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Checklist of the families Lonchopteridae and Phoridae of Finland (Insecta, Diptera)

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Abstract

A checklist of the Lonchopteridae and Phoridae recorded from Finland is presented.

Keywords

Checklist, Finland, Diptera, Lonchopteridae, Phoridae

Introduction

The superfamily Phoroidea includes at least the fly families Phoridae, Lonchopteridae, and the small family Ironomyiidae known only from Australia. The flat-footed fly families Platypezidae and Opetiidae, treated in a separate paper in this volume, are placed either in their own basal superfamily Platypezoidea or included in Phoroidea (see Cumming et al. 1995, Woodley et al. 2009 and Wiegmann et al. 2011).

Lonchoptera Meigen, 1803 is the only currently recognized genus in Lonchopteridae. Five *Lonchoptera* species have been added to the Finnish fauna after the checklist of Hackman (1980) (Andersson 1991, Kahanpää 2013).

The scuttle flies (family Phoridae) may be the largest single family in Diptera. The true number of species in this family has been estimated to be over 30000, the vast majority still undescribed (Marshall 2012). The ‘megagenus’ *Megaselia* Rondani, 1856 contains about

50% of the species (Marshall 2012). Other phorid genera are relatively better known in Finland but none of them can be called well studied. It is likely that at least a hundred (or hundreds of) Finnish species remain unnoticed, most of them in *Megaselia*.

The checklist for *Megaselia* is mostly based on previously published records. The collections of Finnish Museum of Natural History (MZH) were examined by the author during the preparation of this checklist and a few obvious mistakes were taken into account. Most of the material in MZH was identified by H. Schmitz (between years 1915 and 1940) or E. Beyer (in 1958). The lists for other phorid genera are based on recently examined specimens from both MZH and private collections. Due to the difficulties encountered in identifying *Megaselia*, the list for this genus should definitely be considered preliminary. A revision of the Finnish material is sorely needed.

The Finnish species of these families were last listed by Hackman (1980).

Number of species (Lonchopteridae, Phoridae):

World: 63, 4105 species (Pape et al. 2011)

Europe: 13, 656 species

Finland: 8, ~224–234 species

Faunistic knowledge level in Finland: good, poor

Checklist

suborder Brachycera Macquart, 1834

clade Eremoneura Lameere, 1906

clade Cyclorrhapha Brauer, 1863

superfamily Phoroidea Curtis, 1833

LONCHOPTERIDAE Macquart, 1835

LONCHOPTERA Meigen, 1803

= *Dipsa* Fallén, 1810

Lonchoptera bifurcata (Fallén, 1810)

= *furcata* (Fallén, 1823)

Lonchoptera fallax de Meijere, 1906

Lonchoptera impicta Zetterstedt, 1848

Lonchoptera lutea Panzer, 1809

Lonchoptera meijerei Collin, 1938

Lonchoptera nigrociliata Duda, 1927

Lonchoptera nitidifrons Strobl, 1898

Lonchoptera scutellata Stein, 1890

PHORIDAE Curtis, 1833

AENIGMATIAS Meinert, 1890

Aenigmatias lubbockii (Verrall, 1877)

