

# Aquatic invertebrates: 225 first Austrian findings in and around mountain springs

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Mit 2 Karten, 2 Abbildungen und 4 Tabellen

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**Summary:** The report presents a lot of 225 first Austrian findings of invertebrates, mainly aquatic and 18 of them new for the science. The detections are the results of systematic investigations in small Austrian waterbodies, mainly in Alpine springs and spring reaches and concentrated in Northern Styria, where the Nationalpark Gesäuse plays the outstanding role. This is owed to an effectively operated long-time research project. Most of the findings count to water mites (Acari) and to some families of diptera (Chironomidae, Empididae, Limoniidae, Mycetophilidae, Sciaridae, Simuliidae).

**Zusammenfassung: Aquatische Wirbellose: 225 österreichische Erstfunde in Bergquellen und deren Umgebung.** – In diesem Bericht werden 225 österreichische Erstfunde von Wirbellosen vorgestellt. In der Mehrzahl sind sie aquatisch, 18 von ihnen sind neu für die Wissenschaft. Die Nachweise gelangen durchwegs an kleinen Gewässern, hauptsächlich in oder an alpinen Quellen und Quellbächen, und konzentriert auf die Nordsteiermark, wo der Nationalpark Gesäuse die herausragende Rolle spielt. Das ist auf ein konsequentes, langfristig andauerndes Forschungsprojekt zurückzuführen. Die meisten Funde zählen zu den Wassermilben (Acari) und zu einigen Dipterenfamilien (Chironomidae, Empididae, Limoniidae, Mycetophilidae, Sciaridae, Simuliidae).

## 1. Introduction

The field work has been carried out in the following frame actions and programs since the year 2007:

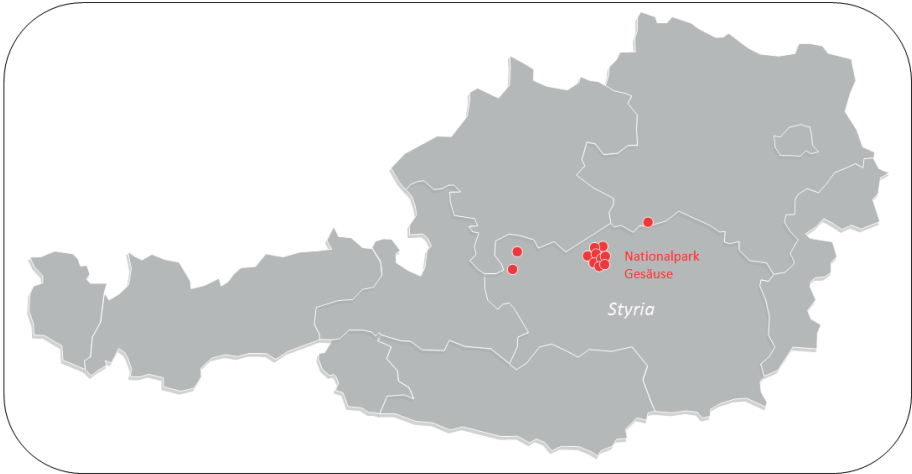
- Nationalpark Gesäuse, Styria: “Spring weeks” 2007–2020, interdisciplinary field campaigns with different experts; attending programs as: seasonal samplings, emergency traps, special investigations such as lateral spring transects (sample releases: Schriften des Nationalparks Gesäuse 7/2012 and 15/2018);
- Wilderness Dürrenstein, Lower Austria: Field investigations adequate to the Gesäuse Spring weeks, 2013 and 2014 (sample releases: Silva Fera, Bd. 5);
- Project “Ausseerland” LIFE12NAT/AT/321, Styria: Field investigations adequate to the Gesäuse Spring weeks, 2016 and 2018 (sample releases: GERECKE & HASEKE 2017, REMSCHAK & HASEKE 2019);
- “Biodiversity days”, Tyrol and Carinthia: Arranged by the Nationalpark Hohe Tauern, 2019 and 2020 (sample releases: pdf’s from the authors on the NP homepage);
- “Austrian Springs Tour”, all Austrian regions: A private research program of the authors, focusing to the spring areas of Austrian rivers >30 km length (since 2019). The species findings are allocated to the following regions in Austria:

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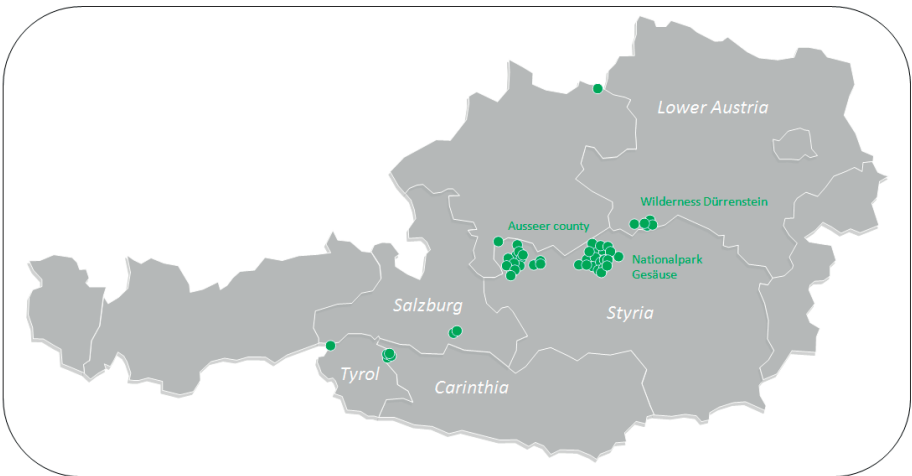
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Region (Bundesland)	First recorded:	
	Science	Austria
Carinthia (Kärnten)		4
Lower Austria (Niederösterreich)	1	3
Upper Austria (Oberösterreich)		1
Salzburg		3
Styria (Steiermark)	17	218

Table 1: Allocation of the new detected species to the Austrian federal states  
 Tabelle 1: Verteilung der neu entdeckten Arten auf die österreichischen Bundesländer



Map 1: Overview map of the finding regions of the species which are new for the science  
 Karte 1: Übersichtskarte der Fundregionen der Arten, die neu für die Wissenschaft sind



Map 2: Overview map of the finding regions of the species which are new for Austria  
 Karte 2: Übersichtskarte der Fundregionen der Arten, die erstmals in Österreich nachgewiesen wurden

The discrepancy in the total of new Austrian species originates from a few double-findings at different locations. The outstanding position of the Nationalpark Gesäuse (198 species new for Austria!) is owed to the long-lasting intense faunistic spring program.

Some of the results presented in place are already published, but widely dissipated, not homogenous arranged and partially in media, which are difficult to catch or not so common in the scientific community. Another reason, why we decided to compile this sample report is the fact, that international data bases (such as FAUNA EUROPAEA or the GLOBAL BIODIVERSITY INFORMATION FACILITY / GBIF) are often at a very poor level of knowledge and updating, relating to invertebrate groups offside the mainstream FFH taxa. Considering the prominent public state of biodiversity today, this is really astonishing and distressing.

#### Methodology of sampling:

The field methods have been described in some of our previous releases, so we give only a few keywords:

- Benthos: Kick-sampling, aggregation of typical microhabitats and choriotores, filtering through nets with mesh diameters down to 200–300 µm; sampling of living animals from white bowls, conservation in 96% ethylene;
- Interstitial: Hand digging, boulder moving, churning the underwater ground; Karaman-Chappuis-digging, partly with the assistance of excavators; sampling adequate to benthos, in special cases conservation of a larger sediment sampling and detailed control under a stereomicroscope;
- Land and air: Wipe-scooping of the spring- and brooksides with butterfly nets, including the surrounding vegetation, extraction with exhaustors, conservation in 70% ethylene. At some locations, emergency traps were exposed, with a time period of min. one year.

The chart below shows the executed aquatic habitat types and the number of assigned species, which are described in this article (the total sample is considerably larger, e.g. 430 sampling locations). It is obvious that springs and spring reaches play a decisive role in hosting rare species.

Waterbody habitat type	Number of locations	Summary of species	Species/ location
Springs (eucrenals)	82	215	2,6
Spring reaches (hypocrenals)	21	52	2,5
Mountain brooks (epirhithrals)	28	56	2,0
Interstitial diggings	3	5	1,7
Lakes and ponds	11	16	1,5
<b>SUMMARY</b>	<b>145</b>	<b>225</b>	<b>1,6</b>

Table 2: Allocation of the new detected species to aquatic habitats  
Tabelle 2: Verteilung der neu nachgewiesenen Arten auf Gewässerhabitate

At a few finding spots, we had a really stunning number of animals, which had never been found before in Austria. At only three samplings points in the Nationalpark Gesäuse, we caught 49 of these species - the leader of the listing, the near-valley forest spring “Untere Rohrquelle (URO)” in the Nationalpark Gesäuse Buchstein massif, “delivered” 23 species!

The next chart overviews the number of first Austrian findings in their systematic groups and families.

Table 3: Zoological classification of the new detected species  
Tabelle 3: Zuordnung der neu nachgewiesenen Arten nach zoologischer Systematik

Taxon / Family		First recorded:	
		Science	Austria
Water mites	Acari	1	42
Seed shrimps	Ostracoda		3
Copepods	Copepoda		5
Stone flies	Plecoptera	1	1
Nonbiting midges	Chironomidae	8	35
Meniscus midges	Dixidae		4
Long-legged flies	Dolichopodidae		2
Dagger flies	Empididae	1	7
Crane flies	Limoniidae	1	8
Fungus gnats	Bolitophilidae		3
Fungus gnats	Diadociidae		1
Fungus gnats	Keroplastidae		2
Fungus gnats	Mycetophilidae Exechiinae		65
Hairy-eyed craneflies	Pediciidae		2
Moth flies	Psychodidae		7
Dark-winged Fungus gnats	Sciaridae	5	27
Blackflies	Simuliidae	1	7
Hoverflies	Syrphidae		1
Trickle midges	Thaumaleidae		3
<b>Summary</b>		<b>18</b>	<b>225</b>

It has to be mentioned that a large quantity of different groups and specimens, and also a large amount of recently collected animals is not determined till today, because of the lack of money and/or the increasing absence of taxonomic experts. On average, only 30 to 40 percent of our collections are identified up to the species level. A lot of insect families, terrestrial mites and aquatic worms remain still unidentified; in other groups, e.g. Chironomidae, the species identification rate is lower than five percent of the caught specimens. We are holding these family-clean probes as retained samples for each separate finding spot.

## 2. First records in Austria and/or new for the science

### 2.1. Acari Prostigmata

At the present state, a total number of 284 species of water mites (9 Halacaridae, 275 Hydrachnidia) is known from Austria (GERECKE 2012 and additional records since then). The documentation of the water mite fauna of the country is highly uneven (e.g., only 30 species recorded from Carinthia). Due to recent research efforts, Styria harbours the highest species number (169).

## 2.1.1 Eupodides, Halacaroidea, Halacaridae (“marine mites“)

### Halacaridae

***Halacarellus fontinalis* Bartsch & Gerecke, 2011:** Styria, Nationalpark Gesäuse, Hochtor mountains, Pfarralm (PFARR, N47.53192 E14.66563, 1.308 m a.s.l.): 1♀; leg. Gerecke 17.07.2007; 1dN, leg. Gerecke 07.06.2010, det. I. Bartsch & R. Gerecke. Remarks: **New species for the science.** The detection of a new halacarid species in Central Europe, found in a small rheocene spring complex consisting of several outflows, was out of the ordinary routine. The first recorded freshwater species of a genus previously including only species known from sea water is expected to have evolved in the Tertiary from a Tethyan-Paratethyan *Halacarellus*. The type locality is situated in an area largely spared from full glaciation during the Würm ice age, because the National park’s position assigns exactly the eastern end of the main Alpine glacier. Primarily assessed as endemic in the Gesäuse mountains, *H. fontinalis* has been detected in a second south-Styrian spot. The finding place is the underground quarry “Römersteinbruch” near Aflenz an der Sulm, situated at the border of a Paratethys bay in the rock formation Leithakalk (middle Miocene; N46.74940 E15.54970, 300 m a.s.l.): 1 specimen, leg. O. Moog & E. Christian 29.11.2016, det. E. Christian. – Ref.: BARTSCH & GERECKE (2011); FIŠER et al. (2012); informations by E-mail from I. Bartsch, E. Christian and R. Gerecke (2021).

***Porohalacarus alpinus brachypeltatus* K. Viets, 1927:** Styria, Nationalpark Gesäuse, Reichenstein mountains, spring line near Mödlingerhütte (TREF4, N47.53195 E14.55335, 1.465 m a.s.l.): 18 specimens, leg. Gerecke 24.06.2013; Lower Austria, Dürrenstein, Leckermoos (LEMO 2, N47.77379 E14.96082, 860 m a.s.l.): 1 specimen, leg. Gerecke 26.06.2013. Remarks: Population in a slightly acid spring in the Gesäuse region and in a really acid sphagnum pond (pH = 4.5) in a raised bog near Göstling village. Despite of the clear morphological definition, the state is controversial (“an ecotype rather than a subspecies” – BARTSCH 2007). *P. alpinus* is exclusively known from acid waterbodies and has a nearly cosmopolitan distribution, while *P. alpinus brachypeltatus* was known so far only from Central Europe, Italy and Hungary. – Ref.: GERECKE et al. (2018).

## 2.1.2 Anystides, Parasitengona, Hydrachnidia (“true water mites”)

*Determinations: Reinhard Gerecke*

### 2.1.2.1 Arrenuridae

***Arrenurus bifidicodulus* Piersig, 1897:** Styria, eastern Dachstein, moor lake Miesbodensee (MIES, N47.49133 E13.87333, 1.418 m a.s.l.): 1 specimen, leg. Gerecke 15.07.2016. – Ref.: GERECKE & HASEKE (2017).

***Arrenurus compactus* Piersig, 1894:** Styria, Nationalpark Gesäuse, Ennstal-Gstatterboden, hotel pond (currently destroyed; HOTÜ, N47.59250 E14.63260, 599 m a.s.l.): 24 specimens, leg. Gerecke 18.07.2016; Ennstal-Hieflau, spring dripping cascade (HAGL, N47.59818 E14.72439, 512 m a.s.l.): 24 specimens, leg. Gerecke 11.06.2010. – Ref.: FIŠER et al. (2012).

***Arrenurus fontinalis* K. Viets, 1920:** Styria, eastern Dachstein, near Steinitzenalm, small tufa spring (HERZLQ, N47.54894 E13.87158, 874 m a.s.l.): 2 specimens, leg. Gerecke 12.07.2016; Hallgraben near Bad Mitterndorf „Naturdenkmal Schwefel-

quelle“ (natural monument sulphuric spring, SO<sub>2</sub>, N47.53148 E13.91659, 814 m a.s.l.): 1 specimen; leg. Gerecke 14.07.2016. – Ref.: GERECKE & HASEKE (2017).

***Arrenurus leuckarti* Piersig, 1894:** Styria, Bad Mitterndorf basin, amphibian pond „Libellenteich“ Knoppenmoos (KNOTÜ, N47.56242 E13.87524, 805 m a.s.l.): 34 specimens, leg. Gerecke 13.07.2016; eastern Dachstein, Steinitzenalm, amphibian pond (SENDER, N47.54482 E13.88753, 979 m a.s.l.): 44 specimens, leg. Gerecke 13.07.2016; Hallgraben valley, „Naturdenkmal Schwefelquelle“ (natural monument sulphuric spring, SO<sub>2</sub>, N47.53148 E13.91659, 814 m a.s.l.): 1 specimen, leg. Gerecke 14.07.2016; a few more single records in small ponds of the region. – Ref.: GERECKE & HASEKE (2017).

***Arrenurus mediorotundatus* Thor, 1898:** Styria, Bad Mitterndorf basin, Riedlbachtraun creek (RIBA, N47.56221 E13.85519, 772 m a.s.l.): 1 specimen, leg. Gerecke 23.09.2016. – Ref.: GERECKE & HASEKE (2017).

***Arrenurus cf. neumani* Piersig, 1895:** Styria, eastern Dachstein, Hallgraben valley, amphibian pond „Grubenmoos“ (GRUBE, N47.53144 E13.90169, 988 m a.s.l.): 1 specimen, leg. Gerecke 14.07.2016. – Ref.: GERECKE & HASEKE (2017).

***Arrenurus truncatellus* (Müller, 1776):** Styria, eastern Dachstein, Steinitzenalm, amphibian pond (SENDER, N47.54482 E13.88753, 979 m a.s.l.): 2 specimens; Hallgraben valley, amphibian pond „Grubenmoos“ (GRUBE, N47.53144 E13.90169, 988 m a.s.l.): 1 specimen, leg. Gerecke 14.07.2016. – Ref.: GERECKE & HASEKE (2017).

***Arrenurus tubulator* (Müller, 1767):** Styria, Nationalpark Gesäuse, Ennstal-Gstatterboden, hotel pond (actually destroyed; HOTÜ, N47.59250 E14.63260, 599 m a.s.l.): 11.06.2010; Ennstal-Hieflau, spring dripping cascade (HAGL, N47.59818 E14.72439, 512 m a.s.l.): 15 specimens, leg. Gerecke 11.06.2010. – Ref.: FIŠER et al. (2012).

#### 2.1.2.2 Aturidae

***Aturus asserculatus* Walter, 1906:** Styria, Bad Mitterndorf basin, Rödtschitzbach (RÖBA-790, N47.55677 E13.91775, 790 m a.s.l.): 1 specimen, leg. Gerecke 20.09.2016., – Ref.: GERECKE & HASEKE (2017)

***Kongsbergia dentata* Walter, 1947:** Styria, Bad Mitterndorf basin, Rödtschitzbach creek, water barrage at km 1.33 (ROEDNEU=RÖD-4, N47.56411 E13.92134, 805 m a.s.l.): 1 specimen, leg. Remschak & Haseke 08.11.2017. Remarks: Caught during a LIFE river restoration project, downshredding of an old concrete river obstacle. *Kongsbergia dentata* is recorded highly dispersed in Europe, obviously more frequent in the Mediterranean area (GERECKE 2014). – Ref.: REMSCHAK & HASEKE (2019).

***Kongsbergia simillima* K. Viets, 1949:** Styria, Bad Mitterndorf basin, Rödtschitzbach creek, water barrage at km 1.33 (ROEDNEU=RÖD-4, N47.56411 E13.92134, 805 m a.s.l.): 2 specimens, leg. Remschak & Haseke 08.11.2017. Remarks: Caught during a LIFE river restoration project, downshredding of an old concrete river obstacle. The distribution of *K. simillima* is still unclear. Disregarding the holotype from Ticino (Switzerland, a single male with a doubtful provenance (Corsica or Northern Italy) is known (GERECKE & DI SABATINO 2013), one population was found in Sardinia (GERECKE 2014), and one specimen was found in the Berchtesgaden National Park (Germany/Bavaria, Gerecke unpubl.). – Ref.: REMSCHAK & HASEKE (2019).

#### 2.1.2.3 Feltriidae

***Feltria (Feltria) cornuta* Walter, 1927:** Styria, Nationalpark Gesäuse, Gscheidegg spring line (GSCH, N47.52121 E14.67982, 1.540 m a.s.l.): 5 specimens, leg. Weigand

2004 and 1 specimen, leg. Gerecke 17.07.2007; Bad Mitterndorf basin, Rödtschitzbach creek, water barrage at km 1.33 (ROEDNEU=RÖD-4, N47.56411 E13.92134, 805 m a.s.l.): 1 specimen, leg. Remschak & Haseke 08.11.2017; Nationalpark Gesäuse, Buchstein, Niederscheibenalm, Kaltenbründl spring (KALB, N47.60401 E14.67591, 965 m a.s.l.): 1 specimen, leg. Gerecke 07.08.2020. – Ref.: FIŠER et al. (2012).

***Feltria (Azugofeltria) motasi (Schwoerbel, 1961)***: Styria, Nationalpark Gesäuse, Hochtort, Hartelsgraben valley, Hüpfinger creek - interstitial digging (HGH-a, N47.54841 E14.69373, 1.430 m a.s.l.): 1 specimen, leg. Gerecke 22.07.2015. Remarks: Discovered during an interstitial digging action; typically hyporheobiontic, hitherto known from Central and Southern Europe. – Ref.: GERECKE et al. (2018).

