Further records of new or rare Empidoidea from Denmark (Diptera: Empididae, Hybotidae and Microphorinae)

Yderligere fund af nye eller sjældne Empidoidea fra Danmark (Diptera: Empididae, Hybotidae og Microphorinae)

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Abstract

In the period 2013-2014, 12 species of Empidoidea were registered as new to Denmark: *Chelifera flavella* (Zetterstedt, 1838), *Clinocera fontinalis* (Haliday, 1833), *Hilara barbipes* Frey, 1908, *Rhamphomyia hybotina* Zetterstedt, 1838, *Rhamphomyia physoprocta* Frey, 1913, *Anathalia beatricella* Chandler, 1992, *Drapetis assimilis* Fallén, 1815, *Drapetis infitialis* Collin, 1961, *Leptopeza borealis* Zetterstedt, 1842, *Platypalpus excisus* (Becker, 1907), *Tachydromia connexa* Meigen, 1822 and *Microphorus crassipes* Macquart, 1827. Three more species are added as new to the Danish list due to previous misidentification or synonymization with similar species: *Chelipoda albiseta* (Zetterstedt, 1838), *Hilara aeronetha* Mik, 1892 and *Hilara griseola* Zetterstedt, 1838. Further 18 species are briefly commented upon with indication of old and new records.

Dansk sammendrag

I perioden 2013-14 blev 12 arter af Empidoidea konstateret som nye for den danske fauna: *Chelifera flavella* (Zetterstedt, 1838), *Clinocera fontinalis* (Haliday, 1833), *Hilara barbipes* Frey, 1908, *Rhamphomyia hybotina* Zetterstedt, 1838, *Rhamphomyia physoprocta* Frey, 1913, *Anathalia beatricella* Chandler, 1992, *Drapetis assimilis* Fallén, 1815, *Drapetis infitialis* Collin, 1961, *Leptopeza borealis* Zetterstedt, 1842, *Platypalpus excisus* (Becker, 1907), *Tachydromia connexa* Meigen, 1822 og *Microphorus crassipes* Macquart, 1827. Yderligere tre arter angives som nye for Danmark p.g.a. tidligere fejlbestemmelser eller synonymisering med meget lignende arter: *Chelipoda albiseta* (Zetterstedt, 1838), *Hilara aeronetha* Mik, 1892 og *Hilara griseola* Zetterstedt, 1838. Andre 18 arter behandles kort med angivelse af nye og gamle fund.

Introduction

After nearly a quarter-century break, systematic recording of Empidoidea in Denmark, now with malaise traps, started up in 2006. From 2006-2012, the first 20 new species for the Danish fauna were recorded (Bøggild 2012 and 2013).

The efforts of a small number of collectors in 2013 and 2014 resulted in a substantial sample of empidoid flies from Denmark. The new data, among other things, suggest that species previously considered rare or very rare are in fact widespread and may occur abundantly in their right habitats. In the following we suggest some species, because of their habitat requirements, as indicators of valuable/vulnerable nature.

Material and methods

In 2013, three traps were tended to in the protected area of Store Stendal at Rebild, NEJ, in the swampy area next to a brook (UTM NH59). Two traps were operated in Stokholm Mose, close to Vebbestrup, EJ, a peat bog overgrown primarily with birch, located a few kilometers north of Hobro (UTM NH58).

In 2014, eleven traps were operated in four different spots in the marsh land of the Wadden Sea in South Jutland, which previously has been a dipterological terra incognita.

In 2013 and 2014 Jan Pedersen from ZMUC provided large numbers of Empidoidea from many different habitats, all captured with sweep net and sieve.

In 2014 an insect box containing about 600 specimens of hybotids and empidids was examined. The flies were caught a century earlier, in the period 1911-18, by the veterinarian and simuliid expert Axel Pedersen.

