

Superorder **Parasitiformes** Reuter, 1909 (sensu Krantz & Walter 2009)¹ (4 orders)²

Order **Opilioacarida** Zakhvatkin, 1952 (1 superfamily)

Superfamily **Opilioacaroidea** Redikorzev, 1937 (1 family)

Family **Opilioacaridae** Redikorzev, 1937 (10 genera, 35 species, 0/2)³

Order **Holothyrida** Thon, 1905 (1 superfamily)

Superfamily **Holothyroidea** Thorell, 1882 (3 families)

Family **Allothyridae** van der Hammen, 1972 (2 genera, 3 species)

Family **Holothyridae** Thorell, 1882 (8 genera, 20 species)

Family **Neothyridae** Lehtinen, 1981 (3 genera, 4 species)

Order **Ixodida** Leach, 1815 (1 superfamily)

Superfamily **Ixodoidea** Dugès, 1834 (3 families)

Family **Argasidae** Koch, 1844 (4 genera, 188 species, 0/2)

Family **Ixodidae** Dugès, 1834 (14 genera, 682 species, 2/4)

Family **Nuttalliellidae** Schulze, 1935 (1 genus, 1 species)

Order **Mesostigmata** G. Canestrini, 1891 (3 suborders)⁴

Suborder **Sejida** Kramer, 1885 (2 superfamilies)

Superfamily **Sejoidea** Berlese, 1885 (3 families)

Family **Ichthyostomatogasteridae** Sellnick, 1953 (3 genera, 10 species)

Family **Sejidae** Berlese, 1885 (5 genera, 46 species)

Family **Uropodellidae** Camin, 1955 (1 genus, 6 species)

Superfamily **Heterozerconoidea** Berlese, 1892 (2 families)⁵

Family **Discozerconidae** Berlese, 1910 (2 genera, 3 species)

Family **Heterozerconidae** Berlese, 1892 (7 genera, 13 species)

Suborder **Trigynaspida** Camin & Gorirossi, 1955 (2 infraorders)

Infraorder⁶ **Cercomegistina** Camin & Gorirossi, 1955 (1 superfamily)

Superfamily **Cercomegistoidea** Trägårdh, 1937 (6 families)

Family **Asternoseiidae** Vale, 1954 (2 genera, 3 species)⁷

Family **Cercomegistidae** Trägårdh, 1937 (5 genera, 13 species)

Family **Davacaridae** Kethley, 1977 (2 genera, 4 species)

Family **Pyrosejidae** Lindquist & Moraza, 1993 (2 genera, 3 species)

Family **Saltiseiidae** Walter, 2000 (1 genus, 1 species)

Family **Seiodidae** Kethley, 1977 (1 genus, 1 species)

Infraorder **Antennophorina** Camin & Gorirossi, 1955 (7 superfamilies)

Superfamily **Aenictequoidea** Kethley, 1977 (4 families)

