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DIAGNOSES OF THE HIGHER TAXA OF APHIDOMORPHA (HEMIPTERA STERNORRHYNCHA)

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Heie O.E., Wegierek P. – Diagnoses of the higher taxa of Aphidomorpha (Hemiptera Sternorrhyncha).

Diagnoses of the higher taxa within Aphidomorpha according to the phylogenetic classification given in Heie & Wegierek (this volume) are given. Both extant and extinct taxa are included.

KEY WORDS: Aphidomorpha, classification, phylogeny, diagnoses of higher taxa.

INTRODUCTION

Diagnoses of families, subfamilies, tribes and subtribes of aphids are given below, including the extinct taxa. The classification is the same as that given by HEIE & WEGIEREK (2009).

DIAGNOSES OF TAXONOMIC GROUPS

Aphidomorpha Becker-Migdisova & Aizenberg, 1962
(x = extinct group)

Naibioidea Shcherbakov, 2007 (x). Only alatae known. Pterostigma long, pointed and curved, reaching apex of fore wing. Radial sector curved, long, reaching beyond apex of pterostigma. Media with one fork or unbranched. Cubitus shaped as a fork with a long stem. Hind wing rather short. Siphunculi absent. Oviparous.

Naibiidae Shcherbakov, 2007 (x). Media unbranched, weak, leaving the base of cubitus. Hind wing with two oblique veins, much smaller than fore wing. Wings probably rooflike in repose. Head strongly flattened. Eyes displaced ventrally, with rather few ommatidia, with triommatidia at hind edges. Antennae short, 6-segmented with a short processus terminalis. Primary rhinaria roundish, placed at apices of segments III, IV, V and basal part of VI. Rostrum short and rather broad. Anal tube cauda-like but with a canal, two-segmented, constricted at base, its apex being emarginated. A rudimentary ovipositor probably present.

Sinojuraphididae Huang & Nel, 2008 (x). Pterostigma very narrow. Cubitus shaped as a fork, the proximal branch (CuA₂) thickened, the distal branch (CuA₁) longest. Media with one fork, departing from a point in the middle of the distance between radial sector and cubitus. Hind wing very short. Antennae said to be 12-segmented (but probably only 6-segmented); antennal segments short and rounded, with very small rhinaria placed in transverse rows. Rostrum short. The tarsi said to be 3-segmented with a long segment I, but probably 2-segmented with a short segment I as in all other aphids. Two long, thin, dark processes present at the end of the abdomen.

A new still undescribed Triassic family (x). Body very large. Media unbranched, arising close to the base of cubitus. The proximal branch of cubitus, (CuA₂) slightly longer than stem; claval furrow very distinctly visible. Wings roof-like in repose. Marginal tubercles apparently present along the sides of abdomen. Head with median tubercle. Eyes very large, kidney-shaped. Rostrum rather long. Antennae and legs missing in the fossil except the inner antennal segments, which are short and roundish. Two long, thin, pale processes at the end of the abdomen present, apparently placed on sternite VII. Perhaps with a supracaudal process. Anal plate rounded.

Triassoaphidoidea Heie, 1991 (x). Pterostigma long and slender, Radial sector long and slender, departing from the base or the middle of pterostigma. Media with three branches Cubitus shaped as a fork with a moderately long stem. Traces of oblique veins (CuB) and an anal vein) on the proximal side of cubitus apparently present.

Triassoaphididae Heie, 1991 (x). Only a fore wing is known. Wing veins very long. Radial sector straight, nearly reaching the pterostigma, leaving the middle of it. Media departing from base of pterostigma.

Creaphididae Shcherbakov & Wegierek, 1990 (x). Only a fore wing is known. Pterostigma reaching the apex of the wing. Subcosta forming a deep furrow along radius and media. Radial sector very long, leaving the base of pterostigma. CuA₁ thicker than media and distal part of radial sector.

Genaphidoidea Handlirsch, 1907 (x). Only a fore wing is known. Pterostigma not slender or pointed. Radial sector leaving the basal third of pterostigma. Media with three branches (= two forks). Cubitus shaped as a fork with a very short stem or with its branches departing from the same point. Hind wing with two oblique veins. If *Juraphis*, *Aphaorus*, and *Pterotella* belong here (the fore wing of *Juraphis* looks like that of *Genaphis*), then siphunculi and apparently also cauda are absent, and the antennae consist of up to 7 segments, with several transverse, narrow secondary rhinaria on segments III and IV. Wings probably roof-like in repose. Frons convex. Head with an epicranial suture. Ovipositor present.

Genaphididae Handlirsch, 1907 (x). As in the superfamily.

Palaeoaphidoidea Richards, 1966 (x). Only alatae known. Fore wings often strongly narrow in basal part. Media with one or two forks. Cubitus shaped as a fork or its branches separated at bases. Hind wings with tendency to shortening. Antennae 5- to 7-segmented. Siphunculi absent. Oviparous.

Ellinaphididae Kania & Wegierek, 2008 (x). Body stumpy, ellipsoid, apparently haired. Pterostigma rather short. Radial sector leaving the subapical part of pterostigma. Cubitus shaped as a fork, usually with a long stem. Media with two forks. Cubital branches distinctly more thickened than media and radial sector. Hind wing relatively short, with one or two oblique veins, in some cases forming a fork with a long stem. Wings roof-like in repose. Epicranial suture dividing the head of some species, connected with two lateral structures. Compound eyes partly ventrally oriented; the central ocellus placed ventrally. Antennae finger-shaped, 7-segmented and short, inserted ventrally. Secondary rhinaria (or similar structures) very small, placed in numerous transverse rows, between the rows sclerotic transverse grooves present. Processus terminalis absent or very short. Rostrum short and slender. Legs rather short. Distance between first and second coxa about twice the distance between second and third coxa. Anal plate rounded. Ovipositor present.

Szelegiewiczidae Wegierek, 1989 (x). Fore wings strongly narrow in basal part. Radial sector curved, separating from the middle of pterostigma. Media separating from the base of pterostigma, with one or two forks. The bases of cubital veins set widely apart. CuA_1 slightly curved. CuA_2 separating from the main vein at an angle of 100° , three times shorter than CuA_1 . The distance between CuA_1 and CuA_2 at bases similar to the length of CuA_2 . Vertex with suture. Antennae 5- or 7-segmented, with annular rhinaria on segments III-VII, when 7-segmented, and with many transverse rows of small rhinaria. Large rounded or rectangled sclerotized structures located on tergites of abdomen. Ovipositor present.

Shaposhnikoviidae Kononova, 1976 (x). Radial sector leaving the apical part of pterostigma. Media with two forks. Vertex with suture. Fore wings otherwise similar to that of Szelegiewiczidae. Antennae 7- segmented. Rhinaria angular on segments III-VII. Abdominal tergites with a microsculpture. Cauda rounded.

