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## Chapter 10. Suborder Valvifera

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### Abstract

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Diagnoses and illustrated keys are provided for 12 families and 90 genera of marine isopods of the suborder Valvifera. The ecology and distribution of each taxon are discussed with citation of literature critical for further investigation.

### Keywords

Antarcturidae, Arcturidae, Arcturididae, Austrarcturellidae, Holidoteidae, Pseudidotheidae, Rectarcturidae, Thermoarcturidae, Xenarcturidae, Chaetiliidae, Holognathidae, Idoteidae, dichotomous keys

### Introduction

Isopods of the suborder Valvifera G.O. Sars, 1883 are distinguished from all other suborders by the manner in which the uropods attach laterally on the pleotelson and are modified to form opercular plates covering the pleopods ventrally. With the exception of one species, all valviferans lack a mandibular palp. Valviferans range in size from a few millimetres long to some of the largest isopods known. In Antarctica, *Glyptonotus antarcticus* Eights, 1852 grows up to 90 mm long (Held and Wägele, 2005).

Valviferans fall naturally into two groups, differentiated on the basis of general body shape, fusion of the head and pereonite 1, arrangement of pereopods, and sexual modification of the male pleopod 1 (see key and diagnoses). Although not recognised formally previously, they are treated as superfamilies here: Arcturoidea Dana, 1849 and Idoteoidea Samouelle, 1819.

Arcturoidea generally have cylindrical bodies with fused head and pereonite 1 and long modified pleopods 1. Some arcturoids use their long setose pereopods 2–4 as filter-feeding baskets (Wägele, 1987) while others have these pereopods modified in other ways. Some arcturoids reach the deepest parts of the ocean. The Idoteoidea are flat with free heads and unmodified first pleopods; they include some of the few herbivorous isopods (Poore et al., 2017).

An early comprehensive review of the systematics and phylogeny of the Valvifera (Brusca, 1984) recognised six

families (one, Idoteidae, with five subfamilies). More recent revisions recognise 12 families (Poore, 2001, 2015).

*Diagnosis.* Head-pereonite 1 free, or fused. Dorsal pereopodal coxal plates present (reduced secondarily in some species); coxal plate of pereopod 1 fused to tergite; coxal plate 7 present; ventral coxal plates 1–7 (medial extension of coxa replacing sternite) extending to midpoint (well defined and separated by suture). Pleonites 4–6 fused into pleotelson, pleonites 1–3 free or fused variously. Pleotelson underside vaulted, branchial chamber defined by ridges along mesial margin of lateral edge; ventrolateral margins of pleon and pleotelson narrow. Penial processes medial, on anterior margin or directly on pleonite 1. Mandibular lacinia mobilis present on both sides; molar usually a cylindrical process with tritulative flat end; palp absent (present in *Holognathus stewarti* (Filhol, 1885)). Maxilla trilobed. Maxillipedal endite reaching at least distal margin of palp article 2, usually truncate distally and setose. Pereopods 1–3 more or less prehensile, directed anteriorly; pereopods 4–7 directed posteriorly. Pleopodal exopods uniarticulate. Pleopod 1 biramous. Pleopod 2 biramous. Pleopod 3 biramous; endopod roughly triangular (or at least with inner angle sharper than outer). Telsonic region of pleotelson elongate, anus situated anteriorly on pleotelson. Uropod situated anterolaterally on pleotelson; peduncle and short rami enclosing pleopods in branchial chamber; rami lateral to margin of pleotelson, articulating in longitudinal axis and folding down alongside branchial chamber.

### Key to families of Valvifera

1. Head free from pereonite 1 (rarely fused). Pereopod 1 subchelate and similar to or larger than pereopod 2. Pleopod 1 peduncle as long or shorter than rami; exopod of male laminar, about twice as long as wide, with distal setae shorter than rami (fig. 10.18v) ..... Idoteoidea ... 2

- Head fused with pereonite 1. Pereopod 1 smaller than pereopod 2, sometimes gnathopod-like, very different in structure from pereopod 2. Pleopod 1 peduncle elongate, distinctly longer than rami; exopod of male more than twice as long as wide, laminar with lateral notch or thickened with groove on posterior face, with distal setae longer than rami (fig. 10.4q, t) ..... Arcturoidea ... 4
- 2. Pereopods 1, 1–3, 1–5 or 1–6 subchelate or prehensile and different from remaining limbs. Head with flat lateral lobes, sometimes notched. Uropod with 2 rami (figs 10.13, 10.14) ..... Chaetiliidae ... p. 459
- Only pereopod 1 subchelate, others ambulatory. Head without flat lateral lobes, never deeply notched. Uropod with 1 or rarely 2 rami ..... 3
- 3. Pereopod 4 similar to other pereopods. Body oval or elongate; pleotelson acute posteriorly, rarely rounded (figs 10.16–10.18) ..... Idoteidae ... p. 466
- Pereopod 4 shorter than others and with spinose distal articles. Body more or less parallel-sided. Pleotelson rounded posteriorly (fig. 10.15) ..... Holognathidae ... p. 464
- 4. Pereopod 1 coxal plate and head expanded ventrally and enclosing gnathopod-like pereopod 1. Male pleopod 1 exopod laminar, with lateral notch, a tuft of fine setae, 2 or 3 long plumose setae, or a combination of these (figs 10.3, 10.4) ..... Arcturidae ... p. 442
- Pereopod 1 coxal plate not expanded to enclose pereopod 1. Pereopod 1 a grasping limb (fig. 10.2c). Male pleopod 1 exopod thickened, with groove or with lateral secondary ramus ..... 5
- 5. Uropodal rami each with apical strong robust seta, exopod minute, shorter than wide. Penial plate bifid apically and splayed. Exopod of male pleopod 1 with overlapping rows of simple and plumose setae along lateral margin, terminating at subdistal excavation into which groove opens. Body cylindrical or often flattened (fig. 10.8) ..... Holidoteidae ... p. 451
- Uropodal rami, if present, without apical strong robust seta, exopod longer than wide, usually with 2 or 3 long apical setae. Penial plate apically simple or weakly bifid. Exopod of male pleopod 1 with simple row of setae along lateral margin; groove opens distolaterally or laterally. Body cylindrical or rarely flattened ..... 6
- 6. Body strongly geniculate between pereonites 4 and 5 ..... 7
- Body straight, not flexed between pereonites 4 and 5 ..... 9
- 7. Pleotelson variously sculptured, often with paired posterior pleotelsonic spines, but without single medial posterior spine dorsal to apex. Pereopods 2–4 with dactylus strong, unguis short (rarely setiform). Pereopods 2–4 similar. Pleonite 1 not articulating with pleotelson; groove on exopod of male pleopod 1 opening distolaterally or laterally ..... 8
- Pleotelson with dorsolateral ridges usually ending in middorsal posterior spine dorsal to apex (or transverse ridge of spines). Pereopods 2–4 with dactylus shortened, unguis setiform, longer than dactylus. Pereopod 4 usually smaller and less setose than pereopods 2 and 3. Pleonite 1 weakly or not articulating with pleotelson. Groove on exopod of male pleopod 1 opening distolaterally or exopod with prominent basally derived lateral lobe (figs 10.6, 10.7) ..... Austrarcturellidae ... p. 448
- 8. Pereopods 2–4 with closely space pairs of long flexible “filter-setae” and associated shorter finer setae. Uropodal exopod rectangular with distal setae, shorter than endopod. Cuticle smooth (figs 10.1, 10.2) ..... Antarcturidae ... p. 435
- Pereopods 2–4 with widely spaced, more or less alternating lateral and mesial stiff setae, without associated groups of shorter finer setae. Uropodal rami triangular, exopod slightly smaller than endopod, both rami with terminal robust setae. Cuticle covered in fur of fine setae (fig. 10.11) ..... Thermoarcturidae ... p. 458
- 9. Body dorsoventrally flattened, dorsally setose, without spines. Pereopods 2 and 3 with even rows of long setae, pereopods 4–7 ambulatory (fig. 10.12) ..... Xenarcturidae ... p. 458
- Body cylindrical, ornamented. Pereopods 2–4 differentiated from ambulatory pereopods 5–7 or 2–7 ..... 10
- 10. Pereonites cylindrical, longer than wide, each with paired simple dorsal spines. Pereopods 2–7 similar, ambulatory (fig. 10.5) ..... Arcturididae ... p. 448
- Pereonites wider than long, with complex dorsal plate-like spination. Pereopods 2–4 differentiated from ambulatory pereopods 5–7 ..... 11

11. Pereopods 1–4 with strong robust setae on broad articles, dactyli with short unguis. Exopod of male pleopod 1 with groove ending on distolateral apical extension (fig. 10.9) ..... Pseudidotheidae ... p. 453
- Pereopods 2–4 with weak rows of long setae, dactyli with long, setiform unguis. Exopod of male pleopod 1 with groove ending distolaterally (fig. 10.10) ..... Rectarcturidae ... p. 454

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Fig. 10.1a, Kussakin and Vasina (1995); b, d, g, Schultz (1981); c, e, Beddard (1886); f, Poore (1998); h, Brandt (1990); i, Baltzer et al. (2000); j, Kussakin and Vasina (1998); k, Kussakin and Vasina (1994). Fig. 10.2a, Hale (1946); b, e, Beddard (1886); c, Poore (2012); d, Kussakin (1967); f, Vanhöffen (1914); g, Pereira et al. (2019). Fig. 10.3a, h, Kensley et al. (2007); d, e, Menoui and Poore (2008); f, King and Poore (2001); g, Sars (1897); k, King (2003b); l, Stransky et al. (2020). Fig. 10.5a, Hale (1946). Fig. 10.6a, b, d, Poore and Bardsley (1992); c, Poore (1998). Fig. 10.8a–f, Kensley (1978). Fig. 10.9, Poore and Bardsley (2004). Fig. 10.10a–d, g, h, Poore (2013); e, f, Park and Wägele (1995). Fig. 10.11a, Schultz (1966); b, Kensley (1978). Fig. 10.12a, b, Park (1995). Fig. 10.13a, Poore (1978); b, k, l, Poore (1985); c, King and Cawood (2007); d, m, Poore (1984); e, Wägele (1991); f, Poore et al. (2009); g, Jones and Fenwick

(1978); h, Roman (1991); j, Holthuis (1964). Fig. 10.15a, b, Poore and Lew Ton (1990). Fig. 10.16b, e, g, h, j, m, s, Poore and Lew Ton (1993); c, Miers (1881); f, Brandt (1990); n, King and Poore (2001); o, Moreira (1974). Fig. 10.17a, Park and Wägele (1995); b, Santos and Xavier (2011); c–e, Poore and Lew Ton (1993); f, Poore and Hurlay (2015).

### References

- Brusca, R.C. 1984. Phylogeny, evolution and biogeography of the marine isopod subfamily Idoteinae (Crustacea: Isopoda: Idoteidae). *Transactions of the San Diego Society of Natural History* 20: 99–134. <https://doi.org/10.5962/bhl.part.29001>
- Held, C., and Wägele, J.W. 2005. Cryptic speciation in the giant Antarctic isopod *Glyptonotus antarcticus* (Isopoda: Valvifera: Chaetiliidae). *Scientia Marina* 69 (Suppl. 2): 175–181. <https://doi.org/10.3989/scimar.2005.69s2175>
- Poore, A.G.B., Ahyong, S.T., Lowry, J.K., and Sotka, E.E. 2017. Plant feeding promotes diversification in the Crustacea. *Proceedings of the National Academy of Sciences* 114: 8829–8834. <http://doi.org/10.1073/pnas.1706399114>
- Poore, G.C.B. 2001. Isopoda Valvifera: diagnoses and relationships of the families. *Journal of Crustacean Biology* 21: 205–230. [http://doi.org/10.1651/0278-0372\(2001\)021\[0205:IVDARO\]2.0.CO;2](http://doi.org/10.1651/0278-0372(2001)021[0205:IVDARO]2.0.CO;2)
- Poore, G.C.B. 2015. Thermoarcturidae, a new crustacean family of three genera (Isopoda: Valvifera). *Zootaxa* 4007: 409–418. <http://doi.org/10.11646/zootaxa.4007.3.7>
- Wägele, J.W. 1987. The feeding mechanism of *Antarcturus* and a redescription of *A. spinacoronatus* Schultz, 1978 (Crustacea: Isopoda: Valvifera). *Philosophical Transactions of the Royal Society B* 316: 429–458. <https://doi.org/10.1098/rstb.1987.0031>

## Superfamily Arcturoidea Dana, 1849

Arcturoids differ from idoteids in the fusion of pereonite 1 to the head, gnathopod-like first pereopod and the modified pleopod 1, that of the male interacting with the appendix masculina on pleopod 2 as a spermatophore-transfer device.

*Diagnosis.* Body more or less cylindrical, without coxal dorsal plates or pleonal epimera (*Xenarcturus* excepted). Head and

pereonite 1 fused. Pereopod 1 smaller than pereopod 2, sometimes gnathopod-like, very different in structure from pereopod 2. Pleopod 1 peduncle more elongate than rami, longer than on other pleopods; exopod of male thickened and with groove on posterior face, or laminar, with proximolateral notch.

## Antarcturidae Poore, 2001

Figures 10.1, 10.2

Antarcturids lack the elongate pereonite 4 that characterises Arcturidae (Poore, 2001). The anterior body is held erect to allow filter feeding using long setae on pereopods 2–4 (Wägele, 1987). The mouthparts are visible in lateral view. The family is diverse, especially in deep water of the Southern Ocean (Wägele, 1991). The major revision of Brandt (1990)

established many of the current genera. Keys to identify some species can be found in Wägele (1991) and Kussakin (1982), the latter in Russian and now somewhat outdated. A cladistic analysis using morphological features of representatives of eight genera found that not all are monophyletic (Pereira et al., 2019).

*Diagnosis.* Body more or less cylindrical, without coxal dorsal plates or pleonal epimera, flexed between pereonites 4 and 5, anterior segments held slightly erect. Pereopod 1 gnathopod-like; pereopods 2–4 elongated, with even rows of long filter-setae, differentiated from ambulatory pereopods 5–7; with prominent dactyli, unguis short. Uropodal exopod (smaller ramus) tapering (with terminal seta or setae only). Pleopod 1 peduncle more elongate than rami, longer than on other pleopods; exopod of male thickened and with groove on posterior face, ending distolaterally or laterally on simple margin.

*Implicit generic attributes.* Head with pair of submedian spines between eyes; pereonites without supracoxal spines (tubercles at most); without paired sublateral spines; without paired submedian spines; without middorsal spines. Pleonites without middorsal spines; without marginal lateral spines. Eyes pigmented. Pereopods 2–4 with regular rows of long setae along flexor margins of merus–propodus; dactylus linear, with few short setae along flexor margin; unguis short, curved.

### Key to genera of Antarcturidae

1. Pereopods 2–4 with regular rows of long setae along flexor margins of merus–dactylus (figs 10.1f, g, 10.2m) ..... 2
  - Pereopods 2–4 with regular rows of long setae along flexor margins of merus–propodus; dactylus with few short setae (fig. 10.2b) ..... 5
2. Pleonite 1 free from remaining pleotelson; pleonites 2 and 3 with middorsal spine; pleotelson with marginal lateral spines (fig. 10.2d) ..... *Mixarcturus*
  - Pleonite 1 fused to remaining pleotelson; pleonites 2 and 3 without middorsal spine; pleotelson without lateral spines ..... 3
3. Pereonites 1 and 3 only with prominent supracoxal spines (fig. 10.1c). Pereopods 2–4 unguis setiform (figs 10.1d, 10.2m) ..... *Caecarcturus*
  - Pereonites 1–7 variously spinose. Pereopods 2–4 unguis short or absent ..... 4
4. Pereonites 1, 2 with supracoxal spines directed anteriorly; 4–7 with triangular spines; pereon otherwise smooth (fig. 10.1j) ..... *Glaberarcturus*
  - Pereonites 1–7 with supracoxal, sublateral, submedian and middorsal spines (fig. 10.1d, e) ..... *Chaetarcturus*
5. Pleotelson with pair of prominent posterolateral spines longer than lateral spines (figs 10.1c, h, i, 10.2b, c, e) ..... 6
  - Pleotelson without pair of prominent posterolateral spines ..... 11
6. Pleotelson with prominent medial posterior spine dorsal to margin (fig. 10.2c, e) ..... 7
  - Pleotelson without medial posterior spine dorsal to margin (fig. 10.1c, h, i, 10.2b) ..... 8
7. Pereonites 1–5 with middorsal spines on posterior margins. Pleonites 5 and 6 with middorsal spines (fig. 10.2c) ..... *Marmachus*
  - Pereonites 1–5 without middorsal spines. Pleonites 5 and 6 without middorsal spines (fig. 10.2e) ..... *Oxyarcturus*
8. Head without pair of submedian spines between eyes ..... 9
  - Head with pair of submedian spines between eyes ..... 10
9. Pleonite 1 articulating with pleotelson. Posterolateral spines on pleotelson about half as long as pleotelson (fig. 10.1i) ..... *Furcarcturus*
  - Pleonite 1 fused with pleotelson. Posterolateral spines on pleotelson about one-fifth as long as pleotelson (fig. 10.2b) ..... *Litarcturus*
10. Antennal flagellum of 9 or more short articles (fig. 10.2i). Pereopods 2–4 unguis short, curved (fig. 10.2l) ..... *Antarcturus*
  - Antennal flagellum of 3 or more articles plus claw (fig. 10.2j). Pereopods 2–4 unguis setiform (fig. 10.2n) ..... *Fissarcturus*

- |     |  |                        |
|-----|--|------------------------|
| 11. | Pereonites with sublateral and supracoxal mushroom-like tubercles; pereonites 1–4 with middorsal tubercles on posterior margins (fig. 10.2f). Antennal flagellum of 9 or more short articles ..... | <i>Tuberarcturus</i>   |
| –   | Pereonites ornamented with spines or tubercles, without mushroom-like tubercles. Antennal flagellum of 4 or fewer articles .....   | 12                     |
| 12. | Pleotelson prominently produced posteriorly (figs 10.1b, g, 10.2g) .....   | 13                     |
| –   | Pleotelson not prominently produced posteriorly .....  | 15                     |
| 13. | Pereon and pleotelson without spines or tubercles (fig. 10.1g). Pereopods 2–4 unguis setiform .....  | <i>Cylindrarcturus</i> |
| –   | Pereon and pleotelson spinose or tuberculate. Pereopods 2–4 unguis short, curved .....   | 14                     |
| 14. | Body spinose (fig. 10.1b). Antennal flagellum of 4 similar articles (fig. 10.2h). Uropod with 1 short ramus, tenth length of peduncle (fig. 10.2o) .....   | <i>Acantharcturus</i>  |
| –   | Body tuberculate at most (fig. 10.2g). Antennal flagellum of 2 articles and claw (fig. 10.2k). Uropod with 1 long ramus, half length of peduncle (fig. 10.2p) .....                                | <i>Xiphoarcturus</i>   |
| 15. | Head without submedian spines. Pereon without supracoxal, sublateral and submedian spines. Pleotelson dorsal surface bulbous, as long as wide (fig. 10.1k) .....                                   | <i>Globarcturus</i>    |
| –   | Head with submedian spines. Pereon with supracoxal, sublateral and submedian spines or tubercles. Pleotelson dorsal surface convex, longer than wide .....   | 16                     |
| 16. | Eyes present. Pereon with prominent tubercles. Pleotelson with prominent middorsal blade-like tubercles, with marginal lateral projections (fig. 10.2a) .....                                      | <i>Halarcturus</i>     |
| –   | Eyes absent. Pereon with small tubercles and paired sublateral spines. Pleotelson with lateral and sublateral tubercles (fig. 10.1a) .....   | <i>Abyssarcturus</i>   |

#### ***Abyssarcturus* Kussakin and Vasina, 1995**

*Diagnosis.* Pereonites with supracoxal spines on all pereonites; with paired sublateral tubercles; with paired submedian tubercles (spines on pereonites 1 and 2). Pleonite 1 free from remaining segments of pleotelson. Pleotelson without paired submedian spines; with pairs of sublateral tubercles. Eyes absent. Antennal flagellum of 3 articles. Pereopods 2–4 unguis half as long as dactylus. Pleopod 1 of male exopod groove opening distolaterally on margin, scarcely produced at opening. Pleopod 2 of male, appendix masculina acute, about as long as endopod. Uropod with triangular endopod and smaller exopod.

Abyssal. Southern Ocean. 1 species (Kussakin and Vasina, 1995).

#### ***Acantharcturus* Schultz, 1981**

*Diagnosis.* Pereonites with supracoxal spines on all pereonites; with paired sublateral spines; with paired submedian spines; with middorsal spines on posterior margins of pereonites 1–5. Pleonite 1 free from remaining segments of pleotelson. Pleotelson with paired submedian spines or tubercles; with few pairs of sublateral spines, none more prominent than others; with marginal lateral spines; produced prominently posteriorly. Antennal flagellum of 4 articles. Pleopod 1 of male exopod groove opening distolaterally on lobe-like apex beset with numerous fine setae. Pleopod 2 of male, appendix masculina elongate, acute, considerably longer than endopod. Uropod with short endopod only.

Abyssal. Southern Ocean. 3 species (Schultz, 1981; Wägele, 1991: rediagnosis, key to 2 species).

#### ***Antarcturus* zur Strassen, 1902**

*Diagnosis.* Pereonites with supracoxal spines on all pereonites; with paired sublateral spines; without paired submedian spines (sometimes with tubercles). Pleonite 1 fused to remaining pleotelson. Pleotelson with paired submedian spines or tubercles; with pairs of sublateral tubercles, or with few pairs of sublateral spines, none more prominent than others, or with prominent pair of sublateral spines on pleonite 3; with marginal lateral spines; with pair of prominent posterolateral spines longer than other sublateral spines. Antennal flagellum of 9 or more short articles. Pleopod 1 of male exopod groove opening distolaterally on margin, scarcely produced at opening. Pleopod 2 of male, appendix masculina acute, about as long as endopod. Uropod with triangular endopod and smaller exopod.

Shelf–abyssal. Temperate Northern W Pacific, Southern Ocean. 26 species (Brandt, 1990: rediagnosis, species descriptions; Wägele, 1991: rediagnosis, key to 15 Antarctic species).

#### ***Caecarcturus* Schultz, 1981**

*Diagnosis.* Head without pair of submedian spines between eyes; pereonites with prominent supracoxal spines on pereonites 1 and 3 only. Pleonite 1 fused to remaining pleotelson. Pleotelson without paired submedian spines; with prominent pair of sublateral spines on pleonite 3. Eyes absent. Antennal flagellum of 4 articles. Pereopods 2–4 with regular rows of long setae along flexor margins of merus–dactylus; unguis setiform. Pleopod 1 of male exopod groove opening

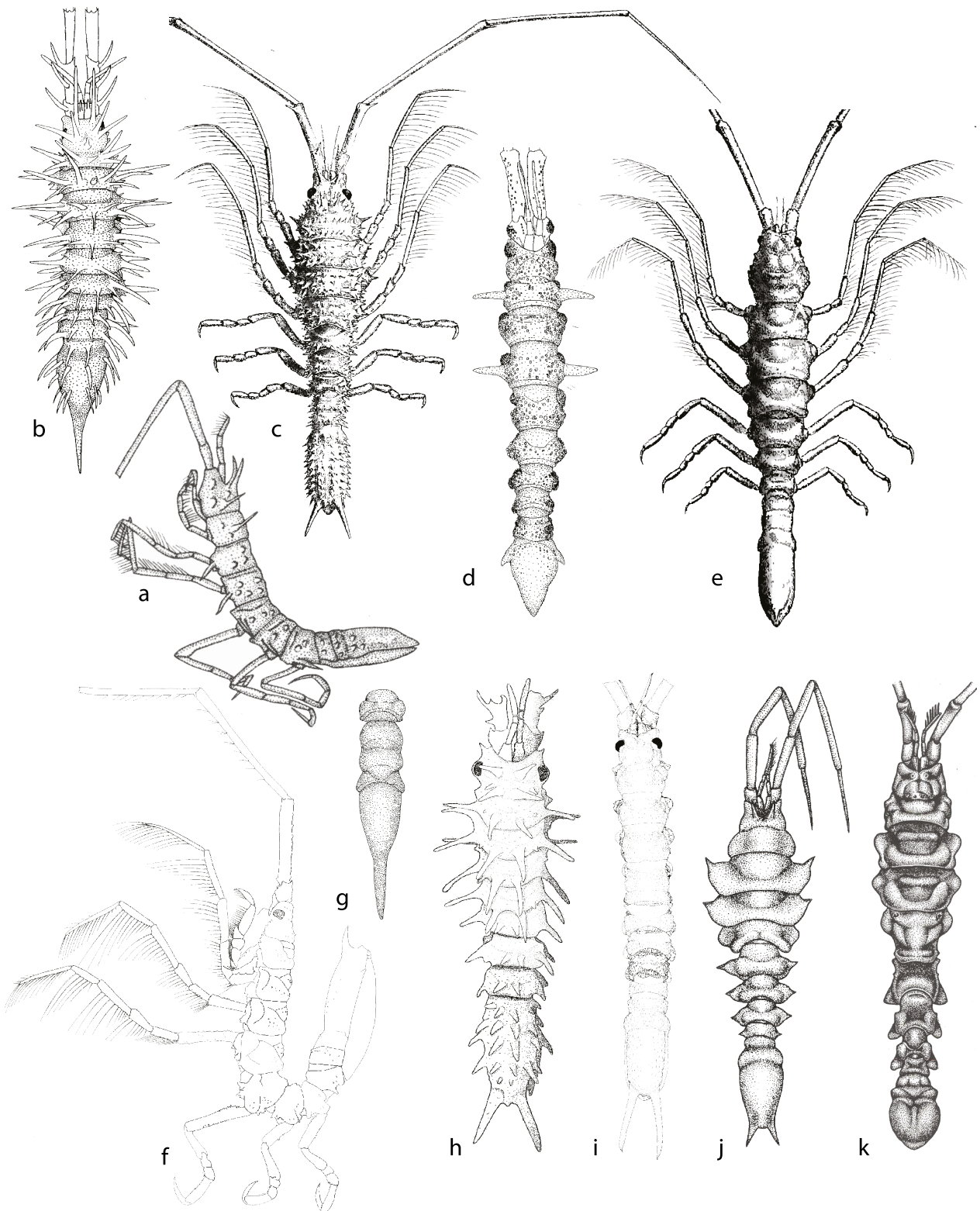


Figure 10.1. Antarcturidae. a, *Abyssarcturus averincevi* Kussakin and Vasina, 1995; b, *Acantharcturus acutipleon* Schultz, 1981; c, *Antarcturus glacialis* (Beddard, 1886); d, *Caecarcturus quadraspinosus* Schultz, 1981; e, *Chaetarcturus abyssicolus* (Beddard, 1886); f, *Chaetarcturus crosnieri* Poore, 1998; g, *Cylindrarcturus elongatus* Schultz 1981 (pereonite 7, pleotelson); h, *Fissarcturus emarginatus* Brandt, 1990; i, *Furcarcturus polarsterni* Baltzer, Held and Wägele, 2000; j, *Glaberarcturus stellae* Kussakin and Vasina, 1998; k, *Globarcturus angelikae* Kussakin and Vasina, 1994.

