

Mycophagous gall midges (Diptera: Cecidomyiidae excl. Cecidomyiinae) in Sweden: status report after 15 years of taxonomic inventory, annotated taxonomic checklist, and description of *Camptomyia alstromi* sp. nov.

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Jaschhof, M. & Jaschhof, C.: Mycophagous gall midges (Diptera: Cecidomyiidae excl. Cecidomyiinae) in Sweden: status report after 15 years of taxonomic inventory, annotated taxonomic checklist, and description of *Camptomyia alstromi* sp. nov. [**Mykofaga gallmyggor (Diptera: Cecidomyiidae excl. Cecidomyiinae) i Sverige: statusrapport efter 15 års taxonomisk inventering, kommentarer till artlistan och beskrivning av *Camptomyia alstromi* sp. nov.**] – Entomologisk Tidskrift 142 (3): 105–184. Björnlunda, Sweden 2021. ISSN 0013-886x.

As a result of 15 years of taxonomic inventory, the Swedish fauna of mycophagous gall midges (Diptera: Cecidomyiidae excl. Cecidomyiinae) is shown to include 97 genera (incl. 2 subgenera) and 639 species (incl. 19 aggregate species), not counting 178 species identified as unnamed. Species are listed and annotated regarding their geographical distribution outside and within Sweden, their first mention for Sweden in literature (“first report”), and publications useful for identification. *Camptomyia alstromi* Jaschhof & Jaschhof is described as a new species. *Paurodyla serrulata* (Jaschhof, 2013), previously classified in the genus *Porricondyla* Rondani, 1840, is a new combination. Species reported for the first time as occurring in Sweden are: *Anarete corni* (Felt, 1907); *Anarete johnsoni* (Felt, 1908); *Anarete triarthra* Edwards, 1938; *Campylomyza cornuta* Jaschhof, 1998; *Campylomyza nigroliminata* Mamaev, 1998; and *Parepidosis ulmicorticis* Mamaev, 1964. The last two species are diagnosed and illustrated. Provided also are: an introduction to the target group regarding diversity, biology, geographical distribution and study methods; an overview of classification; an outline of the inventory’s history; and a discussion reflecting on the *status quo* and the prospects for mycophagous cecidomyiid taxonomy. As a further component of the discussion, an attempt is made to estimate the number of species of Cecidomyiidae both in Sweden and the World, based on data at the authors’ disposal including that presented here.

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Prologue

Mycophagous gall midges occur abundantly in our backyards as well as nearby forests where people are used to walking their dogs or going on a mushroom foray. Countless unknown species live close to human settlements, not to speak of remote, tropical jungles. Mycophagous cecidomyiids are truly ubiquitous. But yet, few people know that these tiny, mostly harmless and seemingly useless insects exist, and even fewer have any idea of their appearance and their role in ecosystems. Why, then,

do two biologists decide to spend a considerable part of their lifetime researching the taxonomy of these midges that nobody knows? Does one become a taxonomic specialist of mycophagous cecidomyiids purely by chance? For the joy of discovery? To do something nobody else cares about? To open a further window into the diversity, complexity and other marvels of nature? To feel the satisfaction when, slowly but steadily, total chaos makes way for clarity? For the sake of enjoying the esthetics inherent in morphological microstructures?

Our motivation for doing what we have done for now almost 30 years is a combination of all these reasons. During these years our goal remained the same, while the course of events changed repeatedly and often unexpectedly. In the beginning, there was certainly no plan to spend 15 years studying the fauna of a single country in Northern Europe. The result is that our “Swedish years” gave our careers and lives a direction and rewards we never anticipated. The present paper summarizes the major events and results of our taxonomic inventory of Sweden’s mycophagous cecidomyiids, a project that occupied 15 full years within a period beginning in April 2004 and ending in July 2021.

Material and methods

Most of this paper is a summary and analysis of the literature on mycophagous cecidomyiids, including our own publications of the past 25 years. Our intention here is to edit this fairly complex subject matter for a broad audience, including fellow entomologists and entomohistorians. Much of our considerations concern, naturally, the fauna of Sweden, but since the midges addressed here are cosmopolitan, the Swedish fauna is viewed in a global context whenever appropriate. Cited in the text are checklists of species for certain places



in Sweden (Fiby urskog Nature Reserve, Grytsjön Nature Reserve, Öland), which can on request be obtained from the authors as Word documents.

As regards the taxonomic-descriptive part of this paper, we refer here to our previous publications, in particular the monographs (Jaschhof & Jaschhof 2009, 2013) and the most recent articles, such as Jaschhof & Jaschhof (2020a, 2020b, 2020c). These papers should be consulted regarding details of specimen preparation, morphological terms used here and the particulars of how species-related data are presented. The entirety of our publications may be seen as a body, which over time has grown fairly consistently and with each component correlating to another. The present publication fits into this system. Specimens referred to here are deposited either in the Naturhistoriska Riksmuseet Stockholm (NHRS) or in the Senckenberg Deutsches Entomologisches Institut in Müncheberg, Germany (SDEI). Abbreviations used are MT, for Malaise trap, and NR, for nature reserve.

Mycophagous gall midges – an introduction

Systematic position. Gall midges, Cecidomyiidae, are a megadiverse family of lower (nematoceran) Diptera, whose closest relatives are fungus gnats of the superfamily Sciaroidea (Ševčík et al. 2016). Five of six extant subfamilies have retained the mycophagous mode of feeding: Catotrichinae (which is not known to occur in Europe), Lestremiinae, Micromyinae, Winnertziinae and Porricondyliinae. Solely the Cecidomyiinae, the most evolutionary advanced and largest subfamily,

Figure 1. Male of *Svenartia spungisi* Jaschhof, 2009, a species of Porricondyliinae known from only two places in Sweden, Grytsjön NR in Småland and Ekdalen NR in Uppland. The generic name, *Svenartia*, was coined to pay tribute to Svenska artprojektet, The Swedish Taxonomy Initiative. The specific epithet honors Voldemars Spungis, a Latvian investigator of Cecidomyiidae. The image shows a specimen floating in ethanol, its abdomen is unnaturally shriveled. Photo: Mathias Jaschhof.

Figur 1. Hane av *Svenartia spungisi* Jaschhof, 2009, en art av Porricondyliinae känd från endast två platser i Sverige, Grytsjön NR i Småland och Ekdalen naturreservat i Uppland. Släktnamnet *Svenartia* myntades för att hedra Svenska artprojektet. Artepitetet hedrar Voldemars Spungis, en lettisk Cecidomyiidae-forskare. Bilden visar ett exemplar som flyter i etanol, bakkroppen onaturligt krympt. Foto: Mathias Jaschhof.

Table 1. Number of genera and species of mycophagous Cecidomyiidae extant in the World, Europe and Sweden (according to Gagné & Jaschhof 2021). *Including 4 genera and 9 species of Catotrichinae.

Tabell 1. Antal släkten och arter av mykofaga nu levande Cecidomyiidae i världen, Europa och Sverige (enligt Gagné & Jaschhof 2021). *Inklusive 4 släkten och 9 arter av Catotrichinae.

Taxon	Genera World	Genera Europe	Genera Sweden	Species World	Species Europe	Species Sweden
All Mycophages	179*	105	97	1523*	778	639
Lestremiinae	13	8	8	102	28	14
Micromyinae	43	28	27	615	368	320
Winnertziinae	31	16	12	226	110	72
Porricondyliinae	88	53	50	571	272	233

contains plant-eaters (including gall inducers, hence the name of the family) and predators. In consequence of different study methods, and due to the enormous size of the family, most investigators of gall midges reach sooner or later a point when they have to decide to specialize either in the mycophagous or phytophagous/predatory subgroups (for details, see Sikora et al. 2019).

Species richness and its geographical distribution. Of 1,523 extant species of mycophagous cecidomyiids known in the World, 778 (i.e. about one half) are found in Europe (Table 1). This is not because Europe is such an exceptional hotspot of mycophage diversity; the reason is that most previous research related to this group was conducted here. A broad belt running from the United Kingdom via the Scandinavian Peninsula to western Russia is the region surveyed best (Jaschhof & Jaschhof 2009: 18ff.; 2013: 22ff.). In 2004, when we started our work in Sweden, Northern Europe was commonly regarded as fairly well studied for the midges in question – a gross misestimation as we know today. Our research revealed the presence in Sweden of as many as 442 species new to science, of which we formally described 276, leaving 178 unnamed for the time being. Thirty-two of our newly described species were discovered in a single nature reserve in Småland (see the remarks on Grytsjön Nature Reserve below). Also, we introduced 15 new genera for species discovered in Sweden. As per December 31, 2020, we know of 817 species, both named and unnamed, occurring in Sweden – more species than are named from all of Europe. This may be taken as a measure of the potential for new discoveries in those parts of Europe that remain

virtually unstudied for the target group, including all of the Alpine and Carpathian Mountains as well as the Iberian, Apennine and Balkan Peninsulas. Mycophagous cecidomyiids outside of Europe are even more heavily underexplored. When *Winnertzia panguana* was recently described as a new species, it was the first mycophagous gall midge documented for all of Peru (Jaschhof & Jaschhof 2020c). Likewise, all that is known of the mycophagous cecidomyiids of Indonesia is a single species of Porricondyliinae, described 100 years ago (Kolesik & Gagné 2020).

The attribute “little-known” describes a further aspect. Of most of the species named in the past, including in Europe, we lack information on larvae and life histories, and our knowledge of adults is limited to male morphology and sparse data on phenology and geographic distribution. This agrees with the fact that our research unveiled 243 previously described species whose presence in Sweden was unknown before. Also, 154 of our newly described species are currently known only from Sweden, and 22 only from Öland, although we take it for granted that all these species will sooner or later be found elsewhere in Europe or the Palearctic region. According to our and other investigators’ observations, certain species are distinctly less frequently collected or encountered in nature than others; this phenomenon, commonly referred to as rarity, remains largely unexplained for the focal taxa. In Sweden, 280 species – 44% of the species total – may be regarded as rare, in the sense that they are known from only three or fewer sites. Although rarity is a vague, multi-dimensional concept, it can reveal something about a species and its habitat (Jaschhof & Jaschhof 2020e).



Figure 2. Female of *Clinorhynchus flavitarsis* (Kieffer, 1895), displaying its bright yellow tarsi (hence the specific name). In Sweden, this up to 5 mm long winnertziine is known only from Halland (Osbecks bokskogar NR) and Småland (Mårås NR). The image shows a live individual in Osbeck, on June 3, 2010. Photo: Mathias Jaschhof.

Figur 2. Hona av *Clinorhynchus flavitarsis* (Kieffer, 1895) med sin ljusgula tars (därför artnamnet). I Sverige är denna upp till 5 mm långa winnertziine endast känd från Halland (Osbecks bokskogar naturreservat) och Småland (Mårås naturreservat). Bilden visar ett levande exemplar i Osbeck den 3:e juni, 2010. Foto: Mathias Jaschhof.

Mycophagous cecidomyiids have been found on all continents, with the exception of Antarctica. Our conclusion from nearly 30 years of studying insect samples from many different places on Earth is that almost any landmass is worth a detailed investigation of its mycophagous cecidomyiid fauna if the gauge is new discoveries. The data presented in Table 1 are no doubt biased insofar as they highlight Europe and Sweden as regions of previous intense work on the group rather than hotspots of species diversity. The fact is that we lack the data to outline even the most basic patterns of mycophage diversity across the globe. Our earlier attempt to ascribe the lestremiine and micromyine species in Fennoscandia to five geographical distribution patterns (Jaschhof & Jaschhof 2009: 292ff.) must now, after several further years of survey work, be regarded as largely outdated. Although comparative data from other regions are scarce, some might regard the species richness

of mycophagous cecidomyiids in Fennoscandia as astonishing, especially in light of the short timespan available for postglacial dispersal and recolonization. However, as our investigations in Japan indicate, the fauna north of the Alps is depauperate compared with that in latitudes where Pleistocene glaciation was less severe or absent (e.g. Jaschhof 2001).

Subfamily names. A further indicator that the target group is poorly known outside academia is the fact that none of the subfamilies bears a popular vernacular name, in spite of attempts to coin those (e.g. Økland & Mamaev 1997a). We ourselves stopped using “wood midges” as the collective name for Lestremiinae and Micromyinae (Jaschhof & Jaschhof 2009), with the exception of popular science articles. Instead, we generally use lestremiines, micromyines, winnertziines and porricondyline – names that stick better in the mind if one knows that Lestremiinae (or *Lestremia*) is



Figure 3. Cecidomyiine gall midges hanging on a thread of a spider web (Coronada National Forest, Arizona, USA, August 2007). Photo: Steve A. Marshall.

Figur 3. Gallmyggor som hänger på en tråd av ett spindelnät (Coronada National Forest, Arizona, USA, augusti 2007). Foto: Steve A. Marshall.



Figure 4. Petri dish filled with cecidomyiids from one of the insect samples obtained by The Swedish Malaise Trap Project. In most Malaise trap samples, members of the Cecidomyiinae are in the majority; the number of mycophages often exceeds 100 specimens. Photo: Mathias Jaschhof.

Figur 4. Petriskål fylld med gallmyggor från ett av de insektsprover som erhållits av Svenska malaisefällprojektet. I de flesta malaisefällprover är medlemmar av Cecidomyiinae i majoritet; mykofaga arter överstiger ofta 100 exemplar. Foto: Mathias Jaschhof.



Figure 5. Grytsjön NR, municipality of Nybro, Småland, protects a superb 139 hectares of mature hemiboreal forest rich with aspen trees (12 July 2019). This nature reserve is Sweden's richest site for mycophagous cecidomyiids: 192 species were recorded there in the past and additional species are detected every year. Photo: Mathias Jaschhof.

Figur 5. Grytsjöns naturreservat, Nybro kommun, Småland, skyddar en fantastisk 139 hektar mogen hemiboreal skog rik på aspträd (12:e juli, 2019). Detta naturreservat är Sveriges rikaste plats för mykofaga gallmyggor: 192 arter registrerades där tidigare och ytterligare arter upptäckts varje år. Foto: Mathias Jaschhof.



Figure 6. The old-growth hemiboreal forest of Fiby urskog NR, municipality of Uppsala, Uppland (27 July 2009). Although only the size of barely 90 hectares, Fiby is Sweden's second most species-rich forest for mycophagous cecidomyiids. The junior author posing for size comparison. Photo: Mathias Jaschhof.

Figur 6. Den gammalväxande hemiborealskogen i Fiby urskogs naturreservat, Uppsala kommun, Uppland (27:e juli, 2009). Även om det bara är en storlek på knappt 90 hektar är Fiby Sveriges näst mest artrika skog för mykofaga gallmyggor. Andraförfattaren poserar för storleksjämförelse. Foto: Mathias Jaschhof.

derived from Lestrém, a small town in northeastern France; Micromyinae (*Micromya*) is Greek for small flies; Porricondylinae (*Porricondyla*) describes the onion-shaped flagellomeres found in many of these midges (*porrus* = Latin for leek, *condylus* = knuckle); and Winnertziinae (*Winnertzia*) honors the German dipterist Johannes Winnertz (1800–1890).

Adult biology. Where can a naturalist, eager to observe one of these tiny, elusive midges, encounter live individuals? Mycophagous cecidomyiids are positively phototactic and thus attracted to sources of bright light, such as window panes facing the sun; there they tend to "dance" up and down the glass plate in an attempt to escape. Observers should watch out for millimeter-sized, delicate midges with unproportionally long legs and antennae, and orange yellow abdomens (Figs 1–2). Also, porricondylines can be found hanging on their forelegs in spider webs, sometimes lined

up like clothes on a line, a habit shared with some cecidomyiines (Fig. 3). If a midge gets stuck to a thread (which apparently rarely happens) its legs break off behind the foreshortened first tarsomeres; a live-saving preadaptation. Another observation opportunity appears when one is lucky enough to encounter swarms of mycophagous cecidomyiids, either true mating swarms (which are typical of lestremines of the genus *Anarete* Haliday, 1833 and micromyines of the genus *Micromya* Rondani, 1840) or swarms resulting from mass emergence events (as in the micromyine genera *Bryomyia* Kieffer, 1895 and *Campylomyza* Meigen, 1818). In the latter case, hundreds to thousands of individuals (usually males, as random sampling has shown) may be found hovering in the airspace close to the forest ground from where they emerged. This spectacle of nature in miniature happens typically on calm, warm, slightly cloudy mornings in spring (southern Sweden) or summer (northern Sweden).



Figure 7. Mixed broadleaf forest with plenty of dead ash trees in Gamla Skogsby, municipality of Mörbylånga, Öland (8 April 2016). This forest, now heavily damaged by the ash dieback disease, is the type locality of 12 new species of mycophagous cecidomyiids, all described from 2013–2020. Photo: Mathias Jaschhof.

Figur 7. Blandad lövskog med massor av döda askar i Gamla Skogsby, Mörbylånga kommun, Öland (8:e april, 2016). Denna skog, som nu är kraftigt skadad av askskottsjuka, är typplatsen för 12 nya arter av mykofaga gallmyggor, alla beskrivna mellan 2013–2020. Foto: Mathias Jaschhof.



Figure 8. Anne Wilk's meadow in Ullevi, municipality of Mörbylånga, central Öland, provides the habitat for four species of Micromyinae described as new to science in 2017. Hay meadows like this, traditionally maintained and thus botanically extremely diverse, are among the most threatened biotopes in Sweden. Photo: Mathias Jaschhof.

Figur 8. Anne Wilks äng i Ullevi, Mörbylånga kommun, centrala Öland, ger livsmiljö för fyra arter av Micromyinae som beskrevs som nya för vetenskapen 2017. Höängar som detta, traditionellt underhållna och därmed botaniskt extremt artrika, är bland de mest hotade biotoperna i Sverige. Foto: Mathias Jaschhof.

Other manifestations of adult life are usually imperceptible to human observers (apart from the few taxonomists specializing in these midges). Live individuals aside, the abundance of mycophagous cecidomyiids can readily be appreciated by examining the sediment of Malaise trap catches, particularly those obtained in moist forests (Fig. 4). Even when looked at with the naked eye, or a weak magnifying glass, such samples may give a fair idea of the variation found in body size, body shape and wing vein patterns, thereby providing an idea of the diversity that fully unfolds under a microscope. In terms of taxonomy, adults are much better known than the larval and pupal stages. Although adult midges possess fully developed, apparently functioning mouthparts, the general belief is that they do not universally seek and consume food, which suggests short lifespans. Their major functions are reproduction and dispersal. With one, two or multiple generations per year, the peaks of adult activity are found in both spring/early summer and autumn (warm-temperate zone), or merely in summer (cool-temperate zone). In Sweden, the prime period for collecting adult specimens is from June to September. The midges are small enough to join the aerial plankton that drifts passively with the winds.

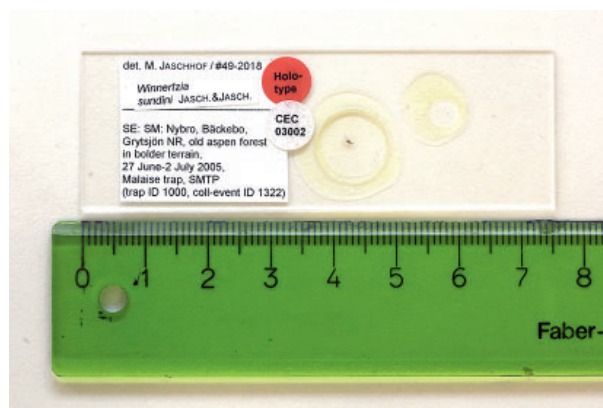


Figure 9. Holotype specimen of *Winnertzia sundini* Jaschhof & Jaschhof, 2020, mounted on microscope slide in Canada balsam. The genitalia (small cover slip) are embedded separately from the rest of the body (large cover slip). Photo: Mathias Jaschhof.

Figur 9. Holotypen av *Winnertzia sundini* Jaschhof & Jaschhof, 2020, monterat på objektglas i kanadabalsam. Genitalierna (lilla täckglaset) är preparerade separat från resten av kroppen (stora täckglaset). Foto: Mathias Jaschhof.

Mamaev's (1968) velum type of the adult interprets the long antennae and legs as morphological preadaptations for wind transport and dispersal. Indeed, porricondylines on the wing, antennae and legs widely outstretched, are reminiscent of tiny parachutes (personal observation). The shape of many micromyines, which are more compact and short-legged compared with porricondylines, suggests they are poor drifters. Given the fact that certain micromyines are only infrequently captured by Malaise trap and sweepnet, they seem to be also fairly poor flyers (see the remarks on collection methods below).

Larval biology. The attribute “mycophagous” relates to the larvae, which are commonly classified as mycelium eaters that suck the content of fungal hyphae (Mamaev & Krivosheina 1965). However, since only a few species have been examined in detail regarding their larval biology, one is well

advised to regard the attribution “mycophage” as a generalization requiring validation through more in-depth studies. As recently discussed for the genus *Winnertzia* Rondani, 1860, both the concept of the host and the issue of trophic specialization in mycophagous cecidomyiids leave much to be examined and specified (Jaschhof & Jaschhof 2020c). Based on what we know of host specificity in phytophagous gall midges, one may speculate that the great taxonomic diversity of mycophages is chiefly the result of fairly strict substrate specificity, with “substrate” describing a specific, fungus-induced stage of decay. Long evolutionary history is certainly a further explanation for the enormous extant diversity. (The oldest known fossil is the catotrichine *Mesotrichoca mesozoica* (Kovalev, 1990), found in sediment deposits of Lower Cretaceous/Upper Jurassic age, *i.e.* 145 million years ago.) Larvae of mycophages are mostly

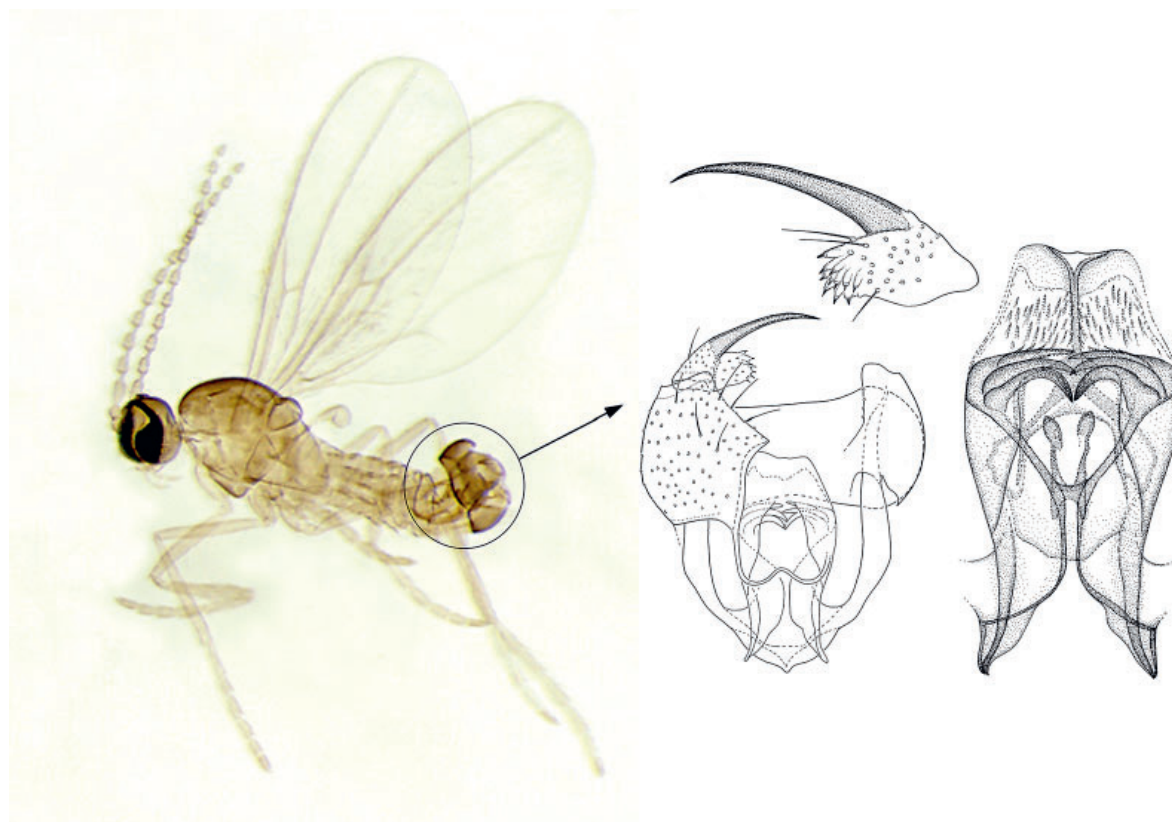


Figure 10. Micrograph (left) of a male *Aprionus victoriae* Jaschhof, 2009, the genitalia framed. The genitalic structures were drawn to depict characters diagnostic of this species (published as figure 90 in Jaschhof & Jaschhof (2009)). Photo and drawings: Mathias Jaschhof.

Figur 10. Mikroskopfoto (till vänster) av en hane av *Aprionus victoriae* Jaschhof, 2009, genitalierna inringade. Genitaliестrukturer ritades för att skildra karkatärer som är diagnostiska för denna art (publicerad som figur 90 i Jaschhof & Jaschhof (2009)). Foto och illustrationer: Mathias Jaschhof.



Figure 11. The efficiency of Malaise traps can be increased by "feeding" with decaying wood (here logs of birch) in the hope that adults will emerge from them (Grytsjön NR, 12 July 2019). Photo: Mathias Jaschhof.

Figur 11. Effektiviteten hos malaisefällor kan ökas genom att de "matas" med ruttnande trä (här stockar av björk) i hopp om att vuxna kommer ut ur dem (Grytsjöns naturreservat, 12:e juli, 2019). Foto: Mathias Jaschhof.

found in soil (pedobionts) or under bark and deep in wood of decaying broadleaf trees infested by white rot (dendrobionts) (*e.g.* Krivosheina 2006). Larvae of some Dicerurini and Asynaptini (both Porricondylinae) were found in association with living plants (*e.g.* Skuhravá & Hellrigl 2007), but the definite proof that those species are phytophagous is yet to come. As shown by the example of a species of *Camptomyia* Loew, 1850, whose larvae were found living in douglas-fir cones (Hedlin & Johnson 1968), it is not always easy to determine the actual diet of plant-associated species.

Habitats. As indicated above, mycophagous cecidomyiids are most abundant and species-rich in woodlands, broadleaf rather than coniferous and natural rather than commercial. Prime habitats, such as those shown in Figures 5–6, are characterized by the presence of many old trees, abundant mosses and lichens, plenty of large-dimensioned dead wood (typically covered with the brackets of polypore fungi), and accumulations of fallen leaves and twigs. Forests with long, uninterrupted tree continuum are among the richest habitats, which can host more than 150 species of mycophagous cecidomyiids on fewer than 100 hectares of land. The two top sites in this respect are Grytsjön Nature Reserve in Småland with 192 named species (Figs 5 & 11) and Fiby urskog Nature Reserve in Uppland with 160 named species (Fig. 6). Broadleaf forests as different as subalpine birch forest, beech forest



Figure 12. The senior author sweep-netting around fallen spruce logs in Kivach Strict NR, Russian Karelia (9 June 2005). Mosquitoes occurred in abundance, requiring protective clothing and filling the net with unwanted specimens. Photo: Catrin Jaschhof.

Figur 12. Försteförfattaren håvar runt nedfallna granstammar i Kivach Strict naturreservat, ryska Karelen (9:e juni, 2005). Stickmyggor fanns i överflöd, vilket krävde skyddskläder och fyllde nätet med oönskade exemplar. Foto: Catrin Jaschhof.

and precious broadleaf forest (ädellövskog in Swedish, Fig. 7) are other high-quality habitats of the focal taxa. Apart from forest-dwellers, there are many species with an ecological preference for open habitats, such as shrublands, grasslands (Fig. 8), gardens, fens and even deserts (*e.g.* Jaschhof & Jaschhof 2011). The taxonomy of forest dwellers is generally better studied than that of open habitat species.

Taxonomic practice. For purposes of identification and taxonomic description, specimens of mycophagous cecidomyiids need to be embedded in Canada balsam (or similar, artificial media) on glass slides, so that morphological details can be scrutinized by transmitted-light microscope (Fig. 9). According to present knowledge, only males of mycophages can be positively identified to species and therefore are of peculiar interest to taxonomists. No species can be identified without male genitalic structures being investigated, usually at 400 times magnification (Fig. 10). There is a range of methods available for collecting specimens for taxonomic scrutiny, the most efficient being Malaise trapping and hand-collecting by sweepnet and exhauster (Jaschhof & Jaschhof 2009: 27ff.; this paper, Figs 11–14). For collecting winnertziines and porricondyline we used, on a limited scale, trunk emergence traps (Jaschhof



Figure 13. Freshly captured midges are collected into ethanol-filled vials using an exhaustor (Kivach Strict NR, Russian Karelia, 9 June 2005). Photo: Catrin Jaschhof.

Figur 13. Nyfångade myggor samlas i etanolfyllda rör med hjälp av en exhaustor (Kivach Strict naturreservat, ryska Karelen, 9:e juni, 2005). Foto: Catrin Jaschhof.

& Jaschhof 2013: 30f.; this paper, Fig. 18). The variety of collecting methods aside, it is fair to say that Malaise traps were of paramount importance for revealing the species richness of mycophagous cecidomyiids, both in and beyond Fennoscandia. As regards the molecular identification of species, the building of a DNA barcode reference library for mycophagous cecidomyiids is, worldwide, in the very early stages of development. The bottleneck is obtaining specimens, especially of rare species, for DNA extraction (Jaschhof & Jaschhof 2020c). Also, barcode-based identification of mycophagous cecidomyiids is no unproblematic endeavor, and morphological expertise has been essential to explain any conflicting and otherwise suspicious findings (Jaschhof 2017b; Jaschhof & Jaschhof 2020c).

Classification

Although comprising mainly phytophages and predators, the subfamily Cecidomyiinae contains a few mycophagous subgroups, so that one should refer to the Catotrichinae, Lestremiinae, Micromyinae, Winnertziinae and Porricondylinae as the *universally* mycophagous subfamilies to avoid ambiguity. With that clarification, we will dispense further with the qualifying “universally”.

Until recently, Lestremiinae and Porricondylinae were the only mycophagous subfamilies employed in traditional classifications. This practice continued even after the paraphyletic nature of these groups had been realized (*e.g.* Panellius 1965; Gagné



Figure 14. The application of trunk emergence traps has the advantage that the larval substrate of captured midges is clearly defined. As larvae of mycophagous cecidomyiids tend to occur in patches, not evenly spread in the substrate, the efficiency of such traps is modest (Omberg, Storpissan NR, 19 June 2009). Photo: Mathias Jaschhof.

Figur 14. Användning av kläckfällor har fördelen att larvsubstratet av fångade myggor är klart avgränsat. Eftersom larver av mykofaga gallmyggor tenderar att förekomma fläckvis, inte jämnt spridda i substratet, är effektiviteten hos sådana fällor blygsam (Omberg, Storpissan naturreservat, 19:e juni, 2009). Foto: Mathias Jaschhof.

1989; Jaschhof 1998c). Work towards a natural subfamilial classification started with Jaschhof (2000), who separated the Catotrichinae (then in the rank of a tribe, Catotrichini Edwards, 1938) from the Lestremiinae. In a second step, the remainder of the traditional Lestremiinae was segregated into the Lestremiinae *sensu stricto* and the Micromyinae (Jaschhof & Jaschhof 2009). Likewise, the traditional Porricondylinae were divided into the Winnertziinae and the Porricondylinae *sensu stricto* (Jaschhof & Jaschhof 2013). This reclassification was elaborated using morphological indicators and was subsequently to a large extent confirmed by Sikora's et al. (2019) molecular phylogenetic analysis. This scheme forms the backbone of the arrangement of the mycophagous groups in the world catalog of Cecidomyiidae (Gagné & Jaschhof 2021).

Catotrichinae. This is a small, relict subfamily, whose nine extant species (in four extant genera) are found in both the Northern (North America, Asia) and the Southern Hemispheres (Australia, New Zealand) (Jaschhof & Jaschhof 2020d). We regard the occurrence of catotrichines in Europe as unlikely, although not impossible; one or two species might have survived Pleistocene glaciation

periods in woodlands or other climatically favored refuge areas persisting south of the Alps. With adult body sizes of up to 10 mm, catotrichines are among the largest cecidomyiids known. They are characterized by the most generalized wing vein pattern found in Cecidomyiidae (Jaschhof & Fitzgerald 2016: fig. 8), with only the New Zealand *Wheeleriola perplexa* Jaschhof & Jaschhof, 2020

deviating in this respect (Jaschhof & Jaschhof 2020d: fig. 1). The first tarsomeres of Catotrichinae are markedly longer than the second tarsomeres (Jaschhof & Fitzgerald 2016: fig. 3), which is an ancestral character state shared with Lestremiinae and Micromyinae.

Lestremiinae. This subfamily appeared only recently as a further candidate (besides the

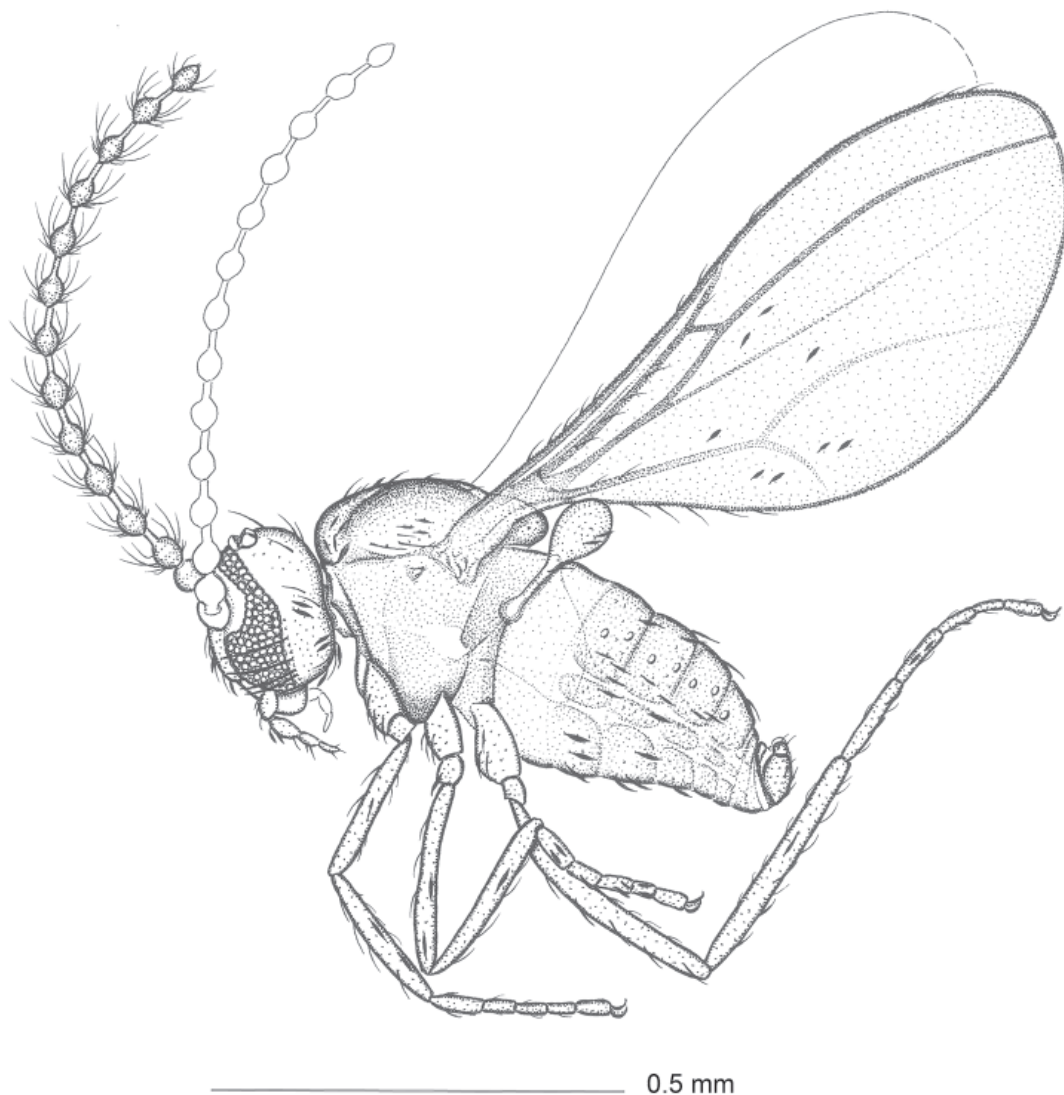


Figure 15. Line drawing of *Peromyia* sp., one set of legs and most scales omitted. The body of most *Peromyia* is densely covered in scales. Drawing: Mathias Jaschhof.

Figur 15. Illustration av *Peromyia* sp., En uppsättning ben och de flesta fjäll utelämnade. Kroppen hos de flesta *Peromyia* är täckt av fjäll. Illustration: Mathias Jaschhof.



Figure 16. Bert Viklund (1955–2014), for many years curator of Coleoptera and Diptera of the Swedish Museum of Natural History, took an active interest in our research. He supported our wood midge project by providing Malaise trap samples from, and valuable information on pristine forests in northern Sweden. Bert was first to raise our awareness of pyrophilic species among the Diptera and of the critical situation of old-growth forests and its biota in Sweden and Fennoscandia (Naturhistoriska Riksmuseet, 12 May 2005). Photo: Mathias Jaschhof.

Figur 16. Bert Viklund (1955–2014), under många år kurator för Coleoptera och Diptera på Naturhistoriska riksmuseet, intresserade sig aktivt för vår forskning. Han stödde vårt vedmyggeprojekt genom att tillhandahålla malaisefälleprouver och värdefull information om orörda skogar i norra Sverige. Bert var först med att öka vår medvetenhet om pyrofila arter bland Diptera och om den kritiska situationen för gammelskogar och dess biota i Sverige och Fennoskandien (Naturhistoriska riksmuseet, 12:e maj, 2005). Foto: Mathias Jaschhof.