Palaeoaphididae Richards, 1966 (x). Body slender. Pterostigma rather short. Radial sector leaving a point about one third back at pterostigma or at its very base. Media with one fork, its basal part being invisible, but apparently departing from a point near base of cubitus. Cubitus shaped as a fork with a long stem. Cubital branches are distinctly more thickened than media and radial sector. Hind wing with one or two oblique veins or without oblique veins. Head flattened. Compound eyes partly ventrally oriented. Triommatidia placed behind the eyes. Antennae 6- or 7-segmented, apparently with transverse and ring-like secondary rhinaria. Processus terminalis not developed. Rostrum rather short. Distance between first and second coxa larger than $1\frac{1}{2}$ times the distance between second and third coxa. Cauda finger-shaped. Ovipositor present.

Tajmyraphidoidea Kononova, 1975 (x). Only alatae are known. Pterostigma short. Radial sector leaving pterostigma subapically. Media leaving its base, with two branches. Cubitus branches separated at base, the distal

branch (CuA_1) leaving the main vein at an angle of $35-50^\circ$, the proximal branch (CuA_2) short and forming an angle of $75-90^\circ$ with the main vein, occasionally absent. Hind wings more or less reduced. Antennae short, 4- to 7-segmented. Processus terminalis little developed or absent. Tarsi in some cases relatively long. Siphunculi absent. Ovipositor present.

Tajmyraphididae Kononova, 1975 (x). Hind wing without oblique veins. Antennae 5- or 6-segmented. Secondary rhinaria ring-shaped or absent. Rostrum longer than body. Cauda knobbed (ampullaceous). Anal plate bilobed. Wings roof-like in repose.

Burmitaphididae Poinar & Brown, 2005 (x). Cubitus consisting of only one vein, the original distal branch ($Cu1_a$). Hind wings reduced, stub-shaped. wings probably flat in repose. Rostrum apparently missing or at least invisible. Frons with protruding central tubercle. Antennae 7-segmented, very short, without processus terminalis, sometimes with transverse stripes. Cauda elongate. Anal plate perhaps bilobed.

Grassyaphididae Heie, 2000 (x). Antennae apparently 7-segmented. Secondary rhinaria not ring-shaped. Rostrum longer than body, Hind wing without oblique veins. Posterior end of abdomen bilobed.

Khatangaphididae Heie, 2000 (x). Antennae 4- or 5-segmented. Secondary rhinaria apparently absent. Wings roof-like in repose. Rostrum shorter than body. Posterior end of abdomen bilobed.

Lebanaphididae Heie, 2000 (x). Antennae 7-segmented. Secondary rhinaria apparently absent. Rostrum extremely long, longer than body. Wings probably flat in repose. Abdomen apparently with rounded end.

Retinaphididae Heie, 2000 (x). Antennae 5- or 6-segmented. Secondary rhinaria ring-shaped. Posterior end of abdomen with two pairs of lobes. Rostrum shorter than body. With or without dorsal wax glands on abdomen. Ovipositor apparently present.

Aphidoidea Latreille, 1802. Fore wing normally with a well developed radial sector, media with one or two forks; cubitus- branches normally separated at bases. Hind wing with 0-2 oblique veins. Siphunculi or siphuncular pores present. Parthenogenetic females of most families viviparous. Antennae normally with 6 segments, occasionally with fewer, rarely with 7 (in Sinaphiumidae).

Oviparosiphidae Shaposhnikov, 1979 (x). Only alatae known. Radial sector leaving the middle of the elongate, but rather short and not slender pterostigma. Media with three branches, its base leaving a short distance from base of pterostigma. Cubitus branches leaving the main vein at points rather close to each other. Hind wing with two oblique veins. Head with an epicranial suture. Frons convex. Antennae short, apparently 3-segmented with transverse secondary rhinaria in stripes on segment III. Siphuncular pores present, ring-like. Cauda knobbed. Triangular ovipositor present.

Canadaphididae Richards, 1966 (x). Only alatae known. Pterostigma rather short. Radial sector arising from the middle of pterostigma or a little distally to the middle. Media with three branches, its base placed close to the base of cubitus. Cubitus branches separated. Hind wings relatively large, longer than half of the length of the fore wing, with two oblique veins. Head flat, with the fore part reaching far back ventrally. Compound eyes large, partly in ventral position, with triommatidia. Antennae rather short, 5-6-segmented, with a rather long segment II. Processus terminalis well developed.

Rostrum shorter than body. Thoracic segments with oblique lateral borderlines. Tarsi long. Cauda finger-shaped. Siphuncular pores present, ring-like. Ovipositor present.

Sinaphidumidae Zhang, Hou & Ma, 1989 (x). Fore wing with radial sector straight and long, arising from the middle of pterostigma. Both media and CuA₁ invisible at base. Media with two forks. Both branches of cubitus distinctly separated basally, somewhat curved. Hind wing with two oblique veins. Antennae 5- to 7-segmented. Rhinaria circular, disorderly arranged. Siphunculi ring-like. Ovipositor large.

Cretamyzidae Heie & Pike, 1992 (x). Only an aptera is known. Border between head and pronotum distinctly visible. Frons with a median, triangular, pointed process. Compound eyes placed on sockets, with ocular tubercles containing triommatidia behind the eyes. Antennae probably 6-segmented, placed on subcylindrical sockets or lateral frontal tubercles. Antennal segment I relatively long, slender, but with truncate, curved and swollen basal half; segment II thin at base, widening towards apex. Processus terminalis well developed, but shorter than base of ultimate antennal segment. Rostrum rather long and very thin. Knees rather strongly developed. Tibiae with thickened basal ends. Claws well developed. Siphuncular pores present, placed on abdominal segment V. Cauda ending in a thin, bent cylindrical apex. Perhaps viviparous.

Paraverrucosidae Poinar & Brown, 2005 (syn. Verrucosidae Poinar & Brown, 2005) (x). Pterostigma short and broad. Radial sector leaving the pterostigma a little in front of its middle, not very long, curved. Media with one fork, leaving the base of pterostigma. Cubitus consisting of a long distal branch and only traces of the proximal branch, leaving the main vein far away from the distal branch. Hind wing reduced to a stub (just as in Burmit-aphididae). Head flattened. Antennae 3-segmented, short and very thick, with deep ring-like structures, perhaps rhinaria. Eyes ventrally oriented, without triommatidia. Rostrum very long, with an extremely long apical segment. Siphunculi of medium size, slightly swollen, without flange. Perhaps viviparous.