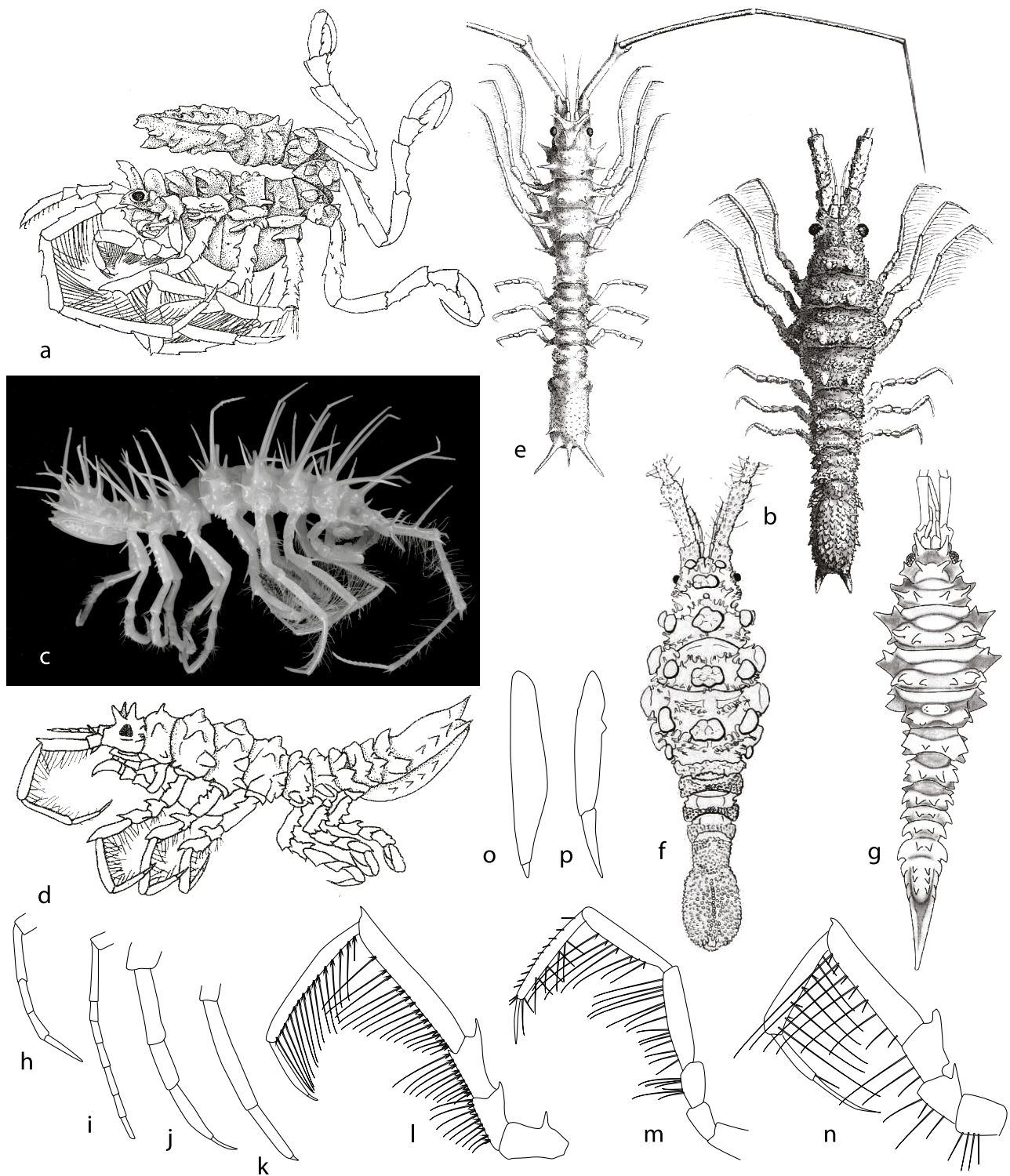


Figure 10.2. Antarcturidae. a, *Halarcturus serrulatus* (Whitelegge, 1904); b, *Litarcturus americanus* (Beddard, 1886); c, *Marmachius fortuneae* Poore, 2012; d, *Mixarcturus abnormis* (Kussakin, 1967); e, *Oxyarcturus spinosus* (Beddard, 1886); f, *Tuberarcturus drygalskii* (Vanhöffen, 1914); g, *Xiphoarcturus kussakini* Pereira, Roccatagliata and Doti, 2019. Antennal flagellum: h, *Acantharcturus*; i, *Antarcturus*; j, *Fissarcturus*; k, *Xiphoarcturus*. Pereopod 2: l, *Antarcturus*; m, *Caecarcturus*; n, *Fissarcturus*. Uropod: o, *Acantharcturus*; p, *Xiphoarcturus*.

distolaterally on margin, scarcely produced at opening. Pleopod 2 of male, appendix masculina acute, about as long as endopod. Uropod with short endopod only (uncertain).

Shelf–bathyal. Southern Ocean (subantarctic New Zealand). 1 species (Schultz, 1981).

#### ***Chaetarcturus* Brandt, 1990**

*Diagnosis.* Pereonites with supracoxal spines on all pereonites; with paired sublateral spines; with paired submedian spines; with middorsal spines on posterior margins of pereonites 1–5. Pleonite 1 fused to remaining pleotelson. Pleotelson with paired submedian spines or tubercles; with few pairs of sublateral spines, none more prominent than others; with pair of prominent posterolateral spines longer than other sublateral spines; with prominent medial posterior spine dorsal to margin. Antennal flagellum of 3–7 articles. Pereopods 2–4 with regular rows of long setae along flexor margins of merus–dactylus. Pleopod 1 of male exopod groove opening distolaterally on subterminal triangular projection. Uropod with triangular endopod and smaller exopod.

Shelf–bathyal. Temperate Northern W Pacific, Central Indo-Pacific, Temperate South America, Temperate Australasia, Southern Ocean. 25 species (Brandt, 1990; Wägele, 1991: rediagnosis, key to 6 Antarctic species; Poore, 1998: list of species).

#### ***Cylindrarcturus* Schultz, 1981**

*Diagnosis.* Head without pair of submedian spines between eyes. Pleonite 1 fused to remaining pleotelson. Pleotelson without paired submedian spines; prominently posteriorly produced. Antennal flagellum of 4 articles. Pereopods 2–4 unguis setiform. Uropod with short endopod only.

Shelf–abyssal. Southern Ocean. 3 species (Schultz, 1981; Wägele, 1991: rediagnosis; Brandt, 2002).

#### ***Fissarcturus* Brandt, 1990**

*Diagnosis.* Pereonites with supracoxal spines on all pereonites; with paired sublateral spines, or with paired sublateral tubercles; without paired submedian spines, or with paired submedian spines. Pleonite 1 fused to remaining pleotelson. Pleotelson with paired submedian spines or tubercles; with few pairs of sublateral spines, none more prominent than others; with marginal lateral spines; with pair of prominent posterolateral spines longer than other sublateral spines. Antennal flagellum of 4 or more articles plus claw. Pereopods 2–4 unguis setiform. Pleopod 1 of male exopod groove opening laterally on margin, covered with small lobe. Pleopod 2 of male, appendix masculina elongate, acute, considerably longer than endopod. Uropod with triangular endopod and smaller exopod.

Shelf–bathyal. Southern Ocean. 22 species (Brandt, 1990; Wägele, 1991: keys to species as *Fissarcturus* and *Neoarcturus*; Poore, 2003: corrections to Wägele’s use of *Neoarcturus*; Brandt, 2007).

#### ***Furcarcturus* Baltzer, Held and Wägele, 2000**

*Diagnosis.* Head without pair of submedian spines between eyes. Pleonite 1 free from remaining segments of pleotelson. Pleotelson

without paired submedian spines; with pair of prominent posterolateral spines half as long as pleotelson. Antennal flagellum of 9 or more short articles. Pleopod 1 of male exopod groove opening laterally on margin, covered with small lobe. Pleopod 2 of male, appendix masculina acute, about as long as endopod. Uropod with triangular endopod and smaller exopod.

Bathyal. Southern Ocean. 1 species (Baltzer et al., 2000).

#### ***Glaberarcturus* Kussakin and Vasina 1998**

*Diagnosis.* Pereonites with supracoxal spines directed anteriorly on pereonites 2, 3, triangular spines on 5–7. Pleonite 1 fused to remaining pleotelson. Pleotelson without paired submedian spines; with pair of prominent posterolateral spines one fifth as long as pleotelson. Eyes absent. Antennal flagellum of 2 articles plus short claw. Pereopods 2–4 with regular rows of long setae along flexor margins of merus–dactylus. Uropod with triangular endopod and smaller exopod.

Bathyal. Southern Ocean. 1 species (Kussakin and Vasina, 1998).

#### ***Globarcturus* Kussakin and Vasina 1994**

*Diagnosis.* Head without pair of submedian spines between eyes. Pleonite 1 free from remaining segments of pleotelson. Pleotelson dorsal surface bulbous, as wide as long; pleotelson without paired submedian spines. Eyes absent. Antennal flagellum of 4 articles plus claw. Pleopod 1 of male exopod groove opening distolaterally on margin, scarcely produced at opening. Pleopod 2 of male, appendix masculina elongate, acute, considerably longer than endopod. Uropod with triangular endopod and smaller exopod.

Hadal. Southern Ocean. 1 species (Kussakin and Vasina, 1994).

#### ***Halearcturus* Poore, 2015**

*Diagnosis.* Pereonites with supracoxal spines on all pereonites; with paired sublateral tubercles. Pleonite 1 fused to remaining pleotelson. Pleotelson with 2 middorsal tubercles near apex; pleotelson without paired submedian spines; with pairs of sublateral tubercles; with marginal lateral projections. Antennal flagellum of 1 long and 1 minute articles. Pleopod 1 of male exopod groove opening distolaterally on margin, scarcely produced at opening. Pleopod 2 of male, appendix masculina elongate, acute, considerably longer than endopod. Uropod with short endopod only.

Shelf. Temperate SE Australia. 1 species (Poore, 2015).

#### ***Litarcturus* Brandt, 1990**

*Diagnosis.* Head without pair of submedian spines between eyes. Pleonite 1 fused to remaining pleotelson. Pleotelson without paired submedian spines; with pair of prominent posterolateral spines one fifth as long as pleotelson. Antennal flagellum of 9 or more short articles. Pereopods 2–4 unguis half as long as dactylus. Pleopod 1 of male exopod groove opening distolaterally on margin, scarcely produced at opening. Uropod with triangular endopod and smaller exopod.

Shelf–bathyal. Southern Ocean. 7 species (Brandt, 1990; Wägele, 1991: rediagnosis, key to 6 Antarctic species).

**Marmachius Poore, 2012**

**Diagnosis.** Pereonites with supracoxal spines on all pereonites; with paired sublateral spines (exceptionally long); with paired submedian spines (exceptionally long); with middorsal spines on posterior margins of pereonites 1–5. Pleonite 1 free from remaining segments of pleotelson. Pleotelson dorsal surface bulbous, differentiated from lateral margin by longitudinal groove; pleonites 5 and 6 with middorsal spines; pleotelson with paired submedian spines or tubercles; with few pairs of sublateral spines, none more prominent than others; with marginal lateral spines; with pair of prominent posterolateral spines longer than other sublateral spines; with prominent medial posterior spine dorsal to margin. Antennal flagellum of 9 or more short articles. Pleopod 1 of male exopod groove opening distolaterally on lobe-like apex with numerous fine setae. Pleopod 2 of male, appendix masculina elongate, acute, considerably longer than endopod. Uropod with triangular endopod and smaller exopod.

Slope, abyssal. Temperate SE Australia, Southern Ocean. 2 species (Poore, 2012).

**Mixarcturus Brandt, 1990**

**Diagnosis.** Pereonites with supracoxal spines on all pereonites (tubercles only); with paired sublateral tubercles; with paired submedian tubercles. Pleonite 1 free from remaining segments of pleotelson. Pleonites 2 and 3 with middorsal spine; pleotelson without paired submedian spines; with marginal lateral spines; with pair of prominent posterolateral spines longer than other sublateral spines. Antennal flagellum of 3 articles plus claw. Pereopods 2–4 with regular rows of long setae along flexor margins of merus–dactylus. Pleopod 1 of male exopod groove opening distolaterally on margin, scarcely produced at opening. Pleopod 2 of male, appendix masculina elongate, acute, considerably longer than endopod. Uropod with triangular endopod and smaller exopod.

Shelf–bathyal. Southern Ocean. 3 species (Brandt, 1990; Wägele, 1991: rediagnosis, key to 2 Antarctic species).

**Oxyarcturus Brandt, 1990**

**Diagnosis.** Pereonites with supracoxal spines on all pereonites; with paired sublateral spines; with paired submedian spines. Pleonite 1 fused to remaining pleotelson. Pleotelson with paired submedian spines or tubercles (pleonites 1–3 only); with few pairs of sublateral spines, none more prominent than others; with pair of prominent posterolateral spines longer than other sublateral spines; with prominent medial posterior spine dorsal to margin. Antennal flagellum of 9 or more short articles. Uropod with triangular endopod and smaller exopod.

Shelf–bathyal. Southern Ocean. 2 species (Brandt, 1990; Wägele, 1991: rediagnosis, key to 3 Antarctic species; Pereira et al., 2023).

**Tuberarcturus Brandt, 1990**

**Diagnosis.** Head with pair of submedian spines between eyes (blunt); pereonites with supracoxal mushroom-like tubercles; with paired sublateral tubercles (mushroom-shaped); with

middorsal tubercles on posterior margins of pereonites 1–4. Pleonite 1 fused to remaining pleotelson. Pleotelson without paired submedian spines. Antennal flagellum of 9 or more short articles. Uropod with triangular endopod and smaller exopod.

Shelf–bathyal. Southern Ocean. 5 species (Brandt, 1990; Wägele, 1991: rediagnosis, key to 3 Antarctic species).

**Xiphoarcturus Pereira, Roccatagliata and Doti, 2019**

**Diagnosis.** With paired sublateral spines, or with transverse ridge. Pleonite 1 fused to remaining pleotelson. Pleotelson with paired submedian spines or tubercles; with few pairs of sublateral spines, none more prominent than others; produced prominently posteriorly. Antennal flagellum of 2 articles plus short claw. Pleopod 1 of male exopod groove opening distolaterally on margin, scarcely produced at opening. Pleopod 2 of male, appendix masculina elongate, acute, considerably longer than endopod. Uropod with endopod only, about half as long as peduncle.

Slope. Temperate South America (Mar del Plata submarine canyon). 2 species (Pereira et al., 2019).

**References**

- Baltzer, C., Held, C., and Wägele, J.W. 2000. *Furcarcturus polarsterni* gen. nov., sp. nov., a large deep-sea arcturid isopod from the Drake Passage, with a preliminary molecular characterization. *Polar Biology* 23: 833–839. <https://doi.org/10.1007/s0030000000160>
- Beddard, F.E. 1886. Zoology Part XLVIII. Report on the Isopoda collected by H.M.S. Challenger during the years 1873–76. Second Part. *Report of the Scientific Results of the Voyage of H.M.S. Challenger during the years 1873–76* 17: 1–178, pls I–XXXV, 1 chart. <http://biodiversitylibrary.org/page/36871016>
- Brandt, A. 1990. *Antarctic valviferans (Crustacea, Isopoda, Valvifera) new genera, new species and redescriptions*. E.J. Brill: Leiden. 176 pp.
- Brandt, A. 2002. *Cylindrarcturus longitelson* n. sp. from the South Shetland Islands, Antarctica (Isopoda, Arcturidae). *Beaufortia* 52: 25–35.
- Brandt, A. 2007. Three new species of *Fissarcturus* (Isopoda, Arcturidae) from the Southern Ocean. *Zoological Journal of the Linnean Society* 149: 263–290. <https://doi.org/10.1111/j.1096-3642.2007.00247.x>
- Hale, H.M. 1946. Isopoda–Valvifera. *British, Australian and New Zealand Antarctic Research Expedition, 1929–1931. Reports–Series B (Zoology and Botany)* 5: 161–212.
- Kussakin, O.G. 1967. Fauna of Isopoda and Tanaidacea in the coastal zones of the Antarctic and Subantarctic waters. [Translation from Russian by the Israel Program for Scientific Translations, Jerusalem, 1968.] *Biological Reports of the Soviet Antarctic Expedition (1955–1958)* 3: 220–389. <https://doi.org/10.2307/1442262>
- Kussakin, O.G. 1982. Marine and brackish-water Crustacea (Isopoda) of cold and temperate waters of the Northern Hemisphere. Suborders Anthuridea, Microcereberidea, Valvifera, Tyloidea. *Opredeliteli po Faune SSR, Akademiya Nauk, SSSR* 131: 1–461.
- Kussakin, O.G., and Vasina, G.S. 1994. Description of *Globarcturus angelikae* gen. et sp. n., the first Antarctic hadal arcturid from the South Sandwich Trench (Crustacea, Isopoda: Arcturidae). *Zoosystematica Rossica* 2: 241–245.
- Kussakin, O.G., and Vasina, G.S. 1995. Antarctic hadal arcturids, with descriptions of a new genus and five new species (Isopoda: Valvifera: Arcturidae). *Zoosystematica Rossica* 3: 207–228.

- Kussakin, O.G., and Vasina, G.S. 1998. New bathyal and abyssal arcturids from the western Antarctic and Subantarctic (Crustacea: Isopoda: Arcturidae). *Zoosystematica Rossica* 7: 55–75.
- Pereira, E., Roccatagliata, D., and Doti, B.L. 2019. *Xiphoarcturus* – a new genus and two new species of the family Arcturidae (Isopoda: Valvifera) from the Mar del Plata submarine canyon and its phylogenetic relationships. *Arthropod Systematics & Phylogeny* 77: 303–323. <http://doi.org/10.26049/ASP77-2-2019-07>
- Pereira, E., Roccatagliata, D., and Doti, B.L. 2023. Revision of the genus *Oxyarcturus* (Isopoda, Valvifera, Arcturidae), with a description of a new deep-sea species from Argentina. *Zoosystematics and Evolution* 99: 457–472. <https://doi.org/10.3897/zse.99.106667>
- Poore, G.C.B. 1998. Deep-water Arcturidae (Crustacea, Isopoda, Valvifera) from French collections in the south-western Pacific Ocean. *Zoosystema* 20: 379–399.
- Poore, G.C.B. 2001. Isopoda Valvifera: diagnoses and relationships of the families. *Journal of Crustacean Biology* 21: 205–230. [http://doi.org/10.1651/0278-0372\(2001\)021\[0205:IVDARO\]2.0.CO;2](http://doi.org/10.1651/0278-0372(2001)021[0205:IVDARO]2.0.CO;2)
- Poore, G.C.B. 2003. Revision of Holidoteidae, an endemic southern African family of Crustacea, and re-appraisal of taxa previously included in its three genera (Isopoda: Valvifera). *Journal of Natural History* 37: 1805–1846. <http://doi.org/10.1080/00222930210133273>
- Poore, G.C.B. 2012. *Marmachius*, a spectacular new genus of Arcturidae (Crustacea: Isopoda: Valvifera). *Zootaxa* 3559: 61–68. <https://doi.org/10.11646/zootaxa.3559.1.7>
- Poore, G.C.B. 2015. *Halearcturus*, a new genus of Arcturidae (Crustacea: Isopoda: Valvifera) with a key to genera of the family. *Memoirs of Museum Victoria* 73: 13–18. <http://doi.org/10.24199/j.mmv.2015.73.02>
- Schultz, G.A. 1981. Arcturidae from the Antarctic and Southern Seas (Isopoda, Valvifera) Part I. In: Kornicker, L.S. (ed.), *Biology of the Antarctic Seas X. Antarctic Research Series* 32: 63–94. <https://doi.org/10.1029/AR032p0063>
- Vanhöffen, E. 1914. Die Isopoden der Deutschen Südpolar-Expedition 1901–1903. *Deutsche Südpolar-Expedition, 1901–03* 15: 447–598. <http://biodiversitylibrary.org/page/2117456>
- Wägele, J.W. 1987. The feeding mechanism of *Antarcturus* and a redescription of *A. spinacoronatus* Schultz, 1978 (Crustacea: Isopoda: Valvifera). *Philosophical Transactions of the Royal Society B* 316: 429–458. <https://doi.org/10.1098/rstb.1987.0031>
- Wägele, J.W. 1991. *Antarctic Isopoda Valvifera*. Vol. 2. Koeltz Scientific Books: Königstein. 213 pp.

## Arcturidae Bate and Westwood, 1868

Figures 10.3, 10.4

Most arcturids are strongly geniculate between pereonites 4 and 5, the anterior segments held prominently erect, but this is not always the case. Pleonite 4 is usually longer than more anterior pleonites, especially in males, where it can be very thin. Pereopods 2–4 are usually cylindrical and held close under the mouthparts at rest, but are expanded as a filter-basket of long setae for feeding. These limbs can be absent or not so modified.

Poore (2001) restricted Arcturidae to valviferans with mouthparts hidden laterally by plates of the head and pereonite 1, and the exopod of the male pleopod 1 having a lateral notch, usually supporting two or more long plumose setae. He placed other hitherto “arcturids” in Arcturidae. Amesopodidae Stebbing, 1905 and the subfamily Edwinjoyceinae Müller, 1993 [pro Edwinjoyceinae misspelling] are not recognised. Kim and Yoon (2021) were the first to write a key to 14 genera; the one here uses other characters.

*Diagnosis.* Body more or less cylindrical, without coxal dorsal plates or pleonal epimera, weakly or strongly geniculate

between pereonites 4 and 5, anterior segments usually held prominently erect. Pereonite 4 at least 1.5 times as long as pereonite 3 (in males often much longer). Mouthparts and pereopod 1 enclosed in lateral view by lateral plates of head and pereonite 1. Pereopod 1 dactylus with unguis, or without unguis. Pereopod 1 gnathopod-like; pereopods 2–4 usually cylindrical, usually with even rows of long filter-setae, differentiated from ambulatory pereopods 5–7; pereopods 3 and 4 rarely absent; with prominent dactyli, unguis short (or dactylus lost in some pereopods). Uropodal exopod (smaller ramus) tapering (with terminal seta or setae only) (rarely absent). Pleopod 1 peduncle more elongate than rami, longer than on pleopods 2 and 3; exopod of male laminar, with proximolateral notch with 3 or 3 long setae. Basally as wide or wider than endopod.

*Implicit generic attributes.* Antenna slender, peduncle without tubercles. Maxillipedal palp with 5 free articles. Male ventral appendage absent. Uropod exopod present.

### Key to genera of Arcturidae

1. Pereopod 2 ambulatory or vestigial, pereopods 3 and 4 absent, or pereopod 4 vestigial (figs 10.3a, 10.4n) ..... 2
  - Pereopods 1–7 present and fully formed (fig. 10.3f, g, k, l) ..... 5
2. Pereopod 2 present as a small plate (fig. 10.3i). Antenna 2 flagellum terminal article with comb of strong setae (fig. 10.4b). Maxillipedal palp articles 2, 3 fused (fig. 10.4e) ..... *Edwinjoyceia*
  - Pereopod 2 ambulatory or setose. Antenna 2 flagellum of 3 articles, with or without unguis (fig. 10.4a, c). Maxillipedal palp articles free (fig. 10.4d) ..... 3
3. Pereopod 2 ambulatory (figs 10.3a, 10.4i) ..... *Amesopous*

- Pereopod 2 held against mouthparts, setose (fig. 10.3e) ..... 4
- 4. Pereopod 4 absent. Pereonites 3 and 4 much wider than head, rounded (fig. 10.3d, e) ..... *Arcturinoidea*
- Pereopod 4 vestigial (fig. 10.4n). Pereonites 2, 3 short, pereonite 4 much longer, with broad triangular wings in female (fig. 10.3c) ..... *Arcturina*
- 5. Pereopods 2–4 with flexion between carpus and propodus, without dactylus (fig. 10.4l) ..... 6
- Pereopods 2–4 without flexion between carpus and propodus, usually with dactylus (fig. 10.4j, k, m) ..... 8
- 6. Pleotelson with dorsolateral triangular wings (fig. 10.3h). Male without prominent ventral pereonal projection ..... *Astacilla*
- Pleotelson without dorsolateral triangular wings. Male with prominent ventral projection on pereonite 3 (fig. 10.3f) or 5 (fig. 10.3m) ..... 7
- 7. Male with prominent spoon-shaped or trifid ventral projection on pereonite 3 (fig. 10.3f) ..... *Arcturopsis*
- Male with prominent bifurcate ventral projection on pereonite 5 (fig. 10.3m) ..... *Arctopsis*
- 8. Pereopod 1 dactylus with unguis (fig. 10.4f, g) ..... 9
- Pereopod 1 dactylus without unguis (fig. 10.4h) ..... 10
- 9. Pereonites 2–4 similar, cylindrical, often sculptured (fig. 10.3g). Pereopods 2–4 cylindrical, with rows of setae (fig. 10.4k) ..... *Arcturus*
- Pereonites 2–4 in female together forming rhomboid shape (fig. 10.3b), in male cylindrical with dorsal ridge, pereonite 4 longer than pereonites 2, 3. Pereopods 2–4 flattened, with few setae (fig. 10.4j) ..... *Arcturina*
- 10. Pereopods 2–4 flattened, with few short setae (fig. 10.4m) ..... *Parastacilla*
- Pereopods 2–4 cylindrical, with dense setae (fig. 10.4k) ..... 11
- 11. Antenna peduncle articles 2, 3 with spines on upper margin. Pereonite 4 about twice as long as pereonites 2, 3 together, more so in male (fig. 10.3l). North Pacific and North Atlantic only ..... *Spectrarturus*
- Antenna peduncle articles 2, 3 smooth. Pereonite 4 at least 3 times as long as pereonites 2, 3 together, more so in male ..... 12
- 12. Body strongly geniculate between pereonites 4 and 5, sometimes sculptured with lobes or spines (fig. 10.3k). Pereopods 5–7 dactylus longer than wide, with 2 unguis (fig. 10.4p) ..... *Neastacilla*
- Body weakly geniculate between pereonites 4 and 5, slightly dorsoventrally flattened (fig. 10.3j). Pereopods 5–7 dactylus reduced, with swollen pad on lower margin, unguis hook-like (fig. 10.4o) ..... *Idarturus*

### ***Amesopus* Stebbing, 1905**

*Diagnosis.* Body weakly geniculate between pereonites 4 and 5, cylindrical, smooth; pereonites 2, 3 of similar width, narrow; pereonite 4 of similar proportions to pereonites 2, 3 in both sexes; pleotelson without dorsolateral posterior wings. Antenna flagellum with 3 articles. Pereopod 1 dactylus without unguis; pereopod 2 ambulatory; pereopods 3, 4 absent; without flexion between carpus and propodus. Pereopods 5–7 dactylus with 2 unguis, secondary unguis robust.

Subtidal, associated with hydroids. Western and Central Indo-Pacific. 2 species (Kensley et al., 2007: redescription of type species; Nunomura, 2011: second species possibly synonymous with *Amesopus richardsonae* Stebbing, 1905).

### ***Arctopsis* Barnard, 1920**

*Diagnosis.* Body strongly geniculate between pereonites 4 and 5, cylindrical, more or less granular; pereonites 2–4 progressively

wider; pereonite 4 more elongate than pereonites 2, 3, male more than twice as long as female; pleotelson without dorsolateral posterior wings. Antenna flagellum with 2 articles and unguis. Pereopod 1 dactylus with unguis; pereopods 2–4 cylindrical, held close to mouthparts; with flexion between carpus and propodus; with rows of setae as long as articles; dactylus absent. Pereopods 5–7 dactylus with 2 unguis, secondary unguis small. Male ventral appendage prominent on pereonite 5.

Shelf; 80 m. Tropical Atlantic. 1 species (Koehler, 1911: description; Barnard, 1920).

### ***Arcturina* Koehler, 1911**

*Diagnosis.* Body strongly geniculate between pereonites 4 and 5, with double dorsal ridge; pereonites 2–4 in female together forming rhomboid shape, in male cylindrical; pereonite 4 longer than pereonites 2, 3; pleotelson without dorsolateral posterior wings. Antenna flagellum with 3 articles and unguis. Pereopod 1 dactylus with unguis; pereopods 2–4 flattened;

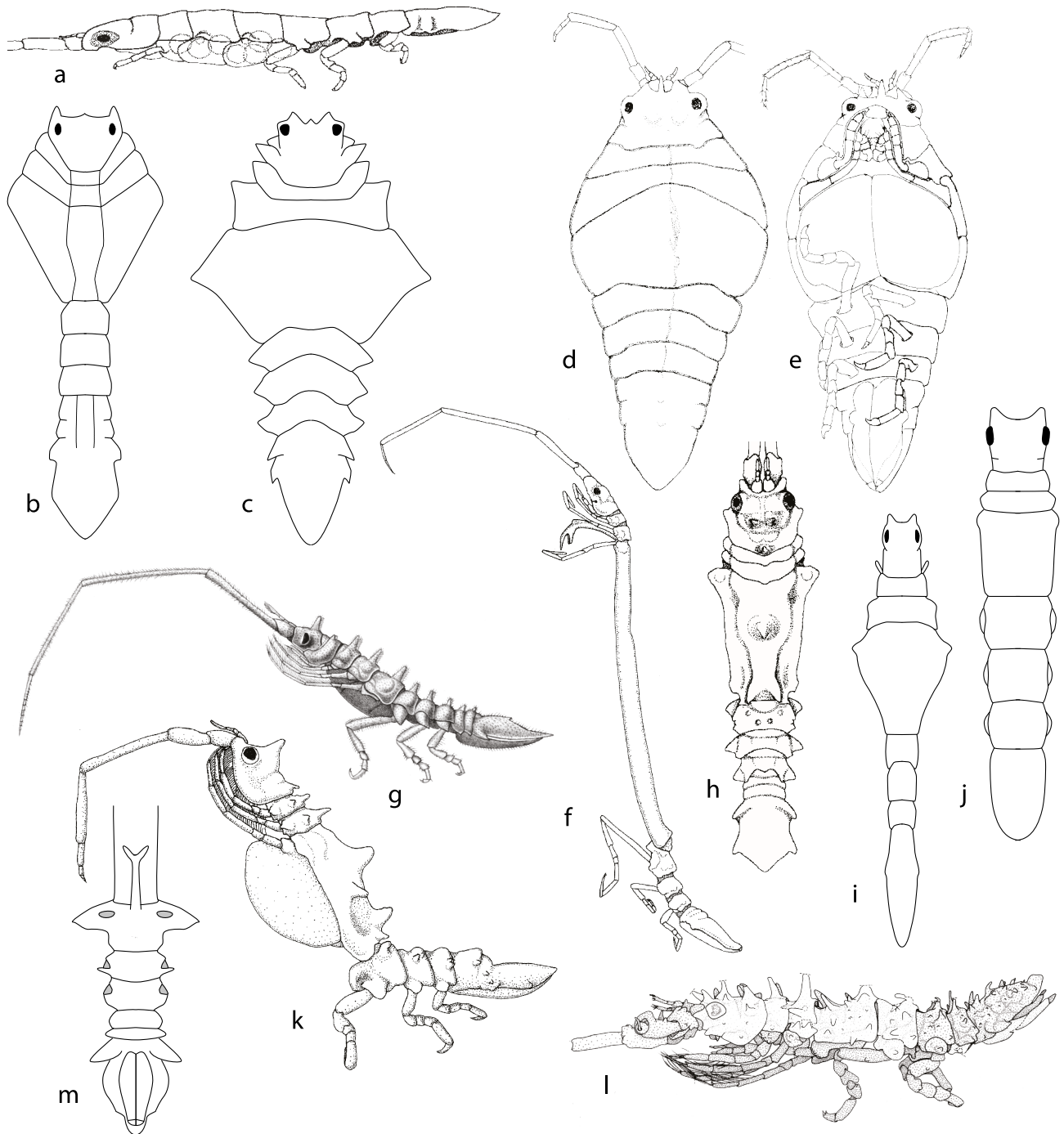


Figure 10.3. Arcturidae. a, *Amesopous richardsonae* Stebbing, 1905 (female); b, *Arcturina* (female); c, *Arcturinella* (female); d, e, *Arcturinoides dakhla* Menioui and Poore, 2008 (female); f, *Arcturopsis giardi* (Bonnier, 1896) (male); g, *Arcturus baffini* G.O. Sars, 1885 (female); h, *Astacilla mccaini* Kensley, Schotte and Poore, 2007 (female); i, *Edwinjoycea*; j, *Idarcturus platysoma* Barnard, 1914; k, *Neastacilla tarni* King 2003 (female); l, *Spectrarturus toporoki* (Kussakin, 1972); m, pereonites 5–7, pleotelson, *Arctopsis* (male, ventral view).