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2. Reuter (1909) used Gamasiformes but provided an alternative, Parasitiformes, because “The genus *Gamasus* has recently been replaced by *Parasitus* because of priority considerations” (i.e. *Parasitus* Latreille, 1795, is a senior objective synonym of *Gamasus* Latreille, 1802). Reuter’s Gamasiformes (Parasitiformes) contained three superfamilies (Holothyroidea, Gamasoidea [Parasitoidea], Ixodoidea) and five families (Holothyridae, Gamasidae [Parasitidae], Uropodidae, Argasidae, Ixodidae). In current usage (Krantz & Walter 2009), Parasitiformes consists of four orders (Opilioacarida, Holothyrida, Ixodida, Mesostigmata). Despite changes in concepts, ranks and/or name endings of higher taxa (beyond superfamily), we assigned authorships to the first author who mentioned the taxonomic name, except for Gamasina where the priority is not clear (see footnote #12). Within the Mesostigmata, we recognise 25 superfamilies, 109 families, 878 genera, and have records for approximately 11,424 species.
3. When available, the number of fossil genera (fg) and fossil species (fs) are indicated as fg/fs in the parentheses.
4. This taxonomic framework follows Lindquist et al. (2009a, b) with exceptions noted for various groups. Mesostigmata is equivalent to Gamasida of other workers. Genera and species estimates are from our records checked against the Zoological Record to 31 March 2011, relevant monographs (e.g. Berlese 1916, Hughes 1961, Gilyarov & Bregetova 1977, Shcherbak 1980, Hirschmann & Wiśniewski 1982, Karg 1993, De Moraes et al. 2004, Chant & McMurtry 2007, Maśán 2007, Papadoulis et al. 2009, Denmark & Evans 2011), and ITIS listings (Castilho et al. 2011 a, b, c).
5. In Lindquist et al. (2009a, b), Heterozerconoidea is treated as a separate cohort (i.e. infraorder), but we follow the results of Lekveishvili & Klompen (2004).
6. Cohort is traditionally used in Acarology for the rank of infraorder, which is used in most other fields of Zoology, and subcohort for hyporder, but for consistency with other disciplines we have switched to the more common zoological forms.
7. Includes *Holostethus longosetis* Karg & Schorlemmer, 2011, which they placed in the Fedrizziidae. However, this genus clearly belongs in the Asternoseiidae and is very close to, and perhaps a junior synonym of *Asternoseius* Berlese, 1910.

- Family **Aenictequidae** Kethley, 1977 (1 genus, 1 species)
 Family **Euphysalozercnidae** Kim, 2008 (1 genus, 1 species)
 Family **Messoracaridae** Kethley, 1977 (2 genera, 3 species)
 Family **Ptochacaridae** Kethley, 1977 (1 genus, 3 species)
