

# On the family Keroplatidae in Norway (Diptera, Mycetophiliformia)

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Our knowledge about the Norwegian fauna of Keroplatidae has improved considerably during the last 15 years. With the present addition of 9 species, 38 species belonging to the family Keroplatidae have been recorded from Norway. A complete check list is presented together with detailed information for the nine new species.

Key words: Diptera, Mycetophiliformia, Keroplatidae, check list, Norway.

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## INTRODUCTION

Members of the family Keroplatidae are among the larger and most conspicuous Mycetophiliformia (systematics following Amorim & Rindal (2007)). The family has a worldwide distribution, with of 952 species belonging to 86 genera (Evenhuis 2006). In Europe the family is represented with 111 species in 16 genera (Chandler 2004). The Norwegian fauna with 38 species in 12 genera constitute about 35 % of the European fauna.

The biology of Keroplatidae is better studied than for most other Mycetophiliformia. The larvae of Macrocerinae and Keroplatini are mycetophagous, while larvae of some genera in Orfeliini are predators. These larvae normally use oxalic acid to kill their prey. The oldest fossil is from Lower Cretaceous amber of Spain (ca. 110 mya) and belongs to Macrocerinae (Blagoderov & Arillo 2003).

The first two Norwegian records are those by Zetterstedt (1848). In “Enumeratio Insectorum Norwegicum” Siebke (1877) listed 6 species altogether. Today this number is increased to 38. The present paper is the first resent attempt to present a complete list of Norwegian Keroplatidae. More species are likely to be added in the future.

## THE CHECK LIST

Codes: \* = new to Norway, © = first published record. Red List codes: <sup>DD</sup> = Data Deficient, <sup>EN</sup> = Endangered, <sup>NT</sup> = Near Threatened, <sup>VU</sup> = Vulnerable.

## Subfamily Macrocerinae

\* *Macrocera anglica* Edwards, 1925

*Macrocera angulata* Meigen, 1818

Norwegian sources: Siebke (1877), Kjærandsen & Jordal (2007)

***Macrocera aterrima* Stackelberg, 1945**

Norwegian sources: DN (1999)

***Macrocera centralis* Meigen, 1818**

Norwegian sources: Storm (1898)

**\* *Macrocera estonica* Landrock, 1924**

***Macrocera fasciata* Meigen, 1804**

Norwegian sources: Siebke (1866, 1877), Storm (1898)

**<sup>NT</sup> *Macrocera grandis* Lundström, 1912**

Norwegian sources: Økland (1996), Økland & Zaitzev (1997), DN (1999), Chandler (2004), Evenhuis (2006), Gammelmo et al. (2006)

***Macrocera lutea* Meigen, 1804**

Norwegian sources: Zetterstedt (1848), Siebke (1877), Storm (1898)

***Macrocera parva* Lundström, 1914**

Norwegian sources: Økland (1996), Økland & Zaitzev (1997), Chandler (2004), Evenhuis (2006), Kjærandsen & Jordal (2007)

**©<sup>VU</sup> *Macrocera phalerata* Meigen, 1818**

Norwegian sources: Gammelmo et al. (2006; without detailed record).

**©<sup>DD</sup> *Macrocera pilosa* Landrock, 1917**

Norwegian sources: Gammelmo et al. (2006, without detailed record)

**<sup>DD</sup> *Macrocera pumilio* Loew, 1869**

Norwegian sources: Strand (1903), Økland (1996), Økland & Zaitzev (1997), DN (1999), Chandler (2004), Evenhuis (2006), Gammelmo et al. (2006)

***Macrocera stigma* Curtis, 1837**

Norwegian sources: Siebke (1870), Schøyen (1889), Økland (1996), Økland & Zaitzev (1997), DN (1999), Chandler (2004), Evenhuis (2006), Kjærandsen & Jordal (2007)

***Macrocera stigmoides* Edwards, 1925**

Norwegian sources: Økland (1996), Økland

& Zaitzev (1997), Chandler (2004), Evenhuis (2006), Kjærandsen & Jordal (2007)

***Macrocera vittata* Meigen, 1830**

Norwegian sources: Zetterstedt (1848), Siebke (1877)

***Macrocera zetterstedti* Lundström, 1914**

Norwegian sources: Økland (1996), Økland & Zaitzev (1997), Chandler (2004), Evenhuis (2006), Kjærandsen & Jordal (2007)

**Subfamily Keroplatinae**

**Tribe Keroplatini**

**\* *Cerotelion striatum* (Gmelin, 1790)**

= *lineatus* (Fabricius, 1775)

**<sup>VU</sup> *Keroplatus dispar* Dufour, 1839**

Norwegian sources: Økland & Søli (1992), Chandler (2004), Evenhuis (2006, marked with ‘?’), Gammelmo et al. (2006)