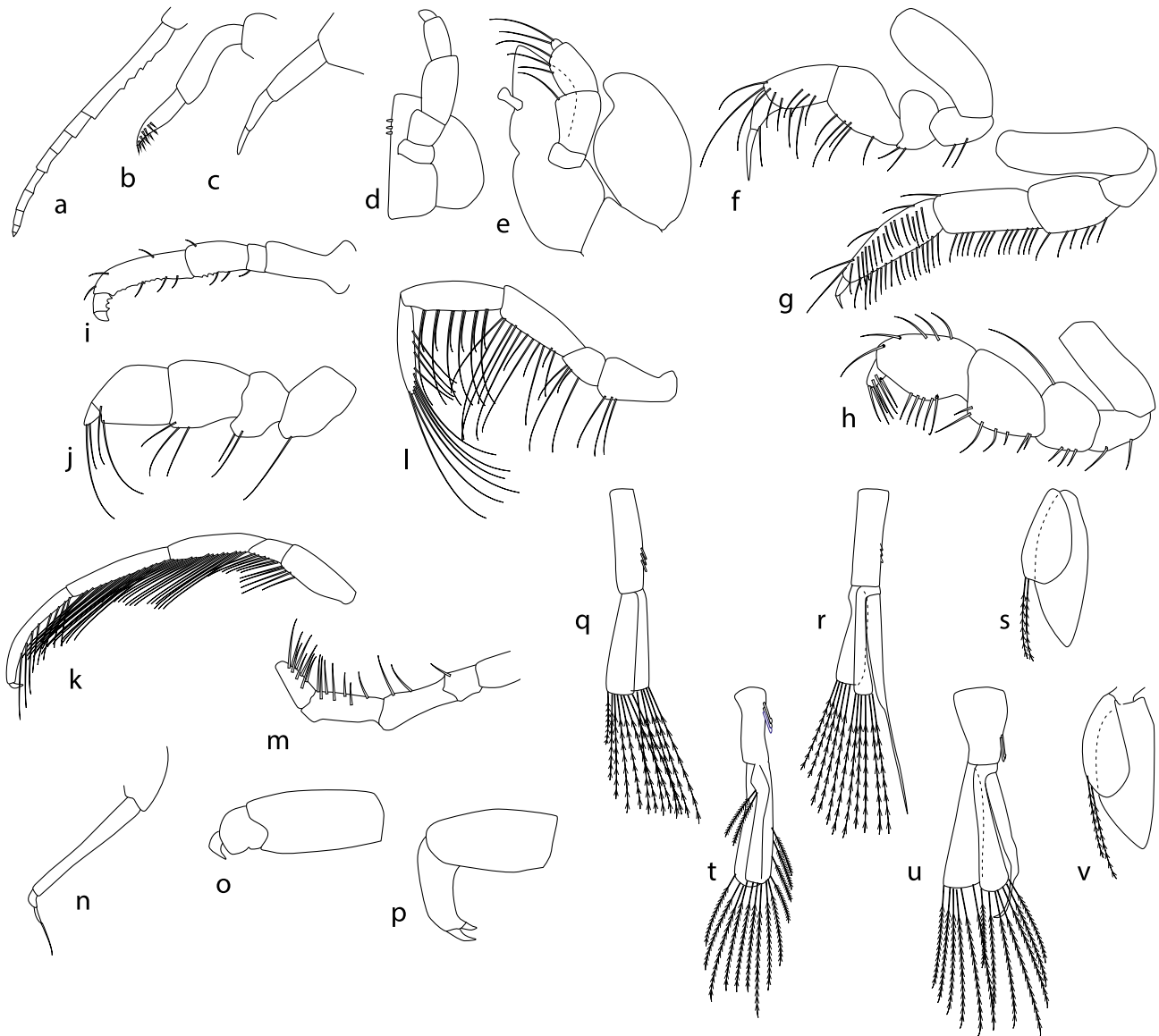


Figure 10.4. Arcturidae. Antennal flagellum: a, *Arcturus*; b, *Edwinjoycea*; c, *Neastacilla*. Maxilliped: d, *Arcturus*; e, *Edwinjoycea*. Pereopod 1: f, *Arcturina*; g, *Arcturus*; h, *Parastacilla*. Pereopod 2: i, *Amesopous*; j, *Arcturina*; k, *Arcturus*; l, *Astacilla*; m, *Parastacilla*. Pereopod 4, propodus, dactylus: n, *Arcturinella*. Pereopod 5, propodus, dactylus: o, *Idarcturus*; p, *Neastacilla*. Male pleopods 1–3: q–s, *Astacilla*; t–v, *Neastacilla*.

without flexion between carpus and propodus; with few setae; propodus less than half length of carpus; dactylus absent. Pereopods 5–7 dactylus without secondary unguis.

Subtidal. Tropical Atlantic, Western and Central Indo-Pacific, Temperate Southern Africa. 7 species (Reboreda et al., 1994; redescription of type species; additional species: Bamber, 2008; Nunomura, 2008).

#### *Arcturinella* Poisson and Maury, 1931

**Diagnosis.** Body weakly geniculate between pereonites 4 and 5, extremely dorsoventrally flattened, with dorsal ridge;

pereonites 2, 3 short; pereonite 4 much longer than pereonites 2, 3, with broad triangular wings in female; pleotelson with dorsolateral posterior wings. Antenna flagellum with 3 articles and unguis. Pereopod 1 dactylus without unguis; pereopod 4 vestigial; pereopods 2, 3 cylindrical, similar; without flexion between carpus and propodus; with rows of setae as long as articles; dactylus absent; pereopod 4 reduced. Pereopods 5–7 dactylus without secondary unguis.

Subtidal. Temperate Northern Atlantic (Mediterranean only). 2 species (Poisson and Maury, 1931; Castelló et al., 2018; rediagnosis, possible second species).

***Arcturinoidea* Kensley, 1977**

*Diagnosis.* Body weakly geniculate between pereonites 4 and 5, extremely flattened dorsoventrally, with dorsal ridge; pereonites 2–4 forming rounded or rectangular shape in female; pereonite 4 more elongate than pereonites 2, 3, male and female of similar length; pleotelson with or without dorsolateral posterior wings. Antenna flagellum with 3 articles and unguis. Pereopod 1 dactylus with unguis; pereopod 4 absent; pereopods 2–3 cylindrical, held close to mouthparts; without flexion between carpus and propodus; with few setae; dactylus with unguis. Pereopods 5–7 dactylus with 2 unguis, secondary unguis small.

Subtidal, shelf. Temperate Northern Atlantic, Western Indo-Pacific (African coasts). 4 species (Kensley et al., 2007: rediagnosis, key to species; Menioui and Poore, 2008: key to 3 species).

***Arcturopsis* Koehler, 1911**

*Diagnosis.* Body strongly geniculate between pereonites 4 and 5, cylindrical, more or less granular; pereonites 2–4 progressively wider; pereonite 4 more elongate than pereonites 2, 3, male more than twice as long as female; pleotelson without dorsolateral posterior wings. Antenna flagellum with 2 articles and unguis. Pereopod 1 dactylus with unguis; pereopods 2–4 cylindrical, held close to mouthparts; with flexion between carpus and propodus; with rows of setae as long as articles; dactylus absent. Pereopods 5–7 dactylus with 2 unguis, secondary unguis small. Male ventral appendage prominent on pereonite 3.

Subtidal–slope; 5–923 m. Temperate Northern and Tropical W Atlantic. 3 species (Koehler, 1911; King and Poore, 2001: rediagnosis, redescription).

***Arcturus* Latreille, 1829**

*Diagnosis.* Body strongly geniculate between pereonites 4 and 5, cylindrical, more or less granular; pereonites 2, 3 of similar width, narrow; pereonite 4 of similar proportions to pereonites 2, 3 in both sexes; pleotelson without dorsolateral posterior wings. Antenna flagellum with 3–10 articles and unguis. Pereopod 1 dactylus with unguis; pereopods 2–4 cylindrical, held close to mouthparts; without flexion between carpus and propodus; with rows of setae as long as articles; dactylus with unguis. Pereopods 5–7 dactylus with 2 unguis, secondary unguis robust.

Subtidal–bathyal; 5–2670 m. Arctic, Temperate Northern Atlantic, Temperate Northern Pacific. 25 species (Sars, 1896–1899: figures; Kussakin, 1982: key to species from NW Pacific [in Russian]).

***Astacilla* Cordiner, 1793**

*Diagnosis.* Body strongly geniculate between pereonites 4 and 5, cylindrical, more or less granular; pereonites 2, 3 of similar width, narrow; pereonite 4 about twice as long as pereonites 2, 3, more so in male; pleotelson with dorsolateral posterior wings. Antenna flagellum with 2 or 3 articles and unguis. Pereopod 1 dactylus without unguis, or with unguis (rare); pereopods 2–4 cylindrical, held close to mouthparts; with flexion between carpus and propodus; with rows of setae as long as articles; dactylus absent. Pereopods 5–7 dactylus with 2

unguis, secondary unguis robust. Male ventral appendage on pereonite 3, bud-like.

Subtidal, shelf. Arctic, Temperate Northern Atlantic, Temperate Northern Pacific, Tropical Atlantic, Western and Central Indo-Pacific, Temperate Southern Africa. 50 species (Kussakin, 1982: key to 6 NW Pacific species and 2 species of *Arcturella* [in Russian]; King, 2003a: list of species). *Agularcturus* Kensley, 1984 and *Arcturella* G.O. Sars, 1897 are treated as synonyms.

***Edwinjoycea* Menzies and Kruczynski, 1983**

*Diagnosis.* Body strongly geniculate between pereonites 4 and 5, smooth; pereonites 2–4 progressively wider; pereonite 4 longer than pereonites 2, 3; pleotelson without dorsolateral posterior wings. Antenna flagellum of 2 articles, second with comb of strong setae. Maxillipedal palp articles 2, 3 fused. Pereopod 1 dactylus without unguis; pereopod 2 present as small plate; pereopods 3, 4 absent. Pereopods 5–7 dactylus without secondary unguis. Uropod exopod absent.

Shelf; 21–73 m, associated with hydroids. Tropical W Atlantic. 1 species (Menzies and Kruczynski, 1983; Müller, 1993: redescription).

***Idarcturus* Barnard, 1914**

*Diagnosis.* Body weakly geniculate between pereonites 4 and 5, slightly flattened dorsoventrally, without dorsal ridge; pereonites 2–4 progressively wider; pereonite 4 about twice as long as pereonites 2, 3, more so in male; pleotelson without dorsolateral posterior wings, or with or without dorsolateral posterior wings. Antenna flagellum with 3 articles and unguis. Pereopod 1 dactylus without unguis; pereopods 2–4 cylindrical, held close to mouthparts; without flexion between carpus and propodus; with rows of setae as long as articles. Pereopods 5–7 dactylus reduced, with swollen pad on lower margin, unguis hook-like.

Intertidal. Temperate Southern Africa. 1 species (Barnard, 1914). Kim and Yoon (2021) provided a key to four species but these probably belong in *Neastacilla*.

***Neastacilla* Tattersall, 1921**

*Diagnosis.* Body strongly geniculate between pereonites 4 and 5, sometimes sculptured with lobes or spines; pereonites 2, 3 of similar width, narrow; pereonite 4 at least 3 times as long as pereonites 2, 3, more so in male; pleotelson with or without dorsolateral posterior wings. Antenna flagellum with 2 or 3 articles and unguis. Pereopod 1 dactylus without unguis; pereopods 2–4 cylindrical, held close to mouthparts; without flexion between carpus and propodus; with rows of setae as long as articles; dactylus with unguis, or dactylus absent (rare). Pereopods 5–7 dactylus with 2 unguis, secondary unguis robust. Male ventral appendage on pereonite 3, bud-like.

Intertidal–slope; 0–1050 m. Temperate Northern Pacific, Temperate South America, Temperate Southern Africa, Temperate Australasia, Southern Ocean. 50 species (King, 2003b: rediagnosis, key to 22 Australian and New Zealand species; Kim and Yoon, 2021: key to 17 NW Pacific species).

***Parastacilla* Hale, 1924**

**Diagnosis.** Body strongly geniculate between pereonites 4 and 5, cylindrical, more or less granular; pereonites 2, 3 of similar width, narrow; pereonite 4 about twice as long as pereonites 2, 3, more so in male; pleotelson with dorsolateral posterior wings. Antenna robust, distal peduncle articles about 5 times as long as wide; flagellum with 2 articles, second reduced, and unguis. Pereopod 1 dactylus without unguis; pereopods 2–4 flattened, held close to mouthparts; without flexion between carpus and propodus; with few short setae; dactylus with unguis present on pereopod 2, absent on 3, 4. Pereopods 5–7 dactylus with 2 unguis, secondary unguis robust. Male ventral appendage on pereonite 3, bud-like.

Subtidal, shelf. Temperate Australia. 4 species (King, 2000: rediagnosis, key to species).

***Spectrarcturus* Schultz, 1981**

**Diagnosis.** Body weakly geniculate between pereonites 4 and 5, cylindrical, with spines or tubercles; pereonites 2, 3 of similar width, narrow; pereonite 4 about twice as long as pereonites 2, 3, more so in male; pleotelson with dorsolateral posterior wings. Antenna robust, articles 2, 3 with spines on upper margin; flagellum with 3 articles and unguis. Pereopod 1 dactylus without unguis; pereopods 2–4 cylindrical, held close to mouthparts; without flexion between carpus and propodus; with rows of setae as long as articles; dactylus with unguis. Pereopods 5–7 dactylus with 2 unguis, secondary unguis robust.

Subtidal–slope; 5–1150 m. Arctic, Temperate Northern Atlantic, Temperate Northern Pacific. 8 species (Stransky et al., 2020: rediagnosis, key to species).

**References**

- Bamber, R.N. 2008. New species of anthurid and arcturid isopod (Crustacea: Peracarida: Isopoda) from Hong Kong. *Journal of Natural History* 42: 855–876. <http://doi.org/10.1080/00222930701850489>
- Barnard, K.H. 1914. Contributions to the crustacean fauna of South Africa. 3. Additions to the marine Isopoda, with notes on some previously incompletely known species. *Annals of the South African Museum* 10: 325a–358a, 359–442. <http://biodiversitylibrary.org/page/1554824>
- Barnard, K.H. 1920. Contributions to the crustacean fauna of South Africa. No. 6. Further additions to the list of marine Isopoda. *Annals of the South African Museum* 17: 319–438. <http://biodiversitylibrary.org/page/1520873>
- Castelló, J., Molina, C., Constenla, M., and Soler-Membrives, A. 2018. Description of *Arcturinella deltensis* sp. nov. (Crustacea, Isopoda, Arcturidae) from the Ebro Delta (Western Mediterranean Sea), with remarks on the status of the genus *Arcturinella* Poisson & Maury, 1931. *Marine Biodiversity* 48: 1413–1420. <https://doi.org/10.1007/s12526-016-0624-9>
- Kensley, B., Schotte, M., and Poore, G.C.B. 2007. New species and records of valviferan isopods (Crustacea: Isopoda: Valvifera) from the Indian Ocean. *Proceedings of the Biological Society of Washington* 120: 429–445. [http://doi.org/10.2988/0006-324X\(2007\)120\[429:NSAROV\]2.0.CO;2](http://doi.org/10.2988/0006-324X(2007)120[429:NSAROV]2.0.CO;2)
- Kim, S.H., and Yoon, S.M. 2021. Four new species of isopods (Crustacea, Isopoda) from South Korea. *ZooKeys* 1010:133–164. <http://doi.org/10.3897/zookeys.1010.59101>
- King, R.A. 2000. Rediagnosis of the endemic southern Australian genus *Parastacilla* Hale, 1924 (Crustacea: Isopoda: Arcturidae) with descriptions of two new species. *Memoirs of Museum Victoria* 58: 125–136. <https://doi.org/10.24199/j.mmv.2000.58.6>
- King, R.A. 2003a. First valid record of *Astacilla* Cordiner, 1793 in Australia, with description of a new species (Crustacea: Isopoda: Arcturidae). *Records of the Western Australian Museum* 21: 359–366. [https://doi.org/10.18195/issn.0312-3162.21\(4\).2003.359-366](https://doi.org/10.18195/issn.0312-3162.21(4).2003.359-366)
- King, R.A. 2003b. *Neastacilla* Tattersall, 1921 redefined, with eight new species from Australia (Crustacea: Isopoda: Arcturidae). *Memoirs of Museum Victoria* 60: 371–416. <https://doi.org/10.24199/j.mmv.2003.60.29>
- King, R.A., and Poore, G.C.B. 2001. Diagnosis of *Arcturopsis* Koehler, 1911 and redescription of *A. giardi* (Bonnier, 1896) (Crustacea, Isopoda, Arcturidae). *Zoosystema* 23: 467–477.
- Koehler, R. 1911. Arcturidés nouveaux provenant des campagnes de la “Princesse-Alice” ou appartenant au Musée Océanographique de Monaco. *Bulletin de l'Institut Océanographique* 214: 1–65. <http://biodiversitylibrary.org/page/46209283>
- Kussakin, O.G. 1982. Marine and brackish-water Crustacea (Isopoda) of cold and temperate waters of the Northern Hemisphere. Suborders Anthuridea, Microcereberidea, Valvifera, Tyloidea. *Opredeliteli po Faune SSR, Akademiya Nauk, SSSR* 131: 1–461.
- Menioui, M., and Poore, G.C.B. 2008. A new species of *Arcturinoides* (Isopoda, Valvifera, Arcturidae) from the Atlantic Coast of Morocco. *Crustaceana* 81: 169–176. <http://doi.org/10.1163/156854008783476170>
- Menzies, R.J., and Kruczynski, W.L. 1983. Isopod Crustacea (exclusive of Epicaridea). *Memoirs of the Hourglass Cruises* 6: 1–126.
- Müller, H.-G. 1993. Arcturidae (Isopoda) from the Santa Marta area, northern Colombia, with a review of the shallow-water species from the Caribbean Sea and Gulf of Mexico. *Mitteilungen aus dem Zoologischen Museum in Berlin* 69: 317–337. <https://doi.org/10.1002/mmnz.19930690211>
- Nunomura, N. 2008. Marine isopod crustaceans collected from Shijiki Bay, Western Japan (1) Valvifera, Cymothoidea, Sphaeromatidea, Limnoriidea and Oniscidea. *Bulletin of the Toyama Science Museum* 31: 13–43.
- Nunomura, N. 2011. A new species of the genus *Arcturus* (Crustacea: Isopoda: Arcturidae) from colonies of a hydrozoan, *Lytocarpia niger*, Tomioka, western Japan. *Contributions from the Toyama Science Museum* 34: 45–49.
- Poisson, R., and Maury, A. 1931. *Arcturinella banyulensis* nov. gen., nov. sp., crustacé isopode nouveau (tribu des Valvifera, famille des Arcturidae), capturé à Banyuls (Pyr. Orientales). *Bulletin de l'Institut Océanographique* 573: 1–14.
- Poore, G.C.B. 2001. Isopoda Valvifera: diagnoses and relationships of the families. *Journal of Crustacean Biology* 21: 205–230. [http://doi.org/10.1651/0278-0372\(2001\)021\[0205:IVDARO\]2.0.CO;2](http://doi.org/10.1651/0278-0372(2001)021[0205:IVDARO]2.0.CO;2)
- Reboreda, P., Wägele, J.W., and Garmendia, J.M. 1994. On rare Arcturidae (Crustacea: Isopoda: Valvifera) from the Atlantic coast of Spain with description of *Arcturella carlosoteroi* n. sp. *Zoologischer Anzeiger* 233: 251–263.
- Sars, G.O. 1896–1899. *An account of the Crustacea of Norway with short descriptions and figures of all the species*. Vol. 2 Isopoda [Parts 5, 6. Idotheidae, Arcturidae, Asellidae, Ianiridae, Munnidae, pp. 81–116, pls 33–48 published 1897]. Bergen Museum: Bergen.
- Stransky, B., Poore, G.C.B., and Svavarsson, J. 2020. Revision of *Pleuropriion* zur Strassen, 1903 (Holidoteidae) and re-evaluation of *Spectrarcturus* Schultz, 1981 (Arcturidae) (Crustacea, Isopoda, Valvifera). *Zootaxa* 4894: 1–52. <https://doi.org/10.11646/zootaxa.4894.1.1>

## Arcturididae Poore, 2001

Figure 10.5

The cylindrical body, paired horns on the head, and essentially similar ambulatory pereopods characterise the family and its only species, *Arcturides cornutus* Studer, 1882. The species is often associated with erect hydroids (Hale, 1946; Poore, 2001) and can be abundant.

**Diagnosis.** Body more or less cylindrical, without coxal dorsal plates or pleonal epimera, straight, without flexion (fig. 10.5a). Pereopod 1 gnathopod-like; pereopods 2–4 stout, with 2 rows of 5–6 well-spaced setae, scarcely differentiated from ambulatory pereopods 5–7; with prominent dactyli, unguis short. Uropodal exopod (smaller ramus) tapering (with terminal seta or setae only) (fig. 10.5b). Pleopod 1 peduncle more elongate than rami, longer than on other pleopods; exopod of male thickened and with groove on posterior face, ending on tapering distolateral apical extension (fig. 10.5c).

### *Arcturides* Studer, 1882

Shelf, slope. Southern Ocean (Subantarctic islands). 1 species. The three described species are treated as synonyms (descriptions: Hale, 1946; Kensley, 1980).

### References

- Hale, H.M. 1946. Isopoda –Valvifera. *British, Australian and New Zealand Antarctic Research Expedition, 1929–1931. Reports – Series B (Zoology and Botany)* 5: 161–212.
- Kensley, B. 1980. Marine isopods from Marion, Prince Edward, and Crozet Islands (Crustacea, Isopoda). *Annals of the South African Museum* 82: 155–185. <http://biodiversitylibrary.org/page/40752225>
- Poore, G.C.B. 2001. Isopoda Valvifera: diagnoses and relationships of the families. *Journal of Crustacean Biology* 21: 205–230. [http://doi.org/10.1651/0278-0372\(2001\)021\[0205:IVDARO\]2.0.CO;2](http://doi.org/10.1651/0278-0372(2001)021[0205:IVDARO]2.0.CO;2)

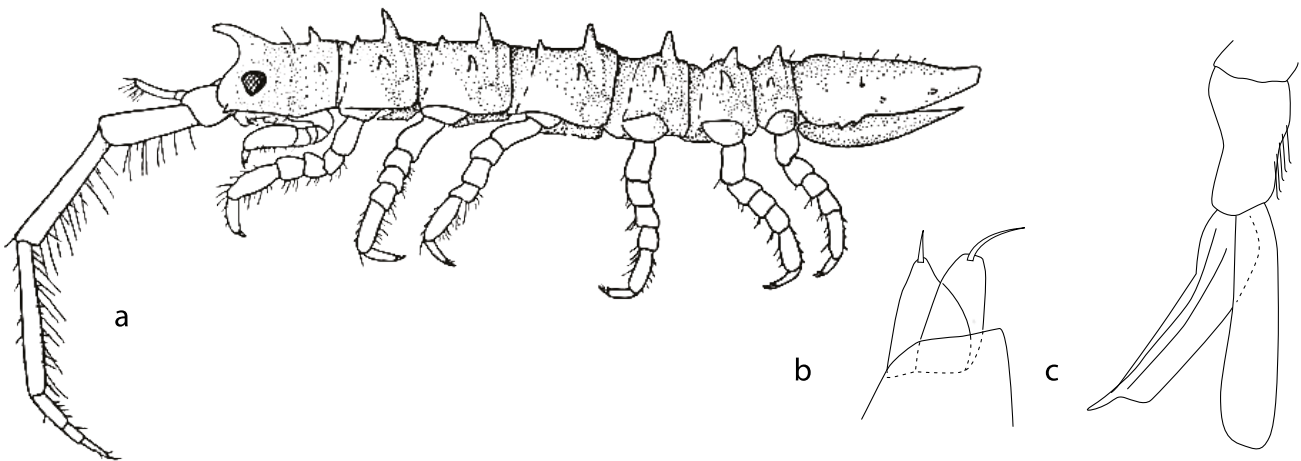


Figure 10.5. Arcturididae, *Arcturides cornutus* Studer, 1882: a, habitus; b, uropodal rami; c, male pleopod 1.

## Austrarcturellidae Poore and Bardsley, 1992

Figures 10.6, 10.7

Poore and Bardsley's (1992) review of the family included only four genera; *Dolichiscus* is now recognised as a member (Poore, 2001). The inverted boat-shaped pleotelson and pereopod 4 shorter than pereopods 2 and 3 enable most species to be distinguished from similar genera of Antarcturidae. All are shelf or deep-sea species, concentrated in the Southern Hemisphere.

**Diagnosis.** Body more or less cylindrical, without coxal dorsal plates or pleonal epimera, flexed between pereonites 4 and 5, anterior segments held slightly erect. Pleotelson with dorsolateral ridges usually ending in mediodorsal posterior

spine. Pereopod 1 gnathopod-like; pereopods 2–4 elongated, with even rows of long filter-setae, differentiated from ambulatory pereopods 5–7, pereopod 4 shorter and less setose than pereopods 2 and 3; with minute dactyli, unguis setiform. Uropodal exopod (smaller ramus) tapering (with terminal seta or setae only). Pleopod 1 peduncle more elongate than rami, longer than on pleopods 2 and 3; exopod of male thickened and with groove on posterior face, ending distolaterally or laterally on simple margin (*Dolichiscus*) or ending on basally derived branch of exopod.

**Implicit generic attributes.** Eyes pigmented; on eyestalks.

Antennal flagellum of 2–4 elongate articles plus claw. Pereopod 1 dactylus with anterior lobe on extensor margin, constricted and tapering distally. Pereopods 2–4 dactylus longer than wide,

with unguis as long as propodal setae. Pereopods 5–7 dactylus moderately longer than propodus. Pleopod 1 of male exopod groove ending on basally derived branch of exopod.

### Key to genera of Austrarcturellidae

1. Antennal flagellum with 8 or more articles (fig. 10.6c). Male pleopod 1 exopod with groove opening distolaterally on triangular lobe (fig. 10.7j) ..... *Dolichiscus*
- Antennal flagellum with 2 articles (fig. 10.7a, b). Male pleopod 1 exopod with groove ending on basally-derived branch of exopod (fig. 10.7k) ..... 2
2. Eyes absent. Pereopods 2–4 with minute dactylus (shorter than long) and short setiform unguis (shorter than propodal setae) (fig. 10.7g). Pereopods 5–7 with dactylus extremely elongated, about twice as long as propodus (fig. 10.6d). Uropod with 2 rami (fig. 10.7l) ..... *Scyllarcturella*
- Eyes present. Pereopods 2–4 dactylus longer than wide, with setiform unguis as long as propodal setae. Pereopods 5–7 with dactylus moderately long. Uropod without or with rami ..... 3
3. Eyes not on eyestalks (fig. 10.6a). Pereopod 4 with strong setal group distally on basis, with setal row on propodus flexor margin (fig. 10.7h) ..... *Abyssarcturella*
- Eyestalks present. Pereopod 4 with few setae distally on basis, without setal row on propodus flexor margin (fig. 10.7i) (rare exception) ..... 4
4. Antennal flagellum with distal article stout, no longer than preceding flagellar articles (fig. 10.7b). Pereopod 1 dactylus with proximal part narrow and linear (fig. 10.7d). Pereopods 2–4 dactyli with proximal part small, conical, with elongate unguis (fig. 10.7f). Uropod with 1 or 2 rami ..... *Pseudarcturella*
- Antennal flagellum with distal article elongate, usually longest flagellar articles (figs 10.6b, 10.7a). Pereopod 1 dactylus with proximal part anteriorly convex (fig. 10.7c). Pereopods 2–4 dactyli with proximal part minute, with setiform unguis at least as long as propodus (fig. 10.7e). Uropod without rami ..... *Austrarcturella*

### *Abyssarcturella* Poore and Bardsley, 1992

*Diagnosis.* Eyes not elevated on eyestalks. Antennal flagellum, distal article elongate, usually the longest flagellar article. Pereopod 4 basis with strong setal group distally, with setal row on flexor margin of propodus. Uropod with 1 or 2 rami.