Figure 17. The covers of our two books resulting from our first two STI projects: “The wood midges of Fennoscandia and Denmark” (published in 2009) and “The Porricondylinae of Sweden” (published in 2013). Photo: Mathias Jaschhof.

Figur 17. Omslagen till våra två böcker som härrör från våra två första AP-projekt: ”The wood midges of Fennoscandia and Denmark” (publicerad 2009) och ”The Porricondylinae of Sweden” (publicerad 2013). Foto: Mathias Jaschhof.

Catotrichinae) for the hypothetical sister group to all other Cecidomyiidae (Sikora et al. 2019; Jaschhof & Jaschhof 2020d). Being a comparatively small subfamily of about 100 named species, the Lestremiinae include several genera whose taxonomy is fraught with problems, such as *Anarete* Haliday, 1833, in which the delimitation of species using adult morphology is especially difficult; *Anaretella* Enderlein, 1911, which with *A. defecta* (Winnertz, 1870) includes one of the most complex, unresolved species aggregates known in mycophagous cecidomyiids; and *Lestremia* Macquart, 1826, in which a worldwide revision is pending and expected to reduce considerably the number of valid species. With body sizes of usually 2–4 mm, lestremiine adults are fairly large. Several species are remarkably common and widespread, possibly even cosmopolitan. The wing vein pattern of lestremiines is as uniform as it is distinctive (Jaschhof & Jaschhof 2009: fig. 15B), the only deviant in this respect being the Scandinavian *Eomastix incerta* (Jaschhof, 2002) (Jaschhof & Jaschhof 2009: fig. 15A).

Micromyinae. *Micromyinae* and *Porricondylinae*, both with more than 500 extant species, are the two largest subfamilies. As a striking difference, there are only half as many micromyine genera (43, including two subgenera) as there are porricondyline genera (88), fossils not counted. *Aprionus* Kieffer, 1894 and *Peromyia* Kieffer, 1894, which are two of the three largest genera of mycophagous cecidomyiids, account for more than half of the named micromyine species. The fact that previous studies only scratched the surface of micromyine diversity, especially outside Europe, is illustrated by *Aprionus*: while only 137 described species are known worldwide (113 in Europe), we know of 150 unnamed species from only two countries, Japan and Malaysia (unpublished data). The subfamily is subdivided into nine tribes, of which eight occur in the Palearctic region and Sweden. The only non-Palearctic tribe, *Pteridomyiini* Jaschhof, 2003, is as far as we know exclusively Australasian/Oceanian. The tribe *Micromyini* Jaschhof, 1998 is remarkable in that Europe hosts only a fragment of the inherent diversity, while the Eastern Palearctic and Oriental regions must be regarded as the center of extant specific and generic richness (unpublished data). The tribe *Strobliellini* Edwards, 1938, is

unusual in that its few species are rarely found in nature. Additionally, some strobliellines are hard to interpret taxonomically, and in Jaschhof's (2017a) delineation this tribe is no monophyletic group (Jaschhof 2021). Adult Micromyinae, which stand out from most other mycophagous cecidomyiids by their small, sturdy bodies with comparatively short legs (Figs 10 & 15), display a fairly broad range of different vein patterns (Jaschhof & Jaschhof 2009: fig. 15C–F, with 15F showing the venation typical of most Micromyinae). With body lengths of 0.5–0.7 mm, males of certain *Peromyia* species are among the smallest cecidomyiids known (Fig. 15).

Winnertziinae. With almost 230 extant species named, this subfamily is about twice as large as the Lestremiinae and about half the size of either the Micromyinae or Porricondylinae, thus medium-size. It contains three tribes, each with remarkable features. The tribe Heteropezini Schiner, 1868 is noteworthy in that its members are paedogenetic (a peculiarity shared only with a few species of the micromyine tribe Aprionini Jaschhof, 1998), universally small (adult body sizes <1.5 mm), and with usually fewer than five (*i.e.* two to four) tarsomeres. The tribe Diallactiini Jaschhof, 2009 is a further subgroup whose taxonomic diversity is markedly depauperate in Europe; the recent center of diallactiine occurrence is the tropics (Jaschhof 2016c). The tribe Winnertziini Panelius, 1965 is remarkable for containing what presumably is the most species-rich genus of mycophagous cecidomyiids, *Winnertzia* Rondani, 1860, with an estimated 2,000–3000 species in the World and 300–400 in Europe (Jaschhof & Jaschhof 2020c). Both Winnertziinae and Porricondylinae have the first tarsomeres shorter than the second, a derived character state they share with the Cecidomyiinae.

Porricondylinae. This is presumably the most taxonomically diverse mycophagous subfamily and the hypothetical sister group to the Cecidomyiinae (Jaschhof & Jaschhof 2013). Of three tribes recognized, members of the Dicerurini Mamaev, 1966 and Porricondylini Kieffer, 1913 are not always easy to distinguish from each other using adult-morphological indicators. The molecular analysis by Sikora et al. (2019) queried whether Dicerurini *sensu* Jaschhof & Jaschhof (2013) is a monophyletic group. As regards the generic composition of this subfamily, there are three large genera (*Porricondyla* Rondani, 1840 and



Figure 18. Our collecting and sorting equipment prepared for the departure to Finland (Naturhistoriska Riksmuseet, 24 May 2004). CJ in the background. Photo: Mathias Jaschhof.

Figur 18. Vår samlings- och sorteringsutrustning förberedd för avresan till Finland (Naturhistoriska riksmuseet, 24:e maj, 2004). CJ i bakgrunden. Foto: Mathias Jaschhof.



Figure 19. The yield of 3.5 months collecting in Finland for the "Wood midges of Fennoscandia" project. Both the large and medium-sized jars contain unsorted Malaise trap samples of insects, the vials are filled with mycophagous cecidomyiids collected by sweepnet and exhaustor (Zoological Museum Helsinki, 3 September 2004). Photo: Mathias Jaschhof.

Figur 19. Avkastningen från 3,5 månaders insamling i Finland för projektet "Wood midges of Fennoscandia". Både de stora och medelstora burkarna innehåller osorterade malaisefälteprover av insekter, flaskorna är fyllda med mykofaga gallmyggor samlade håv och exhaustor (Zoologiska museet i Helsingfors, 3:e september, 2004). Foto: Mathias Jaschhof.

Camptomyia Kieffer, 1894, each with 71 extant species; *Asynapta* Loew, 1850, with 49 extant species), about 10 genera of medium size (10–30 extant species), and a large number of genera with fewer than 10 species. Intergeneric relationships are poorly understood, one of the reasons being that the porricondyline diversity outside Europe

is grossly underexplored. For instance, of 28 genera of Porricondylinae identified as occurring in Costa Rica, only 11 are taxonomically described (unpublished data).

Project history

Taxonomy is an inherently intergenerational endeavor, and our research in Sweden fits that rule in that it has been built upon the achievements of several previous investigators. The scientific study of mycophagous cecidomyiids in Scandinavia began with the Swedish entomologist Johan Wilhelm Zetterstedt (1785–1874). Among his discoveries in Sweden were five species of Lestremiinae and Micromyinae, which even today are considered valid (Zetterstedt 1850, 1851, 1852). Remarkably enough, one of the two species he described as new, *Catarte brevinervis* (Zetterstedt, 1851), has not been rediscovered since. In the 140 years following Zetterstedt's efforts, only a very few species were added to the Swedish fauna. These additions were casually discovered species that are today regarded as common; their first mention in

literature is merely of historic interest, for there are no voucher specimens preserved for validating the original identifications. The systematic exploration of mycophagous cecidomyiids in Sweden began only in the 1990s, when Boris Michailovich Mamaev (1932–2003), a Russian scientist based in Moscow, published two lists of species he had collected during his stay as a guest researcher at the Department of Plant and Forest Protection of the Swedish University of Agricultural Sciences, Uppsala, from 21 May to 22 July 1993. The first list addressed Winnertziinae and Porricondylinae (Mamaev 1995), the second list Lestremiinae and Micromyinae (Mamaev 1996). At about the same time, the senior author of the present paper (MJ) published on lestremiines and micromyines

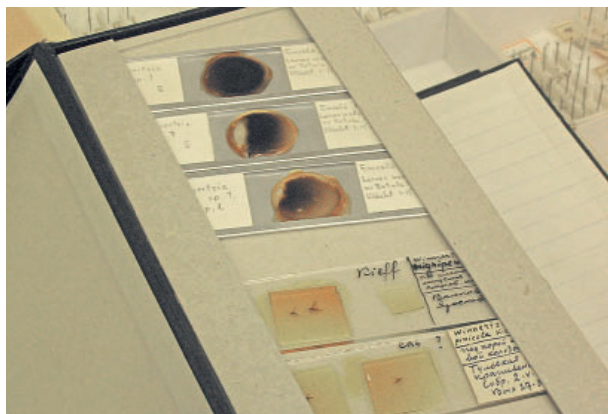


Figure 20. Good and bad side by side in the Panelius collection of Winnertziinae and Porricondylinae in the Finnish Museum of Natural History, Zoological Museum, in Helsinki (26 May 2004). While some of S. Panelius's slide-mounts were found to be discolored and thus useless as voucher specimens, our study of his collection revealed, unexpectedly, the presence of specimens identified and donated by B.M. Mamaev. Photo: Mathias Jaschhof.

Figur 20. Bra och dåligt sida vid sida i Panelius-samlingen av Winnertziinae och Porricondylinae på Finlands naturhistoriska museum, Zoologiska museet, i Helsingfors (26:e maj, 2004). Medan några av S. Panelius preparat fanns missfärgade och därmed värdelösa som voucherexemplar, avslöjade vår studie av hans samling oväntat förekomsten av exemplar som identifierade och donerade av B.M. Mamaev. Foto: Mathias Jaschhof.



Figure 21. Our collecting campaign in Russian Karelia was made possible through the friendly support by Alexei Polevoi (Forest Research Institute, Karelian Research Centre of the Russian Academy of Sciences, Petrozavodsk) and Nadeshda Kutenkova (Kivach Strict NR, near Kondopoga). The field station in Kivach, which provided our home for seven days, is maintained by the Karelian Research Centre. People in this picture are, from left to right, A. Polevoi, CJ, and Polevoi's friend, a police officer engaged to help passing the shaky Lada car through roadside checks. Photo: Mathias Jaschhof (upon arrival on 8 June 2005).

Figur 21. Vår insamlingsresa i ryska Karelen möjliggjordes genom det vänliga stödet av Alexei Polevoi (Forest Research Institute, Karelian Research Center of the Russian Academy of Sciences, Petrozavodsk) och Nadeshda Kutenkova (Kivach Strict naturreservat, nära Kondopoga). Fältstationen i Kivach, som var vårt hem i sju dagar, underhålls av Karelian Research Center. Medverkande på den här bilden är, från vänster till höger, A. Polevoi, CJ och Polevois vän, en polis som är engagerad för att hjälpa till att få den skakiga Lada-bilen att passera genom vägkontroller. Foto: Mathias Jaschhof (vid ankomst den 8:e juni, 2005).



Figure 22. Although not looking particularly spectacular, the taiga protected in Kivach Strict NR was shown to host 105 different species of Lestremiinae and Micromyinae, resulting in the site being the second most species-rich for these subfamilies in all of Fennoscandia (10 June 2005). Photo: Mathias Jaschhof.

Figur 22. Även om den inte ser särskilt spektakulär ut visades den taiga som skyddades i Kivach Strict naturreservat vara hem för 105 olika arter av Lestremiinae och Micromyinae, vilket resulterade i att platsen var den näst mest artrika för dessa underfamiljer i hela Fennoskandien (10:e juni, 2005). Foto: Mathias Jaschhof.

from Swedish and Norwegian Lapland (Jaschhof 1996), a study contributing to his doctorate thesis (Jaschhof 1998c). Shortly afterwards, from 1996–1997, MJ spent six months at the Naturhistoriska Riksmuseet Stockholm as a research fellow of the Academy of Natural Scientists Leopoldina in Halle (Saale), Germany, which presented an even better opportunity for studying samples of Swedish Lestremiinae and Micromyinae (Jaschhof 1998b). Altogether, the surveys conducted in the 1990s revealed 120 species of mycophagous cecidomyiids as occurring in Sweden. In 2004, Svenska artprojektet, widely known as The Swedish Taxonomy Initiative (STI), started funding the present authors' research into the taxonomy of mycophagous cecidomyiids of Sweden and other Nordic countries. This is where the history of the project outlined here begins.

STI's goal is to complete Linnaeus's inventory of the multicellular organisms present in Sweden (Ronquist 2010). The funding policy of this initiative has always been such that taxonomic



Figure 23. The authors on 7 June 2009 in Fiby urskog NR during an afternoon break, used to have a coffee and sorting gall midge specimens collected in the morning. Photo: Mathias Jaschhof.

Figur 23. Författarna den 7:e juni, 2009, i Fiby urskog naturreservat under en eftermiddagspaus, vanva vid att ta en kaffe och sortera gallmygprover samlade på morgonen. Foto: Mathias Jaschhof.

research and inventory projects targeting eminently poorly known groups of organisms are given highest priority. Self-evidently, the family Cecidomyiidae met this criterion. When we submitted our first research proposal, STI had been officially launched only shortly before, in 2002, meaning the initiative was new and relatively unknown to taxonomists outside Sweden (Ronquist 2010). We learned of STI through Heikki Hippa (born 1943), a taxonomic



Figure 24. Travel during collecting campaigns was by campervan, which served as a multi-purpose vehicle for locomotion, accommodation and field laboratory (camp near Suorke NR, municipality of Jokkmokk, Norrbotten, 16 July 2010). Photo: Mathias Jaschhof.

Figur 24. Resor under insamlingsturer gjordes med husbil, som fungerade som ett mångsidigt fordon för förflyttning, logi och som fältlaboratorium (läger nära Suorke naturreservat, Jokkmokks kommun, Norrbotten, 16:e juli, 2010). Foto: Mathias Jaschhof.



Figure 25. Hans Bengtsson, journalist of Laholms Tidning, prepared to conduct an interview on our work in Osbecks bokskogar NR, municipality of Laholm, Halland (3 Juni 2010). Photo: Mathias Jaschhof.

Figur 25. Hans Bengtsson, journalist på Laholms Tidning, beredd att göra en intervju om vårt arbete i Osbecks bokskogar naturreservat, Laholms kommun, Halland (3:e juni, 2010). Foto: Mathias Jaschhof.

expert of various arthropod groups (including black fungus gnats, Sciaridae, a family closely related to Cecidomyiidae) and at that time Professor of Entomology at the Naturhistoriska Riksmuseet. We immediately agreed with Hippa that our participation in STI's ambitious program would give a boost to the taxonomy of mycophagous cecidomyiids in Scandinavia and beyond. Our first project, titled "The wood midges of Fennoscandia and Denmark", ran for three years (2004–2006) under the administration of the Naturhistoriska Riksmuseet (Fig. 16). The taxonomy of wood midges (= Lestremiinae in the traditional sense) had been revised on a Holarctic scope only shortly before (Jaschhof 1998c), a circumstance that now allowed us to tackle the fauna of an unusually large and environmentally diverse study area. A further motive was that Fennoscandia and Denmark corresponded exactly to the geographic realm covered by Fauna Entomologica Scandinavica, a popular series of taxonomic monographs. The scientific results of our project, including descriptions of 56 new species and a reclassification proposal for the traditional Lestremiinae, were published as a *Studia dipterologica* Supplement (Jaschhof & Jaschhof 2009; Fig. 17), although with some delay due to MJ's temporary appointment



Figure 26. Founded in 1963 as an Ecological Field Research Station of Uppsala University by the zoologist and Professor of Entomology Bertil Kullenberg (1913–2007), Station Linné is nowadays Öland's prime address for biological researchers from all over Sweden and abroad. Photo: Christian Kutzscher (25 September 2015).

Figur 26. Grundad 1963 som en ekologisk fältforskningsstation vid Uppsala universitet av zoologen och professor i entomologi Bertil Kullenberg (1913–2007), är Station Linné numera Ölands främsta plats för biologiforskare från hela Sverige och från utlandet. Foto: Christian Kutzscher (25:e september, 2015).

at the Zoological Institute and Museum of the University of Greifswald, Germany. We have always been impressed by, and are still grateful for the remarkable extent of understanding and confidence that our funding institution showed during this phase of recess – a phase that we perceived as critical and stressful. Among the highlights of our wood midge project were an extensive collecting campaign across Finland (May–August 2004; Figs 18–20); a trip to Russian Karelia (June 2005) to collect specimens by sweepnet and exhaustor, and to install Malaise traps, which were then serviced by local assistants until September (Figs 21–22); and a visit to Moscow to study the Mamaev collection of Micromyinae in the Zoological Museum of Lomonosov State University (April 2006).

Our second project within STI's framework, which addressed the taxonomy of the traditional Porricondylinae in Sweden, ran from 2009–2012 at the Senckenberg Deutsches Entomologisches Institut in Müncheberg. With this group in focus, we entered territory then completely unknown to us.

To become familiar with the porricondylinae named in the past, we studied the types of several hundreds of species from all over the Holarctic region (cf. Jaschhof & Jaschhof 2013: 29), including those by Boris M. Mamaev, Samuel Panelius (born 1934; Fig. 20), and Voldemars Spungis (born 1953). In order to acquire representative material to study, we collected, in both 2009 and 2010, 4,000–5,000 specimens at altogether 39 different sites in Sweden, the expended effort involving >2,100 days of Malaise trapping and >400 hours of hand-collecting (Jaschhof & Jaschhof 2013: 26) (Figs 23–24). Our extensive fieldwork aroused repeated interest even in the local media (Fig. 25). The project raised the number of species known to occur in Sweden from 27 to 206, including 57 species new to science. As a further outcome, the paraphyletic subfamily Porricondylinae was separated into two putatively monophyletic subfamilies, Winnertziinae and Porricondylinae *sensu stricto* (Jaschhof & Jaschhof 2013).



Figure 27. Station Linné's crew of mostly summer students on 21 July 2017. On the right side of the picture, Dave Karlsson, Managing Director of the station, and the authors. Photo: Mathias Jaschhof.

Figur 27. Station Linnés besättning med mestadels sommarstudenter den 21:a juli, 2017. Till höger i bilden, Dave Karlsson, föreståndare för stationen, och författarna. Foto: Mathias Jaschhof.

Although these two projects were formally finalized in 2013, it was evident that the Swedish fauna of mycophagous cecidomyiids, then known to comprise exactly 400 species, was far from being exhaustively explored. Thus it was a logical step to submit a further research proposal, which we titled, optimistically, “Gall midges (Cecidomyiidae) of Sweden: towards completing the taxonomic inventory of a megadiverse family”. The new project was approved by STI in three steps: a research period of six months in 2014 and two periods of each three years from 2015–2018 and 2018–2021. Our decision to locate this project at Station Linné on Öland (Fig. 26) proved a perfect choice, not only because we were part of a team dedicated to biodiversity research (Fig. 27), but we were now close to our major supplier of study material, The Swedish Malaise Trap Project (Karlsson et al. 2005; Karlsson et al. 2020). Further, the large variety of natural habitats preserved on Öland, several of



Figure 28. Mats Karström (born 1957), referred to by journalists as a rockstar in Sweden’s nature conservation scene, is co-founder of Steget före (Swedish for “A Step Ahead”), a group of enthusiasts who since the 1980s conduct species inventories in remnant plots of pristine taiga, to provide arguments for their protection. Essentially an all-round naturalist, Mats’s speciality are fungi. The picture shows him at his Vuollerim home, Lövgården, next to our Malaise trap, installed to capture backyard insects including gall midges (1 July 2016). Photo: Mathias Jaschhof.

Figur 28. Mats Karström (född 1957), benämnd av journalister som en rockstjärna i svensk naturvård, är medgrundare av Steget Före, en grupp entusiaster som sedan 1980-talet bedriver artinventeringar i kvarvarande rester av orörd taiga för att ge argument för deras skydd. I huvudsak en allroundnaturforskare, men Mats specialitet är svampar. Bilden visar honom i sitt hem i Vuollerim, Lövgården, bredvid vår malaisefälla, installerad för att fånga insekter på bakgården inklusive gallyggor (1:a juli, 2016). Foto: Mathias Jaschhof.

which were uncommon elsewhere in Sweden, had a highly favorable effect on our inventory. Within six years, we collected and described as many as 56 new species and three new genera from the island, with 17 species discovered within sight of Station Linné. At the same time, we learned to appreciate Småland’s Grytsjön Nature Reserve as a hotspot of taxonomic diversity (Figs 5 & 11): 32 of our new species were described from there, and several rare, previously described species were found within the reserve’s boundaries and nowhere else in Sweden. Our collaboration with local conservationists in southern Lapland (2016) and Dalarna (2018, 2019) opened up new perspectives. On the one hand, we benefitted enormously from woodland experts, such as Mats Karström (Fig. 28), Bengt Oldhammer, Kjell Hedmark (Fig. 29) and Sebastian Kirppu, who shared with us their intimate knowledge of remnants of precious, mature forest and its history and biota; on the other hand, our taxonomic work became more socially relevant under the influence of these exceptional men (Jaschhof & Jaschhof 2020e). As a methodological novelty in our work, we started



Figure 29. The junior author together with Kjell Hedmark (to the left, born 1939) and Bengt Oldhammer (to the right, born 1957) of Naturskyddsföreningen Orsa, two dedicated conservationists concerned with protecting Dalarna’s last natural forests. The old pine tree in the center bears the scars of ice blocks that the river Unnån, flowing north of Orsa, releases every spring during the thaw period (5 June 2019). Photo: Mathias Jaschhof.

Figur 29. Andraförfattaren tillsammans med Kjell Hedmark (till vänster, född 1939) och Bengt Oldhammer (till höger, född 1957) från Naturskyddsföreningen Orsa, två hängivna naturvårdare som sysslar med att skydda Dalarnas sista naturskogar. Den gamla tallen i mitten bär ärr av isblock som floden Unnån, som strömmar norr om Orsa, släpper ut varje vår under issmältningen (5:e juni, 2019). Foto: Mathias Jaschhof.

using the DNA barcoding technique to support the morphology-based delimitation of species. This had a fundamental impact, for two reasons. First, DNA barcoding data had a recalibrating effect on our faculty of using morphological characters for identifying species boundaries (*e.g.* Jaschhof 2015a); second, the adoption of the integrative-taxonomic approach led to the discovery of cryptic species diversity to an enormous and unexpected extent (*e.g.* Jaschhof 2017b; Jaschhof & Jaschhof 2020c). It is fair to say that the inclusion of molecular data led to a paradigm shift regarding the identification of mycophagous cecidomyiid species, with presumably far-reaching consequences for research in the future (see discussion). At the end of our third project period we have to acknowledge that we still have a long way to go until the taxonomic inventory of Sweden's mycophagous cecidomyiids is completed. The same is true for predacious cecidomyiids of the tribe Lestodiplosini, which we initially intended to deal with during the third project period – we simply lacked the time to expedite our research on this taxon.

Checklist of Swedish Cecidomyiidae excl. Cecidomyiinae

Deadline of this list is December 31, 2020. The 639 species listed here are backed by voucher specimens we have seen. Also presented are the numbers of extant species within subfamilies and genera for the World, Europe and Sweden. The respective data were retrieved from Gagné & Jaschhof (2021) and updated according to our own previously unpublished finds. Further, we cite the number of unnamed species of which we have seen specimens from Sweden, as this may be helpful in identifying potential areas of taxonomic scrutiny in the future. The geographical distribution of genera is indicated at the level of zoogeographic region, that of species at the level of country, or in the case of more than five countries, by subsuming countries under appropriate areas. Fennoscandia as used here comprises Norway, Sweden, Finland and Russian Karelia; Northern Europe is used for a region comprising the British Isles, Fennoscandia, Jutland and the Baltic plain. For Sweden, a species's distribution is given at the level of biological province (in accordance with Fauna Entomologica Scandinavica, including abbreviations used there), or in the case of more

than five provinces, in a suitable synoptic way. Species occurring in Sweden are referred to as rare when they are known from three or fewer localities. All distributional data having become known to us till the deadline are considered. Finally, we indicate the literature containing the first report of a species's presence in Sweden, usually ignoring reports not backed by voucher specimens, and that is useful in identification. Remarks are added to highlight unresolved taxonomic issues. Taxonomic names with the notation "agg.", for aggregate, are taxa for which we have clear evidence that there are more than one species involved, with the genuine, name-bearing taxon evidently or very likely present in Sweden and thus counted as one species.

Lestremiinae Rondani, 1840

Number of tribes: 1 / 1 / 1. **Number of genera:** 13 / 8 / 8. **Number of species:** 102 / 27 / 14. **Unnamed species in Sweden:** 11.

Lestremiini Rondani, 1840

***Allarete* Pritchard, 1951**

Distribution: Holarctic, Afrotropical, Oriental. **Number of species:** 12 / 2 / 1.

(1) *Allarete nigra* Mamaev, 1994

Distribution: Palearctic (Finland, Austria; Kirghizstan, Far East Russia). SWEDEN: Up, Vb. Rare.

First report: Jaschhof & Jaschhof (2015a).

Identification: Jaschhof (1998c).

***Allaretella* Meyer & Spungis, 1994**

Distribution: Europe. Number of species: 1 / 1 / 1.

(2) *Allaretella germanica* Meyer & Spungis, 1994

Distribution: Europe (Latvia, Germany, Austria). SWEDEN: Sm, Öl, Ög, Sö.

First report: Jaschhof & Jaschhof (2017a).

Identification: Jaschhof (1998c).

***Anarete* Haliday, 1833**

Distribution: cosmopolitan (including unnamed species in the Afrotropics mentioned by Edwards (1938a)).

Number of species: 38 / 13 / 4. **Unnamed species in Sweden:** 5.

Remarks. We identified our specimens from Sweden using the accurate descriptions of *Anarete* species by Edwards (1938a), with due regard of synonyms

proposed subsequently (Pritchard 1951). It is unfortunate that subsequent revisers of *Anarete* (Pritchard 1951, Kim 1967, Berest 2000) failed to reach the high standards of Edwards's (1938a) paper, whose sole disadvantage is that it covers only the six species then known from the United Kingdom. The taxonomy of *Anarete*, including specific synonyms proposed in the past, is in need of fundamental revision. We have not seen the specimen on which Mamaev (1996) based the Swedish record of what he referred to as *Anarete coracina* (Zetterstedt, 1851). As explained earlier (Jaschhof & Jaschhof 2009: 322), Zetterstedt's (1851) *Sciara coracina* belongs to the family Sciaridae and is identical with *Scatopsiara* (*S.*) *vitripennis* Meigen, 1818.

(3) *Anarete candidata* Haliday, 1833

Distribution: Europe (United Kingdom, Germany, Russia). SWEDEN: Up, Vb. Rare.

First report: Mamaev (1996). **Identification:** Edwards (1938a).

Remarks. The presence of *A. candidata* in Sweden was previously based on a single male from Uppland (Mamaev 1996), which we have not seen. A second Swedish record of this species, this time from Västerbotten, is presented here.

Material examined. Vb: Munkfors, Ransäter, Rudstorp, sandy pasture, 3 ♂♂, 1 ♀, 23 Jul.–12 Aug. 2005, MT, SMTP leg. (trap 1002, collection event 1378); 1 ♂, same data but 12–24 Aug. 2005 (collection event 1379) (spms CEC3180–CEC3184 in NHRS).

(4) *Anarete corni* (Felt, 1907) – new record

Distribution: Holarctic (widespread USA; United Kingdom, Germany, Latvia, European Russia). SWEDEN: Go. Rare.

First report: this paper. **Identification:** Edwards (1938a), as *A. angustata* Edwards.

Remarks. Three males in our material from Gotland fit exactly Edwards's (1938a) description of *A. angustata* Edwards, 1938, a name that according to Pritchard (1951) is a junior synonym of *A. corni* (Felt, 1907). Pritchard's opinion is followed here, with the reservation that revision in the future might annul this equation.

Material examined. Go: Roleks, grazed pine forest, 1 ♂, 8–18 Jul. 2003, MT, SMTP leg. (trap 28, collection event 488); 1 ♂, same data but 2–19 Aug. 2004 (collection event 1459); 1 ♂, same data but 9 Aug.–2 Sep. 2005 (collection event 1468) (spms CEC3185–CEC3187 in NHRS).

(5) *Anarete johnsoni* (Felt, 1908) – new record

Distribution: widespread Holarctic (including United Kingdom, Germany, Latvia, European Russia), Hawaii?. SWEDEN: Öl. Rare.

First report: this paper. **Identification:** Edwards (1938a), as *A. heracleana* Edwards, 1938.

Remarks. A single male in our material from Öland fits exactly the original description of *A. heracleana* Edwards, 1938. Pritchard's (1951) decision to synonymize *A. heracleana* with *A. johnsoni* needs to be reconsidered once the genus *Anarete* will be comprehensively revised.

Material examined. Öl: Mörbylånga, Gamla Skogsby (Kalkstad), mixed broadleaf forest, 1 ♂, 8 Aug. 2014, exhaustor, M. Jaschhof leg. (spn. CEC3188 in NHRS).

(6) *Anarete triarthra* Edwards, 1938 – new record

Distribution: Europe (United Kingdom, Germany). SWEDEN: Öl, Go. Rare.

First report: this paper. **Identification:** Edwards (1938a).

Material examined. Öl: Mörbylånga, Färjestaden, backyard with birch grove, 1 ♂, 10 Jun.–10 Jul. 2015, MT, M. & C. Jaschhof leg. (spn. CEC3189); Mörbylånga, Gamla Skogsby (Kalkstad), “diversity meadow”, previous pasture cleared of scrub, 1 ♀, 30 Apr.–8 Jun. 2015, MT, M. & C. Jaschhof leg. (spn. CEC3190); **Go:** Roleks, grazed pine forest, 1 ♀, 17 Jul.–9 Aug. 2005, MT, SMTP leg. (trap 28, collection event 1467) (spn. CEC3191) (all in NHRS).

Anaretella Enderlein, 1911

Distribution: cosmopolitan. **Number of species:** 7 / 3 / 2. **Unnamed species in Sweden:** ~5 (see *A. defecta* agg.).

Remarks. This genus contains two taxa, *A. defecta* agg. and *A. iola*, both present in Sweden. The species aggregate around *A. defecta* contains many discrete species worldwide, both named and unnamed, whose exact number is unknown (see below).

(7) *Anaretella defecta* (Winnertz, 1870) agg.

Distribution: cosmopolitan. SWEDEN: ubiquitous.

First report: Mamaev (1996). **Identification:** Jaschhof (1998c).

Remarks. This taxon includes, apart from Winnertz's species, five other *Anaretella* currently regarded as valid (including the European *A. supermagna* Mamaev & Økland, 1996, not known from Sweden) and 12 names regarded as synonyms (including *Catocha spiraeina*

Felt, listed for Sweden by Mamaev (1996)). The status of all these names, of which several were used by Økland & Mamaev (1997b), needs to be revised. Such a revision should clarify the diagnostic characters of the genuine *A. defecta* and designate a neotype. Our tentative studies in the past suggest the *A. defecta* aggregate to include a number of unnamed species, several of which present in Sweden. A revision of this complex taxonomic issue poses no doubt a formidable challenge and makes only sense when addressed on a global scale and using integrative taxonomy.

(8) *Anaretella iola* Pritchard, 1851

Distribution: Holarctic (USA (Washington); widespread Palearctic and Europe). SWEDEN: common from Up to To, rare farther south (Öl, Ög).

First report: Jaschhof (1996). **Identification:** Jaschhof (1998c).

***Eomastix* Jaschhof, 2009**

Distribution: Europe. **Number of species:** 1 / 1 / 1.

(9) *Eomastix incerta* (Jaschhof, 2002)

Distribution: Europe (Norway). SWEDEN: Sö. Rare. **First report:** Jaschhof (2002). **Identification:** Jaschhof (2002), Jaschhof & Jaschhof (2009).

Remarks. This is one of a very few strictly pyrophilous species of Cecidomyiidae.

***Gongromastix* Enderlein, 1936**

Distribution: Holarctic, Oriental. **Number of species:** 5 / 2 / 1.

(10) *Gongromastix ignigena* Jaschhof, 2002

Distribution: SWEDEN: Sö. Rare.

First report: Jaschhof (2002). **Identification:** Jaschhof (2002).

Remarks. This is another pyrophilous species, known only from Tyresta Nature Reserve in Södermanland.

***Lestremia* Macquart, 1826**

Distribution: cosmopolitan. **Number of species:** 15 / 4 / 4.

Remarks. A likely explanation for the large number of *Lestremia* species known in the World is that the two most common and widespread species, *L. cinerea* and *L. leucophaea*, were described several times under different names. This remains to be validated, particularly concerning *Lestremia* species named outside of the Holarctic region.

(11) *Lestremia cinerea* Macquart, 1826

Distribution: widespread Holarctic (including Europe), also Chile, Hawaii and New Zealand. SWEDEN: ubiquitous.

First report: Jaschhof (1996), Mamaev (1996).

Identification: Jaschhof (1998c).

(12) *Lestremia leucophaea* (Meigen, 1818)

Distribution: widespread Holarctic (including Europe), also Hawaii and New Zealand. SWEDEN: ubiquitous.

First report: Mamaev (1996). **Identification:** Jaschhof (1998c).

(13) *Lestremia parvostylia* Jaschhof, 1994

Distribution: Western Palearctic (Estonia, Latvia, Hungary, Morocco). SWEDEN: Sm. Rare.

First report: Jaschhof & Jaschhof (2017a).

Identification: Jaschhof (1998c).

(14) *Lestremia solidaginis* (Felt, 1907)

Distribution: Holarctic (widespread Nearctic). SWEDEN: Sm. Rare.

First report: Jaschhof & Jaschhof (2002).

Identification: Jaschhof (1998c, 2002).

Remark. The only Palearctic records of this species are from a forest fire site in Tyresta Nature Reserve, Södermanland.

***Wasmanniella* Kieffer, 1898**

Distribution: Holarctic, Oriental. **Number of species:** 3 / 1 / 0. **Unnamed species in Sweden:** 1.

Remarks. *Wasmanniella* is a further genus of the tribe Lestremiini whose species are in need of taxonomic revision. We know of many unnamed species of this genus, especially in the tropics of both the Old and New World (unpublished data). One of these unnamed species is the *Wasmanniella* found in Sweden, which is morphologically different from both *W. aptera* Kieffer, 1898, known only from France, and *W. clauda* Pritchard, 1951 in North America. We have seen specimens of it from Halland, Bohuslän, Småland, and Uppland (Jaschhof & Jaschhof 2009: 74).

Micromyinae Rondani, 1856

Number of tribes: 9 / 8 / 8. **Number of genera:** 41 / 26 / 25. **Number of species:** 615 / 368 / 320.

Unnamed species in Sweden: 110.

Acoenoniini Pritchard, 1960***Acoenonia* Pritchard, 1947**

Distribution: Holarctic. **Number of species:** 6 / 5 / 4.

(15) *Acoenonia baltica* Jaschhof, 2017

Distribution: Europe (Latvia). SWEDEN: Öl. Rare.
First report: Jaschhof (2017a). **Identification:** Jaschhof (2017a).

(16) *Acoenonia europaea* Mamaev, 1964

Distribution: widespread Europe. SWEDEN: Sm to Lu.
First report: Mamaev (1996). **Identification:** Jaschhof (1998c, as *A. parvolobata* Mamaev & Berest, 1992, now a junior synonym).

(17) *Acoenonia nana* Meyer & Spungis, 1994

Distribution: Holarctic (Canada (Northwest Territory), USA (Oregon); Germany, Latvia). SWEDEN: Up. Rare.
First report: Jaschhof (2017a). **Identification:** Jaschhof (1998c, 2017a).

(18) *Acoenonia ulleviensis* Jaschhof, 2017

Distribution: Europe (Czech Republic). SWEDEN: Öl. Rare.
First report: Jaschhof (2017a). **Identification:** Jaschhof (2017a).

Aprionini Jaschhof, 1998***Aprionus* Kieffer, 1894**

Distribution: Holarctic, Oriental, Australasian/Oceanian. **Number of species:** 137 / 113 / 99.
Unnamed species in Sweden: 7.
Remark. This is the second most speciose genus of the subfamily Micromyinae in the World and Sweden.

(19) *Aprionus aberrantis* Mamaev, 1998

Distribution: Europe (Germany, Russia). SWEDEN: Sk, Öl.
First report: Jaschhof (2017a). **Identification:** Jaschhof (2017a).

(20) *Aprionus abiskoensis* Jaschhof, 1996

Distribution: SWEDEN: Pi, Lu, To. Rare.

First report: Jaschhof (1996). **Identification:** Jaschhof (1996), Jaschhof & Jaschhof (2009).

(21) *Aprionus accipitris* Jaschhof, 1997

Distribution: Palearctic (including Northern Europe, Germany). SWEDEN: Sm, Ög, Sö, Up.
First report: Jaschhof (1997a). **Identification:** Jaschhof (1998c), Jaschhof & Jaschhof (2009).

(22) *Aprionus acutus* Edwards, 1938

Distribution: widespread Europe. SWEDEN: Sm, Up, Lu. Rare.
First report: Jaschhof & Jaschhof (2009). **Identification:** Jaschhof (1998c), Jaschhof & Jaschhof (2009).

(23) *Aprionus adventitius* Jaschhof, 2009

Distribution: Palearctic (including Finland, Russia). SWEDEN: Dr, Vb, Nb, Lu, To.
First report: Jaschhof & Jaschhof (2009). **Identification:** Jaschhof & Jaschhof (2009).

(24) *Aprionus angeloides* Jaschhof, 1997

Distribution: SWEDEN: Pi, Lu. Rare.
First report: Jaschhof (1997a). **Identification:** Jaschhof (1998c), Jaschhof & Jaschhof (2009).

(25) *Aprionus angulatus* Mamaev, 1963

Distribution: Europe (Russia). SWEDEN: Sö, Vb, Pi, Lu.
First report: Jaschhof & Jaschhof (2009). **Identification:** Jaschhof & Jaschhof (2009).