ANEVRINA Lioy, 1864*Anevrina thoracica* (Meigen, 1804)*Anevrina unispinosa* (Zetterstedt, 1860)= *fennica* (Becker, 1901)*Anevrina urbana* (Meigen, 1830)**BOROPHAGA** Enderlein, 1924*Borophaga agilis* (Meigen, 1830)*Borophaga carinifrons* (Zetterstedt, 1848)*Borophaga femorata* (Meigen, 1830)*Borophaga incrassata* (Meigen, 1830)*Borophaga subsultans* (Linnaeus, 1767)= *okellyi* Schmitz, 1937**CHAETOPLEUROPHORA** Schmitz, 1922*Chaetopleurophora erythronota* (Strobl, 1892)*Chaetopleurophora spinosissima* (Strobl, 1892)**CONICERA** Meigen, 1830*Conicera dauci* (Meigen, 1830)= *atra* Meigen, 1830*Conicera floricola* Schmitz, 1938= *similis* auct. nec (Haliday, 1833)= *minuscula* Schmitz, 1953*Conicera schnittmanni* Schmitz, 1926*Conicera similis* (Haliday, 1833)= *pauxilla* Schmitz, 1920? *Conicera tarsalis* Schmitz, 1920*Conicera tibialis* Schmitz, 1925= *fallens* Schmitz, 1948**DIPLONEVRA** Lioy, 1864= *Diploneura* emend.*Diploneura floescens* (Turton, 1801)= *florea* (Fabricius, 1794) preocc.= *abdominalis* (Fallén, 1823)*Diploneura concinna* (Meigen, 1830)*Diploneura freyi* Schmitz, 1927*Diploneura funebris* (Meigen, 1830)= *rostralis* (Schmitz, 1918)*Diploneura glabra* Schmitz, 1927= *parcepilosa* Schmitz, 1927*Diploneura nitidula* (Meigen, 1830)*Diploneura oldenbergi* Schmitz, 1920**DOHRNIPHORA** Dahl, 1898*Dohrniphora cornuta* (Bigot, 1857)**GYMNOPHORA** Macquart, 1835

- Gymnophora arcuata* (Meigen, 1830)
Gymnophora healeyae Disney, 1980
Gymnophora nigripennis Schmitz, 1926
Gymnophora quartomollis Schmitz, 1920
HYPOCERA Lioy, 1864
Hypocera mordellaria (Fallén, 1823)
MEGASELIA Rondani, 1856
 = **Aphiochaeta** Brues, 1903
 = **Plastophora** Brues, 1905
Megaselia aequalis (Wood, 1909)
Megaselia affinis (Wood, 1909)
 = *proxima* (Lundbeck, 1920)
Megaselia albicaudata (Wood, 1910)
Megaselia albiclava (Schmitz, 1926)
Megaselia altifrons (Wood, 1909)
Megaselia analis (Lundbeck, 1920)
 ? *Megaselia angelicae* (Wood, 1910)
Megaselia angularis (Schmitz, 1924)
Megaselia angusta (Wood, 1909)
 = *angustata* emend.
 = *pulicaria* auct. nec (Fallén, 1923)
Megaselia annulipes (Schmitz, 1921)
Megaselia armata (Wood, 1909)
Megaselia atrosericea Schmitz, 1927
Megaselia auricoma Schmitz, 1927
Megaselia baltica (Schmitz, 1924)
Megaselia barbulata (Wood, 1909)
 = *depilata* (Lundbeck, 1921)
 ? *Megaselia basispinata* (Lundbeck, 1920)
Megaselia basiveluta Schmitz, 1935
Megaselia beckeri (Wood, 1909)
 = *laticrus* Schmitz, 1927
Megaselia berndseni (Schmitz, 1919)
 = *pygmaeoides* (Lundbeck, 1921)
Megaselia bovista (Gimmerthal, 1848)
Megaselia brevicostalis (Wood, 1910)
Megaselia breviseta (Wood, 1912)
Megaselia breviterga (Lundbeck, 1920)
 = *similata* (Lundbeck, 1921)
Megaselia campestris (Wood, 1908)
Megaselia ciliata (Zetterstedt, 1848)
Megaselia cinereifrons (Strobl, 1910)
Megaselia clara (Schmitz, 1921)

