

Additions to the gall midge fauna of Denmark (Diptera: Cecidomyiidae)

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Abstract

Thirteen gall midge species are reported from Denmark for the first time: *Acericecis campestre* Harris, *Ametrodiplosis crassinerva* (Kieffer), *Asphondylia menthae* Kieffer, *Contarinia cucubali* Kieffer, *Contarinia dipsacearum* Rübsaamen, *Contarinia perplicata* Fedotova, *Contarinia polygonati* Rübsaamen, *Contarinia rhamni* (Rübsaamen), *Contarinia vera* Fedotova, *Geocrypta braueri* (Handlirsch), *Geocrypta rostriformis* Fedotova, *Jaapiella loticola* (Rübsaamen) and *Janetiella glechomae* Tavares. The occurrence of some of these species was predictable from their general distribution, while the finding of others was quite unexpected.

Sammenfatning

Fund af tretten arter af galmyg nye for den danske fauna belægges, nemlig *Acericecis campestre* Harris, *Ametrodiplosis crassinerva* (Kieffer), *Asphondylia menthae* Kieffer, *Contarinia cucubali* Kieffer, *Contarinia dipsacearum* Rübsaamen, *Contarinia perplicata* Fedotova, *Contarinia polygonati* Rübsaamen, *Contarinia rhamni* (Rübsaamen), *Contarinia vera* Fedotova, *Geocrypta braueri* (Handlirsch), *Geocrypta rostriformis* Fedotova, *Jaapiella loticola* (Rübsaamen) og *Janetiella glechomae* Tavares. Flere af disse arter forekommer i Danmarks nærrområder og deres forekomst her var forudsigelig, mens fund af andre arter var mere overraskende.

Introduction

Recent years have seen renewed efforts to catalogue the fauna of gall midges (Diptera: Cecidomyiidae) in Denmark, particularly the mainly plant-feeding subfamily Cecidomyiinae (e.g. Skuhrová et al. 2006, Haarder et al. 2016). Nonetheless, the family ranks as one of least known amongst Diptera in Denmark (Petersen & Meier 2003), as it seems to be the case worldwide (Espírito-Santo & Wilson Fernandes 2007, Hebert et al. 2016).

To date, a total of 388 species of Cecidomyiidae have been documented, of which 335 belong to the subfamily Cecidomyiidae. Out of these 335 species, 24 have been identified to the genus level only, but have been deemed as hitherto undescribed species based on larval characters and host plant use. The present paper reports the finding of additional 13 species, not previously recorded in Denmark.

Materials and methods

Most of the new records came from opportunistic forays by the author. However, an appreciable portion of the records resulted from a systematic survey of multi-taxon biodiversity in a set of 130 study sites under the nationwide research project Biowide, including systematic search for galling and mining arthropods (Brunbjerg et al. 2017). Identification was obtained mainly through a combination of larval characters and gall morphology and using standard reference works (e.g. Möhn 1955, Buhr 1964-1965), unless otherwise is stated.

Accounts for each species, including biology, Danish records and known distribution, are provided below. The data presented for materials examined include: Fauna districts (abbreviations according to Enghoff & Nielsen, 1977), collection site name with geographical coordinates (latlong) in brackets, optionally the host plant identity (only in case the midge species in question uses more than a single host species), habitat type, collection date, collector and – optionally – identifier, if different from the collector. Voucher specimens for the

first finds of each species have been deposited at the Zoological Museum (Natural History Museum), University of Copenhagen.

Results

***Acericecis campestre* Harris, 2004**

Several galls were found in leaves of *Acer campestre* (Sapindaceae). The galling symptoms and larval morphology correspond exactly to the recent description of the species from England (Harris 2004). A solitary larva resides on the underside of the leaf blade, in a small pit (Fig. 1a) with a corresponding small upward bulge on the adaxial side of the leaf. The bulge is surrounded by a circular discoloured – yellowish green – area, about 10 mm diam., lending the gall an appearance of a small fried egg, although green in colour (Fig. 1b). The larva is whitish, almost hyaline, short and squat of shape and it lacks a sternal spatula. Larvae leave galls in early June and live in the soil to hibernate and pupate there. The galls continue to be visible after being vacated; in fact, they increase in conspicuousness as the galled tissue wilts and turns brownish over summer. The species has earlier been confused with two *Acer pseudoplatanus*-associated species, *Drisina glutinosa* Giard, 1893, with which it is only remotely related, and *Acericecis vitrina* (Kieffer, 1909), which induces blister galls enclosing the larva (Harris, 2004).