(26) *Aprionus arcticus* Mamaev, 2001

Distribution: Palearctic (including Fennoscandia, Estonia, Germany). SWEDEN: Sm to To.
First report: Jaschhof & Jaschhof (2009). **Identification:** Jaschhof & Jaschhof (2009).

(27) *Aprionus asemus* Pritchard, 1947

Distribution: Holarctic (Canada (Ontario), USA (Minnesota, Pennsylvania?)). SWEDEN: Lu.
First report: Jaschhof & Jaschhof (2009). **Identification:** Jaschhof (1998c), Jaschhof & Jaschhof (2009).
Remark. The only Palearctic record of this species is a single male collected in Tapmokberget Nature Reserve near Vuollerim, Lule Lappmark.

(28) *Aprionus aviarius* Mamaev & Berest, 1990

Distribution: Palearctic (including Northern Europe, Germany, Ukraine). SWEDEN: widespread from Sk to Lu.

First report: Jaschhof & Jaschhof (2009).

Identification: Jaschhof (1998c, as *Aprionus ungulatus* Jaschhof, 1997, a junior synonym), Jaschhof & Jaschhof (2009).

(29) *Aprionus balduri* Jaschhof & Jaschhof, 2017

Distribution: Europe (Norway). SWEDEN: Sm. Rare.

First report: Jaschhof & Jaschhof (2017b).

Identification: Jaschhof & Jaschhof (2017b).

(30) *Aprionus barbatus* Mamaev, 1963

Distribution: Europe (Latvia, Russia). SWEDEN: Sm. Rare.

First report: Jaschhof & Jaschhof (2017a).

Identification: Spungis & Jaschhof (2000).

(31) *Aprionus bestlae* Jaschhof & Jaschhof, 2017

Distribution: Europe (Czech Republic). SWEDEN: Öl. Rare.

First report: Jaschhof & Jaschhof (2017b).

Identification: Jaschhof & Jaschhof (2017b).

(32) *Aprionus betulae* Jaschhof, 1996

Distribution: Europe (Fennoscandia, Germany). SWEDEN: Sm to To.

First report: Jaschhof (1996). **Identification:** Jaschhof (2015b).

Remark. *Aprionus betulae* in the sense of Jaschhof (1996, 1998c) was recently split into three discrete species (Jaschhof 2015b), all present in Sweden.

(33) *Aprionus betuloides* Jaschhof, 2015

Distribution: Europe (Germany). SWEDEN: Öl. Rare.

First report: Jaschhof & Jaschhof (2017a).

Identification: Jaschhof (2015b).

Remark. This is one of the species that Jaschhof (2015b) separated from *Aprionus betulae*.

(34) *Aprionus bidentatus* Kieffer, 1894

Distribution: widespread Europe. SWEDEN: Öl, Sö, Up.

First report: Jaschhof (1998c). **Identification:** Jaschhof (1998c).

(35) *Aprionus bifidus* Mamaev, 1963

Distribution: Holarctic (including Northern Europe, Germany, European Russia). SWEDEN: widespread from Sk to To.

First report: Jaschhof (1996), Mamaev (1996).

Identification: Jaschhof (1998c).

(36) *Aprionus bispinosus* Edwards, 1938

Distribution: Palearctic (including Europe (widespread)). SWEDEN: widespread from Sm to To.

First report: Mamaev (1996). **Identification:** Jaschhof

(1998c).

(37) *Aprionus borri* Jaschhof & Jaschhof, 2017

Distribution: SWEDEN: Öl.

First report: Jaschhof & Jaschhof (2017b).

Identification: Jaschhof & Jaschhof (2017b).

Remark. This species is so far known only from Öland, where it is widespread but infrequently encountered.

(38) *Aprionus brachypterus* Edwards, 1938

Distribution: Palearctic (including Europe (widespread)). SWEDEN: widespread from Sm to Lu.

First report: Jaschhof (1998c). **Identification:** Jaschhof

(1998c), Jaschhof & Jaschhof (2009).

(39) *Aprionus brevitegminis* Jaschhof, 2009

Distribution: Europe (Finland). SWEDEN: Up, Dr, Vb, Pi.

First report: Jaschhof & Jaschhof (2009).

Identification: Jaschhof & Jaschhof (2009).

(40) *Aprionus cardiophorus* Mamaev, 1963

Distribution: widespread Europe. SWEDEN: widespread from Sk to Lu.

First report: Jaschhof & Jaschhof (2009).

Identification: Spungis & Jaschhof (2000), as *Aprionus onychophorus* Berest, 1991, a junior synonym.

(41) *Aprionus carinatus* Jaschhof, 1996

Distribution: widespread Europe. SWEDEN: widespread from Sk to To.

First report: Jaschhof (1996). **Identification:** Jaschhof (1996), Jaschhof & Jaschhof (2009).

(42) *Aprionus caucasicus* Mamaev & Jaschhof, 1997

Distribution: Europe (Germany, Russia). SWEDEN: Sk. Rare.

First report: Jaschhof & Jaschhof (2015a).

Identification: Jaschhof (1998c).

(43) *Aprionus complicatus* Mamaev & Jaschhof, 1997

Distribution: widespread Europe. SWEDEN: widespread from Sk to Lu.

First report: Jaschhof & Jaschhof (2009).

Identification: Jaschhof (1998c), Spungis & Jaschhof (2000).

(44) *Aprionus confusus* Mamaev, 1969

Distribution: widespread Europe. SWEDEN: widespread from ÖI to To.

First report: Jaschhof (1996). **Identification:** Jaschhof

(1998c), Jaschhof & Jaschhof (2009).

(45) *Aprionus corniculatus* Mamaev, 1963

Distribution: widespread Europe. SWEDEN: widespread from Sm to Lu.

First report: Økland & Mamaev (1997b).

Identification: Jaschhof (1998c), Jaschhof & Jaschhof (2009).

(46) *Aprionus cornutus* Berest, 1986

Distribution: widespread Europe. SWEDEN: widespread from Sm to Lu.

First report: Økland & Mamaev (1997b).

Identification: Jaschhof (1998c), Jaschhof & Jaschhof (2009).

(47) *Aprionus dalarnensis* Mamaev, 1998

Distribution: Europe (Fennoscandia, Czech Republic). SWEDEN: Dr. Rare.

First report: Mamaev (1998a). **Identification:** Jaschhof & Jaschhof (2009).

Remark. In Fennoscandia, this species is known from one site each in northern Norway (Fø) and central Sweden (Dr), and from several sites in Finland (St, Tb, Kb, Ok).

(48) *Aprionus demonstrativus* Mamaev, 1998

Distribution: Europe (Norway, Germany, Russia). SWEDEN: Ha, Up, Dr, Lu.

First report: Jaschhof & Jaschhof (2009).

Identification: Jaschhof & Jaschhof (2009).

(49) *Aprionus denticulus* Berest, 1986

Distribution: widespread Europe. SWEDEN: Bo, Sm, Up, Lu.

First report: Jaschhof & Jaschhof (2009).

Identification: Jaschhof (1998c), Jaschhof & Jaschhof (2009).

(50) *Aprionus dentifer* Mamaev, 1965

Distribution: widespread Europe. SWEDEN: widespread from Sö to Lu.

First report: Mamaev (1996). **Identification:** Jaschhof (1998c), Jaschhof & Jaschhof (2009).

(51) *Aprionus dispar* Mamaev, 1963

Distribution: Europe (Finland, Germany, Russia, Ukraine). SWEDEN: Sm, ÖI, Up, Dr.

First report: Jaschhof & Jaschhof (2009).

Identification: Jaschhof (1998c), Jaschhof & Jaschhof (2009).

(52) *Aprionus dissectus* Mamaev & Berest, 1990

Distribution: Europe (Finland, Russia, Ukraine). SWEDEN: Sk, Sm, Nb.

First report: Jaschhof & Jaschhof (2009).

Identification: Jaschhof (1998c), Jaschhof & Jaschhof (2009).

(53) *Aprionus duplicatus* Mamaev, 1998

Distribution: Europe (Fennoscandia, Germany). SWEDEN: widespread from Sm to Lu.

First report: Mamaev (1998a). **Identification:** Jaschhof & Jaschhof (2009).

(54) *Aprionus ensiferus* Jaschhof, 1996

Distribution: Europe (Fennoscandia, Latvia, Germany). SWEDEN: Sö, Dr, Vb, Lu, To.

First report: Jaschhof (1996). **Identification:** Jaschhof (1998c), Jaschhof & Jaschhof (2009).

(55) *Aprionus fennicus* Jaschhof, 2009

Distribution: Europe (Finland). SWEDEN: Sm, Vb. Rare.

First report: Jaschhof & Jaschhof (2017a).

Identification: Jaschhof & Jaschhof (2009).

(56) *Aprionus flavidus* (Winnertz, 1870)

Distribution: Palearctic (including Europe (widespread)). SWEDEN: widespread from Sk to Lu.

First report: Mamaev (1996), there also as *Aprionus aequatus* Mamaev, 1963, a junior synonym. **Identification:** Jaschhof (1998c), Jaschhof & Jaschhof (2009).

(57) *Aprionus foliosus* Jaschhof, 2009

Distribution: Europe (Fennoscandia). SWEDEN: Sm, Dr, Lu.

First report: Jaschhof & Jaschhof (2009).

Identification: Jaschhof & Jaschhof (2009).

(58) *Aprionus forshagei* Jaschhof & Jaschhof, 2015**Distribution:** SWEDEN: Ög, Up, Dr. Rare.**First report:** Jaschhof & Jaschhof (2015a).**Identification:** Jaschhof & Jaschhof (2015a).**(59) *Aprionus frigga* Jaschhof & Jaschhof, 2017****Distribution:** SWEDEN: Öl, Sö. Rare.**First report:** Jaschhof & Jaschhof (2017b).**Identification:** Jaschhof & Jaschhof (2017b).**(60) *Aprionus gladiator* Jaschhof, 2009****Distribution:** Europe (Finland, Russia). SWEDEN: Hr, Lu. Rare.**First report:** Jaschhof & Jaschhof (2015a).**Identification:** Jaschhof & Jaschhof (2009).**(61) *Aprionus gustavssoni* Jaschhof & Jaschhof, 2015****Distribution:** SWEDEN: Up. Rare.**First report:** Jaschhof & Jaschhof (2015a).**Identification:** Jaschhof & Jaschhof (2015a).**(62) *Aprionus halteratus* (Zetterstedt, 1852)****Distribution:** widespread Europe, possibly Nearctic. SWEDEN: widespread from Sk to To.**First report:** Zetterstedt (1852). **Identification:** Jaschhof (1998c), Jaschhof & Jaschhof (2009).**(63) *Aprionus heothinos* Jaschhof, 2009****Distribution:** Palearctic (Finland, Germany; western Siberia, South Korea). SWEDEN: Lu. Rare.**First report:** Jaschhof & Jaschhof (2020b).**Identification:** Jaschhof & Jaschhof (2009).**(64) *Aprionus hintelmannonum* Jaschhof, 2009****Distribution:** Europe (Finland, Russia). SWEDEN: Up, Dr, Vb, Pi, Lu.**First report:** Jaschhof & Jaschhof (2009).**Identification:** Jaschhof & Jaschhof (2009).**(65) *Aprionus hugini* Jaschhof & Jaschhof, 2017****Distribution:** Europe (Germany). SWEDEN: Sk, Sm, Öl, Ög.**First report:** Jaschhof & Jaschhof (2017b).**Identification:** Jaschhof & Jaschhof (2017b).**(66) *Aprionus hybridus* Jaschhof, 2009****Distribution:** Europe (Russia). SWEDEN: Lu, Nb.**First report:** Jaschhof & Jaschhof (2009).**Identification:** Jaschhof & Jaschhof (2009).**(67) *Aprionus inquisitor* Mamaev, 1963****Distribution:** Palearctic (including Europe (widespread)). SWEDEN: widespread from Up to To.**First report:** Mamaev (1996). **Identification:** Jaschhof (1998c), Jaschhof & Jaschhof (2009).**(68) *Aprionus insignis* Mamaev, 1963****Distribution:** Holarctic (including Europe (widespread)). SWEDEN: widespread from Sk to Lu.**First report:** Jaschhof (1998c). **Identification:** Jaschhof (1998c), Jaschhof & Jaschhof (2009).**(69) *Aprionus internuntius* Jaschhof, 2003****Distribution:** Europe (Germany). SWEDEN: Sk, Ög, Up, Dr.**First report:** Jaschhof & Jaschhof (2020b).**Identification:** Jaschhof (2003), Jaschhof & Jaschhof (2020b).**Remark.** Subsumed under *Aprionus stylifer* Mamaev, 1998 by Jaschhof & Jaschhof (2009), this species was only recently released from synonymy (Jaschhof & Jaschhof 2020b).**(70) *Aprionus karlssonorum* Jaschhof & Jaschhof, 2015****Distribution:** Europe (Estonia, Germany). SWEDEN: Sm, Sö, Up, Dr.**First report:** Jaschhof & Jaschhof (2015a).**Identification:** Jaschhof & Jaschhof (2015a).**(71) *Aprionus karsios* Jaschhof, 2009****Distribution:** Europe (Russia). SWEDEN: Dr. Rare.**First report:** Jaschhof & Jaschhof (2009).**Identification:** Jaschhof & Jaschhof (2009).**(72) *Aprionus laevis* Mohrig, 1967****Distribution:** Palearctic (widespread Europe; South Korea). SWEDEN: widespread Sm to Dr.**First report:** Jaschhof & Jaschhof (2009).**Identification:** Jaschhof (1998c), Jaschhof & Jaschhof (2009).**(73) *Aprionus lapponicus* Jaschhof & Mamaev, 1997****Distribution:** Palearctic (Northern Europe; western Siberia). SWEDEN: widespread from Sk to To.**First report:** Mamaev & Jaschhof (1997).**Identification:** Jaschhof (1998c), Jaschhof & Jaschhof (2009).

(74) *Aprionus laricis* Mamaev & Jaschhof, 1997

Distribution: Palearctic (Finland; western Siberia). SWEDEN: Up. Rare.

First report: Jaschhof & Jaschhof (2009).

Identification: Jaschhof (1998c), Jaschhof & Jaschhof (2009).

(75) *Aprionus latens* Mamaev & Berest, 1990

Distribution: Europe (Ukraine). SWEDEN: Up, Dr. Rare.

First report: Jaschhof & Jaschhof (2015a).

Identification: Jaschhof (1998c).

(76) *Aprionus latitegminis* Jaschhof, 2009

Distribution: Europe (Finland). SWEDEN: Gä, Up, Lu. Rare.

First report: Jaschhof & Jaschhof (2009).

Identification: Jaschhof & Jaschhof (2009).

(77) *Aprionus lindgrenae* Jaschhof & Jaschhof, 2015

Distribution: Europe (Germany, Slovak Republic). SWEDEN: Bo, Sm, Dr. Rare.

First report: Jaschhof & Jaschhof (2015a).

Identification: Jaschhof & Jaschhof (2015a).

(78) *Aprionus longicollis* Mamaev, 1963

Distribution: Palearctic (Northern Europe, Germany, European Russia; western Siberia). SWEDEN: widespread from Sm to Lu.

First report: Jaschhof & Jaschhof (2009).

Identification: Jaschhof (1998c), Jaschhof & Jaschhof (2009).

(79) *Aprionus longitegminis* Yukawa, 1967

Distribution: Palearctic (Finland, Germany, Austria, European Russia; Japan). SWEDEN: widespread from Sm to Vb.

First report: Jaschhof & Jaschhof (2009).

Identification: Jaschhof & Jaschhof (2009).

(80) *Aprionus magnii* Jaschhof & Jaschhof, 2017

Distribution: Europe (Estonia). SWEDEN: Öl. Rare.

First report: Jaschhof & Jaschhof (2017b).

Identification: Jaschhof & Jaschhof (2017b).

(81) *Aprionus magnussoni* Jaschhof & Jaschhof, 2015

Distribution: SWEDEN: Ha, Öl. Rare.

First report: Jaschhof & Jaschhof (2015a).

Identification: Jaschhof & Jaschhof (2015a).

(82) *Aprionus marginatus* Mamaev, 1963

Distribution: Europe (Fennoscandia, Russia). SWEDEN: Dr, Lu. Rare.

First report: Jaschhof & Jaschhof (2009).

Identification: Jaschhof & Jaschhof (2009).

(83) *Aprionus miki* Kieffer, 1895

Distribution: Palearctic (including Europe (widespread)). SWEDEN: widespread from Sk to Lu.

First report: Jaschhof (1998c). **Identification:** Jaschhof (1998c), Jaschhof & Jaschhof (2009).

Remark. *Aprionus pullatus* Mamaev, 1998, a species described from Söderåsen National Park in Skåne, is identical with *A. miki* (cf. Jaschhof & Jaschhof 2009).

(84) *Aprionus mossbergi* Jaschhof & Jaschhof, 2020

Distribution: SWEDEN: Sk, Öl.

First report: Jaschhof & Jaschhof (2020b).

Identification: Jaschhof & Jaschhof (2020b).

(85) *Aprionus munini* Jaschhof & Jaschhof, 2017

Distribution: Europe (Germany, Hungary). SWEDEN: Sk, Sm, Öl, Up.

First report: Jaschhof & Jaschhof (2017b).

Identification: Jaschhof & Jaschhof (2017b).

(86) *Aprionus odini* Jaschhof & Jaschhof, 2017

Distribution: SWEDEN: Öl, Go.

First report: Jaschhof & Jaschhof (2017b).

Identification: Jaschhof & Jaschhof (2017b).

(87) *Aprionus oligodactylus* Jaschhof, 2009

Distribution: Europe (Finland, Czech Republic). SWEDEN: Ha, Sm, Lu. Rare.

First report: Jaschhof & Jaschhof (2009).

Identification: Jaschhof & Jaschhof (2009).

(88) *Aprionus oljonsbynensis* Jaschhof & Jaschhof, 2020

Distribution: SWEDEN: Sm, Dr. Rare.

First report: Jaschhof & Jaschhof (2020b).

Identification: Jaschhof & Jaschhof (2020b).

(89) *Aprionus paludosus* Jaschhof & Mamaev, 1997

Distribution: Europe (Fennoscandia, Germany, Russia). SWEDEN: widespread from Sk to Nb.

First report: Mamaev & Jaschhof (1997).

Identification: Jaschhof & Jaschhof (2017b).

(90) *Aprionus piceae* Jaschhof, 1997

Distribution: Europe (Fennoscandia, Germany). SWEDEN: Dr, Vb, Pi, Nb, Lu.

First report: Jaschhof (1998c). **Identification:** Jaschhof (1998c), Jaschhof & Jaschhof (2009).

(91) *Aprionus pigmentalis* Mamaev, 1998

Distribution: Palearctic (Norway, Czech Republic; eastern Siberia). SWEDEN: Öl, Sm, Pi, Lu.

First report: Jaschhof & Jaschhof (2009). **Identification:** Jaschhof & Jaschhof (2009).

(92) *Aprionus praecipuus* Jaschhof, 2009

Distribution: Europe (Fennoscandia, Russia). SWEDEN: Sk, Sö. Rare.

First report: Jaschhof & Jaschhof (2009). **Identification:** Jaschhof & Jaschhof (2009).

(93) *Aprionus pratincolus* Jaschhof & Meyer, 1995

Distribution: Palearctic (Norway, Estonia, Latvia, Germany; Kazakhstan). SWEDEN: Öl, Go, Ög, Sö, Dr.

First report: Jaschhof & Jaschhof (2009). **Identification:** Jaschhof (1998c), Jaschhof & Jaschhof (2009).

(94) *Aprionus pseudispar* Jaschhof, 1997

Distribution: Palearctic (Germany; South Korea). SWEDEN: Sk, Öl, Sö, Up.

First report: Jaschhof & Jaschhof (2009). **Identification:** Jaschhof (1998c), Jaschhof & Jaschhof (2009).

(95) *Aprionus pyxidiifer* Mamaev, 1998

Distribution: Europe (Fennoscandia). SWEDEN: widespread from Sm to Lu.

First report: Mamaev (1998a). **Identification:** Jaschhof & Jaschhof (2009).

(96) *Aprionus reduncus* Jaschhof, 2009

Distribution: Europe (Finland, Germany, Russia). SWEDEN: Sm. Rare.

First report: Jaschhof & Jaschhof (2017a). **Identification:** Jaschhof & Jaschhof (2009).

(97) *Aprionus separatus* Mamaev & Jaschhof, 1997

Distribution: Palearctic (Finland, Latvia, Germany; Far East Russia, South Korea). SWEDEN: Bl, Sö, Dr.

First report: Jaschhof & Jaschhof (2009). **Identification:** Jaschhof (1998c), Jaschhof & Jaschhof (2009).

(98) *Aprionus sievertorum* Jaschhof, 2009

Distribution: Europe (Fennoscandia). SWEDEN: Dr, Vb, Pi, Lu.

First report: Jaschhof & Jaschhof (2009). **Identification:** Jaschhof & Jaschhof (2009).

(99) *Aprionus sifae* Jaschhof & Jaschhof, 2017

Distribution: SWEDEN: Öl. Rare.

First report: Jaschhof & Jaschhof (2017b). **Identification:** Jaschhof & Jaschhof (2017b).

(100) *Aprionus similis* Mamaev, 1963

Distribution: Palearctic (widespread Europe; Far East Russia). SWEDEN: widespread from Sm to Lu.

First report: Jaschhof (1998c). **Identification:** Jaschhof (1998c), Jaschhof & Jaschhof (2009).

(101) *Aprionus sleipniri* Jaschhof & Jaschhof, 2017

Distribution: SWEDEN: Öl. Rare.

First report: Jaschhof & Jaschhof (2017b). **Identification:** Jaschhof & Jaschhof (2017b).

(102) *Aprionus spiniferus* Mamaev & Berest, 1990

Distribution: Europe (Fennoscandia, Germany, Russia, Ukraine). SWEDEN: Up, Gä, Dr, Hr, Lu.

First report: Jaschhof & Jaschhof (2009). **Identification:** Jaschhof & Jaschhof (2009).

(103) *Aprionus spiniger* (Kieffer, 1894)

Distribution: Holarctic (USA (Maine, Pennsylvania?); widespread Europe; widespread Palearctic Far East). SWEDEN: widespread from Sk to To.

First report: Mamaev (1996). **Identification:** Jaschhof (1998c), Jaschhof & Jaschhof (2009).

(104) *Aprionus stiktos* Jaschhof, 2009

Distribution: Europe (Fennoscandia, Estonia). SWEDEN: Vb, Pi, Nb, Lu.

First report: Jaschhof & Jaschhof (2009). **Identification:** Jaschhof & Jaschhof (2009).

(105) *Aprionus stylifer* Mamaev, 1998

Distribution: Europe (Fennoscandia, Estonia, Germany, Russia). SWEDEN: widespread from Sk to Nb.

First report: Jaschhof & Jaschhof (2009). **Identification:** Jaschhof & Jaschhof (2020b).

(106) *Aprionus styloideus* Mamaev & Berest, 1990

Distribution: Europe (Germany, Ukraine). SWEDEN: widespread from Sk to Nb.

First report: Jaschhof & Jaschhof (2009).
Identification: Jaschhof & Jaschhof (2020b).

(107) *Aprionus subacutus* Jaschhof, 1997

Distribution: Palearctic (Northern Europe, Germany, European Russia; Far East Russia). SWEDEN: Öl, Up, Dr, Lu.

First report: Jaschhof (1998c). **Identification:** Jaschhof (1998c), Jaschhof & Jaschhof (2009).

(108) *Aprionus subbetulae* Jaschhof, 2015

Distribution: Europe (Fennoscandia, Estonia, Germany). SWEDEN: Sk to Lu.

First report: Jaschhof & Jaschhof (2015b).
Identification: Jaschhof (2015b).

Remark. This species was separated by Jaschhof (2015b) from *Aprionus betulae* in the sense of Jaschhof (1996, 1998c).

(109) *Aprionus surtri* Jaschhof & Jaschhof, 2017

Distribution: SWEDEN: Öl. Rare.

First report: Jaschhof & Jaschhof (2017b).
Identification: Jaschhof & Jaschhof (2017b).

(110) *Aprionus svecicus* Jaschhof, 1996

Distribution: Europe (Fennoscandia), SWEDEN: Vr to To.

First report: Jaschhof (1996). **Identification:** Jaschhof (1998c), Jaschhof & Jaschhof (2009).

(111) *Aprionus taigaensis* Jaschhof, 2009

Distribution: Europe (Finland, Russia). SWEDEN: Up, Lu. Rare.

First report: Jaschhof & Jaschhof (2009).
Identification: Jaschhof & Jaschhof (2009).

(112) *Aprionus terrestris* Mamaev, 1963

Distribution: Europe (Latvia, Lithuania, Germany, Russia). SWEDEN: Öl, Ög, Lu.

First report: Jaschhof & Jaschhof (2017a).
Identification: Jaschhof (1998c).

(113) *Aprionus thori* Jaschhof & Jaschhof, 2017

Distribution: SWEDEN: Sm, Up. Rare.

First report: Jaschhof & Jaschhof (2017b).
Identification: Jaschhof & Jaschhof (2017b).

(114) *Aprionus tiliamcorticis* Mamaev, 1963

Distribution: Europe (Finland, Latvia, Germany, Russia). SWEDEN: Pi, Nb, Lu.

First report: Jaschhof & Jaschhof (1998c).
Identification: Jaschhof & Jaschhof (2009).

(115) *Aprionus tyri* Jaschhof & Jaschhof, 2017

Distribution: SWEDEN: Ha, Öl, Ög, Up, Lu.

First report: Jaschhof & Jaschhof (2017b).
Identification: Jaschhof & Jaschhof (2017b).

(116) *Aprionus victoriae* Jaschhof, 2009

Distribution: Europe (Finland). SWEDEN: Hr, Vb, Lu. Rare.

First report: Jaschhof & Jaschhof (2009).
Identification: Jaschhof & Jaschhof (2009).

(117) *Aprionus ymiri* Jaschhof & Jaschhof, 2017

Distribution: Europe (Finland). SWEDEN: Öl. Rare.

First report: Jaschhof & Jaschhof (2017b).
Identification: Jaschhof & Jaschhof (2017b).

***Mycophila* Felt, 1911**

Distribution: Holarctic, Oriental, Australasian/Oceanian. **Number of species:** 7 / 3 / 2. **Unnamed species in Sweden:** 1.

(118) *Mycophila fungicola* Felt, 1911

Distribution: scattered Holarctic (including Europe (widespread)); Hawaii, Australia, New Zealand. SWEDEN: Sk. Rare.

First report: Jaschhof & Jaschhof (2015a).
Identification: Jaschhof (1998c).

(119) *Mycophila speyeri* (Barnes, 1926)

Distribution: scattered Holarctic (including Europe (widespread)); Taiwan. SWEDEN: Go, Sö. Rare.

First report: Jaschhof & Jaschhof (2015a).
Identification: Jaschhof (1998c).

***Tekomyia* Möhn, 1960**

Distribution: Western Palearctic. **Number of species:** 1 / 1 / 1.

(120) *Tekomyia populi* Möhn, 1960

Distribution: Europe (Germany). SWEDEN: Ha, Öl, Sö.

First report: Jaschhof & Jaschhof (2017a).
Identification: Jaschhof (1998c), Jaschhof & Jaschhof (2017a).

***Tropaprionus* Jaschhof & Jaschhof, 2011**

Distribution: Palearctic, Afrotropical, Oriental.
Number of species: 7 / 1 / 1.

(121) *Tropaprionus kivachensis* (Jaschhof, 2009)

Distribution: Europe (Russia). SWEDEN: Öl, Go, Ög, Sö, Dr.
First report: Jaschhof & Jaschhof (2009).
Identification: Jaschhof & Jaschhof (2009).

Bryomyiini Berest, 1993***Bryomyia* Kieffer, 1895**

Distribution: Holarctic, Oriental. **Number of species:** 6 / 6 / 5.

(122) *Bryomyia amurensis* Mamaev & Økland 1998

Distribution: Palearctic (Far East). SWEDEN: Sm. Rare.

First report: Jaschhof & Jaschhof (2017b).
Identification: Mamaev & Økland (1998).

Remark. The Swedish record of *B. amurensis* from Grytsjön Nature Reserve, Småland (Jaschhof & Jaschhof 2017a), was previously the only evidence of this species's occurrence in the Western Palearctic. A further find, again from Småland, is recorded here.

Material examined. Sm: Nybro, Alsterbro, Alsterån, mixed forest, 3 ♂♂, 25–30 Jun. 2005, MT, SMTP leg. (trap 1008, collection event 1343) (spn CEC3365 in NHRS, spns CEC3366–CEC3367 in SDEI).

(123) *Bryomyia apsectra* Edwards, 1938

Distribution: widespread Palearctic (including Europe (widespread)). SWEDEN: widespread from Sk to Lu.

First report: Jaschhof (1996, as *B. producta*, then thought to be identical), Mamaev (1996). **Identification:** Jaschhof & Jaschhof (2009).

(124) *Bryomyia bergrothi* Kieffer, 1895

Distribution: widespread Palearctic (widespread Europe; western Siberia, China). SWEDEN: widespread from Sk to Lu.

First report: Mamaev (1996). **Identification:** Jaschhof (1998c), Jaschhof & Jaschhof (2009).

Remark. There is preliminary indication from male morphology that *B. bergrothi* in the sense of Jaschhof (1998) and Jaschhof & Jaschhof (2009) is an aggregate species.

(125) *Bryomyia gibbosa* (Felt, 1907)

Distribution: widespread Holarctic (including Europe (widespread)). SWEDEN: widespread from Sk to To.

First report: Jaschhof (1996), Mamaev (1996, there also as *Bryomyia incisa* Mamaev, 1963, a junior synonym). **Identification:** Jaschhof (1998c), Jaschhof & Jaschhof (2009).

(126) *Bryomyia producta* (Felt, 1908)

Distribution: widespread Holarctic (including Europe (widespread)). SWEDEN: widespread from Sk to To.

First report: Jaschhof (1996), Mamaev (1996).
Identification: Jaschhof & Jaschhof (2009).

***Heterogenella* Mamaev, 1963**

Distribution: Holarctic, Oriental. **Number of species:** 12 / 7 / 7.

(127) *Heterogenella bigibbata* Mamaev & Berest, 1991

Distribution: Europe (Ukraine). SWEDEN: Sk, Sm, Up.

First report: Jaschhof & Jaschhof (2015a).
Identification: Jaschhof (1998c), Jaschhof & Jaschhof (2015a).

(128) *Heterogenella cambrica* (Edwards, 1938)

Distribution: Palearctic (widespread Europe; China, South Korea). SWEDEN: Sk, Sm, Up.

First report: Jaschhof (1998c). **Identification:** Jaschhof (1998c), Jaschhof & Jaschhof (2009).

Remarks. It is likely that *H. cambrica* in the sense of Jaschhof (1998c) and Jaschhof & Jaschhof (2009) is a species aggregate. As is now obvious, male morphological indicators, which are usually used to define species of *Heterogenella*, are not sufficient here, so that support by DNA barcodes is desired to solve this issue.

(129) *Heterogenella finitima* Mamaev, 1998

Distribution: Palearctic (Northern Europe, Germany; Far East Russia). SWEDEN: Up. Rare.

First report: Jaschhof & Jaschhof (2009).
Identification: Spungis & Jaschhof (2000, as *Heterogenella multifurcata* Spungis & Jaschhof, 2000, a junior synonym).

(130) *Heterogenella hybrida* Mamaev, 1963

Distribution: Palearctic (widespread Europe; China). SWEDEN: widespread from Sm to To.

First report: Jaschhof (1996), Mamaev (1996).
Identification: Jaschhof (1998c), Jaschhof & Jaschhof (2009).

(131) *Heterogenella linearis* Yukawa, 1971

Distribution: Palearctic (Germany, Ukraine; China, Far East Russia, Japan). SWEDEN: Sö, Dr, Vb, Nb, Lu.

First report: Jaschhof (1998c). **Identification:** Jaschhof (1998c), Jaschhof & Jaschhof (2009).

(132) *Heterogenella minuta* Jaschhof, 2009

Distribution: Europe (Estonia, Germany, Russia). SWEDEN: Sk, Sm, Öl, Ög, Up.

First report: Jaschhof & Jaschhof (2015a).
Identification: Jaschhof & Jaschhof (2009).

(133) *Heterogenella transgressoris* Jaschhof, 1998

Distribution: Europe (Norway, Estonia, Latvia, Germany). SWEDEN: Ög, Up, Dr, Lu.

First report: Jaschhof & Jaschhof (2015a).
Identification: Jaschhof (1998c), Jaschhof & Jaschhof (2009).

***Skuhraviana* Mamaev, 1963**

Distribution: Holarctic. **Number of species:** 1 / 1 / 1.

(134) *Skuhraviana triangulifera* Mamaev, 1963

Distribution: Holarctic (USA (Virginia, Pennsylvania?); widespread Europe; Far East Russia). SWEDEN: widespread from Sk to Nb.

First report: Jaschhof (1998c). **Identification:** Jaschhof (1998c), Jaschhof & Jaschhof (2009).

Campylomyzini Kieffer, 1898

***Campylomyza* Meigen, 1818**

Distribution: almost cosmopolitan (lacking Afrotropics). **Number of species:** 38 / 34 / 34.
Unnamed species in Sweden: 34.

Remarks. The task of revising the taxonomy of *Campylomyza* is unfinished, although certain subgroups were treated in recent years (Jaschhof 1998c, 2015a; Jaschhof & Jaschhof 2009). We currently know of 34 unnamed species in Sweden and expect more to be detected as taxonomic surveys continue.

(135) *Campylomyza abbreviata* Jaschhof, 2009

Distribution: Europe (Fennoscandia). SWEDEN: widespread from Sm to Pi.

First report: Jaschhof & Jaschhof (2009).
Identification: Jaschhof & Jaschhof (2009).

(136) *Campylomyza abjecta* Mamaev, 1998

Distribution: Palearctic (Far East Russia). SWEDEN: Sk, Up. Rare.

First report: Jaschhof & Jaschhof (2017a).
Identification: Jaschhof & Jaschhof (2017a).

(137) *Campylomyza aemula* Mamaev, 1998

Distribution: Europe (UK, Fennoscandia, Germany, Russia). SWEDEN: Sö to Lu.

First report: Jaschhof & Jaschhof (2009).
Identification: Jaschhof & Jaschhof (2009).

Remarks. It is now evident that the varieties of *C. aemula* noticed by Jaschhof & Jaschhof (2009) are actually discrete species (about five from Sweden alone). To solve this issue definitely, DNA barcoding data are needed in support of preliminary indication from male morphology (Jaschhof & Jaschhof 2009: 101ff.).

(138) *Campylomyza alnea* Jaschhof, 2009

Distribution: Europe (Germany). SWEDEN: Sm, Öl, Up.

First report: Jaschhof & Jaschhof (2009).
Identification: Jaschhof & Jaschhof (2009).

(139) *Campylomyza alpina* Siebke, 1863

Distribution: Palearctic (UK, Fennoscandia; China, Japan). SWEDEN: widespread from Sm to Lu.

First report: Mamaev (1996, as *Campylomyza pinetorum* (Edwards, 1938), a junior synonym).
Identification: Jaschhof (1998c), Jaschhof & Jaschhof (2009).

(140) *Campylomyza angulata* Jaschhof, 2015

Distribution: Palearctic (Finland; Japan). SWEDEN: widespread from Sk to Pi.

First report: Jaschhof (2015a). **Identification:** Jaschhof (2015a).

Remark. This species was before 2015 subsumed under *Campylomyza serrata* (see below).

(141) *Campylomyza appendiculata* Jaschhof, 2015

Distribution: Palearctic (Fennoscandia, Netherlands; Japan, South Korea). SWEDEN: Öl. Rare.

First report: Jaschhof & Jaschhof (2017a).
Identification: Jaschhof (2015a).

Remark. This is a further species that before 2015 was not distinguished from *Campylomyza serrata* (see below).

(142) *Campylomyza arcuata* Jaschhof, 2009

Distribution: Europe (Fennoscandia, Germany). SWEDEN: Dr to To.

First report: Jaschhof & Jaschhof (2009).

Identification: Jaschhof & Jaschhof (2009).

(143) *Campylomyza armata* Mamaev, 1963

Distribution: widespread Europe. SWEDEN: Up, Dr, Vb, Lu.

First report: Jaschhof (1998c). **Identification:** Jaschhof (1998c), Jaschhof & Jaschhof (2009).

(144) *Campylomyza bicolor* Meigen, 1818

Distribution: widespread Europe. SWEDEN: Sm, Ög, Lu, To.

First report: Zetterstedt (1850). **Identification:** Jaschhof (1998c), Jaschhof & Jaschhof (2009).

(145) *Campylomyza borealis* Jaschhof, 2009

Distribution: Europe (Norway, Germany). SWEDEN: Dr, Vb, Nb, Pi, To.

First report: Jaschhof & Jaschhof (2009).

Identification: Jaschhof & Jaschhof (2009).

(146) *Campylomyza cavitata* Mamaev, 1998

Distribution: Palearctic (Finland, Germany, European Russia; Far East Russia). SWEDEN: Sm, Up, Dr, Gä, Lu.

First report: Jaschhof & Jaschhof (2009).

Identification: Jaschhof & Jaschhof (2009).

(147) *Campylomyza cingulata* Jaschhof, 2009

Distribution: Europe (Fennoscandia, Germany). SWEDEN: Sö to Lu.

First report: Jaschhof & Jaschhof (2009).

Identification: Jaschhof & Jaschhof (2009).

(148) *Campylomyza cornuta* Jaschhof, 1998 – new record

Distribution: Europe (Lithuania, Germany). SWEDEN: Öl, Lu. Rare.

First report: this paper. **Identification:** Jaschhof (1998c).

Material examined. Öl: Mörbylånga, Skogsby, Station Linné, swampy meadow next to willow scrub, 1 ♂, 6–27 Sep. 2016, MT, M. & C. Jaschhof & E. Gustavsson leg.