From 2014, a few specimens from Draved Skov, SJ, have been studied as well. All specimens are kept in ZMUC (Zoological Museum, Copenhagen) and stored in alcohol, except the specimens of Axel Petersen which are pinned and kept in NHMA (Natural History Museum, Aarhus). If not mentioned otherwise, all other older records in this article are pinned and preserved in ZMUC.

Results

EMPIDIDAE

Chelifera flavella (Zetterstedt, 1838). NEJ, Rebild, Store Stendal, 15-29.06.2013, 1♂. E. Bøggild leg. **First Danish record**.

Chelifera precabunda Collin, 1961. NEJ, Rebild, Store Stendal, 05-29.06.2013, 2♂♂, 7♀♀. E. Bøggild leg. This species was first reported from the nearby habitat of Valsgård Bæk (=Valsgård Brook) (Bøggild 2013).

Chelipoda albiseta (Zetterstedt, 1838). NEJ, Stokholm Mose, Vebbestrup, 14-28.07.2013, 1♂, 1♀. E. Bøggild leg. Probably the first Danish record. Previously Petersen & Meier (2001) reported 7 specimens in NHMA, though these specimens could not be found.

Clinocera fontinalis (Haliday, 1833). DISTR.?, Lerbæk, 13.08.1917, 1♀. A. Petersen leg. **First Danish record**. There are at least five places in Denmark named Lerbæk. The actual location of this Lerbæk remains unknown.

Empis acinerea Chvála, 1985. NEZ, Asserbo Plantage, 11.05.2014, 1♂, 1♀. J. Pedersen leg. So far only 3 specimens were known from Denmark: SJ, no exact locality, 1893, W. Wüstnei leg. and LFM, Lolland, 1876, R. W. Schlick leg.

Empis albinervis Meigen, 1822. SZ, Vemmetofte Dyrehave, 16.06.2014, 1♂. J. Pedersen leg. So far only 1 specimen recorded from Denmark: F, Middelfart, 1907, 1♂. W. Lundbeck leg. (Lundbeck, 1910). This specimen has since disappeared (Chvála, 1994).

Empis bicuspidata Collin, 1927. SJ, Rømø, Sønderland, heath dune, 17.05-12.06.2014, 1♂. E. Bøggild leg. So far only 2 specimens known from Denmark: NEJ, Frederikshavn, 1881, H. J. Hansen leg. and B, Bornholm, 1964, O. Martin leg. (Chvála 1994).

Empis staegeri Collin, 1963 (Fig. 1). NEZ, Asserbo Plantage, 11.05.2014, 2♂♂, 2♀♀. J. Pedersen leg. So far only 5 very old specimens where known from Denmark: F, Lohals, 1909 (2 specimens), W. Lundbeck leg., NEZ, Ermelunden, 1910 (1 specimen), W. Lundbeck leg. and 2, even older, specimens without label data.

Hilara aeronetha Mik, 1892. EJ, Hundslund, 22.07.1913, 1♂. A. Petersen leg. Probably the first Danish record. Petersen & Meier (2001) indicate 2 specimens in ZMUC and 10 specimens

in NHMA. Chvála (2005) include neither specimens from Copenhagen or Aarhus, and says that " it has commonly been synonymised with *H. angustifrons."*

The specimens in ZMUC are in fact now stored as *angustifrons* (Thomas Pape, pers. com.). The specimens in NHMA are missing and the identity is uncertain.

Hilara albitarsis von Roser, 1840. NEJ, Rebild, Store Stendal, 26.05-05.06.2013, 1♂. E. Bøggild leg. First record from Jutland. Earlier only known from two specimens from LFM, Jydelejet, 1983, V. Michelsen leg.