Material examined: LFM, Løgnør in Fuglsang Storskov (54°47'11.3"N 11°48'33.7"E), old *Acer campestre* standing in forest fringe towards a large meadow, 01-vi-2016, leg. H. H. Bruun, det. K. Harris. Mainly vacated galls were found.



Fig. 1. *Acericecis campestre*, a) larva in pit with discoloured area around, at Løgnør, b) older, vacated gall with enhanced discolouration, c) detail of Emil Rostrup's herbarium specimen collected at Gisselfeld 27-06-1892 and kept in the phytopathological collections of Herb. C.

Further records: After the described encounter, it became clear that two old records of vacated galls on *Acer campestre*, reported by Henriksen & Tuxen (1944), and fitting the description quite accurately, may be attributed to this species with almost certainty: SZ, Højerup in Stevns, 24-vii-1885, leg. C. A. Gad; SZ, Gisselfeld, 27-06-1892, leg. Emil Rostrup (a herbarium sheet of the collection is still kept in the phytopathological collections in the Herbarium of the University of Copenhagen (Herb. C; Fig. 1c). Apparently no larvae or adults were deposited in the collections of the Zoological Museum in Copenhagen (Skuhravá 2005), and the species therefore not included in the checklist of Skuhravá et al. (2006). After my encounter with the species at Løgnør, vacated galls of identical appearance in leaves of *Acer campestre* were found by Simon Harder at three sites: LFM, Store Stejlebjerg at Møns Klint, 28-vi-2017; LFM, Nylukke Skov by Lerbæk, 30-vi-2017; SZ, Kløften by Stensbygård, 05-07-

2017. All records are from the southeastern part of Denmark. No rearing was attempted due to scarcity of live larvae.

Distribution: Considered as widespread in Europe, despite it being only rarely recorded (Harris 2004, Roskam & Carbonnelle 2015, Skuhravá et al. 2014).

***Ametrodiplosis crassinerva* (Kieffer, 1901)**

Gregarious (2-4 together) whitish-lemon yellow larvae were found in an unopened and somewhat greenish and swollen corolla of *Stachys sylvatica* (Lamiaceae) – the calyx not being involved in the gall (Fig. 2). Inside the gall, stamens were stunted and brownish. Several galls were found on the same host plant. The species is reported to have one generation per year and with larvae hibernating in the soil (Ellis 2019), which is in accordance with the mentioned observations.

Material examined: EJ, Kalø Manor, Låddenhoved (56°17'37.9"N 10°29'40.2"E), broad mixed hedgerow in arable landscape, 27-vi-2017, Hans Henrik Bruun.

Further records: LFM, Dronningestolen at Møns Klint, 06-vii-2017, leg. Simon Haarder; SZ, Store Fredskov, 09-vii-2017, leg. Simon Haarder.

Distribution: Widespread in Europe, e.g. France (type locality), the UK and the Netherlands (Gagné & Jaschhof 2017).



Fig. 2. *Ametrodiplosis crassinerva*, flower bud gall (upper left) in *Stachys sylvatica* from Kalø.

***Asphondylia menthae* Kieffer, 1902**

A single pale orange larva was found in an unopened and somewhat swollen flower bud of *Mentha aquatica* (Lamiaceae); the calyx being paler and broader than usual, enclosing the greened corolla, which was lined with white mycelium (Fig. 3). In the dense inflorescence of *Mentha aquatica*, individual galls were very inconspicuous. In this species, pupation is reported to take place within the gall (Ellis 2019). However, that was not observed is the single record made here.

Material examined: SZ, Fensmark Skov (55°17'37.4"N 11°47'36.0"E), mixed deciduous swamp forest, 13-viii-2017, leg. H. H. Bruun.

Distribution: Distributed in southern Europe up to Bundesland Sachsen in East-Central Germany. Based on previous knowledge, Skuhrová et al. (2014) characterized the distribution as Submediterranean in biogeographical terms. The species has not previously been reported from northern Europe, but it may well be overlooked.



Fig. 3. *Asphondylia menthae*, flower bud gall in *Mentha aquatica* at Fensmark Skov.