Drepanochaitophoridae Zhang & Hong, 1999 (x) (perhaps a synonym of another family?). Only an aptera is known. The following is based only on drawings as the description is in Chinese. Frons apparently with four low tubercles. Ocular tubercles placed in front of the compound eyes, these being divided by a suture. Antennae 5- or 6-segmented, shorter than body, the two ultimate segments thicker than the rest. Processus terminalis shorter than base of ultimate antennal segment. A few oval rhinaria present on antennal segments V and VI and a single one on III. Rostrum thin and longer than body, the ultimate segment divided into two segments (IV and V). First tarsal segment only a little shorter than second segment, with long, pointed claws. Siphunculi invisible, perhaps pores. Cauda and anal plate apparently rounded. Wax gland plates apparently present on abdomen. Ovipositor absent.

Phloeomyzidae Mordvilko, 1934. Radial sector leaving apical part of pterostigma. Media unbranched. Branches of cubitus separated at base. Hind wing with two oblique veins. Apterae and nymphs only with triommatidia. Antennae 6-segmented. Processus terminalis shorter than base of ultimate antennal segment. Secondary rhinaria absent from all morphs.

Wings flat in repose. Siphunculi slightly elevated pores. Cauda semicircular. Anal plate entire. Wax glands forming large faceted plates on abdominal segment VII. Both sexuales alate. Oviparae without subsiphuncular wax glands and without scent plaques on legs, laying two eggs. During summer with many generations of apterae. Ovipara laying two eggs. On *Populus*.

Eriosomatidae Kirkaldy, 1905 (1843). Media of with one fork or unbranched. Apterae and nymphs only with triommatidia, with border between head and pronotum normally distinct. Antennae short, normally 6 segmented. Processus terminalis very short. Secondary rhinaria transverse oval, subcircular or narrow and ring-like, usually absent from apterae. Hind wing with 1-2 oblique veins. Siphunculi pore-shaped or absent. Cauda broad, rounded, not constricted. Anal plate entire. Wax glands often well developed, usually in groups of several roundish, faceted plates. Sexuales dwarfish, apterous, without rostrum. Ovipara laying one egg. Host alternation by most species by alate sexuparae in autumn, producing galls on the primary hosts, often able to survive winters on secondary hosts.

Eriosomatinae Kirkaldy, 1905 (1843). Media of fore wing with one fork or unbranched. Hind wing with one or two well separated oblique veins. Antennae 6-segmented. Alatae with narrow, ring-like secondary rhinaria. Wax gland plates in apterae with one or more central facets surrounded by a ring of facets. Most species host-alternating with *Ulmus* as the primary host.

Eriosomatini Kirkaldy, 1905 (1843). Media of fore wing with one fork. Hind wing with two oblique veins. Antennal segment III distinctly longer than segm. IV+V+VI. Secondary rhinaria narrow, ring-like. Apterae with four rows of wax glands plates on dorsum of body. Tarsi 2-segmented. Siphuncular pores present. Galls on primary host only curled leaves or blister-shaped placed directly on thin branches.

Tetraneurini Herrich-Schaeffer, 1845. Media of fore wing with one fork or unbranched. Hind wing with 1-2 oblique veins. Antennal segment III as long as or shorter than segments IV+V+VI. Apterae with 4-6 rows of wax glands plates on dorsum of body. Tarsi 1-segmented or if 2-segmented then with 6 wax gland plates on most body segments. Siphuncular pores present or absent. Galls on primary host more or less closed, placed on surface of leaves.

Pemphiginae Herrich-Schaeffer, 1854. Media unbranched or with two branches (= one fork). Hind wing with two oblique veins, not separated at base or hardly so. Head with well developed wax gland plates. Antennae of alatae 5- or 6-segmented. Secondary rhinaria transverse oval or narrow, often stripe-shaped, covering about half of the circumference of the segments. Tarsi of all morphs 2-segmented. Newborn virginogeniae with very short, uncurved empodial hairs, shorter than the claws. Apical segment of rostrum with pale subapical zone. Apterae on secondary hosts and generally also other morphs with honeycomb-like wax gland plates, often with a white tuft of wax threads covering the posterior part or the whole body. Siphuncular pores present or absent, in apterae on secondary hosts always absent. Most species host-alternating between deciduous trees, mostly *Populus*, where galls are produced on leaves or petioles, and normally herbs.

Prociphilinae Herrich-Schaeffer, 1854. Media with two branches in fundatrigeniae, unbranched in sexuparae. Branches of cubitus leaving the main vein at points close to each other. Head without wax gland plates. Antennae of alatae 6-segmented. Secondary rhinaria oval og transverse linear. Apical segment of rostrum without pale subapical zone. Tarsi of all morphs 2-segmented except in apterae of *Mimeuria*. Dorsum with wax gland plates. Newborn virginogeniae with long, curved empodial hairs, often as long as or longer than the claws (except in *Mimeuria*). Host-alternating between deciduous trees, e.g. *Populus* and *Fraxinus*, and roots of coniferous trees. Otherwise like Pemphiginae.

Fordinae Acloque, 1897. Antennae of alatae with 5-6 segments; secondary rhinaria circular, subcircular or transverse oval or narrow and ring-like. Siphunculi absent. With two year life cycles.

Fordini Acloque, 1897. Pterostigma not long drawn out, its posterior margin not conspicuously concave, or – if so – then ultimate antennal segment without secondary rhinaria. Media of fore wing unbranched. Cubitus shaped as a fork or with separate branches leaving the main vein at points close to each other. Hind wing usually with two oblique veins. Processus terminalis much shorter than 0.3 x basal part of ultimate antennal segment. Alatae with roundish secondary rhinaria. Tarsi two-segmented. Faceted wax gland plates present or absent. Host-alternating species forming galls on the primary host *Pistacia*, secondary hosts normally grasses.

Baizongiina Börner, 1944 (1914). Primary rhinaria surrounded by short hairs. Apterae with well developed spinal, pleural and marginal wax gland plates.

Geociina Börner, 1952. Primary rhinaria surrounded by short hairs. Apterae without wax gland plates.

Fordina Acloque, 1897. Primary rhinaria not surrounded by short hairs. Apterae without wax gland plates.

Melaphidini Baker, 1920. Pterostigma rather long drawn out, its posterior margin concave. Media of fore wing with one fork. Tarsi one-segmented. Processus terminalis about 0.3 x basal part of ultimate antennal segment. Ultimate antennal segment of alatae with transverse-linear ring-like secondary rhinaria. Primary host of host-alternating species *Rhus*, secondary hosts mosses.

Hormaphididae Mordvilko, 1908. Apterae and nymphs without wing pads without compound eyes, only with triommatidia, and with border between head and pronotum indistinct. Antennae 3-5-segmented, much shorter than body, in alatae with narrow, transverse, annular secondary rhinaria. Processus terminalis shorter than base of ultimate antennal segment. Cubitus branches leaving the main vein at the same point and sometimes form a common stalk like a fork. Wings in some cases flat in repose. Tarsi with two long, capitate dorsoapical hairs. With wax production. Siphunculi very short, only pores or missing. Cauda knobbed. Anal plate bilobed. Dorsal and marginal tubercles absent. Host alternation of most species by alate sexuparae in autumn, two years cycles, producing galls on primary host. Sexuales apterous and dwarfish, with well developed rostrum.