Shelf, slope (1609–1840 m). Central Indo-Pacific (NE Australia). 2 species (Poore and Bardsley, 1992).

### *Austrarcturella* Poore and Bardsley, 1992

*Diagnosis.* Antennal flagellum, distal article elongate, usually the longest flagellar article. Pereopod 4 basis with few setae distally, without setal row on flexor margin of propodus. Uropod without rami.

Shelf, slope (28–1000 m). Central Indo-Pacific, Temperate Australasia (Australia, New Zealand). 14 species (Poore and Bardsley, 1992; diagnosis, key to 14 species).

### *Dolichiscus* Richardson, 1913

*Diagnosis.* Antennal flagellum of 9 or more short articles. Pereopod 4 basis with strong setal group distally, with setal row on flexor margin of propodus. Pleopod 1 of male exopod groove opening distolaterally on triangular lobe. Uropod with triangular endopod and smaller exopod.

Shelf–abyssal (24–4209 m). Central Indo-Pacific, Temperate South America, Southern Ocean. 26 species

(Wägele, 1991: rediagnosis, key to 10 Antarctic species and 3 of *Paradolichiscus* Schultz, 1981 treated here as junior synonym; Poore, 1998: 3 species; Kussakin and Vasina, 2001: vertical and horizontal distribution of 21 species).

### *Pseudarcturella* Tattersall, 1921

*Diagnosis.* Antennal flagellum, distal article no longer than preceding flagellar articles. Pereopod 1 dactylus curved evenly along extensor margin, tapering. Pereopod 4 basis with few setae distally, without setal row on flexor margin of propodus. Uropod with 1 or 2 rami.

Subtidal. Temperate Australasia (New Zealand). 2 species (Poore and Bardsley, 1992; rediagnosis, key to 2 species).

### *Scyllarcturella* Poore and Bardsley, 1992

*Diagnosis.* Eyes absent. Antennal flagellum, distal article no longer than preceding flagellar articles. Pereopods 2–4 dactylus minute, shorter than long, with unguis shorter than propodal setae. Pereopod 4 basis with few setae distally, without setal row on flexor margin of propodus. Pereopods 5–7 dactylus extremely elongated, about twice as long as propodus. Uropod with triangular endopod and smaller exopod.

Slope (738 m). Central Indo-Pacific (NE Australia). 1 species (Poore and Bardsley, 1992).

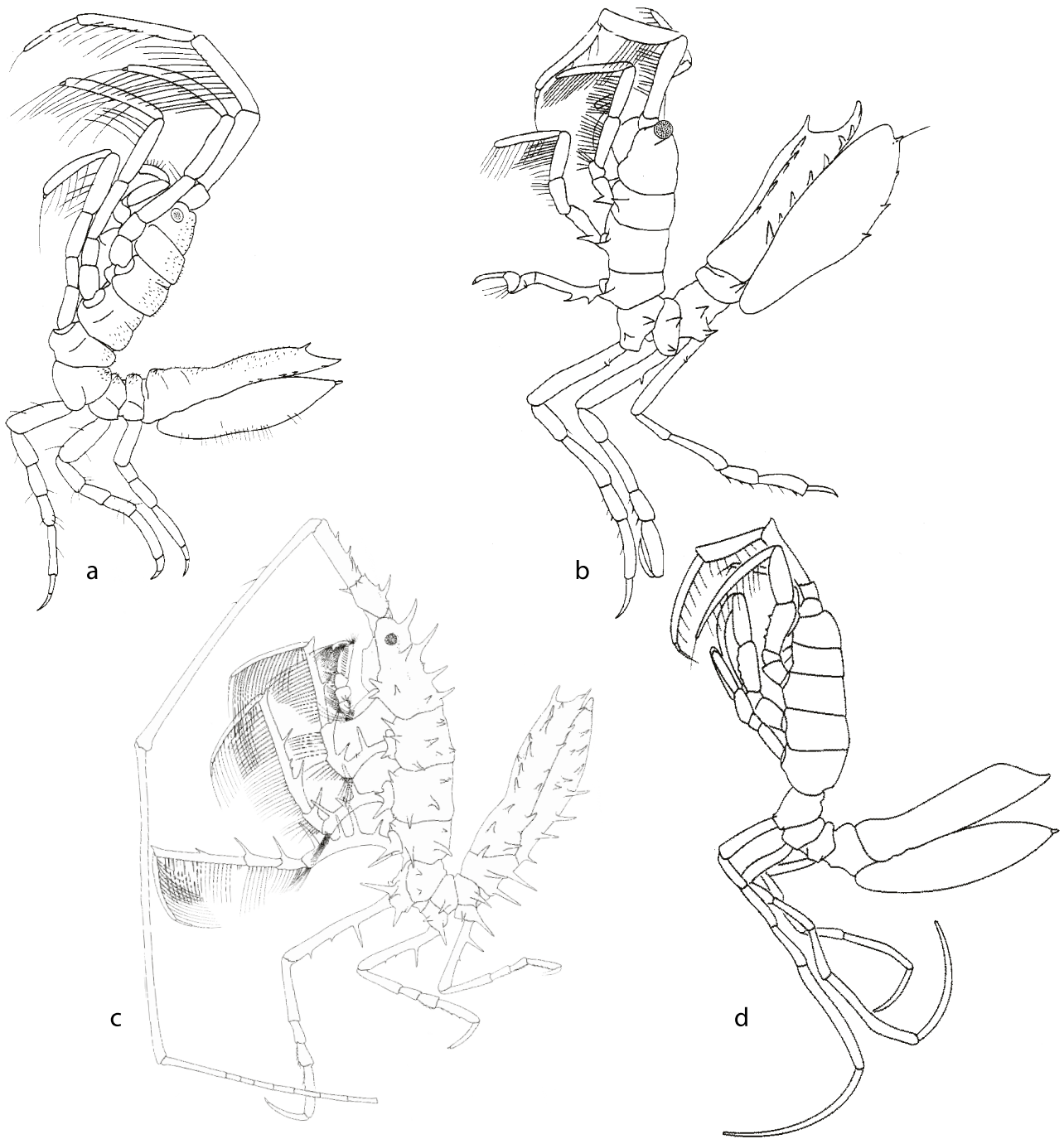


Figure 10.6. Austrarcturellidae. a, *Abyssarcturella panope* Poore and Bardsley, 1992; b, *Austrarcturella oculata* (Beddard, 1886); c, *Dolichiscus tanimbar* Poore, 1998; d, *Scyllarcturella falcata* Poore and Bardsley, 1992.

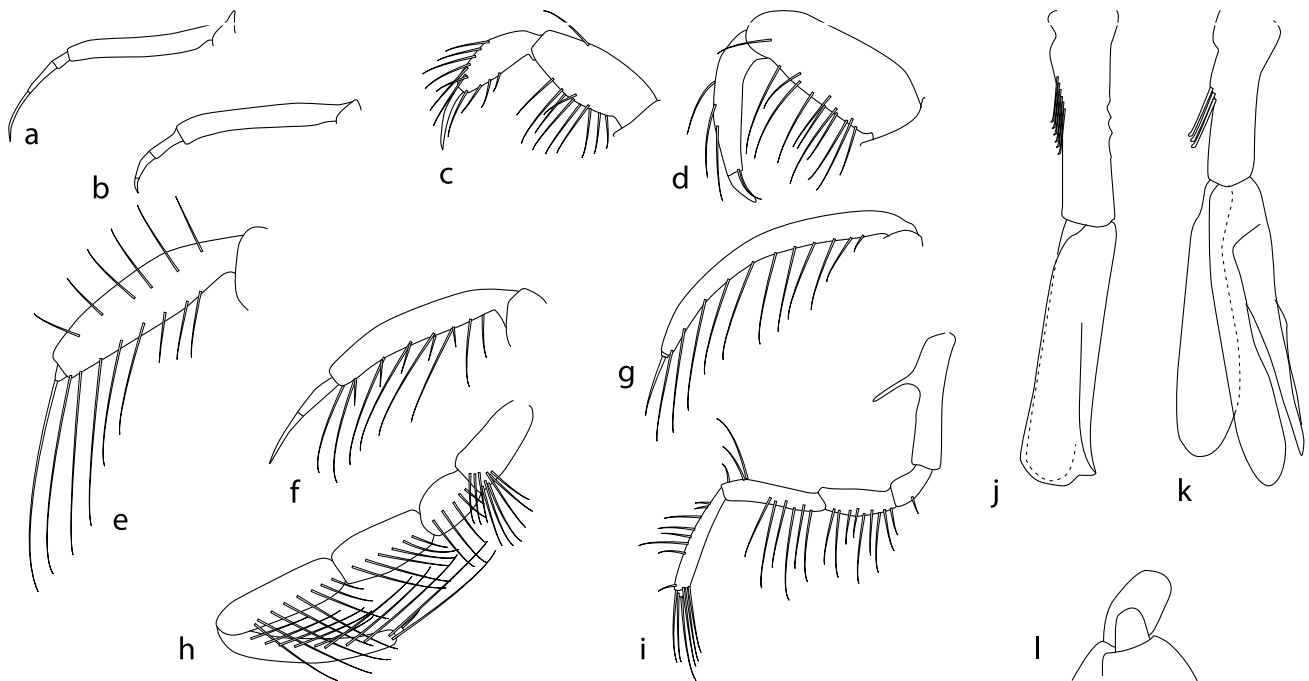


Figure 10.7. Austrarcturellidae. Antennal flagellum: a, *Austrarcturella*; b, *Pseudarcturella*. Pereopod 1, propodus, dactylus: c, *Austrarcturella*; d, *Pseudarcturella*. Pereopod 2, propodus, dactylus: e, *Austrarcturella*; f, *Pseudarcturella*; g, *Scyllarcturella*. Pereopod 4: h, *Abyssarcturella*; i, *Austrarcturella*. Male pleopod 1: j, *Dolichiscus*; k, *Pseudarcturella*. l, uropodal rami, *Scyllarcturella*.

## References

- Kussakin, O.G., and Vasina, G.S. 2001. Supplements for the fauna of arcturid isopods of the genus *Dolichiscus* (Crustacea, Isopoda, Valvifera) of the Antarctic and Subantarctic. *Russian Journal of Marine Biology* 27: 208–217. <https://doi.org/10.1023/A:1011959202164>
- Poore, G.C.B. 1998. Deep-water Arcturidae (Crustacea, Isopoda, Valvifera) from French collections in the south-western Pacific Ocean. *Zoosystema* 20: 379–399.
- Poore, G.C.B. 2001. Isopoda Valvifera: diagnoses and relationships of the families. *Journal of Crustacean Biology* 21: 205–230. [http://doi.org/10.1651/0278-0372\(2001\)021\[0205:IVDARO\]2.0.CO;2](http://doi.org/10.1651/0278-0372(2001)021[0205:IVDARO]2.0.CO;2)
- Poore, G.C.B., and Bardsley, T.M. 1992. Austrarcturellidae (Crustacea: Isopoda: Valvifera), a new family from Australasia. *Invertebrate Taxonomy* 6: 843–908. <http://doi.org/10.1071/IT9920843>
- Wägele, J.W. 1991. *Antarctic Isopoda Valvifera*. Vol. 2. Koeltz Scientific Books: Königstein. 213 pp.

## Holidoteidae Wägele, 1989

Figure 10.8

Holidoteids are confined to southern Africa. Their bodies are flattened or cylindrical, not or scarcely flexed, and possess a uropod with two rami, each with a single strong terminal seta (Poore, 2003).

*Diagnosis.* Body more or less flattened or semicylindrical, coxae with expanded coxal dorsal plates, pleonites with expanded epimera, straight, or scarcely flexed between peronites 4 and 5. Mouthparts and pereopod 1 hidden by expanded tergites.

Pereopod 1 gnathopod-like; pereopods 2–4 elongated, with even rows of long filter-setae, differentiated from ambulatory pereopods 5–7; with short dactyli, unguis longer, setiform. Uropodal exopod (smaller ramus) tapering (with terminal seta or setae only). Pleopod 1 peduncle more elongate than rami, longer than on pleopods 2 and 3; exopod of male thickened and with groove on posterior face, ending on distolateral lobed tip, separated from most of lateral margin by notch.

## Key to genera of Holidoteidae

1. Pleonite 1 articulating with pleotelson (fig. 10.8a, g) ..... 2
- Pleonite 1 fused to pleotelson (fig. 10.8b–f) ..... 3
2. Pereon and pleotelson smooth or tuberculate (fig. 10.8a) ..... *Austroarcturus*
- Pereonites with pair of dorsal spines; pleonites 2, 3 each with median spine (fig. 10.8g) ..... *Pleuroprion*
3. Body cylindrical, tuberculate (fig. 10.8e, f). Pereopods 2–4 with bases held in parallel and in contact along midline of anterior body, enclosing mouthparts; carpus longer than ischium and merus together (fig. 10.8i) ..... *Neoarcturus*
- Body flat, smooth (fig. 10.8d). Pereopods 2–4 with bases held more or less transversely against ridge on ventral coxal plate, bases of pairs barely in contact; carpus almost as long as ischium and merus together (fig. 10.8h) ..... *Holidotea*

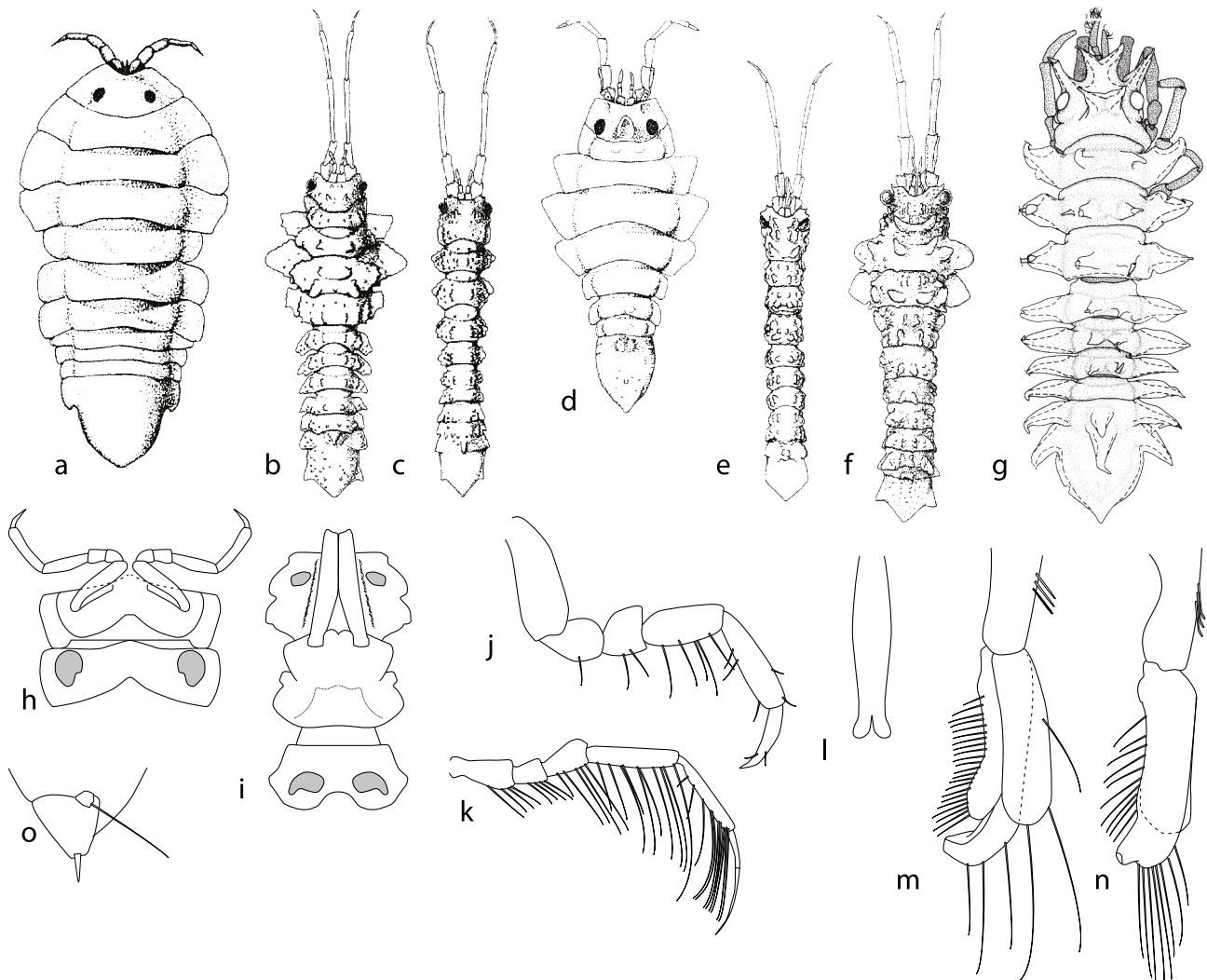


Figure 10.8. Holidoteidae. a, *Austroarcturus africanus* Kensley, 1975; b, c, *Austroarcturus dayi* (Kensley, 1977), female, male; d, *Holidotea unicornis* Barnard, 1920; e, f, *Neoarcturus ornatus* (Kensley, 1975), male, female; g, *Pleuroprion chuni* (zur Strassen, 1902). h, pereonites 4, 5, ventral, pereopods 4, *Austroarcturus*; i, pereonites 3–5, ventral, pereopods 4, *Neoarcturus*. Pereopod 2: j, *Holidotea*; k, *Neoarcturus*. l, penial plate, *Austroarcturus*. Male pleopod 1: m, *Austroarcturus*; n, *Pleuroprion*. o, uropodal rami, *Austroarcturus*.

***Austroarcturus* Kensley, 1975**

*Diagnosis.* Body straight, flattened, coxal plates splayed; smooth, or tuberculate. Pleonite 1 articulating with fused pleotelson. Pereopods 2–4 held more or less transversely against ridge on ventral coxal plate, bases of pairs barely in contact; carpus longer than ischium and merus together; dactylus fine, unguis about one half length of body of dactylus, total shorter than propodus. Pleopod 1 exopod of male with groove on posterior face ending on distolateral lobed tip, separated from most of lateral margin by notch; with mesial setae ending subdistally on definite lobe.

Shelf. Temperate Southern Africa. 6 species (Kensley, 1978: figures; Poore, 2003: rediagnosis, key to species).

***Holidotea* Barnard, 1920**

*Diagnosis.* Body straight, flattened, coxal plates splayed; smooth. All pleonites fused into pleotelson. Pereopods 2–4 held more or less transversely against ridge on ventral coxal plate, bases of pairs barely in contact; carpus almost as long as ischium and merus together; dactylus stout, unguis about one third length of body of dactylus, total shorter than propodus. Pleopod 1 exopod of male with groove on posterior face ending in deep subdistal excavation; with mesial setae ending subdistally on slight concave margin.

Shelf. Temperate Southern Africa. 1 species (Kensley, 1978: figure; Poore, 2003: rediagnosis).

***Neoarcturus* Barnard, 1914**

*Diagnosis.* Body weakly flexed between pereonites 4 and 5, cylindrical; tuberculate. All pleonites fused into pleotelson. Pereopods 2–4 held in parallel and in contact along midline of anterior body, enclosing mouthparts; carpus longer than

ischium and merus together; dactylus fine, unguis longer than body of dactylus, total about as long as propodus. Pleopod 1 exopod of male with groove on posterior face ending in deep subdistal excavation; with mesial setae ending subdistally on ridge at base of groove.

Shelf, slope. Temperate Southern Africa. 9 species (Kensley, 1978: figures; Poore, 2003: rediagnosis, key to species).

***Pleuoprion* zur Strassen, 1903**

*Diagnosis.* Body straight, flattened, coxal plates splayed; with paired dorsal spines on pereonites, median spines on pleonites 2, 3. Pleonite 1 articulating with fused pleotelson. Pereopods 2–4 carpus longer than ischium and merus together; dactylus fine, unguis about one half length of body of dactylus, total shorter than propodus. Pleopod 1 exopod of male with groove on posterior face opening on short distolateral lobe; with mesial setae ending subdistally on slight concave margin.

Shelf. Temperate Southern Africa. 1 species (Stransky et al., 2020: rediagnosis, figures).

**References**

- Kensley, B. 1978. *Guide to the marine isopods of southern Africa*. Trustees of the South African Museum: Cape Town. 173 pp.
- Poore, G.C.B. 2003. Revision of Holidoteidae, an endemic southern African family of Crustacea, and re-appraisal of taxa previously included in its three genera (Isopoda: Valvifera). *Journal of Natural History* 37: 1805–1846. <http://doi.org/10.1080/00222930210133273>
- Stransky, B., Poore, G.C.B., and Svavarsson, J. 2020. Revision of *Pleuoprion* zur Strassen, 1903 (Holidoteidae) and re-evaluation of *Spectrarturus* Schultz, 1981 (Arcturidae) (Crustacea, Isopoda, Valvifera). *Zootaxa* 4894: 1–52. <https://doi.org/10.11646/zootaxa.4894.1.1>

**Pseudidotheidae Ohlin, 1901**

## Figure 10.9

Five species in one genus confined to southern latitudes comprise Pseudidotheidae. The body is straight and pereopods 2–4 are short, stubby and armed with strong robust setae (Poore and Bardsley, 2004; Noli et al., 2022).

*Diagnosis.* Body more or less cylindrical, without coxal dorsal plates or pleonal epimera, straight, without flexion. Pereopod 1 gnathopod-like; pereopods 2–4 raptorial, articles broad, with robust setae on flexor margins, differentiated from ambulatory pereopods 5–7; with prominent dactyli, unguis short. Uropodal exopod (smaller ramus) tapering (with terminal seta or setae only). Pleopod 1 peduncle more elongate than rami, longer than on pleopods 2 and 3; exopod of male thickened and with groove on posterior face, ending on tapering distolateral apical extension.

***Pseudidothea* Ohlin, 1901**

Subtidal–slope (7–500 m). Temperate Australasia, Southern Ocean. 5 species (Poore and Bardsley, 2004; Noli et al., 2022: rediagnosis, key to species).

**References**

- Noli, N., Di Franco, D., Schiaparelli, S., and Brandt, A. 2022. *Pseudidothea armata* sp. n., a new isopod of the genus *Pseudidothea* (Crustacea, Malacostraca, Isopoda) from the Atlantic sector of the Southern Ocean. *Biodiversity Data Journal* 10: e76864. <https://doi.org/10.3897/BDJ.10.e76864>
- Poore, G.C.B., and Bardsley, T.M. 2004. Pseudidotheidae (Crustacea: Isopoda: Valvifera) reviewed with description of a new species, first from Australia. *Memoirs of Museum Victoria* 61: 75–83. <http://doi.org/10.24199/j.mmv.2004.61.6>

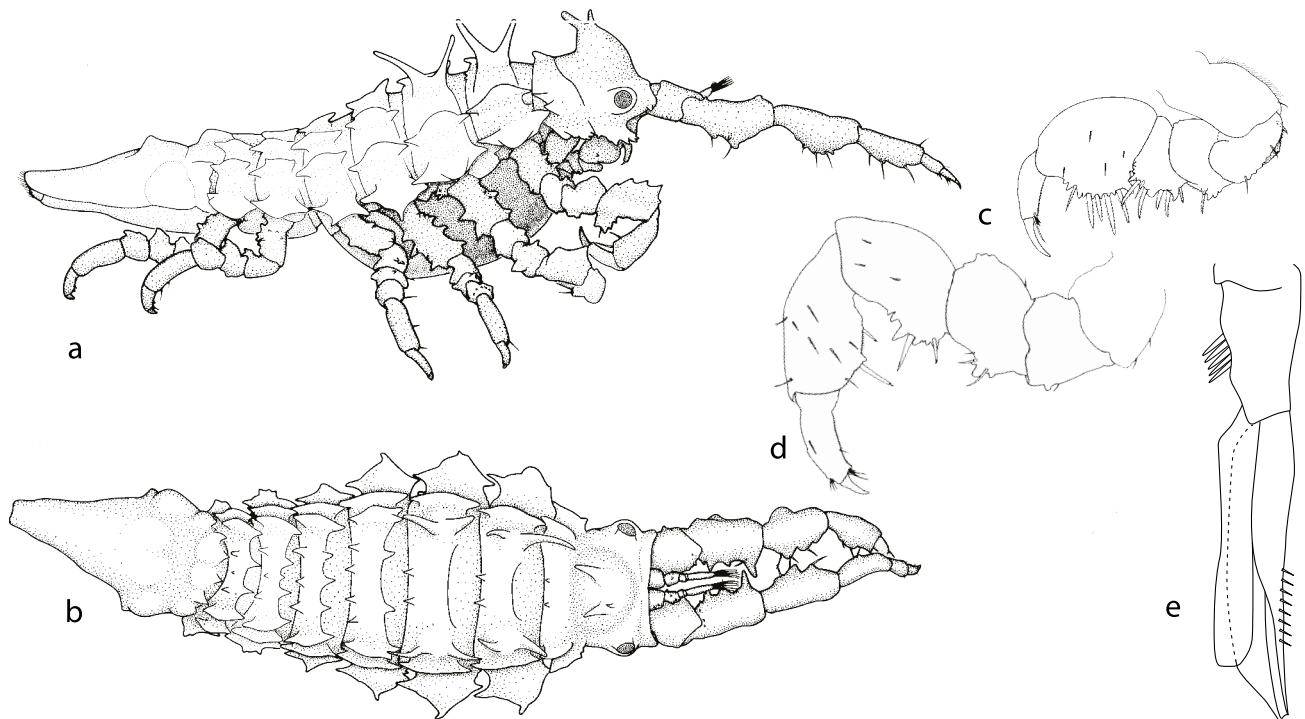


Figure 10.9. Pseudidotheidae, *Pseudidothea hoplites* Poore and Bardsley, 2004. a, b, habitus; c, pereopod 1; d, pereopod 2; e, male pleopod 1.

## Rectarcturidae Poore, 2001

Figure 10.10

Rectarcturids are recognisable and distinguished from arcturids, antarcturids and austrarcturellids by their straight bodies and reduced setation of pereopods 2–4. The structure of the male pleopod 1 exopod separates rectarcturids from other “straight” families – the groove ends in a distolateral lobe separated from a distomesial lamina by a deep notch (Poore, 2013). Poore (2013) reviewed the family, described most species and provided a key to genera and species.

*Diagnosis.* Body more or less cylindrical, without coxal dorsal plates or pleonal epimera, straight, without flexion. Pereopod 1 gnathopod-like; pereopods 2–4 elongated, with pairs of stiff well-spaced setae, differentiated from ambulatory pereopods 5–7; with short dactyli, unguis longer and setiform. Uropodal exopod (smaller ramus) tapering (with terminal seta or setae only). Pleopod 1 peduncle more elongate than rami, longer than on other pleopods; exopod of male thickened and with groove on posterior face, ending distolaterally or laterally on simple margin.