**<sup>VU</sup> *Keroplatus testaceus* Dalman, 1818**

Norwegian sources: Siebke (1877), Økland & Søli (1992), Økland (1996), Økland & Zaitzev (1997), Chandler (2004), Evenhuis (2006), Kjærandsen & Jordal (2007), Gammelmo et al. (2006)

***Rocetelion humerale* (Zetterstedt, 1850)**

Norwegian sources: Lundström (1914), Chandler (2004), Evenhuis (2006)

**Tribe Orfeliini**

**\* *Isoneuromyia semirufa* (Meigen, 1818)**

**©<sup>VU</sup> *Macrorrhyncha flava* Winnertz, 1846**

Norwegian sources: Gammelmo et al. (2006)

**<sup>DD</sup> *Monocentrotta lundstroemi* Edwards, 1925**

Norwegian sources: Gammelmo et al. (2006), Kjærandsen & Jordal (2007)

***Neoplatyura flava* (Macquart, 1826)**

Norwegian sources: Økland (1996), Økland

& Zaitzev (1997), Chandler (2004), Evenhuis (2006), Kjærandsen & Jordal (2007)

\* *Neoplatyura modesta* (Winnertz, 1863)

\* *Neoplatyura nigricauda* (Strobl, 1893)

*Orfelia discoloria* (Meigen, 1818)

Norwegian sources: Økland (1996), Økland & Zaitzev (1997), Chandler (2004), Evenhuis (2006)

*Orfelia falcata* Zaitzev, 1994

Norwegian sources: Økland (1996), Økland & Zaitzev (1997), Chandler (2004), Evenhuis (2006)

*Orfelia fasciata* (Meigen, 1804)

Norwegian sources: Siebke (1872, 1877), Storm (1898)

<sup>NT</sup> *Orfelia nemoralis* (Meigen, 1818)

Norwegian sources: Hansen & Falck (2000), Gammelmo et al. (2006)

*Orfelia nigricornis* (Fabricius, 1805)

Norwegian sources: Siebke (1877, as *Platyura nigricornis* Meig.)

\* *Orfelia pallida* (Staeger, 1840)

*Orfelia unicolor* Staeger, 1840

Norwegian sources: Økland (1996), Økland & Zaitzev (1997), DN (1999), Chandler (2004), Evenhuis (2006)

<sup>VU</sup> *Pyratula perpusilla* (Edwards, 1913)

Norwegian sources: Økland (1996), Økland & Zaitzev (1997), DN (1999), Evenhuis (2006), Gammelmo et al. (2006)

*Pyratula zonata* (Zetterstedt, 1855)

Norwegian sources: Økland (1996), Økland & Zaitzev (1997), Hansen & Falck (2000), Chandler (2004), Evenhuis (2006), Kjærandsen & Jordal (2007)

\* *Urytalpa macrocera* (Edwards, 1913)

*Urytalpa ochracea* (Meigen, 1818)

Norwegian sources: Siebke (1877), Økland (1996), Økland & Zaitzev (1997), Evenhuis (2006), Kjærandsen & Jordal ((2007)

\* *Urytalpa trivittata* (Lundström, 1914)

## SPECIES ADDED TO THE NORWEGIAN LIST

*Macrocera anglica* Edwards, 1925

HOY, Stord: Sjoalemyr (EIS 23), 19 July–29 August 1989, ~20♂♂, leg. L. Greve, coll. NHMO.

*Macrocera estonica* Landrock, 1924

VE, Borre: Adaltjern, (EIS19; 59°22′6.0″N 10°26′8.4″E) 2 September–24 October 2003, leg. E. Rindal

*Cerotelion striatum* (Gmelin, 1790)

TEY, Porsgrunn: Gravastranda (EIS 18; 59°05.146′N 9°38.769′E), 13 June–12. July 1988, 1♂, leg. G. Søli, coll. NHMO.

*Isoneuromyia semirufa* (Meigen, 1818)

HOY, Stord: Sjoalemyr (EIS 23), 19 July 1989, 4♂♂, leg. L. Greve, coll. NHMO; VE, Borre: Adaltjern, (EIS19; 59°22′6.0″N 10°26′8.4″E) 8–25 July, 1♂ 2003, leg. E. Rindal

*Neoplatyura modesta* (Winnertz, 1863)

RY, Finnøy: Ladsteinvatnet (EIS14), 5 August–3 September 1994, 3♂♂, leg. J. Skartveit, coll. NHMO

*Neoplatyura nigricauda* (Strobl, 1893)

TEY, Drangedal: Skultrevassåsen (EIS 11; 32V NL 154 486), 10 July–8. August, 1♂, leg. A. Bakke, coll. NHMO; VE, Horten: Veggefjellet, Falkenstein (EIS 19), July 1997, leg. L. O. Hansen, coll. NHMO; AK, Asker: Bjørkås (EIS 28), 2 July–24. August, 53♂♂12♀♀, leg. L. O. Hansen & O. Hanssen, coll. NHMO; AAY, Grimstad, Reddelsvann (EIS 6), 15 June–16 July 1996, 4♂♂, leg. K. Berggren, coll. NHMO.