#### 2.1.2.4 Hygrobatidae

***Atractides adnatus Lundblad, 1956***: Styria, Nationalpark Gesäuse, Gscheidegg spring line (GSCH, N47.52121 E14.67982, 1.540 m a.s.l.) 4 specimens, leg. Gerecke 17.07.2007; some more locations in the same area, also found at several spots in Hochtort - Hartelsgraben valley, Buchstein - Brucksattel, Reichenstein - Gofers, Salzburg, Nationalpark Hohe Tauern, Schareck-Hafner mountains, Murursprung karst spring (MURUR, N47.13004 E13.34717, 1.895 m a.s.l.): 1 specimen, leg. Remschak & Haseke 14.10.2019. – Ref.: FIŠER et al. (2012).

***Atractides allgaier Gerecke, 2003***: Styria, Bad Mitterndorf basin, Kainisch, ÖdenseeTraun creek near lake outflow (ÖTRA1, N47.56280 E13.82309, 775 m a.s.l.): 1 specimen, leg. Gerecke 22.09.2016. – Ref.: GERECKE & HASEKE (2017).

***Atractides brendle Gerecke, 2003***: Styria, Nationalpark Gesäuse, Buchstein mountains, Gstatterboden valley, Draxltal spring (DRAXL, N47.61120 E14.65323, 910 m a.s.l.): 1 specimen, leg. Gerecke 03.07.2008; Hochtort mountains, Johnsbach valley, Gseng spring (GSENG N47.56849 E14.58961, 683 m a.s.l.): 2 specimens, leg. Gerecke 25.06.2013; Lower Austria, Wilderness Dürrenstein, Bärwiesboden valley, upper karst spring (BÄR8, N47.77528 E15.07127, 1.160 m a.s.l.): 6 specimens, leg. Gerecke 30.07.2014; Wilderness Dürrenstein, Großer Urwald, small spring (ROT39, N47.77893 E15.09756, 1.005 m a.s.l.): 2 specimens, leg. Gerecke 29.07.2014; Wilderness Dürrenstein, Großer Urwald, Moderbach epirhithral brook (MODER 1, N47.78057 E15.10526, 995 m a.s.l.): 2 specimens, leg. Gerecke 27.06.2013. – Ref.: FIŠER et al. (2012).

***Atractides fissus (Walter, 1927)***: Styria, Nationalpark Gesäuse, Hochtort mountains, Hüpfinger creek (HGH2, N47.55262 E14.70063, 1.380 m a.s.l.), Sulzkaralm creek (HGS 2, N47.56637 E14.68993, 1.310 m a.s.l.), Buchstein mountains, Klausgraben fountain stream (KL3, N47.60219 E14.65393, 770 m a.s.l.): 9 specimens at all spots, leg. R. Gerecke 10.-12.09.2012; Lower Austria, Wilderness Dürrenstein, Großer Urwald, Moderbach epirhithral brook (MODER 1, N47.78057 E15.10526, 995 m a.s.l.): 8 specimens, leg. Gerecke 27.06.2013; Großer Urwald, Rothausbach creek (ROTHAUS, N47.77692 E15.09157, 1.005 m a.s.l.): 1 specimen, leg. Gerecke 27.06.2013; Großer Urwald, Moderbach spring line at “Wasserbündl” (WABOE-re, N47.79277 E15.10421, 1.170 m a.s.l.): 4 specimens, leg. Gerecke 27.06.2013. Remarks: A rare species, previously recorded with a question mark from Austria and now ascertained for the country. The few known records come from hypocrenal and epirhithral sectors of streams. – Ref.: GERECKE & HÖRWEG (2013).

***Atractides macrolaminatus Láska, 1956***: Styria, Nationalpark Gesäuse, Hochtort mountains, Hartelsgraben valley, Hüpfinger Alm spring line (HÜPF, N47.54603 E14.68638, 1.508 a.s.l.): 38 specimens, leg. Gerecke 16.07.2009; some more findings at the same area, further records in the Gesäuse region: Gscheidegg Haindlwald spring line (HAWA, N47.51636 E14.67373, 1.605 m a.s.l.); Gscheidegg, Saugasse spring

(SAUG, N47.50282 E14.66137, 1.483 m a.s.l.); Buchstein mountains, Mühlgraben valley, mossy spring (MÜHL2, N47.63671 E14.65137, 960 m a.s.l.): leg. Gerecke 2010-2014; Lower Austria, Wilderness Dürrenstein, Großer Urwald, Rothausbach lower spring (ROT4, N47.78064 E15.09231, 1035 m a.s.l.): 5 specimens; Rothausbach upper spring (ROT38, N47.78441 E15.08819, 1.110 m a.s.l.): 5 specimens; Großer Urwald, small spring (ROT39, N47.77893 E15.09756, 1.005 m a.s.l.): 5 specimens, all leg. Gerecke 29.07.2014; Salzburg, Nationalpark Hohe Tauern, Schareck-Hafner mountains, Schmalzgrube, Mur spring (SCHMAGRU, N47.12203 E13.34597, 2.055 m a.s.l.): 1 specimen, leg. Remschak & Haseke 14.10.2019. – Ref.: FIŠER et al. (2012).

***Atractides magnipalpis* Rensburg, 1971:** Styria, Nationalpark Gesäuse, Buchstein mountains, Klausgraben brook near Gstatterbodenbauer - interstitial digging (KL-B1, N47.59782 E14.64981, 690 m a.s.l.): 1 specimen, leg. Gerecke 22.7.2015; Johnsbach valley head, Neuburgalm, Schafhüttel creek - interstitial digging (SCHABA2, N47.52875 E14.66862, 1.334 m a.s.l.): 3 specimens, leg. Gerecke 06.06.2017. Remarks: Very notable discovery of a species, hitherto known only as a single female from the Tessin. The mites from Gesäuse conform to the original description of the species, which was estimated as uncertain so far; the first report and description of a male is still missing. – Ref.: GERECKE et al. (2018).

***Atractides pumilus* (Szalay, 1946):** Styria, Nationalpark Gesäuse, Buchstein, Ritschengraben creek (interstitial, RITSCH, N47.58509 E14.57276, 615 m a.s.l.): 3 specimens, leg. Gerecke 21.07.2015. Remarks: Popular European species in interstitial environments. – Ref.: GERECKE et al. (2018).

***Atractides remotus* Szalay, 1953:** Styria, Bad Mitterndorf basin, Rödschitzbach-Krautmoos valley (RÖBA-880, N47.57928 E13.91376, 875 m a.s.l.): 21 specimens, leg. Gerecke 20.09.2016; Salza creek (SALZA-780, N47.54234 E13.92325, 776 m a.s.l.): 1 specimen, leg. Gerecke 22.09.2016; Salza creek (SALZA-810, N47.55971 E13.93368, 807 m a.s.l.): 9 specimens, leg. Gerecke 22.09.2016. – Ref.: GERECKE & HASEKE (2017).

***Atractides spinipes* Koch, 1837:** Styria, Nationalpark Gesäuse, Johnsbach creek downstream Ebner (JOTRA3, N47.52802 E14.63676, 930 m a.s.l.): 4 specimens, leg. Gerecke 08.06.2010; Johnsbach valley head, Neuburgalm, Schafhüttel creek - interstitial digging (SCHABA2, N47.52875 E14.66862, 1.334 m a.s.l.), leg. Gerecke 07.06.2017; Bad Mitterndorf basin, Rödschitzbach creek, water barrage at km 1.33 (ROEDNEU=RÖD-4, N47.56411 E13.92134, 805 m a.s.l.): 4 specimens, leg. Remschak & Haseke 08.11.2017 and leg. Gerecke 21.07.18. Remarks: As older records under this name from many parts of Europe generally referred to other species, *A. spinipes* was excluded from the Austrian checklist. As a consequence, this is the first ascertained record for the Austrian fauna. The species is a characteristic inhabitant of epirhithral sectors in mountain streams. – Ref.: GERECKE & HÖRWEIG (2013).

***Atractides trapeziformis* Schwoerbel, 1961:** Styria, Nationalpark Gesäuse, Gscheidegg, Haindlwald hypocrenal stream (HAWA, N47.51636 E14.67373, 1.605 m a.s.l.): leg. Gerecke 08.06.2010; Hochtor, Koderboden valley, Wolfbauern gorge creek (KOB01B, N47.53882 E14.62518; 1.115 m a.s.l.): leg. R. Gerecke 15.07.2009; Hartelsgraben valley, Hüpflinger creek (HGH2, N47.55262 E14.70063, 1.380 m a.s.l.); Sulzkaralm pasture ground creek (HGS2, N47.56637 E14.68993, 1.310 m a.s.l.): leg. R. Gerecke 12.09.2012; Haindlkar valley, gravel stream brook (HAKA2, N47.56867 E14.61396, 1.022 m a.s.l.): 1 specimen, leg. R. Gerecke 28.06.2013; Buchstein mountains, Klausgraben hypocrenal streamlet (KL3, N47.60219 E14.65393, 770 m a.s.l.): leg. Gerecke 10.09.2012. Remarks: Up to date, this species was recorded only from the type localities in the Black Forest (SW Germany). Populations now are known from the North Alpine National Parks Berchtesgaden (Bavaria, Germany) and Gesäuse (Styria, Austria). The species is dwelling on mosses and mineralic sediments in turbulent sectors



of montane and alpine low order streams (epirhithral) and apparently avoids spring habitats. – Ref.: GERECKE & HÖRWEIG (2013).

***Hygrobates setosus* Besseling, 1942:** Styria, Bad Mitterndorf basin, Salza creek (SALZA-780, N47.54234 E13.92325, 776 m a.s.l.): 2 specimens, leg. Gerecke 22.09.2016; Salza barrier lake, thermal spring (STAU4, N47.53100 E13.92827, 765 m a.s.l.): 1 specimen, leg. Remschak & Haseke 21.03.2015. Remarks: The thermal spring near Heilbrunn is only weakly heated (some 15°C) and usually submerged by the blocked Salza valley lake, not far from the Salza river influx. The limnocene spring emerges only during periods of low water level marks. Thus we suppose that *H. setosus* is not bound to the spring, but to the watercourse. – Ref.: GERECKE & HASEKE (2017).

***Mixobates incurvatus* Láska, 1954:** Upper Austria, Mühlviertel, Maltsch (Malše) near Sandl village (MALŠE2, N48.58702 E14.63526, 845 m a.s.l.): 3 specimens, leg. Remschak & Haseke 22.08.2020. Remarks: The finding site in Austria is a near-nature shaped little creek in granite environment near the Czech Republic. Two sites are ascertained in the Orava catchment (Tatra mountains), and three in the Black Forest (SCHWOERBEL 1957, unpubl.), two further records come from S Italy (Calabria) and Greece (Thesprotia, TUZOVSKIJ & GERECKE 2003). A very rare species of shadowed low order streams in forest vegetation, what describes perfectly the Upper Austrian location. Unpublished.

#### 2.1.2.5 Hydryphantidae

***Panisellus thienemanni* (K. Viets, 1920):** Styria, Nationalpark Gesäuse, Johnsbach valley head, Neuburg raised bog, western runout (NEUMO-W, N47.52646 E14.68062, 1.428 m a.s.l.): 1 specimen, leg. Gerecke 07.06.2010. – Ref.: FIŠER et al. (2012).

***Piersigia intermedia* Williamson, 1912:** Styria, eastern Dachstein, Hallgraben near Bad Mitterndorf, Naturdenkmal Schwefelquelle („Natural Monument Sulphuric Spring“ SO2, N47.53148 E13.91659, 814 m a.s.l.): 1 specimen; leg. Gerecke 14.07.2016. Remarks: The find spot is a limnocene spring, rich of sulfate and exhausting a slight sulphuric steam from a subrosion pit in the permioscythian rock series. The species seemed to be restricted on northern European areals for a long time. The larva of *P. intermedia* is parasitizing on marsh beetles (Scirtidae), whose larvae are frequent at the finding spot. – Ref.: GERECKE & HASEKE (2017).

***Tartarothyas romanica* Husiatinschi, 1937:** Styria, Nationalpark Gesäuse, Reichenstein - Gofer valley, lower spring line (GOFU), N47.57343 E14.56012, 715 m a.s.l.): 1 specimen, leg. Gerecke 01.07.2008; Hochtor mountains, Johnsbach valley head, Schröckengraben, gypsum spring near Kölblalm (KOE13, N47.53333 E14.64308, 1.135 m a.s.l.): 1 specimen, leg. Gerecke 04.07.2008. – Ref.: FIŠER et al. (2012).

***Wandesia racovitzai* Gledhill, 1970:** Styria, Nationalpark Gesäuse, Hochtor mountains, Hüpfinger creek (HGH2, N47.55262 E14.70063, 1.380 m a.s.l.): 12.09.2012; furthermore at several spots in the lower Johnsbach creek (JOTRA4, N47.53064 E14.61169, 860 m a.s.l.; JOTRA-b, N47.53366 E14.59481, 830 m a.s.l.; JOTRA5, N47.56597 E14.58051, 630 m a.s.l.): 19 specimens, leg. Gerecke. Remarks: Like all the species of the genus, well adapted for the life in interstitial sediment cavities due to extremely elongation of the body shape. Firstly described from the British Isles, apart from that only found at two locations in Germany so far. – Ref.: GERECKE et al. (2018).

### 2.1.2.6 Lebertiidae

***Lebertia bracteata* K. Viets, 1925:** Styria, Gesäuse region, Reichenstein, Flizengraben valley head, spring line in the east of Treffner pond (REIS4, N47.53527 E14.55019, 1.480 m a.s.l.): 2 specimens, leg. Gerecke 23.06.2013; Gscheidegg - Lugauer, Faschinggraben valley, mossy spring (GEIKO, N47.52443 E14.69722, 1.175 m a.s.l.): 1 specimen, leg. Gerecke 20.07.2016; eastern Dachstein, Steinitzenalm, Rosskogel-Scheiblingmoos, small spring and sink (SBL2, N47.54411 E13.89980, 920 m a.s.l.): 2 specimens, leg. Remschak 05.11.2015; Salzburg, Nationalpark Hohe Tauern, Schareck-Hafner mountains, Murursprung karst spring (MURUR, N47.13004 E13.34717, 1.895 m a.s.l.): 1 specimen, leg. Remschak & Haseke 14.10.2019. Remarks: Rare and bad known in its variety, singular findings in Western, Central and Southern Europe. – Ref.: GERECKE et al. (2018).

***Lebertia depressostriata* K.Viets, 1952:** Styria, Nationalpark Gesäuse, Johnsbach valley head, Schröckengraben, gypsum spring near Kölblalm (KOE13, N47.53333 E14.64308, 1.135 m a.s.l.): 21 specimens; tufa spring near Kölblalm (KOE14, N47.53133 E14.64732, 1.095 m a.s.l.): 1 specimen, leg. Gerecke 04.07.2008. Remarks: Some more findings in a relatively close area, extended only as far as Gscheidegg and Hüpflingeralm. – Ref.: FIŠER et al. (2012).

***Lebertia elsteri* Schwoerbel, 1957:** Styria, Totes Gebirge, Tauplitz mountains, Lawinenstein, Riesenbach spring (RIES, N47.58379 E13.95615, 1.297 m a.s.l.): 1 specimen, leg. Gerecke 22.09.2016. – Ref.: GERECKE & HASEKE (2017).

***Lebertia holsatica* K. Viets, 1920:** Styria, Gesäuse, Buchauerbach valley, Pulvermacher spring line (PULVER2, N47.64617 E14.58333, 620 m a.s.l.): 5 specimens, leg. Gerecke 26.07.2020. Unpublished.

***Lebertia macilenta* K. Viets, 1926:** Carinthia, Nationalpark Hohe Tauern, Schober mountains, Gößnitzalpe spring reach (GÖNITA 6D, N46.98223 E12.75836, 2.250 m a.s.l.): 1 specimen, leg. Remschak & Haseke 25.07.2019. Remarks: The species was known so far only from the Slovakian Tatra and the Italian Southern Alps. Hard to define precisely, the variety of *L. macilenta* is not well-established (GERECKE 2012). – Ref.: HASEKE & REMSCHAK (2021a, unpublished)

***Lebertia mediterranea* Gerecke, 2009:** Styria, Nationalpark Gesäuse, Hochtator mountains, Hartelsgraben valley, Hüpflinger Alm spring line (HÜPF, N47.54603 E14.68638, 1.508 a.s.l.): 8 specimens, leg. Gerecke 16.07.2009. – Ref.: FIŠER et al. (2012).

***Lebertia salebrosa* Koenike, 1908:** Styria, Nationalpark Gesäuse, Buchstein mountains, Ritschengraben creek – interstitial digging (RITSCH2, N47.58442 E14.57232, 615 m a.s.l.): 1 specimen, leg. Gerecke 17.07.2016. Remarks: Widely distributed in the western Palaearctic region. The habitats in Central Europe are mostly in rivulets, in the South exclusively in springs. – Ref.: GERECKE et al. (2018).

### 2.1.2.7 Mideopsidae

***Mideopsis willmanni* (K.Viets, 1920):** Styria, Nationalpark Gesäuse, Hochtator mountains, Hartelsgraben valley, Sulzkaralm, small mossy spring (ZAUN, N47.56103 E14.67355, 1.500 m a.s.l.): 8 specimens, leg. Gerecke 10.06.2010. – Ref.: FIŠER et al. (2012).

### 2.1.2.8 Pionidae

***Aceropsis pistillifer* (Koenike, 1908):** Styria, eastern Dachstein, small spring at Schwarzsee lake (SSQ, N47.53000 E13.81780, 1.414 m a.s.l.): 3 specimens, leg. Gerecke 11.07.2016. – Ref.: GERECKE & HASEKE (2017).

### 2.1.2.9 Sperchontidae

***Sperchon longirostris* Koenike, 1895:** Styria, Nationalpark Gesäuse, Gscheidegg, small spring (HAWA, N47.51636 E14.67373, 1.605 m a.s.l.): 1 specimen, leg. Gerecke 08.06.2010; Gscheidegg-Saugasse spring (SAUG, N47.50282 E14.66137, 1.483 m a.s.l.): 95 specimens, leg. Gerecke 12.06.2010. Remarks: Rare species, only detected at a few locations in Europe; the copious occurrence in a silicate spring was astonishing. – Ref.: FIŠER et al. (2012).

### 2.1.2.10 Unionicolidae

***Neumania spinipes* (Müller, 1776):** Styria, Nationalpark Gesäuse, Gscheidegg - Drahbänk, pond and limnocene spring (DRABA N47.52182 E14.67075, 1.519 m a.s.l.): 1 specimen, leg. Gerecke 17.07.2007; Lugauer, Haselkaralm, pond at „Gspitzer Stein“ (HATÜ-S, N47.53802 E14.70490, 1.555 m a.s.l.): 6 specimens, leg. Gerecke 09.06.2010; Ennstal valley, Gstatterboden hydro-electric dam, bed load retention pool (GST, N47.58652 E14.66114, 560 m a.s.l.): 1 specimen, leg. Gerecke 04.07.2008; Ennstal-Gstatterboden, hotel pond (actually destroyed; HOTÜ, N47.59250 E14.63260, 599 m a.s.l.): 7 specimens, leg. Gerecke 18.07.2009. – Ref.: FIŠER, C., R. GERECKE, C. MEISCH & F. STOCH (2012).

## 2.2 Ostracoda (Seed Shrimps)

*Determinations: Claude Meisch*

***Cyclocypris globosa* (Sars, 1863):** Styria, Nationalpark Gesäuse, Johnsbach valley head, Neuburg raised bog, western runoff (NEUMO-W, N47.52646 E14.68062, 1.428 m a.s.l.): 1 specimen, leg. Gerecke 07.06.2010. Remarks: Very common at the most countries in Central and Northern Europe, absent in the south. – Ref.: GERECKE et al. (2018).