- Megaselia coetanea* Schmitz, 1929
Megaselia coccyx Schmitz, 1965
? *Megaselia collini* (Wood, 1909)
Megaselia conformis (Wood, 1909)
Megaselia costalis (von Roser, 1840)
Megaselia curvivenia Schmitz, 1928
Megaselia dabli (Becker, 1901)
Megaselia discreta (Wood, 1909)
 = *nudiventris* (Wood, 1909)
Megaselia diversa (Wood, 1909)
Megaselia dubitalis (Wood, 1908)
Megaselia eccoptomera Schmitz, 1927
Megaselia eisfelderae Schmitz, 1948
Megaselia elongata (Wood, 1914)
Megaselia erecta (Wood, 1910)
Megaselia exarcuata Schmitz, 1927
Megaselia excavata Schmitz, 1927
Megaselia excorticata Disney, 2009
Megaselia fennicola Beyer, 1958
Megaselia flammula Schmitz, 1928
Megaselia flava (Fallén, 1823)
Megaselia flavicoxa (Zetterstedt, 1848)
Megaselia fumata (Malloch, 1909)
Megaselia funeralis Schmitz, 1928
Megaselia fungivora (Wood, 1909)
Megaselia fusca (Wood, 1909)
Megaselia fuscipalpis (Lundbeck, 1920)
Megaselia fuscoides Schmitz, 1934
Megaselia fuscovariana Schmitz, 1933
Megaselia giraudii (Egger, 1862)
Megaselia glabrifrons (Wood, 1909)
Megaselia groenlandica (Lundbeck, 1901)
Megaselia halterata (Wood, 1910)
 = *plurispinosa* (Lundbeck, 1920)
Megaselia hectochaeta Schmitz, 1974
Megaselia hilaris Schmitz, 1927
Megaselia hirsuta (Wood, 1910)
Megaselia hirticaudata (Wood, 1910)
Megaselia hirticrus (Schmitz, 1918)
Megaselia humeralis (Zetterstedt, 1838)
 = *cubitalis* (Becker, 1901)
Megaselia hyalipennis (Wood, 1912)
Megaselia infraposita (Wood, 1909)

- Megaselia ignobilis* (Schmitz, 1919)
Megaselia intonsa Schmitz, 1948
Megaselia involuta (Wood, 1910)
Megaselia latifemorata (Becker, 1901)
Megaselia limburgensis (Schmitz, 1918)
Megaselia longicostalis (Wood, 1912)
Megaselia longifurca (Lundbeck, 1921)
= *spinolabella* Disney, 1989
Megaselia longipalpis (Wood, 1910)
Megaselia longiseta (Wood, 1909)
Megaselia lucifrons (Schmitz, 1918)
= *subnitida* (Lundbeck, 1920)
Megaselia luminifrons (Schmitz, 1926)
Megaselia lutea (Meigen, 1830)
Megaselia major (Wood, 1912)
Megaselia mallochi (Wood, 1909)
Megaselia manicata (Wood, 1910)
Megaselia maura (Wood, 1910)
Megaselia meconicera (Speiser, 1925)
Megaselia meigeni (Becker, 1901)
? *Megaselia miki* Schmitz, 1929
Megaselia minor (Zetterstedt, 1848)
= *angustifrons* (Wood, 1912)
Megaselia minuta (Aldrich, 1892)
= *luminosa* Schmitz, 1952
Megaselia mixta (Schmitz, 1918)
Megaselia nasoni (Malloch, 1914)
= *coaequalis* (Schmitz, 1919)
Megaselia nigra (Meigen, 1830)
= *albidihalteralis* (Felt, 1896)
Megaselia nigriceps (Loew, 1866)
= *projecta* (Becker, 1901)
Megaselia nigripalpis (Lundbeck, 1920)
Megaselia nudipleura (Beyer, 1958)
Megaselia obscuripennis (Wood, 1909)
Megaselia offuscata (Schmitz, 1921)
Megaselia opacicornis Schmitz, 1949
Megaselia parnassia Disney, 1986
Megaselia parva (Wood, 1909)
Megaselia pectoralis (Wood, 1910)
Megaselia pectunculata Schmitz, 1927
Megaselia picta (Lehmann, 1822)
Megaselia pleuralis (Wood, 1909)