***Orfelia pallida* (Staeger, 1840)**

**AA**Y, Grimstad: Reddalsvann (EIS 6), 15 June–16 July, 8♂♂2♀♀, leg. K. Berggren, coll. NHMO; **AK**, Ås: Årungen, Syverud (EIS 28), 11 June–8 July 2003, 8♂♂, leg. E. Rindal

***Urytalpa macrocera* (Edwards, 1913)**

**HO**Y, Stord: Sjoalemyr (EIS 23), 28 June–19 July 1989, 1♀, leg. L. Greve, coll. NHMO; **TR**Y, Tromsø: Bjørnskarddalen (EIS 162), 2 October 1987, 1♂, leg. G. Søli, coll. NHMO; **BV**, Hol, Geilo, Kikut (EIS 43), 13–18 August 2002, 1♂, leg. E. Rindal, coll. NHMO.

***Urytalpa trivittata* (Lundström, 1914)**

**BV**, Hol, Geilo, Kikut (EIS 43), 13–18 August 2002, 1♂, leg. E. Rindal, coll. NHMO; **NT**I, Lierne, Østborg 14–20 August 1996, 1♂, leg. A. Bakke, coll. NHMO

**SPECIES WITH FIRST PUBLISHED RECORDS**

***Macrocera phalerata* Meigen, 1818**

**TE**Y, Porsgrunn: Hitterødbekken (EIS 18), 13 June–11 July 1988, 6♂♂3♀♀, leg. G. Søli, coll. NHMO; **AK**, Oppegård: Prosted, Svartskog (EIS 28; 59°47.759'N 10°44.243'N), 9–10 June 2007, 2♂♂, leg. G. Søli, coll. NHMO; **TE**I, Kviteseid, Kviteseid (EIS 17) 11–20 July 1988, 2♂♂, leg. S. Ligaard; **RY**, Finnøy: Ladsteinvatnet (EIS14), 21 June–9 July 1994, 4♂♂, leg. J. Skartveit, coll. NHMO

***Macrorrhyncha flava* Winnertz, 1846**

**TE**Y, Porsgrunn: Oksum (EIS 18), 17 July–5 August 1991, 1♂, leg. G. Søli, coll. NHMO; **VE**, Horten: Veggefjellet, Falkenstein (EIS 19), July 1997, 19♂♂5♀♀, leg. L. O. Hansen, coll. NHMO; **HO**Y, Stord: Sjoalemyr (EIS 23), 19 July 1989, 8♂♂2♀♀, leg. L. Greve, coll. NHMO; **SFI**, Luster: Øyastrondi, Jostedal (EIS 60; 32V MP 1385 4443), 12 July–12 September 2006, 4♂♂4♀♀, leg. Ø. Gammelmo, E. Rindal & G. Søli, coll. NHMO; **BV**, Sigdal, Svarttjennet NV, 24 July–15 September 2006, 3♂♂, leg. A. Endrestøl

***Orfelia nigricornis* (Fabricius, 1805)**

**HES**, Kongsvinger, Abborhøgda (EIS 38), 7–22 June, 1♂, leg. K. Sund, coll NHMO.

**CONCLUSIVE REMARKS**

Hutson et al (1980) describe and figure two varieties of *Macrocera parva* Lundström, 1914, the nominotypical form and a variety called 'var. *parva*'. Both varieties have been recorded from Norway.

Pending a better understanding, we prefer to treat *Keroplatus dispar* and *K. testaceus* as separate species following Evenhuis (2006), although Kjærandsen et al (2007) submit good evidence for treating the two as synonyms.

*Orfelia nigricornis* was originally published by Siebke (1877) based on a female from Oslo (Christiania). This specimen is kept in the collection of NHMO, but we were not able to confirm Siebke's identification. Hence, a new record was added above.