(spn CEC3383 in NHRS); Lu: Jokkmokk, Vuollerim, Älrvägen, Lövgården, meadow with rich flora, 1 ♂, 1–15 Jul. 2017, MT, M. Karström & M. & C. Jaschhof leg. (spn CEC3386 in SDEI).

(149) *Campylomyza coronoidea* Jaschhof, 1998

Distribution: Europe (Latvia). SWEDEN: Dr, Vb, Lu.

First report: Jaschhof (1998a). **Identification:** Jaschhof (1998c).

(150) *Campylomyza dilatata* Felt, 1907 agg.

Distribution: widespread Holarctic (including Europe (widespread)). SWEDEN: Up, Pi, To.

First report: Jaschhof (1996). **Identification:** Jaschhof (1998c), Jaschhof & Jaschhof (2009).

Remarks. *Campylomyza dilatata* in the sense of Jaschhof (1998c) and Jaschhof & Jaschhof (2009) consists of two discrete species, both present in Sweden. There is preliminary indication of a third species of this aggregate, known from Uppland. Revisers of this issue will need to restudy the types of both *C. dilatata* and *Campylomyza lobata* Edwards, 1938, a junior synonym.

(151) *Campylomyza falcifera* Jaschhof, 2009

Distribution: Europe (Fennoscandia, Germany). SWEDEN: Sm to To.

First report: Jaschhof & Jaschhof (2009).

Identification: Jaschhof & Jaschhof (2009).

(152) *Campylomyza flavipes* Meigen, 1818

Distribution: widespread Holarctic (including Europe (widespread)); New Zealand. SWEDEN: Sö, Up, Vb.

First report: Jaschhof & Jaschhof (2009) (see the remarks below). **Identification:** Jaschhof & Jaschhof (2009).

Remarks. *Campylomyza flavipes*, which is one of several *Campylomyza* with generally similar male morphology, was only recently more stringently defined (Jaschhof & Jaschhof 2009: 106). Before 2009, the name was used for a species aggregate. We currently know of about five unnamed species in Sweden close to *C. flavipes*. Økland & Mamaev (1997b) referred to Swedish records of *Campylomyza pallipes* (Zetterstedt, 1850) and *Campylomyza pumila* Winnertz, 1870, two species that we regard as identical with *C. flavipes* (cf. Jaschhof 1998c).

(153) *Campylomyza furva* Edwards, 1938

Distribution: Palearctic (Northern Europe, Germany, Austria; South Korea). SWEDEN: Öl and Go to Lu.

First report: Jaschhof & Jaschhof (2009).
Identification: Jaschhof & Jaschhof (2009).

(154) *Campylomyza fusca* Winnertz, 1870 agg.

Distribution: widespread Holarctic (including Europe (widespread)). SWEDEN: Öl, Dr, Hr, Lu.

First report: Jaschhof & Jaschhof (2009) (see the remark below). **Identification:** Jaschhof & Jaschhof (2009).

Remarks. *Campylomyza fusca* in the sense of Jaschhof (1998c) and Jaschhof & Jaschhof (2009) consists of three discrete species in Sweden, which raises the question of how the genuine *C. fusca* is defined. This issue needs restudy in a broader geographic scope. Jaschhof's (1998b, 1998c) record of *C. fusca* from Gästrikland, which is the first find published for Sweden, is based on misidentification and actually refers to *C. stegetfore* (see below).

(155) *Campylomyza hybrida* Jaschhof, 2009

Distribution: Europe (Russia). SWEDEN: Up. Rare.

First report: Jaschhof & Jaschhof (2009).

Identification: Jaschhof & Jaschhof (2009).

(156) *Campylomyza inornata* Jaschhof, 2009

Distribution: Europe (Fennoscandia, Germany). SWEDEN: Sö, Up. Rare.

First report: Jaschhof & Jaschhof (2009).

Identification: Jaschhof & Jaschhof (2009).

(157) *Campylomyza insolita* Jaschhof, 2009

Distribution: Europe (Finland, Germany). SWEDEN: Sm, Up, Dr. Rare.

First report: Jaschhof & Jaschhof (2015a).

Identification: Jaschhof & Jaschhof (2009).

(158) *Campylomyza lapponica* Jaschhof, 2015

Distribution: SWEDEN: Pi, Nb. Rare.

First report: Jaschhof (2015a). **Identification:** Jaschhof (2015a).

Remark. This species was before 2015 subsumed under *Campylomyza serrata* (see below).

(159) *Campylomyza mohrigi* Jaschhof, 2009

Distribution: widespread Palearctic (including Europe (widespread)). SWEDEN: Sm, Öl, Up, Lu.

First report: Jaschhof & Jaschhof (2009).

Identification: Jaschhof & Jaschhof (2009).

(160) *Campylomyza nigroliminata* Mamaev, 1998 – new record

Distribution: Europe (Norway, Russia). SWEDEN: Up, Vb. Rare.

First report: this paper. **Identification:** this paper.

Material examined. Up: Stockholm, Norra Djurgården, mixed broadleaf/coniferous forest, 2 ♂♂, 2 Oct. 2004, sweepnet & exhauster, M. Jaschhof leg. (spn FENN1529 in NHRS, FENN1530 in SDEI); Lövstabruk, 2 ♂♂, Sep.–Oct. 1992, MT, H. Hippa & B. Gustafsson leg. (spns A4620–A4630 in SDEI); **Vb:** 5 km SE Lövvånger, Kallviken, mixed broadleaf forest predominated by gray alder, 2 ♂♂, 25 Jun.–15 Sep. 1997, MT, H. Sporrang & B. Viklund leg. (spn FENN1531 in NHRS, FENN1532 in SDEI). **Norway/Bv:** Hol, Geilo, Kikut, 3 ♂♂, 1 Sep. 2003, MT, E. Rindal leg. (spns FENN3371–FENN3373 in SDEI).

(161) *Campylomyza ormerodi* Kieffer, 1913

Distribution: Europe (UK, Fennoscandia, Germany). SWEDEN: Sm to Lu.

First report: Jaschhof & Jaschhof (2009) (see the remark below). **Identification:** Jaschhof & Jaschhof (2009).

Remark. Literature before 2009 (Jaschhof 1998b, 1998c) referred to a species aggregate, including the genuine *C. ormerodi*.

(162) *Campylomyza paenebicolor* Jaschhof, 2009

Distribution: Europe (Norway, Germany, Czech Republic). SWEDEN: Öl, Up, Dr, Lu.

First report: Jaschhof & Jaschhof (2009).

Identification: Jaschhof & Jaschhof (2009).

(163) *Campylomyza pubescens* Jaschhof, 2009

Distribution: Europe (Estonia, Germany). SWEDEN: Sk, Sm, Sö, Up, To.

First report: Jaschhof & Jaschhof (2009).

Identification: Jaschhof & Jaschhof (2009).

(164) *Campylomyza serrata* Jaschhof, 1998

Distribution: Palearctic (Norway, Netherlands, Germany; Japan). SWEDEN: Sm, Öl, Ög, Up.

First report: Jaschhof & Jaschhof (2015a) (see the remark below). **Identification:** Jaschhof & Jaschhof (2015a).

Remark. *Campylomyza serrata* in the sense of Jaschhof (1998a, 1998b, 1998c) and Jaschhof & Jaschhof (2009) is a species aggregate, whose taxonomy was elucidated by Jaschhof (2015a).

(165) *Campylomyza spatulata* Mamaev, 1998**Distribution:** Europe (Finland). SWEDEN: Sm, Sö, Up, Dr.**First report:** Mamaev (1998a). **Identification:** Jaschhof & Jaschhof (2009).**(166) *Campylomyza stegetfore* Jaschhof, 2009****Distribution:** Europe (Estonia, Germany). SWEDEN: Sö to Lu.**First report:** Jaschhof & Jaschhof (2009). **Identification:** Jaschhof & Jaschhof (2009).**(167) *Campylomyza tridentata* Jaschhof, 1998****Distribution:** Europe (Estonia, Latvia, Germany, Russia). SWEDEN: Sk, Go, Ög, Dr.**First report:** Jaschhof (1998a). **Identification:** Jaschhof (1998c), Jaschhof & Jaschhof (2009).**(168) *Campylomyza zwii* Jaschhof, 2015****Distribution:** Europe (Germany, Czech Republic). SWEDEN: widespread from Öl to Lu.**First report:** Jaschhof & Jaschhof (2015a). **Identification:** Jaschhof (2015a).**Remark.** This species was before 2015 not distinguished from *Campylomyza serrata* (see Jaschhof 1998b).***Corinthomyia* Felt, 1911****Distribution:** Holarctic, Neotropical? **Number of species:** 1 / 1 / 1.**(169) *Corinthomyia brevicornis* Felt, 1907****Distribution:** widespread Holarctic (including UK, Norway, and Austria). SWEDEN: Sm, Sö, Dr.**First report:** Mamaev (1996). **Identification:** Jaschhof (1998c), Jaschhof & Jaschhof (2009).***Excrescentia* Mamaev & Berest, 1991****Distribution:** Holarctic. **Number of species:** 2 / 1 / 1.**(170) *Excrescentia mutuata* Mamaev & Berest, 1991****Distribution:** Europe (Northern Europe, Germany, Russia, Ukraine). SWEDEN: Sm, Sö, Up, Dr, Pi.**First report:** Mamaev (1996). **Identification:** Jaschhof (1998c), Jaschhof & Jaschhof (2009).***Neurolyga* Rondani, 1840****Distribution:** Holarctic. **Number of species:** 27 / 22 / 19. **Unnamed species in Sweden:** 5.**(171) *Neurolyga acuminata* Jaschhof, 2009****Distribution:** Palearctic (Fennoscandia, Czech Republic; southern Siberia). SWEDEN: Sk, Vb, Lu, To.**First report:** Jaschhof & Jaschhof (2009). **Identification:** Jaschhof & Jaschhof (2009).**(172) *Neurolyga angulosa* Jaschhof, 2009****Distribution:** Palearctic (Germany; Kazakhstan). SWEDEN: Go, Ög, Up, Dr.**First report:** Jaschhof & Jaschhof (2009). **Identification:** Jaschhof & Jaschhof (2009).**(173) *Neurolyga bifida* (Edwards, 1938)****Distribution:** Palearctic (widespread Europe; Far East Russia). SWEDEN: Öl, Go, Lu. Rare.**First report:** Jaschhof & Jaschhof (2009). **Identification:** Jaschhof (1998c), Jaschhof & Jaschhof (2009).**(174) *Neurolyga bilobata* (Mamaev & Rozhnova, 1982)****Distribution:** Europe (Northern Europe, Germany, Russia, Ukraine). SWEDEN: Ög, Up, Dr, Pi, Lu.**First report:** Jaschhof & Jaschhof (2009). **Identification:** Spungis & Jaschhof (2000), Jaschhof & Jaschhof (2009).**(175) *Neurolyga constricta* Jaschhof, 2009****Distribution:** SWEDEN: Sö. Rare.**First report:** Jaschhof & Jaschhof (2009). **Identification:** Jaschhof & Jaschhof (2009).**Remark.** The rare occurrence of this species is apparently explained by its pyrophily.**(176) *Neurolyga degenerans* (Mamaev & Mohrig, 1975)****Distribution:** Europe (Germany). SWEDEN: Sm, Öl, Go.**First report:** Jaschhof & Jaschhof (2015a). **Identification:** Jaschhof (1998c), Jaschhof & Jaschhof (2009).**(177) *Neurolyga excavata* (Yukawa, 1967)****Distribution:** Palearctic (widespread Europe; Far East Russia, Japan). SWEDEN: widespread from Sm to Pi.**First report:** Jaschhof & Jaschhof (2009). **Identification:** Jaschhof (1998c), Jaschhof & Jaschhof (2009).

(178) *Neurolyga fenestralis* Rondani, 1840

Distribution: Holarctic (including Europe (widespread)). SWEDEN: Ö1, Ög, Sö, Up, Ån.

First report: Jaschhof (1998c). **Identification:** Jaschhof (1998c), Jaschhof & Jaschhof (2009).

(179) *Neurolyga interrupta* Jaschhof, 2009

Distribution: Europe (Norway, Finland, Czech Republic, Russia). SWEDEN: Dr. Rare.

First report: Jaschhof & Jaschhof (2021). **Identification:** Jaschhof & Jaschhof (2009).

(180) *Neurolyga lonsdalensis* Jaschhof, 2009

Distribution: Europe (Fennoscandia). SWEDEN: Dr, Vb, Pi, Nb.

First report: Jaschhof & Jaschhof (2009). **Identification:** Jaschhof & Jaschhof (2009).

(181) *Neurolyga ovata* Jaschhof, 1996

Distribution: Holarctic (Canada (Northwest Territory); European Russia). SWEDEN: To. Rare.

First report: Jaschhof (1996). **Identification:** Jaschhof (1998c), Jaschhof & Jaschhof (2009).

(182) *Neurolyga paludosa* Jaschhof, 2009

Distribution: Europe (Fennoscandia). SWEDEN: Ha, Dr, Vb, Pi, Nb.

First report: Jaschhof & Jaschhof (2009). **Identification:** Jaschhof & Jaschhof (2009).

(183) *Neurolyga semicircula* Jaschhof, 2009

Distribution: Palearctic (China). SWEDEN: Up, Dr, Hr, Vb.

First report: Jaschhof & Jaschhof (2009). **Identification:** Jaschhof & Jaschhof (2009).

(184) *Neurolyga simillima* Jaschhof & Jaschhof, 2020

Distribution: SWEDEN: Sm, Up. Rare.

First report: Jaschhof & Jaschhof (2020b). **Identification:** Jaschhof & Jaschhof (2020b).

(185) *Neurolyga sylvestris* (Felt, 1907)

Distribution: Holarctic (widespread USA; Northern Europe, Ukraine, European Russia). SWEDEN: Lu. Rare.

First report: Jaschhof & Jaschhof (2009). **Identification:** Jaschhof (1998c), Jaschhof & Jaschhof (2009).

(186) *Neurolyga taigensis* Jaschhof & Jaschhof, 2020

Distribution: Europe (Russia). SWEDEN: Nb. Rare.

First report: Jaschhof & Jaschhof (2020b). **Identification:** Jaschhof & Jaschhof (2020b).

(187) *Neurolyga truncata* (Felt, 1912)

Distribution: Holarctic (USA (Pennsylvania); Northern Europe, Austria; Uzbekistan). SWEDEN: Ha, Sö, Dr, Lu.

First report: Jaschhof & Jaschhof (2009). **Identification:** Jaschhof (1998c), Jaschhof & Jaschhof (2009).

(188) *Neurolyga venusta* (Mamaev & Rozhnova, 1983)

Distribution: Palearctic (European Russia; Far East Russia). SWEDEN: Up. Rare.

First report: Jaschhof & Jaschhof (2020b). **Identification:** Jaschhof (1998c), Jaschhof & Jaschhof (2009).

(189) *Neurolyga verna* (Mamaev, 1963)

Distribution: Holarctic (USA (Connecticut, Pennsylvania?); widespread Europe; Far East Russia). SWEDEN: Sm, Dr, Lu. Rare.

First report: Jaschhof & Jaschhof (2015a). **Identification:** Jaschhof (1998c), Jaschhof & Jaschhof (2009).

Catochini Edwards, 1938***Anocha* Pritchard, 1948**

Distribution: Holarctic. **Number of species:** 8 / 5 / 4.

(190) *Anocha glabra* Jaschhof, 2017

Distribution: SWEDEN: Sm, Dr, Vb, Nb, Lu.

First report: Jaschhof (2017a). **Identification:** Jaschhof (2017a).

(191) *Anocha grytsoenensis* Jaschhof, 2017

Distribution: SWEDEN: Sm. Rare.

First report: Jaschhof (2017a). **Identification:** Jaschhof (2017a).

(192) *Anocha minuta* (Jaschhof, 2009)

Distribution: SWEDEN: Dr, Vb. Rare.

First report: Jaschhof & Jaschhof (2009). **Identification:** Jaschhof & Jaschhof (2009).

(193) *Anocha vernalis* Jaschhof, 2017**Distribution:** SWEDEN: Sk. Rare.**First report:** Jaschhof (2017a). **Identification:** Jaschhof (2017a).***Catarete* Edwards, 1929****Distribution:** Western Palearctic. **Number of species:** 1 / 1 / 1.**(194) *Catarete brevinervis* (Zetterstedt, 1851)****Distribution:** SWEDEN: Ås. Rare.**First report:** Zetterstedt (1851). **Identification:** Jaschhof (1998c), Jaschhof & Jaschhof (2009).**Remarks.** *Catarete brevinervis*, known from a single specimen (presumably female) collected on 15 July 1832 by Zetterstedt at a house window in Vilhelmina, Åsele Lappmark, is the most enigmatic species of mycophagous cecidomyiids in Sweden. A Finnish report of this species (Hackman 1980, as *Catocha brevinervis*) is not backed by voucher specimens and thus doubtful.***Catocha* Haliday, 1933****Distribution:** Holarctic, Oriental. **Number of species:** 8 / 5 / 4. **Unnamed species in Sweden:** 5.**(195) *Catocha angulata* Jaschhof, 2009****Distribution:** Europe (Denmark, Germany, Slovak Republic, Slovenia). SWEDEN: Sm to Lu.**First report:** Jaschhof & Jaschhof (2009).**Identification:** Jaschhof & Jaschhof (2009).**(196) *Catocha incisa* Jaschhof, 2009****Distribution:** Europe (Fennoscandia, Germany, Czech Republic). SWEDEN: widespread from Ha to To.**First report:** Jaschhof & Jaschhof (2009).**Identification:** Jaschhof & Jaschhof (2009).**(197) *Catocha latipes* Haliday, 1833****Distribution:** widespread Holarctic (including Europe (widespread)). SWEDEN: Up to Lu.**First report:** Jaschhof & Jaschhof (2009) (see remarks below). **Identification:** Jaschhof & Jaschhof (2009).**Remark.** Swedish records of *C. latipes* published by Jaschhof (1996) and Mamaev 1996) refer to a species aggregate, whose taxonomy was only subsequently elucidated (Jaschhof & Jaschhof 2009).**(198) *Catocha subalpina* Jaschhof, 2009****Distribution:** Europe (Norway, Estonia). SWEDEN: Pi, Lu. Rare.**First report:** Jaschhof & Jaschhof (2009).**Identification:** Jaschhof & Jaschhof (2009).***Neocatocha* Felt, 1912****Distribution:** Holarctic. **Number of species:** 1 / 1 / 1.**(199) *Neocatocha marilandica* Felt, 1912****Distribution:** widespread Holarctic (including southern Siberia, Japan). SWEDEN: Sö. Rare.**First report:** Jaschhof (2002). **Identification:** Jaschhof (2002), Jaschhof & Jaschhof (2009).**Remark.** All Swedish specimens known of this rarely collected species are from forest fire sites in Tyresta, Södermanland (Jaschhof 2002).***Tritozyga* Loew, 1862****Distribution:** Holarctic. **Number of species:** 2 / 1 / 1.**(200) *Tritozyga tyrestaensis* Jaschhof, 2002****Distribution:** SWEDEN: Sö. Rare.**First report:** Jaschhof (2002). **Identification:** Jaschhof (2002), Jaschhof & Jaschhof (2009).**Remark.** This is a further apparently pyrophilous catochine, known from a single forest fire site in Tyresta, Södermanland (Jaschhof 2002).***Micromyini* Rondani, 1856****Remarks.** As discussed by Jaschhof & Jaschhof (2009, 2020b), the taxonomy of this tribe is in need of fundamental revision. The generic classification now in use is not adequate; it works reasonably well in the Western Palearctic, but usually fails to accommodate species found elsewhere. Europe, where most of the previous work on *Micromyini* was done, hosts only a small proportion of the specific and generic diversity, the true hotspots being the Eastern Palearctic and Oriental regions.***Antennardia* Mamaev, 1993****Distribution:** Holarctic. **Number of species:** 4 / 3 / 2.**Unnamed species in Sweden:** 2.**(201) *Antennardia saxonica* Jaschhof, 2003****Distribution:** Europe (Germany). SWEDEN: Öl. Rare.**First report:** Jaschhof & Jaschhof (2020b).**Identification:** Jaschhof (2003).**(202) *Antennardia suorkensis* Jaschhof & Jaschhof, 2020****Distribution:** SWEDEN: Sm, Lu. Rare.

First report: Jaschhof & Jaschhof (2020b).
Identification: Jaschhof & Jaschhof (2020b).

***Ladopyris* Jaschhof & Jaschhof, 2020**

Distribution: Western Palearctic. **Number of species:** 1 / 1 / 1.

(203) *Ladopyris baltica* Jaschhof & Jaschhof, 2020

Distribution: Europe (Estonia). SWEDEN: Sk. Rare.
First report: Jaschhof & Jaschhof (2020b).
Identification: Jaschhof & Jaschhof (2020b).

Micromya Rondani, 1840

Distribution: Holarctic, Neotropical, Oriental. **Number of species:** 11 / 1 / 1.

(204) *Micromya lucorum* Rondani, 1840 agg.

Distribution: USA (Minnesota); northern Neotropical (Mexico, Costa Rica, Dominica), widespread Palearctic (including Europe (widespread)). SWEDEN: widespread from Sm to Up.

First report: Jaschhof (1998c). **Identification:** Jaschhof (1998c), Jaschhof & Jaschhof (2009).

Remarks. Male morphology indicates that *M. lucorum* in the sense of Jaschhof (1998c) and Jaschhof & Jaschhof (2009) is an aggregate species. Specimens found in Sweden evidently belong to more than one species, although we did not attempt so far to distinguish between different morphotypes. It is obvious that this complex needs to be studied on a Holarctic scope and then using an integrative taxonomic approach.

***Monardia* Kieffer, 1895**

Remarks. Comprising most of the micromyine species named in the past, this genus consists of three subgenera (Jaschhof & Jaschhof 2020b), which are treated separately here. Although none is likely to be monophyletic, the subgenera continue to be employed for convenience. A comprehensive analysis of micromyine interrelationship to accomplish a natural subgeneric classification is pending. Three *Monardia* species from New Zealand are not classified to subgenus (Gagné & Jaschhof 2021). Since the only Swedish record of *Monardia kollari* (Winnertz, 1870) is beyond validation, this species was deleted from the country's checklist (Jaschhof & Jaschhof 2009: 323).

Subgenus *Monardia sensu stricto*

Distribution: Holarctic, Australasian/Oceanian.
Number of species: 25 / 17 / 10. **Unnamed species in Sweden:** 5.

(205) *Monardia abnormis* Mamaev, 1963

Distribution: Europe (Northern Europe, Germany, Russia). SWEDEN: widespread from Sk to Up, also Lu.
First report: Økland & Mamaev (1997, as *Mycopriona abnormis*). **Identification:** Jaschhof (1998c), Jaschhof & Jaschhof (2009).

(206) *Monardia armata* Jaschhof, 2003

Distribution: Europe (Finland, Germany). SWEDEN: Sö. Rare.

First report: Jaschhof & Jaschhof (2009).
Identification: Jaschhof (2003), Jaschhof & Jaschhof (2009).

(207) *Monardia lapponica* Jaschhof & Jaschhof, 2020

Distribution: SWEDEN: Lu. Rare.

First report: Jaschhof & Jaschhof (2020b).
Identification: Jaschhof & Jaschhof (2020b).

(208) *Monardia lignivora* (Felt, 1907)

Distribution: Holarctic (USA (North Carolina); Fennoscandia, European Russia; Far East Russia). SWEDEN: Lu. Rare.

First report: Jaschhof & Jaschhof (2020b).
Identification: Jaschhof & Jaschhof (2020b).

(209) *Monardia malaisei* Jaschhof, 2009

Distribution: SWEDEN: Up. Rare.

First report: Jaschhof & Jaschhof (2009).
Identification: Jaschhof & Jaschhof (2009).

(210) *Monardia monilicornis* (Zetterstedt, 1838)

Distribution: Europe (Northern Europe, Germany, European Russia). SWEDEN: Up. Rare.

First report: Jaschhof & Jaschhof (2009).
Identification: Jaschhof (1998c), Jaschhof & Jaschhof (2009).

(211) *Monardia obsoleta* Edwards, 1938

Distribution: Palearctic (widespread Europe; Far East Russia). SWEDEN: widespread from Sk to Lu.

First report: Jaschhof (1998c). **Identification:** Jaschhof (1998c), Jaschhof & Jaschhof (2009).

(212) *Monardia pediculata* (Mamaev, 1993)

Distribution: Europe (Finland, Russia). SWEDEN: Sö, Up, Dr, Pi, Lu.

First report: Jaschhof & Jaschhof (2009).

Identification: Jaschhof (1998c), Jaschhof & Jaschhof (2009).

(213) *Monardia recta* (Mamaev, 1993)

Distribution: Europe (Russia). SWEDEN: Öl, Up. Rare.

First report: Jaschhof & Jaschhof (2009).

Identification: Jaschhof & Jaschhof (2009).

(214) *Monardia stirpium* Kieffer, 1895

Distribution: widespread Palearctic (including Europe (widespread)); New Zealand. SWEDEN: Ög, Dr, Vb. Rare.

First report: Mamaev (1996). **Identification:** Jaschhof (1998c), Jaschhof & Jaschhof (2009).

Subgenus *Trichopteromyia* Williston, 1896

Distribution: cosmopolitan (including unpublished Australasian/Oceanian species known to us). **Number of species:** 8 / 4 / 3. **Unnamed species in Sweden:** 1. **Remarks.** There are several unresolved issues with the taxonomy of *Trichopteromyia*. One is to determine characters defining Williston's type species, *T. modesta* (cf. Jaschhof & Jaschhof 2009: 206). Edwards's (1938c) conclusion that the holotype female of *T. modesta* from the Caribbean island St. Vincent is conspecific with *Trichopteromyia* females from the UK, as well as with a syntype female of *Projoannisia latipennis* Kieffer, 1912 from the Seychelles, cannot be accepted from what we know today. Morphological characters to distinguish among female *Trichopteromyia* are unknown and, according to male morphological indication, there are numerous unnamed species of *Trichopteromyia* in various parts of the World, including Central America and the Afrotropics (unpublished data). A further problem is that the morphology of several micromyines from the Oriental and Neotropical regions (all unnamed) are incongruent with Jaschhof & Jaschhof's (2009: 204) definition of the genus *Trichopteromyia*, which poses the question how this genus should be delimited.

(215) *Trichopteromyia magnifica* Mamaev, 1963

Distribution: Palearctic (Fennoscandia, Germany, European Russia; Far East Russia). SWEDEN: Up, Dr, Hr, Pi, Lu.

First report: Jaschhof & Jaschhof (2009).

Identification: Jaschhof (1998c), Jaschhof & Jaschhof (2009).

(216) *Trichopteromyia modesta* Williston, 1896

Distribution: Holarctic (including Europe (widespread)), northern Neotropics, Seychelles. SWEDEN: Sk, Ha, Ög, Up.

First report: Mamaev (1996). **Identification:** Jaschhof (1998c), Jaschhof & Jaschhof (2009).

(217) *Trichopteromyia relicta* Jaschhof, 2009

Distribution: Europe (Finland). SWEDEN: Sm. Rare.

First report: Jaschhof & Jaschhof (2020b).

Identification: Jaschhof & Jaschhof (2009).

Subgenus *Xylopriona* Kieffer, 1913

Distribution: Holarctic, Australasian/Oceanian.

Number of species: 16 / 10 / 10. **Unnamed species in Sweden:** 16.

Remark. The *Xylopriona toxicodendri* group of species, a distinct subdivision of the genus *Xylopriona* (Jaschhof & Jaschhof 2009, 2020b), has at least nine unnamed species in Sweden and presumably many more in other parts of the World.

(218) *Xylopriona abbreviata* Jaschhof & Jaschhof, 2020

Distribution: SWEDEN: Go, Up. Rare.

First report: Jaschhof & Jaschhof (2020b).

Identification: Jaschhof & Jaschhof (2020b).

(219) *Xylopriona adentis* Jaschhof, 1998

Distribution: Europe (Finland, Germany). SWEDEN: Ha, Up, Dr, Pi, Nb.

First report: Jaschhof & Jaschhof (2009).

Identification: Jaschhof (1998c), Jaschhof & Jaschhof (2009).

(220) *Xylopriona atra* (Meigen, 1804)

Distribution: Holarctic (including Europe (widespread)). SWEDEN: widespread from Sk to To.

First report: Jaschhof (1998c). **Identification:** Jaschhof (1998c), Jaschhof & Jaschhof (2009).

Remark. It remains to be clarified whether there is more than one species subsumed under *X. atra* in the sense of Jaschhof (1998c) and Jaschhof & Jaschhof (2009).

(221) *Xylopriona furcifera* (Mamaev, 1963)

Distribution: Palearctic (widespread Europe; Far East Russia, South Korea). SWEDEN: Sk, Up. Rare.

First report: Jaschhof & Jaschhof (2009).

Identification: Jaschhof (1998c), Jaschhof & Jaschhof (2009).

(222) *Xylopriona monothea* (Edwards, 1938)

Distribution: widespread Holarctic (including Europe (widespread)). SWEDEN: widespread from Sm to To.

First report: Mamaev (1996). **Identification:** Jaschhof (1998c), Jaschhof & Jaschhof (2009).

(223) *Xylopriona obscura* Jaschhof & Jaschhof, 2020

Distribution: SWEDEN: Lu. Rare.

First report: Jaschhof & Jaschhof (2020b).

Identification: Jaschhof & Jaschhof (2020b).

(224) *Xylopriona radiella* Mamaev, 1993

Distribution: Europe (Finland, Russia). SWEDEN: Up. Rare.

First report: Jaschhof & Jaschhof (2009).

Identification: Jaschhof (1998c), Jaschhof & Jaschhof (2009).

(225) *Xylopriona toxicodendri* (Felt, 1907) agg.

Distribution: widespread Holarctic (including Europe (widespread)), Mexico. SWEDEN: Up. Rare.

First report: Jaschhof (1998c). **Identification:** Jaschhof (1998c), Jaschhof & Jaschhof (2009).

(226) *Xylopriona truncata* Jaschhof, 2009

Distribution: SWEDEN: Up, Dr. Rare.

First report: Jaschhof & Jaschhof (2009).

Identification: Jaschhof & Jaschhof (2009).

(227) *Xylopriona unguifera* Berest & Mamaev, 1997

Distribution: Europe (Finland, Germany, Czech Republic, Ukraine). SWEDEN: Sm, Up.

First report: Jaschhof & Jaschhof (2017b).

Identification: Jaschhof & Jaschhof (2009).

***Polyardis* Pritchard, 1947**

Distribution: Holarctic, Australasian/Oceanian.

Number of species: 10 / 5 / 4. **Unnamed species in Sweden:** 10.

Remark. *Polyardis adela*, *P. bispinosa* and *P. silvalis* as treated by Jaschhof (1998c) and Jaschhof & Jaschhof (2009) are evidently aggregate species whose taxonomy is in need of revision.

(228) *Polyardis adela* Pritchard, 1947 agg.

Distribution: USA (Minnesota), widespread Europe. SWEDEN: Sk, Sö, Up.

First report: Jaschhof (1998c). **Identification:** Jaschhof (1998c), Jaschhof & Jaschhof (2009).

Remarks. Male morphology suggests the presence of five different *P. adela*-like species solely in Sweden.

Questions to be resolved in the future are how the genuine *P. adela* is characterized morphologically and whether this species occurs outside of North America.

The synonyms proposed for *P. adela* by Jaschhof & Jaschhof (2009) need reconsideration in this context.

(229) *Polyardis bispinosa* (Mamaev, 1963) agg.

Distribution: Palearctic (widespread Europe; Far East Russia, South Korea). SWEDEN: Sk, Sö, Up.

First report: Jaschhof (1998c). **Identification:** Jaschhof (1998c), Jaschhof & Jaschhof (2009).

Remark. Our investigation of the morphology of Swedish males suggests that there are two different species subsumed under *P. bispinosa* in the sense of Jaschhof (1998c) and Jaschhof & Jaschhof (2009).

(230) *Polyardis micromyoides* Jaschhof, 1998

Distribution: Europe (Estonia, Latvia, Lithuania, Germany). SWEDEN: Öl. Rare.

First report: Jaschhof & Jaschhof (2017b).

Identification: Jaschhof (1998c).

(231) *Polyardis silvalis* Rondani, 1840 agg.

Distribution: widespread Holarctic (including Europe (widespread)). SWEDEN: Sö, Up, Pi.

First report: Jaschhof (1998c). **Identification:** Jaschhof (1998c), Jaschhof & Jaschhof (2009).

Remarks. There is evidence from male morphology suggesting the presence of five different *P. silvalis*-like species in Sweden (presumably more elsewhere). The question whether Rondani's species occurs in Sweden and outside of Europe and the Palearctic region is unanswered for the time being. The synonyms proposed for *P. silvalis* by Jaschhof & Jaschhof (2009) need reconsideration in this context.

Peromyiini Kleesattel, 1979***Peromyia* Kieffer, 1894**

Distribution: Cosmopolitan. **Number of species:** 202 / 116 / 99. **Unnamed species in Sweden:** 24 (including split-ups expected to result from resolving species aggregates).

Remarks. *Peromyia* is the largest genus of the subfamily Micromyinae in the World. Unnamed species of this genus are continually being found in all parts in the World, in Europe and in Sweden.

(232) *Peromyia abdita* Jaschhof, 2009

Distribution: Europe (Finland). SWEDEN: Lu. Rare.

First report: Jaschhof & Jaschhof (2020b).

Identification: Jaschhof & Jaschhof (2009).

(233) *Peromyia abnormis* Mamaev & Berest, 1990

Distribution: Europe (Finland, Germany, Ukraine). SWEDEN: Sm to Lu.

First report: Jaschhof & Jaschhof (2009).

Identification: Jaschhof & Jaschhof (2009).

(234) *Peromyia acuminata* Jaschhof, 2017

Distribution: Europe (Germany, Russia). SWEDEN: Öl, Ög. Rare.

First report: Jaschhof (2017b). **Identification:** Jaschhof (2017b).

Remark. This species was before 2017 not distinguished from *Peromyia truncata* Yukawa, 1967 (the latter being absent from Sweden).

(235) *Peromyia aeratipennis* (Skuse, 1888) agg.

Distribution: widespread Palearctic (including Europe (widespread)); Australia, New Zealand. SWEDEN: Öl, Ög, Dr.

First report: Jaschhof (1998c, as *Peromyia muscorum* (Kieffer, 1895), a junior synonym).

Identification: Jaschhof (1998c, as *P. muscorum*), Jaschhof & Jaschhof (2009, as *P. muscorum*).

Remarks. The taxonomy of *P. aeratipennis* agg. needs to be resolved using an integrative (morphological/genetic) approach. One of the species subsumed here is *Peromyia muscorum*, which in Europe is a more widely known name.

(236) *Peromyia albicornis* (Meigen, 1830)

Distribution: Europe (Fennoscandia, Germany), possibly Japan. SWEDEN: Up, Vb, Lu.

First report: Jaschhof & Jaschhof (2009).

Identification: Jaschhof & Jaschhof (2009).

(237) *Peromyia anatina* Mamaev & Berest, 1990

Distribution: Europe (Russia, Ukraine). SWEDEN: Pi. Rare.

First report: Jaschhof (2017b) (see the remark below). **Identification:** Jaschhof (2017b).

Remarks. *Peromyia anatina* in the sense of Jaschhof (1998c, 2001) and Jaschhof & Jaschhof (2009) are misidentifications. The identity of the genuine *P. anatina* was elucidated by Jaschhof (2017b).

(238) *Peromyia angellifera* Jaschhof, 1997

Distribution: Europe (Norway, Germany). SWEDEN: Up. Rare.

First report: Jaschhof (2017b) (see the remark below). **Identification:** Jaschhof (2017b).

Remarks. Before 2017, *P. angellifera* was not distinguished from *Peromyia angulosa* (see below), a species that in Sweden is even more common. A species mix of *P. angellifera* and *P. angulosa* was first reported for Sweden by Jaschhof (1998c).

(239) *Peromyia angulosa* Jaschhof, 2017

Distribution: Europe (Fennoscandia, Germany). SWEDEN: widespread from Sk to Dr.

First report: Jaschhof (2017b). **Identification:** Jaschhof (2017b).

(240) *Peromyia angustior* Jaschhof, 2017

Distribution: SWEDEN: Sm. Rare.

First report: Jaschhof (2017b). **Identification:** Jaschhof (2017b).

(241) *Peromyia anisotoma* Mamaev, 1994

Distribution: Palearctic (Finland; Far East Russia). SWEDEN: Up, Dr. Rare.

First report: Jaschhof & Jaschhof (2009).

Identification: Jaschhof & Jaschhof (2009).

(242) *Peromyia apposita* Jaschhof, 1997

Distribution: Palearctic (Finland, Latvia, Germany, European Russia; Japan). SWEDEN: widespread from Sk to Nb.

First report: Jaschhof & Jaschhof (2009).

Identification: Jaschhof (1998c, 2017b), Jaschhof & Jaschhof (2009).

(243) *Peromyia appositoides* Jaschhof, 2017

Distribution: SWEDEN: Ög, Sö, Up.

First report: Jaschhof (2017b). **Identification:** Jaschhof (2017b).

(244) *Peromyia assimilis* Jaschhof & Jaschhof, 2020

Distribution: Europe (Finland, Germany, Russia). SWEDEN: Up, Vb, Nb, Lu.

First report: Jaschhof (2017b, as *P. despecta* Jaschhof).

Identification: Jaschhof (2017b).

Remark. Jaschhof & Jaschhof (2020b) introduced *Peromyia assimilis* as a replacement name for the preoccupied *Peromyia despecta* Jaschhof, 2017.

(245) *Peromyia aurantiaca* (Kieffer, 1894)

Distribution: Europe (France, Germany). SWEDEN: Sm to Lu.

First report: Jaschhof & Jaschhof (2017a).

Identification: Jaschhof (1998c).

(246) *Peromyia bertvinklundi* Jaschhof, 2009

Distribution: SWEDEN: Dr, Nb. Rare.

First report: Jaschhof & Jaschhof (2009).

Identification: Jaschhof & Jaschhof (2009).