***Contarinia cucubali* Kieffer, 1909**

Gregarious, white, jumping larvae were found in galls on *Silene vulgaris* (Caryophyllaceae), mainly in lateral shoots low on the main stem. Each gall consisted of more pairs of leaves, on much shortened internodes, the leaves broadened and thickened, forming an elongated pointed gall (Fig. 4a). The species is probably univoltine with larvae hibernating in the soil.

However, hatching adults from mature larvae transferred from galls to soil in pots failed. The larva has a characteristic sternal spatula, which is hyaline except for the yellow apical part with two obtuse lobes, almost as long as broad, that are separated by a wide concave incision (Fig. 4b).

Material examined: NWZ, Disbjerg (55°49'41.6"N 11°26'16.0"E), disturbed sandy area, 03-viii-2017, leg. H. H. Bruun.

Distribution: Known from Italy (type locality), Switzerland and the UK (Gagné & Jaschhof 2017). New to northern Europe.



Fig. 4. *Contarinia cucubali*, a) galls in lateral buds of *Silene vulgaris* at Disbjerg, b) characteristic sternal spatula of the larva.

***Contarinia dipsacearum* Rübsaamen, 1921**

Dirty-whitish, jumping larvae found between greenish stunted flower buds in flower heads of *Knautia arvensis* (Dipsacaceae). The whole flower head appeared disfigured due to uneven flower development and inflation, and greyish, due to excess hairiness. Other flower heads in the *Knautia* population contained much younger larvae sucking the base of immature fruits (Fig. 5), with larvae sitting in a depression in the ovary. These flower heads also appeared greyish due to abnormal hairiness. Little is known about the life cycle of this species, but it is probably univoltine and with larvae hibernating in the soil (Ellis 2019). *Succisa pratensis* (Dipsacaceae) has been reported as an alternative host plant (Buhr 1964-1965).

Material examined: NEZ, Kyndby, Røglernes (55°49'04.9"N 11°54'14.9"E), old, species-rich calcareous grassland, 10-viii-2016, leg. H. H. Bruun; NWZ, Ordrup Strand (55°49'38.4"N 11°24'06.8"E), dry grassland, 03-viii-2017, leg. H. H. Bruun.

Further records: EJ, Molslaboratoriet, 20-vi-2017, leg. Marianne Graversen.

Distribution: Widespread in Europe, including Germany (type locality) and Sweden (Gagné & Jaschhof 2017).



Fig. 5. *Contarinia dipsacearum*, a) gall in flower head of *Knautia arvensis* at Kyndby, b) ovary with larva.

***Contarinia perplicateda* Fedotova, 1997**

Gregarious orange larvae found tunnelling in stunted inflorescences of *Galium verum* (Rubiaceae), each forming a dense head of unopened flowers, broadened leaves and shortened internodes (Fig. 6). The gall has the overall appearance of a gall induced by Eriophyid mites, which was mentioned in the original description along with gall morphology and dimensions, with which the Danish finds accord well (Fedotova, 1997). The species is univoltine according to Fedotova (1997), who also observed pupation in the soil. However, attempts to rear adults have hitherto been unsuccessful.

Material examined: EJ, Helgenæs, Tyskertårnet (56°06'00.3"N 10°31'45.9"E), xerothermic grassland on steep south-facing coastal slope, 07-vi-2016, leg. H. H. Bruun; NEZ, Ejby Ådal (55°42'15.5"N 11°50'31.6"E), species-rich grassland on coastal slope, 27-vi-2012, leg. H. H. Bruun, det. Marcela Skuhrová.

Further records: The species has been reported at an additional two sites: EJ, Molslaboratoriet, 17-vi-2017, leg. Linda Kjær-Thomsen & Lars Thomas; NWZ, Disbjerg, 24-vi-2017, leg. H. H. Bruun, in all cases on *Galium verum*.

Distribution: Described by Fedotova (1997) based on collections made in eastern Kazakhstan in 1986. The species has not been reported from other locations since then.



Fig. 6. *Contarinia perplicata*, a) galled inflorescence of *Galium verum*, at Tyskertårnet, b) detail showing stunted flowers, broadened bracts and a single larva exposed by opening the gall.