- Megaselia plurispinulosa* (Zetterstedt, 1860)
Megaselia posticata (Strobl, 1898)
Megaselia praeacuta (Schmitz, 1919)
Megaselia prodroma (Lundbeck, 1921)
Megaselia producta (Schmitz, 1921)
= *sordescens* auct. nec Schmitz, 1927
Megaselia propinqua (Wood, 1909)
Megaselia pubecula Schmitz, 1927
Megaselia pulicaria (Fallén, 1923)
= *sinuata* Schmitz, 1926
Megaselia pumila (Meigen, 1830)
= *atripes* (Brues, 1915)
Megaselia pusilla (Meigen, 1830)
Megaselia pygmaea (Zetterstedt, 1848)
Megaselia quadriseta (Schmitz, 1918)
= *badia* Schmitz, 1938
? *Megaselia raetica* Schmitz, 1934
Megaselia robertsoni Disney, 2008
Megaselia robusta Schmitz, 1928
Megaselia rubricornis (Schmitz, 1919)
Megaselia rudis (Wood, 1909)
Megaselia ruficornis (Meigen, 1830)
Megaselia rufipes (Meigen, 1804)
Megaselia scalaris (Loew, 1866)
Megaselia scutellaris (Wood, 1909)
= *scutellariformis* (Schmitz, 1926)
Megaselia sepulchralis (Lundbeck, 1920)
Megaselia setulipalpis Schmitz, 1938
Megaselia sordida (Zetterstedt, 1838)
= *eminens* Schmitz, 1953
= *semiscaura* Schmitz, 1927
? *Megaselia specularis* Schmitz, 1935
Megaselia spinicincta (Wood, 1910)
Megaselia spinigera (Wood, 1908)
Megaselia styloprocta (Schmitz, 1921)
Megaselia subcarpalis (Lundbeck, 1920)
Megaselia subpalpalis (Lundbeck, 1920)
Megaselia subpleuralis (Wood, 1909)
Megaselia subtumida (Wood, 1909)
Megaselia sulphuripes (Meigen, 1830)
Megaselia superciliata (Wood, 1910)
Megaselia superfurcata Schmitz, 1928
Megaselia sylvatica (Wood, 1910)

- = *impolluta* (Schmitz, 1920)
Megaselia tarsalis (Wood, 1910)
Megaselia tenuiventris Schmitz, 1927
Megaselia tignorum Disney, 2009
Megaselia tumida (Wood, 1909)
= *setifer* Lundbeck, 1920
Megaselia unicolor (Schmitz, 1919)
Megaselia valvata Schmitz, 1935
Megaselia variana Schmitz, 1926
Megaselia vestita (Wood, 1914)
Megaselia winqvisti Disney, 2011
Megaselia woodi (Lundbeck, 1922)
Megaselia xanthozona (Strobl, 1892)
= *euryprocta* Schmitz, 1957
Megaselia zonata (Zetterstedt, 1838)
MENOZZIOLA Schmitz, 1927
Menozziola obscuripes (Schmitz, 1927)
METOPINA Macquart, 1835
Metopina galeata (Haliday, 1833)
= *inaequalis* Schmitz, 1927
Metopina oligoneura (Mik, 1867)
Metopina pileata Schmitz, 1936
MICROSELIA Schmitz, 1934
Microselia forsiusi (Schmitz, 1927)
PHALACROTOPHORA Enderlein, 1912
Phalacrotophora berlinensis Schmitz, 1920
Phalacrotophora beuki Disney in Disney & Beuk, 1997
Phalacrotophora fasciata (Fallén, 1823)
PHORA Latreille, 1796
= **Trineura** Meigen, 1803
Phora artifrons Schmitz, 1920
Phora atra (Meigen, 1804)
= *aterrima* (Fabricius, 1794) preocc.
Phora bullata Schmitz, 1927
Phora convallium Schmitz, 1928
Phora convergens Schmitz, 1920
Phora dubia (Zetterstedt, 1848)
= *schineri* (Becker, 1901)
Phora edentata Schmitz, 1920
Phora hamata Schmitz, 1927
Phora holosericea Schmitz, 1920
Phora hyperborea Schmitz, 1927
Phora obscura (Zetterstedt, 1848)
Phora occidentata Malloch, 1912