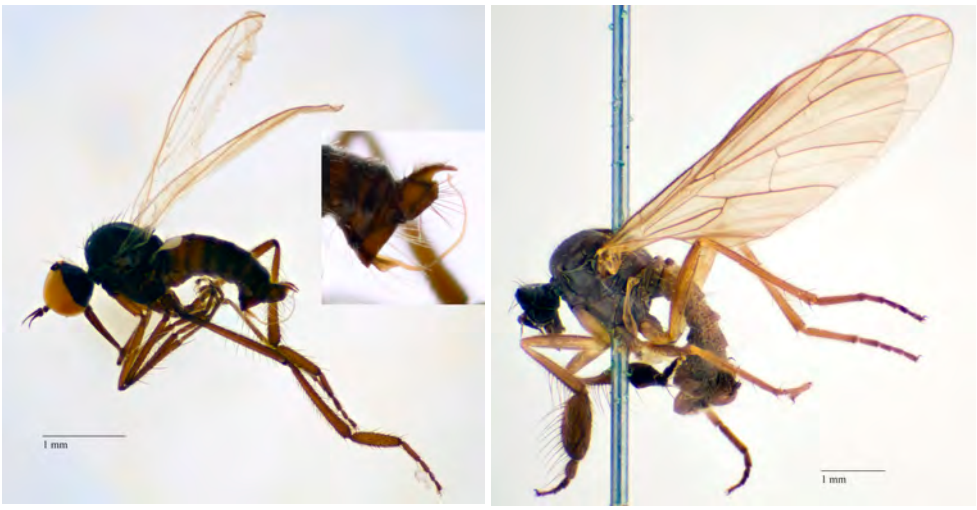

Fig. 1-2. (right) *Empis staegeri* Collin. Note the very pronounced, evenly curved aedeagus. (left) *Hilara clavipes* (Harris). Note the swollen first tarsomere of front leg with numerous long bristles.

Hilara clavipes (Harris, 1780) (Fig. 2). NEJ? Allerup, 21.06.1913, 1♂. A. Petersen leg. So far only known from 2 specimens from NEJ, Sæbygård Skov, Bo Tjeder leg. (Chvála 2005) and from EJ, Valsgård Bæk (Bøggild 2013). Tjeders specimens from 1964 are kept in MZLU (Museum of Zoology, Lund University). *Hilara clavipes* therefore appeared as not yet recorded from Denmark in Petersen & Meier (2001).

Remark: At least 11 locations all over Denmark are called Allerup. However, in his book "Bidrag til De Danske Simuliers Naturhistorie" Axel Petersen mentions "Bække i Allerup Bakker; Tilløb til Vorsaa" (Petersen 1924, p. 58), so this specific locality is probably NEJ, Stagsted Skov.

Hilara barbipes Frey, 1908. SZ, Krobæk i Sjolte Skov, 16.06.2014, 6♂♂. J. Pedersen leg. **First Danish record**.

Hilara griseola Zetterstedt, 1838. DISTR.?, Egebjerg, 30.05.1914, 1♂. A. Petersen leg. Probably the first Danish record. According to Petersen & Meier (2001), 9 specimens are kept in ZMUC and 4 specimens are kept in NHMA. All specimens are missing. Chvála (2005) writes: "Although not yet found in Denmark, it has been found at four sites in the neighboring Swedish province of Skåne…". The actual location of this Egebjerg is uncertain. At least 18 locations in Denmark have the place name "Egebjerg".

Hilara lasiochira Strobl, 1892. SZ, Krobæk i Sjolte Skov, 16.06.2014, 7♂♂. J. Pedersen leg. So far only 2 specimens were known from Denmark: SJ, Hejls, 1919, W. Lundbeck leg. and NEZ, Lyngby Mose, 1964, O. Martin leg.

Ragas unica Walker, 1837. SJ, Rømø, Sønderland, grass land, 03-17.05.2014, 1♂. E. Bøggild leg. So far only known from 1 male from NEJ, Tofte Mose, Lille Vildmose (Bøggild 2012), 2 specimens from F, Lohals, 1909, W. Lundbeck leg. and SJ, Sottrupskov, 1893, W. Wüstnei leg., plus 2 specimens in coll. NHMA (apparently lost).