***Cypria reptans* Bronstein, 1928:** Lower Austria, Wilderness Dürrenstein, Großer Urwald, Rothausbach lower spring (ROT4, N47.78064 E15.09231, 1035 m a.s.l.); Kleiner Urwald, swamp spring (URK4, N47.77869 E15.11004, 1.027 m a.s.l.): 5 specimens, leg. Gerecke 28. & 29.07.2014. Remarks: First described in the Caucasus, also known from Eastern Europe, Slovenia and Italy. The record from Dürrenstein is the most westerly finding point in Europe so far. – Ref.: REMSCHAK et al. (2016), GERECKE et al. (2018).

***Fabaeformiscandona holzkampfi* (Hartwig, 1900):** Styria, Nationalpark Gesäuse, Ennstal valley near Johnsbach river mouth, Weidendom pond (WEID, N47.58137 E14.59067, 612 m a.s.l.): 3 specimens (oviferous), leg. Gerecke 07.06.2017. Remarks: The Weidendom pond, being totally artificial and sealed with plastic membranes, is part of a frequented visitor area; so it seems possible that the genus has been introduced with plants or other animals. – Ref.: GERECKE et al. (2018).

## 2.3 Copepoda (Copepods)

Reference for all items in this chapter, if not otherwise specified: FIŠER et al. (2012), determinations: Cene Fišer

***Acanthocyclops einslei* Mirabdullayev & Defaye, 2004:** Styria, Nationalpark Gesäuse, Gscheidegg, spring pond Schröckermauer (PFUL, N47.52642 E14.67225, 1.397 m a.s.l.): 1 specimen, leg. Gerecke 17.07.2007; Ennstal valley, Gstatterboden hydro-electric dam, bed load retention pool (GST, N47.58652 E14.66114, 560 m a.s.l.) 2 specimens, leg. Gerecke 04.07.2008.

***Bryocamptus tatrensis* Minkiewicz, 1916:** Styria, Nationalpark Gesäuse, Johnsbach valley head, Schröckengraben spring line (SHROEK, N47.53087 E14.65053, 1.102 m a.s.l.): 13.09.2004: 9 specimens, leg. Weigand 13.09.2004. Remarks: Very common in the region, over 20 reported from more than 20 sites from the Gesäuse mountains, also found in Wilderness Dürrenstein.

***Elaphoidella phreatica pseudophreatica* (Chappuis, 1925):** Styria, Nationalpark Gesäuse, Hochtort, Koderboden valley, Gamsbrunnen spring line (KAMS, N47.55600 E14.65425, 1.615 m a.s.l.): 1 specimen, leg. Gerecke 14.07.2009; Stadelfeldalm spring (STADEL3, N47.54253 E14.64670, 1.713 m a.s.l.): 1 specimen, leg. Gerecke 14.07.2009; Hartelsgraben valley, Sulzkaralm, Kammerl spring (KAM2, N47.56646 E14.69629, 1.318 m a.s.l.): 1 specimen, leg. Gerecke 16.07.2009.

***Moraria radovnae* Brancelj, 1988:** Styria, Nationalpark Gesäuse, Enns valley near Johnsbach river mouth, Zigeunerbrunnen karst spring (ZIB, N47.57903 E14.59836, 610 m a.s.l.): 1 specimen, leg. Gerecke 04.07.2008; Buchstein, Mühlgraben valley spring line (MÜHL4, N47.63953 E14.66209, 845 m a.s.l.): 1 specimen, leg. Gerecke 01.08.2014.

***Paracyclops imminutus* Kiefer, 1929:** Styria, Gesäuse region, Johnsbach village, Erzbach [??] karst spring (ETZ, N47.52876 E14.61018, 861 m a.s.l.): 32 specimens, leg. Gerecke 21.07.2007; also findings in nearly 20 other locations, all around in the Gesäuse mountains and in the Wilderness Dürrenstein area.

## 2.4 Diptera

### 2.4.1 Chironomidae (Nonbiting midges)

Reference for each item in this chapter is REIFF (2018), unless otherwise noted; determinations: Nicola Reiff.

***Bryophaenocladus* (cf.) *illimbatus* (Edwards, 1929):** Styria, Nationalpark Gesäuse, Hochtort, Haindlkar valley, spring in boulder gorge (HAI 46 , N47.57363 E14.61306, 844 m a.s.l.): 1♂, leg. Remschak 15.06.2013.

***Bryophaenocladus* (cf.) *musciola* (Kieffer, 1906):** Styria, Nationalpark Gesäuse, Hochtort, Hartelsgraben valley, Sulzkaralm, Hüttenbach creek (HGS1, N47.56068 E14.67546, 1.483 m a.s.l.): 1♀ (pharate), leg. Reiff 25.06.2013 .

***Bryophaenocladus* (cf.) *vernalis* (Goetghebuer, 1921):** Styria, Nationalpark Gesäuse, Buchstein, Gstatterboden-Rohr valley, lower Rohr spring (URO, N47.59787 E14.63355, 698 m a.s.l.): 2♂, leg. Haseke 20.07.2007; Hochtort, Koderboden valley, Wolfbauernbach spring (KOB01, N47.54213 E14.62770, 1.198 m a.s.l.): 2♂♂, leg. Remschak & Haseke 15.07.2009

***Chaetocladus* (*Chaetocladus*) *aedeagolobatus* Rossaro, Magoga et Montagna, 2017:** Styria, Nationalpark Gesäuse, Gscheidegg spring line (GSCH, N47.52121 E14.67982, 1.540 m a.s.l.): 1♂, leg. Haseke 17.07.2007. Remarks: The similar species

*Chaetocladius dissipatus* (Edwards, 1929) is recorded from Lunz am See (Lower Austria), which is situated in the geographical neighbourhood.

***Chaetocladius (Chaetocladius) gracilis* Brundin, 1956:** Styria, Nationalpark Gesäuse, Gscheidegg spring line (GSCH, N47.52121 E14.67982, 1.540 m a.s.l.): 1♂, leg. Haseke 17.07.2007.

***Chaetocladius (Chaetocladius) longivirgatus* Stur & Spies, 2011:** Styria, Nationalpark Gesäuse, Gscheidegg spring line (GSCH, N47.52121 E14.67982, 1.540 m a.s.l.): 1♂, leg. Haseke 17.07.2007.

***Chaetocladius (Chaetocladius) melaleucus* (Meigen, 1818):** Styria, Nationalpark Gesäuse, Hochtör mountains, Johnsbach valley, Gseng spring (GSENG N47.56849 E14.58961, 683 m a.s.l.): 2♀ pharate, 4 pupa/exuvia (♂,♀), leg. Reiff 25.06.2013.

***Chaetocladius (Chaetocladius) minutissimus* (Goetghebuer, 1942).** Styria, Gesäuse region, upper Johnsbach valley, tufa spring near Hinterleithner (JOBA Tuff, N47.52690 E14.63538, 926 m a.s.l.): ♂ pupa, ♀ pharate, leg. Gerecke 31.07.2014; Lugauer, Radmerbach valley head, Faschinggraben tufa spring (FATUF, N47.52583 E14.70048, 1.072 m a.s.l.): ♀ pupa, leg. Gerecke 20.07.2016; Buchstein, Tamischbach valley head, tufa spring line and hypocranal streamlet (TAMITUFB, N47.63317 E14.69863, 770 m a.s.l.): ♂ pupa, leg. Gerecke 18.06.2016. Remarks: *C. minutissimus* was exclusively found in limestone precipitating springs!

***Chaetocladius (Chaetocladius) subalpinus* Rossaro, Magoga et Montagna, 2017:** Styria, Nationalpark Gesäuse, Gscheidegg spring line (GSCH, N47.52121 E14.67982, 1.540 m a.s.l.): 1♂, leg. Haseke 17.07.2007. Remarks: Known so far from Italy in near-glacier springs.

***Corynoneura* sp. 21ES:** Styria, Gesäuse region, Buchstein, Mühlgraben valley spring line (MÜHL4, N47.63953 E14.66209, 845 m a.s.l.): 1♂, leg. Remschak & Haseke 01.08.2014; 1♂; Tamischbach valley head, Ischbauernkopf, helocrene spring line (TAMI2, N47.63660 E14.70691, 955 m a.s.l.): 4♂♂, leg. Remschak & Haseke 23.07.2016. Remarks: Only detected in a small area beneath the northern Buchstein mountain. The morphotype is undescribed until now and was found and barcoded so far only in Germany (Schwarzwald) and Norway (S. WIEDENBRUG, pers. comm.).

***Heterotrissocladus* cf. *zierli* Stur & Wiedenbrug, 2005:** Styria, Totes Gebirge West, Salza valley near Bad Mitterndorf-Kochalm (SALZA-890, N47.59249 E13.92204, 890 m a.s.l.): 1♂, leg. Remschak & Haseke 08.08.2016. Remarks: **Probably new for science.** The caught male is diagnosed to the genus *Heterotrissocladus*, following LANGTON & PINDER (2007) and SÆTHER et al. (2000). But some features, e.g. in the molding of the gonostyli, are considerably differing from *H. zierli* (STUR & WIEDENBRUG 2005, p. 130). – Ref.: REMSCHAK & HASEKE (2019).

***Heterotrissocladus marcidus* (Walker, 1856).** Carinthia, Nationalpark Hohe Tauern, Schober mountains, Gößnitztal valley, spring at Hinterer Langtal lake (GÖNITA-03, N46.99022 E12.77366, 2.365 m a.s.l.): 4 specimens, leg. Remschak & Haseke 24.07.2019; det. G.H. Niedrist. Remarks: Species of Northern and Western Europe, next point of detection in the Bayerischer Wald area on the Czech-German border. – Ref.: HASEKE & REMSCHAK (2021a, unpublished).

***Krenosmittia* cf. *halvorseni* (Cranston & Saether, 1986).** Styria, Nationalpark Gesäuse, Buchstein mountains, Ritschengraben creek (RITSCH, N47.58509 E14.57276, 623 m a.s.l.): 1♂ pupa spec.uv., leg. Reiff. 29.06.2013. Remarks: It's not out of the question that this finding is a morphological variety of *K. camptophleps*.

***Limnophyes* sp. pr. *angelicae* / *cranstoni* / *spinigus*.** Styria, Nationalpark Gesäuse, Hochtör mountains, Hüpfinger Hals, small spring at the north side (HÜHA, N47.54025 E14.68630, 1.672 m a.s.l.): 1♂, leg. Remschak & Haseke 17.07.2009. Remarks: Uncertain determination, but none of the three species is recorded from

Austria. *Linnophyes*-♂, which are morphologically related to the midge from the Gesäuse, were detected in southern Germany.

***Linnophyes bidumus* Sæther, 1990.** Styria, Nationalpark Gesäuse, Hochtort, Sulzkarhagd, small helocrene spring (ARSCH, N47.55722 E14.66318, 1.712 m a.s.l.): 1♂, leg. Remschak & Haseke 13.07.2009; Koderalm, Gamsbründl rheocrene spring (GAMB, N47.55462 E14.65705, 1.665 m a.s.l.): 1♂, leg. Remschak & Haseke 14.07.2009; Hüpflinger Hals, small spring at the north side (HÜHA, N47.54025 E14.68630, 1.672 m a.s.l.): 1♂, leg. Remschak & Haseke 17.07.2009.

***Linnophyes difficilis* Brundin, 1947:** Styria, Nationalpark Gesäuse, Buchstein, Gstatterboden-Rohr valley, lower Rohr spring (URO N47.59787 E14.63355, 698 m a.s.l.), leg. Haseke 20.07.2007; Hochtort, Neuburgalm pasture grounds, Humlechernalm fen lawn outrun (HUM, N47.52913 E14.67952, 1.420 m a.s.l.): 3♂♂, leg. Remschak & Haseke 17.07.2009.

***Linnophyes edwardsi* Sæther, 1990:** Styria, Nationalpark Gesäuse, Hochtort mountain, Koderboden rock spring (KOB02, N47.54588 E14.63168, 1.290 m a.s.l.): 14♂♂, leg. Remschak & Haseke 15.07.2009.

***Linnophyes cf. punctipennis* (Goetghebuer, 1919):** Styria, Nationalpark Gesäuse, Hochtort mountains, Johnsbach valley, Gseng spring (GSENG N47.56849 E14.58961, 683 m a.s.l.): 1♀ pupa exuv., leg. Reiff 25.06.2013.

***Meropelopia nov. spec.* Reiff:** Lower Austria, Wilderness Dürrenstein, Großer Urwald, Rothausbach creek (ROTHAUS, N47.77692 E15.09157, 1.005 m a.s.l.): 3♂♂, leg. Reiff 27.06.2013; Styria, Nationalpark Gesäuse, Hochtort mountains, Haindlkar waterfall (HAKA1, N47.56604 E14.61615, 1.070 m a.s.l.): exuv., leg. Reiff 28.06.2013; Buchstein mountains, Tamischbach tufa springs (TAMITUFQ, N47.63317 E14.69863, 793 m a.s.l.): exuv., leg. Remschak & Haseke 18.07.2016. Remarks: **Species new to science.** Remarkable finding of a species from the genus *Meropelopia*, having only a few records in Europe. – Ref.: REMSCHAK et al. (2016), REIFF (2018).

***Metriocnemus cf. fuscipes spec. nov.* “Hüpf”:** Styria, Nationalpark Gesäuse, Hochtort mountains, Hartelsgraben valley, Hüpflinger Alm spring line (HÜPF, N47.54603 E14.68638, 1.508 a.s.l.): 1♂, leg. Remschak & Haseke 16.07.2009. Remarks: **Probably a new species for science.** The midge from the large main rheocrene spring of the Hüpflingeralm creek is morphologically different from the other *M. fuscipes* individuals in the region and is not attached to any of the known *Metriocnemus* species. Maybe it is one of the cryptic new species, identified by EKREM et al. (2010) using molecular methods.

***Metriocnemus (Metriocnemus) cf. inopinatus* Strenzke, 1950:** Styria, Nationalpark Gesäuse, Buchstein mountains, Ritschengraben creek (RITSCH, N47.58509 E14.57276, 623 m a.s.l.): 2♂♂ pupa exuv., leg. Reiff 29.06.2013.

***Micropsectra bavarica* Stur & Ekrem, 2006.** Buchstein, Tamischbach valley head, tufa spring line and hypocrrenal streamlet (TAMITUFB, N47.63317 E14.69863, 770 m a.s.l.): 1♂ pharate, leg. Gerecke 18.06.2016.

***Micropsectra pharetrophora* Fittkau & Reiss, 1999:** Styria, Nationalpark Gesäuse, Gscheidegg spring line (GSCH, N47.52121 E14.67982, 1.540 m a.s.l.): 1♂, leg. Haseke 17.07.2007; Buchstein, Gstatterboden-Rohr valley, lower Rohr spring (URO, N47.59787 E14.63355, 698 m a.s.l.): 1♂, leg. Remschak & Haseke 07.07.2010.

***Micropsectra sofiae* Stur & Ekrem, 2006:** Styria, Nationalpark Gesäuse, Buchstein, Ritschengraben creek (RITSCH, N47.58509 E14.57276, 623 m a.s.l.): leg. Gerecke 23.06.2013; Mühlbachgraben valley, upper rheocrene spring (MÜHL1, N47.63188 E14.64291, 1.150 m a.s.l.): leg. R. Gerecke 01.08.2014; Hochtort, Haindlkar valley creek, waterfall (HAKA1, N47.56604 E14.61615, 1.070 m a.s.l.): leg. Reiff 28.06.2013: total

8 pupae exuv. Remarks: All finding points represent rough environments, steep torrents with instable loads of whitewashed gravel, also rocky and intermittent passages.

*Neozavrelia cf. improvisa* Fittkau, 1954: Styria, Nationalpark Gesäuse, Buchstein, Gstatterboden-Rohr valley, lower Rohr spring (URO, N47.59787 E14.63355, 698 m a.s.l.): 1♂, leg. Remschak & Haseke 29.05.2013. Buchstein, Hinterwinkel valley, Siebenbrunn cascade springs (7B, N47.61585 E14.62219, 1.245 m a.s.l.): 6♂, leg. Remschak 19.07.2014. Remarks: The styrian specimens differ in some attributes from the original description.

*Parametriocnemus cf. stylatus* (Spärck, 1923): Styria, Nationalpark Gesäuse, Hochtort, Neuburgalm pasture grounds, tufa spring (NEUTUF, N47.52509 E14.68523, 1.424 m a.s.l.): 1♂, leg. Remschak & Haseke 20.07.2016. Remarks: **Probably a new species for science.** The caught male is different in several attributes from the typical individuals of its genus. It is possible that it counts to the unnamed, cryptic new species, which can be only verified by molecular methods.

*Procladius (Holotanypus) tatrensis* Gowin, 1944: Styria, Nationalpark Gesäuse, Hochtort, Planspitzsee lake (PSEE, N47.56977 E14.63995, 1.802 m a.s.l.): 1 pupa, leg. Gerecke 18.07.2018, det. T. Bendt. Remarks: Karst doline pond and helocrene spring in a pretty rocky environment. Known from the Polish and Slovakian Tatra mountains, doubtfully from Norway and Switzerland. Unpublished.

*Prosmittia spec. nov. „HÜPF“*: Styria, Nationalpark Gesäuse, Hochtort mountains, Hartelsgraben valley, Hüpfinger Alm spring line (HÜPF, N47.54603 E14.68638, 1.508 a.s.l.): 1♂, leg. Remschak & Haseke 16.07.2009. Remarks: **New species for science.** In Europe, four species of the genus are reported. The male from the Hüpfingeralm rheocrene spring is different from all these known species and also not resembling the two species from the Russian Far East (MAKARCHENKO & MAKARCHENKO 2007).

*Pseudosmittia spec. nov. „URO“*: Styria, Nationalpark Gesäuse, Buchstein, Gstatterboden-Rohr valley, lower Rohr spring (URO N47.59787 E14.63355, 698 m a.s.l.): 5♂♂, leg. Remschak & Haseke 07.07.2010. Remarks: **Probably a new species to science.** The identification keys are leading to the genus *Pseudosmittia*, but then it is not further suitable to one of the known species. The comparison with 22 species of genus *Pseudosmittia*, hosted in the Bavarian State Collection of Zoology (Zoologische Staatssammlung München), was also without result.

*Pseudosmittia albipennis* (Goetghebuer, 1921): Styria, Gesäuse region, Buchstein, Mühlgraben valley spring line (MÜHL3, N47.63821 E14.65846, 880 m a.s.l.): 1♂, leg. Remschak & Haseke 01.08.2014.

*Rheotanytarsus cf. illiesi* Siebert, 1979: Styria, Nationalpark Gesäuse, Buchstein, Gstatterboden-Rohr valley, lower Rohr spring (URO, N47.59787 E14.63355, 698 m a.s.l.): 2♂♂, leg. Remschak & Haseke 07.07.2010. Remarks: **Probably a new species for science.** The males midges from the Gesäuse are similar to *R. illiesi*, but it is assumed that they might belong to an undescribed sibling species.

*Smittia cf. nudipennis* (Goetghebuer, 1913): Styria, Nationalpark Gesäuse, Hochtort, Koderboden valley, Wolfbauernbach spring (KOB01, N47.54213 E14.62770, 1.198 m a.s.l.), leg. Remschak & Haseke 15.07.2009; Buchstein, Gstatterboden-Rohr valley, lower Rohr spring (URO N47.59787 E14.63355, 698 m a.s.l.), leg. Remschak & Haseke 07.07.2010; Mühlbach valley spring (MÜHL 4, N47.63953 E14.66209, 845 m a.s.l.), leg. Haseke 01.08.2014: total 4♂♂.

*Smittia cf. stercoraria* Rossaro & Lencioni, 2000: Styria, Nationalpark Gesäuse, Buchstein, Gstatterboden-Rohr valley, lower Rohr spring (URO N47.59787 E14.63355, 698 m a.s.l.): 2♂♂, leg. Remschak & Haseke 15.07.2009.

*Syndiamesa edwardsi* (Pagast, 1947): Styria, Nationalpark Gesäuse, Hochtort,

Haindlkar valley, spring in boulder gorge (HAI 46 , N47.57363 E14.61306, 844 m a.s.l.): 1♂, leg. Remschak 15.06.2013.

