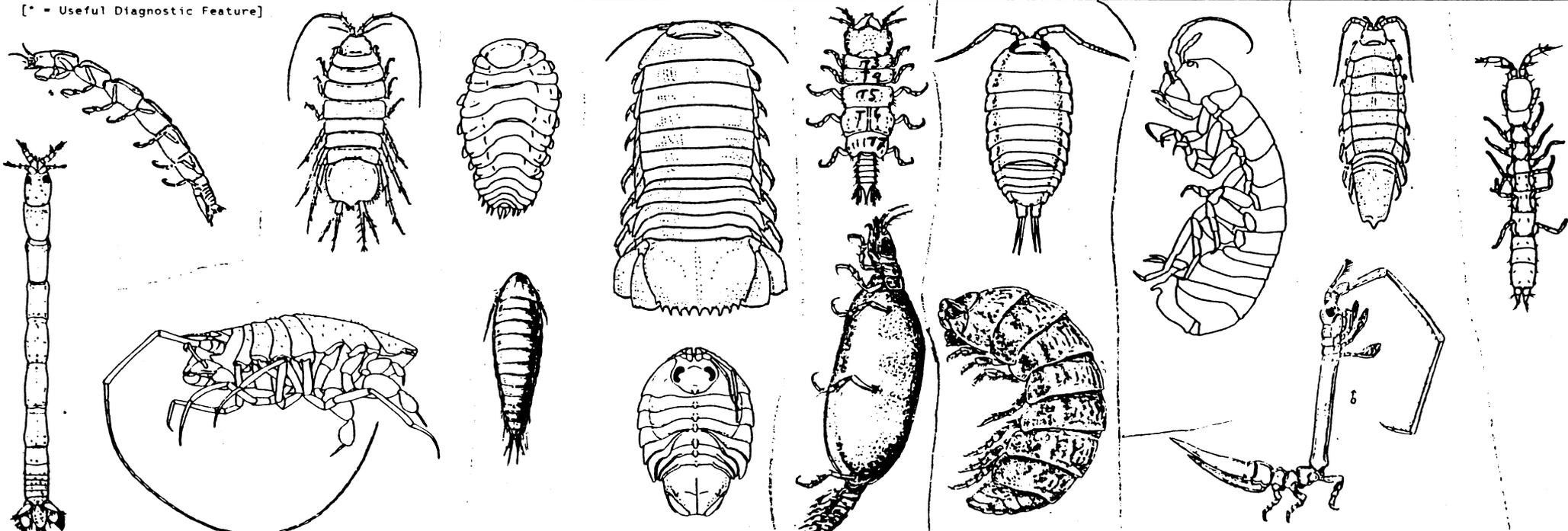


Examples of the Isopod Suborders: A, *Ligia* (Oniscidea); B, *Mesamphisopus* (Phreatoicidea); C, *Cirolana* (Flabellifera); D, *Serolis* (Flabellifera); E, *Dynamenella* (Flabellifera); F, *Pleurocope* (Asellota); G, *Microcerberus* (Asellota); H, *Paranthurus* (Anthuridea); I, *Pseudione* (Epicaridea); J, *Gnathia* (Gnathiidea); K, *Calabozoa* (Calabozoida); L, *Cleantoides* (Valvifera). All in dorsal view, not to scale.