Rhamphomyia albipennis (Fallén, 1816). NEZ, Asserbo Plantage, 11.05.2014, 2♂. J. Pedersen leg. So far only 3 specimens where known from Denmark: SJ: Hårup, 1891, W. Wüstnei leg., SJ, Sønderborg, 1892, W. Wüstnei leg. and SJ, Mjelsmark, 1892, W. Wüstnei leg.

Rhamphomyia anomalipennis Meigen, 1822 (Fig. 3). SJ, Draved Skov, 04-17.05.2014. 1♂. E. Bøggild leg. This species was first reported as new to the Danish fauna in Bøggild (2012) from NEJ, Høstemark Skov and Tofte Mose. *Rhamphomyia anomalipennis* seems to be a bioindicator for valuable fragile habitats such as old open mixed deciduous forests.

Rhamphomyia hybotina Zetterstedt, 1838 (Fig. 4). SJ, Buntje Ballum, 31.07-16.08.2014, 1♂. E. Bøggild leg. **First Danish record**. This species is common in Norway and associated with heather (*Calluna vulgaris*) and blueberry (*Vaccinium corymbosum*). To our knowledge no serious fly collecting has been attempted on the remaining scattered heaths in Denmark. Therefore we assume that the species is more widespread than this solitary finding indicates.

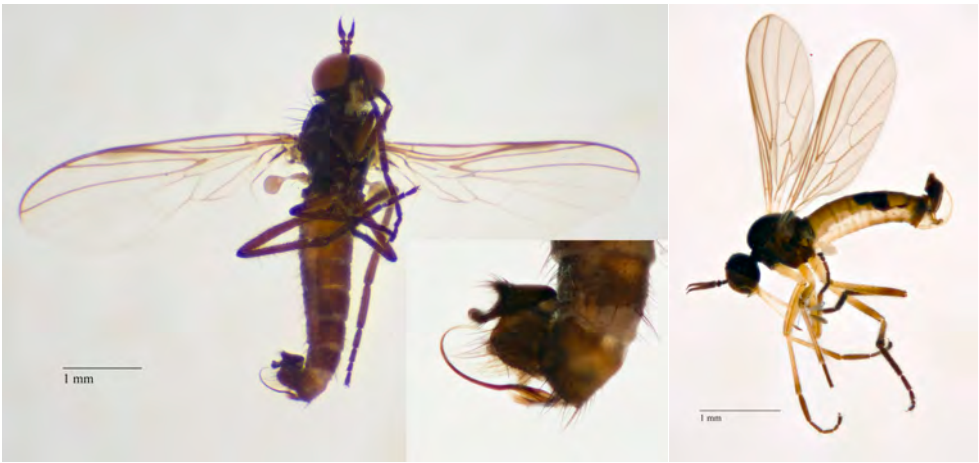

Fig. 3-4. (left) *Rhamphomyia anomalipennis* Meigen. Ventral view, showing the characteristic hypopygium. (right) *Rhamphomyia hybotina* Zetterstedt. Note the very little developed axillary lobe of wing.

Rhamphomyia longipes (Meigen, 1804). SZ, Bimose i Broby Overdrev, 30.06-02.07.2013, 10♂♂, 3♀♀. J. Pedersen leg. SZ, Sorø, Kristiansminde, 27.06-02.07.2013, 1m. J. Pedersen leg. SZ, Krobæk i Sjolte Skov, 16.06.2014, 1m. J. Pedersen leg. Draved Skov, 08-21.06.2014, 1m. E. Bøggild leg. Until the recent malaise trap project started up in 2006, *R. longipes* seemed very rare in Denmark with only 1 registered specimen. Since then it has been recorded in NEJ, Høstemark Skov and Tofte Mose (Bøggild 2012) and EJ, Valsgård Bæk and Bramslev (Bøggild 2013). This species is clearly widespread and probably rather common, and should be considered as a bioindicator for mixed deciduous forests.

Rhamphomyia physoprocta Frey, 1913 (Fig. 5). SJ, Rømø, Sønderland, heath dune, 21.06-11.07.2014, 2♂♂, 2♀♀. E. Bøggild leg. **First Danish record.**

Fig. 5. *Rhamphomyia physoprocta* Frey. A very characteristic species with swollen upper lamellae of hypopygium in the shape of two globes.