### Key to genera of Rectarcturidae

1. Antenna less than twice dorsal length of head+pereonite 1; article 4 subspherical, about as long as fused articles 1+2; article 5 at least twice as long as article 5 (fig. 10.10a, g, i, k). Pereopod 2 dactylus body+unguis 3 times as long as propodus (fig. 10.10l) ..... 2
  - Antenna at least 2.5 times dorsal length of head+pereonite 1; article 4 cylindrical, at least twice as long as fused articles 1+2; article 5 shorter than or at most 15 times as long as article 5 (fig. 10.10c, e, j). Pereopod 2 dactylus body+unguis shorter or at most 2.5 times as long as propodus (fig. 10.10m, n) ..... 3
2. Head with paired submedian tubercles, pereonites with smooth transverse ridges, anterior pleonites barely elevated (fig. 10.10a, b). Antenna article 3 without ventrolateral flange (fig. 10.10i) ..... *Galathearcturus*
  - Head, pereonites and anterior pereonites with paired blade-like submedian and sublateral tubercles/carinae, all secondarily tuberculate (fig. 10.10g, h). Antenna article 3 with ventrolateral teeth (fig. 10.10k) ..... *Tasmarcturus*

3. Head with paired submedian tubercles, pereonites with smooth transverse ridges (pereonite 3 with second ridge anterior to major one), anterior pleonites barely elevated (fig. 10.10c, d) ..... *Nowrarturus*
- Head, pereonites and anterior pleonites with paired blade-like submedian and sublateral tubercles or carinae, smooth or barely secondarily ornamented (fig. 10.10e, f) ..... *Rectarturus*

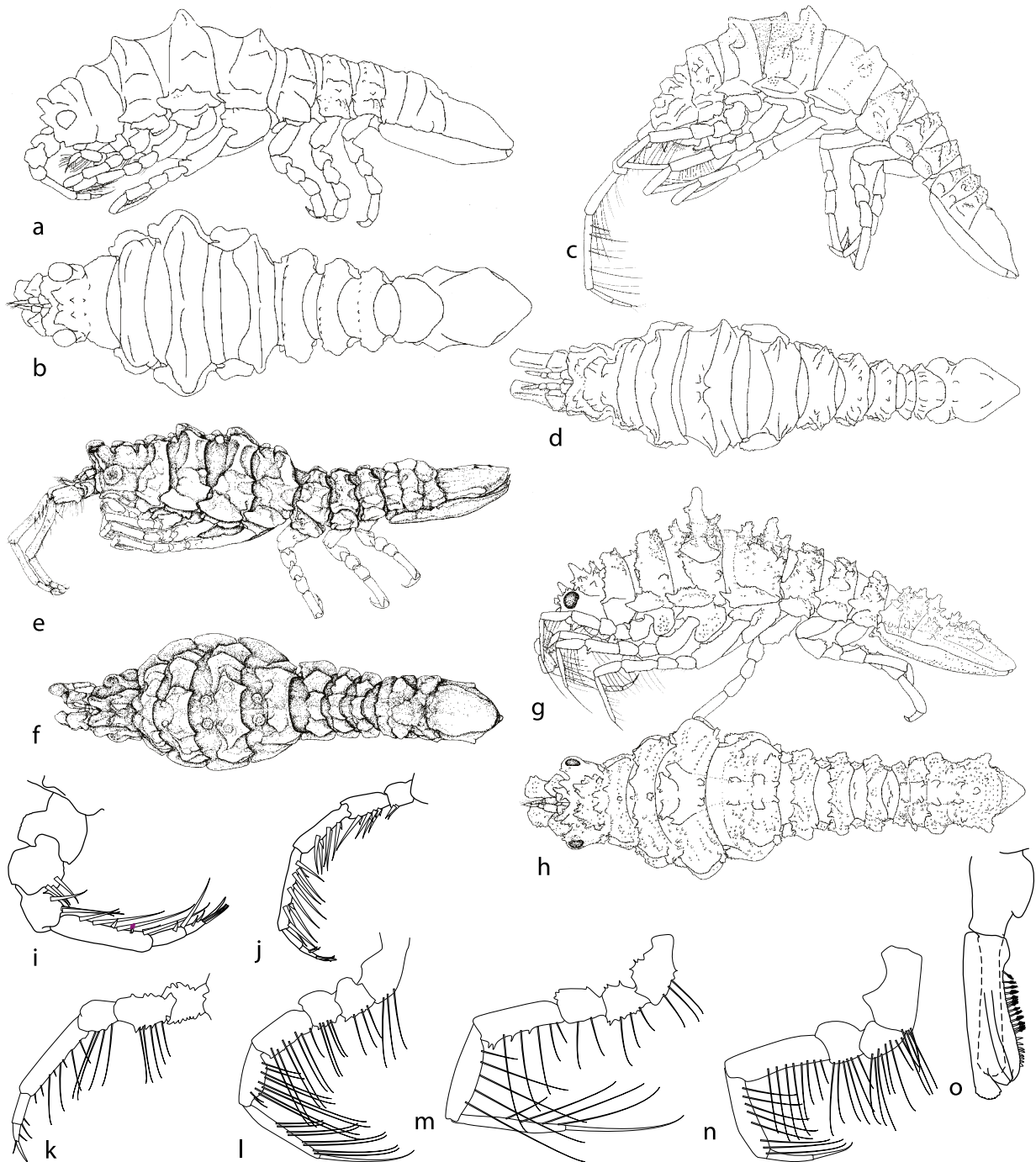


Figure 10.10. Rectarturidae. a, b, *Galathearcturus antoniae* Poore, 2013; c, d, *Nowrarturus jamesi* Poore, 2013; e, f, *Rectarturus kophameli* (Ohlin, 1901); g, h, *Tasmarturus simplicissimus* (Whitelegge, 1904). Antenna: i, *Galathearcturus*; j, *Nowrarturus*; k, *Tasmarturus*. Pereopod 2: l, *Galathearcturus*; m, *Nowrarturus*; n, *Rectarturus*. o, male pleopod 1, *Tasmarturus*.

***Galathearcturus* Poore, 2013**

*Diagnosis.* Head with paired submedian tubercles, pereonites with smooth transverse ridges, anterior pleonites barely elevated. Antenna 1.5 times dorsal length of head+pereonite 1; article 3 cuboid, as long as deep, without ventrolateral flange; article 4 subspherical, about as long as fused articles 1–2; article 5 cylindrical, 2–2.5 times as long as article 4, 5 times as long as wide. Pereopod 2 propodus palm convex, denticulate; dactylus body+unguis 3 times as long as propodus; dactylus unguis setiform, as long or longer than dactylus body.

Shelf (86 m). Temperate E Australia. 1 species (Poore, 2013).

***Nowrarcturus* Poore, 2013**

*Diagnosis.* Head with paired submedian tubercles, pereonites with smooth transverse ridges (third with second ridge anterior to major one), anterior pleonites barely elevated. Antenna 2.5 times dorsal length of head+pereonite 1; article 3 cylindrical, twice as long as deep, without ventrolateral flange; article 4 cylindrical, more than twice as long as fused articles 1–2; article 5 cylindrical, 1.5 times as long as article 4, 5 times as long as wide. Pereopod 2 propodus palm convex, denticulate; dactylus body+unguis 2.5 times as long as propodus; dactylus unguis setiform, as long or longer than dactylus body.

Slope (990–1118 m). Temperate SE Australia. 1 species (Poore, 2013).

***Rectarcturus* Schultz, 1981**

*Diagnosis.* Head, pereonites and anterior pereonites with paired blade-like submedian and sublateral tubercles/carinae, smooth or barely secondarily ornamented. Antenna 2.5 times dorsal length of head+pereonite 1, or 3 times dorsal length of head+pereonite 1; article 3 cuboid, as long as deep, without

ventrolateral flange; article 4 cylindrical, more than twice as long as fused articles 1–2; article 5 cylindrical, 0.7 length of article 4, 5 times as long as wide. Pereopod 2 propodus palm straight, smooth; dactylus body+unguis as long or little shorter than propodus; dactylus unguis setiform, shorter than dactylus body.

Shelf, slope (10–3590 m). Temperate South America (Argentina). 3 species (Park and Wägele, 1995: species descriptions; Poore, 2013: rediagnosis, key to 2 species).

***Tasmarcturus* Poore, 2013**

*Diagnosis.* Head, pereonites and anterior pereonites with paired blade-like submedian and sublateral tubercles/carinae, all secondarily tuberculate. Antenna 1.7–2 times dorsal length of head+pereonite 1; article 3 cuboid, as long or little longer than deep, with ventrolateral teeth; article 4 subspherical, about as long as fused articles 1–2; article 5 cylindrical, 2–2.5 times as long as article 4, 5 times as long as wide. Pereopod 2 propodus palm convex, denticulate; dactylus body+unguis 3 times as long as propodus; dactylus unguis setiform, as long or longer than dactylus body.

Shelf, slope (26–1096 m). Temperate E Australia. 3 species (Poore, 2013: key to species).

**References**

- Park, J.-Y., and Wägele, J.W. 1995. On a small collection of Valvifera (Crustacea Isopoda) from the Magellan Strait, with a description of *Platidotea magellanica* n. gen. n. sp. *Bulletin Zoölogisch Museum, Universiteit van Amsterdam* 14: 57–99. <http://www.repositorio.naturalis.nl/document/549063>
- Poore, G.C.B. 2013. Rectarcturidae Poore, 2001 rediagnosed with descriptions of new Australian genera and species (Isopoda: Valvifera). *Memoirs of Museum Victoria* 70: 17–36. <http://doi.org/10.24199/j.mmv.2013.70.03>

**Thermoarcturidae Poore, 2015**

Figure 10.11

Thermoarcturidae are a small family of three species from slope depths distinguished by their geniculate body and well-spaced stiff setae on pereopods 2–4 in place of the filter setae seen on similar Antarcturidae (Poore, 2015).

*Diagnosis.* Body more or less cylindrical, without coxal dorsal plates or pleonal epimera, flexed between pereonites 4 and 5, anterior segments held slightly erect. Pereopod 1 gnathopod-

like; pereopods 2–4 elongated, with pairs of stiff well-spaced setae, differentiated from ambulatory pereopods 5–7; with prominent dactyli, unguis short (fig. 10.11k–m). Uropodal exopod (smaller ramus) triangular, similar to endopod (with terminal setae). Pleopod 1 peduncle more elongate than rami, longer than on other pleopods; exopod of male thickened and with groove on posterior face, ending on tapering distolateral apical extension or evident only as shallow proximal concavity.

**Key to genera of Thermoarcturidae**

1. Pleonite 3 with pair of long acute sublateral spines (fig. 10.11b). Male pleopod 2 exopod with area of fine setae about one third along, groove weakly defined (fig. 10.11h, i) ..... *Spinarcturus*
- Pleonite 3 without or with short tubercles. Male pleopod 2 exopod with well-defined groove running to subapical notch ..... 2

2. Pereonites and pleonites with transverse rows of submedian, sublateral and lateral tubercles bearing bead-like spheres (fig. 10.11a). Male pleopod 2 exopod with groove opening at notch about three quarters along, without ventral keel or tooth (fig. 10.11g) ..... *Califarcturus*
- Pereonites with simple sublateral spines, pleotelson scarcely ornamented (fig. 10.11c, d). Male pleopod 2 exopod with groove opening at end of subdistal rounded lobe, with prominent keel ending in tooth on anterior (ventral) face (fig. 10.11j) ..... *Thermoarcturus*

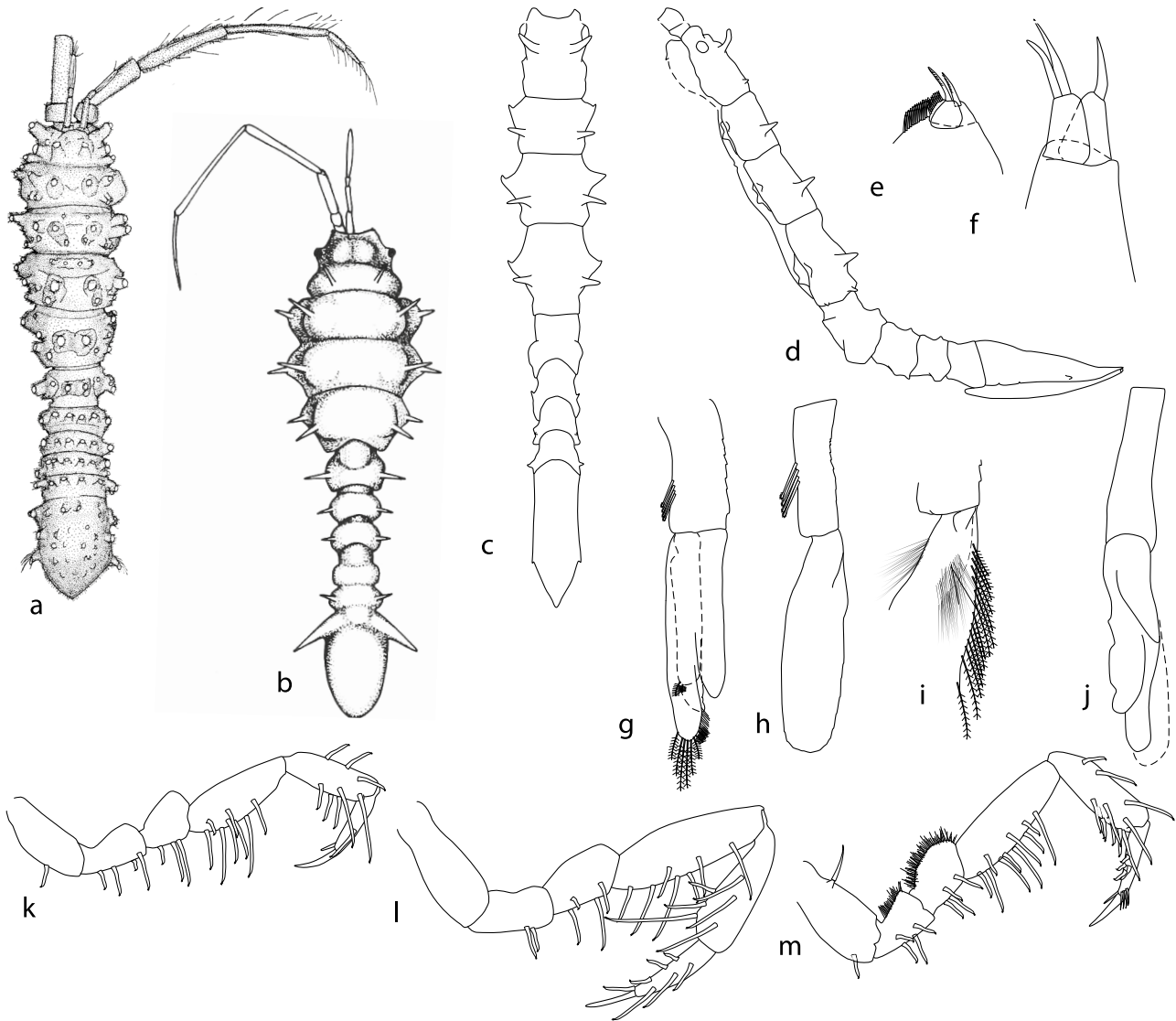


Figure 10.11. Thermoarcturidae. a, *Califarcturus tannerensis* (Schultz, 1966); b, *Spinarcturus natalensis* Kensley, 1978; c, d, *Thermoarcturus venezuelensis* Paul and Menzies, 1971. Uropodal rami: e, *Califarcturus*; f, *Spinarcturus*. Male pleopod 1: g, *Califarcturus*; h, i, *Spinarcturus* (with detail of base of exopod); j, *Thermoarcturus*. Pereopod 2: k, *Califarcturus*; l, *Spinarcturus*; m, *Thermoarcturus*.

### *Califarcturus* Poore, 2015

**Diagnosis.** Head, pereonites and all pleonites each with transverse rows of submedian, sublateral and lateral tubercles bearing bead-like spheres. Pleotelson with short oblique lateral tubercles. Eyes

absent. Male pleopod 1 exopod with well-defined anterior groove opening laterally at notch about three quarters along lateral margin, without ridge and tooth on anterior face. Male pleopod 2, appendix masculina slightly longer than endopod.

Slope (1300 m). Tropical Eastern Pacific. 1 species (Schultz, 1966: species description; Poore, 2015: species redescription, diagnosis).

#### ***Spinarcturus* Kensley, 1978**

*Diagnosis.* Pereonites 2–4 with prominent sublateral and lateral spines; pereonites 5–7 with prominent lateral spines; pleonite 3 with pair of acute sublateral spines, longer and stouter than other spines. Pleotelson unarmed. Eyes present. Male pleopod 1 exopod with area of fine setae about one third along on anterior face, without well-defined groove. Male pleopod 2, appendix masculina almost twice as long as endopod. Oostegites 5 a pair of small flaps on anterior margin of pereonite 5.

Slope (550 m). Temperate Southern Africa (Natal). 1 species (Kensley, 1978: species description; Poore, 2015: rediagnosis).

#### ***Thermoarcturus* Paul and Menzies, 1971**

*Diagnosis.* Head and pereonites 2–4 with simple sublateral spines, pleotelson scarcely ornamented; pereonites 5–7 and anterior pleon scarcely armed. Pleotelson with minute lateral wings. Eyes present. Male pleopod 1 exopod with well-defined

groove opening laterally at end of rounded lobe, with prominent ridge-tooth on anterior face. Male pleopod 2, appendix masculina 1.3 times as long as endopod. Oostegites 5 a pair of small midventral ovoids covering oopores.

Slope (95–900 m). Tropical Atlantic. 1 species (Paul and Menzies, 1971: species description; Poore, 2015: rediagnosis).

#### **References**

- Kensley, B. 1978. The South African Museum's Meiring Naude cruises. Part 7. Marine Isopoda. *Annals of the South African Museum* 74: 125–157. <http://biodiversitylibrary.org/page/41212927>
- Paul, A.Z., and Menzies, R.J. 1971. Sub-tidal isopods of the Fosa de Cariaco, Venezuela, with descriptions of two new genera and twelve new species. *Boletín del Instituto Oceanográfico, Universidad de Oriente* 10: 29–48.
- Poore, G.C.B. 2015. Thermoarcturidae, a new crustacean family of three genera (Isopoda: Valvifera). *Zootaxa* 4007: 409–418. <http://doi.org/10.11646/zootaxa.4007.3.7>
- Schultz, G.A. 1966. Submarine canyons of southern California. Part IV. Systematics: Isopoda. Marine isopods of the submarine canyons of the southern Californian continental shelf. *Allan Hancock Pacific Expeditions* 27 (Part 4): 1–56. <http://biodiversitylibrary.org/page/4683460>

### **Xenarcturidae Sheppard, 1957**

Figure 10.12

The Xenarcturidae is the only valviferan family in which pereopod 4 is one of the posterior ambulatory limbs. The single species, *Xenarcturus spinulosus* Sheppard, 1957, is confined to Patagonian Argentina; Park (1995) redescribed it in detail.

*Diagnosis.* Body more or less flattened or semicylindrical, coxae with expanded coxal dorsal plates, pleonites with expanded epimera, straight, without flexion. Pereopod 1 dactylus without unguis. Pereopod 1 gnathopod-like; pereopods 2–3 elongated, setose, differentiated from ambulatory pereopods 5–7, pereopod 4 different from pereopod 3, similar to pereopod 5; with prominent dactyli, unguis short. Uropodal exopod (smaller ramus) tapering (with terminal seta or setae only). Pleopod 1 peduncle more elongate than rami, longer than on other pleopods; exopod of male thickened and with groove on posterior face, ending on tapering distolateral apical extension.

#### ***Xenarcturus* Sheppard, 1957**

Shelf (150–256 m). Southern Ocean (Magellan Straits). 1 species (Sheppard, 1957; Park, 1995: redescription).

#### **References**

- Park, J.-Y. 1995. *Xenarcturus spinulosus* Sheppard, 1957 (Crustacea, Isopoda, Valvifera): redescription of a specimen from the Strait of Magellan. *Bulletin Zoologisch Museum, Universiteit van Amsterdam* 14: 145–152. <http://www.repository.naturalis.nl/document/548940>
- Sheppard, E.M. 1957. Isopod Crustacea Part II. The sub-order Valvifera. Families: Idoteidae, Pseudidotheidae and Xenarcturidae fam. n. With a supplement to isopod Crustacea, Part I. The family Serolidae. *Discovery Reports* 29: 141–197, pls 8, 9. <http://biodiversitylibrary.org/page/5568877>

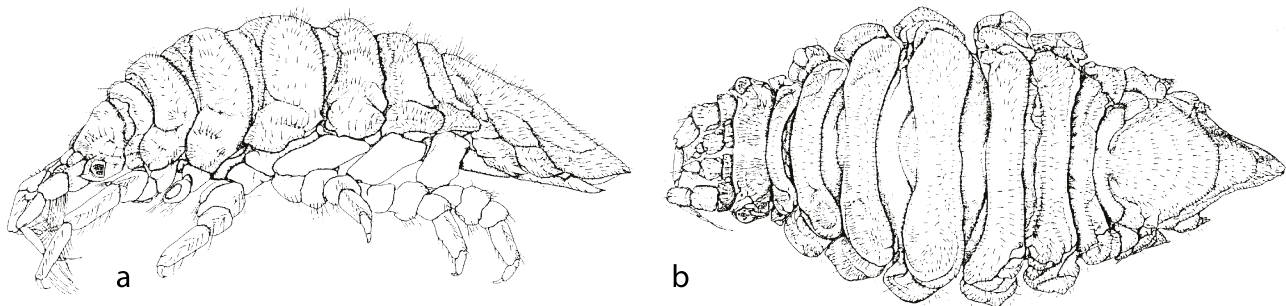


Figure 10.12. Xenarcturidae. *Xenarcturus spinulosus* Sheppard, 1957: a, b, lateral, dorsal views.

## Superfamily Idoteoidea Samouelle, 1819

Three families of Valvifera – Chaetiliidae, Holognathidae and Idoteidae – are included in Idoteoidea. While Holognathidae are probably monophyletic, having a shortened pereopod 4, relationships between the others are less clear. Idoteids have simple pereopods but those of chaetiliids are diverse; both families contain genera with plesiomorphic biramous uropods, suggesting both families are polyphyletic.

*Diagnosis.* Body more or less flattened or semicylindrical, coxae with expanded coxal dorsal plates, pleonites with expanded epimera. Head and pereonite 1 free, or fused (*Crabyzos*, *Lyidotea* only). Pereopod 1 subchelate; pereopods variously subchelate or ambulatory. Pleopod 1 peduncle shorter than or as long as rami (similar to pleopods 2 and 3); exopod of male laminar.

## Chaetiliidae Dana, 1849

Figures 10.13, 10.14

The Chaetiliidae are a diverse family of largely flattened or vaulted isopods possessing both uropodal rami and diverse modifications of the pereopods. The most well studied are the large polar analogues, the Arctic species, *Saduria entomon* (Linnaeus, 1758) (e.g. Haahtela, 2000; Hagerman and Szaniawska, 1991; Svanbäck et al., 2011) and the Antarctic *Glyptonotus antarcticus* Eights, 1852 (e.g. Clarke, 1979; Meyer-Rochow and Suzuki, 1986). Most species are confined to the Southern Hemisphere, but a few occur on shelves and deeper water elsewhere. Species of *Macrochiridothea* and *Chiridotea* are inhabitants of sandy beaches.

The relationships between members of this family and those of Idoteidae are not clear. While most idoteids possess only a uropodal endopod, others have two rami; all have simple ambulatory pereopods 2–7.

*Diagnosis.* Body more or less flattened or vaulted, pereonites and/or coxae and pleonites with expanded epimera, straight, without flexion, tapering posteriorly. Head with prominent flat lateral lobes, sometimes with ocular notch. Pereopod 1

gnathopod-like; pereopods 2–7 ambulatory, similar, with marginal short robust setae or pereopods 1–3 subchelate, similar, differentiated from pereopod 4–7 or pereopods 1–6, similar, differentiated from pereopod 7; with prominent dactyli, unguis short. Uropodal exopod (smaller ramus) ovate, fringed with setae (if present). Pleopod 1 peduncle short (similar to other pleopods); exopod of male laminar.

*Implicit generic attributes.* Head without lateral ocular notches; body smooth or slightly sculptured; pereonite 7 little narrower than pereonite 6; coxal dorsal plates 2–4 fused with tergites, 5–7 separated by sutures visible in dorsal view from tergites; coxal dorsal plate 7 about as long as 6. Pleonite 2 approximately as wide as pleonite 3; pleotelson tapering more or less evenly to acute apex. Antennula flagellum aesthetascs marginal along clavate article. Antennal peduncle article 4 quadrate; flagellum multiarticulate. Pereopodal carpi 1–6 not produced; pereopods 4–5 ambulatory; pereopod 4 and 5 dactyli tapering; pereopods 6 and 7 with tapering dactyli. Uropodal rami short, broad, smaller exopod overlapped.

### Key to genera of Chaetiliidae

1. Pereopod 1 subchelate, with propodus expanded; pereopods 2 and 3 with expanded articles (fig. 10.14e, g); pereopods 4–7 ambulatory ..... 2
  - Pereopods 1 or more subchelate (fig. 10.14f, h), others ambulatory ..... 3
2. Antennal peduncle article 4 quadrate (fig. 10.14d). Pereopods 2 and 3 with minute subchelate dactyli (figs 10.13f, 10.14k) ..... *Macrochiridothea*
  - Antennal peduncle article 4 with posterodistal lobe alongside article 5 (fig. 10.14c). Pereopods 2 and 3 without dactyli (figs 10.13d, 10.14i, j) ..... *Chiriscus*
3. Pereopods 1–6 subchelate; pereopods 2–6 carpi projected distally on lower margin; pereopod 7 ambulatory (figs 10.13m, 10.14o, q) ..... *Symmium*
  - Fewer than first 6 pairs of pereopods subchelate, remaining pereopods ambulatory ..... 4
4. Pereopods 1–5 subchelate, pereopods 6 and 7 ambulatory (figs 10.13b, 10.14f, n) ..... *Chaetilia*
  - Pereopods 1 or 1–3 subchelate, pereopods 4–7 ambulatory ..... 5
5. Coxal dorsal plates 2–4 fused with tergites, plates 5–7 separated from suture visible in dorsal view ..... 6
  - Coxal dorsal plates 2–7 separated from suture visible in dorsal view ..... 9

6. Pereonites each with median and sublateral tubercles. Pleonites 1 and 2 articulating with each other and with remaining pleotelson (fig. 10.13k, l) ..... *Stegidotea*
- Pereonites each with median and sublateral tubercles. Pleonites 1–3 or 1–4 articulating with each other and with remaining pleotelson ..... 7
7. Pleonites 1–3 articulating with each other and with fused pleotelson (fig. 10.13a). Antennula flagellum with aesthetascs on minute distal article only (fig. 10.14a) ..... *Austrochaetilia*
- Pleonites 1–4 articulating with each other and with fused pleotelson. Antennula flagellum with aesthetascs marginal along clavate article (fig. 10.14b) ..... 8
8. Body vaulted, sculptured. Pleonite 2 narrower than pleonite 3 (fig. 10.13e) ..... *Glyptonotus*
- Body flat, smooth. Pleonite 2 about as wide as pleonite 3 (fig. 10.13g) ..... *Maoridotea*
9. Coxal dorsal plate 7 about as long as coxal dorsal plate 6 (fig. 10.13i, j) ..... 10
- Coxal dorsal plate 7 clearly shorter than coxal dorsal plate 6 and pleonite 1 (fig. 10.13c, h) ..... 11
10. Body vaulted. Pleonites 1–4 articulating with each other and with pleotelson (fig. 10.13i) ..... *Saduria*
- Body flattened. Pleonites 1–3 articulating with each other and with pleotelson (fig. 10.13j) ..... *Saduriella*
11. Pleonites 1–3 articulating with each other and with fused pleotelson (fig. 10.13c). Pereopods 4, 5 ambulatory (fig. 10.13l) ..... *Chiridotea*
- Pleonites 1, 2 articulating with each other and with fused pleotelson (fig. 10.13h). Pereopods 4, 5 natatory, broad (fig. 10.13m) ..... *Parachiridotea*

#### ***Austrochaetilia* Poore, 1978**

*Diagnosis.* Body vaulted; head without lateral ocular notches. Pleonites 1–3 articulating with each other and with fused pleotelson; pleonite 4 fused to pleotelson but indicated by lateral suture only; pleonite 1 narrower than pleonite 3. Antennula flagellum aesthetascs terminal only (on minute distal article). Pereopods 1–3 subchelate; pereopods 4–7 ambulatory.

Shelf. Temperate Australia. 1 species (Poore, 1978).

#### ***Chaetilia* Dana, 1849**

*Diagnosis.* Body flattened, coxal plates splayed; head with lateral ocular notches; pereonite 7 much narrower than pereonite 6, 6 times as wide as long; coxal dorsal plate 7 clearly shorter than 6 and pleonite 1. Pleonites 1–3 articulating with each other and with fused pleotelson; pleonite 4 not indicated; pleonite 1 narrower than pleonite 3. Pereopods 1–5 subchelate; pereopod 6 elongate; pereopod 7 ambulatory; 6 with long setose dactylus, 7 with minute obscure dactylus.

Subtidal. Temperate South America, Temperate Australasia. 4 species (Bastida and Torti, 1970; Poore, 1985: rediagnosis).

#### ***Chiridotea* Harger, 1878**

*Diagnosis.* Body flattened, coxal plates splayed; head with lateral ocular notches; coxal dorsal plates 2–7 separated by sutures visible in dorsal view from tergites; coxal dorsal plate 7 clearly shorter than 6 and pleonite 1. Pleonites 1–3 articulating with each other and with fused pleotelson; pleonite 4 fused to pleotelson but indicated by lateral suture only; pleonite 1 as wide as pleonite 3. Pereopods 1–3 subchelate; pereopods 4–7 ambulatory.

Subtidal, shelf. Temperate Northern W Atlantic. 5 species (Bastida and Torti, 1969; McDermott, 2001, 2005; King and Cawood, 2007: rediagnosis, key to species).

#### ***Chiriscus* Richardson, 1911**

*Diagnosis.* Body flattened, coxal plates splayed; head without lateral ocular notches; pereonite 7 much narrower than pereonite 6, 3 times as wide as long; coxal dorsal plate 7 clearly shorter than 6 and pleonite 1. Pleonites 1–3 articulating with each other and with fused pleotelson; pleonite 4 fused to pleotelson but indicated by complete suture; pleonite 1 narrower than pleonite 3. Antennal peduncle article 4 with posterodistal lobe alongside article 5. Pereopods 1 subchelate, propodus expanded; pereopods 2 and 3 with minute subchela; pereopods 4–7 ambulatory; 2 and 3 without dactyli; pereopod 4 and 5 dactyli minute or lost; 6 and 7 with minute dactylus.

Shelf. Tropical W Atlantic, Temperate South America (Atlantic coast). 2 species (Poore, 1984; Poore et al., 2009: rediagnosis, key to species).

#### ***Glyptonotus* Eights, 1852**

*Diagnosis.* Body vaulted; pereonite 7 little narrower than pereonite 6. Pleonites 1–4 articulating with each other and with fused pleotelson, others sometimes indicated but not articulating; pleonite 1 narrower than pleonite 3; pleonite 2 narrower than pleonite 3. Pereopods 1–3 subchelate; pereopods 4–7 ambulatory.

Subtidal, shelf. Southern Ocean (Antarctic shelf). 2 species (Wägele, 1991: rediagnosis; Held and Wägele, 2005).