Cerataphidinae Baker, 1920. Head of apterae fused with pronotum and also with meso- and metanotum, but not with abdominal segments.

Nipponaphidinae Ghosh, 1988. Head, thorax and abdominal tergite I or with segments I-VII fused into a prosoma in apterae. Hind wing with two oblique veins leaving the same point on the main vein.

Hormaphidinae Mordvilko, 1908. Not with a prosoma. Hind wing with two separated oblique veins.

Anoeciidae Tullgren, 1909. Pterostigma usually very dark. Apterae and nymphs without wing pads with rather few ommatidia or only triommatidia and with border between head and pronotum only distinctly visible laterally. Antennae normally with 6 segments, in alatae with oval or subcircular secondary rhinaria. Processus terminalis shorter than 0.5 x base of ultimate segment. Marginal tubercles present on prothorax and some of the abdominal segments. Siphuncular pores placed on low cones. Cauda and anal plate rounded. Some species with host alternation by sexuparae, the primary host being *Cornus*, the secondary hosts roots of various herbs, mostly grasses. Sexuales apterous, in dioecious species also dwarfish, but with well developed rostrum.

Drepanosiphidae Herrich-Schaeffer, 1857. Media with one or two forks. Cubitus branches normally separated at bases. Hind wing normally with two oblique veins. Wings normally roof-like in repose. Head and pronotum rarely fused. Compound eyes normally well developed in all morphs and all instars, but in nymphs and apterae sometimes only triommatidia present. Processus terminalis normally longer than 0.5 x basal part of ultimate antennal segment, often much longer. Empodial hairs sometimes more or less flattened. Antennae normally 6-segmented, sometimes 4-5-segmented. Secondary rhinaria transverse oval or circular except in some cases, usually only present on antennal segment III in alatae, often absent from apterae. A sclerotized wishbone-shaped stiffening at base of second segment of rostrum present in most subfamilies. Trochantera tend to separate from femora. Siphunculi pore-shaped to long, usually short and truncate and directed laterally, in some cases with reticulation. Cauda semicircular or knobbed. Anal plate usually emarginate or bilobed. Wax gland pores around body setae progressively reduced or abolished. In some cases all parthenogenetic females alate. Oviparae apterous, also in species, where all viviparous females are alate, normally with subsiphuncular wax gland plates. Without host alternation. Most species living on woody plantss, in some cases on herbs.

Mindariniae Tullgren, 1909. Pterostigma long, slender, pointed. Radial sector long reaching the end of the pterostigma, leaving the base of the pterostigma. Costal cell widened. Media with two branches. Hind wing with two oblique veins. Border between head and pronotum invisible in nymphs and apterae. Eyes in young nymphs and often also in adult apterae only triommatidia. Antennae 5-6-segmented, in apterae without secondary rhinaria, in alatae with transverse, annular secondary rhinaria, on segment IV placed near the distal end. Processus terminalis shorter than basal part of ultimate antennal segment. Rostrum retractile into a long first segment. Wishbone-shaped stiffening absent from base of second segment of rostrum. Empodial hairs hairlike. Abdomen with 2-4 longitudinal rows of faceted wax glands. Tarsi with two long, capitate dorsoapical hairs. Siphuncular pores usually present on tergite VI, sometimes absent

in embryos and apterae. Cauda short, triangular in alatae and rounded in apterae. Anal plate entire or weakly indented. Covered by wax from glands aggregated into well-developed faceted plates. With three rudimentary gonapophyses. Fundatrices able to produce sexuales. Sexuales apterous, but with rostrum, dwarfish. Oviparae with subsiphuncular wax gland plates. On Coniferae.

Neophyllaphidinae Takahashi, 1921. Pterostigma normal, shortened. Radial sector long reaching the end of the pterostigma, leaving the base of the pterostigma. Media with three branches. Cubitus branches placed close to each other at bases. Head of apterae often not separated from pronotum. Epicranial suture present. Eyes in apterae usually only triommatidia, sometimes with a few additional lenses or multilensed. Antennae of alatae with slit-like, annular secondary rhinaria. Wishbone-shaped stiffening absent from base of second segment of rostrum. Some species with eversible, adhesive vesicles on underside of abdomen. Empodial setae hair-like. Siphunculi only pores or short and cone-shaped, usually absent or closed in embryos. Cauda knobbed. Anal plate bilobed. Wax gland fields present around dorsal body setae, mostly developed as scattered pits or small cribriform discs, often on reticulate zones. Also antennae and legs with wax gland pores. Covered by wax. Fundatrices able to produce sexuales, and sexuales can be produced at any time of the year. Eggs stalked, flat and membrane-covered. Oviparae mostly alate, without subsiphuncular wax gland plates, with scent plaques present on hind tibiae, sometimes on all tibiae. On Coniferae.

Baltichaitophorinae Heie, 1980 (syn. Parachaitophorinae Remaudière & Stroyan, 1984). Pterostigma rather long. Radial sector departing the apical part of pterostigma or absent. Processus terminalis as long as or longer than base of ultimate antennal segment. Secondary rhinaria roundish, placed on small tubercles. Hind wing reduced, with only one oblique vein. Body covered with numerous long hairs. Nymphs with triommatidia only. Second segment of rostrum without a wishbone-shaped stiffening. Head and pronotum of apterae separated. Processus terminalis as long as or longer than basal part of ultimate antennal segment. Siphunculi low, truncate, broad at base, with a large flange and a small aperture. Anal plate emarginate. Oviparae with subsiphuncular wax gland plates.

Lizeriinae Blanchard, 1923. Pterostigma long, slender. Radial sector long, almost straight. Media with two or rarely three branches. Hind wing with two oblique veins. Eyes of apterae three-lensed or multilensed. Empodial hairs setiform with pointed or weakly clavate apices. Secondary rhinaria circular or elliptical. Rostrum with apical segment often strongly sclerified suggesting a rudimentary segment V. Second rostral segment without wishbone-shaped sclerification or present, but poorly developed. Dorsum of apterae with wart-like or thorn-like processes present, less developed or absent in alatae. Fore femora mostly enlarged and saltatorial. Siphunculi little raised above surface, placed on tergite V, absent or little developed in embryos. Cauda long, finger-like, knobbed. Anal plate deeply incised or bilobed. Covered by wax. Oviparae with palette-shaped subsiphuncular wax

gland plates and scent plaques on all tibiae. On various plant families.