 Superfamily **Antennophoroidea** Berlese, 1892 (1 family)
 Family **Antennophoridae** Berlese, 1892 (6 genera, 19 species)
 Superfamily **Celaenopsoidea** Berlese, 1892 (8 families)
 Family **Celaenopsidae** Berlese, 1892 (7 genera, 14 species)
 Family **Costacaridae** Hunter, 1993 (1 genus, 1 species)
 Family **Diplogyniidae** Trägårdh, 1941 (42 genera, 85 species)
 Family **Euzerconidae** Trägårdh, 1938 (12 genera, 24 species)
 Family **Megacelaenopsidae** Funk, 1975 (2 genera, 2 species)
 Family **Neotenogyniidae** Kethley, 1974 (1 genus, 1 species)
 Family **Schizogyniidae** Trägårdh, 1950 (6 genera, 10 species)
 Family **Triplogyniidae** Funk, 1977 (2 genera, 11 species)
 Superfamily **Fedrizzioidea** Trägårdh, 1937 (2 families)
 Family **Fedrizzidae** Trägårdh, 1937 (3 genera, 34 species)⁸
 Family **Klinckowstroemiidae** Camin & Gorirossi, 1955 (4 genera, 36 species)⁹
 Superfamily **Megisthanoidea** Berlese, 1914 (2 families)
 Family **Hoplomegistidae** Camin & Gorirossi, 1955 (1 genus, 7 species)
 Family **Megisthanidae** Berlese, 1914 (1 genus, 30 species)
 Superfamily **Paramegistoidea** Trägårdh, 1946 (1 family)
 Family **Paramegistidae** Trägårdh, 1946 (5 genera, 30 species)
 Superfamily **Parantennuloidea** Willmann, 1941 (3 families)
 Family **Parantennulidae** Willmann, 1941 (3 genera, 5 species)
 Family **Philodanidae** Kethley, 1977 (2 genera, 2 species)
 Family **Promegistidae** Kethley, 1977 (1 genus, 1 species)
 Suborder **Monogynaspida** Camin & Gorirossi, 1955 (2 infraorders)
 Infraorder **Uropodina** Kramer, 1881 (4 superfamilies)
 Superfamily **Microgynioidea** Trägårdh, 1942 (2 families)¹⁰
 Family **Microgyniidae** Trägårdh, 1942 (2 genera, 4 species)
 Family **Nothogynidae** Walter & Krantz, 1999 (1 genus, 2 species)
 Superfamily **Thinozerconoidea** Halbert, 1915 (2 families)
 Family **Protodinychidae** Evans, 1957 (1 genus, 3 species)
 Family **Thinozerconidae** Halbert, 1915 (1 genus, 1 species)
 Superfamily **Uropodoidea** Kramer, 1881 (30 families)¹¹
 Family **Baloghjkaszabiidae** Hirschmann, 1979 (1 genus, 3 species)
 Family **Brasiluropodidae** Hirschmann, 1979 (2 genera, 18 species)
 Family **Cillibidae** Trägårdh, 1944 (2 genera, 19 species)
 Family **Clausiadinychidae** Hirschmann, 1979 (1 genus, 4 species)
 Family **Cyllibulidae** Hirschmann, 1979 (1 genus, 32 species)
 Family **Deraiphoridae** Trägårdh, 1952 (1 genus, 36 species)
 Family **Dinychidae** Berlese, 1916 (1 genus, 34 species)
 Family **Discourellidae** Baker & Wharton, 1952 (1 genus, 76 species)
 Family **Eutrachytidae** Trägårdh, 1944 (1 genus, 36 species)
 Family **Hutufeideriidae** Hirschmann, 1979 (1 genus, 9 species)

