

New Danish records of Empidoidea (Diptera Empididae and Hybotidae).

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Abstract

Three sites along Mariager Fjord have in 2009, 2010 and 2012 been investigated in order to explore the Empidoidea of this area. The result for Empididae and Hybotidae has been nine species not previously recorded from Denmark and seven species only rarely recorded.

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Introduction

The recordings of Diptera in Denmark have been relatively few. Especially Empidoidea have been neglected by the entomologists, presumably because of their small size. Furthermore the main parts of the collecting during 19th and early 20th century primarily were conducted in the vicinity of Copenhagen. In depth-investigations far from Copenhagen were only conducted in the 1960s- and 1970s-. I have previously outlined the collections made in Denmark from the 1880s- till now (Bøggild 2012) and apart from a few hot spots, the map of Denmark is largely one large white spot. This paper, and hopefully future efforts, is an attempt to map the white spots.

Mariager Fjord, situated in the north eastern part of Jutland, is 35 km long and the landscape around it changes from sandy, flat and windswept in the east to being hilly and more fertile in the west.

Methods

From 2009-2012 traps were operating in three sites situated by, or a few km away from, the fjord.

Valsgård Bæk: A protected area, which extends from the village of Valsgård to the fjord. Three Malaise traps were set up here from April to September 2009. They were placed right next to the brook, Valsgård Bæk, with the edge of a wood on the one hand and a meadow on the other. The area has an unusually large number of springs, which all drain into the brook. The wood is about three hectares, mostly mixed deciduous forest.

Bramslev: An area situated in the immediate vicinity of the fjord to the west of Kielstrup Sø. The area was a common as late as the 1960ies, but when the grazing of cattle stopped at about that time, mixed deciduous forest grew back. In this area a varying number of water traps were set up. Right next to the fjord however, a swampy area, presumably a wet costal meadow before the grazing stopped, is now overgrown primarily by birch. In this area one Malaise trap was put up from June to September 2012.

Ajstrup Krat: This old coppiced woodland, which is a part of the EU-project Natura 2000, has now grown tall. However, it still contains many open areas and has high species diversity. The wood is made by five hectares of mixed deciduous forest and shows no

signs of forestry. In the middle of the wood is a natural meadow, which is grazed by deer living in the area. Three Malaise traps were put up from May to September 2010. The traps were emptied regularly and the flies are kept in 75% alcohol.

Results

Empis planetica Coll. Ajstrup Krat, 22 May-5 June, 2m. In Denmark so far 9 specimens from North East Zealand. New to Jutland. *Empis Lutea* Meig. Ajstrup Krat, 29 June-21 July, 1f. This species has not been recorded in Denmark since Lundbeck collected 24 m and 6 at Hou, NEJ in July 1922. *Hilara clavipes* Harris. Valsgård Bæk, 29 June-12 July, 2m, 1f. Until now only 2m from Sæbygård Skov, NEJ (Chvála 2005). Very characteristic species with very strong bristles on bt1 and apical half of tibia. Bt1 as long as tibia.

Hilara medeteriformis Coll. Ajstrup Krat, 29 June-21 July, 1m. In Denmark so far otherwise only found on Bornholm. Most characteristic feature is the »duck-like« shape of hypandrium.

Rhamphomyia laevipes Fall. First Danish record. In *Diptera Danica* (1910) Lundbeck reported one single specimen of *Rhamphomyia conformis* Kow. Lundbeck's illustration of the male genitalia shows clearly, that it is *Rhamphomyia stigmosa* Macq. This specimen and five further specimens were at a later date labeled *R. laevipes* in the collection of ZMUC and therefore appear in Petersen & Meier (2001) as recorded from Denmark. I have examined all the specimens in ZMUC and they are all *R. stigmosa*. Four specimens in the collections of the Museum of Natural History in Aarhus (acc. to Petersen & Meier (2001)) were not recovered. Judging from the collecting date of the flies in the Aarhus collection in general, they have probably been identified by the help of Lundbeck's work. *R. stigmosa* Macq.: I reported this species as new to Denmark in 2012 (Høstemark Skov, Tofte mose, NEJ) not yet aware of Lundbeck's records labeled *R. laevipes*. Since then it has turned up in the traps at Valsgård Bæk (1-18 May, 3m, 2f), and at Ajstrup Krat (22 May-05 June, 25m, 14f). *R. stigmosa* appears to be a rather common species in Jutland (figure 1). One specimen of *R. laevipes* Fall., collected at Ajstrup Krat, 06-22 May, has an appearance very much like *R. stigmosa*, but the terminalia are very different; the lammellae of different shape and penis only partly visible and of different shape (Figure 2). The lammellae of this specimen are unfortunately somewhat crippled.