Pterastheniinae Remaudière & Quednau, 1988. Pterostigma truncate at apex or with tendency to be become short. Media unbranched or with two branches. Hind wing reduced in size, with or without an oblique vein. Epicranial suture present. Frons with weakly developed tubercles. Eyes of all morphs multilensed with triommatidia. Head and pronotum of apterae separated. Processus terminalis very long and evenly tapering. Accessory rhinaria scattered. Segment II of rostrum without wishbone-shaped stiffening. Empodial hairs setiform. Fore femora of alatae mostly enlarged and saltatorial, sometimes also in apterae. Wax gland pores often present on tibiae. Siphunculi normally very short, never poriform, placed on tergite VI or between V and VI, well developed in embryos. Cauda tongue-shaped. Anal plate bilobed. Body without tubercles. Ovipara without subsiphuncular wax gland plates, with scent plaques mostly present on hind tibiae, sometimes also on the other tibiae. Wax powdered. On Fabaceae.

Macropodaphidinae Zachvatkin & Aizenberg, 1960. Head and pronotum separated. Anterior margin of eyes reaching to the basis of the antennal socket; occiput extended posteriorly beyond hind margins of eyes. Clypeus greatly enlarged. Eyes multilensed, with ocular tubercle (triommatidium) distinct, but small, in young nymphs multilensed without separated ocular tubercle. Processus terminalis evenly tapering from base to apex. Accessory rhinaria scattered. Second segment of rostrum with well developed wishbone-shaped stiffening. Fore femora much enlarged and saltatorial. Fore legs also with stronger tibiae and tarsi than the other legs. Tarsi spiculate. Empodial hairs hair-like. Dorsum with transverse rows of numerous seta-bearing elevations. Siphunculi short, cylindrical, without flange, well developed in embryos, placed on tergite VI. Cauda knobbed. Anal plate indented. Weakly wax-powdered. Ovipara without subsiphuncular gland plates, with scent plaques only on hind tibiae. On *Potentilla*.

Israclaphidinae Ilharco, 1961. Pterostigma pointed, elongate as in Mindaridae. Radial sector leaving the base of pterostigma, reaching to the apex of the wing. Media irregularly shaped. Hind wing with one oblique vein. Alatae rare. Eyes of all morphs multilensed with normal triommatidia, widely separated from antennal sockets. Processus terminalis elongate, evenly tapering towards apex. Primary rhinaria nude, that on penultimate antennal segment often relatively far basad of apex. Secondary rhinaria absent from antennal segment III. Accessory rhinaria adjacent to the primary rhinarium on ultimate segment. Epicranial suture absent. Head and pronotum separated. Segment II of rostrum without wishbone-shaped stiffening. Empodial setae hair-like. Fore femora normal. Siphunculi swollen in the middle, with smooth or slightly striated apices, brandy-glass-shaped, placed on abdominal segment VI or between V and VI. Cauda knobbed, with the knob egg- or flask-shaped. Anal plate bilobed in viviparae, rounded in oviparae. Segment VIII of abdomen usually with two long, hornlike processes, sometimes also on other tergites. Cauda rounded or triangular. Ovipara without subsiphuncular wax gland plates. Oviparae and eggs occurring in spring. On grasses.

Spicaphidinae Essig, 1953. Media with one fork, almost parallel to both cubitus branches. Hind wings with bases of oblique veins widely separated. Head and pronotum separated in some species. Dorsum often with horn-like or finger-like processes. Eyes of all morphs multilensed with triommatidia well developed. Processus terminalis long and narrowed from base to apex. Antennae long. Primary rhinaria ciliated. Accessory rhinaria adjacent to the primary rhinarium. Secondary rhinaria numerous, not ciliated. Empodial setae rod-shaped or hair-like, sometimes with slightly widened apices. Wishbone-shaped stiffening present at base of second segment of rostrum. Fore femora of alatae nearly always enlarged and saltatorial, but not in apterae. Abdomen of apterae with finger-like processes. Siphunculi densely striated or reticulate at apex, and reticulation sometimes extending further basad, placed on tergite V, little developed in embryos. Cauda knobbed. Anal plate bilobed or incised. Body with some wax powder. Oviparae with two pairs of subsiphuncular wax gland plates and with scent plaques on all or only the hind tibiae, sometimes also present in viviparae. On *Nothofagus*.

Taiwanaphidinae Quednau & Remaudière, 1994. Wings normal. Oblique veins of hind wing widely separated at bases. Head and pronotum of apterae fused or almost fused. Epicranial suture undeveloped. Eyes multilensed except in embryos. Processus terminalis narrowed from base to apex. Accessory rhinaria adjacent to the primary rhinarium. Apical rostral segment with apex often strongly sclerified suggesting a rudimentary segment V. Wishbone-shaped stiffening normally absent from base of second segment of rostrum or poorly developed. Fore femora normal, not enlarged. Empodial hairs with broadly flattened apices. Apterae often with short mammiform or finger-like processes on some, rarely all tergites except tergite V. Siphunculi densely striated, placed on tergite V, in embryos poorly developed or absent. Cauda knobbed, turnip-shaped or egg-shaped. Anal plate bilobed or incised. Body without noticeable waxy powdering. Oviparae with two pairs of subsiphuncular wax gland plates and with scent plaques on all tibiae or only on hind tibiae. On *Nothofagus*.

Phyllaphidinae Herrich-Schaeffer, 1857. Wings normal, but in some cases with only two branches (one fork) of media. With two rudimentary gonapophyses. Viviparous females alate or apterous, sometimes only apterous or only alate. Compound eyes of alatae with small triommatidia or without triommatidia. Triommatidia not placed on ocular tubercles. Compound eyes also present in nymphs. Apterae with division of the compound eye into a dorsal and a ventral portion and with an undeveloped triommatidium. Antennal segment II often longer than segment I. Processus terminalis much shorter than basal part of ultimate antennal segment. Basal part of segment II of rostrum usually with sclerotized wishbone-shaped arch. Without border between femur and trochanter. The inner base of tibia hollowed with a distinct foramen articulare. Empodial setae hair-like, flabellate or absent. Siphunculi short, poriform, never reticulate, placed on tergite VI. Fore coxae of adults of about the same size as middle coxae. Cauda of apterae rounded, in alatae sometimes

knobbed. Thoracic segments with two pairs of marginal hairs. First instar nymphs with at least 6 longitudinal rows of dorsal hairs. Dorsum with wax gland plates. Oviparae with subsiphuncular wax glands and scent plaques on hind legs or all legs. On Fagaceae and Lauraceae.