- = *zetterstedti* Schmitz, 1927
Phora penicillata Schmitz, 1920
Phora praepandens Schmitz, 1927
Phora pubipes Schmitz, 1920
Phora stictica Meigen, 1830
Phora tinctoria Schmitz, 1920
PLECTANOCNEMA Schmitz, 1926
Plectanocnema nudipes (Becker, 1901)
PSEUDACTEON Coquillett, 1907
Pseudacteon fennicus Schmitz, 1927
Pseudacteon formicarum (Verrall, 1877)
SPINIPHORA Malloch, 1909
Spiniphora bergenstammi Mik, 1864
Spiniphora dorsalis (Becker, 1901)
Spiniphora excisa (Becker, 1901)
Spiniphora maculata (Meigen, 1830)
 = *helicivora* (Dufour, 1841)
TRIPHLEBA Rondani, 1856
 = **Citrigo** Schmitz, 1924
Triphleba admirabilis Schmitz, 1927
 ? *Triphleba aequalis* (Schmitz, 1919)
 ? *Triphleba autumnalis* (Becker, 1901)
Triphleba bicornuta (Strobl, 1910)
 = *uncinata* (Schmitz, 1918)
Triphleba citreiformis (Becker, 1901)
Triphleba distinguenda (Strobl, 1892)
 = *unicarata* (Becker, 1901)
Triphleba excisa (Lundbeck, 1921)
Triphleba gracilis (Wood, 1907)
Triphleba hyalinata (Meigen, 1830)
 ? *Triphleba inaequalis* Schmitz, 1943
Triphleba intermedia (Malloch, 1908)
Triphleba lugubris (Meigen, 1830)
Triphleba luteifemorata (Wood, 1906)
Triphleba nudipalpis (Becker, 1901)
Triphleba opaca (Meigen, 1830)
Triphleba pachyneurella (Schmitz, 1919)
Triphleba palposa (Zetterstedt, 1848)
Triphleba renidens Schmitz, 1927
Triphleba subcompleta Schmitz, 1927
Triphleba trinervis (Becker, 1901)
VERUANUS Schmitz, 1927
Veruanus oldenbergi Schmitz, 1919
 = *memorabilis* Schmitz, 1927

Excluded species

Megaselia cirriventris Schmitz, 1929 mistake?

Megaselia crassipes (Wood, 1909) misidentified

Megaselia digitalis Schmitz, 1957 mistake?

Megaselia indifferens (Lundbeck, 1920) not found within present borders

Megaselia lapponica Schmitz, 1928 not found within present borders

Megaselia luteipes (Schmitz, 1918) misidentified

Megaselia palmeni (Becker, 1901) not found within present borders

Megaselia septentrionalis (Schmitz, 1919) not found within present borders

Megaselia simulans (Wood, 1912) not found within present borders ?

Triphleba gilvipes Schmitz, 1943 not found within present borders

Notes

Conicera tarsalis, *Megaselia collini*. Records of these species are based on single females identified by H. Schmitz.

Megaselia basispinata, *M. miki*, *M. raetica*. Species recorded from Finland by Hackman (1980) and Disney (1991) but no Finnish specimens or published records with details could be located.

Megaselia cirriventris, *M. digitalis*. These species were recorded from ‘Fennia’ and ‘Lapland’ by Schmitz (1958), but all specimens listed are from the Abisko region in northern Sweden. It seems likely that Schmitz erroneously assigned the material from Swedish Lapland to Finland.

Megaselia luteipes. Examined specimens belong to *Megaselia* sp. not *luteipes* (females) (Espoo, leg. W. Hackman) and possibly *Megaselia* sp. 24 of Disney (2013) (Finland, Muonio, leg. J. Sahlberg and Russia, Kola, Kantalahti, leg. R. Frey).

Megaselia pulicaria agg. This difficult complex of species was revised by Disney (1999). The Finnish material has not been re-examined. The Finnish species involved are *M. angusta*, *M. costalis*, *M. longicostalis*, *M. longifurca*, *M. pulicaria*, *M. subtumida* and *M. tumida*.

Megaselia simulans. Recorded only(?) from Kuusamo, a municipality split between Finland and Russia in 1944. Most records preceding the split are from the Russian side. No material was found in MZH.

Megaselia specularis. Recorded, with some doubt, from Finland by Hackman (1963). No material could be found in MZH.