Figure 1. *Rhamphomyia stigmosa* Macq. Terminalia.



Figure 2. *Rhamphomyia laevipes* Fall. Terminalia.

Rhamphomyia amoena Loew. First Danish Record. Ajstrup krat, 22 May-05 June, 1 f. Very characteristic species with yellow legs and 1st and 2nd antennal segments yellow. 5 mm.

Rhamphomyia nitidula Zett. First Danish record. Valsgård Bæk, 22.04-06.05, 1m. When only one male has been caught it might indicate that *R. nitidula* is a very early spring species. The Malaise traps were set up on 22.04 in Valsgård Bæk. Its occurrence in northern Scandinavia and the Alps (Collin, 1961) would seem to support an early spring phenology in Denmark. Black shining species with characteristic terminalia and distinctly enlarged eye facets in the upper half of the eye, the lower part of the compound eye appearing much darker than the upper part.

Rhamphomyia longipes Meig. ZMUC has only registered one single specimen, but the species is apparently common and widespread. Valsgård Bæk 18 May-12 July, 14m, 6f, Bramslev 03 -21 June, (in water traps) 22m, 4f. (Earlier I collected 8 specimens from Lille Vildmose, NEJ). Two of the specimens show a radial fork on vein R4+5 (the 'Empis fork'). A male with the fork on left wing (figure 3), and a female with the fork on both wings. I have never observed this phenomenon before, whereas the opposite - species of *Empis* with missing radial forks - are frequently seen. This elegant long legged species is easily recognized, especially by the terminalia with fully exposed phallus curved like a soft m (fig 3).



Figure 3. *Rhamphomyia longipes* Meig. Note the »Empis-fork« at wing.

Rhamphomyia trigemina Oldenb. First Danish record. Ajstrup Krat 05-29 June, 1 m. In the subgenus *Holoclera* only the species *R. nigripennis* F. and *R. umbripennis* Meig. are to my knowledge common in Denmark. So far one or both species have been present where I have set up traps. At Ajstrup Krat two unforeseen species of the subgenus turned up, *Rhamphomyia trigemina* Old. and *Rhamphomyia lamellata* Coll. *R. trigemina* Oldenb. resembles *R. umbripennis* Meig., but the ventral lamella has a cluster of bristles, like *R. nigripennis*.

R. lamellata Coll. First Danish Record. Ajstrup Krat, 29 June-21 July, 2m. Males of this species are very easy to distinguish from the other species in the subgenus. The upper lamella is longer than the lateral lamella and clothed with long setae (figure 4), and these unique features are of course the reason for the name. J. E. Collin chose, when he described the species in 1926.



Figure 4. *Rhamphomyia lamellata* Coll. Terminalia.

Rhamphomyia caesia Meig. I have reported this species from several localities in Lille Vildmose (Bøggild 2012) and 1 male was found at Ajstrup Krat 06-22 May.

Chelifera precabunda Coll. First Danish Record. Valsgård Bæk, 10 June-12 July, 7m, 3f. Very much like *Chelifera precatioria* Fall. The main differences are the yellow thoracic spiracles and upper lamellae with a tooth in the middle when viewed from above. Furthermore the upper lamellae are a bit shorter than the lateral lamellae.



Figure 5. *Chelifera pectinicauda* Coll. Female with narrow brown bands on each tergite.



Figure 6. *Chelifera astigma* Coll. Abdomen with dark patch.



Figure 7. *Wiedemannia rhynchops* Now. Var. *insularis* Coll. Terminalia.

Chelifera pectinicauda Coll. First Danish Records. Valsgård Bæk, 17-29 June, 3m, 1f. Yellow species with small black spines on the upper lamellae. Female with a narrow brown band on each tergite (figure 5).