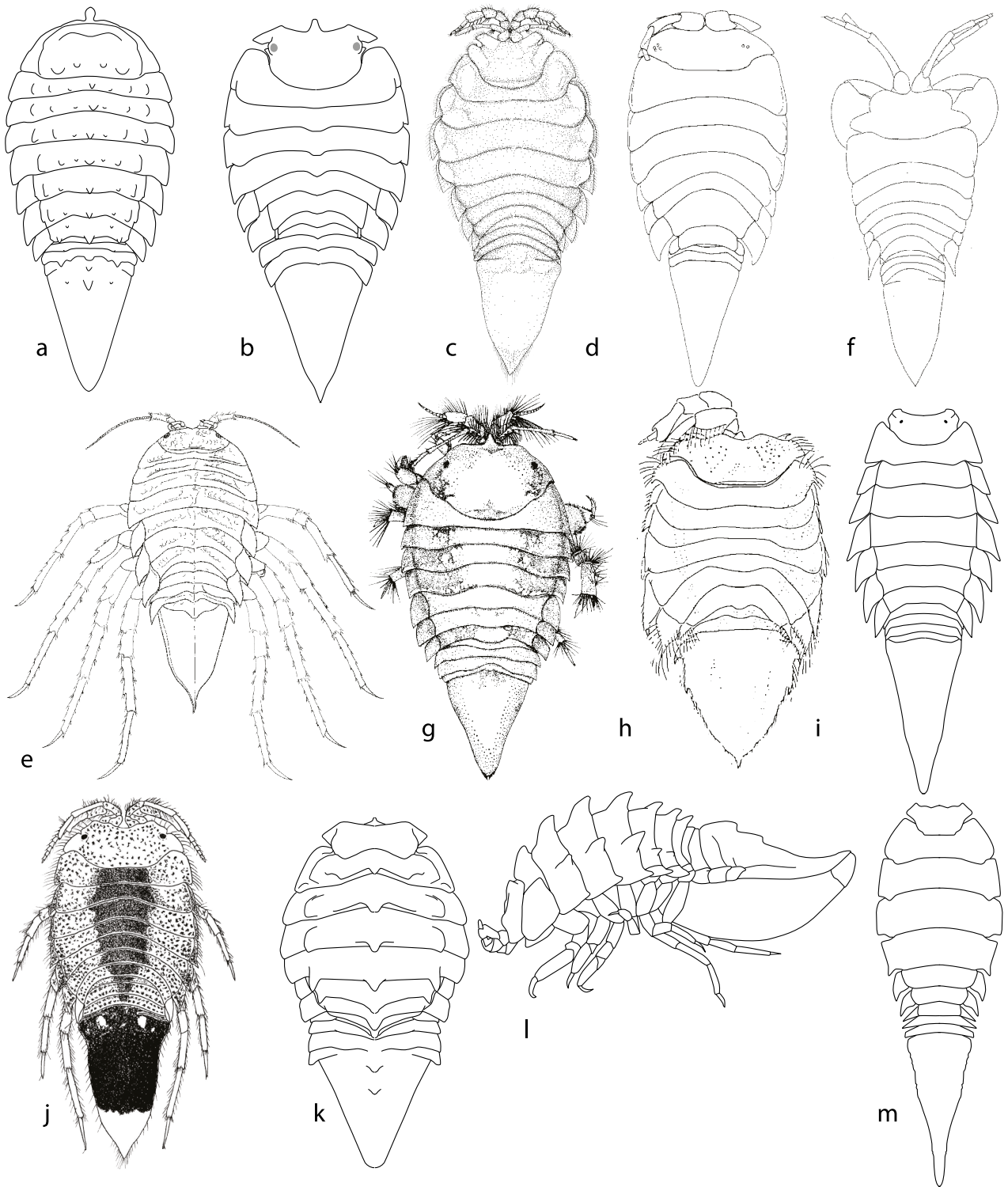


Figure 10.13. Chaetiliidae. a, *Austrochaetilia capeli* Poore, 1978; b, *Chaetilia tasmanica* Poore, 1985; c, *Chiridotea coeca* (Say, 1818); d, *Chiriscus australis* Richardson, 1911; e, *Glyptonotus antarcticus* Eights, 1852; f, *Macrochiridothea estuariae* Poore, Ramirez and Schiariti, 2009; g, *Maoridotea naylori* Jones and Fenwick, 1978; h, *Parachiridotea mediterranea* Roman, 1991; i, *Saduria entomon* (Linnaeus, 1758); j, *Saduriella losadai* Holthuis, 1964; k, l, *Stegidotea pinnata* Poore, 1985; m, *Symmium caudatus* Richardson, 1904.

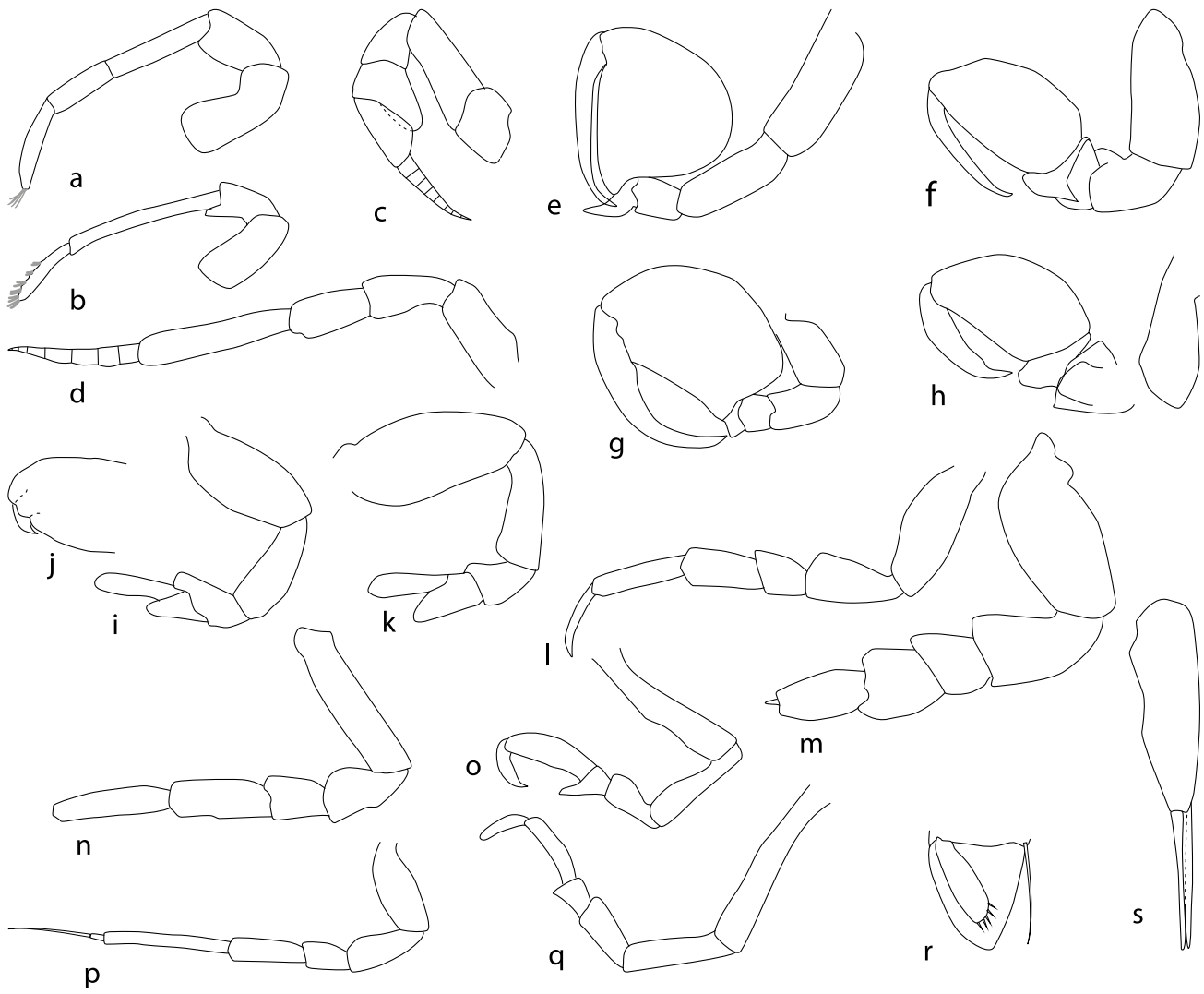


Figure 10.14. Chaetiliidae. Antennula: a, *Austrochaetilia*; b, *Maoridotea*. Antenna: c, *Chiriscus*; d, *Macrochiridothea*. Pereopod 1: e, *Chiriscus*; f, *Chaetilia*; g, *Macrochiridothea*; h, *Symmius*. Pereopod 2: i, j, *Chiriscus* (with detail of dactylus); k, *Macrochiridothea*. Pereopod 4: l, *Chiridotea*; m, *Parachiridotea*. Pereopod 6: n, *Chaetilia*; o, *Symmius*. Pereopod 7: p, *Macrochiridothea*; q, *Symmius*. Uropod: r, *Stegidotea* (rami only, internal view); s, *Symmius*.

#### ***Macrochiridothea* Ohlin, 1901**

**Diagnosis.** Body flattened, coxal plates splayed; head with lateral ocular notches; pereonite 7 much narrower than pereonite 6, 6 times as wide as long; coxal dorsal plate 7 clearly shorter than 6 and pleonite 1. Pleonites 1–3 articulating with each other and with fused pleotelson; pleonite 4 fused to pleotelson but indicated by complete suture; pleonite 1 narrower than pleonite 3. Pereopods 1 subchelate, propodus expanded; pereopods 2 and 3 with minute subchela; pereopods 4–7 ambulatory; 2 and 3 with minute subchelate dactyli; pereopod 4 and 5 dactyli minute or lost; 6 and 7 with minute dactylus.

Subtidal, shelf. Temperate South America, Temperate Australasia (New Zealand). 11 species (Carvacho, 1997; Poore et al., 2009; rediagnosis, key to species).

#### ***Maoridotea* Jones and Fenwick, 1978**

**Diagnosis.** Body flattened, coxal plates splayed; head without lateral ocular notches. Pleonites 1–4 articulating with each other and with fused pleotelson, others sometimes indicated but not articulating; pleonite 1 narrower than pleonite 3. Pereopods 1–3 subchelate; pereopods 4–7 ambulatory.

Subtidal. Temperate Australasia (New Zealand). 1 species (Jones and Fenwick, 1978).

#### ***Parachiridotea* Daguerra de Hureaux and Elkaïm, 1972**

**Diagnosis.** Body flattened, coxal plates splayed; head with lateral ocular notches (small anterior “horns”); pereonite 7 much narrower than pereonite 6, 3 times as wide as long; coxal

dorsal plates 2–7 separated by sutures visible in dorsal view from tergites; coxal dorsal plate 7 clearly shorter than 6 and pleonite 1. Pleonites 1 and 2 articulating with each other and with fused pleotelson; pleonite 3 fused to pleotelson but indicated by lateral suture only (slight); pleonite 4 not indicated; pleonite 1 as wide as pleonite 3; pleotelson lateral margins convex, with hook-like projections and acute apex. Pereopods 1–3 subchelate; pereopods 4–7 ambulatory; 4–5 natatory, broadened, with fringes of long setae; pereopod 4 and 5 dactyli minute or lost.

Subtidal. Temperate Northern E Atlantic. 2 species (Elkaïm and Daguerre de Hureaux, 1976; Guerao and Castelló, 2012; Roman, 1991).

### **Saduria Adams, 1852**

*Diagnosis.* Body vaulted; head with lateral ocular notches; coxal dorsal plates 2–7 separated by sutures visible in dorsal view from tergites. Pleonites 1–4 articulating with each other and with fused pleotelson, others sometimes indicated but not articulating; pleonite 1 as wide as pleonite 3. Pereopods 1–3 subchelate; pereopods 4–7 ambulatory.

Estuarine and marine; subtidal–slope. Arctic, Temperate Northern Atlantic. 4 species (Kussakin, 1982: key to species as *Mesidotaea*, junior synonym, in Russian; Lajus et al., 2003: variation; Svanbäck et al., 2011: predatory diet).

### **Saduriella Holthuis, 1964**

*Diagnosis.* Body flattened, coxal plates splayed; head with lateral ocular notches; coxal dorsal plates 2–7 separated by sutures visible in dorsal view from tergites. Pleonites 1–3 articulating with each other and with fused pleotelson; pleonite 4 fused to pleotelson but indicated by lateral suture only; pleonite 1 as wide as pleonite 3. Pereopods 1–3 subchelate; pereopods 4–7 ambulatory.

Subtidal. Temperate Northern Atlantic (Spain). 1 species (Holthuis, 1964).

### **Stegidotea Poore, 1985**

*Diagnosis.* Body vaulted; head without lateral ocular notches; strongly spinose with at least dorsal and dorsolateral pairs of spines, often dominated by pair near end of pleotelson; pereonite 7 little narrower than pereonite 6. Pleonites 1 and 2 articulating with each other and with fused pleotelson; pleonite 3 fused to pleotelson but indicated by lateral suture only; pleonite 4 fused to pleotelson but indicated by lateral suture only; pleonite 1 narrower than pleonite 3. Antennula flagellum aesthetascs terminal only (on minute distal article). Antennal flagellum of 2–3 articles without distal claw. Pereopods 1–3 subchelate; pereopods 4–7 ambulatory.

Shelf, slope. Central Indo-Pacific, Temperate Australasia. 6 species (Poore, 1985: description of 3 species; 1990: key to 3 Australian species; 1991).

### **Symmius Richardson, 1911**

*Diagnosis.* Body vaulted; head with lateral ocular notches; pereonite 7 little narrower than pereonite 6; coxal dorsal plate

7 clearly shorter than 6 and pleonite 1. Pleonites 1 and 2 articulating with each other and with fused pleotelson; pleonite 3 fused to pleotelson but indicated by complete suture; pleonite 4 not indicated; pleonite 1 as wide as pleonite 3. Antennula flagellum aesthetascs terminal only (on minute distal article). Antennal flagellum of 2–3 articles without distal claw. Pereopods 1–6 subchelate; pereopods 2–6 carpi projected distally on lower margin; pereopod 7 ambulatory; pereopodal carpi 1–6 produced distally to oppose dactylus. Uropodal rami elongate, of equal length.

Shelf. Temperate Northern W Pacific. 5 species (Poore, 1984, 1991; Shimomura, 2008).

### **References**

- Bastida, R., and Torti, M.R. 1969. Un nuevo isópodo del género *Macrochiridothea* de las costas Argentinas (Valvifera, Idoteidae). *Neotropica* 15: 65–72.
- Bastida, R., and Torti, M.R. 1970. *Chaetilia argentina* sp. nov., un nuevo aporte al conocimiento de la isopodofauna sudamericana. *Bulletin du Muséum national d'Histoire naturelle, Paris* (Sér. 2) 42: 392–400.
- Carvacho, A. 1997. Redescrición de *Macrochiridothea setifer* Menzies, 1962 y revisión del género *Macrochiridothea* Ohlin, 1901 (Isopoda: Valvifera: Idoteidae). *Boletín Museo Nacional de Historia Natural, Chile* 46: 45–54.
- Clarke, A. 1979. Assimilation efficiency of the antarctic marine isopod *Glyptonotus antarcticus*. *Marine Biology* 52: 157–160. <https://doi.org/10.1007/BF00390423>
- Elkaïm, B., and Daguerre de Hureaux, N. 1976. Contribution a l'étude des isopodes marins: le genre *Parachiridotea* et la sous-famille nouvelle des Parachiridoteinae (Valvifère, Idoteidae). *Archives de Zoologie Expérimentale et Générale* 117: 275–293.
- Guerao, G., and Castelló, J. 2012. The isopod *Parachiridotea mediterranea* Roman, 1991 (Valvifera, Chaetiliidae) in the Ebro delta (Iberian Peninsula). *Crustaceana* 85: 621–623. <https://doi.org/10.1163/156854012X643753>
- Haahntela, I. 2000. Mate-guarding of the isopod *Saduria entomon* (L.). In: Styczynska-Jurewicz, E. (ed.), *Crustacea – relict and rare species. Issues of the Marine Biology Centre in Gdynia* 4: 7–12.
- Hagerman, L., and Szaniawska, A. 1991. Ion regulation under anoxia in the brackish water isopod *Saduria (Mesidotaea) entomon*. *Ophelia* 33: 97–104. <https://doi.org/10.1080/00785326.1991.10429732>
- Held, C., and Wägele, J.W. 2005. Cryptic speciation in the giant Antarctic isopod *Glyptonotus antarcticus* (Isopoda: Valvifera: Chaetiliidae). *Scientia Marina* 69 (Suppl. 2): 175–181. <https://doi.org/10.3989/scimar.2005.69s2175>
- Holthuis, L.B. 1964. *Saduriella*, a new genus of Isopoda Valvifera from northwestern Spain. *Zoologische Mededelingen* 40: 29–35. <http://www.repository.naturalis.nl/document/150346>
- Jones, M.B., and Fenwick, G.D. 1978. *Maoridotea naylori*, a new genus and species of isopod (Valvifera, Idoteidae, Chaetiliinae) from the Kaikoura Peninsula, New Zealand. *Journal of Natural History* 12: 617–625. <https://doi.org/10.1080/00222937800770451>
- King, R.A., and Cawood, A.M. 2007. A revision of the genus *Chiridotea* (Isopoda: Chaetiliidae) with species redescrptions and a key. *Journal of Crustacean Biology* 27: 121–139. <https://doi.org/10.1651/S-2708.1>
- Kussakin, O.G. 1982. Marine and brackish-water Crustacea (Isopoda) of cold and temperate waters of the Northern Hemisphere. Suborders Anthuridea, Microcereberidea, Valvifera, Tyloidea. *Opredeliteli po Faune SSR, Akademiya Nauk, SSSR* 131: 1–461.

- Lajus, D., Ciostek, M., Makowiecka, M., and Sywula, T. 2003. Geographic and ontogenic patterns of chaetotaxy variation in glacial relict *Saduria entomon* (L.) (Crustacea, Isopoda): inter-population, inter-individual and intra-individual variations (fluctuating symmetry). *Annales Zoologici Fennici* 40: 411–429.
- McDermott, J.J. 2001. Biology of *Chiridotaea caeca* (Say, 1818) (Isopoda: Idoteidae) in the surf zone of exposed sandy beaches along the coast of southern New Jersey, USA. *Ophelia* 55: 123–135. <https://doi.org/10.1080/00785236.2001.10409479>
- McDermott, J.J. 2005. Food habits of the surf-zone isopod *Chiridotaea caeca* (Say, 1818) (Chaetiliidae) along the coast of New Jersey, U.S.A. *Proceedings of the Biological Society of Washington* 118: 63–73. [https://doi.org/10.1016/0305-0491\(86\)90334-2](https://doi.org/10.1016/0305-0491(86)90334-2)
- Meyer-Rochow, V.B., and Suzuki, T. 1986. A study of visual pigments in the two Antarctic crustaceans *Orchomene plebs* (Amphipoda) and *Glyptonotus antarcticus* (Isopoda). *Comparative Biochemistry and Physiology, B* 83: 75–78.
- Poore, G.C.B. 1978. *Austrochaetilia capeli*, a new genus and species of chaetiline idoteid (Isopoda) from Port Phillip Bay, Australia. *Crustaceana* 33: 113–118. <http://doi.org/10.1163/156854077X00016>
- Poore, G.C.B. 1984. Clarification of the monotypic genera *Chiriscus* and *Symmium* (Crustacea: Isopoda: Idoteidae). *Proceedings of the Biological Society of Washington* 97: 71–77. <http://biodiversitylibrary.org/page/34553389>
- Poore, G.C.B. 1985. Australian chaetiliids (Crustacea: Isopoda: Valvifera): a new genus, new species and remarks on the family. *Memoirs of the Museum of Victoria* 46: 153–172, pl. 34. <https://doi.org/10.24199/j.mmv.1985.46.06>
- Poore, G.C.B. 1990. Two new species of isopod crustaceans belonging to Australian endemic genera (Serolidae and Chaetiliidae). *Memoirs of the Museum of Victoria* 51: 99–107. <https://doi.org/10.24199/j.mmv.1990.51.07>
- Poore, G.C.B. 1991. Crustacea Isopoda: Deep-sea Chaetiliidae (Valvifera) from New Caledonia and the Philippines. In: Crosnier, A. (ed.), *Résultats des Campagnes MUSORSTOM*, vol. 9. *Mémoires du Muséum national d'Histoire naturelle, Paris (Zoologie)* 152: 139–153.
- Poore, G.C.B., Ramírez, F., and Schiariti, A. 2009. A new species of Chaetiliidae (Crustacea: Isopoda: Valvifera) from the Río de la Plata estuary, Argentina-Uruguay, and reconsideration of *Macrochiridothea* and *Chiriscus*. *Zootaxa* 2119: 51–65. <https://doi.org/10.11646/zootaxa.2119.1.4>
- Roman, M.L. 1991. Contribution à l'étude des isopodes marins littoraux de Méditerranée. 1. Description de *Parachirodotea mediterranea*, spec. nov. (Valvifera, Idoteidae, Parachidoteinae). *Spixiana* 14: 143–151. <http://biodiversitylibrary.org/page/32912154>
- Shimomura, M. 2008. A new species of *Symmium* Richardson (Crustacea: Isopoda: Chaetiliidae) from Japan. *Zootaxa* 1719: 61–68.
- Svanbäck, R., Rydberg, C., Leonardsson, K., Englund, G., and Göran, E. 2011. Diet specialization in a fluctuating population of *Saduria entomon*: a consequence of resource or forager densities? *Oikos* 120: 848–854. <https://doi.org/10.1111/j.1600-0706.2010.18945.x>
- Wägele, J.W. 1991. *Antarctic Isopoda Valvifera*. Vol. 2. Koeltz Scientific Books: Königstein. 213 pp.

## Holognathidae Thomson, 1904

Figure 10.15

The family Holognathidae was erected for a single species, *Holognathus stewarti* (Filhol, 1885), the only valviferan to possess a mandibular palp (Thomson, 1904). Other species are now included in the family. All possess a cylindrical shape and pereopod 4 shorter than other pereopods. Many are associated with seagrasses, and some use seagrass stems as homes (Poore and Lew Ton, 1990).

**Diagnosis.** Body more or less flattened or semicylindrical, coxae with expanded coxal dorsal plates, pleonites with expanded epimera, straight, without flexion, parallel-sided over most of length. Head and pereonite 1 free. Head more or less

semi-cylindrical. Pereopod 1 gnathopod-like; pereopods 2–7 ambulatory, similar, with marginal short robust setae, pereopod 4 shorter and more spinose than pereopods 3 and 5; with prominent dactyli, unguis short. Uropodal exopod (smaller ramus) ovate, fringed with setae (if present). Pleopod 1 peduncle shorter than or as long as rami (similar to other pleopods); exopod of male laminar.

**Implicit generic attributes.** Body parallel-sided over most of length; pereonite 1 little longer than pereonite 2. Eyes present. Mandibular palp present. Pereopods 5–7 articles about twice as long as deep.

### Key to genera of Holognathidae

1. Uropod with 2 rami (fig. 10.15q) ..... 2
- Uropod with 1 ramus (endopod only) (fig. 10.15p) ..... 3
2. Pleotelson with 4 pleonites marked dorsally (fig. 10.15i, j). Maxillipedal palp with article 4 lobed, article 5 long (fig. 10.15n) ..... *Holognathus*
- Pleotelson with 2 or 3 pleonites marked dorsally (fig. 10.15a, b). Maxillipedal palp oval, article 5 shorter than wide (fig. 10.15m) ..... *Cleantis*
3. Antennal flagellum multiarticulate (fig. 10.15d). Maxillipedal palp article 3 lobed, article 4 elongate (fig. 10.15o) ..... *Zenobianopsis*

- Antennal flagellum clavate (fig. 10.15c). Maxillipedal palp oval, article 3 not lobed, article 4 short (fig. 10.15m) ..... 4
- 4. Pleotelson parallel-sided, with rounded or slightly excavate apex (fig. 10.15g, h) ..... *Cleantioides*
- Pleotelson tapering dorsoventrally and laterally, with deeply notched apex (fig. 10.15e, f) ..... *Chongxidotea*

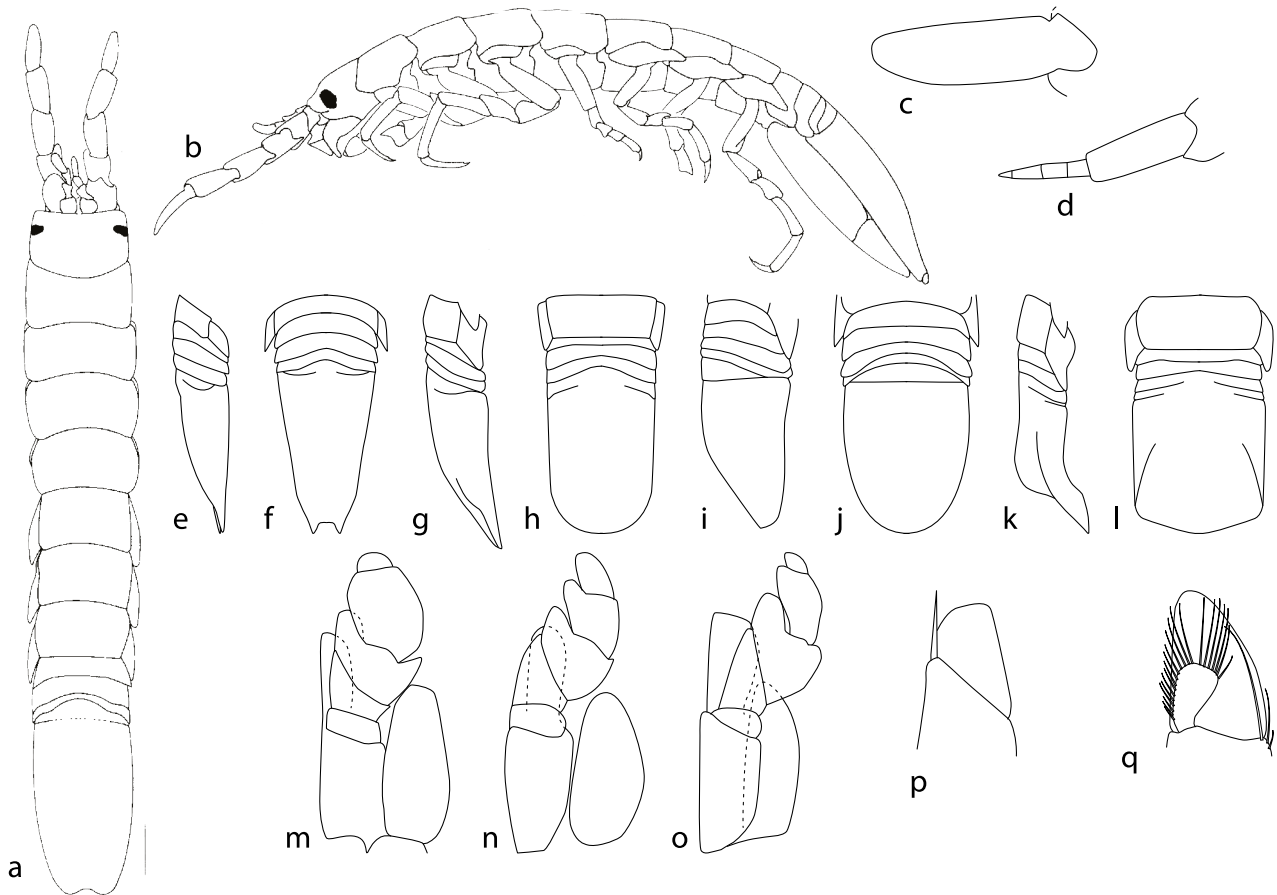


Figure 10.15. Holognathidae. a, b, *Cleantis phryganea* (Hale, 1924). Antennal flagellum: c, *Cleantis*; d, *Zenobianopsis*. Pereonite 7, pleotelson, lateral and dorsal: e, f, *Chongxidotea*; g, h, *Cleantioides*; i, j, *Holognathus*; k, l, *Zenobianopsis*. Maxilliped 3: m, *Cleantioides*; n, *Holognathus*; o, *Zenobianopsis*. Uropodal ramus/rami: p, *Chongxidotea*; q, *Cleantis*.

### ***Chongxidotea* Liu, Poore and Lu, 2010**

**Diagnosis.** Body elongate oval, pleotelson tapering. Pleonite 1 articulating with fused pleotelson; pleonite 2 fused to pleotelson but indicated by complete suture; pleonite 3 fused to pleotelson, indicated by complete suture; pleonite 4 indicated by lateral suture; pleotelson deeply excavate, produced posterolaterally. Antennal flagellum clavate. Maxillipedal palp articles 1–5 free; article 3 scarcely lobed, article 4 elongate. Pereopod 4 dactylus with unguis differentiated from short proximal part. Pereopods 5–7 articles about 5 times as long as deep. Uropod with 1 ramus (endopod only).

Freshwater, estuarine, subtidal. Temperate Northern W Pacific (China, Korea). 1 species (Liu et al., 2010).

### ***Cleantioides* Kensley and Kaufman, 1978**

**Diagnosis.** Pleonite 1 articulating with fused pleotelson; pleonite 2 fused to pleotelson but indicated by complete suture; pleonite 3 fused to pleotelson, indicated by complete or lateral suture; pleonite 4 indicated by lateral suture; pleotelson ending with oblique plane. Antennal flagellum clavate. Maxillipedal palp articles 2–3 fused (suture visible between); article 3 lobed, article 4 oval. Pereopod 4 dactylus reduced to unguis alone, or

with unguis differentiated from short proximal part. Uropod with 1 ramus (endopod only).