***Contarinia polygonati* Rübsaamen, 1921**

Gregarious milk white, jumping larvae were found in swollen unopened flower buds of *Polygonatum odoratum* (Convallariaceae) (Fig. 7). The ovary inside the gall was found to be disfigured and hollow – ovules inside aborted. Most galls were empty, suggesting hibernation in the soil.



Fig. 7. *Contarinia polygonati*, a) flower bud gall in *Polygonatum odoratum* at Røsnæs, b) fleshy galled flower (left) and normal flower with faded corolla and developing ovary (right).

Material examined: NWZ, Røsnæs, Vindekilde (55°44'05.1"N 10°53'36.7"E), *Polygonatum odoratum* in old thermophilic scrub, 03-vi-2016, leg. H. H. Bruun, det. M. Skuhravá. A few days earlier, empty galls of the species had been found at LFM, Løgnor in Fuglsang Storskov (54°47'10.4"N 11°48'41.0"E), *Polygonatum multiflorum* in old-growth mull forest, 01-vi-2016, leg. H. H. Bruun.

Distribution: Widespread in Europe, but rarely recorded (Gagné and Jaschhof 2017).

***Contarinia rhamni* (Rübsaamen, 1892)**

Whitish-pale yellow larvae were found, individually or a few together, in unopened, barely swollen flower buds of *Frangula alnus* (Rhamnaceae) (Fig. 8). The galls were rather inconspicuous. The species has a univoltine life cycle, with pupation and hibernation taking place in the soil (Ellis 2019). Rearing was not attempted due to scarcity of material.

Material examined: NEZ, Smuldmosen (55°33'09.5"N 11°53'01.6"E), 14-vi-2016, mixed scrub on moist peat soil on former forest meadow, leg. H. H. Bruun

Distribution: Widespread in Europe, including northern Germany and Norway (Gagné & Jaschhof 2017).



Fig. 8. *Contarinia rhamni*, a) flower bud gall in *Frangula alnus* at Smuldmosen (left), b) opened gall exposing a larva.

***Contarinia vera* Fedotova, 1997**

Gregarious, orange larvae were found in shoot-tip galls on *Galium verum*. The gall consists of one or more whorls of leaves, slightly (if at all) broadened, borne on much shortened internodes, forming a dense – often twisted - tuft, with the larvae living between the leaves in the gall interior (Fig. 9). The enclosed shoot apex dies and turns black. However, at the time that is apparent, the gall has typically already been vacated, as larvae hibernate in the soil. After the larvae have left, the galled leaves continue to grow, and so become longer, broader and more twisted (Fig. 9), often sitting as wilted structures overtopped by growth from lateral shoots of the plant. Larvae have been found in June and – more rarely – in August, suggesting a bivoltine life cycle, which is consistent with Fedotova's description of emergence of adults after 20 days of incubation in soil (Fedotova 1997). Unfortunately, I have so far been unsuccessful in rearing adults.

Material examined: EJ, Helgenæs, Tyskertårnet (56°06'00.3"N 10°31'45.9"E), xerothermic grassland on steep south-facing coastal slope, 07-vi-2016, leg. H. H. Bruun, det. Marcela Skuhravá; NEZ, Ejby Ådal (55°42'17.1"N 11°50'42.2"E), species-rich grassland on coastal slope, 13-vi-2017, leg. H. H. Bruun; NWZ, Disbjerg (55°49'35.7"N 11°26'10.4"E), 05-vi-2016, species-rich grassland, leg. H. H. Bruun.

Further remarks: The identification of the specimens from Disbjerg and Helgenæs worked like a revelation to me. I realized that I had previously taken detailed notes about inhabited galls of this species, but failed to reach a satisfying identification, from 2011 and onwards. Subsequently, empty galls of the species have been found at a number of places, but almost exclusively in dry grasslands of high conservation interest.

Distribution: Described from eastern Kazakhstan by Fedotova (1997). Since then only reported from Georgia (Skuhravá et al. 2013). However, Buhr (1964-65) mentions an undescribed *Contarinia* sp. (#2029), with gall morphological properties fitting *C. vera*, which he calls „widespread in Europe“. Similarly, Coulianos & Holmåsén (1991) mentions a „*Contarinia* sp.“ causing spiralled tufts of leaves at the shoot tips of *Galium verum*, with occurrence in Skåne, Öland and Uppland. Thus, probably the species occurs throughout much of the range of its host, but has escaped attention.