MAJOR GROUPINGS OF THE ISOPODA AT A GLANCE

	Anthuridea	Asellota	Epicaridea	"Flabellifera"	Gnathiidea	Oniscidea	Phreatoicidea	Valvifera	Microcerberidae
Body Form & Locomotion	Elongate and slender* Swimming dimorphic	Flattened to variable Ambulatory	Distorted* to sac-like* degenerate	Flattened to enrollable good swimmers	Sexual dimorphism & metamorphosis	Flattened, often enrollable ambulatory only	Amphipod-like* Good swimmers	Flattened to caprellid-like some good swimmers	Elongate and slender* Ambulatory
Cephalon All peduncle:	5 segments Mouthparts suctorial in some	eyes often absent 6 segments, scale* on seg.3 Mouthparts normal	3 segs. in male Mouthparts suctorial when present	5(6?) segments Mouthparts normal or suctorial. Mnd molar reduced or modified	4 segments Juv. mouthparts suctorial. Adults degenerate	AI tiny*, 3 segs. 4-5 segments M.parts normal Mxp palp distally reduced	5 segments Mouthparts normal	5 segments M.parts normal Mnd palp often absent Mxp palp reduced	Eyes absent 5-6 segments Mnd w/o palp
Pereon	T2-4 pereopods Subchelate*	Coxae small, unfused w/o epimeral plates anter./poster. Th.s may be fused	larval forms cf. flabelliferans* Adult Th.s prehensile (hook-like), if pres.	Coxae epimeral and often fused to pereon	T2 fused to ceph*; T8 missing* only 5 free Th.s (adult manca)*	Coxae epimeral, fused to pereon	Coxae w/o epimeres T2-5 directed anter. T6-8 posterior T Bases 6-8 expanded	Coxae usually w. epimeres & fused to pereon	Coxae small, w/o epimeres Pers. rotated dorsally*
Pleon	P1.1-2 normal P1.1 sometimes opercular Urs. sometimes block openings	Urs. styliform Pls. I-II modified & opercular Pls.3-5, telson fused into single unit Pls. III-V branchial	All Pleopods branchial if pres. Pls. I-V for swimming in juveniles Urs. various	Pleonites free or fused Uropods sometimes form tail-fan	Pleonites all free. Urs. flat & biram. (but no tail-fan)	Pleonites rarely fused. Pleopods air breathing. Uropods styliform	Pleonites free Pls. I-V subeq., for resp. & swimming Uropods styliform	Pleonites fused variously to telson Uropods form operculum over pleopods	Pls.1-2 large P1.3-5 & telson fused. Pleopods Uropods reduced or absent
Body Length	5-47mm	1-20mm	0.5-10mm	1-350mm	2-17mm	1-50mm	5-45mm	5-130mm	0.5-1.5mm
Fossil Record	Recent	Recent	Upper-Jurassic	Triassic	Recent	Eocene	Upper Carboniferous	Oligocene	Recent
Habitat	Marine Estuarine and fresh water	Marine, fresh water (incl. caves), rarely brackish	Marine & Estuarine	Marine, fresh water, Some cavernicolous (Hot springs!)	Fish parasites as juveniles benthic & cryptic as adults	Terrestrial*, Amphibious, & fresh water	Fresh water (surface & ground) Relict Gondwanaland distribution*	Marine benthic	Interstitial*: marine & FW beaches & ground waters
Feeding	Carnivorous	Omnivorous Detritivorous	Ecto/endoparasites on Crustacea*	Carniv., fish parasites to Omniv.	Ectoparasites Adults non-feed.	Detritivorous Herbivorous	Detritivorous	Herbivorous & Omnivorous	Detritivorous
Num. Families	3	29	4	16	1	35	3	7	1

[* = Useful Diagnostic Feature]



Genera of Asellota (some recent new genera not included)
 Data from Torben Wolff's catalogue