***Thienemanniella spiesi* Moubayed-Breil & Ashe, 2016:** Styria, Nationalpark Gesäuse, Hocht, Hartelsgraben valley, Hüpflinger Alm spring line (HÜPF, N47.54603 E14.68638, 1.508 a.s.l. ): 1♂, leg. Remschak & Haseke 16.07.2009; Buchstein, Mühlbach valley spring line (MÜHL4, N47.63953 E14.66209, 845 m a.s.l.): 1♂, leg. Haseke 01.08.2014.

***Thienemanniella cf. caspersi / vittata spec. nov.?*** Styria, Nationalpark Gesäuse, Buchstein, Hinterwinkel valley, Siebenbruenn cascade springs (7B, N47.61585 E14.62219, 1.245 m a.s.l.): 1♂, leg. Remschak 19.07.2014. Remarks: **Probably a new species to science.** The available male leads with its properties to *Thienemanniella*, but it does not fit in some important characteristics.

#### 2.4.2 Dixidae (Meniscus Midges)

***Dixella monticola* (Nielsen, 1937):** Styria, Nationalpark Gesäuse, Buchstein, Gstatterboden-Rohr valley, lower Rohr spring (URO, N47.59787 E14.63355, 698 m a.s.l.): 1 specimen, leg. Remschak & Haseke 06.08.2008, det. R. Wagner. – Ref.: WAGNER (2012).

***Dixa dilatata* Strobl, 1900:** Styria, Nationalpark Gesäuse, Hocht, Hartelsgraben, Hüpflingerbach, hypocrenal-epirhithral Stream (HÜHABA, N47.53387 E14.68337, 1.537 m a.s.l.): 1♂, leg. Remschak & Haseke 05.06.2017; Gesäuse region, Buchstein, Pulvermacher spring line (PULVER3, N47.64771 E14.58525, 609 m a.s.l.): 1♂ 1♀, leg. Remschak & Haseke 26.07.2020; Dachstein Ost, Hallgraben near Bad Mitterndorf „Naturdenkmal Schwefelquelle“ (natural monument sulphuric spring, SO<sub>2</sub>, N47.53148 E13.91659, 814 m a.s.l.): 2♂♂ 2♀♀, leg. Remschak & Haseke 14.07.2016; Totes Gebirge, Sandling near Altaussee, spring rivulet near Blaa-Alm (BLAABA, N47.66952 E13.73851, 945 m a.s.l.): 1♂, leg. Remschak & Haseke 21.07.2018; det. C. Remschak. Remarks: Rare European species, populating springs and small runnels. – Ref.: REMSCHAK & HASEKE (2019).

***Dixa serrifera* Edwards, 1928:** Styria, Nationalpark Gesäuse, Buchstein, rheohelocrene spring line at „Schmalzfeicht'n“ southern of „Luckete Mauer“ (KOT1, N47.61497 E14.66564, 1.160 m a.s.l.): 1♂, leg. Remschak & Haseke 10.09.2012; later also found in some other Gesäuse springs at Reichenstein, Johnsbach valley - Treffnergraben trench, Hocht, Gscheidegg and Buchstein; Totes Gebirge, Sandling bei Altaussee, hypocrenal stream Blaa-Alm (BLAABA, N47.66952 E13.73851, 945 m a.s.l.) leg. Remschak & Haseke 12.07.2016; Salza valley, spring line Schusterin (SAM, N47.60151 E13.92816, 927 m a.s.l.) leg. Remschak & Haseke 21.07.2018; det. C. Remschak & R. Wagner. Remarks: First record in Austria in National Park Gesäuse, several more findings in the Gesäuse region and in the Styrian Salzkammergut (LIFE-Ausseeerland project). It is a bit amazing that the species, which seems to be common in Upper Styria, has not already been detected in the past. – Ref.: WAGNER (2012), REMSCHAK & HASEKE (2019).

***Dixella nigra* (Stäger, 1840):** Styria, Nationalpark Gesäuse, Reichenstein mountains, Gof, lower spring line (GOFU), N47.57343 E14.56012, 715 m a.s.l.): 1♂ 1♀, leg. Remschak 03.09.2019; Gesäuse, Buchauerbach valley, Pulvermacher spring line (PULVER2, N47.64617 E14.58333, 620 m a.s.l.): 2♂, leg. Remschak 26.07.2020; det. C. Remschak & R. Wagner. – Ref.: REMSCHAK (2021, unpublished).



### 2.4.3 Dolichopodidae (Long-legged flies)

***Syntormon pennatum* Ringdahl, 1920:** Styria, Nationalpark Gesäuse, Reichenstein, Flizengraben valley head, spring line in the east of Treffner pond (REIS4, N47.53527 E14.55019, 1.480 m a.s.l.): 1♂, leg. Remschak & Haseke 23.06.2013; further loc.: Reichenstein, spring line near Moedlingerhütte (TREF4, N47.53195 E14.55335, 1.465 m a.s.l.); Gscheidegg spring line (GSCH, N47.52121 E14.67982, 1.540 m a.s.l.); Hochtort, Hartelsgraben valley, Sulzkaralm spring (SUKA, N47.56172 E14.68693, 1.365 m a.s.l.); Styria, eastern Dachstein plateau, some small springs at Schwarzsee / Karssee / Finitzsee lakes, 1.410 - 1.580 m a.s.l.; Styria, Totes Gebirge, Salza valley head, 1.160 m a.s.l.: overall sample 14 specimens; det. C. Remschak. Remarks: First Austrian record from montane-subalpine rheocrene springs in National Park Gesäuse, then also found in similarly exposed locations in the Styrian Salzkammergut (LIFE-Ausseeerland project). – Ref.: REMSCHAK (2018), REMSCHAK & HASEKE (2019).

***Syntormon denticulatum* (Zetterstedt, 1843):** Styria, Nationalpark Gesäuse, Reichenstein mountains, spring line near Moedlingerhütte (TREF4, N47.53195 E14.55335, 1.465 m a.s.l.): 26♀♀, leg. Remschak & Haseke 17.07.2013; further findings at some springs in all Gesäuse mountain groups; also detected in: Eastern Dachstein, Groebmingbach valley head, Seeboden brook (SEEBO, N47.47358 E13.84648, 1.055 m a.s.l.): 23 specimens, leg. Remschak & Haseke 19.07.2018; Western Hochschwab, Eisenerz river valley, Schwarze Lacke or Wassermannloch karst spring („Aquarius hole“, WAMALO, N47.58225 E14.82610, 590 m a.s.l.): 1♀; det. C. Remschak. Remarks: First Austrian record of *S. denticulatum* in National Park Gesäuse, although the dissemination is widespread in the Ennstal region and covers actually an area of nearly 500 km<sup>2</sup>. – Ref.: REMSCHAK (2018), REMSCHAK & HASEKE (2019).

### 2.4.4 Empididae (Dagger flies)

***Chelifera (Hemerodromia) strobli* Wagner & Gerecke 2008:** Styria, Nationalpark Gesäuse, Gscheidegg spring line (GSCH-W, N47.51868 E14.67521, 1.572 m a.s.l.); leg. Haseke 17.07.2007: 1♂ (holotype); Enns valley, Gstatterboden, Weißenbachl valley karst spring (WEIBA, N47.59496 E14.64329, 619 m a.s.l.): 1♂, leg. Remschak & Haseke 13.06.2017, det. R. Wagner. Remarks: The found was the **first record to science**. Despite of the very intense investigations in the Johnsbach valley - Gscheidegg area during the next 12 years, there was only one other confirmation in a much lower and pretty far situated spring. R. Wagner indicates the find as “*H. strobli* or very close related”. – Ref.: WAGNER & GERECKE (2008), WAGNER (2012).

***Phaeobalia varipennis* (Nowicki, 1868):** Carinthia, Nationalpark Hohe Tauern, Gößnitz valley, gravel spring SW Tramerkopf (GÖNITA 8, N46.99513 E12.73811, 2.770 m a.s.l.): 1♂, leg. Remschak & Haseke 26.07.2019; det. C. Remschak & R. Wagner. Remarks: Rediscovery of a „lost“ Austrian species, actually not recorded and also missing in *Fauna Europaea* (what doesn't mean a lot, to be honest). The high mountains species is only known from historical evidence in the 19th century, pointing out the Gesäuse (where *P. varipennis* has not been recovered till now) and the „Naßfeld“ area at the Carinthian/Italian border in the Southern Alps (ENGEL 1918). Recent reports are only given from the Tatra mountains in Poland and Slovakia and from the Italian Alps (PALACZYK & SLOWINSKA-KRYSIAK 2013). – Ref.: HASEKE & REMSCHAK (2021a, unpublished).

***Dolichocephala cavatica* (Becker, 1889):** Styria, Nationalpark Gesäuse, Hochtort, Haindlkar hut spring (HAIHUE, N47.56603 E14.61478, 1.145 m a.s.l.): 1♂, leg. Rem-

schak 06.08.2019, det. R. Wagner. Remarks: Recorded to date from Belgium, Germany, Croatia and Slovakia (Fauna Europaea). – Ref.: REMSCHAK (2020, unpublished).

***Hemerodromia laudatoria* Collin, 1927:** Styria, Gesäuse region, Enns valley, Hieflau, Zwanzenbichl spring (ZWANZ, N47.61233 E14.74283, 487 m a.s.l.): 10♂♂ 4♀♀, leg. Remschak & Haseke 09.06.2010, det. R. Wagner. – Ref.: WAGNER (2012).

***Chelifera astigma* Collin, 1927:** Styria, Nationalpark Gesäuse, Reichenstein, Flizengraben valley head, spring line in the east of Treffner pond (REIS4, N47.53527 E14.55019, 1.480 m a.s.l.): 1♂, leg. Remschak & Haseke 23.06.2013; Gesäuse region, Buchstein, Pulvermacher spring line (PULVER, N47.64617 E14.58333, 620 m a.s.l.): 2♂♂ 2♀♀, leg. Remschak & Haseke 22.06.2017, det. C. Remschak & R. Wagner. Remarks: *C. astigma* was furthermore caught in some more springs in the close neighbourhood around REIS4, but also in the 14 km distant Pulvermacher spring in the Buchauerbach valley near St. Gallen.– Ref.: REMSCHAK et al. (2018).

***Chelifera subangusta* Collin, 1961:** Styria, Nationalpark Gesäuse, Hochtort, Johnsbach valley, Gseng spring (GSENG, N47.56849 E14.58961, 683 m a.s.l.): 2♂♂, leg. Remschak 02.06.2013, det. C. Remschak. Remarks: Recorded with one single detection in the Gseng spring, which has been very intensely investigated during the last 10 years (emergency traps, recurring samplings). – Ref.: REMSCHAK et al. (2018).

***Clinocera doriei* Vaillant, 1968:** Styria, Nationalpark Gesäuse, Buchstein, Mühlgraben upper spring (MÜHL1, N47.63188 E14.64291, 1.150 m a.s.l.): 2♂♂ 1♀, leg. Remschak & Haseke 01.08.2014; Hochtort mountains, Hartelsgraben-Hochreid, large cascading springs (HORE, N47.57776 E14.70482, 845 m a.s.l.): 1♂ 2♀♀, leg. Remschak & Haseke 13.06.2017; Enns valley, Gstatterboden, Weißenbachl valley karst spring (WEIBA, N47.59496 E14.64329, 619 m a.s.l.): 1♂, leg. Remschak & Haseke 08.08.2017, det. R. Wagner & C. Remschak. Unpublished.

## 2.4.5 Limoniidae (Crane Flies, subfamily)

Reference for all items unless otherwise noted by  
REUSCH & HEISS (2012)

***Antocha* sp. A (Reusch, 2012):** Styria, Nationalpark Gesäuse, Johnsbach valley head, Schröckengraben, gypsum spring near Kölblalm (KOE13, N47.53333 E14.64308, 1.135 m a.s.l.): 1♂, leg. Remschak & Haseke 04.07.2008, det. H. Reusch & R. Heiss. Remarks: Estimated as an unknown species, but obviously not depicted so far.

***Dicranophragma (Brachylimnophila) separatum* (Walker, 1848):** Styria, Nationalpark Gesäuse, Johnsbach valley head, tufa spring near Kölblalm (KOE14, N47.53133 E14.64732, 1.095 m a.s.l.): 2♀♀, leg. Remschak & Haseke 04.07.2008., det. H. Reusch & R. Heiss. Remarks: Frequent in the upper Johnsbach valley and the Hartelsgraben valley area (Hochtort mountains), some more ♂♀ could be found later in this region.

***Erioptera aletschina* Stary, 1997:** Styria, Nationalpark Gesäuse, Hochtort, Sulzkaralm pasture, bog spring (JAMOQ, N47.55992 E14.68993, 1.398 m a.s.l.): 1♂ 1♀, leg. Remschak & Haseke 16.07.2009, det. H. Reusch & R. Heiss.

***Gnophomyia lugubris* (Zetterstedt, 1838):** Styria, Nationalpark Gesäuse, Hochtort, Koderboden rock spring (KOBO2, N47.54588 E14.63168, 1.290 m a.s.l.): 1♂, leg. Remschak & Haseke 15.07.2009, det. H. Reusch & R. Heiss.

***Gonomyia (Gonomyia) abscondita* Lackschewitz, 1935:** Styria, Nationalpark Gesäuse, Hochtort mountains, Hartelsgraben-Hochreid, large cascading springs (HORE, N47.57776 E14.70482, 845 m a.s.l.): 1♂, leg. Remschak & Haseke 05.07.2008, det. H. Reusch.

***Molophilus (Molophilus) variispinus* (Tonnoir, 1921):** Styria, Nationalpark

Gesäuse, Hochtör, Koderboden rock spring (KOB02, N47.54588 E14.63168, 1.290 m a.s.l.): 1♂, leg. Remschak & Haseke 15.07.2009; Reichenstein, Treffnergraben trench, Huberalm swamp spring line (TREF2, N47.53673 E14.57067, 1.045 m a.s.l.): 1♂, leg. Remschak & Haseke 17.07.2013, det. H. Reusch & R. Heiss.

***Rhabdomastix (Lurdia) sublurida Starý, 1971:*** Styria, Nationalpark Gesäuse, Buchstein, Bruckgraben gorge, rheocene debris spring (BRUG, N47.59598 E14.58229, 895 m a.s.l.): 2♂♂ 1♀, leg. Remschak & Haseke 02.07.2008, det. H. Reusch & R. Heiss.

***Tasiocera (Dasymolophilus) exigua Savchenko, 1973:*** Lower Austria, Wildnisgebiet Dürrenstein, Rothausbach creek (ROBA, N47.77665 E15.09468, 980 m a.s.l.): 6♂♂, leg. Remschak & Haseke 27.06.2013, det. H. Reusch.

#### 2.4.6 Pediciidae (Hairy-eyed Craneflies)

***Dicranota (Paradicranota) minuta Lackschewitz, 1940:*** Styria, Nationalpark Gesäuse, Hochtör, Hartelsgraben valley, Hüpfingeralm upper spring (GSUECH, N47.54533 E14.68101, 1.570 m a.s.l.): 1♂, leg. Remschak & Haseke 13.07.2009; Hartelsgraben valley, Sulzkaralm, Rotofen, „Teufelsarsch“ rock, small helocene spring (ARSCH, N47.55722 E14.66318, 1.712 m a.s.l.): 1♂, leg. Remschak & Haseke 16.07.2009; det. H. Reusch. – Ref.: REUSCH & HEISS (2012).

***Ula (Ula) mixta Starý, 1983:*** Styria, Nationalpark Gesäuse, Gscheidegg, limnocene spring pond Schröckermauer (PFUL, N47.52642 E14.67225, 1.397 m a.s.l.): 1♀, leg. Haseke 07.07.2007, det. H. Reusch. Remarks: The species (all of them ♀♀) has been collected in a few more springs at the pasture grounds and forests around the Neuburgalm, close to the declared finding spot. – Ref.: REUSCH & HEISS (2012).

#### 2.4.7 Psychodidae (Drain flies, Moth flies)

*Determinations: Rüdiger Wagner*

***Berdeniella glacialis (Vaillant, 1958):*** Styria, Nationalpark Gesäuse, Johnsbach valley head, Schröckengraben spring line (SHROEK, N47.53087 E14.65053, 1.102 m a.s.l.): 1 specimen, leg. Weigand 18.11.2006; Gscheidegg spring line (GSCH, N47.52121 E14.67982, 1.540 m a.s.l.): 1 specimen, leg. Haseke 17.07.2007; Schafgraben, forest spring line (SCHAF, N47.53058 E14.65605, 1.217 m a.s.l.): 1 specimen, leg. Haseke 17.07.2007; Buchstein, Hinterwinkel valley, Siebenbrunn cascade springs (7B, N47.61585 E14.62219, 1.245 m a.s.l.): 1♂, leg. Remschak 19.07.2014; **Carinthia**, Nationalpark Hohe Tauern, Schober mountains, Gößnitztal valley, swamp helocene spring line (GÖNITA 1, N47.00266 E12.76425, 2.145 m a.s.l.): 1 specimen, leg. Remschak & Haseke 23.07.2019. Remarks: In the Nationalpark Gesäuse, the species is recorded from springs in a small area in the Johnsbach headwaters (Neuburgalm) and as a single finding at the „Seven Fountain“ cascades in the Buchstein massif. In 2019, we found *B. glacialis* also in the Central Alps in northern Carinthia. The Red List of the endangered mothflies in Bavaria indicates *B. glacialis* as an extremely rare species or as a species with geographical restriction (WAGNER 2003, MAUCH et al. 2020). – Ref.: WAGNER (2012), HASEKE & REMSCHAK (2021a, unpublished).

***Berdeniella globulifera Vaillant, 1976:*** Styria, Nationalpark Gesäuse, Johnsbach valley head, Grössingergraben creek (GG, N47.52645 E14.64457, 970 m a.s.l.): 112 specimens, leg. Remschak & Haseke 12.06.2010. – Ref.: WAGNER (2012).

***Pericoma crenophila Wagner & Schrankel, 2005:*** Styria, Nationalpark Gesäuse,

Johnsbach valley head, Schröckengraben spring line (SHROEK, N47.53087 E14.65053, 1.102 m a.s.l.): 1 specimen, leg. Weigand 18.11.2006; Eisenerzer Alpen, Kaiserau valley, large gravel spring line, hypocrenal stream (KAISER, N47.52869 E14.47035, 1.098 m a.s.l.): 1♂ 1♀, leg. Remschak & Haseke 29.06.2013; Johnsbach valley, rheocrene forest spring in Treffnergraben trench (TREF0, N47.53814 E14.57931, 880 m a.s.l.): 1♂, leg. Remschak & Haseke 17.07.2013. – Ref.: WAGNER (2012).

***Pericoma ljubiliensis* Krek, 1967:** Styria, Gesäuse region, Buchauerbach valley, Pulvermacher spring line (PULVER, N47.64617 E14.58333, 620 m a.s.l.): 8♂, leg. Remschak & Haseke 22.06.2017; Nationalpark Gesäuse, Hochtor mountains, Johnsbach valley, Gseng spring (GSENG, N47.56849 E14.58961, 683 m a.s.l.): 2♂ 1♀, leg. Remschak 05.06.2019; Haindlkar valley, spring on the path (HAIMI, N47.57228 E14.61415, 923 m a.s.l.): 9♂, leg. Remschak 16.09.2019; Reichenstein - Gofer valley, lower spring line (GOFU), N47.57343 E14.56012, 715 m a.s.l.): 26 specimens, leg. Remschak June/July 2019. Remarks: The species was primarily estimated as eastern alpine-balkan, but it seems to be distributed in a larger area, considering the occurrence also in the Bavarian Nationalpark Berchtesgaden. In Austria, *P. ljubiliensis* is known so far only from the Gesäuse mountains. – Ref.: HASEKE & REMSCHAK (2017, unpublished), REMSCHAK (2021, unpublished).