(247) *Peromyia bicolor* (Edwards, 1938)

Distribution: Europe (Northern Europe, Germany, Czech Republic). SWEDEN: widespread from Sm to To.

First report: Jaschhof (1996). **Identification:** Jaschhof (1998c), Jaschhof & Jaschhof (2009).

(248) *Peromyia bidentata* Berest, 1988

Distribution: widespread Europe, Japan. SWEDEN: Sk, Öl, Go, Sö.

First report: Jaschhof (1998c). **Identification:** Jaschhof (1998c), Jaschhof & Jaschhof (2009).

(249) *Peromyia borealis* (Felt, 1920)

Distribution: widespread Holarctic (including Europe (UK, Latvia, Germany)). SWEDEN: widespread from Sk to Up, also Lu.

First report: Jaschhof & Jaschhof (2009).

Identification: Jaschhof (1998c), Jaschhof & Jaschhof (2009).

(250) *Peromyia boreophila* Jaschhof, 2001

Distribution: Palearctic (Finland, European Russia; Japan, South Korea). SWEDEN: Sm, Up, Dr. Rare.

First report: Jaschhof & Jaschhof (2015a).

Identification: Jaschhof (2001), Jaschhof & Jaschhof (2009).

(251) *Peromyia brandenburgensis* Jaschhof, 2017

Distribution: Europe (Germany). SWEDEN: Öl, Dr. Rare.

First report: Jaschhof & Jaschhof (2020b).

Identification: Jaschhof (2017b).

(252) *Peromyia brevispina* Yukawa, 1967

Distribution: Palearctic (including Europe: Finland, Germany, Russia). SWEDEN: Sk, Up. Rare.

First report: Jaschhof (2017b). **Identification:** Jaschhof (2017b).

(253) *Peromyia brutostylata* Jaschhof, 2017

Distribution: Europe (Finland, Russia). SWEDEN: Sö, Up, Dr, Nb.

First report: Jaschhof (2017b). **Identification:** Jaschhof (2017b).

Remark. This species was before 2017 not distinguished from *Peromyia perpusilla* (Winnertz, 1870) (see below).

(254) *Peromyia caricis* (Kieffer, 1901)

Distribution: widespread Europe, possibly USA (California). SWEDEN: widespread from Sk to Vb.

First report: Jaschhof (2017b) (see the remark below).

Identification: Jaschhof (2017b).

Remark. *Peromyia caricis* in the sense of Jaschhof (1998c, 2001) and Jaschhof & Jaschhof (2009) was recently split into four discrete species (Jaschhof 2017b), the reason why earlier Swedish records (*e.g.* Jaschhof 1996) are ignored here.

(255) *Peromyia clavata* Jaschhof, 2017

Distribution: Europe (Germany). SWEDEN: Öl. Rare.

First report: Jaschhof (2017b). **Identification:** Jaschhof (2017b).

(256) *Peromyia cognata* Jaschhof, 2017

Distribution: Europe (Fennoscandia, Russia). SWEDEN: Sö to To.

First report: Jaschhof (2017b). **Identification:** Jaschhof (2017b).

Remark. This species was before 2017 not distinguished from *P. caricis*.

(257) *Peromyia composita* Jaschhof, 1997

Distribution: Europe (Latvia, Germany). SWEDEN: Sk, Ha, Öl, Ög.

First report: Jaschhof & Jaschhof (2009).

Identification: Jaschhof (1998c), Jaschhof & Jaschhof (2009).

(258) *Peromyia concitata* Mamaev & Berest, 1994**Distribution:** Europe (Finland, Germany, Russia, Ukraine). SWEDEN: Sk, Go, Dr, Vb, Lu.**First report:** Jaschhof & Jaschhof (2009).**Identification:** Jaschhof & Jaschhof (2009).**(259) *Peromyia consimilis* Jaschhof, 2017****Distribution:** Europe (Fennoscandia, Germany). SWEDEN: widespread from Sk to Pi.**First report:** Jaschhof (2017b). **Identification:** Jaschhof (2017b).**Remark.** This species was before 2017 not distinguished from *P. caricis*.**(260) *Peromyia constricta* Jaschhof, 2017****Distribution:** Europe (Finland, Germany). SWEDEN: Sk, Sm, Bo, Dr, Vb.**First report:** Jaschhof (2017b). **Identification:** Jaschhof (2017b).**Remark.** This species was before 2017 not distinguished from *P. subborealis* (see below).**(261) *Peromyia cornuta* (Edwards, 1938)****Distribution:** widespread Europe, possibly Far East Russia. SWEDEN: Sk to Vb.**First report:** Jaschhof & Jaschhof (2009).**Identification:** Jaschhof (1998c, 2017b), Jaschhof & Jaschhof (2009).**(262) *Peromyia curta* Jaschhof, 1997****Distribution:** Palearctic (widespread Europe; Japan, South Korea). SWEDEN: Sm, Ög, Up. Rare.**First report:** Jaschhof & Jaschhof (2017a).**Identification:** Jaschhof (1998c, 2001).**(263) *Peromyia curvostylata* Jaschhof, 2017****Distribution:** SWEDEN: Öl, Up, Lu.**First report:** Jaschhof (2017b). **Identification:** Jaschhof (2017b).**Remark.** This species was before 2017 not distinguished from *P. ramosa* (see below).**(264) *Peromyia denotata* Jaschhof, 2009****Distribution:** SWEDEN: Sm, Up. Rare.**First report:** Jaschhof & Jaschhof (2009).**Identification:** Jaschhof & Jaschhof (2009).**(265) *Peromyia devia* Jaschhof, 2017****Distribution:** Europe (Germany), SWEDEN: Up. Rare.**First report:** Jaschhof (2017b). **Identification:** Jaschhof (2017b).**(266) *Peromyia diadema* Mamaev, 1963****Distribution:** Europe (Northern Europe, Germany, Russia), SWEDEN: widespread from Sk to Nb.**First report:** Mamaev (1996). **Identification:** Jaschhof (1998c), Jaschhof & Jaschhof (2009).**(267) *Peromyia discreta* Jaschhof, 1997****Distribution:** SWEDEN: Up to Lu.**First report:** Jaschhof (1997a). **Identification:** Jaschhof (1998c), Jaschhof & Jaschhof (2009).**Remark.** Jaschhof & Jaschhof (2009) established the identity of *P. discreta* with *Peromyia longicostalis* Mamaev & Zaitzev, 1997, a species described from Uppland.**(268) *Peromyia dupla* Jaschhof, 2017****Distribution:** Europe (Germany), SWEDEN: Öl, Go. Rare.**First report:** Jaschhof (2017b). **Identification:** Jaschhof (2017b).**(269) *Peromyia edwardsi* Berest, 1994****Distribution:** Europe (Northern Europe, Germany, Ukraine), SWEDEN: Sm, Bl, Öl, Sö, Up.**First report:** Jaschhof (1998c). **Identification:** Jaschhof (1998c), Jaschhof & Jaschhof (2009).**(270) *Peromyia elongatula* Jaschhof & Jaschhof, 2020****Distribution:** SWEDEN: Öl, Go, Dr. Rare.**First report:** Jaschhof & Jaschhof (2020b).**Identification:** Jaschhof & Jaschhof (2020b).**(271) *Peromyia fagiphila* Jaschhof, 1997****Distribution:** Palearctic (Northern Europe, Germany, Austria; western Siberia; Far East). SWEDEN: Sk. Rare.**First report:** Jaschhof & Jaschhof (2009).**Identification:** Jaschhof (1998c), Jaschhof & Jaschhof (2009).**(272) *Peromyia fibyensis* Jaschhof, 2009****Distribution:** SWEDEN: Up, Nb. Rare.**First report:** Jaschhof & Jaschhof (2009).**Identification:** Jaschhof & Jaschhof (2009).**(273) *Peromyia fungicola* (Kieffer, 1898)****Distribution:** Holarctic (USA (California); widespread Europe; Japan). SWEDEN: Sm to To.

First report: Jaschhof (1996). **Identification:** Jaschhof (2017b).

(274) *Peromyia gotohi* Jaschhof, 2001

Distribution: Palearctic (Japan, South Korea). SWEDEN: Sm, Up. Rare.

First report: Jaschhof & Jaschhof (2017a).

Identification: Jaschhof (2001).

(275) *Peromyia gracilostylata* Jaschhof, 2017

Distribution: Europe (Fennoscandia, Germany), SWEDEN: Sk to Dr.

First report: Jaschhof (2017b). **Identification:** Jaschhof (2017b).

Remark. This species was before 2017 not distinguished from *P. perpusilla* (see below).

(276) *Peromyia gryphiswaldensis* Jaschhof, 1997

Distribution: Palearctic (Germany; Japan). SWEDEN: Sk, Sm, Öl. Rare.

First report: Jaschhof & Jaschhof (2017a).

Identification: Jaschhof (1998c).

(277) *Peromyia grytsoenensis* Jaschhof, 2017

Distribution: SWEDEN: Sm. Rare.

First report: Jaschhof (2017b). **Identification:**

Jaschhof (2017b).

(278) *Peromyia hyalina* Jaschhof, 2017

Distribution: Europe (Finland). SWEDEN: Sm, Dr, Lu. Rare.

First report: Jaschhof (2017b). **Identification:** Jaschhof (2017b).

(279) *Peromyia impexa* (Skuse, 1888) agg.

Distribution: Holarctic (including widespread Palearctic); Australia, New Zealand. SWEDEN: Sk to Vb.

First report: Jaschhof (1998c, as *P. palustris* (Kieffer, 1895), a junior synonym). **Identification:** Jaschhof (1998c, as *P. palustris*), Jaschhof & Jaschhof (2009, as *P. palustris*).

Remarks. It is now evident that *P. impexa* is a worldwide complex of cryptic species, including the Palearctic *P. palustris* (Jaschhof 2010, 2017b). Using male morphological indicators, Jaschhof (2001, 2017b) found eight or nine different morphotypes of *P. palustris* in Japan, and six in Sweden, all likely to be discrete species. An integrative taxonomic approach is required to resolve this complex issue.

(280) *Peromyia inflata* Jaschhof, 2017

Distribution: Palearctic (Finland, Germany; Japan). SWEDEN: Sk to Vb.

First report: Jaschhof (2017b). **Identification:** Jaschhof (2017b).

Remark. This species was before 2017 not distinguished from *P. subborealis* (see below).

(281) *Peromyia intermedia* (Kieffer, 1895)

Distribution: Palearctic (widespread Europe; Japan). SWEDEN: Sk, Sm, Öl, Ög, Vb.

First report: Jaschhof & Jaschhof (2009). **Identification:** Jaschhof (1998c, 2017b), Jaschhof & Jaschhof (2009).

(282) *Peromyia iuxtatruncata* Jaschhof, 2017

Distribution: Europe (Finland, Germany, Russia). SWEDEN: Sm, Öl, Ög, Up, Dr.

First report: Jaschhof (2017b). **Identification:** Jaschhof (2017b).

Remark. This species was before 2017 not distinguished from *P. truncata*.

(283) *Peromyia karstroemi* Jaschhof, 2017

Distribution: SWEDEN: Ög, Dr, Lu. Rare.

First report: Jaschhof (2017b). **Identification:** Jaschhof (2017b).

(284) *Peromyia lapponica* Jaschhof, 2017

Distribution: SWEDEN: Lu. Rare.

First report: Jaschhof (2017b). **Identification:** Jaschhof (2017b).

(285) *Peromyia leveillei* Kieffer, 1894

Distribution: Europe (France). SWEDEN: Öl, Bo, Sö.

First report: Jaschhof & Jaschhof (2017a).

Identification: Jaschhof & Jaschhof (2017a).

(286) *Peromyia lindstroemi* Jaschhof & Jaschhof, 2020

Distribution: SWEDEN: Ha, Sm, Öl, Dr.

First report: Jaschhof & Jaschhof (2020b).

Identification: Jaschhof & Jaschhof (2020b).

(287) *Peromyia lippertae* Jaschhof, 2017

Distribution: SWEDEN: Nb. Rare.

First report: Jaschhof (2017b). **Identification:** Jaschhof (2017b).

(288) *Peromyia lisatengoe* Jaschhof, 2017

Distribution: SWEDEN: Öl, Ög.

First report: Jaschhof (2017b). **Identification:** Jaschhof (2017b).

(289) *Peromyia longistylata* Jaschhof, 2017

Distribution: Europe (Norway, Germany). SWEDEN: Sm, Öl, Lu.

First report: Jaschhof (2017b). **Identification:** Jaschhof (2017b).

Remark. This species was before 2017 not distinguished from *P. ramosa* (see below).

(290) *Peromyia maetoi* Jaschhof, 2001

Distribution: Palearctic (Japan, South Korea). SWEDEN: Lu. Rare.

First report: Jaschhof (2017b). **Identification:** Jaschhof (2001).

Remark. A single male from Kaltisbäcken Nature Reserve in Lule Lappmark is the only evidence that *P. maetoi* occurs in the Western Palearctic (Jaschhof 2017b).

(291) *Peromyia manca* Jaschhof, 2017

Distribution: Europe (Norway). SWEDEN: Sk to Lu.

First report: Jaschhof (2017b). **Identification:** Jaschhof (2017b).

Remark. This species was before 2017 not distinguished from *P. ramosa* (see below).

(292) *Peromyia menzeli* Jaschhof, 2009

Distribution: Europe (Germany). SWEDEN: Vb. Rare.

First report: Jaschhof & Jaschhof (2009). **Identification:** Jaschhof & Jaschhof (2009).

(293) *Peromyia mitrata* Jaschhof, 1997

Distribution: Europe (Northern Europe, Germany). SWEDEN: Öl, Sö, Up. Rare.

First report: Jaschhof (1997a). **Identification:** Jaschhof (1998c), Jaschhof & Jaschhof (2009).

(294) *Peromyia modesta* (Felt, 1907)

Distribution: Holarctic (USA (New York); widespread Palearctic). SWEDEN: widespread from Sk to Lu.

First report: Jaschhof (1998c). **Identification:** Jaschhof (1998c), Jaschhof & Jaschhof (2009).

(295) *Peromyia monilis* Mamaev, 1965

Distribution: Holarctic (USA (Minnesota); widespread Europe). SWEDEN: widespread from Sk to To.

First report: Jaschhof (1996). **Identification:** Jaschhof (1998c), Jaschhof & Jaschhof (2009).

(296) *Peromyia monticorvina* Jaschhof, 2017

Distribution: SWEDEN: Öl, Ög. Rare.

First report: Jaschhof (2017b). **Identification:** Jaschhof (2017b).

Remark. This species was before 2017 not distinguished from *P. ramosa* (see below).

(297) *Peromyia neglecta* Jaschhof, 2017

Distribution: Europe (Finland, Germany). SWEDEN: Go, Sö, Up, Vb, Nb.

First report: Jaschhof (2017b). **Identification:** Jaschhof (2017b).

Remark. Jaschhof (1998c, 2001) and Jaschhof & Jaschhof (2009) deemed this species to be a morphotype of *P. subborealis* (see below).

(298) *Peromyia nemorum* (Edwards, 1938)

Distribution: Palearctic (Northern Europe, Germany; Japan). SWEDEN: Öl, Ög, Up, To.

First report: Jaschhof (1996). **Identification:** Jaschhof (1998c), Jaschhof & Jaschhof (2009).

(299) *Peromyia neomexicana* (Felt, 1913)

Distribution: Holarctic (USA (New Mexico); Germany, Ukraine, European Russia; Palearctic Far East). SWEDEN: Öl. Rare.

First report: Jaschhof (2017b). **Identification:** Jaschhof (1998c), Jaschhof (2017b).

(300) *Peromyia niederhofensis* Jaschhof, 2017

Distribution: Europe (Germany). SWEDEN: Bl, Öl. Rare.

First report: Jaschhof (2017b). **Identification:** Jaschhof (2017b).

(301) *Peromyia oelandica* Jaschhof, 2017

Distribution: SWEDEN: Öl. Rare.

First report: Jaschhof (2017b). **Identification:** Jaschhof (2017b).

(302) *Peromyia ombergensis* Jaschhof, 2017

Distribution: SWEDEN: Sm, Ög, Up, Dr.

First report: Jaschhof (2017b). **Identification:** Jaschhof (2017b).

(303) *Peromyia ovalis* (Edwards, 1938)

Distribution: Holarctic (USA (Minnesota); Northern Europe, Germany, European Russia; Far East Russia). SWEDEN: Ha, Öl, Up, Dr, Lu.

First report: Jaschhof & Jaschhof (2009). **Identification:** Jaschhof (1998c), Jaschhof & Jaschhof (2009).

(304) *Peromyia penicillata* Jaschhof, 1997

Distribution: Europe (Germany). SWEDEN: Sm, Up, Dr. Rare.

First report: Jaschhof & Jaschhof (2015a).

Identification: Jaschhof (1998c).

(305) *Peromyia perpusilla* (Winnertz, 1870)

Distribution: Palearctic (Fennoscandia, Germany, European Russia; Japan). SWEDEN: Up, Lu. Rare.

First report: Jaschhof (2017b) (see the remark below).

Identification: Jaschhof (2017b).

Remark. *Peromyia perpusilla* in the sense of Jaschhof (1998c, 2001) and Jaschhof & Jaschhof (2009) is an aggregate of three discrete species (Jaschhof 2017b). Which of these species was meant by previous authors when referring to Sweden (e.g. Mamaev 1996) is unclear.

(306) *Peromyia photophila* (Felt, 1907) agg.

Distribution: Holarctic (including Europe (widespread)). SWEDEN: Up, Lu. Rare.

First report: Jaschhof (1996). **Identification:** Jaschhof (1998c, 2001, 2017b), Jaschhof & Jaschhof (2009).

Remarks. *Peromyia photophila* in the sense of Jaschhof (1998c, 2001) and Jaschhof & Jaschhof (2009) is evidently a species aggregate, of which three distinct morphotypes (supported by COI sequences) are found in Sweden Jaschhof (2017b). This complex issue needs further study on a broader geographical scale.

(307) *Peromyia pseudoborealis* Jaschhof, 2017

Distribution: Palearctic (Norway; Japan). SWEDEN: Sm. Rare.

First report: Jaschhof (2017b). **Identification:** Jaschhof (2017b).

(308) *Peromyia pumiloides* Jaschhof, 2017

Distribution: Europe (Fennoscandia, Germany). SWEDEN: Sk to To.

First report: Jaschhof (2017b). **Identification:** Jaschhof (2017b).

(309) *Peromyia quercinophila* Jaschhof, 2017

Distribution: SWEDEN: Up. Rare.

First report: Jaschhof (2017b). **Identification:** Jaschhof (2017b).

(310) *Peromyia ramosa* (Edwards, 1938)

Distribution: Europe (UK, Germany). SWEDEN: Sk to Vb.

First report: Jaschhof (2017b) (see the remarks below).

Identification: Jaschhof (2017b).

Remarks. *Peromyia ramosa* in the sense of Jaschhof (1998c, 2001) and Jaschhof & Jaschhof (2009) comprises several discrete species (Jaschhof (2017b), the consequence being that Swedish records of *P. ramosa* published before 2017 (e.g. Jaschhof 1998c) are unspecific and cannot be approved.

(311) *Peromyia ramosoides* Jaschhof, 2009

Distribution: Europe (Finland). SWEDEN: Sm, Up. Rare.

First report: Jaschhof & Jaschhof (2015a).

Identification: Jaschhof & Jaschhof (2009).

(312) *Peromyia revelata* Mamaev & Berest, 1990

Distribution: Palearctic (Ukraine; Japan). SWEDEN: Öl. Rare.

First report: Jaschhof (2017b). **Identification:** Jaschhof (2001).

(313) *Peromyia sanguinea* (Kieffer, 1894)

Distribution: Palearctic (Fennoscandia, France, Germany; Japan). SWEDEN: widespread from Sk to Lu.

First report: Jaschhof & Jaschhof (2009). **Identification:** Jaschhof (1998c), Jaschhof & Jaschhof (2009).

(314) *Peromyia scirrhosa* Jaschhof, 2009

Distribution: Europe (Finland, Germany, Russia). SWEDEN: Sk to Lu.

First report: Jaschhof & Jaschhof (2009). **Identification:** Jaschhof & Jaschhof (2009).

(315) *Peromyia scutellata* Mamaev, 1990

Distribution: Palearctic (including Europe: Norway, Latvia?, Germany, Austria, Russia?). SWEDEN: widespread from Sk to Lu.

First report: Jaschhof (2017b). **Identification:** Jaschhof (2017b).

(316) *Peromyia semotoides* Jaschhof, 2009

Distribution: Europe (Finland), possibly USA (Pennsylvania). SWEDEN: Sm, Öl, Up.

First report: Jaschhof & Jaschhof (2009). **Identification:** Jaschhof & Jaschhof (2009).

(317) *Peromyia simulans* Jaschhof, 2017

Distribution: Europe (Finland). SWEDEN: Sk. Rare.

First report: Jaschhof (2017b). **Identification:** Jaschhof (2017b).

(318) *Peromyia sofielundensis* Jaschhof & Jaschhof, 2020

Distribution: SWEDEN: Sö. Rare.

First report: Jaschhof & Jaschhof (2020b).

Identification: Jaschhof & Jaschhof (2020b).

(319) *Peromyia spinosa* Jaschhof, 2001

Distribution: Palearctic (Japan, South Korea). SWEDEN: Nb, Lu. Rare.

First report: Jaschhof & Jaschhof (2009). **Identification:** Jaschhof (2001), Jaschhof & Jaschhof (2009).

(320) *Peromyia stenshuvudensis* Jaschhof, 2017

Distribution: Europe (Germany). SWEDEN: Sk. Rare.

First report: Jaschhof (2017b). **Identification:** Jaschhof (2017b).

(321) *Peromyia subanatina* Mamaev & Zaitzev, 1997

Distribution: SWEDEN: Bl to Dr.

First report: Jaschhof (2017b). **Identification:** Jaschhof (2017b).

(322) *Peromyia subbicolor* Jaschhof, 2009

Distribution: Europe (Finland, Russia). SWEDEN: Dr, Gä, Vb.

First report: Jaschhof & Jaschhof (2009). **Identification:** Jaschhof & Jaschhof (2009).

(323) *Peromyia subborealis* Jaschhof, 1997

Distribution: Palearctic (Latvia?, Germany, European Russia; Japan). SWEDEN: Sk, Sö. Rare.

First report: Jaschhof (1998c). **Identification:** Jaschhof (2017b).

(324) *Peromyia syltefjordensis* Jaschhof, 1996

Distribution: Europe (Fennoscandia). SWEDEN: Dr, Pi, Lu, Nb, To.

First report: Jaschhof (1996). **Identification:** Jaschhof (1998c), Jaschhof & Jaschhof (2009).

(325) *Peromyia trifidoides* Jaschhof, 2017

Distribution: SWEDEN: Up. Rare.

First report: Jaschhof (2017b). **Identification:** Jaschhof (2017b).

(326) *Peromyia trimera* (Edwards, 1938)

Distribution: Europe (UK). SWEDEN: Öl, Up.

First report: Jaschhof & Jaschhof (2017a). **Identification:** Jaschhof & Jaschhof (2017a).

(327) *Peromyia tschirnhausi* Jaschhof, 1996

Distribution: SWEDEN: To. Rare.

First report: Jaschhof (1996). **Identification:** Jaschhof (1998c), Jaschhof & Jaschhof (2009).

(328) *Peromyia tundrae* Jaschhof, 1996

Distribution: Palearctic (Finland, Germany, European Russia; Japan). SWEDEN: Vb, To. Rare.

First report: Jaschhof (1996). **Identification:** Jaschhof (1998c), Jaschhof & Jaschhof (2009).

(329) *Peromyia uleforsi* Jaschhof, 2017

Distribution: SWEDEN: Sk, Sm, Öl, Up, Dr.

First report: Jaschhof (2017b). **Identification:** Jaschhof (2017b).

(330) *Peromyia uniseriata* Jaschhof, 2017

Distribution: Europe (Germany). SWEDEN: Sm. Rare.

First report: Jaschhof (2017b). **Identification:** Jaschhof (2017b).

(331) *Peromyia upupoides* Jaschhof, 1997

Distribution: Europe (Finland, Latvia, Germany, European Russia). SWEDEN: Sk to Lu.

First report: Jaschhof (1998c). **Identification:** Jaschhof (1998c), Jaschhof & Jaschhof (2009).

(332) *Peromyia viklundi* Jaschhof, 1997

Distribution: Europe (Norway, Finland, Latvia?, European Russia). SWEDEN: Up, Pi, Lu, Nb.

First report: Jaschhof (1997a). **Identification:** Jaschhof (2017b).

Remark. Jaschhof & Jaschhof's (2009) synonymization of *P. viklundi* with *P. scutellata* (see above) was shown to be unfounded and was thus corrected by Jaschhof (2017b).

Strobilellini Edwards, 1938

***Groveriella* Mamaev, 1978**

Distribution: Western Palearctic. **Number of species:** 2 / 2 / 1.

(333) *Groveriella baltica* Spungis & Jaschhof, 2000

Distribution: Europe (Estonia, Latvia). SWEDEN: Sm, Öl, Up, Dr.

First report: Jaschhof & Jaschhof (2009). **Identification:** Spungis & Jaschhof (2000), Jaschhof & Jaschhof (2009, 2020b).

***Strobliella* Kieffer, 1898**

Distribution: Holarctic. **Number of species:** 1 / 1 / 1.

(334) *Strobliella intermedia* Kieffer, 1898

Distribution: Europe (UK?, Slovak Republic, Austria), possibly USA (Alaska). SWEDEN: Ha, Sm, Up. Rare. **First report:** Jaschhof (2017a). **Identification:** Jaschhof (2017a).

Winnertziinae Panelius, 1965

Number of tribes: 3 / 3 / 3. **Number of genera:** 31 / 16 / 12. **Number of species:** 226 / 110 / 72. **Unnamed species in Sweden:** 40.

Diallactiini Jaschhof, 2013

***Diallactia* Gagné, 2004**

Distribution: Holarctic. **Number of species:** 2 / 1 / 1.

(335) *Diallactia crocea* (Kieffer, 1894)

Distribution: widespread Europe. SWEDEN: widespread from Sk to Lu. **First report:** Jaschhof & Jaschhof (2013). **Identification:** Jaschhof & Jaschhof (2013).

***Gynapteromyia* Mamaev, 1965**

Distribution: Neotropical, Palearctic, Oriental, Australasian/Oceanian. **Number of species:** 13 / 5 / 2.

(336) *Gynapteromyia brevialpis* (Mamaev, 1964)

Distribution: Europe (Estonia, Latvia, Russia). SWEDEN: ÖI. **First report:** Jaschhof (2016c). **Identification:** Jaschhof (2016c).

(337) *Gynapteromyia heteroptera* (Mamaev & Spungis, 1980)

Distribution: Europe (Estonia, Latvia, Lithuania). SWEDEN: Sm, Öl, Up. **First report:** Jaschhof & Jaschhof (2013, as *Haplusia heteroptera*). **Identification:** Mohrig *et al.* (1980, as *Chastomera heteroptera*), Jaschhof & Jaschhof (2013, as *Haplusia heteroptera*).

***Sylvenomyia* Mamaev & Zaitzev, 1998**

Distribution: Western Palearctic. **Number of species:** 2 / 2 / 2.

(338) *Sylvenomyia fennica* Penttinen & Jaschhof, 2009

Distribution: Europe (Finland). SWEDEN: Dr, Hr, Lu. **First report:** Jaschhof & Jaschhof (2013). **Identification:** Penttinen & Jaschhof (2009), Jaschhof & Jaschhof (2013).

(339) *Sylvenomyia spinigera* (Spungis, 1985)

Distribution: Europe (Finland, Latvia, Russia). SWEDEN: Sk, Sm, Ög, Up. **First report:** Mamaev & Zaitzev (1998, as *Sylvenomyia sueciae* Mamaev & Zaitzev, 1998, a junior synonym). **Identification:** Penttinen & Jaschhof (2009), Jaschhof & Jaschhof (2013).

Heteropezini Schiner, 1868

***Heteropeza* Winnertz, 1846**

Distribution: Holarctic, Oriental. **Number of species:** 3 / 1 / 1.

(340) *Heteropeza pygmaea* Winnertz, 1846

Distribution: widespread USA, widespread Western Palearctic. SWEDEN: widespread from Ha to Lu. **First report:** Mamaev (1995). **Identification:** Pritchard (1960), Jaschhof & Jaschhof (2013).

***Leptosyna* Kieffer, 1894**

Distribution: Palearctic. **Number of species:** 4 / 4 / 2. **Unnamed species in Sweden:** 1.

(341) *Leptosyna nervosa* (Winnertz, 1852)

Distribution: Palearctic (UK, France, Germany; South Korea). SWEDEN: widespread from Sk to Dr. **First report:** Jaschhof & Jaschhof (2013). **Identification:** Jaschhof & Jaschhof (2013).

(342) *Leptosyna similis* Jaschhof, 2013

Distribution: Europe (Finland). SWEDEN: Sm, Sö. Rare. **First report:** Jaschhof & Jaschhof (2013). **Identification:** Jaschhof & Jaschhof (2013).

Miastor Meinert, 1864

Distribution: Holarctic. **Number of species:** 2 / 2 / 1.
Unnamed species in Sweden: 2.

(343) Miastor metraloas Meinert, 1864

Distribution: widespread Holarctic (including Europe (widespread)). SWEDEN: Sö, Gä. Rare.

First report: Mamaev (1995). **Identification:** Wyatt (1967), Jaschhof & Jaschhof (2013).

Nikandria Mamaev, 1964

Distribution: Palearctic, Australasian/Oceanian.
Number of species: 2 / 1 / 1.

(344) Nikandria brevitorsis Mamaev, 1964

Distribution: Europe (Estonia, Germany, Russia). SWEDEN: Sm, Öl, Up.

First report: Jaschhof & Jaschhof (2017a).

Identification: Jaschhof & Jaschhof (2017a).

Winnertziini Panelius, 1965**Clinorhytis Kieffer, 1896**

Distribution: Palearctic. **Number of species:** 1 / 1 / 1.

(345) Clinorhytis flavitorsis (Kieffer, 1895)

Distribution: Palearctic (France, Latvia, Ukraine; Far East Russia). SWEDEN: Ha, Sm. Rare.

First report: Jaschhof & Jaschhof (2013).

Identification: Jaschhof & Jaschhof (2013).

Ekmanomyia Jaschhof, 2013

Distribution: Western Palearctic. **Number of species:** 1 / 1 / 1.

(346) Ekmanomyia svecica Jaschhof, 2013

Distribution: Europe (Czech Republic). SWEDEN: Sk, Sm, Öl.

First report: Jaschhof & Jaschhof (2013).

Identification: Jaschhof & Jaschhof (2013).

Kronomyia Felt, 1911

Distribution: Holarctic. **Number of species:** 4 / 2 / 1.

(347) Kronomyia ovalis (Mamaev, 1964)

Distribution: Europe (Finland, Latvia, Ukraine, Russia). SWEDEN: Sm, Up. Rare.

First report: Jaschhof & Jaschhof (2013).

Identification: Jaschhof & Jaschhof (2013).

Rhipidoxylomyia Mamaev, 1964

Distribution: Holarctic, Oriental. **Number of species:** 16 / 5 / 3.

(348) Rhipidoxylomyia excavata Mamaev, 1964

Distribution: Palearctic (European Russia; Algeria). SWEDEN: Ög to Lu.

First report: Jaschhof & Jaschhof (2013).

Identification: Jaschhof & Jaschhof (2013).

(349) Rhipidoxylomyia aff. orbiculata Jiang & Bu, 2004

Distribution of *R. orbiculata*: Palearctic (China). SWEDEN: Sk, Sm, Öl.

First report: Jaschhof & Jaschhof (2013).

Identification: Jaschhof & Jaschhof (2013).

Remark. We identified our specimens from Sweden using Jiang & Bu's (2004) description of *R. orbiculata*. Considering that our specimens are the only European records of a species whose other distribution is Asia, we deem it necessary in the future to validate our identification by comparison with the Chinese original material.

(350) Rhipidoxylomyia perfecta Mamaev, 1998

Distribution: Europe (Russia). SWEDEN: Up. Rare.

First report: Jaschhof & Jaschhof (2013).

Identification: Jaschhof & Jaschhof (2013).

Winnertzia Rondani, 1860

Distribution: Cosmopolitan. **Number of species:** 133 / 81 / 56. **Unnamed species in Sweden:** 37.

Remarks. The genus *Winnertzia* includes many species that we cannot interpret using published descriptions, meaning their identity must be elucidated through study of type material. With such a revision pending, we lack the knowledge to name a number of species found in Sweden. We estimate that there are 120–150 species of *Winnertzia* in Sweden (Jaschhof & Jaschhof 2020c).

(351) Winnertzia acutistylus Jaschhof & Jaschhof, 2020

Distribution: SWEDEN: Sm. Rare.

First report: Jaschhof & Jaschhof (2020c).

Identification: Jaschhof & Jaschhof (2020c).

(352) Winnertzia angustistylus Jaschhof & Jaschhof, 2020

Distribution: SWEDEN: Öl, Ög, Sö, Up.

First report: Jaschhof & Jaschhof (2020c).

Identification: Jaschhof & Jaschhof (2020c).

(353) *Winnertzia arctostylus* Jaschhof & Jaschhof, 2020**Distribution:** SWEDEN: Sm, Öl. Rare.**First report:** Jaschhof & Jaschhof (2020c).**Identification:** Jaschhof & Jaschhof (2020c).**(354) *Winnertzia bicolor* Jaschhof & Jaschhof, 2020****Distribution:** SWEDEN: Sk, Öl, Up, Lu.**First report:** Jaschhof & Jaschhof (2020c).**Identification:** Jaschhof & Jaschhof (2020c).**(355) *Winnertzia brachytarsus* Jaschhof & Jaschhof, 2020****Distribution:** SWEDEN: Sm. Rare.**First report:** Jaschhof & Jaschhof (2020c).**Identification:** Jaschhof & Jaschhof (2020c).**(356) *Winnertzia brevipalpata* Jaschhof, 2009****Distribution:** SWEDEN: Sm to Up.**First report:** Jaschhof & Jaschhof (2013).**Identification:** Jaschhof & Jaschhof (2013).**(357) *Winnertzia bulbifera* Mamaev, 1963 agg.****Distribution:** Europe (Finland, Latvia, Germany, Russia). SWEDEN: widespread.**First report:** Jaschhof & Jaschhof (2013).**Identification:** Jaschhof & Jaschhof (2020c).**Remarks.** As shown by Jaschhof & Jaschhof (2020c), *W. bulbifera* in the sense of Jaschhof & Jaschhof (2013) comprises three discrete species in Sweden, presumably including the genuine *W. bulbifera*.**(358) *Winnertzia curvata* Panelius, 1965****Distribution:** Europe (UK, Finland). SWEDEN: widespread from Ha to Lu.**First report:** Jaschhof & Jaschhof (2013).**Identification:** Jaschhof & Jaschhof (2020c).**(359) *Winnertzia dentata* Jaschhof & Jaschhof, 2020****Distribution:** SWEDEN: Öl. Rare.**First report:** Jaschhof & Jaschhof (2020c).**Identification:** Jaschhof & Jaschhof (2020c).**(360) *Winnertzia discretella* Spungis, 1992****Distribution:** Palearctic (Latvia, European Russia; Far East Russia, South Korea). SWEDEN: widespread from Sm to To.**First report:** Mamaev (1995). **Identification:** Jaschhof & Jaschhof (2013, 2020c).**Remark.** *Winnertzia sequentis* Mamaev, 2001, a species described from Dalarna, is identical with *W. discretella* (cf. Jaschhof & Jaschhof 2013).**(361) *Winnertzia egregia* Jaschhof & Jaschhof, 2020****Distribution:** SWEDEN: Öl, Up. Rare.**First report:** Jaschhof & Jaschhof (2020c).**Identification:** Jaschhof & Jaschhof (2020c).**(362) *Winnertzia ekdalensis* Jaschhof & Jaschhof, 2020****Distribution:** SWEDEN: Up. Rare.**First report:** Jaschhof & Jaschhof (2020c).**Identification:** Jaschhof & Jaschhof (2020c).**(363) *Winnertzia feralis* Mamaev, 2002****Distribution:** Europe (Ukraine). SWEDEN: widespread from Sk to Up.**First report:** Jaschhof & Jaschhof (2020c).**Identification:** Jaschhof & Jaschhof (2020c).**Remark.** Jaschhof & Jaschhof (2013) subsumed this species under *W. tridens* (see below).**(364) *Winnertzia fraxinophila* Jaschhof & Jaschhof, 2020****Distribution:** SWEDEN: Öl. Rare.**First report:** Jaschhof & Jaschhof (2020c).**Identification:** Jaschhof & Jaschhof (2020c).**(365) *Winnertzia fusca* Kieffer, 1901****Distribution:** Palearctic (France, Finland, Latvia; Far East Russia). SWEDEN: widespread from Sk to Dr, also Vb.**First report:** Jaschhof & Jaschhof (2020c).**Identification:** Jaschhof & Jaschhof (2020c).**(366) *Winnertzia globifera* Mamaev, 1963 agg.****Distribution:** Palearctic (including Europe (widespread)), possibly USA (Pennsylvania). SWEDEN: widespread.**First report:** Mamaev (1995). **Identification:** Jaschhof & Jaschhof (2013, 2020c).**Remarks.** As shown by Jaschhof & Jaschhof (2020c), *W. globifera* in the sense of Jaschhof & Jaschhof (2013) is a species aggregate. While we recognized two discrete morphotypes in Sweden, the identity of the genuine *W. globifera* remains to be elucidated.

(367) *Winnertzia graduata* Spungis, 1992

Distribution: Europe (Finland, Estonia, Latvia, Ukraine), possibly USA (Pennsylvania). SWEDEN: widespread from Ha to Lu.

First report: Mamaev (1995). **Identification:** Jaschhof & Jaschhof (2013, 2020c).

(368) *Winnertzia grytsojenensis* Jaschhof & Jaschhof, 2020

Distribution: SWEDEN: Sm. Rare.

First report: Jaschhof & Jaschhof (2020c).