<i>Abyssijaera</i>	<i>Haploniscus</i>	<i>Momedossa</i>	<i>Trichopleon</i>
<i>Abyssoniscus</i>	<i>Hapsidohedra</i>	<i>Munella</i>	<i>Tytthocope</i>
<i>Acanthaspidia</i>	<i>Hawaiianira</i>	<i>Munna (Metamunna)</i>	<i>Urias</i>
<i>Acanthocope</i>	<i>Hebefustis</i>	<i>Munna (Munna)</i>	<i>Uromunna</i>
<i>Acanthomunna</i>	<i>Helomesus</i>	<i>Munna (Neomunna)</i>	<i>Vemathamben</i>
<i>Angeliera</i>	<i>Heterias</i>	<i>Munneurycope</i>	<i>Whoia</i>
<i>Anneckella</i>	<i>Heteromesus</i>	<i>Munnicope</i>	<i>Xostylus</i>
<i>Antennuloniscus</i>	<i>Hydroniscus</i>	<i>Munnogonium</i>	<i>Zoromunna</i>
<i>Antennulosignum</i>	<i>lais</i>	<i>Munnopsis</i>	
<i>Asellus</i>	<i>laniroides</i>	<i>Munnopsoides</i>	
<i>Aspidarachna</i>	<i>laniropsis</i>	<i>Munnopsurus</i>	
<i>Aspidoniscus</i>	<i>lanisera</i>	<i>Nannoiniscus</i>	
<i>Astrurus</i>	<i>lanthopsis</i>	<i>Nannoniscidae</i>	
<i>Austrogonium</i>	<i>lathrippa</i>	<i>Nannoniscoides</i>	
<i>Austroniscus</i>	<i>Santia</i>	<i>Nannonisconus</i>	
<i>Austrosignum</i>	<i>Ilyarachna</i>	<i>Nannoniscus</i>	
<i>Bacromesus</i>	<i>Iolanthe</i>	<i>Neasellus</i>	
<i>Bactromesus</i>	<i>Iolella</i>	<i>Neojaera</i>	
<i>Bagatus</i>	<i>Ischnomesus</i>	<i>Notasellus</i>	
<i>Balbidocolon</i>	<i>Jaera</i>	<i>Notoxenoides</i>	
<i>Bathyopsurus</i>	<i>Jaerella</i>	<i>Notoxenus</i>	
<i>Betamorpha</i>	<i>Janaira</i>	<i>Oecidiobranchus</i>	
<i>Caecianiropsis</i>	<i>Janira</i>	<i>Paracanthaspidia</i>	
<i>Caecijaera</i>	<i>Janiralata</i>	<i>Paramunna</i>	
<i>Caecostenetroides</i>	<i>Janirella</i>	<i>Paramunnopsis</i>	
<i>Chelator</i>	<i>Janirella (Parjanirella)</i>	<i>Paropsurus</i>	
<i>Coperonus</i>	<i>Janthura</i>	<i>Pleurocope</i>	
<i>Coulmannia</i>	<i>Joeropsis</i>	<i>Pleurogonium</i>	
<i>Dactylostylis</i>	<i>Katianira</i>	<i>Pleurogonium</i>	
<i>Dendromunna</i>	<i>Kuphomunna</i>	<i>Pleurosignum</i>	
<i>Dendronunna</i>	<i>Lionectes</i>	<i>Prochelator</i>	
<i>Dendrotion</i>	<i>Lipomera</i>	<i>Protocharon</i>	
<i>Desmosoma</i>	<i>Lipomera (Lipomera)</i>	<i>Protojanira</i>	
<i>Disconnectes</i>	<i>Lipomera</i>	<i>Pseudarachna</i>	
<i>Disparella</i>	<i>(Paralipomera)</i>	<i>Pseudojanira</i>	
<i>Echinomunna</i>	<i>Lipomera (Tetracope)</i>	<i>Pseudomesus</i>	
<i>Echinopleura</i>	<i>Mackinia</i>	<i>Pseudosellus</i>	
<i>Echinosone</i>	<i>Macrostylis</i>	<i>Rhacura</i>	
<i>Echinothambema</i>	<i>Maresia</i>	<i>Santia</i>	
<i>Echinozone</i>	<i>Mesosignum</i>	<i>Stenasellus</i>	
<i>Ectias</i>	<i>Microcharon</i>	<i>Stenetrium</i>	
<i>Eugerda</i>	<i>Microjaera</i>	<i>Stenobermuda</i>	
<i>Eugerdella</i>	<i>Microjanira</i>	<i>Storhyngura</i>	
<i>Eurycope</i>	<i>Micromesus</i>	<i>Stylomesus</i>	
<i>Exacanthaspidia</i>	<i>Microparasellus</i>	<i>Sugoniscus</i>	
<i>Fritzianira</i>	<i>Microprotus</i>	<i>Synasellus</i>	
<i>Gnathostenetroides</i>	<i>Microthambema</i>	<i>Syneurycope</i>	
<i>Gomphomesus</i>	<i>Mictosoma</i>	<i>Thambema</i>	
<i>Halacarasantia</i>	<i>Mimocopelates</i>	<i>Thaumastosoma</i>	
<i>Haplomesus</i>	<i>Mirabilicoxa</i>	<i>Thylakogaster</i>	
<i>Haplomunna</i>	<i>Mixomesus</i>	<i>Torwolia</i>	