***Pericoma pingarestica* Vaillant, 1978:** Styria, Nationalpark Gesäuse, Johnsbach valley head, Schröckengraben spring line (SHROEK, N47.53087 E14.65053, 1.102 m a.s.l.): 1 specimen, leg. Weigand 18.11.2006; Ennstal valley, Steinach - Niederhofen village, Friedstein castle spring (FRIEST, N47.54368 E14.11892, 720 m a.s.l.): 2♂ 2♀, leg. Remschak & Haseke 24.06.2020. Remarks: Currently known to occur from Bulgaria, Czech Republic, Romania, Serbia and Slovakia, now confirmed at two locations in northern Styria. – Ref.: WAGNER (2012).

***Trichomyia stephani* Beran, Doczkal, Pfister & Wagner, 2010:** Styria, Nationalpark Gesäuse, Buchstein mountains, Ritschengraben creek (RITSCH, N47.58509 E14.57276, 623 m a.s.l.): 1♂, leg. Remschak & Haseke 29.06.2013. – Ref.: REMSCHAK et al. (2018).

***Peripsychoda fusca* (Macquart, 1826):** Styria, Gesäuse region, Buchauerbach valley, Pulvermacher spring line (PULVER 3, N47.64771 E14.58525, 609 m a.s.l.): 1♂, leg. Remschak & Haseke 22.06.2017. Remarks: A very rare species, specializing in fountains. Unpublished.

#### 2.4.8 Sciaroidea excl. Sciaridae (Mycetophilidae, Fungus Gnats)

Reference for all items in this chapter is PLASSMANN (2011), PLASSMANN (2012), unless otherwise noted; determinations: Eberhard Plassmann

##### 2.4.8.1 Family Bolitophilidae

***Bolitophila aperta* Lundstroem, 1914:** Styria, Nationalpark Gesäuse, Gscheidegg, small spring (HAWA, N47.51636 E14.67373, 1.605 m a.s.l.): 1♂ 1♀, leg. Remschak & Haseke 08.06.2010.

***Bolitophila edwardsiana* Stackelberg, 1969:** Styria, Nationalpark Gesäuse, Gscheidegg, small spring (HAWA, N47.51636 E14.67373, 1.605 m a.s.l.): 1♂ 1♀, leg. Remschak & Haseke 08.06.2010; Johnsbach valley head, Gscheidegg, Haindlwaldgraben hypocrenal creek (JOTRA1, N47.52712 E14.675737, 1.375 m a.s.l.): 2♂♂, leg. Remschak & Haseke 07.06.2010.

***Bolitophila rossica* Landrock, 1912:** Styria, Nationalpark Gesäuse, Hochtor, Hartelsgraben valley, Sulzkaralm, Kammerl cave spring (KAM, N47.56586 E14.69600,

1.328 m a.s.l.): 1♀, leg. Remschak & Haseke 16.07.2009; Johnsbach valley head, Neuburg raised bog, western runout (NEUMO-W, N47.52646 E14.68062, 1.428 m a.s.l.): 5 specimens, leg. Remschak & Haseke 07.06.2010.

#### 2.4.8.2 Family Diadocidiidae

***Diadocidia borealis* Coquillett, 1900:** Styria, Nationalpark Gesäuse, Buchstein mountains, Klausgraben fountain stream (KL3, N47.60219 E14.65393, 770 m a.s.l.): 1♀, leg. Remschak & Haseke 02.08.2012. Remarks: According to GBIF, *D. borealis* is only assured so far from Canada and USA. In the sampling spot KL1, which is not far away from KL3, we found *D. ferruginosa* and *D. valida*. – Ref.: GBIF, FAUNEURP.

#### 2.4.8.3 Family Keroplatidae

***Macrorrhyncha rostrata* (Zetterstedt, 1851):** Styria, Nationalpark Gesäuse, Buchstein, Gstatterboden-Rohr valley, lower Rohr spring (URO N47.59787 E14.63355, 698 m a.s.l.): 1♀, leg. Remschak & Haseke 06.08.2008; Eisenerzer Alpen, Lahngangkogel, Flizengraben creek (FLIZ 2, N47.53616 E14.53712, 1.205 m a.s.l.): 1♂, leg. Remschak & Haseke, 12.08.2012.

***Macrorrhyncha collarti* (Tollet, 1955):** Styria, Nationalpark Gesäuse, Hochtort mountains, small spring trench in Ödsteinkar (OED1, N47.55709 E14.60208, 1.375 m a.s.l.): 1♂, leg. Remschak & Haseke 04.08.2012. – Ref.: GBIF, FAUNEURP.

#### 2.4.8.4 Family Mycetophilidae, Subfamily Gnoristinae

***Boletina griphoides* Edwards, 1925:** Styria, Gesäuse region, Gscheidegg, Saugasse spring (SAUG, N47.50282 E14.66137, 1.483 m a.s.l.): 1♂, leg. Remschak & Haseke 12.06.2010.

***Boletina nigricans* Dziedzicki, 1885:** Styria, Nationalpark Gesäuse, Hochtort mountains, Pfarralm spring line (PFARR, N47.53192 E14.66563, 1.308 m a.s.l.): 1♂, leg. Remschak & Haseke 07.06.2010. Remarks: *B. nigricans* has been collected at 4 further locations in the close neighbourhood.

***Boletina silvatica* Dziedzicki, 1885:** Styria, Nationalpark Gesäuse, Gscheidegg, Haindlwaldgraben hypocrrenal creek (JOTRA1 N47.52712 E14.67573, 1.375 m a.s.l.): 1♂, leg. Remschak & Haseke 12.10.2012. – Ref.: GBIF, FAUNEURP.

***Creagdhubhia mallochorum* Chandler, 1999:** Styria, Gesäuse region, Enns valley, Hieflau village, Zwanzentbichl spring (ZWANZ, N47.61233 E14.74283, 487 m a.s.l.): 1 specimen, leg. Remschak & Haseke 09.06.2010.

#### Subfamily Leiinae

***Docosia pallipes* Edwards, 1941:** Styria, Nationalpark Gesäuse, Johnsbach valley head, spring reach Kölblalm (GAUCK, N47.53281 E14.64042, 1.120 m a.s.l.): 1♂ 1♀, leg. Remschak & Haseke 11.06.2010.

***Ectrepesthoneura gracilis* Edwards, 1928:** Styria, Gesäuse region, Gscheidegg-Saugasse spring (SAUG, N47.50282 E14.66137, 1.483 m a.s.l.): 1♂, leg. Remschak & Haseke 12.06.2010.

***Novakia scatopsiformis* Strobl, 1893:** Styria, Nationalpark Gesäuse, Ennstal valley, Klausgraben river mouth (KL4, N47.59243 E14.64927, 585 m a.s.l.): 2♂♂, leg. Remschak & Haseke 10.09.2012. – Ref.: GBIF, FAUNEURP.

### Subfamily Exechiinae

*Allodia pyxidiiformis* Zaitzev, 1983: Styria, Nationalpark Gesäuse, Hohtor mountains, Haindlkar, spring on the path (HAIMI, N47.57228 E14.61415, 923 m a.s.l.): 1♂, leg. Haseke 18.07.2007; Buchstein, Gstatterboden-Rohr valley, lower Rohr spring (URO, N47.59787 E14.63355, 698 m a.s.l.): 1♂, leg. Remschak & Haseke 06.08.2008; Eisenerzer Alpen, Lahngangkogel, Flizengraben creek (FLIZ 2, N47.53616 E14.53712, 1.205 m a.s.l.): 1♂, leg. Remschak & Haseke 12.08.2012.

*Anatella bremia* Chandler, 1994: Styria, Nationalpark Gesäuse, Gscheidegg, Schröckenmauer, helocrene spring pond (PFUL, N47.52642 E14.67225, 1.397 m a.s.l.): 1♂, leg. Remschak & Haseke 29.07.2009.

*Anatella emergens* Caspers, 1987: Styria, Nationalpark Gesäuse, Johnsbach village, Etbach karst spring (ETZ, N47.52876 E14.61018, 861 m a.s.l.): 1♂, leg. Remschak & Haseke 23.12.2008.

*Anatella loniflagellata* Caspers, 1991: Styria, Nationalpark Gesäuse, Gscheidegg, Haindlwaldgraben hypocrenal creek (JOTRA1, N47.52712 E14.67573, 1.375 m a.s.l.): 1♂, leg. Remschak & Haseke 12.10.2012. – Ref.: GBIF, FAUNEUROPE.

*Anatella novata* Dziedzicki, 1922: Styria, Nationalpark Gesäuse, Gscheidegg, spring pond Schröckermauer (PFUL, N47.52642 E14.67225, 1.397 m a.s.l.): 1♂, leg. Remschak & Haseke 06.08.2008.

*Brevicornu cognatum* Ostroverkhova, 1979: Styria, Nationalpark Gesäuse, Enns valley near Johnsbach river mouth, Zigeunerbrunnen karst spring (ZIB, N47.57903 E14.59836, 610 m a.s.l.): 1♂, leg. Remschak & Haseke 05.05.2009.

*Brevicornu intermedium* (Santos-Abreu, 1920). Reichenstein - Gofer valley, lower spring line (GOFU), N47.57343 E14.56012, 715 m a.s.l.): 1♂, leg. Remschak & Haseke 01.07.2007.

*Cordyla parvipalpis* Edwards, 1924: Styria, Nationalpark Gesäuse, Hohtor, Hartelsgraben valley, Sulzkaralm-Brunnetz small rock spring (BRUTZ, N47.55271 E14.66660, 1.760 m a.s.l.): 1♂, leg. Remschak & Haseke 10.07.2010.

*Exechia fulva* (Santos-Abreu, 1920): Styria, Nationalpark Gesäuse, Hohtor mountains, Pfarralm (PFARR, N47.53192 E14.66563, 1.308 m a.s.l.): 1♂, leg. Remschak & Haseke 07.06.2010.

*Exechia papyracea* Stackelberg, 1948: Styria, Nationalpark Gesäuse, Johnsbach village, Etbach karst spring (ETZ, N47.52876 E14.61018, 861 m a.s.l.): 1♂, leg. Remschak & Haseke 06.10.2008.

*Pseudexechia parallela* (Edwards, 1925): Styria, Nationalpark Gesäuse, Hartelsgraben valley, Höllboden, Sulzkarbach cascades (HGS3, N47.57196 E14.70251, 1.020 m a.s.l.): 1♂, leg. Remschak & Haseke 20.10.2012; Hüpfingeralm, Schwarzlacken hypocrenal brook (HGH1, N47.54279 E14.68788, 1.560 m a.s.l.): 1♂, leg. Remschak & Haseke 20.10.2012.

*Rymosia acta* Dziedzicki, 1909: Styria, Gesäuse region, Johnsbach village, Etbach karst spring (ETZ, N47.52876 E14.61018, 861 m a.s.l.): 1♂, leg. Remschak & Haseke 09.05.2008.

### Subfamily Mycetophilinae

*Mycetophila abiecta* (Lastovka, 1963): Styria, Nationalpark Gesäuse, Johnsbach village, Etbach karst spring (ETZ, N47.52876 E14.61018, 861 m a.s.l.): 1♂, leg. Remschak & Haseke 06.10.2008; Gscheidegg, spring pond Schröckermauer (PFUL, N47.52642 E14.67225, 1.397 m a.s.l.): 1 specimen, leg. Remschak & Haseke 29.07.2009; Hohtor mountains, Hüpfinger creek (HGH2, N47.55262 E14.70063, 1.380 m a.s.l.):

1♂, leg. Haseke & Remschak 07.08.2012; Hüpfinger creek - Schwarzlacken hypocrenal stream (HGH1 N47.54279 E14.68788, 1.560 m a.s.l.): 1♂, leg. Haseke & Remschak 07.08.2012; Sulzkaralm pasture ground creek (HGS2, N47.56637 E14.68993, 1.310 m a.s.l.): 1♂, leg. Haseke & Remschak 20.10.2012.

***Mycetophila attonsa* (Laffoon, 1957):** Styria, Nationalpark Gesäuse, Buchstein, Gstatterboden-Rohr valley, lower Rohr spring (URO, N47.59787 E14.63355, 698 m a.s.l.): 1♂, leg. Remschak & Haseke 06.08.2008.

***Mycetophila autumnalis* Lundström, 1909:** Styria, Eisenerzer Alpen, Lahngangkogel, Flizengraben creek at „Schnürchsperre“ (FLIZ3, N47.52541 E14.54140, 1.117 m a.s.l.): 1♂, leg. Remschak & Haseke 12.08.2012. – Ref.: GBIF, FAUNEUROPE.

***Mycetophila brevitarsata* (Lastovka, 1963):** Styria, Nationalpark Gesäuse, Buchstein, Gstatterboden-Rohr valley, lower Rohr spring (URO, N47.59787 E14.63355, 698 m a.s.l.): 1♂, leg. Remschak & Haseke 08.10.2009; 1♂, leg. Haseke & Remschak 07.07.2010.

***Mycetophila czizeki* Landrock, 1911:** Styria, Nationalpark Gesäuse, Gscheidegg spring line (GSCH, N47.52121 E14.67982, 1.540 m a.s.l.): 4 specimens, leg. Remschak & Haseke 07.10.2009; Buchstein, Gstatterboden-Rohr valley, lower Rohr spring (URO, N47.59787 E14.63355, 698 m a.s.l.): 4♂♂, leg. Remschak & Haseke 08.10.2009. Remarks: Further four detections in a small area of the Johnsbach valley head (Schröckenbach and Grössingerbach brooks), and in the Sulzkaralm pasture ground creek.

***Mycetophila filiae* Zaitzev, 1998:** Styria, Nationalpark Gesäuse, Buchstein, Gstatterboden-Rohr valley, lower Rohr spring (URO, N47.59787 E14.63355, 698 m a.s.l.): 1♂, leg. Remschak & Haseke 06.08.2008.

***Mycetophila flavolineata* (Bukowski, 1934):** Styria, Nationalpark Gesäuse, Buchstein, small dolomitic trench southwest of „Luckete Mauer“ (KL1, N47.61697 E14.66025, 1.160 m a.s.l.): 1♂, leg. Remschak & Haseke 02.08.2012. – Ref.: GBIF, FAUNEUROPE.

***Mycetophila formosa* Lundstroem, 1911:** Styria, Nationalpark Gesäuse, Johnsbach valley head, Schröckengraben spring line (SHROEK, N47.53087 E14.65053, 1.102 m a.s.l.): 1♂, leg. Haseke 19.07.2007; Johnsbach village, Etbach karst spring (ETZ, N47.52876 E14.61018, 861 m a.s.l.): 2♂♂, leg. Remschak & Haseke 06.10.2008 and 05.05.2009; Hartelsgraben valley, Höllboden, Sulzkarbach cascades (HGS3, N47.57196 E14.70251, 1.020 m a.s.l.): 2♂♂, leg. Remschak & Haseke 07.08.2012 and 20.10.2012.

***Mycetophila gibbula* Edwards, 1924:** Styria, Gesäuse region, Johnsbach village, Etbach karst spring (ETZ, N47.52876 E14.61018, 861 m a.s.l.): 1♂, leg. Remschak & Haseke 09.05.2008; Nationalpark Gesäuse, Gscheidegg spring line (GSCH, N47.52121 E14.67982, 1.540 m a.s.l.): 1♂, leg. Remschak & Haseke 07.10.2009; Buchstein, Gstatterboden-Rohr valley, lower Rohr spring (URO, N47.59787 E14.63355, 698 m a.s.l.): 1♂, leg. Remschak & Haseke 08.10.2009; Buchstein, Brucksattel spring (BRUSO, N47.59393 E14.59051, 1.123 m a.s.l.): 1♂, leg. Remschak & Haseke 07.07.2010. Remarks: Also caught around some more small hypocrenal brooks in the Johnsbach valley head area.

***Mycetophila immaculata* Dziedzicki, 1884:** Styria, Nationalpark Gesäuse, Buchstein, small dolomitic trench southwest of „Luckete Mauer“ (KL1, N47.61697 E14.66025, 1.160 m a.s.l.): 1♂, leg. Remschak & Haseke 02.08.2012. – Ref.: GBIF, FAUNEUROPE.

***Mycetophila mikii* Dziedzicki, 1884:** Styria, Nationalpark Gesäuse, Ennstal valley, Klausgraben river mouth (KL4, N47.59243 E14.64927, 585 m a.s.l.): 1♂, leg. Remschak & Haseke 10.09.2012. – Ref.: GBIF, FAUNEUROPE.

***Mycetophila mitis* Johannsen, 1912:** Styria, Nationalpark Gesäuse, Johnsbach

valley head, Kölblalm, hypocrenal spring reach (GAUCK, N47.53281 E14.64042, 1.120 m a.s.l.): 1♂, leg. Remschak 11.06.2010.

***Mycetophila moravica* Landrock, 1915:** Styria, Gesäuse region, Gscheidegg, Saugasse, trench spring (SAUG, N47.50282 E14.66137, 1.483 m a.s.l.): 1♂, leg. Remschak & Haseke 12.06.2010.

***Mycetophila nigrofusca* Dziedzicki, 1884:** Styria, Nationalpark Gesäuse, Hochtortor, Haindlkar valley, spring on the path (HAIMI, N47.57228 E14.61415, 923 m a.s.l.): 1♂, leg. Haseke 18.07.2007; Gscheidegg, Haindlwaldgraben hypocrenal creek (JOTRA1, N47.52712 E14.67573, 1.372 m a.s.l.): 2♂♂, leg. Remschak & Haseke 07.06.2010; Buchstein, Gstatterboden-Rohr valley, lower Rohr spring (URO, N47.59787 E14.63355, 698 m a.s.l.): 1♂, leg. Remschak & Haseke 07.07.2010; Buchstein, Brucksattel spring (BRUSO, N47.59393 E14.59051, 1.123 m a.s.l.): 1♂, leg. Remschak & Haseke 02.07.2008; Ennstal valley, Klausgraben river mouth (KL4, N47.59243 E14.64927, 585 m a.s.l.): 2♂♂, leg. Remschak & Haseke 12.10.2012.

***Mycetophila scotica* Edwards, 1941:** Styria, Nationalpark Gesäuse, Buchstein, Gstatterboden-Rohr valley, lower Rohr spring (URO, N47.59787 E14.63355, 698 m a.s.l.): 1♂, leg. Haseke 20.07.2007; Hochtortor, Hartelsgraben valley, Höllboden, waterfall fountain (HÖBO, N47.57183 E14.70355, 1.050 m a.s.l.) 1♂, leg. Remschak & Haseke 05.07.2008.

***Mycetophila teiei* Zaitzev, 1999:** Styria, Nationalpark Gesäuse, Hochtortor, Haindlkar valley, spring on the path (HAIMI, N47.57228 E14.61415, 923 m a.s.l.): 1♂, leg. Haseke 18.07.2007; Ennstal valley, Klausgraben river mouth (KL4, N47.59243 E14.64927, 585 m a.s.l.): 1♂, leg. Remschak & Haseke 02.08.2012.

***Mycetophila zetterstedti* Lundstroem, 1906:** Styria, Gesäuse region, Johnsbach valley head, Grössingergraben creek (GRÖGRA, N47.51712 E14.66146, 1.175 m a.s.l.): 1♂, leg. Remschak & Haseke 12.06.2010.

***Phronia aviculata* Lundstrom, 1914:** Styria, Nationalpark Gesäuse, Buchstein, rheohelocrene spring line at „Schmalzfeicht'n“ southern of „Luckete Mauer“ (KOT1, N47.61497 E14.66564, 1.160 m a.s.l.): 1♂, leg. Remschak & Haseke 10.09.2012. – Ref.: GBIF, FAUNEUROPE

***Phronia digitata* Hackman, 1970:** Styria, Nationalpark Gesäuse, Buchstein, Gstatterboden-Rohr valley, lower Rohr spring (URO, N47.59787 E14.63355, 698 m a.s.l.): 1♂, leg. Remschak & Haseke 07.07.2010.