8. Family concept follows Seeman (2007; not Karg & Schorlemmer 2011).

9. *Klinckowstroemiidae* has traditionally been attributed to Trägårdh, but Trägårdh failed to designate a type species for *Klinckowstroemia* and so his family name was not valid. The genus name did not become available until Baker & Wharton (1952) designated a type and the family was first used by Camin & Gorirossi (1955). See Villegas-Guzman et al. (2009) for details.

10. In Lindquist et al. (2009a, b), *Microgynioidea* is treated as a separate cohort (infraorder), but we think that the weight of evidence supports treating this group as a member of the *Uropodina*.

11. The family arrangement of *Uropodoidea* follows Hirschmann (1979) with few exceptions (e.g. an expanded view of *Trachytidae* following Bloszyk et al. 2005).

- Family **Kaszabjaloghiidae** Hirschmann, 1979 (1 genus, 6 species)
 Family **Macrodinychidae** Hirschmann, 1979 (4 genera, 22 species)
 Family **Metagynuridae** Balogh, 1943 (2 genera, 17 species)
 Family **Nenteriidae** Hirschmann, 1979 (2 genera, 128 species)
 Family **Oplitidae** Johnston, 1968 (8 genera, 163 species)
 Family **Phymatodiscidae** Hirschmann, 1979 (1 genus, 10 species)
 Family **Polyaspididae** Berlese, 1913 (1 genus, 16 species)
 Family **Prodinychidae** Berlese, 1917 (3 genera, 16 species)
 Family **Rotundabaloghiidae** Hirschmann, 1979 (4 genera, 165 species)
 Family **Tetrasespidae** Hirschmann, 1979 (1 genus, 15 species)
 Family **Trachytidae** Trägårdh, 1938 (7 genera, 108 species)
 Family **Trachyuropodidae** Berlese, 1917 (17 genera, 99 species)
 Family **Trematuridae** Berlese, 1917 (13 genera, 401 species)
 Family **Trichocyllibidae** Hirschmann, 1979 (5 genera, 57 species)
 Family **Trichouropodellidae** Hirschmann, 1979 (1 genus, 11 species)
 Family **Trigonuropodidae** Hirschmann, 1979 (1 genus, 87 species)
 Family **Uroactiniidae** Hirschmann & Zirngiebl-Nicol, 1964 (3 genera, 67 species)
 Family **Urodiaspididae** Trägårdh, 1944 (3 genera, 26 species)
 Family **Urodinychidae** Berlese, 1917 (13 genera, 267 species)
 Family **Uropodidae** Kramer, 1881 (9 genera, 261 species)
 Uropodoidea, no assigned family (5 genera, 5 species)
 Superfamily **Diarthrophalloidea** Trägårdh, 1946 (1 family)
 Family **Diarthrophallidae** Trägårdh, 1946 (22 genera, 63 species)
 Infraorder **Gamasina** Kramer, 1881 (4 hyporders)¹²
 Hyporder **Epicriiiae** Kramer, 1885 (3 superfamilies)
 Superfamily **Epicriioidea** Berlese, 1885 (1 family)
 Family **Epicriidae** Berlese, 1885 (4 genera, 48 species)
 Superfamily **Heatherelloidea** Walter, 1997 (1 family)¹³
 Family **Heatherellidae** Walter, 1997 (1 genus, 2 species)
 Superfamily **Zerconoidea** G. Canestrini, 1891 (2 families)
 Family **Coprozerconidae** Moraza & Lindquist, 1999 (1 genus, 1 species)
 Family **Zerconidae** G. Canestrini, 1891 (36 genera, 390, species, 1/1)¹⁴
 Hyporder **Arctacaridae** Johnston, 1982 (1 superfamily)
 Superfamily **Arctacaroidea** Evans, 1955 (1 family)
 Family **Arctacaridae** Evans, 1955 (2 genera, 6 species)
 Hyporder **Parasitiae** Evans & Till, 1979 (1 superfamily)
 Superfamily **Parasitoidea** Oudemans, 1901 (1 family)
 Family **Parasitidae** Oudemans, 1901 (35 genera, 426 species, 0/1)¹⁵
 Hyporder **Dermanyssiae** Evans & Till, 1979 (6 superfamilies)
 Superfamily **Veigaiioidea** Oudemans, 1939 (1 family)
 Family **Veigaiidae** Oudemans, 1939 (4 genera, 95 species)
 Superfamily **Rhodacaroidea** Oudemans, 1902 (6 families)
 Family **Digamasellidae** Evans, 1957 (13 genera, 261 species, 0/1)¹⁶
 Family **Halolaelapidae** Karg, 1965 (4 genera, 80 species)¹⁷

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12. Sensu Lindquist et al. (2009a, b). The name Gamasina apparently originates from Gammasides (sic) Leach, 1815, which was used as a family to accommodate a single genus, *Gamasus* Latreille, 1802 (misspelled *Gammasus*). However, Kramer (1881) provided a more defined concept under the name Gamasina.
13. In Lindquist et al. (2009a, b), Heatherelloidea is treated as a separate cohort (infraorder), but as noted in Walter (1997), the morphology suggests a close relationship to the families Epicriidae and Zerconidae. Further study of these unique Australian mites has reinforced this conclusion.
14. Zsolt Ujvári (pers. comm.). Relevant monographs (Błaszak 1976) and recent revisions such as Díaz-Aguilar & Ujvári (2010) were also consulted. One fossil genus (fg) and species (fs) has been described (Błaszak et al. 1995) (as fg/fs in list).
15. A fossil species of Eocene age, apparently the oldest known mesostigmatan, and attributable to the extant genus *Aclerogamasus* has been described (Witalinski 2000).
16. A fossil species of Miocene age attributable to an extant genus, *Dendrolaelaps*, has been described (Hirschmann 1971).
17. Species estimate and generic concepts follows Halliday (2008).

