article 3 as long as or shorter than

article 2; flagellum shorter than peduncle. Maxillipedal palp articles 2–4 mesial margins not lobate. Penial processes in contact basally. Pleopod 2 appendix masculina inserted distally, ovoid, short. Pleopod 3 exopod without transverse suture. Pleopod 4 exopod without transverse suture, without thickened transverse ridges; endopod without thickened transverse ridges. Pleopod 5 exopod without transverse suture, without thickened transverse ridges, with 2 discrete scale patches; endopod without thickened transverse ridges. Uropodal rami forming part of continuous body outline; endopods in contact posteriorly; exopod embedded and flush with margin of endopod, rounded narrowly distally.

Intertidal. Temperate Northern Pacific, Western Indo-Pacific, Tropical Eastern Pacific. 4 species (Buss and Iverson, 1981).

#### ***Parasphaeroma* Stebbing, 1902**

*Diagnosis.* Body dorsal surfaces smooth. Coxal plates truncate. Pleonite 1 narrower than remainder of pleon, not extending to pleon lateral margins; sutures (except first) running to ventrolateral margin; pleon dorsal surface with posterior medial triangular dorsal projection. Pleotelson with small median triangular dorsal projection; posterior margin simple, arcuate, without exit channel. Antennular peduncle articles 1 and 2 robust, article 3 slender, longer than article 2; flagellum about as long as peduncle. Epistome extended prominently anteriorly and elongate, wide anteriorly. Maxillipedal palp articles 2–4 mesial margins lobate. Pereopod 2 more robust than pereopods 1 and 3. Penial processes short (not extending beyond pleopod peduncles). Pleopod 2 appendix masculina spatulate terminally. Pleopod 4 exopod with transverse suture, without thickened transverse ridges; endopod without thickened transverse ridges. Pleopod 5 exopod without transverse suture, with obsolete thickened transverse ridges, with 3 discrete scale patches. Uropodal endopod truncate distally; exopod longer than endopod, acute distally.

Subtidal. Temperate Southern Africa. 1 species (Stebbing, 1902; Bruce, 2001: rediagnosis, redescription).

#### ***Parisocladus* Barnard, 1914**

*Diagnosis.* Body dorsal surfaces smooth, able to conglobate; strongly sexually dimorphic. Pereonite 7 with prominent horizontal dorsal spine. Pleonite 1 as wide as remainder of pleon, extending to pleon lateral margins. Pleotelson posterior margin with distinct median point, with subapical foramen connected to apex by narrow slit; ventrolateral margins forming ridge. Antennular peduncle articles 1 and 2 robust, article 3 slender, longer than article 2; flagellum about as long as peduncle. Epistome wide anteriorly. Maxillipedal palp articles 2–4 mesial margins lobate. Pleopod 4 exopod with transverse suture, without thickened transverse ridges; endopod without thickened transverse ridges. Pleopod 5 exopod with transverse suture, without thickened transverse ridges. Uropodal endopod broadly rounded distally; exopod narrowly rounded or rounded with acute mesiodistal point.

Intertidal. Temperate Southern Africa. 2 species (Kensley, 1978: rediagnosis, key and figures of species).

***Pedinura* Bruce, 2003**

*Diagnosis.* Body dorsal surfaces smooth, unable to conglobate; not or weakly sexually dimorphic. Head without rostrum. Coxal plates tapering, rounded or coxal plates truncate. Pleonite 1 as wide as remainder of pleon, extending to pleon lateral margins. Pleotelson posterior margin simple, arcuate, without exit channel; ventrolateral margins forming ridge. Antennular peduncle articles 1 and 2 flattened strongly (compressed dorsoventrally but not part of anterior margin), with first articles meeting medially; article 1 produced anteriorly (but deflected posteroventrally in one species); article 3 as long as or shorter than article 2; flagellum shorter than peduncle. Epistome wide anteriorly or acute anteriorly. Mandibular molar process surface smooth, surrounded with basal fine setae. Maxillipedal palp articles 2–4 mesial margins not lobate, article 2 not expanded. Pereopods 2 and 3 more slender than others. Penial processes in contact basally or narrowly separated, short (not extending beyond pleopod peduncles), straight. Pleopod 2 appendix masculina inserted near midpoint of mesial margin. Pleopod 4 exopod with transverse suture, with thickened transverse ridges; endopod with thickened transverse ridges. Pleopod 5 exopod without transverse suture, with thickened transverse ridges, with 2 discrete scale patches or with 3 discrete scale patches; endopod with thickened transverse ridges. Uropod attached anteriorly, directed ventrally, not visible in dorsal view; endopod rounded broadly distally; exopod inserted near midpoint of lateral margin of peduncle-endopod, minute, immobile, broadly rounded distally.