***Phronia dziedzickii* Lundstroem, 1906:** Styria, Nationalpark Gesäuse, Hochtortor, Neuburgalm area, Glanegg rheocrene spring (GLAU, N47.53629 E14.67468, 1.550 m a.s.l.): 1♂, leg. Remschak & Haseke 08.06.2010; Gesäuse region, Johnsbach valley head, Grössingergraben creek (GRÖGRA, N47.51712 E14.66146, 1.175 m a.s.l.): 1 specimen, leg. Remschak & Haseke 12.06.2010.

***Phronia elegans* Dziedzicki, 1889:** Styria, Nationalpark Gesäuse, Hochtortor, Koderboden valley, Wolfbauern gorge creek (KOBO1B, N47.53882 E14.62518; 1.115 m a.s.l.): 1♂, leg. Remschak & Haseke 15.07.2009.

***Phronia minuta* Landrock, 1928:** Styria, Nationalpark Gesäuse, Hartelsgraben valley, Höllboden, Sulzkarbach cascades Hartelsgraben valley, Höllboden, Sulzkarbach cascades (HGS3, N47.57196 E14.70251, 1.020 m a.s.l.): 1♂, leg. Remschak & Haseke 07.08.2012.

***Phronia rauschi* Plassmann, 1990:** Styria, Nationalpark Gesäuse, Johnsbach valley head, spring reach Kölblalm (GAUCK, N47.53281 E14.64042, 1.120 m a.s.l.): 1♂, leg. Remschak 11.06.2010.

***Phronia sylvatica* Dziedzicki, 1889:** Styria, Gesäuse region, Gscheidegg, Saugasse, trench spring (SAUG, N47.50282 E14.66137, 1.483 m a.s.l.): 1♂, leg. Remschak & Haseke 12.06.2010.



***Sceptonia fumipes* Edwards, 1924:** Styria, Nationalpark Gesäuse, Johnsbach valley head, spring reach Kölblalm (GAUCK, N47.53281 E14.64042, 1.120 m a.s.l.): 2♂, leg. Remschak 11.06.2010.

***Sceptonia membranacea* (Edwards, 1925):** Styria, Nationalpark Gesäuse, Buchstein mountains, Klausgraben fountain stream (KL3 N47.60219 E14.65393, 770 m a.s.l.): 1♂, leg. Remschak & Haseke 02.08.2012. – Ref.: GBIF, FAUNEUROPE

***Trichonta aberrans* Lundstroem, 1911:** Styria, Nationalpark Gesäuse, Gscheidegg, spring pond Schröckermauer (PFUL, N47.52642 E14.67225, 1.397 m a.s.l.): 1♂, leg. Remschak & Haseke 06.08.2008.

***Trichonta bezzii* Landrock, 1912:** Styria, Nationalpark Gesäuse, Johnsbach valley head, spring reach Kölblalm (GAUCK, N47.53281 E14.64042, 1.120 m a.s.l.): 3♂♂, leg. Remschak 11.06.2010.

***Trichonta bicolor* Landrock, 1912:** Styria, Nationalpark Gesäuse, Johnsbach valley head, spring reach Kölblalm (GAUCK, N47.53281 E14.64042, 1.120 m a.s.l.): 1♂, leg. Remschak 11.06.2010.

***Trichonta brevicauda* Lundstroem, 1906:** Styria, Nationalpark Gesäuse, Johnsbach valley head, spring reach Kölblalm (GAUCK, N47.53281 E14.64042, 1.120 m a.s.l.): 1♂, leg. Remschak 11.06.2010; Eisenerzer Alpen, Lahngangkogel, Flizengraben creek at „Schnürch Sperre“ (FLIZ3, N47.52541 E14.54140, 1.117 m a.s.l.): 1♂, leg. Haseke & Remschak 12.08.2012.

***Trichonta clavigera* Lundstrom, 1913:** Styria, Nationalpark Gesäuse, Buchstein mountains, Klausgraben fountain stream (KL3, N47.60219 E14.65393, 770 m a.s.l.): 1♂, leg. Remschak & Haseke 02.08.2012. – Ref.: GBIF, FAUNEUROPE

***Trichonta conjungens* Lundstroem, 1909:** Styria, Eisenerzer Alpen, Johnsbach valley head, Grössingergraben creek (GRÖGRA, N47.51712 E14.66146, 1.175 m a.s.l.): 6 specimens, leg. Remschak & Haseke 12.06.2010; Nationalpark Gesäuse, Hochtorn mountains, Hüpfinger creek (HGH2, N47.55262 E14.70063, 1.380 m a.s.l.): 2♂♂, leg. Haseke & Remschak 07.08.2012.

***Trichonta escisa* Lundstrom, 1916:** Styria, Eisenerzer Alpen, Lahngangkogel, Flizengraben creek (FLIZ 2, N47.53616 E14.53712, 1.205 m a.s.l.): 1♂, leg. Remschak & Haseke 12.08.2012. – Ref.: GBIF FAUNEUROPE

***Trichonta fissicauda* (Zetterstedt, 1852):** Styria, Nationalpark Gesäuse, Johnsbach valley head, spring reach Kölblalm (GAUCK, N47.53281 E14.64042, 1.120 m a.s.l.): 1♂, leg. Remschak 11.06.2010.

***Trichonta hungarica* Landrock, 1925:** Styria, Nationalpark Gesäuse, Johnsbach valley head, spring reach Kölblalm (GAUCK, N47.53281 E14.64042, 1.120 m a.s.l.): 1♂, leg. Remschak 11.06.2010.

***Trichonta nigritula* Edwards, 1925:** Styria, Eisenerzer Alpen, Lahngangkogel, Flizengraben creek (FLIZ 2, N47.53616 E14.53712, 1.205 m a.s.l.): 1♂, leg. Remschak & Haseke 12.08.2012. – Ref.: GBIF, FAUNEUROPE

***Trichonta subfusca* Lundstroem, 1909:** Styria, Nationalpark Gesäuse, Johnsbach valley head, spring reach Kölblalm (GAUCK, N47.53281 E14.64042, 1.120 m a.s.l.): 1♂, leg. Remschak 11.06.2010.

### Subfamily Mycomyinae

***Mycomya heydeni* Plassmann, 1970:** Styria, Nationalpark Gesäuse, Buchstein, Gstatterboden-Rohr valley, lower Rohr spring (URO, N47.59787 E14.63355, 698 m a.s.l.): 1♂, leg. Remschak & Haseke 09.05.2008.

***Mycomya maculata* (Meigen, 1804):** Styria, Nationalpark Gesäuse, Gscheidegg

spring line (GSCH, N47.52121 E14.67982, 1.540 m a.s.l.): 1♂, leg. Remschak & Haseke 29.07.2009.

***Mycomya tamerlani* Väisänen, 1984:** Styria, Gesäuse region, Gscheidegg-Saugasse, trench spring (SAUG, N47.50282 E14.66137, 1.483 m a.s.l.): 1♂, leg. Remschak & Haseke 12.06.2010.

***Mycomya neolittoralis* Vaisanen, 1984:** Styria, Nationalpark Gesäuse, Ennstal valley, Hartelsgraben river mouth (HGU2, N47.59124 E14.70490, 530 m a.s.l.): 1♂, leg. Remschak & Haseke 07.08.2012. – Ref.: GBIF, FAUNEUROPE

***Mycomya pectinifera* (Edwards, 1925):** Styria, Eisenerzer Alpen, Lahngangkogel, Flizengraben creek at „Schnürchsperr“ (FLIZ3, N47.52541 E14.54140, 1.117 m a.s.l.): 8♂♂, leg. Remschak & Haseke 12.08.2012, det. E. Plassmann. – Ref.: GBIF, FAUNEUROPE

### Subfamily Sciophilinae

***Leptomorphus forcipatus* Landrock, 1918:** Styria, Nationalpark Gesäuse, Buchstein, Gstatterboden-Rohr valley, lower Rohr spring (URO, N47.59787 E14.63355, 698 m a.s.l.): 1♂, leg. Haseke 07.07.2007.

***Polylepta borealis* Lundstroem, 1912:** Styria, Gesäuse region, Gscheidegg-Saugasse, trench spring (SAUG, N47.50282 E14.66137, 1.483 m a.s.l.): 1♂, leg. Remschak & Haseke 12.06.2010.

***Sciophila bicuspidata* Zaitzev, 1982:** Styria, Nationalpark Gesäuse, Hohtor mountains, Neuburgalm-Pfarralm spring (PFARR, N47.53192 E14.66563, 1.308 m a.s.l.): 1♂, leg. Remschak & Haseke 07.06.2010.

### 2.4.9 Sciaridae (Dark-winged Fungus Gnats)

Reference for all items in this chapter is HELLER (2012), unless otherwise noted; determinations: Kai Heller.

***Bradysia angustostylata* Menzel, 2005:** Styria, Eisenerzer Alpen, Johnsbach valley head, Grössingeralm rheohelocrene springs (GRÖS N47.50784 E14.66091, 1.325 m a.s.l.): 1 specimen, leg. Remschak & Haseke 12.06.2010.

***Bradysia breviallata* Mohrig & Menzel, 2002:** Styria, Nationalpark Gesäuse, Johnsbach valley head, Schröckengraben creek and tufa springs (JOTRA2, N47.53085 E14.64997, 1.100 m a.s.l.): 2 specimens, leg. Remschak & Haseke 07.06.2010; Grössingergraben creek (GRÖGRA, N47.51712 E14.66146, 1.175 m a.s.l.): 1 specimen, leg. Remschak & Haseke 12.06.2010.

***Bradysia fontinalis* Heller, 2012:** Styria, Eisenerzer Alpen, Johnsbach valley head, Grössingergraben creek (GRÖGRA, N47.51712 E14.66146, 1.175 m a.s.l.): 1 specimen (holotype) leg. Remschak & Haseke 12.06.2010. Remarks: **New species to science.**

***Bradysia kirstenae* Heller, 2012:** Styria, Nationalpark Gesäuse, Hohtor, Koderboden valley, Gamsbrunnen spring line (KAMS, N47.55600 E14.65425, 1.615 m a.s.l.): 1 specimen (holotype), leg. Remschak 14.07.2009. Remarks: **New species to science.**

***Bradysia lobulifera* Frey, 1948:** Styria, Nationalpark Gesäuse, Buchstein, Bruckgraben gorge, rheocrene debris spring (BRUG, N47.59598 E14.58229, 895 m a.s.l.): 2 specimens, leg. Remschak & Haseke 02.07.2008; Hohtor, Koderboden valley, Gamsbrunnen spring line (KAMS, N47.55600 E14.65425, 1.615 m a.s.l.): 1 specimen, leg. Remschak & Haseke 14.07.2009.

***Bradysia longicauda* Mohrig & Menzel, 1990:** Styria, Gesäuse region, Erzbach valley, Waaggraben gorge near Hieflau (WAAG, N47.58948 E14.73684, 671 m a.s.l.): 1 specimen, leg. Remschak & Haseke 04.07.2008.

***Bradysia maggiaensis* Mohrig & Röschmann, 1994:** Styria, Nationalpark Gesäuse, Johnsbach valley head, Schröckengraben creek and tufa springs (JOTRA2, N47.53085 E14.64997, 1.100 m a.s.l.): 1 specimen, leg. Remschak & Haseke 07.06.2010; Eisenerzer Alpen, Leobner-Saugasse, trench spring (SAUG, N47.50282 E14.66137, 1.483 m a.s.l.): 1 specimen, leg. Remschak & Haseke 12.06.2010.

***Bradysia submorio* Mohrig & Krivosheina, 1983:** Styria, Nationalpark Gesäuse, Johnsbach valley head, Schröckengraben, gypsum spring near Kölblalm (KOE13, N47.53333 E14.64308, 1.135 m a.s.l.): 1 specimen, leg. Remschak & Haseke 04.07.2008.

***Bradysia trispinifera* Mohrig & Krivosheina, 1979:** Styria, Nationalpark Gesäuse, Johnsbach valley head, spring reach Kölblalm (GAUCK, N47.53281 E14.64042, 1.120 m a.s.l.): 1 specimen, leg. Remschak & Haseke 11.06.2010.

***Camptochaeta austriaca* Heller, 2012:** Styria, Nationalpark Gesäuse, Gscheidegg, Haindlwaldgraben hypocrrenal creek (JOTRA1, N47.52712 E14.67573, 1.372 m a.s.l.): 1 specimen (holotype), leg. Remschak & Haseke 07.06.2010; Gscheidegg-Pleschberg ridge, small pond (GITUE2, N47.51460 E14.67831, 1.692 m a.s.l.): 1 specimen, leg. Remschak & Haseke 08.06.2010; Hoctor, Neuburgalm area, Glanegg rheocrene spring (GLAU, N47.53629 E14.67468, 1.550 m a.s.l.): 3 specimens, leg. Remschak & Haseke 10.06.2010; Sulzkaralm area, rheocrene spring and pond (SUTU, N47.56197 E14.67330, 1.517 m a.s.l.): 2 specimens, leg. Remschak & Haseke 09.06.2010; Buchstein, Gstatterboden-Rohr valley, lower Rohr spring (URO N47.59787 E14.63355, 698 m a.s.l.): leg. Remschak & Haseke 09.06.2010. Remarks: **New species to science.** Most of the finding spots are rounded in a quite small area, dominated by pasture grounds with light grove and coppice and some small ponds.

***Claustropyga abblanda* (Freeman, 1983):** Styria, Nationalpark Gesäuse, Enns valley near Johnsbach river mouth, Zigeunerbrunnen karst spring (ZIB, N47.57903 E14.59836, 610 m a.s.l.): 1 specimen, leg. Remschak & Haseke 04.07.2008; Johnsbach valley head, Schröckengraben spring line (SHROEK, N47.53087 E14.65053, 1.102 m a.s.l.): 1 specimen, leg. Remschak & Haseke 09.05.2008; Hoctor, Neuburgalm-Pfaralm (PFARR, N47.53192 E14.66563, 1.308 m a.s.l.): 1 specimen, leg. Remschak & Haseke 07.06.2010.

***Corynoptera barbata* Tuomikoski, 1960:** Styria, Nationalpark Gesäuse, Hoctor, Koderboden valley, Gamsbrunnen spring line (KAMS, N47.55600 E14.65425, 1.615 m a.s.l.): 1 specimen, leg. Remschak & Haseke 14.07.2009.

***Corynoptera grothae* Mohrig & Menzel, 1990:** Styria, Nationalpark Gesäuse, Johnsbach creek at Hellichter Stein, not far from river mouth (JOTRA6, N47.57406 E14.58581, 606 m a.s.l.): 1 specimen, leg. Remschak & Haseke 11.06.2010.

***Corynoptera polana* Rudzinski, 2009:** Styria, Nationalpark Gesäuse, Buchstein, Brucksattel spring (BRUSO, N47.59393 E14.59051, 1.123 m a.s.l.): 1 specimen, leg. Remschak & Haseke 07.07.2010.

***Corynoptera sphenoptera* Tuomikoski, 1960:** Styria, Nationalpark Gesäuse, Buchstein, Brucksattel spring (BRUSO, N47.59393 E14.59051, 1.123 m a.s.l.): 1 specimen, leg. Remschak & Haseke 07.07.2010.

***Corynoptera tridentata* Hondru, 1968:** Styria, Nationalpark Gesäuse, Johnsbach valley near Wolfbauernbach waterfall, gypsum spring „Beim Zachen Schuach“ (ZACH, N47.53575 E14.62109, 975 m a.s.l.): 1♂, leg. Remschak & Haseke 15.07.2009.

***Corynoptera winnertzi* Mohrig, 1993:** Styria, Nationalpark Gesäuse, Johnsbach valley head, Grössingergraben creek (GRÖGRA, N47.51712 E14.66146, 1.175 m a.s.l.): 1 specimen, leg. Remschak & Haseke 12.06.2010.

***Cratyna contracta* Mohrig & Röschmann, 1996:** Styria, Nationalpark Gesäuse, Hochtort mountains, Pfarralm (PFARR, N47.53192 E14.66563, 1.308 m a.s.l.): 1 specimen, leg. Remschak & Haseke 07.06.2010.

***Epidapus lucifuga* (Mohrig, 1970):** Styria, Nationalpark Gesäuse, Hochtort, Hartelsgraben gorge creek and springs near river mouth into Enns river (HABE, N47.58955 E14.70520, 565 m a.s.l.): 1 specimen, leg. Remschak & Haseke 05.07.2008.

***Leptosciarella gretae* Heller, 2012:** Styria, Nationalpark Gesäuse, Buchstein, Gstatterboden-Rohr valley, lower Rohr spring (URO N47.59787 E14.63355, 698 m a.s.l.): 1 specimen (holotype), leg. Haseke 01.07.2007. Remarks: **New species to science.**

***Leptosciarella multispinosa* (Mohrig & Mamaev, 1985):** Styria, Nationalpark Gesäuse, Gscheidegg spring line (GSCH, N47.52121 E14.67982, 1.540 m a.s.l.): 1 specimen, leg. Remschak & Haseke 29.07.2009.

***Leptosciarella subspinulosa* (Edwards, 1925):** Styria, Nationalpark Gesäuse, Enns valley near Johnsbach river mouth, Zigeunerbrunnen karst spring (ZIB, N47.57903 E14.59836, 610 m a.s.l.): 1 specimen, leg. Remschak & Haseke 05.05.2009.

***Scatopsiara subcalamophila* Menzel & Mohrig, 1991:** Styria, Nationalpark Gesäuse, Johnsbach creek at Kainzenalbl trench (JOTRA5, N47.56597 E14.58051, 630 m a.s.l.): 1 specimen, leg. Remschak & Haseke 11.06.2010.

***Trichosia discolor* (Lengersdorf, 1928):** Styria, Nationalpark Gesäuse, Buchstein, Bruckgraben gorge, Pichlmayerschütt rheocene spring line (PIS, N47.59676 E14.59009, 1.040 m a.s.l.): 1 specimen, leg. Remschak & Haseke 07.07.2010.

***Trichosiopsis antimelanoma remschakae* nov. spec. Heller 2021:** Styria, Nationalpark Gesäuse, Johnsbach valley head, Schröckengraben spring line (SHROEK, N47.53087 E14.65053, 1.102 m a.s.l.): 1♂ (holotype), leg. Remschak 17.06.2016; Hochtort, Hartelsgraben valley, Höllboden, waterfall fountain (HÖBO, N47.57183 E14.70355, 1.050 m a.s.l.): 1♂, leg. Remschak & Haseke 15.07.2008; Hochtort, Johnsbach valley near Wolfbauernbach waterfall, gypsum spring „Beim Zachen Schuach“ (ZACH, N47.53575 E14.62109, 975 m a.s.l.): 1♂, leg. Remschak & Haseke 15.07.2009 (unpublished). Remarks: **New species or subspecies for the science.** The specimens of *T. a. remschakae* had been misidentified as *Leptosciarella melanoma* in HELLER (2012). *T. antimelanoma* is only described from Norway (2016), the subspecies is mainly based on its unique COI sequence and its Alpine distribution. More sampling of Alpine and subarctic material of this poorly known species is needed in order to know, whether the two subspecies are truly allopatric. In that case a treatment as two distinct species would be the more adequate to taxonomy.

***Xylosciara heptacantha* Tuomikoski, 1957:** Styria, Nationalpark Gesäuse, Reichenstein, Gofer valley, lower spring line (GOFU), N47.57343 E14.56012, 715 m a.s.l.): 1 specimen, leg. Haseke 01.07.2008; Enns valley near Johnsbach river mouth, Zigeunerbrunnen karst spring (ZIB, N47.57903 E14.59836, 610 m a.s.l.): 2 specimens; Johnsbach creek at Kainzenalbl trench (JOTRA5, N47.56597 E14.58051, 630 m a.s.l.): 1 specimen; Johnsbach valley head, Grössingergraben creek (GG, N47.52645 E14.64457, 970 m a.s.l.): 1 specimen.

***Zygoneura calthae* Tuomikoski, 1960:** Styria, Nationalpark Gesäuse, Johnsbach village, Ertzbach karst spring (ETZ, N47.52876 E14.61018, 861 m a.s.l.): 1 specimen, leg. Remschak & Haseke 07.10.2009.