- Family **Laelaptonyssidae** Womersley, 1956 (1 genus, 6 species)
 Family **Ologamasidae** Ryke, 1962 (45 genera, 452 species)
 Family **Rhodacaridae** Oudemans, 1902 (15 genera, 148 species)
 Family **Teranyssidae** Halliday, 2006 (1 genus, 1 species)
 Not assigned to a family (1 genus, 1 species)
- Superfamily **Eviphidoidea** Berlese, 1913 (5 families)
 Family **Eviphididae** Berlese, 1913 (19 genera, 108 species)
 Family **Leptolaelapidae** Karg, 1978 (12 genera, 48 species)
 Family **Macrochelidae** Vitzthum, 1930 (20 genera, 470 species)¹⁸
 Family **Pachylaelapidae** Berlese, 1913 (26 genera, 199 species)
 Family **Parholaspididae** Evans, 1956 (12 genera, 96 species)
- Superfamily **Ascoidea** Voigts & Oudemans, 1905 (3 families)
 Family **Ameroseiidae** Evans, 1961 (10 genera, 148 species)
 Family **Ascidae** Voigts & Oudemans, 1905 (17 genera, 338 species)
 Family **Melicharidae** Hirschmann, 1962 (12 genera, 201 species)¹⁹
- Superfamily **Phytoseioidea** Berlese, 1916 (4 families)
 Family **Blattisociidae** Garman, 1948 (11 genera, 369 species)
 Family **Otopheidomenidae** Treat, 1955 (10 genera, 28 species)
 Family **Phytoseiidae** Berlese, 1916 (90 genera, 2300 species)²⁰
 Family **Podocinidae** Berlese, 1913 (2 genera, 25 species)
- Superfamily **Dermanysoidea** Kolenati, 1859 (17 families)
 Family **Dasyponyssidae** Fonseca, 1940 (2 genera, 2 species)
 Family **Dermanyssidae** Kolenati, 1859 (2 genera, 26 species)
 Family **Entonyssidae** Ewing, 1923 (9 genera, 27 species)
 Family **Haemogamasidae** Oudemans, 1926 (5 genera, 78 species)
 Family **Halarachnidae** Oudemans, 1906 (7 genera, 43 species)
 Family **Hystriehonyssidae** Keegan, Yunker & Baker, 1960 (1 genus, 1 species)
 Family **Iphiopsididae** Kramer, 1886 (14 genera, 68 species)
 Family **Ixodorhynchidae** Ewing, 1923 (6 genera, 43 species)
 Family **Larvamimidae** Elzinga, 1993 (1 genus, 4 species)
 Family **Laelapidae** Berlese, 1892 (90 genera, 1316 species)²¹
 Family **Macronyssidae** Oudemans, 1936 (34 genera, 233 species)
 Family **Manitherionyssidae** Radovsky & Yunker, 1971 (1 genus, 1 species)
 Family **Omentolaelapidae** Fain, 1961 (1 genus, 1 species)
 Family **Rhinonyssidae** Trouessart, 1895 (8 genera, 510 species)
 Family **Spelaeorhynchidae** Oudemans, 1902 (1 genus, 7 species)
 Family **Spinturnicidae** Oudemans, 1901 (12 genera, 101 species)
 Family **Varroidae** Delfinado & Baker, 1974 (2 genera, 6 species)

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18. See Emberson (2010).

19. See Naskrecki & Colwell (1998) for an exceptionally fine systematic analysis of two genera.

20. See De Moraes et al. (2004), Chant & McMurtry (2007), Papadoulis et al. (2009), and Denmark & Evans (2011).

21. Family and generic concepts largely follow the classification of Evans & Till (1966) as modified by Casanueva (1993) (but also see Walter & Campbell 2003, Dowling et al. 2007, Beaulieu 2009 & Dowling & OConnor 2010). In this treatment, the Laelapidae includes the monogeneric and digeneric subfamilies Alphalaelapinae Tipton, 1960, and Acanthochelinae Radovsky & Gettinger, 1999, respectively, and the large subfamilies Hirstionyssinae Evans & Till, 1966, Laelapinae Berlese, 1892, Hypoaspidae Vitzthum, 1941, and Melittiphidinae Evans & Till, 1966. However, many genera cannot be assigned confidently to subfamilies, and the boundaries of the large subfamilies remain unclear. Species estimates were corrected for reported synonymies in the Chinese fauna following Ma (2006).

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