Intertidal, subtidal, shelf (0–21 m). Temperate Australia. 2 species (Bruce, 2003).

***Pistorius* Harrison and Holdich, 1982**

*Diagnosis.* Body dorsal surfaces with nodular ornamentation, coxal and other margins with fringe of short setae, able to conglobate; strongly sexually dimorphic. Rostrum not separating antennular bases. Pleonite 1 as wide as remainder of pleon, extending to pleon lateral margins; pleon sutures short. Pleotelson vaulted; with short tube directed dorsally, enclosed ventrally and posteriorly; ventrolateral margins simple. Antennular peduncle article 1 robust, longer and more robust than 2 and 3 combined, with first articles meeting medially; article 3 longer than article 2; flagellum about as long as peduncle. Epistome narrow anteriorly. Maxillipedal palp articles 2–4 mesial margins lobate, article 2 not expanded. Penial processes close-set basally, long (extending to pleopod rami). Pleopod 2 appendix masculina basally swollen (“flask-shaped”). Pleopod 3 exopod without transverse suture. Pleopod 4 exopod with incomplete transverse suture, with thickened transverse ridges; endopod with thickened transverse ridges. Pleopod 5 exopod with transverse suture, with thickened transverse ridges, with 3 discrete scale patches; endopod with thickened transverse ridges. Uropod attached anterolaterally to pleotelson, cylindrical (not especially flattened); without endopod; exopod cylindrical, longer than endopod, falcate distally.

Intertidal. Western and Central Indo-Pacific (southern Great Barrier Reef, Thailand, Japan). 2 species (Harrison and Holdich, 1982b; Nunomura, 1990).

***Platycerceis* Baker, 1926**

*Diagnosis.* Body flat, coxae without visible sutures, directed laterally, dorsal surfaces smooth, unable to conglobate; not or weakly sexually dimorphic. Head with ventral rostrum. Coxal plates posterolaterally acute, coxal plate 7 shorter than coxal plate 6. Pleonite 1 narrower than remainder of pleon, not extending to pleon lateral margins. Pleotelson flat; posterior margin with deep notch, with incomplete ventral groove or channel. Antennular peduncle articles 1 and 2 robust, article 3 slender, longer than article 2; flagellum longer than peduncle. Epistome acute anteriorly. Maxillipedal palp articles 2–4 mesial margins lobate. Penial processes close-set basally, short (not extending beyond pleopod peduncles). Pleopods 1, 2 exopods lateral margins serrate, especially distally. Pleopod 2 appendix masculina inserted near midpoint of mesial margin, about twice as long as endopod. Pleopod 4 exopod without transverse suture, with thickened transverse ridges; endopod with thickened transverse ridges. Pleopod 5 exopod with transverse suture, with thickened transverse ridges, with 2 discrete scale patches; endopod with thickened transverse ridges. Uropodal rami extending well beyond pleotelson; peduncle-endopod styliform, acute distally; exopod styliform, acute distally.

Shelf. Temperate Australia. 1 species (Baker, 1926; Harrison, 1984b: rediagnosis, redescription of only species).

***Platynympha* Harrison, 1984**

*Diagnosis.* Body flat, coxae without visible sutures, directed laterally, dorsal surfaces smooth; not or weakly sexually dimorphic. Rostrum not separating antennular bases. Coxal plates truncate. Pleotelson flat; posterior margin posteriorly narrowed, with posteriorly produced sharp lobe over excision; ventrolateral margins forming ridge. Antennular peduncle article 1 robust, longer and more robust than 2 and 3 combined; article 1 with lower distal angle produced; article 3 as long as or shorter than article 2; flagellum longer than peduncle. Epistome narrow anteriorly. Maxillipedal palp articles 2–4 mesial margins lobate, article 2 not expanded. Penial processes in contact basally, long (extending to pleopod rami). Pleopod 2 appendix masculina tapering evenly to apex. Pleopod 4, 5 exopod with transverse suture, without thickened transverse ridges; endopod with thickened transverse ridges. Uropodal rami extending well beyond pleotelson; peduncle-endopod styliform, acute distally; exopod styliform.

Subtidal. Temperate Australia. 1 species (Harrison, 1984b).