Identification: Jaschhof & Jaschhof (2020c).

(369) *Winnertzia hamatula* Jaschhof & Jaschhof, 2020

Distribution: SWEDEN: Sk, Öl, Up.

First report: Jaschhof & Jaschhof (2020c).

Identification: Jaschhof & Jaschhof (2020c).

(370) *Winnertzia hemisphaerica* Jaschhof & Jaschhof, 2020

Distribution: SWEDEN: Sk, Sm, Öl.

First report: Jaschhof & Jaschhof (2020c).

Identification: Jaschhof & Jaschhof (2020c).

(371) *Winnertzia imbecilla* Jaschhof & Jaschhof, 2020

Distribution: SWEDEN: Öl, Sö. Rare.

First report: Jaschhof & Jaschhof (2020c).

Identification: Jaschhof & Jaschhof (2020c).

Remarks. This species was erroneously reported as *Winnertzia brachypalpa* Mamaev, 1975 as occurring in Sweden (Jaschhof & Jaschhof 2017a). *Winnertzia brachypalpa* is not known to occur in this country (Jaschhof & Jaschhof 2020c).

(372) *Winnertzia incisa* Jaschhof & Jaschhof, 2020

Distribution: SWEDEN: Öl. Rare.

First report: Jaschhof & Jaschhof (2020c).

Identification: Jaschhof & Jaschhof (2020c).

(373) *Winnertzia inornata* Jaschhof & Jaschhof, 2020

Distribution: SWEDEN: Ha, Öl, Vr, Sö, Up.

First report: Jaschhof & Jaschhof (2020c).

Identification: Jaschhof & Jaschhof (2020c).

(374) *Winnertzia lapponica* Jaschhof & Jaschhof, 2020

Distribution: SWEDEN: Lu. Rare.

First report: Jaschhof & Jaschhof (2020c).

Identification: Jaschhof & Jaschhof (2020c).

(375) *Winnertzia lobata* Jaschhof & Jaschhof, 2020

Distribution: SWEDEN: Sm. Rare.

First report: Jaschhof & Jaschhof (2020c).

Identification: Jaschhof & Jaschhof (2020c).

(376) *Winnertzia longicoxa* Jaschhof & Jaschhof, 2020

Distribution: SWEDEN: Öl. Rare.

First report: Jaschhof & Jaschhof (2020c).

Identification: Jaschhof & Jaschhof (2020c).

(377) *Winnertzia longiptera* Mamaev, 2002

Distribution: SWEDEN: widespread from Ha to Dr.

First report: Mamaev (2002). **Identification:** Jaschhof & Jaschhof (2013, 2020c).

(378) *Winnertzia nigra* Mamaev, 1963

Distribution: Palearctic (UK, Latvia, Ukraine, European Russia; Far East Russia). SWEDEN: Sm. Rare.

First report: Jaschhof & Jaschhof (2013).

Identification: Jaschhof & Jaschhof (2013, 2020c).

(379) *Winnertzia nigripennis* (Kieffer, 1894)

Distribution: Palearctic (widespread Europe; South Korea), possibly USA (Pennsylvania). SWEDEN: Up. Rare.

First report: Jaschhof & Jaschhof (2013).

Identification: Jaschhof & Jaschhof (2013, 2020c).

(380) *Winnertzia normalis* Jaschhof & Jaschhof, 2020

Distribution: SWEDEN: Sm, Öl, Up. Rare.

First report: Jaschhof & Jaschhof (2020c).

Identification: Jaschhof & Jaschhof (2020c).

(381) *Winnertzia oelandica* Jaschhof & Jaschhof, 2020

Distribution: SWEDEN: Öl.

First report: Jaschhof & Jaschhof (2020c).

Identification: Jaschhof & Jaschhof (2020c).

(382) *Winnertzia ombergensis* Jaschhof & Jaschhof, 2020

Distribution: SWEDEN: Ög. Rare.

First report: Jaschhof & Jaschhof (2020c).

Identification: Jaschhof & Jaschhof (2020c).

(383) *Winnertzia padicola* Spungis, 1992

Distribution: Europe (Latvia). SWEDEN: Sk to Lu.

First report: Jaschhof & Jaschhof (2013).

Identification: Jaschhof & Jaschhof (2013, 2020c).

(384) *Winnertzia parvidens* Jaschhof & Jaschhof, 2020

Distribution: SWEDEN: Öl.

First report: Jaschhof & Jaschhof (2020c).
Identification: Jaschhof & Jaschhof (2020c).

(385) *Winnertzia parvispina* Jaschhof, 2013

Distribution: Europe (Czech Republic). SWEDEN: Sk, Sm, Öl, Ög.

First report: Jaschhof & Jaschhof (2013).
Identification: Jaschhof & Jaschhof (2013, 2020c).

(386) *Winnertzia pilosistylus* Jaschhof & Jaschhof, 2020

Distribution: SWEDEN: Öl. Rare.

First report: Jaschhof & Jaschhof (2020c).
Identification: Jaschhof & Jaschhof (2020c).

(387) *Winnertzia pinicola* Kieffer, 1913

Distribution: Europe (France, Russia). SWEDEN: widespread from Sk to Up, also Vb.

First report: Jaschhof & Jaschhof (2013).
Identification: Jaschhof & Jaschhof (2013, 2020c).

(388) *Winnertzia pratensis* Jaschhof & Jaschhof, 2020

Distribution: SWEDEN: Sm, Öl, Sö, Lu.

First report: Jaschhof & Jaschhof (2020c).
Identification: Jaschhof & Jaschhof (2020c).

Remarks. *Winnertzia pratensis* and *W. silvestris* (see below) are two species, which before 2020 were subsumed under *Winnertzia pravdini* Mamaeva & Mamaev, 1971 (e.g. Jaschhof & Jaschhof 2013). The genuine *W. pravdini* is not known to occur in Sweden (Jaschhof & Jaschhof 2020c).

(389) *Winnertzia pustulata* Spungis, 1992

Distribution: Europe (Latvia, Ukraine). SWEDEN: Dr, Vb, Lu.

First report: Jaschhof & Jaschhof (2013).
Identification: Jaschhof & Jaschhof (2013, 2020c).

(390) *Winnertzia pustulatula* Jaschhof & Jaschhof, 2020

Distribution: SWEDEN: Sm, Öl, Up, Dr.

First report: Jaschhof & Jaschhof (2020c).
Identification: Jaschhof & Jaschhof (2020c).

(391) *Winnertzia quercinophila* Jaschhof & Jaschhof, 2020

Distribution: SWEDEN: Ha. Rare.

First report: Jaschhof & Jaschhof (2020c).
Identification: Jaschhof & Jaschhof (2020c).

(392) *Winnertzia regia* Mamaev, 2002

Distribution: Palearctic (southern Siberia). SWEDEN: Öl, Up.

First report: Jaschhof & Jaschhof (2013).
Identification: Jaschhof & Jaschhof (2013, 2020c).

(393) *Winnertzia rickebasta* Jaschhof & Jaschhof, 2020

Distribution: SWEDEN: Up. Rare.

First report: Jaschhof & Jaschhof (2020c).
Identification: Jaschhof & Jaschhof (2020c).

(394) *Winnertzia rotundata* Spungis, 1992

Distribution: Europe (Finland, Estonia, Latvia). SWEDEN: Ög. Rare.

First report: Jaschhof & Jaschhof (2013).
Identification: Jaschhof & Jaschhof (2013, 2020c).

(395) *Winnertzia ruliki* Jaschhof & Jaschhof, 2020

Distribution: SWEDEN: Sk, Öl, Up. Rare.

First report: Jaschhof & Jaschhof (2020c).
Identification: Jaschhof & Jaschhof (2020c).

(396) *Winnertzia serri* Jaschhof & Jaschhof, 2020

Distribution: SWEDEN: Lu. Rare.

First report: Jaschhof & Jaschhof (2020c).
Identification: Jaschhof & Jaschhof (2020c).

(397) *Winnertzia setosa* Jaschhof & Jaschhof, 2020

Distribution: SWEDEN: Up. Rare.

First report: Jaschhof & Jaschhof (2020c).
Identification: Jaschhof & Jaschhof (2020c).

(398) *Winnertzia silvestris* Jaschhof & Jaschhof, 2020

Distribution: SWEDEN: Sk, Sm, Öl, Up.

First report: Jaschhof & Jaschhof (2020c).
Identification: Jaschhof & Jaschhof (2020c).

(399) *Winnertzia smalandensis* Jaschhof & Jaschhof, 2020

Distribution: SWEDEN: Sm. Rare.

First report: Jaschhof & Jaschhof (2020c).
Identification: Jaschhof & Jaschhof (2020c).

(400) *Winnertzia solidaginis* Felt, 1907 agg.

Distribution: Holarctic (eastern USA; widespread Europe; widespread Palearctic Far East). SWEDEN: widespread.

First report: Jaschhof & Jaschhof (2013).
Identification: Jaschhof & Jaschhof (2013, 2020c).

Remarks. Jaschhof & Jaschhof (2020c) showed that *W. solidaginis* as treated by Jaschhof & Jaschhof (2013) is a species aggregate, whose taxonomy cannot be resolved using solely male morphological indicators. For the time being it remains unclear how the genuine *W. solidaginis*, a species originally described from North America, can be distinguished from its siblings. Specimens of this species aggregate are found abundantly throughout Sweden.

(401) *Winnertzia sundini* Jaschhof & Jaschhof, 2020

Distribution: SWEDEN: Sm, Sö, Up. Rare.

First report: Jaschhof & Jaschhof (2020c).

Identification: Jaschhof & Jaschhof (2020c).

(402) *Winnertzia tridens* Panelius, 1965

Distribution: widespread Europe. SWEDEN: widespread from Sk to Up.

First report: Jaschhof & Jaschhof (2020c) (see the remarks below). **Identification:** Jaschhof & Jaschhof (2020c).

Remark. While Spungis (1992) and Jaschhof & Jaschhof (2013) advocated a broad concept of *W. tridens*, including considerable variation in morphological characters, Jaschhof & Jaschhof (2020c) returned to the strict definition by Panelius (1965).

(403) *Winnertzia tumida* Panelius, 1965

Distribution: Europe (UK, Germany, Latvia). SWEDEN: Ha, Sm, Go, Up.

First report: Jaschhof & Jaschhof (2013).

Identification: Jaschhof & Jaschhof (2013, 2020c).

(404) *Winnertzia tumidoides* Jaschhof & Jaschhof, 2020

Distribution: SWEDEN: Öl. Rare.

First report: Jaschhof & Jaschhof (2020c).

Identification: Jaschhof & Jaschhof (2020c).

(405) *Winnertzia upplandensis* Jaschhof & Jaschhof, 2020

Distribution: SWEDEN: Up. Rare.

First report: Jaschhof & Jaschhof (2020c).

Identification: Jaschhof & Jaschhof (2020c).

(406) *Winnertzia xylostei* Mamaev, 1963 agg.

Distribution: Palearctic (European Russia; Far East Russia). SWEDEN: widespread.

First report: Jaschhof & Jaschhof (2013).

Identification: Jaschhof & Jaschhof (2020c).

Remarks. Jaschhof & Jaschhof (2020c) showed *W. xylostei* in the sense of Jaschhof & Jaschhof (2013) to be an aggregate of two or three species in Sweden. For the time being it remains unclear whether the genuine *W. xylostei* is present in Sweden and how it is distinguished from its siblings.

Porricondyliinae Kieffer, 1913

Number of tribes: 3 / 3 / 3. **Number of genera:** 88 / 53 / 50. **Number of species:** 566 / 272 / 233. **Unnamed species in Sweden:** 17.

Asynaptini Rübsaamen & Hedicke, 1926

***Asynapta* Loew, 1850**

Distribution: almost cosmopolitan, absent Australasia/Oceania. **Number of species:** 49 / 19 / 15.

(407) *Asynapta baltica* Spungis, 1988

Distribution: Europe (Latvia, Ukraine). SWEDEN: Up, Dr. Rare.

First report: Jaschhof & Jaschhof (2019b) (see the remark below). **Identification:** Jaschhof & Jaschhof (2019b).

Remark. The species treated by Jaschhof & Jaschhof (2013) as *A. baltica* is actually *A. rickebasta* (see below).

(408) *Asynapta breviata* Spungis, 1988

Distribution: Europe (Northern Europe, Russia, Ukraine). SWEDEN: Bo, Sö, Up, Dr, Vb.

First report: Jaschhof & Jaschhof (2013).

Identification: Jaschhof & Jaschhof (2013, 2019c).

Remark. *Asynapta panzari* Jaschhof & Jaschhof, 2015, a species described from Sweden, is identical with *A. breviata* (cf. Jaschhof & Jaschhof 2019c).

(409) *Asynapta inflata* Spungis, 1988

Distribution: Europe (Latvia, Ukraine). SWEDEN: Sm, Öl, Bo, Sö.

First report: Jaschhof & Jaschhof (2019c) (see the remark below). **Identification:** Jaschhof & Jaschhof (2019c).

Remark. The species treated as *A. inflata* by Jaschhof & Jaschhof (2013) is actually *A. inflatoides* (see below).

(410) *Asynapta inflatoides* Jaschhof & Jaschhof, 2019

Distribution: Europe (Finland, Latvia, Russia?). SWEDEN: Sm, Bo, Pi, Lu.

First report: Jaschhof & Jaschhof (2019c).

Identification: Jaschhof & Jaschhof (2013, as *A. inflata*; 2019c).

(411) *Asynapta magdalini* Panelius, 1965

Distribution: Europe (UK, Finland, Latvia). SWEDEN: widespread from Sk to Lu.

First report: Jaschhof & Jaschhof (2013).

Identification: Jaschhof & Jaschhof (2013).

(412) *Asynapta pectoralis* Winnertz, 1853

Distribution: Holarctic (Canada (Quebec), USA (New York); widespread Europe). SWEDEN: Sk, Dr. Rare.

First report: Mamaev (1995). **Identification:** Jaschhof & Jaschhof (2013).

(413) *Asynapta phragmitis* (Giraud, 1863)

Distribution: Palearctic (widespread Europe; Kazakhstan). SWEDEN: Sk, Sö. Rare.

First report: Panelius (1965). **Identification:** Jaschhof & Jaschhof (2013).

(414) *Asynapta reticulata* Jaschhof, 2013

Distribution: SWEDEN: Sk. Rare.

First report: Jaschhof & Jaschhof (2013).

Identification: Jaschhof & Jaschhof (2013).

(415) *Asynapta rickebasti* Jaschhof & Jaschhof, 2019

Distribution: SWEDEN: Up. Rare.

First report: Jaschhof & Jaschhof (2019c).

Identification: Jaschhof & Jaschhof (2013, as *A. baltica*; 2019c).

(416) *Asynapta rufomaculata* Panelius, 1965

Distribution: Europe (UK, Finland, Latvia). SWEDEN: Sk to Lu.

First report: Jaschhof & Jaschhof (2013).

Identification: Jaschhof & Jaschhof (2013).

(417) *Asynapta saliciperda* Felt, 1908

Distribution: Holarctic (USA (Illinois, Pennsylvania); widespread Europe). SWEDEN: widespread from Sk to Lu.

First report: Jaschhof & Jaschhof (2013).

Identification: Jaschhof & Jaschhof (2013).

(418) *Asynapta strobi* (Kieffer, 1920)

Distribution: widespread Palearctic (including Europe (widespread)). SWEDEN: Sm to Vb.

First report: Jaschhof & Jaschhof (2013).

Identification: Jaschhof & Jaschhof (2013).

(419) *Asynapta suzzae* Jaschhof & Jaschhof, 2015

Distribution: SWEDEN: Sm, Öl, Up.

First report: Jaschhof & Jaschhof (2015a).

Identification: Jaschhof & Jaschhof (2015a).

(420) *Asynapta taigensis* Jaschhof & Jaschhof, 2019

Distribution: Europe (Finland). SWEDEN: Lu. Rare.

First report: Jaschhof & Jaschhof (2019c).

Identification: Jaschhof & Jaschhof (2019c).

(421) *Asynapta thurau* Rübisaamen, 1893

Distribution: widespread Europe. SWEDEN: Sm, Dr, Pi, Vb.

First report: Jaschhof & Jaschhof (2013).

Identification: Jaschhof & Jaschhof (2013).

***Camptomyia* Loew, 1850**

Distribution: Holarctic, Neotropical. **Number of species:** 71 / 30 / 24.

(422) *Camptomyia abnormis* Mamaev, 1961

Distribution: widespread Europe. SWEDEN: Sk to Lu.

First report: Mamaev (1995). **Identification:** Jaschhof & Jaschhof (2013).

(423) *Camptomyia addenda* Spungis, 1989

Distribution: Europe (Latvia). SWEDEN: Sm. Rare.

First report: Jaschhof & Jaschhof (2017a).

Identification: Spungis (1989).

(424) *Camptomyia alstromi* Jaschhof & Jaschhof – new species

Distribution: Europe (Finland). SWEDEN: Ha, Sm, Öl, Up, Dr.

First report: this paper. **Identification:** Jaschhof & Jaschhof (2009, as *C. regia* Spungis, 1989; this paper).

(425) *Camptomyia calcarata* Mamaev, 1964

Distribution: Europe (Northern Europe, Russia). SWEDEN: Sm, Up. Rare.

First report: Jaschhof & Jaschhof (2013).

Identification: Jaschhof & Jaschhof (2013).

(426) *Camptomyia capitata* Jaschhof & Jaschhof, 2019

Distribution: Europe (Ukraine). SWEDEN: Sk, Öl, Ög. Rare.

First report: Jaschhof & Jaschhof (2019b).

Identification: Jaschhof & Jaschhof (2013, as *C. ulmicola*; 2019b).

(427) *Camptomyia corticalis* (Loew, 1851)

Distribution: Palearctic (widespread Europe; Far East Russia, South Korea). SWEDEN: widespread from Sk to To.

First report: Jaschhof & Jaschhof (2013).

Identification: Jaschhof & Jaschhof (2013).

(428) *Camptomyia drymophila* Mamaev & Zaitzev, 1998

Distribution: Palearctic (Far East Russia). SWEDEN: Sm, Öl, Up.

First report: Jaschhof & Jaschhof (2013).

Identification: Jaschhof & Jaschhof (2013).

Remark. Our Swedish finds are the only records of this species in the Western Palearctic.

(429) *Camptomyia erythromma* (Kieffer, 1888)

Distribution: Europe (France). SWEDEN: Sk, Dr. Rare.

First report: Jaschhof & Jaschhof (2013).

Identification: Jaschhof & Jaschhof (2013).

(430) *Camptomyia flavocinerea* Panelius, 1965

Distribution: Palearctic (widespread Europe; South Korea). SWEDEN: widespread from Sk to Lu.

First report: Jaschhof & Jaschhof (2013).

Identification: Jaschhof & Jaschhof (2013).

Remark. *Camptomyia flavocinerea* in the sense of Jaschhof & Jaschhof (2013) is likely an aggregate species.

(431) *Camptomyia fulva* Mamaev, 1961

Distribution: widespread Europe. SWEDEN: Öl, Up. Rare.

First report: Mamaev (1995) (see the remark below).

Identification: Jaschhof & Jaschhof (2017a).

Remark. A specimen of *C. fulva* from Öland was reported in error as the first Swedish record of this species (Jaschhof & Jaschhof 2017a).

(432) *Camptomyia gigantea* Spungis, 1989

Distribution: Europe (Finland, Latvia, Slovak Republic). SWEDEN: Sk, Öl, Dr, Ån.

First report: Jaschhof & Jaschhof (2013).

Identification: Jaschhof & Jaschhof (2013).

(433) *Camptomyia hedmarki* Jaschhof & Jaschhof, 2019

Distribution: SWEDEN: Lu. Rare.

First report: Jaschhof & Jaschhof (2019b).

Identification: Jaschhof & Jaschhof (2019b).

(434) *Camptomyia multinoda* (Felt, 1908)

Distribution: Holarctic (USA (Illinois, New York); widespread Palearctic (including Europe (widespread)). SWEDEN: Sk to Dr.

First report: Mamaev (1995, as *C. tiliarum*).

Identification: Jaschhof & Jaschhof (2013).

(435) *Camptomyia oldhammeri* Jaschhof & Jaschhof, 2019

Distribution: SWEDEN: Dr. Rare.

First report: Jaschhof & Jaschhof (2019b).

Identification: Jaschhof & Jaschhof (2019b).

(436) *Camptomyia* aff. *pinicola* Mamaev, 1961

Distribution of *C. pinicola*: Europe (Finland, Latvia, Russia). SWEDEN: widespread.

First report: Jaschhof & Jaschhof (2013).

Identification: Jaschhof & Jaschhof (2013).

Remark. As discussed by Jaschhof & Jaschhof (2013), we cannot decide whether our specimens from Sweden belong to *C. pinicola* or *C. piceae* Panelius, 1965. It is unclear how these two species can be distinguished from each other using male morphological indicators.

(437) *Camptomyia piptopori* Panelius, 1965

Distribution: Europe (Finland, Estonia, Latvia, Russia). SWEDEN: Dr. Rare.

First report: Jaschhof & Jaschhof (2019b).

Identification: Jaschhof & Jaschhof (2019b).

(438) *Camptomyia regia* Spungis, 1989

Distribution: Europe (Latvia). SWEDEN: Dr. Rare.

First report: Jaschhof & Jaschhof (2020e).

Identification: Spungis (1989).

Remark. Records of *C. regia* published for Sweden (Jaschhof & Jaschhof 2013) and Finland (Jaschhof et al. 2014) are based on misidentification and must be deleted (cf. *C. alstromi*).

(439) *Camptomyia rhynchostylata* Jaschhof & Jaschhof, 2019

Distribution: SWEDEN: Sm. Rare.

First report: Jaschhof & Jaschhof (2019b).

Identification: Jaschhof & Jaschhof (2019b).

(440) *Camptomyia salicicola* Mamaev, 1961

Distribution: widespread Europe. SWEDEN: Sm, Öl, Sö, Dr, Lu.

First report: Jaschhof & Jaschhof (2013).

Identification: Jaschhof & Jaschhof (2013).

(441) *Camptomyia spinifera* Mamaev, 1961**Distribution:** widespread Palearctic (including Europe (widespread)). SWEDEN: widespread from Sk to Lu.**First report:** Jaschhof & Jaschhof (2013).**Identification:** Jaschhof & Jaschhof (2013).**(442) *Camptomyia stenshuvudensis* Jaschhof, 2013****Distribution:** SWEDEN: Sk. Rare.**First report:** Jaschhof & Jaschhof (2013).**Identification:** Jaschhof & Jaschhof (2013).**(443) *Camptomyia szadziewskii* Spungis, 1989****Distribution:** Europe (Latvia, Poland). SWEDEN: Sö, Dr. Rare.**First report:** Jaschhof & Jaschhof (2013).**Identification:** Jaschhof & Jaschhof (2013).**(444) *Camptomyia ulmicola* Mamaev, 1961****Distribution:** Europe (Northern Europe, Poland?, Ukraine, Russia). SWEDEN: Öl, Bo, Up, Dr.**First report:** Jaschhof & Jaschhof (2019b) (see the remark below). **Identification:** Jaschhof & Jaschhof (2019b).**Remark.** *Camptomyia ulmicola* in the sense of Jaschhof & Jaschhof (2013) is actually *C. capitata*.**(445) *Camptomyia unisaetosa* Spungis, 1989****Distribution:** Europe (Latvia). SWEDEN: Sk, Öl, Up.**First report:** Jaschhof & Jaschhof (2013).**Identification:** Jaschhof & Jaschhof (2013).***Colomyia* Kieffer, 1892****Distribution:** Palearctic, Oriental. **Number of species:** 5 / 4 / 2.**(446) *Colomyia caudata* Spungis, 1991****Distribution:** Europe (Latvia). SWEDEN: Up, Lu. Rare.**First report:** Jaschhof & Jaschhof (2013).**Identification:** Jaschhof & Jaschhof (2013).**(447) *Colomyia clavata* Kieffer, 1892****Distribution:** Europe (Latvia). SWEDEN: Sm, Up. Rare.**First report:** Jaschhof & Jaschhof (2013).**Identification:** Jaschhof & Jaschhof (2013).***Epicola* Spungis, 1991****Distribution:** Western Palearctic. **Number of species:** 1 / 1 / 1.**(448) *Epicola mirabilis* Spungis, 1991****Distribution:** Europe (Latvia, Poland). SWEDEN: Öl. Rare.**First report:** Jaschhof & Jaschhof (2017a).**Identification:** Spungis (1991).***Parasynapta* Panelius, 1965****Distribution:** Holarctic. **Number of species:** 2 / 1 / 1.**(449) *Parasynapta intermedia* Panelius, 1965****Distribution:** Europe (Finland, Latvia). SWEDEN: Öl, Bo, Lu, To.**First report:** Jaschhof & Jaschhof (2013).**Identification:** Jaschhof & Jaschhof (2013).***Stackelbergiella* Marikovskij, 1958****Distribution:** Holarctic. **Number of species:** 3 / 3 / 3.**(450) *Stackelbergiella hordei* (Barnes, 1927)****Distribution:** Palearctic (UK, Germany, Latvia, Lithuania; Kazakhstan), possibly USA (Pennsylvania). SWEDEN: Öl, Go, Ög.**First report:** Jaschhof & Jaschhof (2013).**Identification:** Jaschhof & Jaschhof (2013).**(451) *Stackelbergiella rickebasti* Jaschhof, 2013****Distribution:** Europe (Estonia). SWEDEN: Up, Dr. Rare.**First report:** Jaschhof & Jaschhof (2013).**Identification:** Jaschhof & Jaschhof (2013).**(452) *Stackelbergiella sikorai* Jaschhof & Jaschhof, 2019****Distribution:** Europe (Estonia). SWEDEN: Öl. Rare.**First report:** Jaschhof & Jaschhof (2019b).**Identification:** Jaschhof & Jaschhof (2019b).***Svenartia* Jaschhof, 2013****Distribution:** Western Palearctic. **Number of species:** 1 / 1 / 1.**(453) *Svenartia spungisi* Jaschhof, 2013****Distribution:** SWEDEN: Sm, Up. Rare.**First report:** Jaschhof & Jaschhof (2013).**Identification:** Jaschhof & Jaschhof (2013).***Dicerurini* Mamaev, 1966 (incl. *Solntseviini* Mamaev, 1966)**

Arctepidosis* Mamaev, 1990*Distribution:** Palearctic. **Number of species:** 2 / 2 / 1.**(454) *Arctepidosis jamalensis* Mamaev, 1990****Distribution:** Palearctic (western Siberia). SWEDEN: Öl. Rare.**First report:** Jaschhof & Jaschhof (2017a).**Identification:** Jaschhof & Jaschhof (2017a).**Remark.** Our finds of *A. jamalensis* in Öland are the only records of this species in all of Europe.***Desertepidosis* Mamaev & Soyunov, 1989****Distribution:** Palearctic. **Number of species:** 6 / 4 / 3.**(455) *Desertepidosis borealis* Jaschhof, 2013****Distribution:** Europe (Latvia, Czech Republic). SWEDEN: Sk to Up.**First report:** Jaschhof & Jaschhof (2013).**Identification:** Jaschhof & Jaschhof (2019a).**(456) *Desertepidosis grytsjoenensis* Jaschhof & Jaschhof, 2019****Distribution:** SWEDEN: Sm. Rare.**First report:** Jaschhof & Jaschhof (2019a).**Identification:** Jaschhof & Jaschhof (2019a).**(457) *Desertepidosis robusta* Jaschhof & Jaschhof, 2019****Distribution:** SWEDEN: Sm, Up. Rare.**First report:** Jaschhof & Jaschhof (2019a).**Identification:** Jaschhof & Jaschhof (2019a).***Dicerura* Kieffer, 1898****Distribution:** Holarctic. **Number of species:** 32 / 19 / 13.**Remarks.** A Swedish record of *Dicerura iridis* (Kaltenbach, 1873) mentioned by Mamaev (1995) is apparently not backed by voucher specimens. Although this species, according to the literature, is the most commonly found *Dicerura* in Europe, we do not know of specimens proving its occurrence in Sweden.**(458) *Dicerura barbata* Mamaev, 1966****Distribution:** Europe (Ukraine). SWEDEN: Lu. Rare.**First report:** Jaschhof & Spungis (2018). **Identification:** Jaschhof & Spungis (2018).**(459) *Dicerura complicata* Spungis, 1987****Distribution:** Europe (Finland, Estonia, Latvia). SWEDEN: Öl, Ög. Rare.**First report:** Jaschhof & Jaschhof (2013).**Identification:** Jaschhof & Jaschhof (2013).**(460) *Dicerura dentata* Spungis, 1979****Distribution:** Europe (Finland, Latvia, Slovak Republic). SWEDEN: Öl, Up, Dr.**First report:** Jaschhof & Jaschhof (2013).**Identification:** Jaschhof & Jaschhof (2013).**(461) *Dicerura dispersa* Jaschhof, 2013****Distribution:** Europe (Slovak Republic). SWEDEN: Sk, Sö, Up, Pi.**First report:** Jaschhof & Jaschhof (2013).**Identification:** Jaschhof & Jaschhof (2013).**(462) *Dicerura feminea* Jaschhof, 2013****Distribution:** SWEDEN: Up. Rare.**First report:** Jaschhof & Jaschhof (2013).**Identification:** Jaschhof & Jaschhof (2013).**(463) *Dicerura formosa* Mamaev, 1998****Distribution:** Palearctic (Estonia; southern Siberia). SWEDEN: Lu. Rare.**First report:** Jaschhof & Spungis (2018). **Identification:** Jaschhof & Spungis (2018).**(464) *Dicerura fungicola* (Mamaev, 1964)****Distribution:** Europe (Finland, Russia). SWEDEN: Dr. Rare.**First report:** Jaschhof & Jaschhof (2013).**Identification:** Jaschhof & Jaschhof (2013).**(465) *Dicerura mixta* Spungis, 1987****Distribution:** Europe (Finland, Estonia, Latvia, Russia). SWEDEN: Sk, Up, Dr. Rare.**First report:** Jaschhof & Jaschhof (2013).**Identification:** Jaschhof & Jaschhof (2013).**(466) *Dicerura peterssoni* Jaschhof & Jaschhof, 2015****Distribution:** SWEDEN: Up, Dr. Rare.**First report:** Jaschhof & Jaschhof (2015a).**Identification:** Jaschhof & Jaschhof (2015a).**(467) *Dicerura rossica* (Mamaev, 1960)****Distribution:** Europe (Finland, Latvia, Russia). SWEDEN: Up. Rare.**First report:** Jaschhof & Jaschhof (2013).**Identification:** Jaschhof & Jaschhof (2013).

(468) *Dicerura separata* Spungis, 1987

Distribution: Europe (Latvia). SWEDEN: Sm, Dr, Pi, Lu, To.

First report: Mamaev (1995). **Identification:** Jaschhof & Jaschhof (2013).

(469) *Dicerura triangularis* Mamaev, 1966

Distribution: Europe (Finland, Estonia, Latvia, Ukraine). SWEDEN: Dr, Hr, Vb, Lu.

First report: Jaschhof & Jaschhof (2013). **Identification:** Jaschhof & Jaschhof (2013).

(470) *Dicerura xylophila* Mamaev, 1966

Distribution: widespread Europe. SWEDEN: Up. Rare.

First report: Jaschhof & Jaschhof (2013). **Identification:** Jaschhof & Jaschhof (2013).

***Dirhiza* Loew, 1850**

Distribution: Holarctic. **Number of species:** 3 / 1 / 1. **Unnamed species in Sweden:** 1.

Remark. A single male from Sweden identified by Jaschhof & Jaschhof (2013) as *Dirhiza* aff. *abludentis* Mamaev, 1998, and a single female referred to as *Dirhiza* spec. are here regarded as belonging to one and the same unidentified species.

(471) *Dirhiza lateritia* Loew, 1850

Distribution: Holarctic (northeastern USA; widespread Europe). SWEDEN: Up, Dr, Pi.

First report: Jaschhof & Jaschhof (2013). **Identification:** Jaschhof & Jaschhof (2013).

***Gardenforsia* Jaschhof & Jaschhof, 2019**

Distribution: Western Palearctic. **Number of species:** 1 / 1 / 1. **Unnamed species in Sweden:** 1.

(472) *Gardenforsia oelandica* Jaschhof & Jaschhof, 2019

Distribution: SWEDEN: Öl. Rare.

First report: Jaschhof & Jaschhof (2019a). **Identification:** Jaschhof & Jaschhof (2019a).

***Glemparon* Jaschhof, 2013**

Distribution: Western Palearctic, Australasian/Oceanian. **Number of species:** 19 / 2 / 2.

(473) *Glemparon sagittifer* Jaschhof, 2013

Distribution: SWEDEN: Ha, Sm, Vb. Rare.

First report: Jaschhof & Jaschhof (2013). **Identification:** Jaschhof & Jaschhof (2013).

(474) *Glemparon tomelilla* Jaschhof & Jaschhof, 2018

Distribution: SWEDEN: Sk, Öl. Rare.

First report: Jaschhof & Jaschhof (2018). **Identification:** Jaschhof & Jaschhof (2018).

***Hilversidia* Mamaev, 1966**

Distribution: Western Palearctic. **Number of species:** 1 / 1 / 1.

(475) *Hilversidia autumnalis* Mamaev, 1966

Distribution: widespread Europe. SWEDEN: Sm to Lu.

First report: Jaschhof & Jaschhof (2013). **Identification:** Jaschhof & Jaschhof (2013).

***Linnaeomyia* Jaschhof & Jaschhof, 2015**

Distribution: Western Palearctic. **Number of species:** 2 / 2 / 1.

(476) *Linnaeomyia hortensis* Jaschhof & Jaschhof, 2015

Distribution: SWEDEN: Öl. Rare.

First report: Jaschhof & Jaschhof (2015b). **Identification:** Jaschhof & Jaschhof (2015b).

***Neurepidosis* Spungis, 1987**

Distribution: Holarctic. **Number of species:** 14 / 10 / 9.

(477) *Neurepidosis conchata* Fedotova & Sidorenko, 2008

Distribution: Palearctic (Far East Russia). SWEDEN: Sm, Öl, Sö, Vr, Up.

First report: Jaschhof & Jaschhof (2013). **Identification:** Jaschhof & Jaschhof (2013).

(478) *Neurepidosis decorata* Jaschhof, 2013

Distribution: SWEDEN: Sm, Up. Rare.

First report: Jaschhof & Jaschhof (2013). **Identification:** Jaschhof & Jaschhof (2013).

(479) *Neurepidosis ekdalensis* Jaschhof & Jaschhof, 2019

Distribution: SWEDEN: Up. Rare.

First report: Jaschhof & Jaschhof (2019a). **Identification:** Jaschhof & Jaschhof (2019a).

(480) *Neurepidosis emarginata* Jaschhof & Jaschhof, 2019

Distribution: Europe (Czech Republic). SWEDEN: Öl, Vb. Rare.

First report: Jaschhof & Jaschhof (2019a).
Identification: Jaschhof & Jaschhof (2019a).

(481) *Neurepidosis gracilis* Spungis, 1987

Distribution: Europe (Estonia, Latvia). SWEDEN: Sm, Öl, Go, Ög, Up.

First report: Jaschhof & Jaschhof (2013).
Identification: Jaschhof & Jaschhof (2013).

(482) *Neurepidosis grytsoenensis* Jaschhof, 2013

Distribution: SWEDEN: Sm, Up, Dr.

First report: Jaschhof & Jaschhof (2013).
Identification: Jaschhof & Jaschhof (2013).

(483) *Neurepidosis hybrida* Jaschhof & Jaschhof, 2019

Distribution: SWEDEN: Sm, Up, Dr. Rare.

First report: Jaschhof & Jaschhof (2019a).
Identification: Jaschhof & Jaschhof (2019a).

(484) *Neurepidosis minuta* Spungis, 1987

Distribution: Europe (Latvia). SWEDEN: Sk, Sm, Öl, Go, Up.

First report: Jaschhof & Jaschhof (2013).
Identification: Jaschhof & Jaschhof (2013).

(485) *Neurepidosis subalpina* Jaschhof, 2013

Distribution: SWEDEN: Lu. Rare.

First report: Jaschhof & Jaschhof (2013).
Identification: Jaschhof & Jaschhof (2013).

***Paratetraneuromyia* Spungis, 1987**

Distribution: Holarctic. **Number of species:** 3 / 3 / 3.

(486) *Paratetraneuromyia aestiva* Jaschhof, 2013

Distribution: SWEDEN: Ög, Up, Hr. Rare.

First report: Jaschhof & Jaschhof (2013).
Identification: Jaschhof & Jaschhof (2013).

(487) *Paratetraneuromyia nobilis* (Felt, 1913)

Distribution: Holarctic (USA (New York, Maine, Pennsylvania?). SWEDEN: Öl, Up. Rare.

First report: Jaschhof & Jaschhof (2013).
Identification: Jaschhof & Jaschhof (2013).

(488) *Paratetraneuromyia vernalis* Spungis, 1987

Distribution: Europe (Finland, Estonia, Latvia). SWEDEN: Sk, Sm, Up, Dr.

First report: Jaschhof & Jaschhof (2015a).
Identification: Spungis (1987).

***Solntsevia* Mamaev, 1965**

Distribution: Holarctic. **Number of species:** 3 / 1 / 1.

(489) *Solntsevia nigripes* Mamaev, 1965

Distribution: Europe (Finland, Estonia, Latvia, Russia). SWEDEN: Up, Dr. Rare.

First report: Jaschhof & Jaschhof (2013).
Identification: Jaschhof & Jaschhof (2013).

***Tetraneuromyia* Mamaev, 1964**

Distribution: Holarctic. **Number of species:** 13 / 13 / 12.

(490) *Tetraneuromyia brevivalpis* Jaschhof & Jaschhof, 2019

Distribution: Europe (Slovak Republic). SWEDEN: Öl.

First report: Jaschhof & Jaschhof (2019a).
Identification: Jaschhof & Jaschhof (2019a).

(491) *Tetraneuromyia bulbifera* Mamaev, 1964

Distribution: Europe (Russia, Moldova). SWEDEN: Lu.