Fig. 9. *Contarinia vera*, a) young inhabited gall in shoot tip of *Galium verum* at Disbjerg, showing broadened leaf bases, b) older, vacated gall at Glænø, showing the typical twisted appearance.

***Geocrypta braueri* (Handlirsch, 1884)**

Whitish larvae, a few together, were found in bright red egg-shaped galls, 4-5 mm long, on the subterranean parts of *Hypericum perforatum* (Clusiaceae). The galls were formed in axillary buds, which normally develop as long, slender sub-soil runners with scattered bracts (Fig. 10). Elongation is prohibited and the broadened bracts form a thick fleshy wall, which enclose a gall chamber close to the parent stem. In most cases several galls per vertical stem have been observed. Each one contains several larvae, which hibernate – and later pupate – in whitish cocoons in the gall. Pupation takes place in the gall. However, galls are very difficult

to find in early spring, because they easily detach from the plant. Thus, all but one attempts of rearing adults have so far failed.

Material examined: SZ, Glænø, Overdrevet (55°11'31.6"N 11°25'09.1"E), dry coastal grassland, 15-viii-2016, leg. H. H. Bruun. NWZ, Disbjerg, 03-viii-2017, leg. H. H. Bruun

Further records: EJ, Molslaboratoriet, 20-vi-2017, leg. Marianne Graversen; SZ, Tårnborgh Kirke, 01-viii-2017; in all cases on *Hypericum perforatum*.

Distribution: Widespread in Europe (Gagné & Jaschhof 2017), but not previously encountered in Scandinavia.



Fig. 10. *Geocrypta braueri*, a) subterranean galls in lateral buds seen on uprooted *Hypericum perforatum* plant at Glænø, b) exuviae protruding from galls collected at Disbjerg, c) adult female reared from the same galls, d) adult male from the same collection (foto c and d: Astrid Blok van Witteloostuijn).

***Geocrypta rostriformis* Fedotova, 1997**

An orange larva was found in an eagle beak-shaped laterally flattened bulge of the stem cortex of *Galium verum* (Rubiaceae), the bulge often extended as a longitudinal fold along the stem, which in some cases were bent due to the galling (Fig. 11). Larvae have been reported to exit through a slit in the apex of the bulge to hibernate in the soil (Bland et al. 2003). The species has been encountered on *Galium verum*, *G. mollugo* and *G. boreale* (Simova-Tosić et al. 2000, Bland et al. 2003).

Material examined: EJ, Helgenæs, Tyskertårnet (56°06'00.3"N 10°31'45.9"E), *Galium verum* in xerothermic grassland on steep south-facing coastal slope, 07-vi-2016, leg. H. H. Bruun.

Further records: Empty galls strongly resembling the here described have been found twice: NWZ, Disbjerg, *Galium verum*, 24-vi-2017, leg. H. H. Bruun; SZ, Havrebjerg Skov, *Galium mollugo*, 14-viii-2017, leg. H. H. Bruun.

Distribution: Described from Kazakhstan by Fedotova (1997), but known from Scotland and northern England since 1873 (Bland et al. 2003) and from Germany (Mecklenburg and Thüringen; Buhr 1964-65) at least since 1964, i.a. under the nomen nudum "*Dasyneura galiicaulis*". Further, it has recently been reported from Italy (South Tyrol) (Skuhravá & Skuhravy 2010), Slovenia (Simova-Tosić et al. 1996), Croatia (Simova-Tosić et al. 2004) and Serbia (Simova-Tosić et al. 2000).



Fig. 11. *Geocrypta rostriformis*, eagle beak-shaped bulge of the stem cortex of *Galium verum* at Helgenæs.

Jaapiella loticola (Rübsaamen, 1889)

Gregarious orange or reddish non-jumping larvae were found among curled and stunted leaves in a tuft at the shoot tip of *Lotus tenuis* (Fabaceae) (Fig. 12). No observations were made on the hibernation or pupation. Neither was rearing attempted due to the sparse material. The species has been reported using other *Lotus* species as host elsewhere in its range (Skuhravá et al. 2014). The species is reported to be bivoltine and to pupate in the soil (Ellis 2019).

Material examined: SZ, Glænø Vesterfed near Sælhøj (55°11'19.7"N 11°25'07.1"E), upper salt marsh bordering brackish lagoon, 15-viii-2016, leg. H. H. Bruun.