## 2.4.10 Simuliidae (Blackflies)

*Determinations: Gunther Seitz*

In the latest „Checklist of the blackflies of Austria“ (CAR & LECHTHALER 2002), 45 blackfly species had been reported from Austria. Within 20 years, this range of species has grown to 54 - a considerable increase of 20 percent (SEITZ 2022). Disregarding the abolition of synonymy and the renaming of *S. reptans* (now *S. reptantoides*) and *S. gale-ratum* (now *S. reptans*, KÚDELA & al. 2014) into two discrete taxa, further eight species could be proved as new in Styria. Four species were familiar in neighbour countries, two species recently described as new in Germany and one species could be realized as new for the science. Another species was completely out of the ordinary because we detected it for the first time in central Europe, far away from its main distribution area at the Black Sea. Nearly all the preimaginal stages of the new reported species live in hypocrrenal streams. This underlines the relevancy of the spring research programs for the knowledge of blackfly biodiversity.

***Simulium (Nevermannia) arminii* (Seitz & Adler 2017):** Styria, Nationalpark Gesäuse, Hochtör-Stadelfeld mountains, waterfall below Wolfbauernturm (USTAWA, N47.54341 E14.64114, 1.520 m a.s.l.): 1 larva., leg. Seitz 18.07.2018 (determinations confirmed by cytological examinations, Adler in litt.). Remarks: The species was described for the first time in the year 2017 from two spring brooks in the northern limestone Alps of Germany. – Ref.: SEITZ & ADLER (2017), SEITZ (2022).

***Simulium (Nevermannia) bavaricum* Seitz & Adler 2009.** Locations: Styria, Nationalpark Gesäuse, Gscheidegg spring line (GSCH-W, N47.51868 E14.67521, 1.572 m a.s.l.): 1 larva, leg. Seitz 17.07.2007; Johnsbach valley head, tufa spring near Koelblalm (KOE14, N47.53133 E14.64732, 1.095 m a.s.l.): 1 larva, leg. Seitz 04.07.2008; Hochtör, Haindlkar hut spring (HAIHUE, N47.56603 E14.61478, 1.145 m a.s.l.): 2 larvae, leg. Seitz 18.07.2007; Buchstein, Bruckgraben gorge, Pichlmayerschuetz rheocrene spring line (PIS, N47.59676 E14.59009, 1.040 m a.s.l.): 2 pupae, leg. Seitz 02.07.2008; Reichenstein, Gofer valley, rheocrene debris spring (TURM, N47.57010 E14.55847, 835 m a.s.l.): 3 larvae, leg. Seitz 01.07.2008; later also found in LEUC, SEEMA, HAWA2, TREF3, REIS3, GSENG, GSEGRAQ, HAWA, FLIZQ, STADEL, ARSCH, HAWA, SHRÖK TUFF, WEINB, Langgries Traufquelle. Remarks: Described from the Nationalpark Berchtesgaden (Bavaria) shortly before the findings in Gesäuse. *Simulium bavaricum* seems to be not so rare and settles in all parts of the ragged Gesäuse mountains. It was nevertheless impossible to detect the species in the nearby situated Styrian Salzkammergut (Aussee county), despite of intense research. – Ref.: SEITZ & ADLER (2009), SEITZ (2012).

***Simulium hasekei* Seitz, Adler & Remschak 2021:** Styria, eastern Dachstein, Viehbergalm, spring rivulet beside the raised bog „Miesbodenmoor“ (MIBOMOPO, N47.49341 E13.87770, 1.408 m a.s.l.): 4 larvae, 6 pupae, leg. Seitz 15.07.2016; 23 larvae, 7 pupae, leg. Remschak & Haseke 26.06.2019; 14 pupae, leg. Seitz & Remschak 14.07.2019; 18 larvae, leg. Remschak & Haseke 30.06.2020; 7 larvae, 25 pupae, leg. Remschak & Haseke 11.07.2020. Remarks: **New species for the science.** The species seems to be strictly endemic in a large uvala depression within the Kemetgebirge (eastern Dachstein mountains), covered with bogs and a lake and known as a cold air depression. The very narrow spring streamlet habitat of *S. hasekei* is strongly isolated and vanishes in a karst ponor, drying out after only a few days without precipitation. – Ref.: SEITZ et al. (2021).

***Simulium maritimum* (Rubtsov, 1956):** Styria, Bad Mitterndorf basin, Sonnenalm village, Rödschitzbach creek, water barrage at km 1.41 (ROEDNEU, N47.56411 E13.92134, 807 m a.s.l.): 2 specimens (determinations confirmed by cytological examinations, Adler in litt.). Remarks: **First record in Central Europe.** The main distribution area is the Krasnodar region at the Black Sea (VLASOV & AL. 2018). The finding spot in Mitterndorf is a small brook, running through the settlement area. – Ref.: SEITZ (2019).

***Simulium (Eusimulium) petricolum* (Rivosecchi 1963):** Styria, Nationalpark Gesäuse, Buchstein, Bruckgraben gorge (HÖLL, N47.59943 E14.58125, 925 m a.s.l.): 14 larvae, 4 pupae, leg. Seitz 02.07.2008, det. G. Seitz; Bad Mitterndorf basin, Sonnenalm village, Rödschitzbach creek, water barrage at km 1.41 (ROEDNEU, N47.56411 E13.92134, 807 m a.s.l.): 6 larvae, 2 pupae (determinations confirmed by cytological examinations, Adler in litt.). Remarks: The Bruckgraben location is a vegetation-free ravine with wet rocks under downspraying water of lateral small springs („hygropetric“ situation). – Ref.: SEITZ (2009, 2012, 2019).

***Simulium rubzovianum* (Sherban, 1961):** Styria, Bad Mitterndorf basin, Kainisch, Ödenseetraun creek near lake outflow (ÖTRA1, N47.56280 E13.82309, 775 m a.s.l.): 1 larva, leg. Seitz 21.07.2016; Totes Gebirge, Grundlsee valley, Toplitzbach creek (TOP, N47.64157 E13.91274, 715 m a.s.l.): 49 larvae, 6 pupae, leg. Gerecke 22.09.2016. Remarks: Both detection spots are medium large, near-nature valley creeks outflowing from oligotrophic mountain lakes. – Ref.: SEITZ (2019).

***Simulium (Nevermannia) urbanum* Davies, 1966:** Styria, Nationalpark Gesäuse, Lugauer, Scheuchekalm small spring (SCHEU2, N47.56393 E14.71936, 1.580 m a.s.l.): 3 larvae, leg. G. Seitz 24.07.2020; Ennstaler Alpen, spring runnel eastern of Leobner peak (LEO1, N47.49291 E14.65857, 1.742 m a.s.l.): 37 larvae, 1 pupa, leg. G. Seitz 25.07.2020 (determinations confirmed by cytological examinations, Adler in litt.). Remarks: In Central Europe so far only proven in Germany. – Ref.: SEITZ (2022).

#### 2.4.11 Syrphidae (Hoverflies)

***Melanostoma certum* Haarto & Stähls, 2014:** Carinthia, Nationalpark Hohe Tauern, Schober mountains, Gößnitz valley, cascading spring near Elberfelder hut (GÖNITA7, N46.97660 E12.76028, 2.375 m a.s.l.): 2♂, leg. Remschak & Haseke 25.07.2019, det. M. Jentsch. Remarks: HAARTO & STÄHLS (2014) and SPEIGHT et al. (2015) suppose that *M. certum* is a complex consisting of two species, and indicate the undescribed species as “*Melanostoma* A“. This genus is probably restricted to high mountains. A definitive statement is only possible by DNA-barcoding. – Ref.: HASEKE & REMSCHAK (draft 2021a, unpublished).

#### 2.4.12 Thaumaleidae (Trickle midges)

***Thaumalea decussiferens* (Vaillant, 1969):** Styria, Nationalpark Gesäuse, Johnsbach valley head, Schröckengraben creek and tufa springs (JÖTRA2, N47.53085 E14.64997, 1.100 m a.s.l.): 2 specimens, leg. Remschak & Haseke 07.06.2010, det. R. Wagner. – Ref.: WAGNER (2012).

***Thaumalea dinarica* Schmid, 1958:** Styria, Ennstal valley, Stainach-Niederhofen village, Friedstein castle spring (FRIEST, N47.54368 E14.11892, 720 m a.s.l.): 1♂, leg. Remschak & Haseke 24.06.2020, det. C. Remschak.

***Thaumalea tatrlica* Vaillant, 1969:** Styria, Nationalpark Gesäuse, Hochtor, Haindlkarhütte spring (HAIHUE, N47.56603 E14.61478, 1.145 m a.s.l.): 2♂, leg. Remschak & Haseke 16.09.2019, det. C. Remschak. Remarks: Till today, the genus was only

known from Czech Republic, Slovakia, Poland and Romania (FAUNA EUROPAEA). – Ref.: REMSCHAK (2020, unpublished).

## 2.5 Plecoptera (Stone flies)

***Leuctra astridae* Graf, 2005:** Styria, Nationalpark Gesäuse, Hochtör mountains, Hartelsgraben valley, rheocrene spring in the Sulzkar valley (LEUC, N47.55377 E14.66948, 1.570-1.690 m a.s.l.): 12♂♂, 4♀♀, leg. E. Weigand 24.8.2004; 28♂♂ 28♀♀, leg. A. Schmidt-Kloiber, E. Weigand & W. Graf 23.7.2005; further locations: Gscheidegg spring line (GSCH, N47.52121 E14.67982, 1.540 m a.s.l.): leg. Haseke 17.07.2007; Hüpfinger Alm spring line (HÜPF, N47.54603 E14.68638, 1.508 a.s.l.): leg. Haseke & Remschak 16.07.2009; Hartelsgraben valley-Sulzkaralm, Hüttenbach spring (HÜKA, N47.55894 E14.67177, 1.488 m a.s.l.): leg. Haseke & Remschak 25.06.2013; det. W. Graf. Remarks: **New species to science.** The species is obviously endemic and seems to be restricted to a small area in the south-eastern Hochtör mountains. *Leuctra astridae* is closely related to *L. festai*, a strictly rheophilous, microendemic stone fly of the Pennine Alps (Italy/Switzerland; some 450 km in distance). The quite wide disjunction of *L. festai* and *L. astridae* is probably due to glacial phenomena. *L. astridae* has not been detected at other locations until today. – Ref.: GRAF (2005, 2012)

## 3. Species of particular interest

**Crustacea, Copepoda: *Speocyclops cerberus* (Chappuis, 1934):** Styria, Gesäuse region, Johnsbach valley head, Grössingergraben creek - interstitial digging (GROE2, N47.51816 E14.66091, 1.165 m a.s.l.): 2 specimens, leg. Gerecke 22.07.2015; Nationalpark Gesäuse, Buchstein mountains, Klausgraben brook near Gstatterbodenbauer - interstitial digging (KL-B1, N47.59782 E14.64981, 690 m a.s.l.): 1 specimen, leg. Gerecke 22.07.2015; det. F. Stoch. Remarks: **Very rare stygobiont species**, till then only known from two Austrian caves and from a karst spring in the Trentino region (Italy) (CHRISTIAN 2016). First detection in hyporheic habitats! – Ref.: GERECKE et al. (2018).

**Crustacea, Ostracoda: *Fabaeformiscandona tyrolensis* (Loeffler, 1963):** Styria, Gesäuse region, Johnsbach valley head, Grössingergraben creek - interstitial digging (GROE2, N47.51816 E14.66091, 1.165 m a.s.l.): 1 specimen, leg. Gerecke 22.07.2015; Johnsbach creek below concrete dam- interstitial digging (JOTRA-b, N47.53366 E14.59481, 830 m a.s.l.): 3 specimens, leg. Gerecke 22.07.2015; Nationalpark Gesäuse, Hochtör, Hartelsgraben valley, Hüpfinger creek - interstitial digging (HGH-c, N47.56304 E14.70685, 1.175 m a.s.l.): 1 specimen, leg. Gerecke 22.07.2015; det. C. Meisch. Remarks: **First record of a very rare species in Styria**, only two locations of incidence so far, both in Austria (Tyrol and Lower Austria). – Ref.: GERECKE et al. (2018).

**Hemiptera, Corixidae: *Arctocorisa carinata carinata* (C. R. Sahlberg, 1819):** Styria, Nationalpark Gesäuse, Hochtör, Planspitzsee lake (PSEE, N47.56977 E14.63995, 1.802 m a.s.l.): 1♂, leg. C. Remschak 29.7.2017, det. T. Frieß. Remarks: The boreoalpine water boatman is considered as an ice age relic and lives predatory in oligotrophic lakes of the high mountains. In Styria, there are only a few historic findings known, the latest evidence is more than 20 years old. The species is classified as „vulnerable“ and very rare in the northern boundaries of the Alps. – Ref.: BRANDNER & FRIESS (2018).

**Diptera, Psychodidae: *Philosepedon mayeri* (Satchell, 1955):** Styria, Nationalpark Gesäuse, Hochtör mountains, Haindlkar, emergency trap in spring rivulet on the path (HAIMI-EM, N47.57228 E14.61415, 923 m a.s.l.): 1♂, leg. Remschak 18.06.2019,

det. R. Wagner. Remarks: Probably the **second ever detected specimen** of the genus. *P. mayeri* is worldwide only reported from the southeast of Austria (verbal hint from R. Wagner).

**Diptera, Thaumaleidae: *Thaumalea schmidi* Martinovsky & Rozkosny, 1976:** Tyrol, Nationalpark Hohe Tauern, Großvenediger mountains, Umbaltal (UMBAL1, N47.04933 E12.22631, 2.495 m a.s.l.): 2♂, leg. Remschak & Haseke 20.07.2020, det. C. Remschak & R. Wagner. Remarks: **Second recent record of a species estimated as endemic, first record in Tyrol.** The genus was classified up to now as a highly area-restricted species, only known from the „Northern Styrian alps“ (verbal statement R. Wagner, WAGNER 2002). All of a sudden, *Thaumalea schmidi* could be scooped in a moraine spring line, close to the retiring Umbal glacier in den Central Alps of Eastern Tyrol, at least in 130 km distance from the primordial distribution area. – Ref.: HASEKE & REMSCHAK (2021b, unpublished).

**Diptera, Tipulidae: *Tipula (Savtshenkia) tulipa* Dufour, 1983:** Carinthia, Nationalpark Hohe Tauern, Schober mountains, Gößnitz valley (GÖNITA6c, N46.98366 E12.75515, 2.292 m a.s.l.): 2♂, leg. Remschak & Haseke 25.07.2019; 2 added locations in the same area up to 2.500 m a.s.l.; det. P. Vogtenhuber. Remarks: **First record of a rare species in Carinthia.** The species was only known from the Switzerland Alps and the Italian Piemonte, later from the Wildgerlos valley (Salzburg) and the Tyrolean village Kals in the neighbourhood of the finding spot. – Ref.: HASEKE & REMSCHAK (2021a, unpublished).

**Diptera, Simuliidae: *Simulium (Trichodagnia) auricoma* Meigen, 1818:** Styria, Ennstal valley, Stainach-Untenburg, tufa cascade beneath Pürgg (UBRUPÜ, N47.52943 E14.06863, 725 m a.s.l.): 2 larvae, leg. Remschak 14.11.2020; det. G. Seitz. Remarks: First record of a rare species in Styria. Mainly spread through central and southern Europe the species occurs in mountainous areas. In Austria, *S. auricoma* has been found only in western Lower Austria to date (ZWICK 1976, CAR 1993) and in the Nationalpark Oberösterreichische Kalkalpen (Upper Austria, SCHEDER 2004). The new finding spot is a tufa-covered dripping cascade of a small brook below the village Pürgg, right in the Ennstal valley near Stainach.

#### 4. Revisions

***Leuctra auberti* Ravizza & Ravizza-Dematteis 1985.** Remarks: **Unconfirmed, revision.** The species has been published as new for Austria in REMSCHAK & OLIFIERS (2018), but it turned out later that it was a determination error (verbal statement by M. Tintner-Olifiers, April 2021).

***Hauffenia* cf. *kerschneri* (?).** Remarks: **Unconfirmed, revision.** The pretty rare species is mentioned in COLLING (2012), following a hint from W. Graf and E. Weigand, who meant to have collected the genus at three spots in the Nationalpark Gesäuse. But this is obviously not confirmed by an accurate determination; it might be that very small shells of other taxa have lead to misinterpretation. Despite of intense investigations at the named locations and at more than 200 further sampling points all around the Gesäuse mountains, there was not a single detection of *Hauffenia* sp. anywhere.





Fig. 1: Sampling field methods. a) The authors sampling the benthos in the near-surface deposit of a karst spring (Wassermannloch near Eisenerz, Styria). Picture: Martina Tintner-Olifiers. b) Sorting out of living benthic organisms in situ (Nationalpark Gesäuse, Styria). Picture: Harald Haseke. c) Sampling of groundwater/interstitial organisms in a custom-built excavator trench in the headwaters of Johnsbach creek (Gesäuse, Styria). Picture: Christina Remschak. d) Wipe-scooping in the rough surrounding of a waterfall spring site in the Hartelsgraben trench (National park Gesäuse, Styria). Picture: Harald Haseke. e) Christina Remschak, shifting the scooped insects via exhaustor into the conservation liquid (ethanol, 70%). Picture: Harald Haseke.

Abb. 1: Sammelmethode im Gelände. a) Die Autoren bei der Beprobung des Benthos im oberflächennahen Sediment einer Karstquelle (Wassermannloch bei Eisenerz, Steiermark). Foto: Martina Tintner-Olifiers. b) Lebendauslese einer Benthosprobe vor Ort (Gesäuse, Steiermark). Foto: Harald Haseke. c) Grundwasser/Interstitial - Beprobung in einem eigens dafür angelegten Baggerschlitz im Einzugsgebiet des Johnsbaches (Gesäuse, Steiermark). Foto: Christina Remschak. d) Streifkescherung adulter Insekten im schwierigen Gelände rund um eine Traufquelle im Hartelsgraben (Nationalpark Gesäuse, Steiermark). Foto: Harald Haseke. e) Christina Remschak beim Transferieren der gesicherten Beute über den Exhaustor in die Konservierungsflüssigkeit (70% Ethanol). Foto: Harald Haseke.

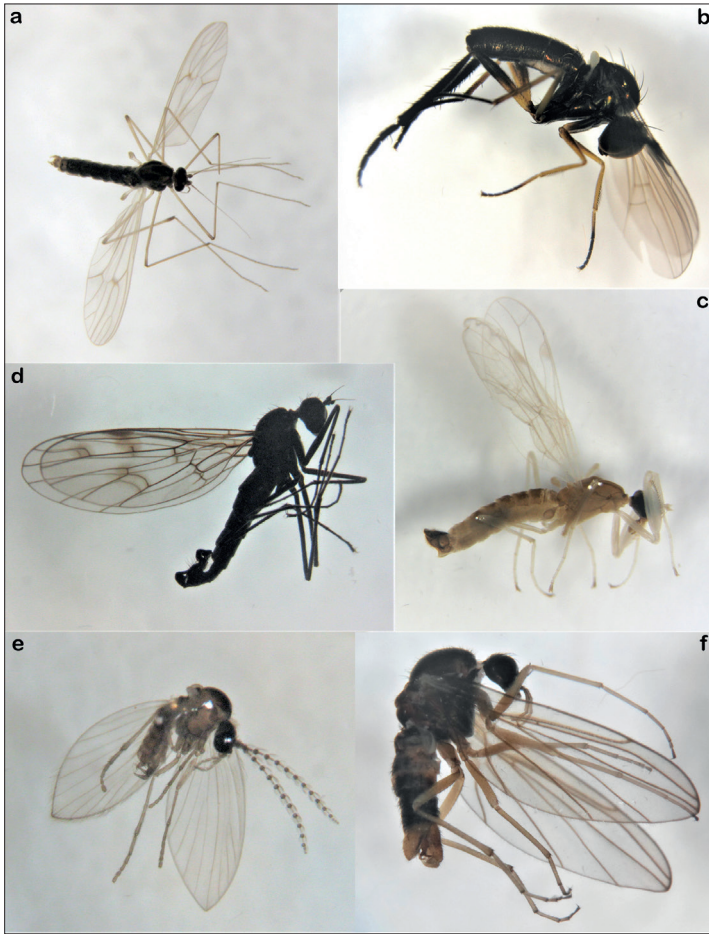


Fig. 2: Some Diptera which are mentioned in this report (microscope photos). All pictures: Christina Remschak. a) *Dixa dilatata* (Dixidae) from the sulphuric spring near Bad Mitterndorf (Ausseer county, Styria). b) The dolichopodidae *Syntormon pennatum* from the Southern Reichenstein (Gesäuse, Styria). c) *Chelifera subangusta* (Empididae) from the Hochtör-Ödstein group (Nationalpark Gesäuse, Styria). d) *Phaeobalia varipennis* (Empididae), collected in the Gößnitztal (Nationalpark Hohe Tauern, Carinthia). e) *Philosepedon mayeri* (Psychodidae) from the Haindlkar valley in the Nationalpark Gesäuse (Styria). f) *Thaumalea schmidi* (Thaumaleidae) from a young near-glacier spring in the Umbal valley (Nationalpark Hohe Tauern, Tyrol).