Composition of the Janiridae

Genera Included by Wolff (1962). The broad definition of the Janiridae (Wolff, 1962) permitted the inclusion of a great deal of morphological diversity. Wolff's concept of the family recognized the following genera as valid members of the Janiridae:

Abyssijaera Menzies, 1962b (= *Katianira* Hansen, 1916)
Acanthaspidia Stebbing, 1893
Angelieria Chappuis and Delamare, 1954
Bagatus Nobili, 1906
Caecianiropsis Menzies and Pettit, 1956
Caecijaera Menzies, 1951a
Carpias Richardson, 1902
Ectias Richardson, 1906
Heterias Richardson, 1904b
Iais Bovallius, 1886
Ianiropsis G.O.Sars, 1897b
Ianthopsis Beddard, 1886b
Iathrippa Bovallius, 1886 (senior synonym of *Notasellus* Pfeffer, 1887)
Iolella Richardson, 1905a
Jaera Leach, 1814
Jaerella Richardson, 1911b
Janiralata Menzies, 1951b
Janira Leach, 1814
Janirella Bonnier, 1896
Janthura Wolff, 1962
Katianira Hansen, 1916.
Mackinia Matsumoto, 1956
Microcharon Karaman, 1934
Microjaera Bocquet and Levi, 1955
Microparasellus Karaman, 1933
Microprotus Richardson, 1909 (not Vanhöffen, 1914 as in Wolff, 1962)
Neojaera Nordenstam, 1933
Protocharon Delamare and Chappuis, 1956
Protojanira Barnard, 1927
Pseudasellus Chappuis, 1951 (= *Heterias* Richardson, 1904b)
Pseudojanira Barnard, 1925
Rhacura Richardson, 1908
Spinianirella Menzies, 1962b (= *Dactylostylis* Richardson, 1911a)
Trichopleon Beddard, 1886a
Xostylus Menzies, 1962b

Genera added since 1962. The following genera have been assigned to the Janiridae by various authors. Some of these genera are junior synonyms of earlier taxa (given here in parentheses).

Austrofiliius Hodgson, 1910 (brought out of synonymy by Schultz, 1976)
Austroniscoides Birstein, 1963 (= *Janthura* Wolff, 1962)
Fritzianira De Castro and Lima, 1977 (= *Heterias* Richardson, 1904b)
Hawaiianira Miller, 1967
Ianiroides Kensley, 1976 (= *Ectias* Richardson, 1906)
Ianisera Kensley, 1976 (= *Neojaera* Nordenstam, 1933)
Janaira Moreira and Pires, 1977a
Janatus Carvacho, 1983 (= *Bagatus* Nobili, 1906)
Janthurella Kussakin, 1982 (= *Katianira* Hansen, 1916)
Microjanira Schiecke and Fresi, 1970

Microthambema Birstein, 1961 (included by Kussakin, 1988)
Natalianira Kensley, 1984a
Thambema Stebbing, 1912 (included by Kussakin, 1988)
Vermetias Sivertsen and Holthuis, 1980.

Adjustments to the composition of the Janiridae. We here limit the Janiridae to a smaller group of genera. The following paragraphs indicate the current placement of genera removed from the janirids. These adjustments are made based on reasons external to the definition of the Janiridae.