***Platysphaera* Holdich and Harrison, 1981**

*Diagnosis.* Body flat, coxae without visible sutures, directed laterally, dorsal surfaces smooth, coxal and other margins with membrana cingula (membranous setose fringe), unable to conglobate; not or weakly sexually dimorphic. Rostrum acute, not separating antennular bases. Eyes more dorsal than lateral. Coxal plates truncate. Pleon comprising a single unit; sutures absent. Pleotelson flat, narrower than pleon anteriorly; posterior margin simple, arcuate, without exit channel; ventrolateral margins simple. Antennular peduncle articles 1 and 2 flat,

expanded as anterior and/or anterolateral lobes, with first articles meeting medially; article 3 as long as or shorter than article 2; flagellum shorter than peduncle, shorter than peduncular article 3. Epistome wide anteriorly. Mandibular molar process surface with transverse ridges. Maxillipedal palp articles 2–4 mesial margins not lobate, article 2 not expanded. Pereopods 2 and 3 more slender than others. Pereopods 1–3 ischium upper margin with few long stiff slender setae. Penial processes in contact basally, short (not extending beyond pleopod peduncles), straight. Pleopod 1 endopod much shorter than exopod. Pleopod 2 appendix masculina twice as long as endopod, rounded bluntly distally. Pleopod 3 exopod without transverse suture. Pleopod 4 exopod with transverse suture, without thickened transverse ridges; endopod without thickened transverse ridges. Pleopod 5 exopod without transverse suture, without thickened transverse ridges, with 2 discrete scale patches; endopod without thickened transverse ridges. Uropodal rami forming part of continuous body outline; uropodal endopod rounded broadly distally; exopod inserted anterior to lateral margin of peduncle-endopod, subtriangular.

Subtidal. Central Indo-Pacific (N Australia, Papua New Guinea). 1 species (Holdich and Harrison, 1981b; Bruce, 1994c: rediagnosis, redescription).

#### ***Pooredoce* Bruce, 2009**

*Diagnosis.* Body dorsal surfaces granular, densely setose, unable to conglobate; strongly sexually dimorphic. Pereonite 7 narrower than pereonite 6. Pleonite 1 as wide as remainder of pleon, extending to pleon lateral margins; pleon posterior margin with broad plate-like extension. Pleotelson posterior margin with ventral thickened rim, with 2 small submedian foramina and with hardened boss anterior to median notch; ventrolateral margins forming ridge. Antennular peduncle articles 1 and 2 robust, article 3 slender, longer than article 2; flagellum about as long as peduncle. Epistome narrow anteriorly. Mandibular molar process surface with transverse ridges. Maxillipedal palp articles 2–4 mesial margins extended, forming finger-like lobes, article 2 not expanded. Penial processes in contact basally, short (not extending beyond pleopod peduncles). Pleopod 4 exopod with transverse suture, without thickened transverse ridges; endopod with thickened transverse ridges. Pleopod 5 exopod with transverse suture, without thickened transverse ridges, with 3 discrete scale patches; endopod without thickened transverse ridges. Uropod attached anterolaterally to pleotelson, cylindrical (not especially flattened); endopod round in section, with hard distal terminal spike; exopod inserted near midpoint of lateral margin of peduncle-endopod, cylindrical, reduced, mobile, with hard distal terminal spike.

Subtidal (0–7 m). Central Indo-Pacific (Northern Great Barrier Reef, Australia). 1 species (Bruce, 2009).

#### ***Pseudocerceis* Harrison and Holdich, 1982**

*Diagnosis.* Body dorsal surfaces smooth or with nodular ornamentation, unable to conglobate; not or weakly sexually dimorphic. Pleonite 1 as wide as remainder of pleon, extending to pleon lateral margins. Pleotelson with 3 weak longitudinal carinae; with medially indented process directed posteriorly;

ventrolateral margins forming ridge. Antennular peduncle articles 1 and 2 robust, article 3 slender, with first articles meeting medially; article 1 with produced acute distal angles; article 3 longer than article 2; flagellum about as long as peduncle or flagellum shorter than peduncle. Epistome acute anteriorly. Maxillipedal palp articles 2–4 mesial margins lobate, article 2 not expanded. Penial processes set apart basally, short (not extending beyond pleopod peduncles), straight. Pleopods 1, 2 (sometimes 3) exopods lateral margins serrate, especially distally (obsolete serrations). Pleopod 2 appendix masculina inserted near midpoint of mesial margin, about as long as endopod. Pleopod 3 exopod with or without transverse suture. Pleopod 4 exopod without transverse suture, with thickened transverse ridges; endopod with thickened transverse ridges. Pleopod 5 exopod with transverse suture, with thickened transverse ridges, with 3 discrete scale patches; endopod with thickened transverse ridges. Uropodal endopod broadly rounded distally; exopod lateral margin finely serrate or smooth or serrate, broadly rounded distally.

Intertidal, subtidal. Western and Central Indo-Pacific, Temperate Australia (Great Barrier Reef, southern Australia, Somalia and Caribbean, Fiji). 4 species (Harrison and Holdich, 1982b). The Caribbean species *P. latistylis* Kensley and Schotte, 1994 is incorrectly placed in this genus.