Abb. 2: Einige Dipteren, die in diesem Bericht erwähnt sind (Mikroskopaufnahmen). Alle Bilder: Christina Remschak. a) *Dixa dilatata* (Dixiden) aus dem Naturdenkmal Schwefelquelle bei Bad Mitterndorf (Ausseerland, Steiermark). b) Die Dolichopodide *Syntormon pennatum* vom südlichen Reichenstein (Gesäuse, Steiermark). c) *Chelifera subangusta* (Empididae) aus dem Gsengkar in der Hochtör-Ödsteingruppe im Nationalpark Gesäuse (Steiermark). d) Die Empidide *Phaeobalia varipennis* aus dem Gößnitztal bei Heiligenblut (Nationalpark Hohe Tauern, Kärnten). e) Die Schmetterlingsmücke *Philosepedon mayeri*, gefangen im Haindlkar im Nationalpark Gesäuse (Steiermark). f) *Thaumalea schmidi* (Thaumaleidae) aus einer jungen gletschnahen Quelle im Umbaltal (Venedigergruppe, Nationalpark Hohe Tauern, Osttirol).

Table 4: Annex: Complete listing of the species reviewed in this report (\* = not new for Austria, but species of particular interest)

Tabelle 4: Anhang: Gesamtliste der in diesem Bericht erwähnten Arten (\* = kein Neufund für Österreich, aber Art von besonderem Interesse)

<b>ANNEX: Complete listing of the reviewed species</b>
<b>Acari: Eupodides, Halacaroidea, Halacaridae</b>
<b>Halacaridae</b>
<i>Halacarellus fontinalis</i> Bartsch & Gerecke, 2010
<i>Porohalacarus alpinus brachypeltatus</i> Viets, 1927
<b>Acari: Anystides, Parasitengona, Hydrachnidia</b>
<b>Arrenuridae</b>
<i>Arrenurus leuckarti</i> Piersig, 1894
<i>Arrenurus truncatellus</i> (O. F. Muller, 1776)
<i>Arrenurus compactus</i> Piersig, 1894
<i>Arrenurus neumani</i> Piersig, 1895
<i>Arrenurus tubulator</i> (Müller, 1767)
<i>Arrenurus bifidicodulus</i> Piersig, 1897
<i>Arrenurus fontinalis</i> K. Viets, 1920
<i>Arrenurus mediorotundatus</i> Thor, 1898
<b>Aturidae</b>
<i>Aturus asserculatus</i> Walter, 1906
<i>Kongsbergia dentata</i> Walter, 1947
<i>Kongsbergia simillima</i> K. Viets, 1949
<b>Feltriidae</b>
<i>Feltria (Feltria) cornuta</i> Walter, 1927
<i>Feltria (Azugofeltria) motasi</i> (Schwoerbel, 1961)
<b>Hydryphantidae</b>
<i>Panisellus thienemanni</i> (K.Viets, 1920)
<i>Piersigia intermedia</i> Williamson, 1912
<i>Tartarothyas romanica</i> Husiatinschi, 1937
<i>Wandesia racovitzae</i> Gledhill, 1970
<b>Hygrobatidae</b>
<i>Atractides adnatus</i> Lundblad, 1956
<i>Atractides brendle</i> Gerecke, 2003
<i>Atractides</i> cf. <i>trapeziformis</i> Schwoerbel, 1961
<i>Atractides fissus</i> (Walter, 1927)
<i>Atractides macrolaminatus</i> Láska, 1956
<i>Atractides magnipalpis</i> Rensburg, 1971
<i>Atractides pumilus</i> (Szalay, 1946)
<i>Atractides spinipes</i> Koch, 1837
<i>Atractides allgaier</i> Gerecke, 2003

<i>Atractides remotus</i> Szalay, 1953
<i>Hygrobates setosus</i> Besseling, 1942
<i>Mixobates incurvatus</i> Láska, 1954
<b>Lebertiidae</b>
<i>Lebertia elsteri</i> Schwoerbel, 1957
<i>Lebertia bracteata</i> K.Viets, 1925
<i>Lebertia depressostriata</i> K.Viets, 1952
<i>Lebertia macilenta</i> K.H. Viets, 1926
<i>Lebertia mediterranea</i> Gerecke, 2009
<i>Lebertia salebrosa</i> Koenike, 1908
<i>Lebertia holsatica</i> K. Viets, 1920
<b>Mideopsidae</b>
<i>Mideopsis willmanni</i> (K.Viets, 1920)
<b>Pionidae</b>
<i>Acercopsis pistillifer</i> (Koenike, 1908)
<b>Sperchontidae</b>
<i>Sperchon longirostris</i> Koenike, 1895
<b>Unionicolidae</b>
<i>Neumania spinipes</i> (Müller, 1776)
<b>Crustacea: Copepoda</b>
<b>Copepoda</b>
<i>Acanthocyclops einslei</i> Mirabdullayev & Defaye, 2004
<i>Bryocamptus tatrensis</i> Minkiewicz, 1916
<i>Elaphoidella</i> sp. pp. <i>phreatica</i> (Chappuis, 1925)
<i>Moraria radovnae</i> Brancelj, 1988
<i>Paracyclops imminutus</i> Kiefer, 1929
* <i>Speocyclops cerberus</i> (Chappuis, 1934)
<b>Crustacea: Ostracoda</b>
<b>Cypridoidea</b>
<i>Cyclocypris globosa</i> (Sars, 1863)
<i>Cypria reptans</i> Bronstein, 1928
<i>Fabaeformiscandona holzkampfi</i> (Hartwig, 1900)
* <i>Fabaeformiscandona tyrolensis</i> (Loeffler, 1963)
<b>Insecta: Diptera</b>
<b>Chironomidae</b>
<i>Bryophaenocladus</i> (cf.) <i>illimbatus</i> (Edwards, 1929)
<i>Bryophaenocladus</i> (cf.) <i>musciicola</i> (Kieffer, 1906)
<i>Bryophaenocladus</i> (cf.) <i>vernalis</i> (Goetghebuer, 1921)
<i>Chaetocladus aedeagolobatus</i> Rossaro, Magoga et Montagna, 2017
<i>Chaetocladus gracilis</i> Brundin, 1956

<i>Chaetocladius longivirgatus</i> Stur & Spies, 2011
<i>Chaetocladius melaleucus</i> (Meigen, 1818)
<i>Chaetocladius minutissimus</i> (Goetghebuer, 1942)
<i>Chaetocladius subalpinus</i> Rossaro, Magoga et Montagna, 2017
<i>Corynoneura</i> sp. 21ES unpublished
<i>Heterotrissocladius</i> cf. <i>zierli</i> Stur & Wiedenbrug, 2005
<i>Krenosmittia</i> cf. <i>halvorseni</i> (Cranston & Saether, 1986)
<i>Limnophyes bidumus</i> Sæther, 1990
<i>Limnophyes</i> cf. <i>punctipennis</i> (Goetghebuer, 1919)
<i>Limnophyes difficilis</i> Brundin, 1947
<i>Limnophyes edwardsi</i> Sæther, 1990
<i>Limnophyes</i> sp. pr. <i>angelicae</i> / <i>cranstoni</i> / <i>spinigus</i> unpublished
<i>Meropelopia</i> nov.spec. unpublished
<i>Metriocnemus</i> cf. <i>inopinatus</i> Strenzke, 1950
<i>Metriocnemus</i> nov. spec. "Hüpf" unpublished
<i>Micropsectra bavarica</i> Stur & Ekrem, 2006
<i>Micropsectra pharetrophora</i> Fittkau & Reiss, 1999
<i>Micropsectra sofiae</i> Stur & Ekrem, 2006
<i>Neozavrelia</i> cf. <i>improvisa</i> Fittkau, 1954
<i>Parametriocnemus</i> cf. <i>stylatus</i> (Spärck, 1923)
<i>Procladius (Holotanypus) tatrensis</i> Gowin, 1944
<i>Prosmittia</i> nov. spec. „HÜPF“ unpublished
<i>Pseudosmittia albipennis</i> (Goetghebuer, 1921)
<i>Pseudosmittia</i> nov. spec. „URO“ unpublished
<i>Rheotanytarsus</i> sp. pr. <i>illiesi</i> Siebert, 1979
<i>Smittia</i> cf. <i>nudipennis</i> (Goetghebuer, 1913)
<i>Smittia</i> cf. <i>stercoraria</i> Rossaro & Lencioni, 2000
<i>Syndiamesa edwardsi</i> (Pagast, 1947)
<i>Thienemannia spiesi</i> Moubayed-Breil & Ashe, 2016
<i>Thienemanniella</i> sp. nov. pr. <i>caspersi</i> / <i>vittata</i>
<b>Dixidae</b>
<i>Dixa dilatata</i> Strobl, 1900
<i>Dixa serrifera</i> Edwards, 1928
<i>Dixella monticola</i> (Nielsen, 1937)
<i>Dixella nigra</i> (Stæger, 1840)
<b>Dolichopodidae</b>
<i>Syntormon pennatum</i> Ringdahl, 1920
<i>Syntormon denticulatum</i> (Zetterstedt, 1843)
<b>Empididae</b>
<i>Chelifera astigma</i> Collin, 1927

<i>Chelifera strobli</i> Wagner & Gerecke, 2008
<i>Chelifera subangusta</i> Collin, 1961
<i>Clinocera doriei</i> Vaillant, 1968
<i>Dolichocephala cavatica</i> (Becker, 1889)
<i>Hemerodromia laudatoria</i> Collin, 1927
<i>Phaeobalia varipennis</i> (Nowicki, 1868)
<b>Limoniidae</b>
<i>Antocha</i> sp. A (Reusch, 2012)
<i>Dicranophragma separatum</i> (Walker, 1848)
<i>Erioptera aletschina</i> Starý, 1997
<i>Gnophomyia lugubris</i> (Zetterstedt, 1838)
<i>Gonopyia (Gonomyia) abscondita</i> Lakschewitz, 1935
<i>Molophilus variispinus</i> (Tonnoir, 1921)
<i>Rhabdomastix (Lurdia) sublurida</i> Starý, 1971
<i>Tasiocera (Dasymolophilus) exigua</i> Savchenko, 1973
<b>Bolitophilidae</b>
<i>Bolitophila aperta</i> Lundstroem, 1914
<i>Bolitophila edwardsiana</i> Stackelberg, 1969
<i>Bolitophila rossica</i> Landrock, 1913
<b>Diadociidae</b>
<i>Diadocidia borealis</i> Coquillett, 1900
<b>Keroplastidae</b>
<i>Macrorrhyncha rostrata</i> (Zetterstedt, 1851)
<i>Macrorrhyncha collarti</i> (Tollett, 1955)
<b>Mycetophilidae Exechiinae</b>
<i>Allodia pyxidiiformis</i> Zaitzev, 1983
<i>Anatella bremia</i> Chandler, 1994
<i>Anatella emergens</i> Caspers, 1987
<i>Anatella novata</i> Dziedzicki, 1922
<i>Anatella longiflagellata</i> Caspers, 1991
<i>Cordyla parvipalpis</i> Edwards, 1924
<i>Exechia fulva</i> (Santos-Abreu, 1920)
<i>Exechia papyracea</i> Stackelberg, 1948
<i>Pseudesechia parallela</i> (Edwards, 1925)
<i>Rymosia acta</i> Dziedzicki, 1909
<i>Brevicornu cognatum</i> Ostroverkhova, 1979
<i>Brevicornu intermedium</i> (Santos-Abreu, 1920)
<b>Mycetophilidae Gnoristinae</b>
<i>Boletina griphoides</i> Edwards, 1925
<i>Boletina nigricans</i> Dziedzicki, 1885

<i>Boletina silvatica</i> Dziekzicki, 1885
<i>Creagdhubhia mallochorum</i> Chandler, 1999
<b>Mycetophilidae Leiinae</b>
<i>Docosia pallipes</i> Edwards, 1941
<i>Ectrepesthoneura gracilis</i> Edwards, 1928
<i>Novakia scatopsiformis</i> Strobl, 1893
<b>Mycetophilidae Mycetophilinae</b>
<i>Mycetophila abiecta</i> (Lastovka, 1963)
<i>Mycetophila attonsa</i> (Laffoon, 1957)
<i>Mycetophila brevitarsata</i> (Lastovka, 1963)
<i>Mycetophila czizeki</i> Landrock, 1911
<i>Mycetophila filiae</i> Zaitzev, 1998
<i>Mycetophila formosa</i> Lundstroem, 1911
<i>Mycetophila gibbula</i> Edwards, 1924
<i>Mycetophila mitis</i> Johannsen, 1912
<i>Mycetophila moravica</i> Landrock, 1915
<i>Mycetophila nigrofusca</i> Dziedzicki, 1884
<i>Mycetophila scotica</i> Edwards, 1941
<i>Mycetophila telei</i> Zaitzev, 1999
<i>Mycetophila zetterstedti</i> Lundstroem, 1906
<i>Mycetophila mikii</i> Dziekzicki, 1884
<i>Mycetophila immaculata</i> Dziekzicki, 1884
<i>Mycetophila flavolineata</i> (Bukowski, 1934)
<i>Mycetophila autumnalis</i> Landrock, 1911
<i>Phronia digitata</i> Hackman, 1970
<i>Phronia dziedzickii</i> Lundstroem, 1906
<i>Phronia elegans</i> Dziedzicki, 1889
<i>Phronia rauschi</i> Plassmann, 1990
<i>Phronia sylvatica</i> Dziedzicki, 1889
<i>Phronia avicula</i> Lundstrom, 1914
<i>Phronia minuta</i> Landrock, 1928
<i>Rymosia virens</i> Dziedzicki, 1909
<i>Sceptonia fumipes</i> Edwards, 1924
<i>Sceptonia membranacea</i> (Edwards, 1925)
<i>Trichonta aberrans</i> Lundstroem, 1911
<i>Trichonta bezzii</i> Landrock, 1912
<i>Trichonta bicolor</i> Landrock, 1912
<i>Trichonta brevicauda</i> Lundstroem, 1906
<i>Trichonta conjungens</i> Lundstroem, 1909
<i>Trichonta fissicauda</i> (Zetterstedt, 1852)

<i>Trichonta hungarica</i> Landrock, 1925
<i>Trichonta subfusca</i> Lundstroem, 1909
<i>Trichonta cavigera</i> Lundstrom, 1913
<i>Trichonta escisa</i> Lundstrom, 1916
<i>Trichonta nigritula</i> Edwards, 1925
<b>Mycetophilidae Mycomyinae</b>
<i>Mycomya heydeni</i> Plassmann, 1970
<i>Mycomya maculata</i> (Meigen, 1804)
<i>Mycomya tamerlani</i> Väisänen, 1984
<i>Mycomya neolittoralis</i> Vaisanen, 1984
<i>Mycomya pectinifera</i> (Edwards, 1925)
<b>Mycetophilidae Sciophilinae</b>
<i>Leptomorphus forcipatus</i> Landrock, 1918
<i>Polylepta borealis</i> Lundstroem, 1912
<i>Sciophila bicuspidata</i> Zaitzev, 1982
<b>Pediciidae</b>
<i>Dicranota (Paradicranota) minuta</i> Lackschewitz, 1940
<i>Ula (Ula) mixta</i> Stary, 1983
<b>Psychodidae</b>
<i>Berdeniella globulifera</i> Vaillant, 1976
<i>Berdeniella glacialis</i> (Vaillant, 1958)
<i>Pericoma crenophila</i> Wagner & Schrankel, 2005
<i>Pericoma pingarestica</i> Vaillant, 1978
<i>Pericoma ljubiliensis</i> Krek, 1967
<i>Peripsychoda fusca</i> (Maquart, 1826)
* <i>Philosepedon mayeri</i> (Satchell, 1955)
<i>Trichomyia stephani</i> Beran, Doczkal, Pfister & Wagner, 2010
<b>Sciaridae</b>
<i>Bradysia angustostylata</i> Menzel, 2005
<i>Bradysia breviallata</i> Mohrig & Menzel, 2002
<i>Bradysia fontinalis</i> Heller, 2012
<i>Bradysia kirstenae</i> Heller, 2012
<i>Bradysia lobulifera</i> Frey, 1948
<i>Bradysia longicauda</i> Mohrig & Menzel, 1990
<i>Bradysia maggiaensis</i> Mohrig & Röschmann, 1994
<i>Bradysia submorio</i> Mohrig & Krivosheina, 1983
<i>Bradysia trispinifera</i> Mohrig & Krivosheina, 1979
<i>Camptochaeta austriaca</i> Heller, 2012
<i>Claustropyga abblanda</i> (Freeman, 1983)
<i>Corynoptera barbata</i> Tuomikoski, 1960



<i>Corynoptera grothae</i> Mohrig & Menzel, 1990
<i>Corynoptera polana</i> Rudzinski, 2009
<i>Corynoptera sphenoptera</i> Tuomikoski, 1960
<i>Corynoptera tridentata</i> Hondru, 1968
<i>Corynoptera winnertzi</i> Mohrig, 1993
<i>Cratyna contracta</i> Mohrig & Röschmann, 1996
<i>Epidapus lucifuga</i> (Mohrig, 1970)
<i>Leptosciarella gretae</i> Heller, 2012
<i>Leptosciarella multispinosa</i> (Mohrig & Mamaev, 1985)
<i>Leptosciarella subspinulosa</i> (Edwards, 1925)
<i>Scatopsiara subcalamophila</i> Menzel & Mohrig, 1991
<i>Trichosia discolor</i> (Lengersdorf, 1928)
<i>Trichosiopsis antimelanoma remschakae</i> unpublished
<i>Xylosciara heptacantha</i> Tuomikoski, 1957
<i>Zygoneura calthae</i> Tuomikoski, 1960
<b>Simuliidae</b>
* <i>Simulium (Trichodagmia) auricoma</i> Meigen, 1818
<i>Simulium bavaricum</i> Seitz & Adler, 2009
<i>Simulium rubzovianum</i> (Sherban, 1961)
<i>Simulium hasekei</i> Seitz & Adler & Remschak, 2021
<i>Simulium maritimum</i> (Rubtsov, 1956)
<i>Simulium petricolum</i> (Rivosecchi, 1963)
<i>Simulium arminii</i> Seitz & Adler 2017
<i>Simulium urbanum</i> Davis, 1966
<b>Syrphidae</b>
<i>Melanostoma certum</i> Haarto & Ståhls, 2014
<b>Thaumaleidae</b>
<i>Thaumalea decussiferens</i> (Vaillant, 1969)
<i>Thaumalea dinarica</i> Schmid, 1958
* <i>Thaumalea schmidi</i> Martinovsky & Rozkosny, 1976
<i>Thaumalea tatriva</i> Vaillant, 1969
<b>Tipulidae</b>
* <i>Tipula (Savtshenkia) tulipa</i> Dufour, 1983
<b>Insecta: Hemiptera</b>
<b>Corixidae</b>
* <i>Arctocorisa carinata carinata</i> (C. R. Sahlberg, 1819)
<b>Insecta: Plecoptera</b>
<b>Leuctridae</b>
<i>Leuctra astridae</i> Graf, 2005

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