Chelifera astigma Coll. First Danish records. Valsgård Bæk, 18 May- 29 June, 2m, 11f. Yellow species very much like *Chelifera flavella* Zett., the main differences are the first segment of fore tarsus which is not dilated and black, but brown. According to Collin (1961) the first 6 tergites are brownish in *C. flavella*, while abdomen of *C. astigma* is only »...darkened in patches from the drying up of internal organs.« (p. 713). The two males in my possession, both kept in alcohol, have an obscured dark patch, the females do not (fig 6).

Wiedemannia rhynchops Nowic. Valsgård Bæk, 18 May-10 June, 1m, 1f. Lundbeck found this species at Hald, EJ: »...it was present in great numbers generally sitting on stones in and by a rapidly flowing brook«. (Lundbeck 1910). The genus *Wiedemannia* is in Denmark represented by further two species, *Wiedemannia bistigma* Curt. (9 specimens) and *Wiedemannia zetterstedti* Fall. (19 specimens) and 4 more species expected. *W. rhynchops* is closely related to *W. bistigma*, the main difference being the wing stigma, which in *W. rhynchops* is directly opposite base of cubical fork. The terminalia are also very different with the upper lamellae much more slender. Collin (1961) describes two continental variations and one British variation, *insularis* Coll. However my male specimen is *insularis*, so at least there should be three subspecies on the continent. Collin pictures three types of hypopygiums, and the

differences are distinct. He writes that it is »highly probable« that »Clinocerids« tend to form local races. With *insularis* now recorded on both sides of the North Sea, it can hardly be labeled as a local form. With that in mind I think *W. rhynchops* Nowic. var *insularis* Coll. should be treated as a separate species (figure 7). Unfortunately, Lundbeck's specimens were not recovered at ZMUC (and consequently not mentioned in Petersen & Meier (2001)), so I am not aware if they were *insularis*, too.

Tachydromia annulimana Meig. First Danish record. Bramslev, 11 August-14 September, lf. According to Petersen & Meier (2001) 21 specimens should be kept in the Museum of Natural History in Aarhus. These specimens have not been recovered, but judging from the collecting dates of the material I have seen from the Aarhus museum, these flies have probably been identified by the help of Lundbeck (1910). Lundbeck used the name *Tachista* Loew for *tachydromia*, and his description of *T. annulimana* (p269f) with four scutellars leaves no doubt, that it is the in Denmark widespread in *T. umbrarum* Hal. (I recorded it from Ajstrup Krat as well). *T. Annulimana* is very much like *T. umbrarum* but has only 2 big spinelike scutellars instead of 4.

Discussion

The most striking results are the many catches of flies from the genus *Chelifera* Macq. *Chelifera* is nearly identical with the genus *Hemerodromia* Meig., the main difference being the missing discal cell in *Chelifera*. The most striking character of these flies is the very raptorial front legs. According to Petersen & Meir 54 specimens are kept in the Danish museum collections. They represent 4 species, but 6 more are to be expected. This number is doubled now with the catch of 55 specimens, 54 of which are from Valsgård bæk and a single catch from Bramslev (in water trap). 25 of the specimens are *C. precatória* Fall., known from 23 specimens in the museum collections. The rest are 2 males and 11 females of *C. astigma* Coll., 7 males and 3 females of *C. precabunda* Coll., 3 males and 1 female of *C. pectinicauda* Coll., and 5 females with no matching male. The species of this genus are obviously rare or very specialized with respect to the environment in which they live. An in depth study of the European records (labelling the localities exactly), might reveal what conditions this genus demands. Eight of the twelve species recorded from Great Britain are described by J.E.Collin in 1927 and 1961. With regard to the evaluation of the Danish population of Empidoidea, the Red List, the mentioned species in this paper shows to which extent our knowledge is incomplete. Species like *R. stigmosa* Macq. and *R. longipes* Meig., previously considered rare, proves to be fairly wide spread or even common. In other words numerous comprehensive studies should be conducted in the coming years to get a fairly complete overview of the 6-700 species of Empidoidea in the Danish fauna.

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Abbreviations Bt1= Metatarsus, front leg. EJ= East Jutland. MNHA= Museum of Natural History Aarhus. NEJ= North East Jutland. ZMUC= Zoological Museum, University of Copenhagen.

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