#### ***Pseudosphaeroma* Chilton, 1909**

*Diagnosis.* Body dorsal surfaces with nodular ornamentation, able to conglobate; not or weakly sexually dimorphic. Rostrum not separating antennular bases. Pleon dorsal surface with 2 or more pairs of tubercles. Pleotelson with 2 pairs of sublateral tubercles; posterior margin with upturned dorsal rim, with incomplete ventral groove or channel; ventrolateral margins forming ridge. Antennular peduncle article 1 robust, longer and more robust than 2 and 3 combined; article 3 longer than article 2; flagellum longer than peduncle. Epistome narrow anteriorly. Maxillipedal palp articles 2–4 mesial margins not lobate, article 2 not expanded. Pereopods 1–3 ischium upper margin with few long stiff slender setae. Penial processes close-set basally, short (not extending beyond pleopod peduncles). Pleopod 2 appendix masculina spatulate terminally. Pleopod 4 exopod with thickened transverse ridges; endopod with thickened transverse ridges. Pleopod 5 exopod with incomplete transverse suture, with thickened transverse ridges, with 3 discrete scale patches; endopod with thickened transverse ridges. Uropodal endopod broadly rounded distally; exopod inserted laterally near anterolateral angle or near midpoint of lateral margin of peduncle-endopod, broadly rounded distally.

Intertidal, subtidal. Eastern Indo-Pacific, Temperate South America, Temperate Australasia. 7 species (Harrison, 1984b: rediagnosis, 3 species excluded). An undescribed species, previously misidentified as *P. campbellense* Chilton, 1909 has been introduced to the Pacific coast of North America (Bruce and Wetzer, 2008).

#### ***Ptyosphaera* Holdich and Harrison, 1983**

*Diagnosis.* Body dorsal surfaces smooth; strongly sexually dimorphic. Pleonite 1 as wide as remainder of pleon, extending to

pleon lateral margins. Pleotelson posterior margin with posteriorly directed, flat, acute triangular extension longer than main dome. Antennular peduncle articles 1 and 2 robust, article 3 slender, longer than article 2; flagellum about as long as peduncle. Epistome narrow anteriorly. Maxillipedal palp articles 2–4 mesial margins lobate. Penial processes set apart basally, short (not extending beyond pleopod peduncles), straight. Pleopod 3 exopod with incomplete transverse suture. Pleopod 4 exopod with incomplete transverse suture, with thickened transverse ridges; endopod with thickened transverse ridges. Pleopod 5 exopod with incomplete transverse suture, with thickened transverse ridges, with 3 discrete scale patches; endopod with thickened transverse ridges. Uropodal rami flat, grossly enlarged, broad, as long as head and pereon; uropodal endopod broadly rounded distally; exopod broadly rounded distally.

Estuarine. Central Indo-Pacific, Temperate Australia. 1 species (Holdich and Harrison, 1983).

### ***Scutuloidea* Chilton, 1883**

*Diagnosis.* Body vaulted weakly, dorsal surfaces smooth, unable to conglobate; not or weakly sexually dimorphic. Pleotelson posterior margin with shallow median indentation or broadly rounded, with incomplete ventral groove or channel. Antennular peduncle articles 1–3 of similar stoutness (or tapering). Maxillipedal palp articles 2–4 mesial margins not lobate. Penial processes close-set basally, long (extending to pleopod rami). Pleopod 2 appendix masculina inserted near midpoint of mesial margin. Pleopod 4 exopod with thickened transverse ridges; endopod with thickened transverse ridges. Pleopod 5 exopod with thickened transverse ridges, with 3 discrete scale patches; endopod with thickened transverse ridges. Uropodal peduncle-endopod a single broad plate alongside pleotelson, narrowly rounded distally; exopod absent.

Intertidal, subtidal. Temperate New Zealand. 2 species (Stephenson and Riley, 1996: rediagnosis, second species).

### ***Sphaeramene* Barnard, 1914**

*Diagnosis.* Body dorsal surfaces covered with large separate tubercles, in transverse rows on pereonites, able to conglobate. Pleonite 1 as wide as remainder of pleon, extending to pleon lateral margins. Pleotelson tuberculate; posterior margin produced, with (or without) narrow slit widening anteriorly to oval foramen. Antennular peduncle articles 1 and 2 robust, article 3 slender, longer than article 2; flagellum shorter than peduncle. Maxillipedal palp articles 2–4 mesial margins lobate. Penial processes set apart basally, short (not extending beyond pleopod peduncles), straight. Pleopod 4 exopod with transverse suture; endopod with thickened transverse ridges. Pleopod 5 exopod with transverse suture, without thickened transverse ridges, with 3 discrete scale patches; endopod with thickened transverse ridges. Uropodal endopod distally with shallow concavity; exopod longer than endopod, acute distally.