First report: Jaschhof & Jaschhof (2019a).
Identification: Jaschhof & Jaschhof (2019a).

(492) *Tetraneuromyia discrepans* Jaschhof & Jaschhof, 2019

Distribution: SWEDEN: Öl. Rare.

First report: Jaschhof & Jaschhof (2019a).
Identification: Jaschhof & Jaschhof (2019a).

(493) *Tetraneuromyia errata* Jaschhof & Jaschhof, 2019

Distribution: SWEDEN: Sk, Sö, Vb, Ån.

First report: Jaschhof & Jaschhof (2019a).
Identification: Jaschhof & Jaschhof (2019a).

(494) *Tetraneuromyia hirticornis* (Zetterstedt, 1850)

Distribution: widespread Europe. SWEDEN: Sk, Up. Rare.

First report: Jaschhof & Jaschhof (2013).
Identification: Jaschhof & Jaschhof (2013).

(495) *Tetraneuromyia lamellata* Spungis, 1987

Distribution: Europe (Latvia, Czech Republic?, Russia). SWEDEN: Sö, Dr, Pi, Lu.

First report: Jaschhof & Jaschhof (2013).
Identification: Jaschhof & Jaschhof (2013, 2019a).

(496) *Tetraneuromyia lapponica* Jaschhof & Jaschhof, 2019**Distribution:** SWEDEN: Lu. Rare.**First report:** Jaschhof & Jaschhof (2019a).**Identification:** Jaschhof & Jaschhof (2019a).**(497) *Tetraneuromyia lenticularis* (Spungis, 1987)****Distribution:** Europe (Finland, Latvia, Czech Republic). SWEDEN: Sö to Lu.**First report:** Jaschhof & Jaschhof (2013).**Identification:** Jaschhof & Jaschhof (2013).**(498) *Tetraneuromyia longiventris* (Mamaev, 1964)****Distribution:** Palearctic (European Russia, southern Siberia). SWEDEN: Up. Rare.**First report:** Jaschhof & Jaschhof (2013).**Identification:** Jaschhof & Jaschhof (2013).**(499) *Tetraneuromyia moldaviensis* (Spungis, 1987)****Distribution:** Europe (Moldova). SWEDEN: Öl, Vb. Rare.**First report:** Jaschhof & Jaschhof (2013).**Identification:** Jaschhof & Jaschhof (2013).**(500) *Tetraneuromyia similis* Mamaev, 1964****Distribution:** Europe (Latvia, Russia). SWEDEN: Öl, Up. Rare.**First report:** Jaschhof & Jaschhof (2013).**Identification:** Jaschhof & Jaschhof (2013).**(501) *Tetraneuromyia wilksae* Jaschhof & Jaschhof, 2015****Distribution:** SWEDEN: Up. Rare.**First report:** Jaschhof & Jaschhof (2015a).**Identification:** Jaschhof & Jaschhof (2015a).**Porricondyliini Kieffer, 1913 (incl. Holoneurini Enderlein, 1936)*****Bryocrypta* Mamaev, 1964****Distribution:** Palearctic, Afrotropical, Oriental.
Number of species: 8 / 5 / 4.**(502) *Bryocrypta angustata* Mamaev, 1966****Distribution:** Europe (Latvia, Russia). SWEDEN: Sm, Sö. Rare.**First report:** Jaschhof & Jaschhof (2020a).**Identification:** Jaschhof & Jaschhof (2020a).**(503) *Bryocrypta dubia* Kieffer, 1896****Distribution:** Europe (France, Germany, Yugoslavia, Russia). SWEDEN: widespread from Sk to Lu.**First report:** Jaschhof & Jaschhof (2013).**Identification:** Jaschhof & Jaschhof (2013).**(504) *Bryocrypta indubitata* Mamaev, 1964****Distribution:** Palearctic (widespread Europe; South Korea). SWEDEN: Sm, Go, Bo, Sö.**First report:** Jaschhof & Jaschhof (2013).**Identification:** Jaschhof & Jaschhof (2013).**(505) *Bryocrypta lobata* Mamaev, 1966****Distribution:** Europe (Ukraine). SWEDEN: Öl. Rare.**First report:** Jaschhof & Jaschhof (2020a).**Identification:** Jaschhof & Jaschhof (2020a).***Cassidoides* Mamaev, 1964****Distribution:** Holarctic. **Number of species:** 5 / 5 / 5.**(506) *Cassidoides bertanderssoni* Jaschhof & Jaschhof, 2020****Distribution:** SWEDEN: Sm, Öl, Dr. Rare.**First report:** Jaschhof & Jaschhof (2020e).**Identification:** Jaschhof & Jaschhof (2020e).**(507) *Cassidoides cornutus* Jaschhof & Jaschhof, 2020****Distribution:** SWEDEN: Dr. Rare.**First report:** Jaschhof & Jaschhof (2020a).**Identification:** Jaschhof & Jaschhof (2020a).**(508) *Cassidoides corticalis* (Mamaev, 1964)****Distribution:** Europe (Estonia, Latvia, Russia). SWEDEN: Sk, Sm, Öl, Up, Dr.**First report:** Jaschhof & Jaschhof (2013).**Identification:** Jaschhof & Jaschhof (2013).**(509) *Cassidoides fulviventris* (Mamaev, 1964)****Distribution:** Palearctic (Estonia, Ukraine, European Russia; Far East Russia). SWEDEN: Go, Ög, Sö, Dr, Lu.**First report:** Jaschhof & Jaschhof (2013).**Identification:** Jaschhof & Jaschhof (2013).**(510) *Cassidoides fulvus* (Kieffer, 1896)****Distribution:** Holarctic (USA (North Carolina); widespread Palearctic (including Europe (widespread))). SWEDEN: Sk, Öl, Go, Dr, Lu.**First report:** Jaschhof & Jaschhof (2013).**Identification:** Jaschhof & Jaschhof (2013).

Cedrocrypta* Kieffer, 1919*Distribution:** Holarctic. **Number of species:** 1 / 1 / 1.**(511) *Cedrocrypta montana* Kieffer, 1919****Distribution:** Holarctic (USA (Pennsylvania); Latvia, Germany; Algeria). SWEDEN: Up. Rare.**First report:** Jaschhof & Jaschhof (2013).**Identification:** Jaschhof & Jaschhof (2013).***Claspettomyia* Grover, 1964****Distribution:** Holarctic, Afrotropical, Oriental. **Number of species:** 30 / 8 / 5. **Unnamed species in Sweden:** 1.**(512) *Claspettomyia formosa* (Bremer, 1847)****Distribution:** Palearctic (including Europe (widespread)). SWEDEN: Up. Rare.**First report:** Mamaev (1995, as *Claspettomyia montana* Mamaev, 1965, a junior synonym). **Identification:** Jaschhof & Jaschhof (2013).**(513) *Claspettomyia hamata* (Felt, 1907)****Distribution:** Holarctic (USA (Massachusetts, North Carolina); Finland). SWEDEN: Sk to Pi.**First report:** Jaschhof & Jaschhof (2013).**Identification:** Jaschhof & Jaschhof (2013).**(514) *Claspettomyia* aff. *kirghizica* Mamaev, 1998****Distribution:** Palearctic (Kirghizstan). SWEDEN: Öl. Rare.**First report:** Jaschhof & Jaschhof (2013).**Identification:** Jaschhof & Jaschhof (2013).**Remark.** Our specimens from Sweden fit Mamaev's (1998b) description of *C. kirghizica*, but our identification, which we regard as preliminary, needs to be verified by comparison with the holotype. There are no further records of *C. kirghizica* from Europe.**(515) *Claspettomyia niveitarsis* (Zetterstedt, 1850)****Distribution:** Palearctic (widespread Europe; Kirghizstan, China?). SWEDEN: Sm, Öl, Sö, Up, Lu.**First report:** Jaschhof & Jaschhof (2013).**Identification:** Jaschhof & Jaschhof (2013).**(516) *Claspettomyia toelgi* (Kieffer, 1913)****Distribution:** widespread Europe; USA (Pennsylvania)?. SWEDEN: Sk, Öl, Go.**First report:** Panelius (1965, as *Pachylabis chrysant-hemi* Panelius, 1965, a junior synonym). **Identification:** Jaschhof & Jaschhof (2013).***Coccopsilis* Meijere, 1901****Distribution:** Holarctic. **Number of species:** 10 / 7 / 7. **Unnamed species in Sweden:** 1.**(517) *Coccopsilis marginata* (Meijere, 1901)****Distribution:** Palearctic (widespread Europe; Japan, South Korea); USA (Pennsylvania)?. SWEDEN: Sm, Ög, Up, Dr, Lu.**First report:** Jaschhof & Jaschhof (2013).**Identification:** Jaschhof & Jaschhof (2013).**(518) *Coccopsilis obscura* (Mamaev, 1964)****Distribution:** Palearctic (Finland, Estonia, Latvia, Russia; South Korea). SWEDEN: Sk, Ha, Sm, Up.**First report:** Jaschhof & Jaschhof (2013).**Identification:** Jaschhof & Jaschhof (2013).**(519) *Coccopsilis omtanke* Jaschhof & Jaschhof, 2020****Distribution:** SWEDEN: Dr. Rare.**First report:** Jaschhof & Jaschhof (2020e).**Identification:** Jaschhof & Jaschhof (2020e).**(520) *Coccopsilis paneliusi* (Yukawa, 1971)****Distribution:** widespread Palearctic (including Europe (widespread)). SWEDEN: Sk to Pi.**First report:** Mamaev (1995, as *Holoneurus paneliusi*).**Identification:** Jaschhof & Jaschhof (2013).**(521) *Coccopsilis pectinata* Jaschhof & Jaschhof, 2020****Distribution:** SWEDEN: Bl, Sm. Rare.**First report:** Jaschhof & Jaschhof (2020a).**Identification:** Jaschhof & Jaschhof (2020a).**(522) *Coccopsilis recondita* Jaschhof & Jaschhof, 2020****Distribution:** SWEDEN: Sm, Öl. Rare.**First report:** Jaschhof & Jaschhof (2020a).**Identification:** Jaschhof & Jaschhof (2020a).**(523) *Coccopsilis scalpta* Jaschhof & Jaschhof, 2020****Distribution:** SWEDEN: Sm. Rare.**First report:** Jaschhof & Jaschhof (2020a).**Identification:** Jaschhof & Jaschhof (2020a).***Cryptodontomyia* Jaschhof, 2013****Distribution:** Western Palearctic. **Number of species:** 3 / 3 / 3.**(524) *Cryptodontomyia elongata* Jaschhof, 2013****Distribution:** SWEDEN: Öl, Hr, Lu. Rare.

First report: Jaschhof & Jaschhof (2013).
Identification: Jaschhof & Jaschhof (2013).

(525) *Cryptodontomyia nigridentis* (Mamaev, 1964)
Distribution: Europe (Russia). SWEDEN: Öl, Ög. Rare.
First report: Jaschhof & Jaschhof (2013).
Identification: Jaschhof & Jaschhof (2013).

(526) *Cryptodontomyia svecica* Jaschhof, 2013
Distribution: SWEDEN: Ög, Up, Dr.
First report: Jaschhof & Jaschhof (2013).
Identification: Jaschhof & Jaschhof (2013).

***Cryptoneurus* Mamaev, 1964**
Distribution: Palearctic. **Number of species:** 2 / 2 / 2.

(527) *Cryptoneurus muscicola* (Kieffer, 1896)
Distribution: Palearctic (widespread Europe; South Korea). SWEDEN: Sk, Sm, Öl, Up.
First report: Jaschhof & Jaschhof (2013).
Identification: Jaschhof & Jaschhof (2013).

(528) *Cryptoneurus paludicola* Jaschhof, 2013
Distribution: SWEDEN: Öl, Ög, Up. Rare.
First report: Jaschhof & Jaschhof (2013).
Identification: Jaschhof & Jaschhof (2013).

***Dallaiella* Mamaev, 1997**
Distribution: Western Palearctic. **Number of species:** 1 / 1 / 1.

(529) *Dallaiella petrosa* Mamaev, 1997
Distribution: Europe (Italy). SWEDEN: Sm. Rare.
First report: Jaschhof & Jaschhof (2017a).
Identification: Jaschhof & Jaschhof (2017a).

***Dendrepidosis* Mamaev, 1990**
Distribution: Palearctic. **Number of species:** 5 / 4 / 3.

(530) *Dendrepidosis lapponica* Jaschhof & Jaschhof, 2020
Distribution: SWEDEN: Lu. Rare.
First report: Jaschhof & Jaschhof (2020a).
Identification: Jaschhof & Jaschhof (2020a).

(531) *Dendrepidosis longipennis* (Spungis, 1981)
Distribution: widespread Europe. SWEDEN: Öl, Ög, Dr, Lu.
First report: Jaschhof & Jaschhof (2013).
Identification: Jaschhof & Jaschhof (2013).

(532) *Dendrepidosis upplandica* Jaschhof & Jaschhof, 2020

Distribution: SWEDEN: Up. Rare.
First report: Jaschhof & Jaschhof (2020a).
Identification: Jaschhof & Jaschhof (2020a).

***Divellepidosis* Fedotova & Sidorenko, 2007**
Distribution: Holarctic, Australasian/Oceanian.
Number of species: 20 / 8 / 8.

(533) *Divellepidosis armilla* (Mamaev, 1994)
Distribution: Palearctic (Finland, Estonia; Far East Russia). SWEDEN: Sk to Ån.
First report: Jaschhof & Jaschhof (2013).
Identification: Jaschhof & Jaschhof (2013).

(534) *Divellepidosis fuscostriata* (Panelius, 1965)
Distribution: Europe (Finland, Estonia, Latvia, Lithuania). SWEDEN: Sk to Dr.
First report: Mamaev (1995, as *Porricondyla fuscostriata*). **Identification:** Jaschhof & Jaschhof (2013).

(535) *Divellepidosis hypoxantha* (Panelius, 1965)
Distribution: widespread Europe. SWEDEN: widespread from Sk to Lu.
First report: Mamaev (1995, as *Porricondyla hypoxantha*). **Identification:** Jaschhof & Jaschhof (2013).

(536) *Divellepidosis lutescens* (Spungis, 1981)
Distribution: Palearctic (widespread Europe; Far East Russia). SWEDEN: Sm, Öl, Up.
First report: Jaschhof & Jaschhof (2013).
Identification: Jaschhof & Jaschhof (2013).

(537) *Divellepidosis pallescens* (Panelius, 1965)
Distribution: widespread Europe. SWEDEN: Sk to Ån.
First report: Jaschhof & Jaschhof (2013).
Identification: Jaschhof & Jaschhof (2013).

(538) *Divellepidosis quadridens* (Spungis, 1981)
Distribution: Europe (Latvia). SWEDEN: Sm, Öl, Up.
First report: Jaschhof & Jaschhof (2017a).
Identification: Spungis (1981).

(539) *Divellepidosis taigacola* Jaschhof, 2013
Distribution: Europe (Finland). SWEDEN: Dr, Hr, Vb, Lu.

First report: Jaschhof & Jaschhof (2013).
Identification: Jaschhof & Jaschhof (2013).

(540) *Divellepidosis vulgata* Jaschhof, 2013

Distribution: Europe (Estonia, Czech Republic).
 SWEDEN: Sk, Sm, Up, Dr.

First report: Jaschhof & Jaschhof (2013).
Identification: Jaschhof & Jaschhof (2013).

***Glossostyles* Jaschhof & Sikora, 2017**

Distribution: Western Palearctic. **Number of species:**
 1 / 1 / 1.

(541) *Glossostyles perspicua* Jaschhof & Sikora, 2017

Distribution: Europe (Czech Republic). SWEDEN:
 Sö, Lu. Rare.

First report: Sikora *et al.* (2017). **Identification:** Sikora
et al. (2017).

***Holoneurus* Kieffer, 1895**

Distribution: Holarctic, Neotropical, Oriental. **Number
 of species:** 9 / 5 / 2.

(542) *Holoneurus ciliatus* Kieffer, 1896

Distribution: Europe (France, Slovak Republic).
 SWEDEN: Sk, Sm, Öl. Rare.

First report: Jaschhof & Jaschhof (2013).
Identification: Jaschhof & Jaschhof (2013).

(543) *Holoneurus fibyensis* Jaschhof, 2013

Distribution: SWEDEN: Sm, Up. Rare.

First report: Jaschhof & Jaschhof (2013).
Identification: Jaschhof & Jaschhof (2013).

***Isocolpodia* Parnell, 1971**

Distribution: Holarctic. **Number of species:** 8 / 2 / 2.

(544) *Isocolpodia graminis* (Felt, 1907)

Distribution: Holarctic (widespread USA). SWEDEN:
 Sk, Öl, Lu. Rare.

First report: Jaschhof & Jaschhof (2013).
Identification: Jaschhof & Jaschhof (2013).

Remark. Sweden is the only Palearctic distribution
 known of this originally North American species.

(545) *Isocolpodia unidentata* (Marikovskij, 1958)

Distribution: Palearctic (Kazakhstan). SWEDEN: Öl.
 Rare.

First report: Jaschhof & Jaschhof (2020a).
Identification: Jaschhof & Jaschhof (2020a).

Remark. The single male found in Öland (Jaschhof
 & Jaschhof 2020a) is the only record of this species
 in all of Europe.

***Jamalepidosis* Mamaev, 1990**

Distribution: Palearctic. **Number of species:** 3 / 1 / 1.

(546) *Jamalepidosis spungisi* Jaschhof, 2013

Distribution: Europe (Finland). SWEDEN: Sö. Rare.

First report: Jaschhof & Jaschhof (2013).
Identification: Jaschhof & Jaschhof (2013).

***Lamellepidosis* Mamaev, 1990**

Distribution: Western Palearctic. **Number of species:**
 1 / 1 / 1.

(547) *Lamellepidosis spungisi* Mamaev, 1990

Distribution: Europe (Ukraine). SWEDEN: Öl. Rare.

First report: Jaschhof & Jaschhof (2017a).
Identification: Jaschhof & Jaschhof (2017a).

***Monepidosis* Mamaev, 1966**

Distribution: Holarctic. **Number of species:** 19 / 12
 / 12. **Unnamed species in Sweden:** 2.

**(548) *Monepidosis bulgarica* Mamaev & Dimitrova,
 1992**

Distribution: Europe (Bulgaria). SWEDEN: Up, Dr,
 Lu.

First report: Jaschhof & Jaschhof (2013).
Identification: Jaschhof & Jaschhof (2013).

**(549) *Monepidosis difficilis* Jaschhof & Jaschhof,
 2020**

Distribution: SWEDEN: Up. Rare.

First report: Jaschhof & Jaschhof (2020a).
Identification: Jaschhof & Jaschhof (2020a).

(550) *Monepidosis duplicis* Mamaev, 1998

Distribution: Palearctic (Latvia; Far East Russia).
 SWEDEN: Up. Rare.

First report: Jaschhof & Jaschhof (2015a, as
Monepidosis tinnerti Jaschhof & Jaschhof, 2015, a
 junior synonym). **Identification:** Jaschhof & Jaschhof
 (2015a, as *M. tinnerti*; 2020a).

(551) *Monepidosis furcata* Mamaev, 1966

Distribution: Europe (Finland, Russia). SWEDEN:
 Go to Lu.

First report: Jaschhof & Jaschhof (2013).
Identification: Jaschhof & Jaschhof (2013).

(552) *Monepidosis heterocera* Jaschhof, 2016

Distribution: Europe (Estonia, Germany). SWEDEN: Ha, Sm, Öl, Sö, Up.

First report: Jaschhof (2016a). **Identification:** Jaschhof (2016a).

(553) *Monepidosis hybrida* Jaschhof & Jaschhof, 2020

Distribution: SWEDEN: Öl, Sö. Rare.

First report: Jaschhof & Jaschhof (2020a).

Identification: Jaschhof & Jaschhof (2020a).

(554) *Monepidosis pectinata* Mamaev, 1966

Distribution: Europe (Finland, Russia). SWEDEN: Sm, Öl, Ög.

First report: Jaschhof & Jaschhof (2013).

Identification: Jaschhof & Jaschhof (2013).

(555) *Monepidosis pectinatoides* Jaschhof, 2013

Distribution: Europe (Estonia, Czech Republic). SWEDEN: Go to Lu.

First report: Jaschhof & Jaschhof (2013).

Identification: Jaschhof & Jaschhof (2013).

(556) *Monepidosis scanica* Jaschhof, 2013

Distribution: SWEDEN: Sk, Ha, Öl, Dr.

First report: Jaschhof & Jaschhof (2013).

Identification: Jaschhof & Jaschhof (2013).

(557) *Monepidosis sceptori* Spungis, 2006

Distribution: Europe (Latvia). SWEDEN: Öl, Dr. Rare.

First report: Jaschhof & Jaschhof (2017a).

Identification: Spungis (2006).

(558) *Monepidosis sceptoroides* Jaschhof, 2016

Distribution: SWEDEN: Öl, Lu. Rare.

First report: Jaschhof (2016a). **Identification:** Jaschhof (2016a).

(559) *Monepidosis spatulata* Spungis, 2006

Distribution: Europe (Latvia, Lithuania). SWEDEN: Öl, Go, Lu. Rare.

First report: Jaschhof (2016a). **Identification:** Spungis (2006).

***Neocolpodia* Mamaev, 1964**

Distribution: Palearctic. **Number of species:** 3 / 3 / 3. **Unnamed species in Sweden:** 2.

(560) *Neocolpodia gukasiani* (Mamaev, 1990) agg.

Distribution: Palearctic (Czech Republic; southern Siberia). SWEDEN: widespread from Sk to Pi (see the remarks below).

First report: Jaschhof & Jaschhof (2013).

Identification: Jaschhof & Jaschhof (2013, 2020a).

Remarks. *Neocolpodia gukasiani* in the sense of Jaschhof & Jaschhof (2013) is a species aggregate, which includes *N. ombergensis* (see below) and possibly three further distinct species (unpublished data). For the time being it is unclear whether the genuine *N. gukasiani* does occur in Sweden.

(561) *Neocolpodia ombergensis* Jaschhof & Jaschhof, 2020

Distribution: SWEDEN: Ög, Up. Rare.

First report: Jaschhof & Jaschhof (2020a).

Identification: Jaschhof & Jaschhof (2013, 2020a).

(562) *Neocolpodia paradoxa* Mamaev, 1964

Distribution: Europe (Netherlands, Germany, Bulgaria, Russia). SWEDEN: Sm, Öl, Up, Vb.

First report: Jaschhof & Jaschhof (2013).

Identification: Jaschhof & Jaschhof (2013).

***Oelandyla* Jaschhof & Jaschhof, 2020**

Distribution: Western Palearctic. **Number of species:** 1 / 1 / 1.

(563) *Oelandyla rostrata* Jaschhof & Jaschhof, 2020

Distribution: SWEDEN: Öl. Rare.

First report: Jaschhof & Jaschhof (2020a).

Identification: Jaschhof & Jaschhof (2020a).

***Paneliusia* Jaschhof, 2013**

Distribution: Holarctic. **Number of species:** 3 / 3 / 3. **Unnamed species in Sweden:** 1.

(564) *Paneliusia albimanoides* Jaschhof, 2013 agg.

Distribution: widespread Palearctic (including Europe (widespread)). SWEDEN: Sm to Vb.

First report: Jaschhof & Jaschhof (2013).

Identification: Jaschhof & Jaschhof (2013).

Remark. Specimens from various parts of Europe, which we studied after our 2013 revision, indicate *P. albimanoides* to be a species aggregate, including at least one unnamed species in Sweden.

(565) *Paneliusia aurantiaca* (Panelius, 1965)

Distribution: widespread Europe; USA (Pennsylvania)?. SWEDEN: Up, Dr, Vb, Lu.

First report: Jaschhof & Jaschhof (2013).

Identification: Jaschhof & Jaschhof (2013).

(566) *Paneliusia despecta* Jaschhof, 2013

Distribution: SWEDEN: Sk to Pi.

First report: Jaschhof & Jaschhof (2013).

Identification: Jaschhof & Jaschhof (2013).

Parepidosis Kieffer, 1913

Distribution: Holarctic, Oriental. **Number of species:** 16 / 10 / 9.

(567) *Parepidosis acridula* Jaschhof, 2013

Distribution: SWEDEN: Öl. Rare.

First report: Jaschhof & Jaschhof (2013).

Identification: Jaschhof & Jaschhof (2013).

(568) *Parepidosis arcuata* Mamaev, 1964

Distribution: Palearctic (widespread Europe; Uzbekistan). SWEDEN: Sk, Sm, Sö, Up, Ån.

First report: Jaschhof & Jaschhof (2013).

Identification: Jaschhof & Jaschhof (2013).

(569) *Parepidosis argentifera* (Meijere, 1906)

Distribution: Europe (Netherlands, Germany, Ukraine). SWEDEN: Sk to Sö, also Lu.

First report: Jaschhof & Jaschhof (2013).

Identification: Jaschhof & Jaschhof (2013).

(570) *Parepidosis frontalis* Jaschhof, 2013

Distribution: Europe (Estonia). SWEDEN: Up. Rare.

First report: Jaschhof & Jaschhof (2013).

Identification: Jaschhof & Jaschhof (2013).

(571) *Parepidosis kaltisbackensis* Jaschhof & Jaschhof, 2020

Distribution: SWEDEN: Lu. Rare.

First report: Jaschhof & Jaschhof (2020a).

Identification: Jaschhof & Jaschhof (2020a).

(572) *Parepidosis peculiaris* Mamaev, 1966

Distribution: Europe (Latvia, Russia). SWEDEN: Sk, Pi, Lu. Rare.

First report: Jaschhof & Jaschhof (2013).

Identification: Jaschhof & Jaschhof (2013).

(573) *Parepidosis planistylata* Jaschhof, 2013

Distribution: Europe (Estonia, Czech Republic). SWEDEN: widespread from Ha to Lu.

First report: Jaschhof & Jaschhof (2013).

Identification: Jaschhof & Jaschhof (2013).

(574) *Parepidosis ulmicorticis* Mamaev, 1964 – new record

Distribution: Europe (Russia). SWEDEN: Öl. Rare.

First report: this paper. **Identification:** this paper (see below).

Material examined. Öl: Mörbylånga, Gamla Skogsby (Kalkstad), mixed broadleaf forest, 1 ♂, 7 May–10 Jun. 2019, MT, M. & C. Jaschhof leg. (spn. CEC3473 in NHRS).

(575) *Parepidosis venustior* Gagné, 2004

Distribution: widespread Europe. SWEDEN: widespread from Sk to Lu.

First report: Jaschhof & Jaschhof (2013).

Identification: Jaschhof & Jaschhof (2013).

***Parvovirga* Jaschhof, 2013**

Distribution: Palearctic. **Number of species:** 2 / 2 / 2.

(576) *Parvovirga latostylata* Jaschhof, 2013

Distribution: Palearctic (Estonia; South Korea). SWEDEN: Sk, Öl, Up. Rare.

First report: Jaschhof & Jaschhof (2013).

Identification: Jaschhof & Jaschhof (2013).

(577) *Parvovirga rickebasti* Jaschhof, 2013

Distribution: SWEDEN: Up. Rare.

First report: Jaschhof & Jaschhof (2013).

Identification: Jaschhof & Jaschhof (2013).

***Paurodyla* Jaschhof, 2013**

Distribution: Western Palearctic. **Number of species:** 3 / 3 / 3.

(578) *Paurodyla serrata* Jaschhof & Jaschhof, 2020

Distribution: SWEDEN: Sö, Vb. Rare.

First report: Jaschhof & Jaschhof (2020a).

Identification: Jaschhof & Jaschhof (2020a).

(579) *Paurodyla serrulata* (Jaschhof, 2013) – new combination

Distribution: SWEDEN: Sm, Öl, Dr. Rare.

First report: Jaschhof & Jaschhof (2013, as *Porricondyla serrulata*). **Identification:** Jaschhof & Jaschhof (2013, as *Porricondyla serrulata*).

Remark. The presence in males of 11 flagellomeres with microtrichose necks is a clear indicator that the species in question is a member of the genus *Paurodyla* (cf. Jaschhof & Jaschhof 2020a). This is corroborated by genitalic characters, as follows. The inside of the gonostylus is concave and, of the gonocoxal synsclerite, the processes are small, the setose portions are separated by a sclerotized, interior rim from an extensive, asetose area basally, and the ventrobasal edge is convex and sharply contoured (Jaschhof & Jaschhof 2013: fig. 113).

(580) *Paurodyla tyresta* Jaschhof, 2013

Distribution: Europe (Finland). SWEDEN: Sk, Ha, Sö, Vb.

First report: Jaschhof & Jaschhof (2013).

Identification: Jaschhof & Jaschhof (2013, 2020a).

Porricondyla Rondani, 1840

Distribution: Holarctic, Oriental, Australasian/Oceanian. **Number of species:** 70 / 27 / 26. **Unnamed species in Sweden:** 5.

(581) *Porricondyla armata* Spungis, 1981

Distribution: Europe (Latvia, Russia). SWEDEN: Sm, Lu. Rare.

First report: Jaschhof & Jaschhof (2013).

Identification: Jaschhof & Jaschhof (2013).

(582) *Porricondyla bidentula* Jaschhof & Jaschhof, 2020

Distribution: SWEDEN: Öl. Rare.

First report: Jaschhof & Jaschhof (2020a).

Identification: Jaschhof & Jaschhof (2020a).

(583) *Porricondyla boreocola* Jaschhof, 2013

Distribution: SWEDEN: Dr, Vb, Lu. Rare.

First report: Jaschhof & Jaschhof (2013).

Identification: Jaschhof & Jaschhof (2013).

(584) *Porricondyla clancula* Jaschhof, 2013

Distribution: SWEDEN: widespread from Sm to Up.

First report: Jaschhof & Jaschhof (2013).

Identification: Jaschhof & Jaschhof (2013).

(585) *Porricondyla colpodoides* Mamaev, 1963 agg.

Distribution: Palearctic (Germany, European Russia; Uzbekistan). SWEDEN: widespread from Sk to Up.

First report: Jaschhof & Jaschhof (2013) (see the remarks below). **Identification:** Jaschhof & Jaschhof (2013) (see the remarks below).

Remarks. Specimens from Sweden, which we investigated recently, leave no doubt that *P. colpodoides* in the sense of Jaschhof & Jaschhof (2013) is a species aggregate. As evidenced by distinctions in male morphological characters, the Swedish fauna includes four discrete species resembling *P. colpodoides* (unpublished data). It needs to be clarified whether the genuine *P. colpodoides* is among those species. As discussed by Jaschhof & Jaschhof (2013: 224), it is beyond judgement whether Mamaev's (1995) mention of *P. colpodoides* refers to this species or to *P. distinguenda* Mamaev, 1963.

(586) *Porricondyla distinguenda* Mamaev, 1963

Distribution: Palearctic (widespread Europe; Uzbekistan). SWEDEN: Sk. Rare.

First report: Jaschhof & Jaschhof (2013).

Identification: Jaschhof & Jaschhof (2013).

(587) *Porricondyla diversicornis* Jaschhof & Jaschhof, 2020

Distribution: SWEDEN: Sk, Öl, Go, Up.

First report: Jaschhof & Jaschhof (2020a).

Identification: Jaschhof & Jaschhof (2020a).

(588) *Porricondyla errabunda* Mamaev, 2001

Distribution: Palearctic (Estonia, Czech Republic; western Siberia). SWEDEN: Go, Sö, Up, Lu.

First report: Jaschhof & Jaschhof (2013).

Identification: Jaschhof & Jaschhof (2013).

(589) *Porricondyla fibyensis* Jaschhof, 2013

Distribution: SWEDEN: Up. Rare.

First report: Jaschhof & Jaschhof (2013).

Identification: Jaschhof & Jaschhof (2013).

(590) *Porricondyla fulvescens* Panelius, 1965

Distribution: Europe (UK, Finland, Estonia, Latvia). SWEDEN: Sk, Öl, Up. Rare.

First report: Jaschhof & Jaschhof (2013).

Identification: Jaschhof & Jaschhof (2013).

(591) *Porricondyla gemina* Jaschhof & Jaschhof, 2020**Distribution:** SWEDEN: Bl, Öl, Sö, Dr, Lu.**First report:** Jaschhof & Jaschhof (2020a).**Identification:** Jaschhof & Jaschhof (2020a).**Remark.** *Porricondyla gemina*, a species only recently differentiated from *P. nigripennis*, is probably much more widespread than suggested by the available data.**(592) *Porricondyla lata* Mamaev, 1965****Distribution:** widespread Europe. SWEDEN: Ha, Öl, Go, Sö.**First report:** Jaschhof & Jaschhof (2013).**Identification:** Jaschhof & Jaschhof (2013).**(593) *Porricondyla leacheana* (Walker, 1856)****Distribution:** Europe (UK, Austria, Latvia, Russia). SWEDEN: Ha, Öl. Rare.**First report:** Jaschhof & Jaschhof (2013).**Identification:** Jaschhof & Jaschhof (2013).**(594) *Porricondyla macrodon* Jaschhof, 2013****Distribution:** SWEDEN: Bo, Sö, Up, Vb.**First report:** Jaschhof & Jaschhof (2013).**Identification:** Jaschhof & Jaschhof (2013).**(595) *Porricondyla microgona* Jaschhof, 2013****Distribution:** Europe (Estonia, Slovak Republic). SWEDEN: Sk to Dr.**First report:** Jaschhof & Jaschhof (2013).**Identification:** Jaschhof & Jaschhof (2013).**(596) *Porricondyla neglecta* Mamaev, 1965****Distribution:** widespread Europe. SWEDEN: Bo to Lu.**First report:** Jaschhof & Jaschhof (2013).**Identification:** Jaschhof & Jaschhof (2013).**(597) *Porricondyla nigripennis* (Meigen, 1830)****Distribution:** widespread Holarctic (see the remarks below). SWEDEN: Bo to Lu.**First report:** Jaschhof & Jaschhof (2013) (see the remarks below). **Identification:** Jaschhof & Jaschhof (2013).**Remarks.** Based on specimens from Sweden, Germany and the Slovak Republic, the definition of *P. nigripennis* was only recently narrowed to exclude *P. gemina* (Jaschhof & Jaschhof 2020a). In order to verify the geographic distribution of *P. nigripennis* within the Holarctic region, specimens mentioned in the literature need to be restudied. As regards Sweden, it is unclearwhether Mamaev's (1995) records from Skåne and Upland refer to *P. nigripennis* or *P. gemina*.**(598) *Porricondyla oelandica* Jaschhof, 2013****Distribution:** Europe (Estonia). SWEDEN: Sm, Öl, Sö, Up.**First report:** Jaschhof & Jaschhof (2013).**Identification:** Jaschhof & Jaschhof (2013).**(599) *Porricondyla ottenbyensis* Jaschhof & Jaschhof, 2020****Distribution:** SWEDEN: Öl. Rare.**First report:** Jaschhof & Jaschhof (2020a).**Identification:** Jaschhof & Jaschhof (2020a).**(600) *Porricondyla pallidigenae* Jaschhof & Jaschhof, 2020****Distribution:** SWEDEN: Sm, Öl, Ög. Rare.**First report:** Jaschhof & Jaschhof (2020a).**Identification:** Jaschhof & Jaschhof (2020a).**(601) *Porricondyla petrophila* Mamaev, 1986****Distribution:** Palearctic (Turkmenistan; Far East Russia). SWEDEN: Sm, Öl, Go, Sö.**First report:** Jaschhof & Jaschhof (2013).**Identification:** Jaschhof & Jaschhof (2013).**(602) *Porricondyla photophila* Spungis, 1981****Distribution:** Europe (Estonia, Latvia, Germany). SWEDEN: Ha, Sm, Öl, Go, Sö.**First report:** Jaschhof & Jaschhof (2013).**Identification:** Jaschhof & Jaschhof (2013).**(603) *Porricondyla pilosa* Mamaev & Zaitzev, 1996****Distribution:** Europe (Russia). SWEDEN: Öl, Bo. Rare.**First report:** Jaschhof & Jaschhof (2013).**Identification:** Jaschhof & Jaschhof (2013).**(604) *Porricondyla roleks* Jaschhof, 2013****Distribution:** SWEDEN: Sk, Go, Sö, Up.**First report:** Jaschhof & Jaschhof (2013).**Identification:** Jaschhof & Jaschhof (2013).**(605) *Porricondyla rufescens* Panelius, 1965****Distribution:** widespread Palearctic (widespread Europe; Turkmenistan; Far East Russia). SWEDEN: widespread from Sm to Up.**First report:** Mamaev (1995). **Identification:** Jaschhof & Jaschhof (2013).

(606) *Porricondyla tetraschistica* Mamaev, 1998

Distribution: Europe (Slovak Republic, Russia). SWEDEN: Öl. Rare.

First report: Jaschhof & Jaschhof (2013).

Identification: Jaschhof & Jaschhof (2013).

***Pseudepidosis* Mamaev, 1966**

Distribution: Palearctic. **Number of species:** 6 / 4 / 4.

(607) *Pseudepidosis acuta* Jaschhof, 2013

Distribution: Europe (Slovak Republic). SWEDEN: Sm, Up. Rare.

First report: Jaschhof & Jaschhof (2013).

Identification: Jaschhof & Jaschhof (2013).

(608) *Pseudepidosis bifida* Spungis, 1981

Distribution: Palearctic (Latvia; Far East Russia). SWEDEN: widespread from Sk to Dr.

First report: Jaschhof & Jaschhof (2013).

Identification: Jaschhof & Jaschhof (2013).

(609) *Pseudepidosis lunaris* Mamaev, 1966

Distribution: Europe (Estonia, Latvia, Lithuania, Russia). SWEDEN: Up. Rare.

First report: Jaschhof & Jaschhof (2013).

Identification: Jaschhof & Jaschhof (2013).

(610) *Pseudepidosis trifida* Mamaev, 1966

Distribution: widespread Europe. SWEDEN: widespread from Sk to Lu.

First report: Jaschhof & Jaschhof (2013).

Identification: Jaschhof & Jaschhof (2013).

***Rostellatyla* Jaschhof, 2013**

Distribution: Holarctic. **Number of species:** 2 / 2 / 2.