Microprotus, despite its complete lack of swimming pereopods, is a derived member of the Munnopsidae *sensu lato* (Wilson, 1989; Wilson, Kussakin, and Vasina, 1989). Its closest relative in the Munnopsidae seems to be *Storothyngura* Vanhöffen, 1914.

The genera *Abyssijaera*, *Janthurella*, *Katianira*, and *Natalianira* have been removed to the new family Katianiridae by Svavarsson (1987), and are reduced to two genera. *Katianira* now contains the species of *Janthurella* and *Abyssijaera*. *Natalianira* is retained as a valid genus of the Katianiridae.

Protojanira and *Pseudojanira* have been removed from the Janiroidea. *Protojanira* is placed in its own family with the genera *Enckella* Fresi, Idato and Scipione, 1980, and *Anneckella* Chappuis and Delamare, 1957; this family is considered to belong to either the Protojaniroidea (Sket, 1982; Wägele, 1983) or the Gnathostenetroidoidea (Wilson, 1987). *Pseudojanira* has been placed in its own monotypic family and superfamily (Wilson, 1986a, 1987), although the superfamily assignment is subject to revision when more specimens and species are found.

The family Microparasellidae Karaman, 1934, has continued to be recognized (Birstein and Ljovuschkin, 1965a,b; Coineau, 1968, 1969, 1986), despite Wolff's elimination of the family. We discuss this family below.

The genera included in the Microparasellidae are *Microparasellus*, *Angeliara*, *Microcharon*, and *Paracharon* (Coineau, 1969).

Janirella and *Dactylostylis* (senior synonym of *Spinianirella*; see Hessler, 1968) belong to the Janirellidae Menzies, 1956, following the composition of family of Menzies (1962b). We, however, exclude the genus *Rhacura* from the Janirellidae until this genus can be more carefully described. These genera have synapomorphies that clearly separate them from the Janiridae, so their classification in this family by Kussakin (1988) is not used here.

The family Acanthaspidiidae Menzies, 1962 is currently recognized (Bowman and Abele, 1982), although Menzies and Schultz (1968), who added several new genera to it, offered no arguments rebutting Wolff's (1962) removal of the family. We do not follow Kussakin (1988) who included *Acanthaspidia* into the Janiridae, and instead assert that the family is indeed valid. Acanthaspidiids can be defined as janiroideans that have enlarged pereonal lappets, narrow or finger-like mandibular molars, broad maxillipedal endites with narrow palps, third pleopods with many plumose setae on both rami, and elongate uropodal sympods. Most species of this family also have dorsal spines. The family contains *Acanthaspidia* Stebbing, 1893, *Iolanthe* Beddard, 1886, *Paracanthaspidia* Menzies and Schultz, 1968, and *Exacanthaspidia* Menzies and Schultz, 1968. This family needs revision because the latter two genera are scarcely different from *Acanthaspidia*. The genus *Ianthopsis* is clearly a sister group of the Acanthaspidiidae, because it has most

apomorphies that define this family. *Ianthopsis* is not a janirellid as suggested by Menzies (1962b), and it should not be classified in the Acanthaspidiidae because it has unreduced mandibular molars and functional eyes, which are lacking in the Acanthaspidiidae *sensu stricto*. Under a new definition of the family, however, *Ianthopsis* might be included in the Acanthaspidiidae. The correct classification of *Ianthopsis* will have to wait until a revision of the family.

The Thambematidae, including the genera *Thambema* and *Microthambema*, is a well-defined family (Harrison, 1987). Consequently, we do not follow Kussakin (1988) in including this family into the Janiridae.

Jaerella, *Rhacura*, *Iolella* have some characters in common but are assigned to *Incertae Sedis*. *Trichopleon* and *Xostylus* are both poorly described and are derived deep-sea genera that have no place in the Janiridae. These two genera need revision before their exact affinities can be resolved, so they are temporarily assigned to *Incertae Sedis*. *Vermetias* is so aberrant that it will require further study to determine its exact affinities. We do not favor its placement in the Janiridae. The composition of these genera are discussed nevertheless.