Further records: B, Amaliekilde, 07-ix-2017, on *Lotus pedunculatus*, leg. Klavs Nielsen.

Distribution: Widespread in Europe, including Fennoscandia, and Western Siberia (Gagné & Jaschhof 2017).



Fig. 12. *Jaapiella loticola*, larvae in curled and amassed leaves of *Lotus tenuis* at Amaliekilde (foto: Klavs Nielsen).

***Janetiella glechomae* Tavares, 1930**

Larvae were found in fruit galls on *Glechoma hederacea* (Lamiaceae), with typically 1-2 larvae per gall (but up to five observed). The gall consisted of one mericarp (fruitlet), with the three others aborted, and the remaining swollen to a degree where the prominently hairy apex protruded between the calyx teeth (Fig. 13). Young larvae were dirty white, while fully grown larvae were dull orange. Young galls were whitish and soft, while mature galls were gray brown and harder. Whitish larvae sucking immature mericarps free in the calyx, without obvious galling, were found once amidst normal galls.

Material examined: LFM, Musse Mose (54°42'52.5"N 11°38'44.1"E), mesotrophic fen grassland, 01-vi-2016, leg. H. H. Bruun; NWZ, Kårup Skov (55°49'17.4"N 11°22'55.7"E), summer cottage allotment, 04-vi-2016, leg. H. H. Bruun.

Further records: SZ, Sorø Sønderkov, Elseengen, 13-vii-2016, leg. H. H. Bruun.

Distribution: Northern Europe.

Further remarks: *Janetiella glechomae* was described in 1930 by the Portuguese Jesuit and entomologist Joaquim da Silva Tavares (1866–1931) based on material collected in Normandy, France (Tavares 1930). His description must have fallen into neglect, as the second report after the type collection was made as much as 80 years later, in 2010 in the Netherlands (Roskam & Carbonelle 2015). Subsequently, several findings of the species have been made in the Netherlands and Belgium. Just a week after the first Danish find, I came across the species in central Finland (Bruun & Torniainen 2016).



Fig. 13. *Janetiella glechomae*, a) Young, whitish gall in enlarged mericarp, concealed in the calyx (left) and with calyx partly removed (right), b) older, browned gall protruding between the calyx teeth (centre), flanked by a normal faded flower (left), and a gall split open to expose a mature dull orange larva (right).

Discussion

Thirteen gall midge species of the subfamily Cecidomyiinae were reported as new to Denmark above. In a study predicting species to occur in Denmark based on their known distribution ranges (Petersen et al. 2001), only four of the here reported species were deemed as likely members of the Danish fauna, namely *Contarinia polygonati*, *C. rhamni*, *Geocrypta braueri* and *Jaapiella loticola*. I believe this illustrates the relatively poor knowledge of gall midge species' total distribution and occurrence in Denmark's neighbouring countries. A prime example is *Janetiella glechomae*, described in 1930, but then gone into neglect for more than 80 years and only recently recorded in several countries as soon as field entomologists looked specifically for the easily recognizable galls induced by this species. Similarly experience was gained in previous accounts on the subfamily in Denmark (e.g. Haarder et al. 2016). As a resulting rule-of-thumb, for every newly encountered species deemed as likely member of the Danish fauna, one or two unexpected species have been recorded as well. Taken at face value, this rule-of-thumb would make a very approximate estimate of the total Danish Cecidomyiinae fauna. Given that almost 90 species of those predicted by Petersen et al. (2001) to occur in Denmark have not yet been recorded, one may expect a potential addition to the Danish fauna in the range of 150-250 species of Cecidomyiinae. The other subfamilies of the family are much less known, so estimates would be extremely uncertain at this point. However, the Swedish species project has resulted in the addition of several hundred species of Winnertiinae, Porricondyliinae, Micromyinae and Lestremiinae to the Swedish fauna (e.g.

Jaschhof 2017, Jaschhof & Jaschhof 2017). For nine of the species here reported as first record for Denmark, the records also constitute the first to Scandinavia. In particular *Contarinia perplicata* and *C. vera*, first described from Central Asia, were unexpected, but also *Asphondylia menthae*, previously judged to have a Submediterranean distribution. This lends further support to the notion that many species of gall midges still are to be recognized as members of the Danish fauna.

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