Intertidal, subtidal (0–22 m). Temperate Southern Africa. 3 species (Barnard, 1914; Loyola e Silva, 1966: key to species).

### ***Sphaeroma* Bosc, 1801**

*Diagnosis.* Body dorsal surfaces with nodular ornamentation, with sparse setae, able to conglobate; not or weakly sexually dimorphic. Pleonite 1 as wide as remainder of pleon, extending to pleon lateral margins. Pleotelson posterior margin simple, arcuate, without exit channel; ventrolateral margins forming ridge. Antennular peduncle articles 1 and 2 robust, article 3 slender, longer than article 2; flagellum about as long as peduncle. Epistome narrow or acute anteriorly. Mandibular molar process surface with transverse ridges. Maxillipedal palp articles 2–4 mesial margins not lobate, article 2 not expanded. Pereopods 1–3 ischium, merus and propodus upper margins each with rows of long stiff slender setae. Penial processes close-set basally, short (not extending beyond pleopod peduncles). Pleopod 3 exopod without transverse suture. Pleopod 4 exopod with transverse suture, without thickened transverse ridges; endopod with thickened transverse ridges. Pleopod 5 exopod with transverse suture, without thickened transverse ridges, with 5 discrete scale patches; endopod with thickened transverse ridges. Uropodal endopod narrowly rounded or acute distally; exopod lateral margin serrate, narrowly rounded or acute distally.

Estuarine, marine, intertidal, subtidal (0–46 m). Temperate Northern Atlantic, Tropical Atlantic, Temperate Northern Pacific, Indo West-Pacific, Temperate South America, Temperate Southern Africa, Temperate Australasia. 38 species (Harrison and Holdich, 1984; Jacobs, 1987: diagnosis, key to 3 species, review) There are several fossil species.

### ***Sphaeromopsis* Holdich and Jones, 1973**

*Diagnosis.* Body dorsal surfaces smooth or polished in appearance, coxal and other margins with fringe of short setae (weakly developed), able to conglobate; not or weakly sexually dimorphic. Pleonite 1 as wide as remainder of pleon, extending to pleon lateral margins; pleon sutures short. Pleotelson posterior margin simple, arcuate, arched in posterior view; ventrolateral margins simple. Antennular peduncle articles 1 and 2 robust, article 3 slender, longer than article 2; flagellum about as long as peduncle. Epistome narrow anteriorly. Mandibular molar process surface with transverse ridges. Maxillipedal palp articles 2–4 mesial margins not lobate, article 2 not expanded. Pereopods 1–3 ischium upper margin with few long stiff slender setae. Penial processes fused basally, long (extending to pleopod rami). Pleopod 2 appendix masculina about as long as endopod. Pleopod 3 exopod with or without transverse suture. Pleopod 4 exopod without transverse suture, with thickened transverse ridges; endopod with thickened transverse ridges. Pleopod 5 exopod with transverse suture, with thickened transverse ridges, with 3 discrete scale patches; endopod with thickened transverse ridges. Uropodal endopod broadly rounded distally; exopod broadly rounded or acute distally.

Subtidal, intertidal, sandy beaches. Tropical Atlantic, Western and Central Indo-Pacific. 14 species (Holdich and Harrison, 1981a: rediagnosis; Anil and Jayaraj, 2021: rediagnosis).

***Stathmos* Barnard, 1940**

*Diagnosis.* Body flat, coxae 2–7 with visible sutures, directed laterally, dorsal surfaces smooth, unable to conglobate. Pleotelson flat; posterior margin produced, without exit channel. Antennular peduncle articles 1 and 2 flat, separately expanded anteriorly; article 3 longer than article 2; flagellum shorter than peduncle. Epistome extended prominently anteriorly and elongate, narrow anteriorly. Maxillipedal palp articles 2–4 mesial margins extended, forming finger-like lobes. Pleopod 2 appendix masculina distal quarter reflexed. Pleopod 4 exopod with transverse suture, without thickened transverse ridges; endopod without thickened transverse ridges. Pleopod 5 exopod with transverse suture, without thickened transverse ridges, with 3 discrete scale patches; endopod without thickened transverse ridges. Uropodal endopod distally with shallow concavity; exopod truncate distally.

Intertidal–shelf (0–17 m). Temperate Southern Africa. 1 species (Bruce, 2001: rediagnosis, redescription of only species).