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**REFERENCES**

- Amorim, D. S. & Rindal, E. 2007. A phylogenetic study of the Mycetophiliformia, with creation of the subfamilies Heterotrichinae, Ohakuneinae, and Chiletrichinae for the Rangomaramidae (Diptera, Bibionomorpha). *Zootaxa*, 1535, 1–92.
- Blagoderov, V.A. & Arillo, A. 2002. New Sciaroidea (Insecta: Diptera) in Lower Cretaceous amber from Spain. *Studia Dipterologica* 9(1), 31–40.
- Chandler, P.J. 2004. Fauna Europaea version 1.2. <http://www.faunaeur.org>
- DN.1999. Nasjonal rødliste for truede arter I Norge 1998. Norwegian Red List 1998. DN-rapport 3, 1–161. (Direktoratet for Naturforvaltning).
- Evenhuis, N. L. 2006. Catalog of the Keroplatidae of the World (Insecta: Diptera). Bishop Museum Bulletin in Entomology 13. Bishop Museum Press, Honolulu. 1–178.
- Gammelmo, Ø., Nielsen, T. R., Falck, M., Greve, L.

- & Søli, G. E. E. 2006. Tovinger Diptera. Pp. 285–296 in J. A. Kålås, Å. Viken & T. Bakken (eds.), Norsk Rødliste 2006 – 2006 Norwegian Red List. Artsdatabanken, Norway.
- Hansen, L. O. & Falck, M. 2000. Insektfaunaen ved Østensjøvannet. Oslo: Østensjøvannets venner. 1–34.
- Hutson, A. M., Ackland, D. M. & Kidd, L. N. 1980. Mycetophilidae (Bolitophilinae, Ditomyiinae, Didaocidiinae, Keroplatinae, Sciophilinae and Manotinae). Handbooks for the Identification of British Insects, 9, 3.
- Kjørandsen, J., Hedmark, K., Kurina, O., Polevoi, A., Økland, B. & Götmark, F. 2007. Annotated checklist of fungus gnats from Sweden (Diptera: Bolitophilidae, Diadocidiidae, Ditomyiidae, Keroplatidae and Mycetophilidae). Insect Systematics and Evolution Supplements, 65, 1–128.
- Kjørandsen, J. & Jordal, J. B. 2007. Fungus gnats (Diptera: Bolitophilidae, Diadocidiidae, Ditomyiidae, Keroplatidae and Mycetophilidae) from Møre og Romsdal. Norw. J. Entomol. 54, 147–171
- Lundström, C. 1914. Verzeichnis mehrer von Dr. E. Strand in Norwegen gesammelten Diptera Nematocera. In: Strand, E. Neue Beiträge zur Arthropoden-fauna Norwegens. Part. XVI. Nyt Magazin for Naturvidenskaberne. Bd. 51, H. IV. Kristiania. Pp. 310–319.
- Matile, L. 1981. Description d'un Keroplatidae du crétacé moyen et données morphologiques et taxinomiques sur les Mycetophiloidea (Diptera). Annales de la Société Entomologique de France (n.s.) 17, 99–123.
- Økland, B. & Søli, G. E. E. 1992. The genus *Keroplatus* Bosc, 1792 – an interesting addition to the Norwegian fauna (Diptera: Keroplatidae) Fauna norv. Ser. B 39, 85–88.
- Økland, B. & Zaitzev, A. I. 1997. Mycetophilids (Diptera, Sciaroidea) from southeastern Norway. Fauna norv. Ser. B 44, 27–37.
- Økland, B. 1996. Unlogged forests: important sites for preserving the diversity of mycetophilids (Diptera: Sciaroidea). Biological Conservation 76, 297–310.
- Schøyen, W. M. 1889. Supplement til H. Siebkes Enumeratio Insectorum Norvegicorum Fasc. IV (Diptera). Christiania Videnskabselsk. Forh. 1889. No. 12, 1–15.
- Siebke, H. 1866. Entomologisk Reise i Romsdals Amt i Sommeren 1864. Nyt Magazin for Naturvidenskaberne, Bd. 14, No. VI Diptera, 375–388.
- Siebke, H. 1870. Beretning om en i Sommeren 1869 foretagen entomologisk reise gennem Ringerike, Hallingdal og Valdres. Nyt Magazin for Naturvidenskaberne, Bd. 17. Pp. 246–314.
- Siebke, H. 1872. Bidrag til Norges Insektfauna. Beretning om en i Østerdalen foretagen Reise i 1870. Nyt Magazin for naturvidenskaberne, Bd. 19, No. 3. Diptera, 75–102.
- Siebke, H. 1877. Enumeratio Insectorum Norwegicum, Fasculum IV, Catalogum Dipteroorum continentem. 255 pp. A. W. Brøgger, Christiania.
- Storm, V. 1898. Entomologiske Undersøgelser. Det Kgl. Norske Videnskabers Selsk. Skrifter. 1898. No. 5, 1–19.
- Strand, E. 1903. Norske lokaliteter for Diptera. Christiania Videnskabselskabs Forhandlinger 1903, No. 3, 1–11.
- Zetterstedt, J. W. 1842-1860. Diptera Scandinaviæ disposita et descripta. Tom. I–XIV. Lund.

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