Saltusaphidinae Baker, 1920. Wings often somewhat elongated, fore wings with normal venation. Hind wings with one or two oblique veins, in the latter case widely separated at base. Apterae of some species predominant. Head often flattened. Compound eye protruding, with incorporated triommatidium. Frons convex or with median projection. Antennae shorter than body, often with rings of spinules. Processus terminalis tapering towards apex. Secondary rhinaria circular or subcircular, surrounded by pale rims of cilia, in apterae secondary rhinaria often only on antennal segment III, usually on distal part of that segment. Accessory rhinaria on antennal segment VI sitting close together or scattered. Second segment of the short rostrum with more or less well developed wishbone-shaped stiffening. Antennae and legs often covered with rings of spinules. Legs in some genera normal; fore and middle legs or all legs in other genera modified for leaping by means of muscles in the thickened femora. First tarsal segment with 5 hairs. Empodial hairs simple or spatulate. Siphunculi pore-shaped or short, cylindrical, placed on tergite VI or between V and VI. Cauda knobbed, the knob being subquadrate. Anal plate bilobed, not only in viviparous females, but also in oviparae. Head and pronotum fused in first instar nymphs. Sexuales dwarfish. Ovipara with subsiphuncular wax gland plates. Male dwarfish. On monocotyledons, in most cases on Cyperaceae.

Saltusaphidini Baker, 1920. Body rarely elongate, normally pear-shaped. Dorsal hairs elongate rod-shaped, stellate or fan-shaped. Fore femora enlarged, saltatorial. Anterior part of siphunculus or siphuncular cone situated behind borderline between abdominal tergites V and VI.

Thripsaphidini Börner, 1949. Body elongate. Dorsal hairs pointed or stellate (mushroom-shaped). Fore femora not enlarged. Anterior part of siphunculus or siphuncular cone situated on abdominal tergite VI.

Drepanosiphinae Herrich-Schaeffer, 1854. Wings normal, roof-like in repose. All viviparous females alate, including fundatrices. Antennae very long. Compound eyes with triommatidia present in all morphs, including nymphs. Secondary rhinaria transverse oval. Fore coxae not enlarged, but hind femora thickened and saltatorial. Basal part of segment II of rostrum without a sclerotized wishbone-shaped structure. Empodial hairs flabellate. Siphunculi elongate, in some genera very long, in some cases with reticulation near apices, placed on tergite VI. Cauda knobbed. Anal plate slightly emarginated or bilobed. Oviparae without subsiphuncular wax gland plates. With three rudimentary gonapophyses. On Aceraceae.

Chaitophorinae Mordvilko, 1908. Wings normal. Antennae with 4, 5 or 6 segments. Primary rhinaria of alatae sometimes surrounded by short setae. Accessory rhinaria on ultimate antennal segment placed close to the primary rhinarium, sometimes more distinctly fringed. Secondary rhinaria circular,

usually absent from apterae. Basal part of segment II of rostrum without a sclerotized wishbone-shaped arch. Body usually with numerous long hairs, which may be pointed, blunt, spatulate or furcate. Fore coxae sometimes enlarged, but not femora. Empodial hairs simple or rod-shaped, occasionally with flattened apices. Siphunculi short, truncate, frequently reticulate, occasionally pore-shaped. Cauda semicircular or more or less distinctly knobbed. Anal plate rounded or slightly emarginated, never bilobed. With four rudimentary gonapophyses. Oviparae without subsiphuncular wax gland plates. On Salicaceae or Aceraceae never producing galls, or on monocotyledones.

Chaitophorini Mordvilko, 1908. Body oval or somewhat elongate, long-haired. Antennae 6-segmented. Apteratae usually without secondary rhinaria. Siphunculi short, truncate, subcylindrical or stump-shaped, with reticulate apical part, placed on margins of abdominal segment VI. Males alate or apterous. On Salicaceae or Aceraceae. Some species with dimorphs in summer.

Siphini Mordvilko, 1928. Body elongate, more or less long-haired. Siphunculi without reticulation, stump-shaped, conical or pore-shaped, placed on margins of abdominal segment V or VI. Antennae very short, 4- or more often 5-segmented. Alatae with rather few small secondary rhinaria on antennal segment III. Empodial hairs simple or spatulate. Males apterous. Scent plaques on hind tibiae of oviparae often fused two by two. On monocotyledons, especially Poaceae and Cyperaceae.

Calaphidinae Oestlund, 1918. Viviparae all alate or alate and apterous. Radial sector often reduced or missing. Epicranial suture present. Compound eyes present in all morphs, including nymphs; triommatidia present or absent. Wishbone-shaped stiffening sometimes present at base of second segment of rostrum. Fore coxae of adults variable, sometimes enlarged, saltatorial. First instar nymphs with four or six longitudinal rows of dorsal hairs (i.e. pleural hairs sometimes absent). Siphunculi short, not reticulated. Antennal segment II with one or three hairs. Oviparae in some cases with subsiphuncular wax gland plates. On deciduous trees.

Calaphidini Oestlund, 1918. First instar nymphs except a few vary hairy species with six longitudinal rows of dorsal hairs on thorax and abdominal segments I-VI, pleural hairs present. Thoracic segments with two marginal hairs on each side. Antennal segment II with two or three hairs. Border between pronotum and head of apterae normally distinct. Fore coxae normal.

Monaphidina Baker, 1920. Pterostigma rather long and slender. Large dorsal and marginal tubercles or finger-like processes not present. Frons with lateral tubercles. Secondary rhinaria circular. Processus terminalis in the genus *Monaphis* longer than 6 x basal part of antennal segment VI; parthenogenetic females bearing all their young at the same time. Siphunculi very low, with flange, not placed dorsally. Cauda not constricted. On Betulaceae.

Calaphidina Oestlund, 1918. Lateral frontal tubercles well developed. Body hairs of nymphs and apterae long and capitate. Large dorsal and marginal tubercles or finger-like processes often

present on body. Processus terminalis longer than basal part of antennal segment VI. Siphunculi truncate with extended apertures. Cauda usually slightly constricted. Anal plate bilobed or more or less emarginate. On Betulaceae, Fagaceae and other deciduous trees.

Panaphidini Oestlund, 1922. First instar nymphs usually with four longitudinal rows of dorsal hairs, pleural hairs absent. Thoracic segments with only one marginal hair on each side. Antennal segment II with only one hair except in a few very hairy species. Pronotum of apterae often partly fused with the vertex. Fore coxae more or less enlarged, saltatorial. Cauda generally knobbed. On various deciduous trees, but not *Betula*.

Myzocallidina Börner, 1942. Alatae often with pairs of finger-like spinal processes or elevations on anterior tergites, often undeveloped, sometimes also present on thoracic segments. Body with marginal tubercles. Radial sector normally weakend. Frontal tubercles little developed. Secondary rhinaria mostly roundish, never elliptical. Fore coxae of alatae sometimes moderately enlarged, those of apterae never enlarged. Empodial hairs of various shape. Siphunculi with or without connection to abdominal segment VI. Ovipara often with prolonged posterior part of abdomen, without subsiphuncular wax gland plates. On deciduous trees, most species living on Fagaceae.