***Striella* Glynn, 1968**

*Diagnosis.* Body flat, coxae without visible sutures, directed laterally, dorsal surfaces smooth, coxal and other margins with fringe of short setae, unable to conglobate. Head without rostrum. Eyes more dorsal than lateral. Coxal plates truncate. Pleon sutures short, converging to single point on posterior margin. Pleotelson flat; posterior margin rounded broadly, with minute median notch, without exit channel. Antennular peduncle articles 1–3 of similar stoutness (or tapering); article 3 as long as or shorter than article 2; flagellum about as long as peduncle. Maxillipedal palp articles 2–4 mesial margins not lobate. Penial processes fused basally, long (extending to pleopod rami). Pleopod 2 appendix masculina tapering from thick base. Pleopod 4 exopod without transverse suture, without thickened transverse ridges; endopod without thickened transverse ridges. Pleopod 5 exopod without transverse suture, without thickened transverse ridges, with 1 discrete scale patch; endopod without thickened transverse ridges. Uropodal endopod broadly rounded distally; exopod shorter than endopod, broadly rounded distally.

Intertidal. Tropical Eastern Pacific (Panama, in barnacle shells). 1 species (Glynn, 1968).

***Syncassidina* Baker, 1928**

*Diagnosis.* Body flat, coxae without visible sutures, directed laterally, dorsal surfaces smooth, with sparse setae, coxal and other margins with fringe of short setae, unable to conglobate; not or weakly sexually dimorphic. Eyes more dorsal than lateral. Coxal plates truncate. Pleon comprising a single unit (with acute lateral margins); pleon sutures absent. Pleotelson flat; posterior margin with ventral thickened rim (flat and broad), without exit channel; ventrolateral margins forming ridge. Antennular peduncle articles 1 and 2 flat, expanded as anterior and/or anterolateral lobes, with first articles separated by prominent epistome; article 1 produced anteriorly; article 2 with distinct anterodistal lobe; article 3 as long as or shorter than article 2; flagellum shorter than peduncle. Epistome

extended prominently anteriorly and elongate, acute anteriorly. Mandibular molar process surface smooth with palisade of spines on proximal margin. Maxillipedal palp articles 2–4 mesial margins not lobate, article 2 not expanded. Pereopod 1 with elongate propodus. Pereopods 1–3 ischium upper margin with few long stiff slender setae. Penial processes fused basally. Pleopod 2 appendix masculina spatulate terminally (with minute teeth over tapering distal half). Pleopod 3 exopod without transverse suture. Pleopod 4 exopod without transverse suture, without thickened transverse ridges; endopod without thickened transverse ridges. Pleopod 5 exopod with transverse suture, without thickened transverse ridges, with 3 discrete scale patches (distal end entirely scaled); endopod without thickened transverse ridges. Uropodal rami forming part of continuous body outline; exopod minute, immobile.

Estuarine, marine, subtidal. Temperate Australia. 1 species (Holdich and Harrison, 1981b: rediagnosis, redescription of type species; Bruce, 1994c: rediagnosis, redescription of type species).

***Tholozodium* Eleftheriou, Holdich and Harrison, 1980**

*Diagnosis.* Body strongly vaulted, dorsal surfaces smooth, able to conglobate; not or weakly sexually dimorphic. Eyes minute. Pleon sutures short. Pleotelson posterior margin simple, arcuate, without exit channel. Antennular peduncle articles 1 and 2 robust, article 3 slender, longer than article 2; flagellum shorter than peduncle. Epistome projecting anteriorly, not conspicuous dorsally. Mandibular palp absent or represented by 1 seta. Maxillipedal palp articles 2–4 mesial margins not lobate. Pereopods 3–6 especially setose. Penial processes in contact basally, long (extending to pleopod rami). Pleopod 2 appendix masculina inserted near midpoint of mesial margin, spatulate. Pleopod 3 exopod without transverse suture. Pleopod 4 exopod without transverse suture, without thickened transverse ridges; endopod without thickened transverse ridges. Pleopod 5 exopod without transverse suture, without thickened transverse ridges, with 2 discrete scale patches; endopod without thickened transverse ridges. Uropodal endopod narrowly rounded distally; exopod acute distally.

Estuarine, marine, intertidal. Western Indo-Pacific, Temperate South America (India, eastern South America). 2 species (Eleftheriou et al., 1980; Pires, 1982).