Subtidal (seagrass meadows). Tropical Atlantic, Temperate Northern W Pacific, Central Indo-Pacific, Tropical Eastern Pacific, Temperate Southern Africa, Temperate Australasia. 13 species (Poore and Lew Ton, 1990: rediagnosis).

#### ***Cleantis* Dana, 1849**

*Diagnosis.* Pleonites 1 and 2 articulating with each other and with fused pleotelson; pleonite 3 fused to pleotelson, indicated by complete or lateral suture; pleonite 4 indicated by lateral suture; pleotelson ending with oblique plane. Antennal flagellum clavate. Maxillipedal palp articles 2–3 fused (suture visible between); article 3 lobed, article 4 oval. Pereopod 4 dactylus with unguis differentiated from longer proximal part. Uropod with 2 rami (endopod and exopod fringed with setae).

Subtidal (seagrass, algae). Temperate Northern E Atlantic, including Mediterranean, Temperate South America, Temperate Australasia. 8 species (Poore and Lew Ton, 1990: rediagnosis).

#### ***Holognathus* Thomson, 1904**

*Diagnosis.* Pereonite 1 twice as long as pereonite 2. Pleonites 1–3 articulating with each other and with fused pleotelson; pleonites 3, 4 fused to pleotelson, indicated by complete sutures; pleotelson domed posteriorly. Antennal flagellum clavate. Mandibular palp present or absent. Maxillipedal palp articles 1–5 free; articles 3 and 4 lobed mesially. Pereopod 4 dactylus with unguis differentiated from longer proximal part. Uropod with 2 rami (endopod and exopod fringed with setae).

Shelf (32–109 m; associated with sunken wood). Temperate Australasia. New Zealand. 2 species (Poore and Lew Ton, 1990).

#### ***Zenobianopsis* Hale, 1946**

*Diagnosis.* Pleonites 1 and 2 articulating with each other and with fused pleotelson; pleonites 3, 4 fused to pleotelson, indicated by lateral sutures; pleotelson ending with oblique plane. Eyes absent. Antennal flagellum of 10–12 articles. Maxillipedal palp articles 1–5 free; article 3 lobed mesially, article 4 elongate. Pereopod 4 dactylus with unguis differentiated from longer proximal part. Uropod with 1 ramus (endopod only).

Slope (386–1180 m). Central Indo-Pacific, Southern Ocean. 3 species (Hale, 1946; Kussakin, 1967; Poore and Lew Ton, 1990: rediagnosis; Poore, 2012).

#### **References**

- Hale, H.M. 1946. Isopoda - Valvifera. *British, Australian and New Zealand Antarctic Research Expedition, 1929-1931. Reports-Series B (Zoology and Botany)* 5: 161–212.
- Kussakin, O.G. 1967. Fauna of Isopoda and Tanaidacea in the coastal zones of the Antarctic and Subantarctic waters. [Translation from Russian by the Israel Program for Scientific Translations, Jerusalem, 1968.] *Biological Reports of the Soviet Antarctic Expedition (1955–1958)* 3: 220–389. <https://doi.org/10.2307/1442262>
- Liu, W., Poore, G.C.B., and Lu, J. 2010. *Chongxidotea*, a new genus for *Cleantis annandalei* Tattersall, 1921 (Isopoda, Valvifera, Holognathidae). *Crustaceana* 83: 1199–1207. <http://doi.org/10.1163/001121610X521154>
- Poore, G.C.B. 2012. Four new valviferan isopods from diverse tropical Australian habitats (Crustacea: Isopoda: Holognathidae and Idoteidae). *Memoirs of Museum Victoria* 69: 327–340. <http://doi.org/10.24199/j.mmv.2012.69.07>
- Poore, G.C.B., and Lew Ton, H.M. 1990. The Holognathidae (Crustacea: Isopoda: Valvifera) expanded and redefined on the basis of body-plan. *Invertebrate Taxonomy* 4: 55–80. <http://doi.org/10.1071/it9900055>
- Thomson, G.M. 1904. A new family of Crustacea Isopoda. *Annals and Magazine of Natural History (ser. 7)* 14: 66–69. <http://bio-diversitylibrary.org/page/27733793>

## **Idoteidae Samouelle, 1819**

Figures 10.16–10.18

Idoteids are generally shallow-water valviferans recognisable from the generally elongated or somewhat oval dorsal aspect and the similarity of the walking legs, pereopods 2–7. Some are popularly referred to as sea-centipedes. They are distinguished from holognathids by being less cylindrical and having pereopod 4 similar to the others. Most are associated with algal or seagrass communities and are principally herbivores (Salemaa, 1987; Sturaro et al., 2010). The association with algal substrates is taken to the extreme by the species of *Idotea* and *Synidotea*, which inhabit drift algae in oceanic environments (Poore, 2012; Thiel and Gutow, 2005a, 2005b; Thiel and Haye, 2006). Some species of *Synidotea* (Kussakin, 1982) and *Edotia* (Brandt and Bruce, 2006; Pereira and Doti, 2017) occurring in shelf or bathyal environments are not associated with algae. Most species prefer fully marine habitats, but species of

*Austridotea* are estuarine (Chadderton et al., 2003), as are some species of *Idotea* (Salemaa, 1979, 1987).

The diagnoses of *Stenosoma* from the North Atlantic and *Euidotea* from southern Australasia are virtually identical. Song and Min's (2017) key to idoteid genera differentiates the two on the size of the lacinia mobilis, but differentiation of these two genera needs further investigation.

*Diagnosis.* Body more or less flattened or semicylindrical, coxae with expanded dorsal plates, pleonites with expanded epimera, straight, without flexion, tapering posteriorly. Head and pereonite 1 free, or fused (*Crabyzos*, *Lyidotea* only). Head more or less semi-cylindrical. Pereopod 1 gnathopod-like; pereopods 2–7 ambulatory, similar, with marginal short robust setae; with prominent dactyli, unguis short. Uropodal exopod

(smaller ramus) absent or ovate, fringed with setae (if present). Pleopod 1 peduncle shorter than or as long as rami (similar to pleopods 2 and 3); exopod of male laminar.

*Implicit generic attributes.* Body vaulted; head smooth; head and pereonite 1 free; smooth or slightly sculptured; parallel-sided over most of length. Pereonite 7 without ventral W-shaped

ridge between pereopods. All pleonites fused into pleotelson. Antennal peduncle article 5 cylindrical. Mouthparts symmetrical. Mandibular lacinia mobilis accessory spine absent. Maxillula, inner lobe setose. Maxilla with 3 lobes. Uropod with endopod only. Penes fused basally as a penial plate but divided over most of length. Oostegites present on pereopods 1–5.

### Key to genera of Idoteidae

1. Pleotelson with 1 or 2 free and articulating pleonites (figs 10.16a, m, 10.17f) ..... 2
  - Pleotelson without free and articulating pleonites, 1 or more completely or laterally indicated by sutures ..... 4
2. Uropod with endopod only (fig. 10.18t) ..... *Idotea*
  - Uropod with endopod and exopod (fig. 10.18s, u). New Zealand only ..... 3
3. Smooth dorsally. Pleonites 1 and 2 articulating (fig. 10.16a). Maxillipedal palp articles 2, 3 free (fig. 10.18j) ...  
..... *Austridotea*
  - Median triangular dorsal tubercles, with sublateral and coxal ridges. Pleonite 1 articulating (fig. 10.17f). Maxillipedal palp articles 2, 3 fused (fig. 10.18r) ..... *Takereana*
4. Body cylindrical. Pleotelson fused to pereonite 7 (fig. 10.16n). Tropical Australia only ..... *Lyidotea*
  - Body flat or vaulted. Pleotelson free from pereonite 7 ..... 5
5. Antennal flagellum multiarticulate (fig. 10.18a, d), sometimes with articles fused but identifiable by rings of short setae (fig. 10.18e) ..... 6
  - Antennal flagellum clavate, of 1 major article and minute terminal articles (fig. 10.18b, c) ..... 19
6. Coxal dorsal plates 2–4 absent, sutures ventral, plates 5–7 present, sutures dorsal, completely traversing pereonites ..... 7
  - Coxal dorsal plates 2–7 visible in dorsal or lateral view, at least posteriorly, or absent ..... 8
7. Body evenly oval, smooth dorsally. Dorsal sutures defining coxal plates 5–7 (fig. 10.16o) ..... *Moplisa*
  - Body margin more or less irregular, pereonites expanded slightly or significantly laterally; smooth or ornamented dorsally. Dorsal sutures defining coxal plates 5–7 traversing tergites, visible or not (fig. 10.17c) ...  
..... *Synidotea*
8. Coxal dorsal plates 2–7 absent, all sutures ventral. Head and body with longitudinal median ridge (fig. 10.17d, e) ..... *Synischia*
  - Coxal dorsal plates 2–7 present at least on posterior pereonites, sutures more or less visible in dorsal or lateral view. Head and body usually smooth or rarely with anterior crest ..... 9
9. Pereonite 1 fused to head. Pleonites not indicated by sutures; pleotelson especially elongate, acute (fig. 10.16e) ..... *Crabyzos*
  - Pereonite and head free. Pleonite 1 or more indicated by lateral or complete sutures; pleotelson variously rounded or acute ..... 10
10. Coxal dorsal plates 2–7 broad, similar, produced laterally over bases of pereopods ..... 11
  - Coxal dorsal plates 2–7 not visible dorsally or narrow, increasing in size posteriorly, not produced laterally over bases of pereopods ..... 13
11. Coxal dorsal plates not contiguous (fig. 10.16g, h). Maxilliped with articles 2, 3 free, 4, 5 fused (fig. 10.18q) ...  
..... *Engidotea*
  - Some coxal dorsal plates more or less contiguous. Maxilliped with articles 1–5 free (fig. 10.18p) ..... 12
12. Pleotelson apex excavate; pleonites 1 and 2 marked by lateral sutures only. Body with middorsal ridge (fig. 10.16l) ..... *Glyptidotea*

- Pleotelson apex acute; pleonites 1 and 2 marked by complete sutures. Body evenly vaulted (fig. 10.16s) ..... *Pentidotea*
- 13. Pleonite 1 indicated by lateral suture, pleonite 2 not indicated (fig. 10.16d) ..... *Colidotea*
- Pleonites 1 and 2 indicated as lateral or complete sutures ..... 14
- 14. Maxilliped palp articles 1–5 free (fig. 10.18o, p) ..... 15
- Maxilliped palp articles 2, 3 and/or 4, 5 fused ..... 17
- 15. Pleotelson apex shallowly excavate (fig. 10.16b). Maxillula inner lobe reduced, without setae (fig. 10.18f). Maxilla a simple lobe (fig. 10.18h) ..... *Batedotea*
- Pleotelson apex acute or excavate. Maxillula of 2 lobes (fig. 10.18g). Maxilla of 3 lobes (fig. 10.18i) ..... 16
- 16. Pereonite 7 with ventral W-shaped ridge between pereopods. Pleotelson apex blunt or excavate (fig. 10.17i) ... *Paridotea*
- Pereonite 7 without ventral W-shaped ridge between pereopods. Pleotelson apex acute (fig. 10.16r) ... *Pentias*
- 17. Maxilliped palp articles 2, 3 fused, 4, 5 free (fig. 10.18m) ..... *Koridotea*
- Maxilliped palp articles 2, 3 free or fused, 4, 5 fused (fig. 10.18n, q, r) ..... 18
- 18. Pleonites 1, 2 indicated by complete or lateral suture, pleonite 3 indicated by lateral suture or not (figs 10.16j, 10.17g). Southern Australasia ..... *Euidotea*
- Pleonites 1–3 indicated laterally or ventrally only (fig. 10.17b). North Atlantic, Mediterranean ..... *Stenosoma*
- 19. Head and body with middorsal ridge. Pleonite 1 completely indicated (fig. 10.16c). Maxillipedal palp articles 1–5 free ..... *Cleantiella*
- Head and body smooth or variously sculptured, without middorsal ridge. Pleonite 1 not completely indicated. Maxillipedal palp articles 2, 3 usually free, 4, 5 fused ..... 20
- 20. Pleotelson expanded posteriorly and then tapering to angular apex; pleonite 1 not indicated (fig. 10.16i) ..... *Erichsonella*
- Pleotelson evenly tapering; pleonite 1 indicated by lateral suture ..... 21
- 21. Coxal dorsal plates 2–7 not visible, fused dorsally to tergites (fig. 10.17a). Antennal peduncle flattened (fig. 10.18c) ..... *Platidotea*
- Coxal dorsal plates 2–7 or 5–7 visible dorsally or laterally. Antennal peduncle cylindrical ..... 22
- 22. Coxal dorsal plate 6 visible laterally, 7 produced laterally, separated from tergite by dorsal suture. Body evenly parallel-sided (fig. 10.16p) ..... *Parasymerus*
- Coxal dorsal plates 5–7 well produced ventrolaterally, separated from tergite by dorsal suture. Body evenly or irregularly parallel-sided or ovate ..... 23
- 23. Coxal dorsal plates 2–4 absent, tergite forming lateral margin; 5–7 well produced ventrolaterally, separated from tergite by dorsal suture traversing tergite (fig. 10.16f) ..... *Edotia*
- Coxal dorsal plates 2–5 not or scarcely visible dorsally; 6, 7 separated from tergite by oblique dorsal suture occupying posterior half of margin (fig. 10.16k) ..... *Eusymerus*

### ***Austridotea* Poore, 2001**

*Diagnosis.* Body widest in midpereon and tapering posteriorly. Coxal dorsal plates 2–7 produced ventrolaterally, sutures visible dorsally, more or less contiguous. Pleonites 1 and 2 articulating with each other and with fused pleotelson, pleonites 3, 4 indicated laterally only; pleotelson apex rounded. Antennal flagellum multiarticulate. Maxillipedal palp articles 1–5 free,

or articles 2, 3 free, 4, 5 fused. Uropod with 2 short rami, exopod overlapped.

Freshwater, estuarine, intertidal. Temperate South America (S Argentina), Temperate Australasia (New Zealand). 4 species (Miers, 1881: figure of South American species; Nicholls, 1937: figures; Poore, 2001; Chadderton et al., 2003: ecology; McGaughan et al., 2006: genetics; Dufour et al., 2007: ecology).

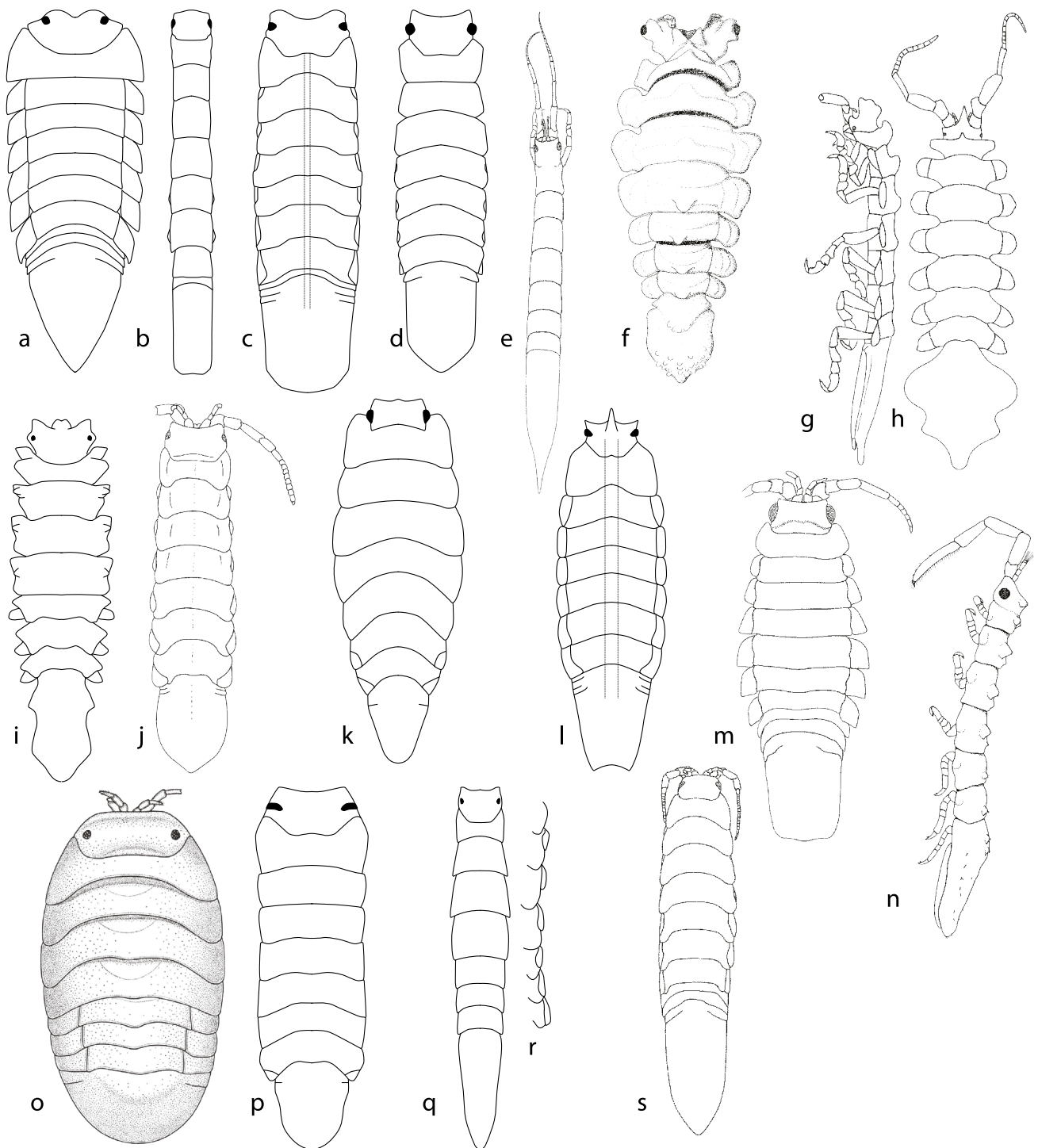


Figure 10.16. Idoteidae. a, *Austridotea annectans* Nicholls, 1937; b, *Batedotea elongata* (Miers, 1876); c, *Cleantiella isopus* (Miers, 1881); d, *Colidotea findleyi* Brusca and Wallerstein, 1977; e, *Crabyzos longicaudatus* Bate, 1863; f, *Edotia pulchra* Brandt, 1990; g, h, *Engidotea cristata* Poore and Lew Ton, 1993; i, *Erichsonella isabellensis* Menzies, 1951; j, *Euidotea bakeri* (Collinge, 1917); k, *Eusymmerus antennatus* Richardson, 1899; l, *Glyptidotea lichtensteini* (Krauss, 1843); m, *Idotea metallica* Bosc, 1802; n, *Lyidotea nodata* Hale, 1928; o, *Moplisa sphaeromiformis* (Mañe-Garzón, 1946); p, *Parasymmerus annamaryae* Brusca and Wallerstein, 1979; q, r, *Pentias hayi* Richardson, 1904 (dorsal, lateral pereon with coxal plates 2–7); s, *Pentidotea australis* Hale, 1924.

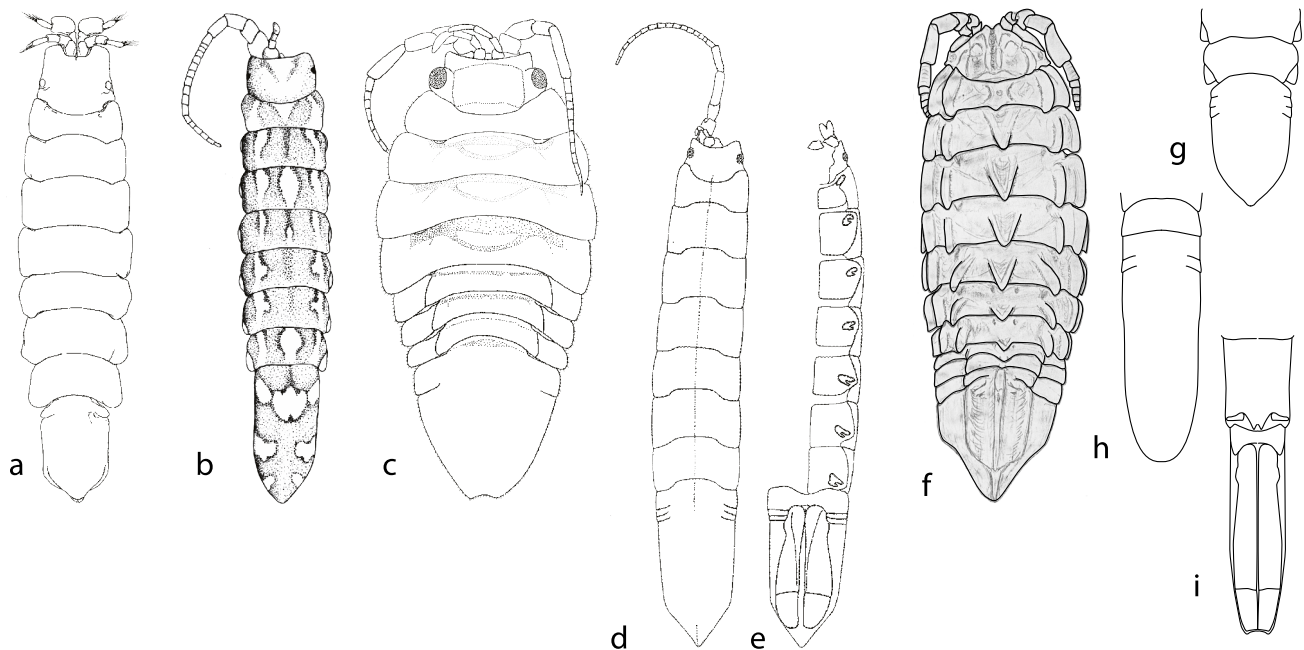


Figure 10.17. Idoteidae. a, *Platidotea magellanica* Park and Wägele, 1995; b, *Stenosoma stephensi* Santos and Xavier, 2011; c, *Synidotea grisea* Poore and Lew Ton, 1993; d, e, *Synischia levidensis* Hale, 1924 (dorsal, ventral); f, *Takereana festiva* (Chilton, 1885). Pereonites 6, 7, pleotelson: g, *Euidotea*; h, *Koridotea*. i, pereonite 7, pleotelson, *Paridotea*.

#### ***Batedotea* Poore and Lew Ton, 1993**

**Diagnosis.** Coxal dorsal plates 2–7 visible only laterally, not contiguous (visible dorsally on posterior pereonites in male only). Pleonite 1 indicated by complete suture, pleonite 2 indicated laterally; pleotelson apex excavate; apical excavation slight. Antennal flagellum multiarticulate. Maxillula, inner lobe reduced, without setae. Maxilla with 1 lobe. Maxillipedal palp articles 1–5 free.

Subtidal. Temperate Australia. 1 species (Poore and Lew Ton, 1993).

#### ***Cleantiella* Richardson, 1912**

**Diagnosis.** Body flattened, coxal plates splayed; body with middorsal ridge. Coxal dorsal plates 2–7 produced laterally, not contiguous. Pleonite 1 indicated by complete suture, pleonites 2, 3 indicated laterally; pleotelson apex acute (broadly). Antennal flagellum clavate, of 1 major article with few minute terminal articles. Maxillipedal palp articles 1–5 free.

Subtidal. Temperate Northern W Pacific. 2 species (Kim and Kwon, 1988; Takahashi and Goshima, 2012).

#### ***Colidotea* Richardson, 1899**

**Diagnosis.** Body widest in midpereon and tapering posteriorly. Coxal dorsal plates 2–4 absent, tergite forming lateral margin; 5–7 well produced ventrolaterally, separated from tergite by dorsal suture traversing tergite. Pleonite 1 indicated laterally, or pleonites not indicated (probable); pleotelson apex rounded. Antennal flagellum multiarticulate. Maxillipedal palp articles 2, 3 free, 4, 5 fused.

Subtidal. Eastern Indo-Pacific, Tropical Eastern Pacific. 4 species (Brusca, 1983; Stebbins, 1988, 1989). *Synisoma wetzerae* Ormsby, 1991 is a probable member.

#### ***Crabyzos* Bate, 1863**

**Diagnosis.** Body cylindrical; head and pereonite 1 fused. Coxal dorsal plates 2–7 visible only laterally, not contiguous. Pleonites not indicated; pleotelson apex acute (extremely). Antennal flagellum multiarticulate. Mouthparts asymmetrical. Maxilla with 1 lobe. Maxillipedal palp articles 1–5 free.

Subtidal (seagrass). Temperate Australia. 1 species (Poore and Lew Ton, 1993).

#### ***Edotia* Guérin-Méneville, 1843**

**Diagnosis.** Head smooth, or with paired lobes or cones; body smooth or slightly sculptured, or nodulose; body widest in midpereon and tapering posteriorly. Coxal dorsal plates 2–4 absent, tergite forming lateral margin; 5–7 well produced ventrolaterally, separated from tergite by dorsal suture. Pleonite 1 indicated laterally; pleotelson apex acute. Antennal flagellum clavate, of 1 major article with few minute terminal articles. Maxillipedal palp articles 2, 3 free, 4, 5 fused. Penes fused as a single penial plate.

Intertidal–bathyal (0–3282 m). Tropical Atlantic, Eastern Indo-Pacific, Temperate South America, Southern Ocean. 20 species (Goeke and Heard, 1983; Brandt, 1990: description of 6 species; Brandt and Bruce, 2006; Pereira and Doti, 2017: key to 14 Southern Hemisphere species). Some species are symbionts of mussels (Zaixso et al., 2009).

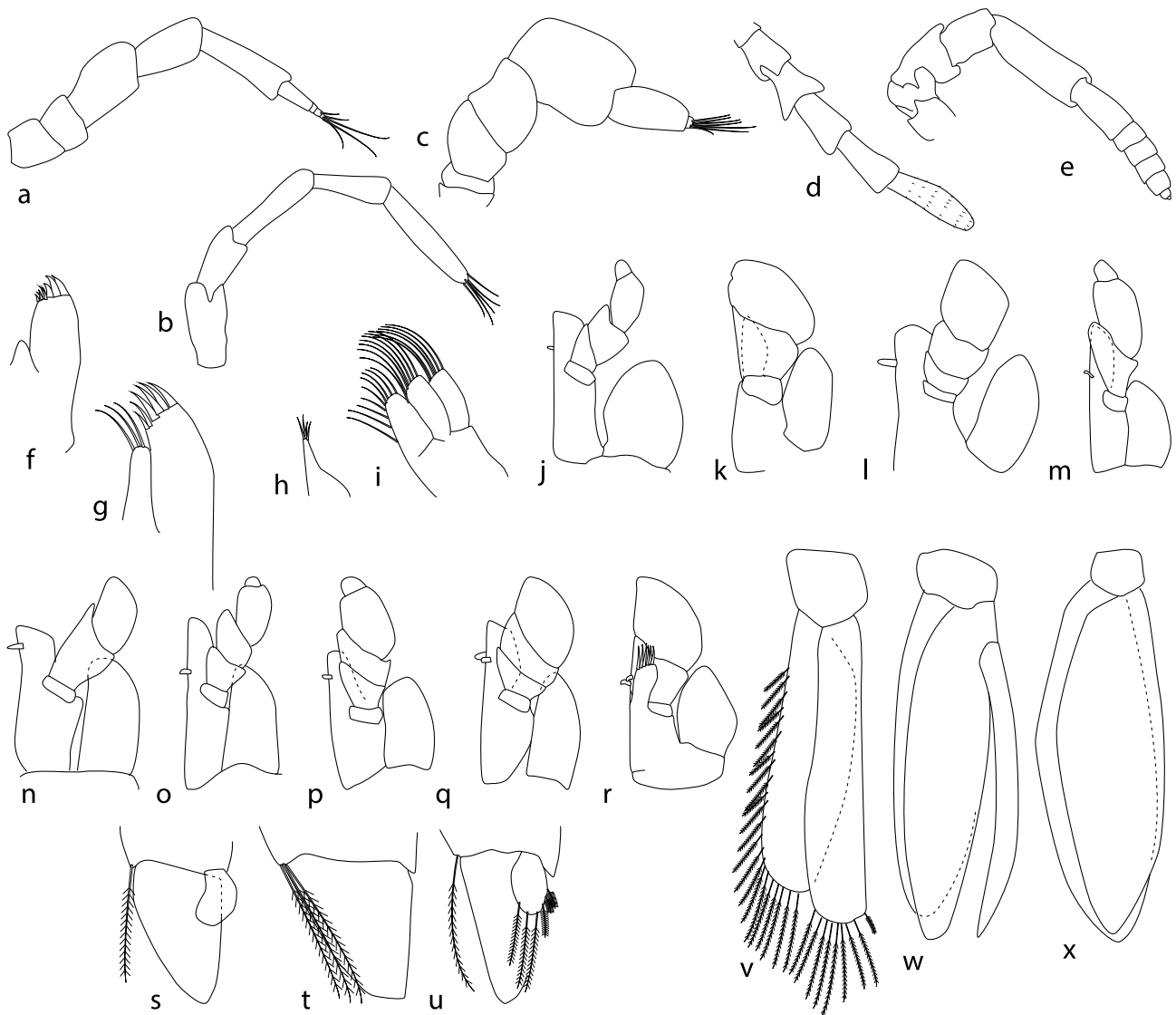


Figure 10.18. Idoteidae. Antenna: a, *Edotia*; b, *Eusymmerus*; c, *Platidotea*; d, e, *Stenosoma*. Maxilla: f, *Batedotea*; g, *Euidotea*. Maxillula: h, *Batedotea*; i, *Euidotea*. Maxilliped: j, *Austridotea*; k, *Edotia*; l, *Eusymmerus*; m, *Koridotea*; n, *Parasymmerus*; o, *Pentias*; p, *Pentidotea*; q, *Stenosoma*; r, *Takereana*. Uropodal ramus/rami: s, *Austridotea*; t, *Synidotea*; u, *Takereana*. v–x, male pleopods 1–3, *Euidotea*.