Triphleba aequalis. Schmitz (1943) mention a Finnish male stored in MZH, but no such specimen could be found.

Triphleba autumnalis, *T. inaequalis*. Finnish according to Disney (1991), but no specimens or detailed records could be located.

References

- Andersson H (1991) Family Lonchopteridae. In: Soós Á, Papp L (Eds) Catalogue of Palaearctic Diptera, Volume 7, Dolichopodidae–Platypezidae. Akademiai Kiado, Budapest & Elsevier, Amsterdam, 139–142.
- Cumming JM, Sinclair BJ, Wood DM (1995) Homology and phylogenetic implications of male genitalia in Diptera - Eremoneura. *Entomologica Scandinavica* 26: 120–151. doi: 10.1163/187631295X00143
- Disney RHL (1991) Family Phoridae. In: Soós Á, Papp L (Eds) Catalogue of Palaearctic Diptera, Volume 7, Dolichopodidae–Platypezidae. Akademiai Kiado, Budapest & Elsevier, Amsterdam, 143–204.
- Disney RHL (1999) A troublesome sibling species complex of scuttle flies (Diptera: Phoridae) revisited. *Entomologica Scandinavica* 33(8): 1159–1216. doi: 10.1080/002229399299987
- Disney RHL (2013) An unusually rich scuttle fly fauna (Diptera, Phoridae) from north of the Arctic Circle in the Kola Peninsula, N.W. Russia. *ZooKeys* 342: 45–74. doi: 10.3897/zookeys.342.5772
- Hackman W (1963) Studies on the dipterous fauna in burrows of voles (*Microtus*, *Clethrionomys*) in Finland. *Acta Zoologica Fennica* 102: 1–64.
- Hackman W (1980) A Check List of the Finnish Diptera. *Notulae entomologicae* 60: 17–48, 117–162.
- Kahanpää J (2013) Viisikymmentä Suomelle uutta kärpäslajia (Diptera: Brachycera). *Sahlbergia* 19(1–2): 63–71.
- Marshall SA (2012) *Flies: The Natural History and Diversity of Diptera*. Firefly Books, Richmond Hill, Ontario, 616 pp.
- Pape T, Blagoderov V, Mostovski MB (2011) Order Diptera Linnaeus, 1758. In: Zhang Z-Q (Ed) *Animal biodiversity: An outline of higher-level classification and survey of taxonomic richness*. *Zootaxa* 3148: 222–229. <http://www.mapress.com/zootaxa/2011/zt03148p229.pdf>
- Schmitz H (1943) 33. Phoridae. In: Lindner E (Ed) *Die Fliegen der Palaearktischen Region* 4(7). E. Schweizerbart'sche Verlagsbuchhandlung, Stuttgart, 673–712.
- Schmitz H (1958) 33. Phoridae. Lieferung 202. In: Lindner E (Ed) *Die Fliegen der Palaearktischen Region* 4(7). E. Schweizerbart'sche Verlagsbuchhandlung, Stuttgart, 465–512.
- Wiegmann BM, Trautwein MD, Winkler IS, Barr NB, Kim J-W, Lambkin C, Bertone MA, Cassel BK, Bayless KM, Heimberg AM, Wheeler BM, Peterson KJ, Pape T, Sinclair BJ, Skewington JH, Blagoderov V, Caravas J, Kutty SN, Schmidt-Ott U, Kampmeier GE, Thompson FC, Grimaldi DA, Beckenbach AT, Courtney GW, Friedrich M, Meier R, Yeates DK (2011) Episodic radiations in the fly tree of life. *Proceedings of the National Academy of Sciences of the United States of America* 108(14): 5690–5695. doi: 10.1073/pnas.1012675108
- Woodley NE, Borkent A, Wheeler TA (2009) Phylogeny of the Diptera. In: Brown BV, Borkent A, Cumming JM, Wood DM, Woodley NE, Zumbado MA (Eds) *Manual of Central American Diptera*. Volume 1. NRC Research Press, Ottawa, 79–94.