Panaphidina Oestlund, 1922. Frontal sinus often above line connecting the frontal tubercles, these rarely absent. Triommatidia occasionally poorly developed or absent. Antennal segment I usually not produced subapically, rarely with more than 5 hairs. Secondary rhinaria mostly elliptical or subcircular, rarely circular. Processus terminalis as long as or shorter, rarely longer than base of ultimate antennal segment. Fore coxae of alatae of most species enlarged, sometimes also those of apterae. Empodial setae usually flabellate. Radial sector often incomplete or missing. Siphunculi short and normally cylindrical or only pores, usually separated from abdominal segment VI, sometimes with a seta appended. Ovipara with posterior part of abdomen prolonged, with subsiphuncular wax gland plates. Most species on deciduous trees, but never on Fagaceae, or they live on Fabaceae (*Therioaphis*).

Thelaxidae Baker, 1920. Wings flat in repose. Media of fore wing with one fork. Hind wing with one oblique vein. Apteratae and nymphs without wing pads, only with triommatidia. Border between head and pronotum of apterae invisible. Apteratae only with triommatidia. Antennae with 5 segments with transverse rows of denticles, in alatae with circular or nearly circular secondary rhinaria. Processus terminalis shorter than base of ultimate antennal segment. Apical segment of rostrum divided into two segments, the ultimate one slender or nearly needle-like. Dorsal and marginal tubercles absent. Wax gland facets absent. Siphunculi poriform or short and truncate. Cauda knobbed or broadly rounded. Anal plate rounded. Sexuales apterous with well developed rostrum. On deciduous trees.

Tamaliidae Oestlund, 1923. Radial sector leaving near the middle of pterostigma. Media unbranched. Hind wing with two oblique veins. Apteratae only with triommatidia. Antennae with transverse rows of

denticles. Secondary rhinaria transverse narrow. Siphunculi mere flanges on low and broad bases. Cauda rounded. Anal plate entire. Sexuales both alate. Oviparae with subsiphuncular wax gland plates and poorly developed scent plaques on tibiae. Making galls on *Arctostaphylos*.

Greenideidae Baker, 1920 (1910). Distance between bases of cubitus-branches short. Most genera with a more or less distinct division of the distal segment (IV + V) of rostrum into two parts. Antennae 4-6-segmented. Siphunculi short, of medium size or very long, often curved outwards, haired, in several cases with reticulation. Cauda short, often with a median process. Posterior part of abdomen often shortened. Time for production of sexuales variable. Oviparae of some species laying stalked eggs. On woody plants.

Greenideinae Baker, 1920 (1910). Hind wing with two oblique veins, occasionally without oblique veins. Eyes with many facets. Antennae about as long as body or longer. Tarsal segment I with 7 hairs. Tubercles absent. Siphunculi very long, in alatae with reticulation on basal part or all over except on a small distal part, sometimes also at base in apterae, thin and easy to break at base, strongly haired. Cauda with or without median process.

Cervaphidinae van der Goot, 1917. Hind wing without oblique veins. Eyes of apterae only triommatidia. Antennae shorter than 0.5 x body length. Tarsal segment I with 5 hairs. Siphunculus of medium length, normally with 3 distal hairs and 3 hairs along its length, sometimes swollen. Cauda with 4 hairs and a median process.

Schoutedeniae Remaudière, 1988. Hind wing without oblique veins. Eyes of apterae only triommatidia. Antennae longer than 0.5 x body length. Tarsal segment I with 3 hairs. Siphunculus short, truncate. Cauda of apterae with 6 hairs and of alatae 4 hairs, without a median process. Apterae with two processes on abdominal segment VII.

Aiceonidae Raychaudhuri, Pal & Ghosh, 1980. Radial sector leaving at a point a little behind middle of pterostigma. Media with two forks. Cubitus branches separated at base. Both sexuales alate. Processus terminalis short. Secondary rhinaria circular. Siphunculi shaped as hairy cones. Cauda rounded. Wax-powdered. Oviparae alate, laying stalked eggs. On Lauraceae and other woody plants.

Aphididae Latreille, 1802. Media of fore wing with two or more frequently three branches. Cubitus-branches separated at bases. Hind wing with two oblique veins, rarely only one. Wings roof-like in repose. Head and pronotum not fused. Antennae 5- or – normally - 6-segmented, only 4-segmented in fundatrices of some species, generally longer than half the body length, frequently longer than body. Processus terminalis thinner and longer than 0.5 x base of ultimate antennal segment, frequently much longer. Secondary rhinaria of alatae present on antennal segment III and often also on IV and V, more or less circular, frequently also present in apterae. Empodial hairs thin, rarely shorter than one third of inner side of claws. First tarsal segment with 2-6 hairs. Marginal tubercles often present on prothorax and abdominal segments I-VIII or on some of these segments. Spinal tubercles occasionally present on some abdominal segments. Distance between stigmal pores on abdominal segment I and II normally much smaller than distance between pores of other neighbouring segments.

Siphunculi nearly always present and longer than width at base, in some genera very long. Cauda finger-shaped, ensiform, tongue-shaped, short triangular, helmet-shaped or broadly rounded, but never knobbed (if apparently so, then different from cauda of all other families). Anal plate never emarginate or bilobed. Three rudimentary gonapophyses present. All instars and all morphs with large compound eyes with triommatidia. Wax glands unicellular, opening separately into integument, not arranged into facets. With only small differences between morphs. Many species with host alternation by alate gynoparae and alate males in autumn. Oviparae never with subsiphuncular wax gland plates. On all kinds of plants, often with host alternation between a woody and a herbaceous plant.

Aphidinae Latreille, 1802. The distance between the stigmal pores on abdominal segments I and II three times as long as the diameter of a stigmal pore or longer, rarely shorter than 0.5 x distance between stigmal pores on abdominal segments II and III. First tarsal segment with two ventral setae. Marginal tubercles on abdominal segments I and VII not smaller than those on II-V, which may be absent, or marginal tubercles absent from all abdominal segments. Frontal tubercles little developed or absent. Antennae shorter than body. Siphunculi of middle length, without reticulation. Cauda longer than 1.2 x its width at base.

Rhopalosiphini Mordvilko, 1914. Marginal tubercle on abdominal segment VII placed a little above a line drawn through the row of stigmal pores or absent: if absent, then processus terminalis shorter than 2 x basal part of ultimate antennal segment. Some species host-alternating between Rosales as primary hosts and mainly monocotyledons as secondary hosts, others monocotyledons on herbs, mostly grasses and other monocotyledons.

Aphidini Latreille, 1802. Marginal tubercle on abdominal segment VII placed below a line drawn through the row of stigmal pores or if absent, then processus terminalis longer than 2 x basal part of ultimate antennal segment. On all kinds of plants, often with host alternation between a woody and a herbaceous plant.