### ***Engidotea* Barnard, 1914**

**Diagnosis.** Body flattened, coxal plates splayed; head smooth, or with a crest or lobe; body with middorsal ridge (anteriorly); parallel-sided over most of length (excavated between coxal plates). Coxal dorsal plates 2–7 well produced laterally, not contiguous. Pleonite 1 indicated by complete or lateral suture; pleotelson apex rounded, or apex excavate. Antennal flagellum multiarticulate. Maxilla with 2 lobes. Maxillipedal palp articles 2, 3 free, 4, 5 fused.

Subtidal. Temperate Southern Africa, Temperate Australasia. 2 species (Kensley, 1978; Poore and Lew Ton, 1993).

### ***Erichsonella* Benedict in Richardson, 1901**

**Diagnosis.** Body cylindrical; head with paired lobes or cones; smooth or slightly sculptured, or pereonites with dorsal spines. Coxal dorsal plates 2–7 visible laterally and dorsally on all or only posterior pereonites, not contiguous. Pleonites not indicated; pleotelson expanded and widest posteriorly. Antennal flagellum clavate, of 1 major article with few minute terminal articles. Maxillipedal palp articles 2, 3 free, 4, 5 fused.

Intertidal–shelf (seagrasses, algae). Temperate Northern and Tropical Atlantic, Temperate Northern and Tropical Eastern Pacific. 7 species (Brusca, 1983; Brusca and Wallerstein, 1977; Pires, 1984; rediagnosis, key to 6 species).

***Euidotea* Collinge, 1917**

*Diagnosis.* Coxal dorsal plates 2–7 visible laterally and dorsally on all or only posterior pereonites, not contiguous. Pleonites 1, 2 indicated by complete or lateral suture, pleonite 3 indicated by lateral suture or not; pleotelson apex rounded, or apex acute. Antennal flagellum multiarticulate. Maxillipedal palp articles 2, 3 fused, 4, 5 fused (rare), or articles 2, 3 free, 4, 5 fused.

Subtidal. Temperate Australasia. 7 species (Poore and Lew Ton, 1993: rediagnosis, key to species). *Idotea distincta* Guérin-Méneville, 1843 from South Africa, synonymised with *E. peronii* by Miers (1881) has not been seen since its description (Kensley, 1978) and is not included.

***Eusymmerus* Richardson, 1899**

*Diagnosis.* Head with paired lobes or cones; body smooth or sculptured slightly, or body with middorsal ridge; body widest in midpereon and tapering posteriorly. Coxal dorsal plates 2–5 not or scarcely visible dorsally; 6, 7 separated from tergite by oblique dorsal suture occupying posterior half of margin. Pleonite 1 indicated laterally; pleotelson apex rounded. Antennal flagellum clavate, of 1 major article with few minute terminal articles. Maxillipedal palp articles 2, 3 free, 4, 5 fused.

Subtidal. Tropical Eastern Pacific. 2 species (Brusca and Wallerstein, 1977: rediagnosis; 1979a: distribution; 1979b: phylogeny; Brusca, 1984: phylogeny).

***Glyptidotea* Stebbing, 1902**

*Diagnosis.* Head with middorsal crest and longitudinal ridge; body with middorsal ridge; body widest in midpereon and tapering posteriorly. Coxal dorsal plates 2–7 produced ventrolaterally, sutures visible dorsally, more or less contiguous. Pleonites 1–3 indicated laterally or ventrally only; pleotelson apex excavate; apical excavation slight. Antennal flagellum multiarticulate. Maxillipedal palp articles 1–5 free.

Intertidal. Temperate Southern Africa. 1 species (Stebbing, 1902; Kensley, 1978: redescription).

***Idotea* Fabricius, 1798**

*Diagnosis.* Head smooth, or with paired lobes or cones (obscure if present). Coxal dorsal plates 2–7 produced ventrolaterally, sutures visible dorsally, more or less contiguous. Pleonites 1 and 2 articulating with each other and with fused pleotelson, others sometimes indicated but not articulating; pleotelson apex rounded, or apex acute, or apex truncate, or with prominent apical lobe. Antennal flagellum multiarticulate. Maxillipedal palp articles 2, 3 free, 4, 5 fused. Penes paired (adjacent).

Subtidal and pelagic. Cosmopolitan, mostly Northern Hemisphere (Rafi and Laubitz, 1990). *Idotea metallica* Bosc, 1802 has been recorded in most oceans associated with drifting kelp (Clarkin et al., 2012; Gutow and Franke, 2003; Thiel and Gutow, 2005a). *Idotea balthica* (Pallas, 1772) is one of the best studied of all marine isopods (Bell and Sotka, 2012; Zaabar et al., 2014).

***Koridotea* Song and Min, 2017**

*Diagnosis.* Body cylindrical. Coxal dorsal plates 2–7 visible only laterally, not contiguous. Pleonite 1 indicated by complete suture, pleonites 2, 3 indicated laterally; pleotelson apex acute. Antennal flagellum multiarticulate. Maxillipedal palp articles 2, 3 fused, 4, 5 free.

Subtidal. Temperate Northern W Pacific. 1 species (Song and Min, 2017).

***Lyidotea* Hale, 1929**

*Diagnosis.* Body cylindrical; head with paired lobes or cones; head and pereonite 1 fused; with median triangular tubercles, with sublateral and coxal ridges. Coxal dorsal plates 2–7 absent, tergite forming lateral margin. All pleonites fused to pereonite 7, none indicated laterally; pleotelson apex rounded. Antennal flagellum clavate, of 1 major article with minute claw. Maxillipedal palp articles 2, 3 fused, 4, 5 free. Penes paired, elongate (adjacent).

Subtidal, shelf (0–140 m). Central Indo-Pacific (N Australia). 1 species (King and Poore, 2001: rediagnosis, redescription of only species).

***Moplisa* Moreira, 1974**

*Diagnosis.* Body flattened, coxal plates splayed; widest in midpereon and tapering posteriorly. Coxal dorsal plates 2–4 absent, tergite forming lateral margin; 5–7 well produced ventrolaterally, separated from tergite by dorsal suture. Pleonite 1 indicated laterally; pleotelson apex rounded. Antennal flagellum multiarticulate. Maxillipedal palp articles 2, 3 fused, 4, 5 fused.

Shelf (4.5–32 m). Temperate South America (Uruguay, Brazil). 1 species (Moreira, 1974).

***Parasymmerus* Brusca and Wallerstein, 1979**

*Diagnosis.* Body flattened, coxal plates splayed. Coxal dorsal plates 2–4 absent, tergite forming lateral margin; 6 visible laterally, 7 produced laterally, separated from tergite by dorsal suture. Pleonite 1 indicated laterally; pleotelson apex acute (broadly). Antennal flagellum clavate, of 1 major article with few minute terminal articles. Maxillipedal palp articles 2, 3 free, 4, 5 fused.

Subtidal. Tropical Eastern Pacific. 1 species (Brusca and Wallerstein, 1979b).

***Paridotea* Stebbing, 1900**

*Diagnosis.* Body flattened, coxal plates splayed (somewhat), or cylindrical. Coxal dorsal plates 2–7 produced ventrolaterally, sutures not or scarcely visible dorsally, contiguous only posteriorly (if at all). Pereonite 7 with ventral W-shaped ridge between pereopods. Pleonites 1, 2 indicated by complete or lateral suture, pleonite 3 indicated by lateral suture or not; pleotelson apex blunt or excavate; apical excavation almost as deep as wide, or slight. Antennal flagellum multiarticulate. Maxillipedal palp articles 1–5 free.

Subtidal. Temperate Northern W Pacific, Temperate Southern Africa, Temperate Australasia. 13 species (Kensley, 1978; key to 5 species; Poore and Lew Ton, 1993; rediagnosis, key to 6 species).

#### ***Pentias* Richardson, 1904**

*Diagnosis.* Coxal dorsal plates 2–7 produced ventrolaterally, sutures not or scarcely visible dorsally, contiguous only posteriorly (if at all). Pleonites 1–3 indicated laterally or ventrally only, or pleonites not indicated (probable); pleotelson apex acute. Antennal flagellum multiarticulate. Maxillipedal palp articles 1–5 free.

Subtidal. Temperate Northern W Pacific (Japan). 4 species (Rafi, 1973; 3 species compared; Nunomura, 2006). *Synisoma pacificum* Nunomura, 1974 is a probable member.

#### ***Pentidotea* Richardson, 1905**

*Diagnosis.* Coxal dorsal plates 2–7 produced ventrolaterally, sutures not or scarcely visible dorsally, contiguous only posteriorly (if at all). Pleonites 1, 2 indicated by complete suture, pleonite 3 indicated laterally; pleotelson apex acute. Antennal flagellum multiarticulate. Maxillipedal palp articles 1–5 free.

Intertidal, subtidal. Temperate Northern W Pacific, Temperate Australasia. 11 species (Brusca and Wallerstein, 1977, 1979a; Poore and Lew Ton, 1993).

#### ***Platidotea* Park and Wägele, 1995**

*Diagnosis.* Body flattened, coxal plates splayed. Coxal dorsal plates 2–7 produced ventrolaterally, sutures not or scarcely visible dorsally, contiguous only posteriorly (if at all). Pleonite 1 indicated laterally; pleotelson apex acute. Antennal peduncle article 5 flattened and broad. Antennal flagellum clavate, of 1 major article with few minute terminal articles. Maxillipedal palp articles 2, 3 fused, 4, 5 fused.

Shelf (21 m). Temperate South America. Magellan Strait. 1 species (Park and Wägele, 1995).

#### ***Stenosoma* Leach, 1814**

*Diagnosis.* Coxal dorsal plates 2–7 produced ventrolaterally, sutures not or scarcely visible dorsally, contiguous only posteriorly (if at all). Pleonites 1–3 indicated laterally or ventrally only; pleotelson apex acute. Antennal flagellum multiarticulate, or of up to 10 fused articles surrounded by short setae. Maxillipedal palp articles 2, 3 free, 4, 5 fused.

Intertidal–shelf (0–118 m). Temperate Northern Atlantic. 16 species (Rezig, 1989; illustrations; Castellanos and Junoy, 2005; key to 13 species; Santos et al., 2011; key to 14 species; Artüz and Kubanç, 2015; key to 16 species). *Stenosoma* is confined here to species from the North Atlantic and Mediterranean. *Stenosoma* has a complex taxonomy, many species having been described as members of *Synisoma* Collinge, 1917 (Santos et al., 2011). The keys to species cited above differentiate three species as possessing a “clavate” antennal flagellum. Their flagellum comprises fused articles surrounded by short setae, not homologous to the clavate form where the flagellum is one

large article and few minute terminal articles (Brusca, 1984).

*Leptosoma* Risso, 1827 is a junior subjective synonym without type species (Risso, 1827). *Leptosoma appendiculata* Risso, 1827 is herein designated as its type species.

Two species from the northern Pacific, both without pleonal sutures, probably belong in other genera in the region. The maxillipedal palp of *Synisoma pacificum* Nunomura, 1974 is narrow like that of *Pentias*, while that of *Synisoma wetzeriae* Ormsby, 1991 resembles that of *Colidotaea*. Pleonal sutures are visible laterally in both these genera.

#### ***Synidotea* Harger, 1878**

*Diagnosis.* Head smooth, or with paired lobes or cones; body smooth or sculptured slightly, or nodulose; body widest in midpereon and tapering posteriorly. Coxal dorsal plates 2–4 absent, tergite forming lateral margin; 5–7 well produced ventrolaterally, separated from tergite by dorsal suture (sometimes fused). Pleonite 1 indicated laterally; pleotelson apex rounded, acute, truncate or excavate; apical excavation slight. Antennal flagellum multiarticulate. Mandibular lacinia mobilis accessory spine present. Maxillipedal palp articles 2, 3 fused, 4, 5 fused. Penes fused as a single penial plate. Oostegites present on pereopods 1–4, as vestigial lobes on 5.

Intertidal–slope. Cosmopolitan. 61 species (Kussakin, 1982; Menzies and Miller, 1972; Poore, 2012; Rafi and Laubitz, 1990; Schotte and Heard, 2004). *Synidotea laticauda* Benedict, 1897, described from San Francisco Bay, has become widespread in harbours throughout the world (Poore, 1996; Soors et al., 2010).

#### ***Synischia* Hale, 1924**

*Diagnosis.* Body flattened, coxal plates splayed or cylindrical; head with longitudinal ridge; body with middorsal ridge. Coxal dorsal plates 2–7 absent, tergite forming lateral margin. Pleonites 1–3 indicated laterally or ventrally only; pleotelson apex acute. Antennal flagellum multiarticulate. Maxillipedal palp articles 1–5 free.

Subtidal. Temperate Australia. 2 species (Poore and Lew Ton, 1993).

#### ***Takereana* Poore and Hurley, 2015**

*Diagnosis.* Head with middorsal crest; body with median triangular tubercles, with sublateral and coxal ridges; body widest in midpereon and tapering posteriorly. Coxal dorsal plates 2–7 produced ventrolaterally, sutures visible dorsally, more or less contiguous. Pleonite 1 articulating with fused pleotelson; pleotelson apex acute. Antennal flagellum multiarticulate. Maxillipedal palp articles 2, 3 fused, 4, 5 fused. Uropod with 2 short rami, exopod overlapped.

Subtidal. Temperate Australasia (New Zealand). 1 species (Poore and Hurley, 2015).

#### **References**

- Artüz, M.L., and Kubanç, C. 2015. Two new species of *Stenosoma* (Isopoda, Idoteidae) from the Sea of Marmara. *Crustaceana* 88: 1201–1220. <http://doi.org/10.1163/15685403-00003481>

- Bell, T.M., and Sotka, E.E. 2012. Local adaptation in adult feeding preference and juvenile performance in the generalist herbivore *Idotea balthica*. *Oecologia* 170: 383–393. <http://doi.org/10.1007/s00442-012-2302-3>
- Brandt, A. 1990. *Antarctic valviferans (Crustacea, Isopoda, Valvifera) new genera, new species and redescrptions*. E.J. Brill: Leiden. 176 pp.
- Brandt, A., and Bruce, N.L. 2006. *Edotia tangaroa* sp. nov. (Crustacea: Isopoda: Idoteidae) from the western Ross Sea, Antarctica. *Zootaxa* 1313: 57–68. <https://doi.org/10.11646/zootaxa.1313.1.3>
- Brusca, R.C. 1983. Two new idoteid isopods from Baja California and the Gulf of California (Mexico) and an analysis of the evolutionary history of the genus *Colidotea* (Crustacea: Isopoda: Idoteidae). *Transactions of the San Diego Society of Natural History* 20: 69–79. <https://doi.org/10.5962/bhl.part.28998>
- Brusca, R.C. 1984. Phylogeny, evolution and biogeography of the marine isopod subfamily Idoteinae (Crustacea: Isopoda: Idoteidae). *Transactions of the San Diego Society of Natural History* 20: 99–134. <https://doi.org/10.5962/bhl.part.29001>
- Brusca, R.C., and Wallerstein, B.R. 1977. The marine isopod Crustacea of the Gulf of California. I. Family Idoteidae. *American Museum Novitates* 2634: 1–17. <http://hdl.handle.net/2246/2949>
- Brusca, R.C., and Wallerstein, B.R. 1979a. Zoogeographic patterns of idoteid isopods in the northeast Pacific, with a review of shallow water zoogeography of the area. *Bulletin of the Biological Society of Washington* 3: 67–105.
- Brusca, R.C., and Wallerstein, B.R. 1979b. The marine isopod crustaceans of the Gulf of California II. Idoteidae: new genus and species, range extensions, and comments on evolution and taxonomy within the family. *Proceedings of the Biological Society of Washington* 92: 253–271. <http://biodiversitylibrary.org/page/35513964>
- Castellanos, C., and Junoy, J. 2005. *Synisoma albertoi*, a new species from the Strait of Gibraltar (southern Spain) with a key to known species of the genus (Crustacea: Isopoda: Idoteidae). *Journal of the Marine Biological Association of the United Kingdom* 85: 1461–1466. <https://doi.org/10.1017/S0025315405012646>
- Chadderton, W.L., Ryan, P.A., and Winterbourn, M.J. 2003. Distribution, ecology, and conservation status of freshwater Idoteidae (Isopoda) in southern New Zealand. *Journal of the Royal Society of New Zealand* 33: 529–548. <http://doi.org/10.1080/03014223.2003.9517742>
- Clarkin, E., Maggs, C.A., Arnott, G., Briggs, S., and Houghton, J.D.R. 2012. The colonization of macroalgal rafts by the genus *Idotea* (sub-phylum Crustacea; order Isopoda): an active or passive process? *Journal of the Marine Biological Association of the United Kingdom* 92: 1273–1282. <http://doi.org/10.1017/S0025315411002013>
- Dufour, C.M., Engels, N.M., and Burns, C.W. 2007. Distribution, substrate preference and habitat enhancement of the isopod *Austridotea lacustris* in Tomahawk Lagoon, Otago, New Zealand. *New Zealand Journal of Marine and Freshwater Research* 41: 299–307. <https://doi.org/10.1080/00288330709509917>
- Goeke, G.D., and Heard, R.W. 1983. Taxonomy and distribution of *Edotea* (= *Tropedotea*) *lyonsi* (Menzies and Kruczynski, 1983) n. comb. (Crustacea: Isopoda: Idoteidae). *Gulf Research Reports* 7: 275–277. <https://doi.org/10.18785/grr.0703.11>
- Gutow, L., and Franke, H.D. 2003. Metapopulation structure of the marine isopod *Idotea metallica*, a species associated with drifting habitat patches. *Helgoland Marine Research* 56: 259–264. <http://doi.org/10.1007/s10152-002-0126-y>
- Kensley, B. 1978. *Guide to the marine isopods of southern Africa*. Trustees of the South African Museum: Cape Town. 173 pp.
- Kim, H.S., and Kwon, D. 1988. Marine isopod crustaceans from Cheju Island, Korea. *Inje Journal* 4: 195–220.
- King, R.A., and Poore, G.C.B. 2001. Redescription of the tropical Australian isopod, *Lyidotea nodata* Hale, 1929 (Crustacea: Idoteidae). *Memoirs of the Museum of Victoria* 58: 365–371. <https://doi.org/10.24199/j.mmv.2001.58.19>
- Kussakin, O.G. 1982. Marine and brackish-water Crustacea (Isopoda) of cold and temperate waters of the Northern Hemisphere. Suborders Anthuridea, Microcereberidea, Valvifera, Tyloidea. *Opredeliteli po Faune SSR, Akademiya Nauk, SSSR* 131: 1–461.
- McGaughran, A., Hogg, I.D., Stevens, M.I., Chadderton, W.L., and Winterbourn, M.J. 2006. Genetic divergence of three freshwater isopod species from southern New Zealand. *Journal of Biogeography* 33: 23–30. <https://doi.org/10.1111/j.1365-2699.2005.01338.x>
- Menzies, R.J., and Miller, M.A. 1972. Systematics and zoogeography of the genus *Synidotea* (Crustacea: Isopoda) with an account of Californian species. *Smithsonian Contributions to Zoology* 102: 1–33. <https://doi.org/10.5479/si.00810282.102>
- Miers, E.J. 1881. Revision of the Idoteidae, a family of sessile-eyed Crustacea. *Zoological Journal of the Linnean Society* 16: 1–88. <https://doi.org/10.1111/j.1096-3642.1881.tb02274a.x>
- Moreira, P.S. 1974. *Moplisa*, a new genus of idoteid isopod from southern South America. *Crustaceana* 26: 149–154. <https://doi.org/10.1163/156854074X00514>
- Nicholls, G.E. 1937. On the freshwater Idoteidae of New Zealand (Crustacea, Isopoda). *Annals and Magazine of Natural History (ser. 10)* 19: 113–136. <http://doi.org/10.1080/00222933708655244>
- Nunomura, N. 1974. Marine Isopoda from the coast of Hikigawa Town, Kii Peninsula, Middle Japan (I). *Bulletin of the Osaka Museum of Natural History* 28: 1–12. <http://www.mus-nh.city.osaka.jp/publication/bulletin/bulletin/28/28-001.pdf>
- Nunomura, N. 2006. Marine isopod crustaceans in the Sagami Sea, Central Japan. *Memoirs of The National Science Museum, Tokyo* 41: 7–42. <http://ci.nii.ac.jp/naid/110005998861/en>
- Ormsby, B. 1991. *Synisoma wetzeriae*, a new species and the first record of *Synisoma* from the new world (Crustacea: Isopoda: Valvifera: Idoteidae). *Proceedings of the Biological Society of Washington* 104: 758–763. <http://biodiversitylibrary.org/page/34809460>
- Park, J.-Y., and Wägele, J.W. 1995. On a small collection of Valvifera (Crustacea Isopoda) from the Magellan Strait, with a description of *Platidotea magellanica* n. gen. n. sp. *Bulletin Zoölogisch Museum, Universiteit van Amsterdam* 14: 57–99. <http://www.repository.naturalis.nl/document/549063>
- Pereira, E., and Doti, B. 2017. *Edotia abyssalis* n. sp. from the Southwest Atlantic Ocean, first record of the genus (Isopoda, Valvifera, Idoteidae) in the deep sea. *Zoologischer Anzeiger* 268: 19–31. <https://doi.org/10.1016/j.jcz.2017.04.007>
- Pires, A.M.S. 1984. Taxonomic revision and phylogeny of the genus *Erichsonella* with a discussion on *Ronalea* (Isopoda, Valvifera). *Journal of Natural History* 18: 665–683. <https://doi.org/10.1080/00222938400770571>
- Poore, G.C.B. 1996. Species differentiation in *Synidotea* (Isopoda: Idoteidae) and recognition of introduced marine species: a reply to Chapman and Carlton. *Journal of Crustacean Biology* 16: 384–394. <https://doi.org/10.2307/1548894>
- Poore, G.C.B. 2001. Isopoda Valvifera: diagnoses and relationships of the families. *Journal of Crustacean Biology* 21: 205–230. [http://doi.org/10.1651/0278-0372\(2001\)021\[0205:IVDARO\]2.0.CO;2](http://doi.org/10.1651/0278-0372(2001)021[0205:IVDARO]2.0.CO;2)
- Poore, G.C.B. 2012. Four new valviferan isopods from diverse tropical Australian habitats (Crustacea: Isopoda: Holognathidae and Idoteidae). *Memoirs of Museum Victoria* 69: 327–340. <http://doi.org/10.24199/j.mmv.2012.69.07>

- Poore, G.C.B., and Lew Ton, H.M. 1993. Idoteidae of Australia and New Zealand (Crustacea: Isopoda: Valvifera). *Invertebrate Taxonomy* 7: 197–278. <https://doi.org/10.1071/IT9930197>
- Poore, G.C.B., and Hurley, D.E. 2015. *Takereana*, a new genus of Idoteidae (Crustacea: Isopoda: Valvifera) from New Zealand *Zootaxa* 4057: 590–594. <http://doi.org/10.11646/zootaxa.4057.4.10>
- Rafi, F. 1973. A new species of the genus *Pentias* Richardson (Isopoda, Valvifera) from the Sea of Japan. *Canadian Journal of Zoology* 51: 1041–1045. <https://doi.org/10.1139/z73-151>
- Rafi, F., and Laubitz, D.R. 1990. The Idoteidae (Crustacea: Isopoda: Valvifera) of the shallow waters of the northeastern Pacific Ocean. *Canadian Journal of Zoology* 68: 2649–2687. <https://doi.org/10.1139/z90-370>.
- Rezig, M. 1989. Les Idoteidae du genre *Synisoma* Collinge (Isopoda Valvifera) du littoral tunisien. *Revue de Faculté des Sciences de Tunis* (D) 4: 29–80.
- Risso, A. 1827. *Histoire naturelle des principales productions de l'Europe Méridionale et particulièrement de celles des environs de Nice et des Alpes maritimes*. Vol. 5 Animaux Articulés, Annelides, Crustacés, Arachnides, Myriapodes et Insectes. F.-G. Levrault: Paris. xiii, 403 pp, 10 pls. <https://www.biodiversitylibrary.org/page/39428259>
- Salemaa, H. 1979. Ecology of *Idotea* spp. (Isopoda) in the northern Baltic. *Ophelia* 18: 133–150. <https://doi.org/10.1080/00785326.1979.10425495>
- Salemaa, H. 1987. Herbivory and microhabitat preferences of *Idotea* spp. (Isopoda) in the northern Baltic Sea. *Ophelia* 27: 1–16. <https://doi.org/10.1080/00785326.1987.10422007>
- Santos, A., Xavier, R., Zenboudji, S., Branco, T., and Branco, M. 2011. *Stenosoma stephenseni* sp. n. (Isopoda, Idoteidae), from the southwestern Mediterranean, with a note on the nomenclatural status of *Synisoma* Collinge, 1917. *ZooKeys* 141: 29–44. <https://doi.org/10.3897/zookeys.141.1376>
- Schotte, M., and Heard, R. 2004. A new species of *Synidotea* (Crustacea: Isopoda: Valvifera) from the northern Gulf of Mexico. *Proceedings of the Biological Society of Washington* 117: 88–94. <http://biodiversitylibrary.org/page/35515533>
- Song, J.-H., and Min, G.-S. 2017. A new genus and two new species of Idoteidae Samouelle, 1819 (Malacostraca: Isopoda: Valvifera) from South Korea, with a key to the genera of Idoteidae. *Journal of Crustacean Biology* 37: 413–425. <https://doi.org/10.1093/jcbiol/rux036>
- Soors, J., Faasse, M., Stevens, M., Verbessem, I., De Regge, N., and Van den Berge, E. 2010. New crustacean invaders in the Schelde estuary (Belgium). *Belgian Journal of Zoology* 140: 3–10.
- Stebbing, T.R.R. 1902. South African Crustacea. Part II. *Marine Investigations in South Africa. Department of Agriculture, Cape Town* 2: 1–92, pls 5–16. <http://biodiversitylibrary.org/page/6427628>
- Stebbins, T.D. 1988. Observations and experiments on the natural history and behaviour of the commensal isopod *Colidotea rostrata* (Benedict, 1898) (Isopoda: Idoteidae). *Journal of Crustacean Biology* 8: 539–547. <https://doi.org/10.1163/193724088X00387>
- Stebbins, T.D. 1989. Population dynamics and reproductive biology of the commensal isopod *Colidotea rostrata* (Crustacea: Isopoda: Idoteidae). *Marine Biology* 101: 329–337. <https://doi.org/10.1007/BF00428129>
- Sturaro, N., Caut, S., Gobert, S., Bouqueneau, J.-M., and Lepoint, G. 2010. Trophic diversity of idoteids (Crustacea, Isopoda) inhabiting the *Posidonia oceanica* litter. *Marine Biology* 157: 237–247. <https://doi.org/10.1007/s00227-009-1311-1>
- Takahashi, T., and Goshima, S. 2012. The growth, reproduction and body colour pattern of *Cleantiella isopus* (Isopoda: Valvifera) in Hakodate Bay, Japan. *Crustacean Research* 41: 1–10. [https://doi.org/10.18353/crustacea.41.0\\_1](https://doi.org/10.18353/crustacea.41.0_1)
- Thiel, M., and Gutow, L. 2005a. The ecology of rafting in the marine environment. II. The rafting organisms and community. *Oceanography And Marine Biology: An Annual Review* 43: 279–418. <https://doi.org/10.1201/9781420037449.ch7>
- Thiel, M., and Gutow, L. 2005b. The ecology of rafting in the marine environment – I – The floating substrata. *Oceanography And Marine Biology: An Annual Review* 42: 181–263. <https://doi.org/10.1201/9780203507810.ch6>
- Thiel, M., and Haye, P.A. 2006. The ecology of rafting in the marine environment. III. Biogeographical and evolutionary consequences. *Oceanography And Marine Biology: An Annual Review* 44: 323–429. <https://doi.org/10.1201/9781420006391.ch7>
- Zaabar, W., Achouri, M.S., and Charfi-Cheikhrouha, F. 2014. Life cycle and population dynamics of *Idotea balthica basteri* (Pallas, 1772), Isopoda Valvifera from the Bizerte lagoon (Southern Mediterranean Sea – Tunisia). *Marine Ecology* 35: 367–376. <https://doi.org/10.1111/maec.12095>
- Zaixso, H., Stoyanoff, P., and Gil, D.G. 2009. Detrimental effects of the isopod, *Edotia doellojuradoi*, on gill morphology and host condition of the mussel, *Mytilus edulis platensis*. *Marine Biology* 156: 2369–2378. <https://doi.org/10.1007/s00227-009-1265-3>

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