Rhamphomyia stigmosa Macquart, 1827. EJ, Kirstinebjerg Skov, 18.05.2014, 4♂♂. J. Pedersen leg. SJ, Draved Skov, 04-17.05.2014, 2♂♂, 2♀♀. E. Bøggild leg. This species was reported new to Denmark in Bøggild (2012). Further specimens were added, and the identity of W. Lundbecks 5 specimens was discussed in Bøggild (2013). It seems that this species is widespread in old open mixed deciduous forests and should be considered as a bioindicator for this kind of habitat.

HYBOTIDAE

Anathalia beatricella Chandler, 1992. NEZ, Asserbo Plantage, 11.05.2014, 1♀. J. Pedersen leg. **First Danish record**.

Drapetis assimilis Fallén, 1815. SZ, Bimose i Broby Overdrev, 30.06-02.07.2013, 1♂. J. Pedersen leg. **First Danish record**.

Drapetis infitialis Collin, 1961. Rømø, Sønderland, heath dune, 17.05-07.06.2014, 1♂. E. Bøggild leg. **First Danish record**.

Ethyneura gyllenhali (Zetterstedt, 1838). SZ, Krobæk i Sjolte Skov, 16.06.2014, 1♂, J. Pedersen leg. So far only 8 very old records (before 1900) from 6 different localities in Denmark.

Leptopeza borealis Zetterstedt, 1842. NEJ, Rebild, Store Stendal, 05-15.06.2013. 1♀. E. Bøggild leg. **First Danish record**.

Oedalea holmgreni Zetterstedt, 1852. NEJ, Rebild Store Stendal, 05-15.06.2013, 1♀. E. Bøggild leg. NEJ?, Allerup, 31.06.2013, 2♀♀. A. Petersen leg. According to Petersen & Meier (2001), 5 specimens are deposited at NHMA. These specimens could not be found.

Remark: About the location NEJ?, Allerup; see remarks at *Hilara clavipes*.

Platypalpus articulatus Macquart, 1827. NEJ, Rebild, Store Stendal, 15-28.07.2013, 1♀, E. Bøggild leg. First record from Jutland and so far only known from 7 specimens in Denmark: F, Odense (before 1900), J. C. Schiødte leg, F, Lohals, 1909 (3 specimens), W. Lundbeck leg., NEZ, Ermelunden, 1908 (1 specimen), W. Lundbeck leg. and 2, even older, specimens without label data.

Platypalpus excisus (Becker, 1907). SJ, Rømø, Sønderland, grass land, 03-17.05.2014, 2♂♂, 3♀♀f. E. Bøggild leg. **First Danish record**.

Platypalpus mikii (Becker, 1890) (Fig. 6). LFM, Møns Klint, 17.07.1918, 1♂. A. Petersen leg. This species was reported as new to the Danish fauna from NEJ, Høstemark, Lille Vildmose (Bøggild 2012).

Fig. 6. *Platypalpus mikii* (Becker). A characteristic coloured species with shining mesonotum.

Platypalpus vividus Meigen, 1838. NEJ, Stokholm Mose, Vebbestrup, 14-28.07.2013. 2♂♂. E. Bøggild leg. SZ, Gammel Kalvehave, 26.07.2013. 1♂. J. Pedersen leg. This species was reported for the first time in Denmark in 2012 with 2 records from NEJ, Høstemark, Lille Vildmose (Bøggild 2012).

Tachydromia connexa Meigen, 1822. NEZ, Ballerup, 04.06.2014, 1♂♂, 5♀♀. J. Pedersen leg. NEZ, København, Kalvebod Brygge, 02.06.2014, 3♀♀. J. Pedersen leg. NEZ, Brøndby, 10.05.2014, 1♂. J. Pedersen leg. **First Danish records**.