***Waiteolana* Baker, 1926**

*Diagnosis.* Body dorsal surfaces with nodular ornamentation, able to conglobate; not or weakly sexually dimorphic. Head without rostrum. Pleonite 1 narrower than remainder of pleon, not extending to pleon lateral margins; pleon dorsal surface tuberculate. Pleotelson posterior margin simple, arcuate, with incomplete ventral groove or channel; ventrolateral margins forming ridge. Antennular peduncle articles 1–3 of similar stoutness (or tapering); article 2 without anterodistal lobe, or with distinct anterodistal lobe; article 3 as long as or shorter than article 2 or longer than article 2; flagellum shorter than peduncle. Epistome narrow anteriorly. Mandibular incisor multicuspid, or unicuspid; molar process surface reduced to thin acute cutting blade. Maxillipedal palp articles 2–4 mesial margins lobate, article 2 not expanded. Penial processes in

contact basally, long (extending to pleopod rami). Pleopod 4 exopod with transverse suture, without thickened transverse ridges; endopod without thickened transverse ridges, or with obsolete transverse ridges. Pleopod 5 exopod with transverse suture, without thickened transverse ridges, with 5 discrete scale patches; endopod without thickened transverse ridges, or with obsolete transverse ridges. Uropodal endopod with distal notch; exopod reduced, mobile, lateral margin with subdistal notch, acute distally.

Subtidal, shelf. Temperate Australia, Temperate South America. 3 species (Holdich and Harrison, 1981b; Harrison, 1984b: rediagnoses; Kussakin, 1967).

### ***Xynosphaera* Bruce, 1994**

*Diagnosis.* Body globular, highly vaulted, dorsal surfaces smooth, unable to conglobate; not or weakly sexually dimorphic. Head without rostrum. Coxal plates truncate. Pleonite 1 as wide as remainder of pleon, extending to pleon lateral margins; pleon sutures running to ventral margin; pleonal epimeron 2 ventrally well beyond epimera 3 and 4. Pleotelson posterior margin narrowed posteriorly; ventrolateral margins simple. Antennular peduncle articles 1 and 2 robust, article 3 slender, as long as or shorter than article 2; flagellum about as long as peduncle. Epistome wide anteriorly. Mandibular incisor unicuspid. Maxillipedal palp articles 2–4 mesial margins not lobate, article 2 not expanded. Pereopods 1–6 largely without setae; carpus partly fused with propodus on pereopods 2–6. Penial processes set apart basally, short (not extending beyond pleopod peduncles). Pleopod 4 exopod with transverse suture, without thickened transverse ridges; endopod with thickened transverse ridges. Pleopod 5 exopod with transverse suture, without thickened transverse ridges, with 4 discrete scale patches; endopod with thickened transverse ridges. Uropodal endopod narrowly rounded distally; exopod longer than endopod, narrowly rounded distally.

Subtidal (coral reefs; commensal burrowing into alcyonaceans). Western and Central Indo-Pacific (Philippines, northeastern Australia, Madagascar). 1 species (Bruce, 1994a).

### ***Zuzara* Leach, 1818**

*Diagnosis.* Body dorsal surfaces smooth, able to conglobate; strongly sexually dimorphic. Pereonite 7 with prominent horizontal long dorsal spine. Pleotelson tuberculate; posterior margin trilobate, with median, posterior extension overhanging pleotelson; ventrolateral margins forming ridge. Antennular peduncle articles 1 and 2 robust, article 3 slender, longer than article 2; flagellum about as long as peduncle. Epistome wide anteriorly. Maxillipedal palp articles 2–4 mesial margins lobate. Penial processes close-set basally, short (not extending beyond pleopod peduncles), straight. Pleopod 2 appendix masculina spatulate terminally. Pleopod 4 exopod without transverse suture, without thickened transverse ridges; endopod with thickened transverse ridges. Pleopod 5 exopod with transverse suture, with thickened transverse ridges, with 3 discrete scale patches. Uropodal endopod broadly rounded distally; exopod broadly rounded distally.

Intertidal, subtidal. Central Indo-Pacific, Temperate Southern Africa, Temperate Australia. 5 species (Harrison and Holdich, 1984: rediagnosis).

### **Freshwater genera excluded from key**

Five of the six exclusively freshwater genera are restricted to the inland ground waters of the Dinaric karst and neighbouring territories in Europe (Jaume and Queinnec, 2007; Sket, 1986). One occurs in hot freshwater springs in southwestern United States and Mexico. Other genera that have representative species in estuaries or brackish ponds may extend their ranges upriver into fresh water, or are found on beaches subject to freshwater flow at low tide (e.g. Holdich and Harrison, 1983) are included in the key and list above.

*Bilistra* Sket and Bruce, 2004. Three species from karst areas in the northwest of South Island, New Zealand (Sket and Bruce, 2004: diagnosis, key to species). *Pseudosphaeroma barnardi* Monod, 1931 belongs to this genus.

*Caecosphaeroma* Dollfus, 1896. Two species in two subgenera in underground streams in Europe (Sket, 1986).