Macrosiphinae Wilson, 1910 (including the former Pterocommatinae Baker, 1920, according to VON DOHLEN, ROWE & HEIE, 2006). Stigmal pores bean-shaped or circular; the distance between those on abdominal segments I and II shorter than 3x the diameter of a stigmal pore, usually shorter than 0.5 x the distance between the stigmal pores on abdominal segment II and III. Marginal tubercles frequently present on abdominal segments II-V, but rarely on I or VII, and then the latter smaller than those on II-V. Spinal tubercles occasionally present on some abdominal segments. Frontal tubercles normally present, frequently very well developed. Antennae shorter or longer than body, in some genera extremely long. Processus terminalis of most species much longer than basal part of the ultimate antennal segment. First tarsal segment with 2-5 ventral setae. Siphunculi usually of medium length or longer, cylindrical or swollen, frequently with reticulation, in some genera reduced and truncate or only elevated pores. Cauda normally tongue- or finger-shaped, sometimes short, especially short in *Pterocomma* and relatives.

Lachnidae Herrich-Schaeffer in Koch, 1854. Media of fore wing usually branched. Cubitus branches a little separated at bases. Eyes normally large, except in some species on roots of herbs. Head of most genera with a distinct longitudinal mid-dorsal suture. Head and pronotum not fused. Antennae with 5 or usually 6 segments. Processus terminalis shorter than base of ultimate antennal segment. Primary rhinaria not surrounded by minute hairs. Secondary rhinaria circular, subcircular or slightly oval, occasionally present on all segments of the antennal flagellum, often close to their apices. Rostrum of most genera long, its distal segment (IV + V) more or less distinctly divided into two parts. First tarsal segment with numerous hairs. Empodial hairs simple, very short. Marginal and dorsal tubercles absent. Wax glands unicellular, opening separately into integument, not arranged into facets. Siphunculi pore-shaped, placed on low cones or sclerites, in the *Trama*-group sometimes absent. Three rudimentary gonapophyses present, the middle one very small. Cauda short, broadly rounded, with numerous hairs. Anal plate entire. With only small differences between morphs.

Lachninae Herrich-Schaeffer in Koch, 1854 (including the former *Traminae* Herrich-Schaeffer, 1854). Media distinctly visible, with two or three branches. Rostrum long, with apical segment (segm. IV + V) normally short and blunt. Radial sector curved, rather long. On deciduous trees or roots of herbs.

Lachnini Herrich-Schaeffer, 1854. Rostrum shorter than body. Tarsi not prolonged. On deciduous trees. Stomaphidini Mordvilko, 1914. Rostrum longer than body. Tarsi not prolonged. On deciduous trees.

Tramini Herrich-Schaeffer, 1854. Rostrum shorter than body. Hind tarsi extremely long. On herbs.

Eulachninae Baker, 1920. Media normally less distinctly visible than cubitus. Apical segment of rostrum short and blunt or slender and pointed. Radial sector short, straight, leaving the apical end of pterostigma. Body often covered by wax. On coniferous trees.

Eulachnini Baker, 1920. Apical segment of rostrum (segment IV+V) short, not quite distinctly subdivided into two parts. Body elongate, slender, at least twice as long as broad, occasionally slightly covered by wax. Primary rhinaria without rings of small sclerites. Eyes without triommatidia.

Schizolachnini Börner, 1952. Apical segment of rostrum (segment IV + V) short, not quite distinctly subdivided into two parts. Body oviform, about 1.6 times as long as broad. Primary rhinaria with rings of small sclerites. Eyes with triommatidia.

Cinarini Börner, 1930. Apical segment of rostrum (segment IV + V) long, slender, very distinctly subdivided into two parts. Body oviform. Primary rhinaria with or without rings of small sclerites. Eyes with triommatidia.

Adelgoidea Annand, 1928. All females oviparous. Media unbranched. Cubitus branches separated. Hind wing without or with only one oblique vein. Apteræ only with triommatidia. Body of apteræ roundish, nearly semiglobular with flat underside, normally narrowing towards the end. With wax glands. Antennae of alatae 5-segmented, with one large rhinarium on each of the three ultimate segments. Processus terminalis little developed or not existing. Rostrum with very long stylets. Fore wing without radial sector. Tarsi with

preapical setae capitate. Siphunculi absent. Sexuales apterous and dwarfish. Ovipositor present. Gonapophyses absent. On Coniferae.

Mesozoicaphididae Heie & Pike, 1992 (x). Only apteræ known. Rostrum much longer than body, stylets even extremely longer. Antennae 5-segmented.

Elektraphididae Steffan, 1968 (x). Only alatae known. Fore wing usually with a little developed radial sector, an unbranched media and the two branches of cubitus leaving the same point at the main vein, sometimes from a stem. Wings probably flat in repose. Hind wing normally without oblique veins. Rostrum short.

Adelgidae Annand, 1928. All morphs wax producing. Fore wings with an unbranched media and with the two branches of cubitus leaving the same point at the main vein. Wings roof-like in repose. Hind wing normally with only one oblique vein. Antennae short with 3 segments in apterous parthenogenetic females, 5 segments in alatae and 4 segments in sexuales. Rostrum short. Wings rooflike in repose. Parthenogenetic females with a small ovipositor consisting of three elements. Eggs stalked. Host alternating between *Picea* and another coniferous tree or monoecious on *Picea* or another conifer. With two years cycle.

Adelginae Annand, 1928. With 6 pairs of abdominal spiracles (5 pairs distinctly visible).

Pineinae Börner, 1930. With 5 pairs of abdominal spiracles (4 pairs distinctly visible).

Phylloxeroidea Herrich-Schaeffer, 1954. All females oviparous. Wings flat in repose. Fore wing without radial sector. Media unbranched. Cubitus shaped as fork. Hind wing without oblique veins. Ovipositor absent except in *Acanthohermes*. Gonapophyses absent. Eggs not stalked. Apteræ only with triommatidia. Body roundish, nearly semi-globular with flat underside, normally narrowing towards the end. Antennae short, with 3 segments, in alatae with two rhinaria on ultimate segment. Processus terminalis little developed or not existing. Rostrum short. Siphuncular pores absent. Sexuales apterous and dwarfish, the sexual female laying only one egg of about the same size as itself. On *Quercus*, *Vitis* and some other deciduous trees.

Phylloxeridae Herrich-Schaeffer, 1854. As in the superfamily.

Phylloxerinae Börner, 1952. With faceted wax glands.

Phylloxerinae Herrich-Schaeffer, 1854. Without faceted wax glands.

Phylloxerini Börner, 1952. Without ovipositor.

Acanthohermesini Börner, 1952. With ovipositor.

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