(611) *Rostellatyla rostellata* (Panelius, 1965)

Distribution: Europe (Northern Europe, Poland, Czech Republic). SWEDEN: Sk to Ån.

First report: Jaschhof & Jaschhof (2013).

Identification: Jaschhof & Jaschhof (2013).

(612) *Rostellatyla varians* (Parnell, 1971)

Distribution: Holarctic (USA (New York, Virginia)). SWEDEN: Go, Up. Rare.

First report: Jaschhof & Jaschhof (2013).

Identification: Jaschhof & Jaschhof (2013).

Remark. Specimens we have seen from Gotland and Uppland are the only finds of *R. varians* known from the Palearctic region.

***Rostratyla* Jaschhof, 2013**

Distribution: Western Palearctic. **Number of species:** 4 / 4 / 4.

(613) *Rostratyla globosa* (Spungis, 1981)

Distribution: Europe (Finland, Estonia, Latvia). SWEDEN: Öl, Sö, Hr, Lu.

First report: Jaschhof & Jaschhof (2013).

Identification: Jaschhof & Jaschhof (2013).

(614) *Rostratyla gracilior* Jaschhof, 2013

Distribution: SWEDEN: Dr. Rare.

First report: Jaschhof & Jaschhof (2013).

Identification: Jaschhof & Jaschhof (2013).

(615) *Rostratyla simplex* Jaschhof, 2013

Distribution: Europe (Estonia). SWEDEN: Sm, Ån. Rare.

First report: Jaschhof & Jaschhof (2013).

Identification: Jaschhof & Jaschhof (2013).

(616) *Rostratyla subglobosa* Jaschhof, 2013

Distribution: SWEDEN: Go, Sö, Dr, Pi.

First report: Jaschhof & Jaschhof (2013).

Identification: Jaschhof & Jaschhof (2013).

***Schistoneurus* Mamaev, 1964**

Distribution: Western Palearctic. **Number of species:** 2 / 2 / 2.

(617) *Schistoneurus impressus* Mamaev, 1964

Distribution: Europe (Finland, Latvia, Russia). SWEDEN: Sk to Ån.

First report: Mamaev (1995). **Identification:** Jaschhof & Jaschhof (2013).

(618) *Schistoneurus irregularis* Mamaev, 1964

Distribution: Europe (Finland, Czech Republic, Slovak Republic, Russia). SWEDEN: widespread from Sk to Lu.

First report: Mamaev (1995). **Identification:** Jaschhof & Jaschhof (2013).

***Serratyla* Jaschhof, 2013**

Distribution: Palearctic. **Number of species:** 4 / 4 / 4.

(619) *Serratyla acuta* (Spungis, 1981)

Distribution: Europe (Latvia). SWEDEN: Sm, Öl. Rare.

First report: Jaschhof & Jaschhof (2015a).

Identification: Jaschhof & Jaschhof (2015a).

(620) *Serratyla furcata* (Mamaev, 2001)

Distribution: Palearctic (Finland; western Siberia). SWEDEN: Sm to Pi.

First report: Jaschhof & Jaschhof (2013).

Identification: Jaschhof & Jaschhof (2013).

(621) *Serratyla pubescens* (Walker, 1856)

Distribution: Palearctic (widespread Europe; Far East Russia). SWEDEN: widespread from Sk to Pi.

First report: Mamaev (1995, as *Porricondyla pubescens*). **Identification:** Jaschhof & Jaschhof (2013).

(622) *Serratyla spinosa* Jaschhof, 2013

Distribution: Europe (Finland). SWEDEN: Sk to Lu.

First report: Jaschhof & Jaschhof (2013).

Identification: Jaschhof & Jaschhof (2013).

***Spungisomyia* Mamaev & Zaitzev, 1996**

Distribution: Palearctic. **Number of species:** 9/9/9.

Unnamed species in Sweden: 2.

(623) *Spungisomyia aberrans* Jaschhof, 2013

Distribution: Palearctic (South Korea). SWEDEN: Sk, Ha, Sm, Up.

First report: Jaschhof & Jaschhof (2013).

Identification: Jaschhof & Jaschhof (2013).

(624) *Spungisomyia carinaolssonae* Jaschhof & Jaschhof, 2020

Distribution: SWEDEN: Öl. Rare.

First report: Jaschhof & Jaschhof (2020a).

Identification: Jaschhof & Jaschhof (2020a).

(625) *Spungisomyia fenestrata* Jaschhof, 2013

Distribution: Europe (Czech Republic). SWEDEN: Sm, Up, Dr, Lu.

First report: Jaschhof & Jaschhof (2013).

Identification: Jaschhof & Jaschhof (2013).

(626) *Spungisomyia media* (Spungis, 1981) agg.

Distribution: Palearctic (Finland, Latvia, Slovak Republic; Far East Russia, South Korea). SWEDEN: widespread from Sm to Lu.

First report: Jaschhof & Jaschhof (2013).

Identification: Jaschhof & Jaschhof (2013).

Remark. We have studied numerous specimens from Sweden showing that *S. media* in the sense of Jaschhof & Jaschhof (2013) is an aggregate of three distinct species, presumably including the genuine *S. media*.

(627) *Spungisomyia palifera* Jaschhof, 2013

Distribution: SWEDEN: Dr, Lu. Rare.

First report: Jaschhof & Jaschhof (2013).

Identification: Jaschhof & Jaschhof (2013).

(628) *Spungisomyia similis* Jaschhof, 2013

Distribution: SWEDEN: Dr, Pi, Lu. Rare.

First report: Jaschhof & Jaschhof (2013).

Identification: Jaschhof & Jaschhof (2013).

(629) *Spungisomyia simillima* Jaschhof, 2013

Distribution: SWEDEN: Pi, Lu. Rare.

First report: Jaschhof & Jaschhof (2013).

Identification: Jaschhof & Jaschhof (2013).

(630) *Spungisomyia svemapro* Jaschhof & Jaschhof, 2020

Distribution: SWEDEN: Lu. Rare.

First report: Jaschhof & Jaschhof (2020a).

Identification: Jaschhof & Jaschhof (2020a).

(631) *Spungisomyia tyresta* Jaschhof, 2013

Distribution: SWEDEN: Sö. Rare.

First report: Jaschhof & Jaschhof (2013).

Identification: Jaschhof & Jaschhof (2013).

***Stomatocolpodia* Mamaev, 1990**

Distribution: Palearctic. **Number of species:** 4/3/1.

(632) *Stomatocolpodia svecica* Jaschhof, 2013

Distribution: SWEDEN: Sm, Go, Up. Rare.

First report: Jaschhof & Jaschhof (2013).

Identification: Jaschhof & Jaschhof (2013).

***Zaitzeviola* Fedotova & Sidorenko, 2007**

Distribution: Palearctic. **Number of species:** 7/7/7.

(633) *Zaitzeviola angustistylata* Jaschhof, 2013

Distribution: SWEDEN: Sm to Pi.

First report: Jaschhof & Jaschhof (2013).

Identification: Jaschhof & Jaschhof (2013).

(634) *Zaitzeviola curtovirga* Jaschhof, 2013

Distribution: Europe (Estonia). SWEDEN: Sm to Up.

First report: Jaschhof & Jaschhof (2013).

Identification: Jaschhof & Jaschhof (2013).

(635) *Zaitzeviola dentatostylata* Jaschhof, 2013

Distribution: Europe (Estonia). SWEDEN: Öl, Go. Rare.

First report: Jaschhof & Jaschhof (2013).

Identification: Jaschhof & Jaschhof (2013).

(636) *Zaitzeviola dubitabila* (Mamaev & Zaitzev, 1998)

Distribution: Palearctic (Russian Far East). SWEDEN: Öl.

First report: Jaschhof & Jaschhof (2020a).

Identification: Jaschhof & Jaschhof (2020a).

Remark. Specimens we have seen from five different sites in Öland are the only records of this species in all of the Western Palearctic.

(637) *Zaitzeviola latistylata* Jaschhof, 2013

Distribution: Europe (Finland). SWEDEN: Go to Pi.

First report: Jaschhof & Jaschhof (2013).

Identification: Jaschhof & Jaschhof (2013).

(638) *Zaitzeviola pilosistylata* Jaschhof, 2013

Distribution: Europe (Finland, Estonia). SWEDEN: widespread from Sk to Ån.

First report: Jaschhof & Jaschhof (2013).

Identification: Jaschhof & Jaschhof (2013).

(639) *Zaitzeviola rufocinerea* (Panelius, 1965)

Distribution: Europe (Finland). SWEDEN: Sk to Lu.

First report: Jaschhof & Jaschhof (2013).

Identification: Jaschhof & Jaschhof (2013).

Taxonomic descriptions

Camptomyia alstromi Jaschhof & Jaschhof sp. nov.

In our revision of Swedish Porricondylinae we treated this species as *Camptomyia regia* (Jaschhof & Jaschhof 2013: 342ff.), a misidentification we only realized when specimens of the genuine *C. regia* appeared in Malaise trap samples we studied from Dalarna (Jaschhof & Jaschhof 2020e: 201). While *C. regia*, a species originally described from Latvia, must be regarded as extremely rare in Sweden (only two specimens, both from the same river valley, are known), *C. alstromi* is more widespread and known to us from several specimens from both Sweden and Finland (see the species list above).

As regards a morphological description of *C. alstromi*, it is sufficient here to refer to the male characters published earlier (Jaschhof & Jaschhof

(2013), as *C. regia*); females and preimaginal stages of this species are unknown. Males found in Sweden have a variable 19–23 flagellomeres; a Finnish specimen with completely preserved antennae has 21. Males of *C. alstromi* can be distinguished from those of other *Camptomyia* by genitalic characters, as usual in this genus.

Diagnosis. Of two pairs of parameres, the ventral pair is present as short, pointed processes arising from the bases of the dorsal pair, while the dorsal parameres are peculiar for the apices, which are slightly bent outwards and covered with numerous small spikes (Jaschhof & Jaschhof 2013: fig. 170E). A further distinction is the ninth tergite, which has 2 posterior lobes with a narrow, U-shaped emargination between whose edge is unmodified, *i.e.* not reinforced by sclerotization (l.c.: fig. 170D). Two congeneric species, *C. erythromma* and *C. regia*, resemble *C. alstromi*. *Camptomyia erythromma* is distinguished by the dorsal parameres, which lack spikes apically and end at the same level as the ventral parameres, and by the ninth tergite whose posterior emargination is strongly reinforced by sclerotization (Jaschhof & Jaschhof 2013: fig. 166C–D). In *C. regia*, the long and slender ventral parameres reach considerably beyond the comparatively thick dorsal parameres; the latter are unmistakable in that they end in a bunch of long, recurved spikes (Spungis 1989: fig. 4.4); and the ninth tergite is remarkable for a strongly sclerotized, dark stripe along the medial axis, while its posterior edge has only a slight indentation, no emargination. Further, the gonostylus of *C. regia* is more slender and more strongly bent (Spungis 1989: fig. 4.3) compared with that of the other two species (Jaschhof & Jaschhof 2013: figs 170A and 166A, respectively).

Etymology. This new *Camptomyia* is named to honor Per Alström, Professor at Uppsala University and one of the leading figures in contemporary avian systematics.

Type material. Holotype. ♂ SWEDEN: Halland, Kungsbacka, Särö, Västerskog, forest mixed of oak and pine trees, 25 Jul.–9 Aug. 2004, MT, SMTP leg. (trap 33, collection event 1081) (spn CEC3402 in NHRS).

***Campylomyza nigroliminata* Mamaev, 1998
(Figs 30A–B)**

The original description of *Campylomyza nigroliminata* is one of seven descriptions of new *Campylomyza* species in Mamaev's (1998a) publication, and one of five that are completely devoid of illustrations. All these descriptions are so superficial that they do not fulfill the major purpose of a morphotaxonomic description, which is to make a new species recognizable to other investigators, preferably without the necessity to study the original specimens. In 2012, one of us (MJ) studied the holotype of *C. nigroliminata*, a circumstance that enables us here to identify our specimens from Sweden and Norway as belonging to the same species. One of the specimens from Sweden is illustrated to show the characters unique to *C. nigroliminata*.

Diagnosis. Male genitalic characters are diagnostic of *C. nigroliminata*, as follows. The tegmen (Fig. 30A) is unmistakable in having a pair of long, pointed processes directed anterolaterad; furthermore, the apical points found in most *Campylomyza* (cf. Jaschhof & Jaschhof 2009: fig. 24) are rounded in *C. nigroliminata*, the mesal points are inconspicuous, and the dorsal processes are small, strongly sclerotized cuspids that are directed dorsad to anterodorsad. Apart from that, the tegmen has a pair of rounded lobes dorsolaterally next to the transverse brace. The gonostylus, in ventral view, is moderately convex posteriorly and narrowly rounded apically.

Remarks. In the holotype, the apices of the dorsal tegminal processes intersect each other, which must be an individual aberration. The lengths of the flagellomeral necks relative to the nodes were found to vary in this species: in the holotype, the neck of the fourth flagellomere is as long as the node; in specimens from Sweden (n=6) the neck is as long as the node or slightly longer; and in specimens from Norway (n=3) the length of the neck exceeds markedly the length of the node. Among *Campylomyza* species named in the past, the genitalic morphology of *C. nigroliminata* is absolutely unmistakable, whereas we have seen Swedish and Korean specimens of a largely similar, unnamed species, whose tegmen is peculiar for lacking dorsal processes. Owing to its unusual tegminal structure, *C. nigroliminata* is difficult to

classify in any of the intrageneric species groups defined by Jaschhof & Jaschhof (2009). We tend to place it in the *C. bicolor* group, admitting that its morphology is rather intermediate between that typical of the *C. bicolor* and *C. flavipes* groups.

***Parepidosis ulmicorticis* Mamaev, 1964 (Fig. 30C)**

Mamaev's (1964) description of *P. ulmicorticis*, a species previously known from the type locality in Russia only, is not sufficient for the purpose of distinguishing this particular *Parepidosis* from its congeners. We identified the only Swedish specimen known to us, a male from a Malaise trap sample taken in Öland, by comparison with the holotype of *P. ulmicorticis*, which MJ studied in 2012. While the genitalia of the holotype specimen are distorted, our Swedish specimen is in perfect shape and thus used here for illustrating the characters diagnostic of this species.

Diagnosis. *Parepidosis ulmicorticis* (Fig. 30C) differs from the congeneric species in the aedeagal apodeme, whose apex is conspicuously narrow and bent ventrad to form a small hook resembling a crochet needle. The gonostylus is elongate in ventral view, its outline being intermediate between that found in *P. argentifera* and *P. peculiaris* (Jaschhof & Jaschhof 2013: figs 94B and 95B). The parameres are merged posteriorly to form a reverse U with two small, posteriad directed knobs at the tip, which corresponds to the structure found in several other *Parepidosis*; as a peculiarity, *P. ulmicorticis* has a further small knob that is ventrad-directed (this is evident in the holotype, of which the parameres are distorted, but not so in our specimen, whose parameres are undistorted). Mamaev's (1964: fig. 5i) illustration of the holotype shows only the ventrad-directed knob, not the paired, dorsal knobs, and might lead to misinterpretations of the actual situation.

Discussion

Why are mycophagous cecidomyiids rarely a focal group in studies of biodiversity worldwide? Our fragmentary knowledge of mycophagous cecidomyiids outside Northern Europe limits possibilities to interpret species found in Sweden in a broader context (e.g. Jaschhof 2016a). One wonders why, on a global scale, research interest

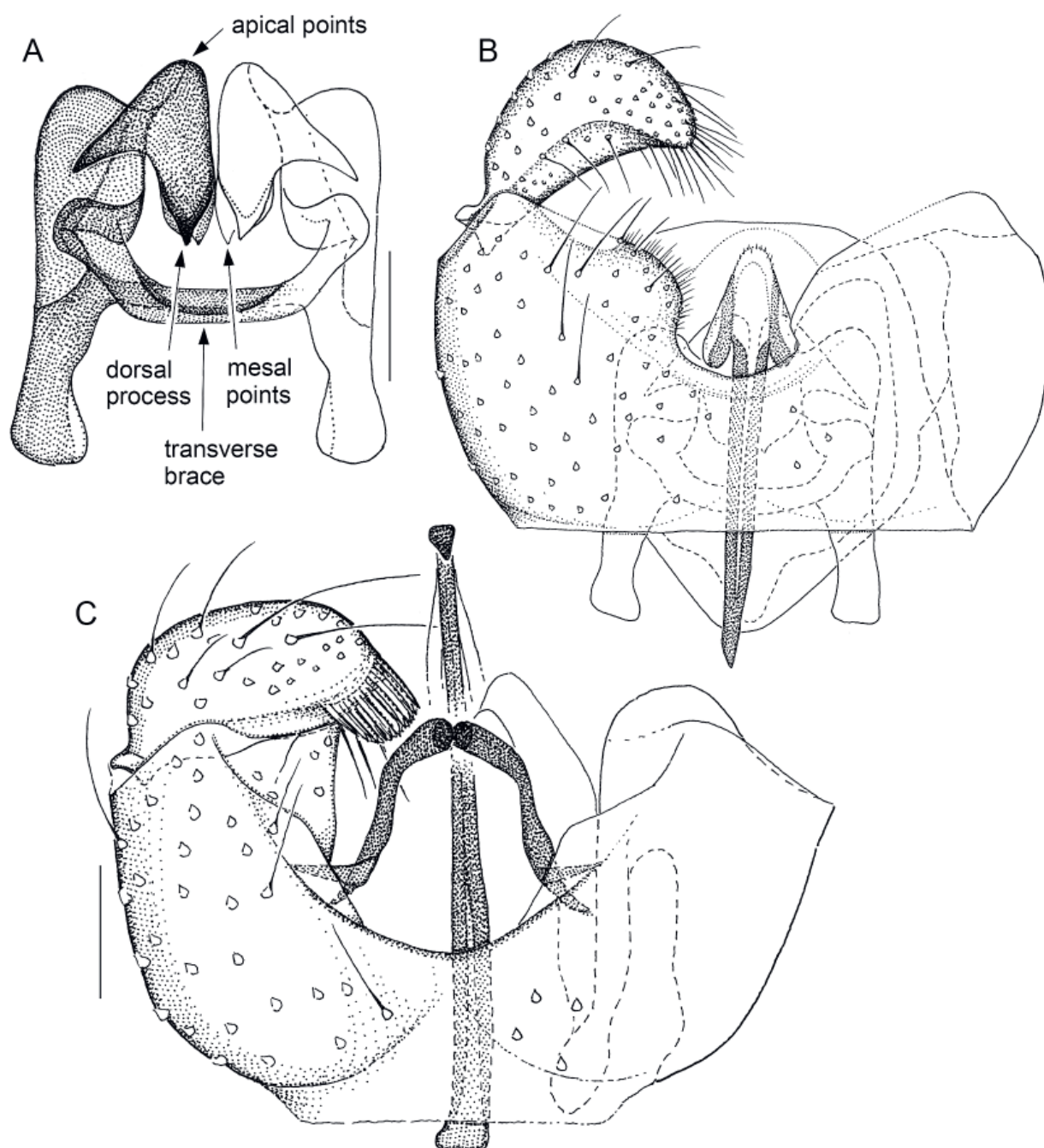


Figure 30. Male genitalia of *Campylomyza nigroliminata* Mamaev, 1998 (A–B) and *Parepidosis ulmicorticis* Mamaev, 1964 (C), specimens from Sweden. – A) Tegmen, dorsal; – B) genitalia, ventral, one gonostylus omitted; – C) ditto. Scale: 0.05 mm.

Figur 30. Genitalier hos hane av *Campylomyza nigroliminata* Mamaev, 1998 (A–B) och *Parepidosis ulmicorticis* Mamaev, 1964 (C), exemplar från Sverige. – A) tegmen, dorsal; – B) genitalier, ventral, en gonostyl utelämnad; – C) dito. Skala: 0,05 mm.

in these flies is so scarce. We think a major reason is that humans, used to contemplate in terms of harm and benefit, rarely see cause to consider mycophagous cecidomyiids. Very few species are known to be economically harmful. Some are pests in mushroom cultures (*e.g.* Shin et al. 2011) and, recently, the porricondyline *Asynapta groverae* Jiang & Bu, 2004 won fame as a serious nuisance species (Ham et al. 2018). As regards the benefit question, mycophagous cecidomyiids are among the myriads of small invertebrates that contribute to the decay of organic matter and serve other animals as food. To be appreciated, those ecosystem services would need to be quantified, which in turn requires the participating species to be identifiable and communicable. Taxonomy is the biological discipline that, among other tasks, defines species and gives them names. Thus, we see pure research like ours, which contains an extensive descriptive component, as a door opener for scholars striving to conduct all kinds of applied studies, whether in ecology, phylogeny, or biogeography.

Mycophagous cecidomyiids are likely to continue being the target of professional rather than amateur researchers, because certain technical requirements, including access to a laboratory for work with harmful chemicals, must be fulfilled. Whatever methodological progress we may hope for in the future, it is clear that the handling (*i.e.* the collection, preparation and investigation) of mycophagous cecidomyiids entails higher costs than may appeal to amateurs. In other words, the future issue regarding the exploration of “our” midges is linked to the fate of professional taxonomy as a whole. As a matter of fact, our focal taxa are notoriously demanding, the consequence being that novices must be conceded sufficient time to acquire the taxonomic skills they need to produce meaningful contributions. Today’s academic system appears unlikely to provide the freedom beginners need to gain a foothold in one of the large, complex subfamilies (Micromyinae and Porricondylinae), let alone the entirety of mycophagous cecidomyiids. In the past few years we have seen young talents in various parts of the World struggling with exactly those system-inherent obstacles. This is unfortunate because the science needs a critical mass of active, skilled, dedicated workers. The worst situation we know of is when someone, professional or amateur, adds substandard work to the literature.

The consequence is that fresh taxonomic problems are created all the time, whose adequate revision requires attention and eats up the working hours better spent on exploring previously unknown faunas (*e.g.* Jaschhof 2007, 2016b, 2021; Jaschhof & Jaschhof 2020b).

What can conventional species inventories achieve for the benefit of mycophagous cecidomyiid taxonomy? Still in the 1990s, there was a broad consensus that genera of mycophagous cecidomyiids are mostly species-poor and wide-ranging (*e.g.* Harris 1994). Today, in 2021, we know that genera such as *Aprionus*, *Peromyia* and *Winnertzia* each have more than 100 named, and several hundreds of unnamed species (Jaschhof 2017b; Jaschhof & Jaschhof 2017b, 2020c). Also, numerous “exotic” species, which await either taxonomic revision or description, will need classification in new genera, of which most are absent from the Holarctic region (*e.g.* Jaschhof 2016c). Many of those species had remained undiscovered without the application of Malaise traps and, in view of the rarity issue, one may question whether their larvae will ever be found. Who had expected 15 years ago that an essentially cool-temperate region like today’s Sweden would host an estimated 1,000 species of mycophagous cecidomyiids? A frequently cited analysis by Hedström (1994) estimated the family Cecidomyiidae as having 530 species in Sweden (332 were known at that time, including doubtful species), with cecidomyiines estimated at 480 and other subfamily members at 50 (!) species. The discrepancy between 50 species (estimated in 1994) and 1,000 species (estimated in 2021) can be taken as an indicator of the fundamental transformation that the taxonomy of mycophagous cecidomyiids underwent during the past 25 years.

It is obvious that species richness of such a magnitude will have consequences for inventory projects addressing mycophagous cecidomyiids in the future, all the more so as the rarity issue is evident. We have repeatedly described the effects of small specimen samples for descriptive, morphotaxonomic work (*e.g.* Jaschhof & Jaschhof 2019a, 2019b), as well as the adverse consequences that the rare species issue has for the progress of faunal inventories, DNA barcoding initiatives included (*e.g.* Jaschhof & Jaschhof 2020c). Rarity is the single most important reason why, after 15 years of intense survey work, the Swedish species

of mycophagous cecidomyiids are merely known to an estimated two thirds. A common situation is that a Malaise trap sample containing tens of thousands of insects produces a single specimen of an unnamed mycophagous cecidomyiid, which cannot be formally described straightaway because it sustained damage during the collection or preparation process. In spite of continuous collecting in the same area, it may take years until further, conspecific specimens appear, often hundreds of kilometers away from the original site, this time, one hopes, sufficiently preserved. Likewise, the positive identification of a single specimen can be impossible to achieve because several specimens are needed for assessing the full range of infraspecific variation or the confusing effects of preparation artefacts. Naturally, the rare species issue is more severe in short-term compared with long-term projects.

How many species of Cecidomyiidae are there in Sweden and the World? Results of our survey can be used for estimating the number of cecidomyiid species actually present in Sweden, a question that has bothered scientists for a long time (e.g. Hedström 1994; Ronquist et al. 2020). Of the universally mycophagous subfamilies, 817 species, both named and unnamed, are at the present known as occurring in the country. The fact that additional species are continuously being discovered leads us to believe that the actual number lies somewhere between 900 and 1,000 species. As regards predators (all classified in the subfamily Cecidomyiinae), a tentative, several months-long investigation we conducted in 2016 identified 70 different species of Lestodiplosini, which suggests the presence of up to 200 predatory cecidomyiid species in Sweden. The number of phytophagous gall midges in Sweden we estimate at 500–600 species, based on the assumptions that 20 (15–25) percent of the vascular plants in Northern and northern Central Europe host gall midges, and a single plant species hosts on average 1.2 gall midge species (based on results by Skuhravá & Skuhravý (2009) and Skuhravá et al. (2014), and that Sweden's flora contains 2080 species of vascular plants, apomictic microspecies not counted (SLU Artdatabanken 2021). Together with a further 100 species reckoned for mycophagous and inquiline Cecidomyiinae, the resulting total is 1,800 (1,700–1,900) species of Cecidomyiidae in

Sweden. This might be the most accurate estimate ever proposed for any country's cecidomyiid fauna. One can go even a step further here, although then entering definitely the sphere of speculation. Using Hebert's et al. (2016) algorithm, the assumption of 1,800 species of Cecidomyiidae in Sweden suggests 300,000 species extant in the World, based on Sweden hosting 0.6% of the World's insect species (33,000 species in Sweden (Ronquist et al. 2020) divided by 5.6 million species in the World (Stork et al. 2015)). This estimate is one order of magnitude smaller than Hebert's et al. (2016) proposal of nearly two million species of cecidomyiids living worldwide, assessed on the basis of DNA barcoding data from Canada.

If anything, those projections show essentially one thing: slight changes in the raw data and initial assumptions cause considerably different computational results, while each result obtained so far shows, unvaryingly, that the magnitude of cecidomyiid species richness is beyond most people's imagination. Cecidomyiidologists have realized for a long time that they are still a world away from understanding even the most basic patterns of that diversity. For example, while our results here suggest that mycophages in Northern Europe are richer in species than phytophages (reversing the previously prevailing opinion), we cannot know whether this holds true for the most of Europe, or for all the temperate parts of the Palearctic region, or for all regions on Earth with temperate climates. In other words, we lack the data showing that the hotspots of mycophage diversity lie either in or outside the tropics. According to what we have seen of the world fauna, the Oriental region, in conjunction with adjacent areas of the Eastern Palearctic and Australasian regions, appear to be the recent center of mycophage diversity, although we have to admit that our knowledge of mycophagous cecidomyiids in the Afro- and Neotropics is comparatively sparse. Likewise, deficiency of data is notorious for temperate regions in the Southern Hemisphere. To sum up, we must admit that we will never understand even the most basic patterns without substantial taxonomic knowledge at the species level. Taxonomic inventories like ours happen to generate exactly that knowledge. In the past 15 years, we had more than once reason to adjust our own estimates of species numbers in Sweden, because the diversity

revealed by actual investigations always exceeded projections (readers of Ronquist's et al. (2020) study should bear this insight in mind).

What resources are needed for describing the species of mycophagous cecidomyiids of a country like Sweden? The research described here was made possible by The Swedish Taxonomy Initiative, which over the years provided financial means amounting to one million Euro for work on Sweden's gall midges. If one divides 1,000,000 Euro by the 276 new species described from Sweden during STI funding, one obtains 3,623 Euro as the cost for publishing one new species, with "publishing" comprising the entire process from collecting specimens to drafting a manuscript. Likewise, the per-species-cost is 1,927 Euro when new faunistic records are included in the calculation. Although these calculations are in some way oversimplified (because, for example, they do not take into account costs for specimens collected by The Swedish Malaise Trap Project, of which quite a few became the holotypes of newly described mycophagous cecidomyiids), they make clear that such a body of taxonomic data cannot be produced without adequate budget. Most of the budget at our disposal flowed into labor costs (*i.e.* costs for taxonomic expertise), the second-largest item being costs for the collection of specimens to study. People believing that 2,000 Euro per species added to the Swedish checklist is unjustifiably high cost should recall that the outcome of our work is name-bearing (Linnaean) species, not operational taxonomic units (OTUs) or barcode index numbers (BINs) as proxies for those. STI's perhaps most remarkable feature is that it explicitly encourages taxonomic projects on extraordinarily diverse and poorly known groups of organisms, regardless whether or not they are relevant for the well-being of humans. Our experience is that most other funding institutions tend to regard megadiversity as a bottomless pit, *i.e.* as an unreasonable cost factor rather than a potentially rich source of knowledge gain.

Just like any other research funding program, STI has its specific pros and cons, although in this particular case the advantages outweigh by far the disadvantages. Perhaps the most striking of STI's limitations is the focus on the biota present in Sweden and other Nordic countries. The geographical distribution of living organisms

other than humans does not follow political borders and there are large, complex groups of mycophagous cecidomyiids whose diversity is found outside the Nordic region. While STI-funded projects provide some room for reviewing more widespread taxa, the outcomes are not absolutely satisfying from a scientific point of view, because too much data on extra-regional taxa must be retained for publication at some point in the future (*e.g.* Jaschhof 2016c). As a case in point here, the taxonomy of the Micromyini, a species-rich tribe of the Micromyinae, represents an extraordinary issue that is practically impossible to resolve within STI's framework (see the remarks about the Micromyini in the above checklist). As a consequence, we had to leave 29 apparently new species of Micromyini from Sweden unpublished, because to treat these species in a proper context would have required attending to scores of many dozens of unrevised and unnamed species from hotspots of Micromyini diversity, such as the Eastern Palearctic and Oriental regions. Likewise, the taxonomy of *Anaretella defecta* and other species aggregates of worldwide distribution is difficult to resolve within STI-funded projects. In a sense, breathing life into STI's mission, which primarily is to describe and interpret species found in Sweden, is impeded by the circumstance that in most parts of the World similar initiatives promoting taxonomy are missing.

Where should the taxonomy of mycophagous cecidomyiids go from here? Fifteen years of work on the Swedish fauna have helped us to sharpen ideas on this point. As the resources available for research into megadiverse groups will always be limited, the whole trick is to set priorities. More than ever we are convinced that *describing* the World species must be prioritized, because accurately identified and replicably documented species boundaries is the kind of basic data needed for all kinds of more advanced studies. For reasons of feasibility one needs to be flexible here and choices should be made on a common sense basis. For example, at the present stage of knowledge, it is certainly more informative to elucidate and describe complex taxonomic situations, such as with the Micromyini, rather than document painstakingly the perhaps 500 species of *Peromyia* living in all of South America. Or, it is certainly more rewarding to gain a fair idea of the generic composition of the Porricondylinae of the Afrotropics (which means research at the

level of species, because many Afrotropical species will require classification in new genera) rather than to initiate a taxonomic inventory of the mycophagous cecidomyiids of the High Arctic. In the same way, addressing the Micromyinae of Bulgaria should certainly be given preference to the Micromyinae of Norway, considering that all of the Balkan is unresearched terrain, while Norway's neighbor to the east, Sweden, has been intensely explored and a wide faunal overlap may be expected. Although not entirely satisfying, the global exploration of species should continue focusing on the adult stage, because to routinely include preimagines in taxonomic studies means considerably higher costs. This statement results from a simple cost-benefit analysis: to present knowledge, we do not need larval or pupal data for the positive identification of species, on condition that there are accurate descriptions of

male morphology and COI sequence data. This is not to say that preimaginal data are uninformative. On the one hand, they are expected to be helpful for resolving phylogenetic problems; on the other hand, investigations of larvae, larval habitats and life histories would round out the overall picture we strive to gain of biological species. Although adult-centered, our research over the past 25 years has resulted in a natural classification of mycophagous cecidomyiids, which on the level of subfamilies and tribes has matured to the extent that it can provide a stable basis for any further inventory work, no matter where on Earth. Also, most of the named species of mycophagous Cecidomyiidae in the World were taxonomically revised in recent years, although DNA barcoding data now suggest the need of fresh revisionary work in many groups thought to be "cleaned". This is how science proceeds: new



Figure 31. Tiny midges carrying great weight! A female of the porricondyline *Dicerura rossica* (Mamaev, 1960) hiding in a jungle of moss. The only distribution in Sweden known of this species is Fiby urskog NR (27 July 2009). Photo: Mathias Jaschhof.

Figur 31. Små myggor som bär stor vikt! En hona av porricondylinen *Dicerura rossica* (Mamaev, 1960) som gömmer sig i en djungel av mossa. Den enda kända utbredningen i Sverige av denna art är Fiby urskog naturreservat (27:e juli, 2009). Foto: Mathias Jaschhof.

technology leads to new insights, new insights give rise to new questions.

Is innovative technology all that is needed to achieve the breakthrough in poorly researched megadiverse taxa? As regards new technology in taxonomy, we are certainly witnesses to an exciting time. As taxonomists specializing in an insect group that is megadiverse, and whose exploration lags far behind that known in most other Diptera, we are careful about choosing the right tools for our research. It is in the nature of things that there can be no blanket recommendation regarding the proper tools for entomological study across the entire insect order, because the properties of taxonomic groups vary. As a further reason, the science of taxonomy is complex and, from a historical viewpoint, certainly no synchronized process. And finally, individuals differ regarding their talents and preferences – we have not heard of a training program that produces, unfailingly, excellent morpho-taxonomists, and we have noticed that the fascination for genetic sequences is not shared by everybody. The scientific community, as well as decision makers in funding institutions, would be well advised to appreciate individuality as what it is: a big chance. As for mycophagous cecidomyiids, there is every indication that an integrative approach, *i.e.* the combination of studying male morphology and analyzing COI sequence data, functions well for the purpose of identifying species boundaries. At some faraway point in the future, it will be possible to identify mycophagous cecidomyiids using DNA barcode reference libraries, and taxonomists then specializing in these midges will probably appreciate that as supportive. The identification of species is, after all, only one of many tasks taxonomists are concerned with. A routine task will certainly be to supervise DNA barcode-based identifications, because it is likely that there will always occur cases of conflict with morphological (or other) indicators.

Needless to say, to outline a research agenda is one thing; to be in a position to materialize it is another. Earlier in this discussion we highlighted, not for the first time, our opinion about major impediments for a thriving taxonomic practice, not only but also in mycophagous cecidomyiids. Looking back on our careers as taxonomists, we think it necessary to mention here two hurdles whose overcoming we deem desirable. One hurdle

is to gain, or regain, the collective consciousness that taxonomy is an independent, pure science, no discipline ancillary to others. The other hurdle is to acknowledge wholeheartedly that each methodologically sound study, whether faunistic or phylogenetic, morphological or genetic, is a welcome contribution towards achieving a common purpose: a better understanding of the natural world.

Epilogue

The title of our presentation on the Flora & Fauna Conference in 2017 in Uppsala, “Ruled by gall midges”, was primarily an allusion to the megadiversity of Cecidomyiidae. We also wanted to paraphrase how we perceive the impact of our research on our lives. To tell the truth, in the past we have more than once uttered, audibly, our gratitude to “our” midges, usually in moments of particularly exciting discoveries or in the face of undisturbed picturebook forests overflowing with life. This was meant as an expression of deep gratitude: these tiny midges, by their sheer existence, made so much possible for us (Fig. 31)! Our engagement in taxonomy precluded the purpose-of-life question, taught us more about evolution than any textbook, and engaged us with many wonderful, absolutely extraordinary people, some of whom are mentioned in this paper. Can there be more delight in any other occupation than ours?

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We have profound sympathy and high esteem for all those in Sweden who raise their voices against today's forestry practices causing destruction of natural woodland ecosystems, and are actively

engaged in the characterization, protection and restoration of such habitats – to them we dedicate our paper.

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Sammanfattning

Efter 15 års taxonomiskt arbete har den hittills kända, svenska faunan mykofaga gallmyggor (Diptera: Cecidomyiidae exkl. Cecidomyiinae) visat sig omfatta 97 släkten (inkl. 2 undersläkten) och 639 arter (inkl. 19 artkomplex), oräknat 178 konstaterade, ännu ej beskrivna arter. Arterna är här ordnade och kommenterade utifrån dess geografiska utbredningsområden i och utanför Sverige; även respektive arts första kända svenska rapporterade fynd anges (“first report”), liksom lämplig bestämmingslitteratur. *Camptomyia alstromi* Jaschhof & Jaschhof beskrivs som en ny art. *Paurodyla serrulata* (Jaschhof, 2013), tidigare tillhörande släktet *Porricondyla* Rondani, 1840, är en ny kombination. Arter som för första gången rapporterats från Sverige är *Anarete corni* (Felt, 1907); *Anarete johnsoni* (Felt, 1908); *Anarete triarthra* Edwards, 1938; *Campylomyza cornuta* Jaschhof, 1998; *Campylomyza nigroliminata* Mamaev, 1998; och *Parepidosis ulmicorticis* Mamaev, 1964. De två sistnämnda arterna beskrivs och illustreras. Därtill presenteras en introduktion till gruppen med avseende på dess mångfald, biologi, geografiska utbredning och lämpliga studiemetoder, en översikt av systematiken, inventeringshistoriska huvuddrag. I diskussionen reflekteras det även över *status quo* och framtidsutsikterna för taxonomiska studier av mykofaga gallmyggor. Dessutom görs ett försök att uppskatta antalet arter av Cecidomyiidae i Sverige såväl som i världen, baserat på den data som stått till författarnas förfogande, inklusive den som presenteras här.