*Makarasphaera* Bruce, 2005. One species from maritime freshwater streams and seeps in New Zealand (Bruce, 2005).

*Merozoon* Sket, 2012. One species from Croatia (Sket, 2012).

*Monolistra* Gerstaecker, 1856. Nineteen species in five subgenera (Prevorčnik and Sket, 2007; Sket, 1986; Prevorčnik et al., 2010: phylogeny and key to species of subgenus *Microlistra* Racovitza, 1929).

*Thermosphaeroma* Cole and Bane, 1978. Eight species from hot freshwater springs in the southwestern United States and central Mexico (Bowman, 1981: rediagnosis; Schotte, 2000: key to species).

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## Tecticipitidae Iverson, 1982

Figure 9.22

The small family with a single genus is confined to the North Pacific. Iverson (1982) provided an extensive diagnosis but treated the group as a subfamily of Sphaeromatidae. Bruce (1993) rediagnosed it as a family. At least one species is locally very abundant on sandy beaches in Japan (Udagawa et al., 2004).

**Diagnosis.** Body oval, flat; head free from pereonite 1; pereonites 1–7 visible dorsally, separated by sutures. Coxal dorsal plates 2–7 delimited from tergite by suture; dorsal coxal plate 7 similar to plate 6. Pleon with pleonite 1 almost hidden dorsally, pleonites 2–5 fused, indicated laterally by 2 sutures. Pleotelson broad, triangular. Antennular and antennal peduncles cylindrical, not part of margin of body. Mandibular incisor cultrate, with or without cusps; molar process absent. Maxillula mesial endite with 3 long pectinal spines; lateral endite with about 13 spines. Maxilla with prominent mesial endite with plumose setae; second and lateral endites with long serrate setae. Maxillipedal palp of 5 free articles. Pereopod 1 subchelate, propodus swollen, palm with row of close-set robust setae. Pereopod 2 subchelate in males only. Pleopods 1–3 peduncles subquadrate, with terminal rami. Uropods attached anterolaterally to pleotelson; endopod fused to peduncle (laminar), exopod laminar.

### *Tecticeps* Richardson, 1897

Intertidal sand beaches to bathyal. Temperate Northern Pacific. 12 species (Birstein, 1963; Kussakin, 1979: rediagnosis, key to 11 species).

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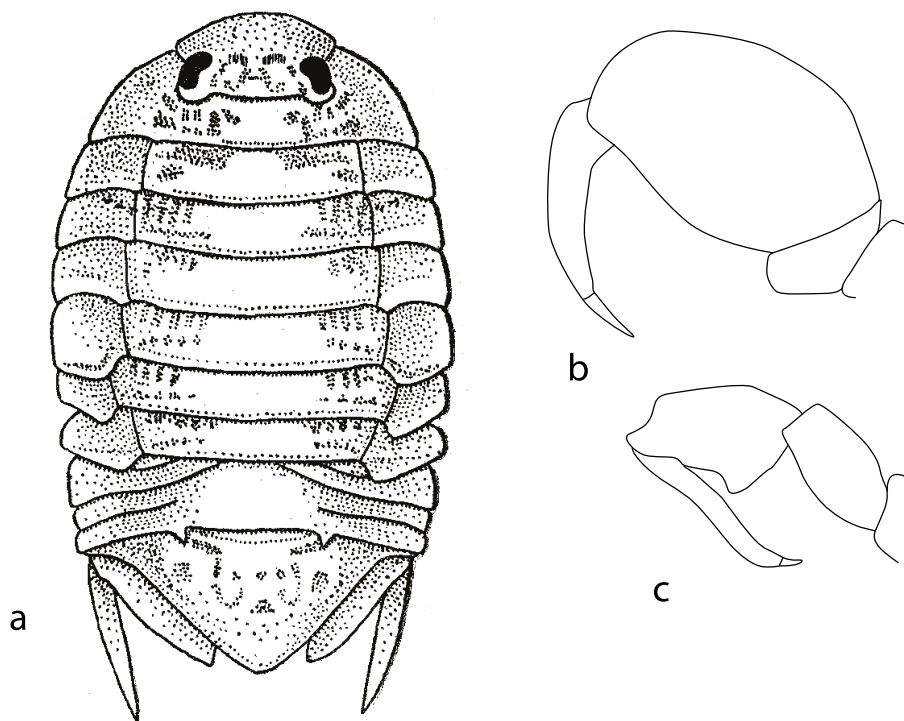


Figure 9.22. Tecticipitidae. *Tecticeps alascaensis* Richardson, 1897. a, habitus; b, c, carpus–dactylus of pereopods 1, 2 (male).

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