MICROPHORINAE

Microphor crassipes Macquart, 1827. SZ, Bimose i Broby Overdrev, 30.06-02.07.2013, 3♂♂, 2♀♀. J. Pedersen leg. **First Danish record**.

Discussion

It is remarkable that nine out of fourteen species of Empidoidea presently reported for the first time from Denmark comprise single specimens only. This is a clear indication of that more collecting is required in order to obtain a better picture of the Danish empidoid fauna. Even from William Lundbeck's favorite hunting localities at Copenhagen and Tisvilde (Asserbo Plantage), we are presently able to report two first records and several so far rare species.

The collecting efforts from 2006-2014 have increased the Danish list of what was formerly called "empidids" (Empididae, Hybotidae, Microphorinae) with 34. Prior to the new surveys, there were 225 different species which could actually be accounted for either by specimens in collections, or from William Lundbeck's records in Diptera Danica. In Petersen & Meier's "A preliminary list of the Diptera of Denmark" (2001) an additional category appears: "Occurs in Denmark according to Palaearctic Catalogue (Soós & Papp 1984-1994)". It seems that this category to a large extent covers species included in Lundbeck's index in Diptera Danica. These species, which were until then not reported from Denmark, were often discussed by Lundbeck to avoid misidentifications and therefore ended up in the index of the book. We suggest that species in this category should not be accepted as belonging to the Danish fauna without further evidence.

The current number of 259 Danish species is still surprisingly low compared to some of the neighboring countries. In Great Britain, with a comparable climate, but with far more dipterists, 386 species are recognized so far, according to "British Insects: the Families of Diptera", (http://delta-intkey.com/britin/dip). In the Netherlands with a quite similar climate and size as Denmark, but with a more damaged nature, around 300 species have been documented according to "Checklist of the Diptera of the Netherlands", (http://www.diptera-info.nl/news.php).

The actual numbers of the British and Dutch species are probably indications of what should be expected in the Danish fauna.

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Table 1. Pyralider rapporteret fra automatiske lysfælder i Danmark 2015.
Pyralidae recorded from automatically operating light traps in Denmark 2015

Pyralidae	**SJ**	**EJ**	**WJ**	**NWJ**	**NEJ**	**F**	**LFM**	**SZ**	**NWZ**	**NEZ**	**B**	**I alt**
Aphomia zelleri (Joan.)	4						129	2		1	52	188
Oncocera semirubella (Sc.)	4	262	6				75	16		345	174	882
Myelois circumvoluta (Fourc.)	2	4			1		16	22		3	172	220
Euchromius ocellea (Hw.)	1										12	13
Crambus heringiellus H.-S.											4	4
Catoptria verellus (Zinck.)							51			455	68	574
Schoenobius gigantella (D.& S.)	15		6				110	1			1	133
Cynaeda dentalis (D.& S.)							1	4			1	6
Evergestis extimalis (Sc.)	1	11	1		3		9	85		11	124	245
Evergestis aenealis (D.& S.)							2				16	18
Udea ferrugalis (Hb.)	35	1	50				8	4			14	112
Loxostege turbidalis (Tr.)											3	3
Loxostege sticticalis (L.)	2	1	3				10	5		1	55	77
Pyrausta aerealis (Hb.)												0
Nascia cilialis (Hb.)		4					5	5		2	5	21
Sitochroa palealis (D.& S.)	3	80	3		6	1	31	16		7	73	220
Ostrinia palustralis (Hb.)											3	3
Mecyna flavalis (D.&S.)											1	1
Palpita vitrealis (Rossi)	3		4				5			1	5	18
Nomophila noctuella (D.& S.)	299	8	452		3		238	33		4	354	1391
Samlet registrering	369	371	525		13	1	690	193		830	1137	4129
Antal fælder med pyralider	7	13	30		12	3	38	15		9	19	146
Antal fælder uden pyralider												0
Antal fældeindberetninger i alt	7	13	30	0	12	3	38	15	0	9	19	146

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