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New Records of Mayflies from Austria (Insecta: Ephemeroptera)

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A b s t r a c t : This paper provides data on new and additional records of mayflies for Austria. *Ametropus fragilis*, *Baetopus tenellus* and *Rhithrogena doriei* represent new records for Austria. *Rhithrogena germanica* has been rediscovered, the only confirmed record for this species dating back to the 19th century. New distributional records for the Burgenland include *Ecdyonurus macani*, *Ecdyonurus torrentis*, *Epeorus assimilis*, *Ephemerella mucronata* and *Caenis luctuosa*. New distribution data are provided for *Centroptilum pulchrum* (2nd record), *Habroleptoides auberti* and *Ecdyonurus subalpinus*. At present 118 nominal mayfly taxa documented by reference specimens are known from Austria

Introduction

The last available checklist for Austria (BAUERNFEIND et al. 1995) included 113 species of mayflies. Another two species (*Ecdyonurus parahelveticus*, *Habroleptoides auberti*) have since been recorded by WEICHELBAUMER (1997) from Northern Tyrol. Distributional data for the 9 counties (Bundesländer) have been provided by BAUERNFEIND & WEICHELBAUMER (1994) and the present status has been discussed lately for Carinthia (WEICHELBAUMER & BAUERNFEIND 1999) and Upper Austria (BAUERNFEIND & WEICHELBAUMER 2002 in press).

New material became available from various collecting trips between 1998-2002 as well as from limnological projects (Dr. Marianne Katzmann, Prof. Dr. Johann Waringer). For methods of collecting see KOVÁCS et al. (1998) and BAUERNFEIND & MOOG (2000).

Reference specimens from the material have been preserved in 70% ethanol and housed in the Mátra Museum (MM; Gyöngyös, Hungary) and in the Naturhistorisches Museum Wien (NMW; coll. Bauernfeind, Wien, Austria). Nomenclature follows BAUERNFEIND & HUMPEŠCH (2001).

A b b r e v i a t i o n s : AA (András Ambrus), BK (Károly Bánkuti), EB (Ernst Bauernfeind), JP (Péter Juhász), KB (Zsuzsanna Benkó Kovácsné), KT (Tibor Kovács), WR (Walter Reisinger).

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Results and discussion

Family *Ametropodidae*

Ametropus fragilis ALBARDA 1878

Material: 1 larva, Rosendorf / Lafnitz, 20.04.2000; leg. KB & KT (NMW)

Ametropus fragilis has recently been recorded from Germany (Lausitzer Neisse, Brandenburg; BERGER & ROTHE 1999) and represents a rather rare and endangered species (SOWA 1992, RUSSEV & VIDINOVA 1994). Larvae are sand dwelling (psammophilic), rheophilic and are considered to inhabit the potamon section of larger lowland rivers. The new record underlines the outstanding importance of the river Lafnitz in terms of faunistics and nature preservation. Previous papers (BAUERNFEIND & WEICHSELBAUMER 1991, 1994; GRAF 1997) have already reported findings of several rare or endangered species from this site: *Baetis vardarensis*, *Centroptilum pulchrum*, *Oligoneuriella rhenana*, *Ecdyonurus aurantiacus*, *Heptagenia coerulans*, *Heptagenia longicauda*, *Potamanthus luteus*, *Ephoron virgo*, *Ephemerella mesoleuca*, *Ephemerella notata* and *Brachycercus harrisellus*. KOVÁCS & AMBRUS (2001) recorded 23 species from the Hungarian section of the river at Szentgotthárd. Distribution data and biology of *Ametropus fragilis* have recently been summarized by BERGER & ROTHE (1999).

Family *Baetidae*

Baetopus tenellus (ALBARDA 1878)

Material: 1 ♂ imago [damaged], Angern / March, 20.6.2002; 1 ♀ imago, 1 ♀ subimago, Angern / March, 26.6.2002, light trap catches, leg. Waringer & Eisendle, det. EB (NMW)

Baetopus tenellus has been recorded from the River Danube in the immediate vicinity of the Austrian border (Bavaria; WEINZIERL & SEITZ 1993) and the species was already expected to occur in Austria as well (BAUERNFEIND 2002 in press). *Baetopus tenellus* represents a rather rare (and geographically restricted) species (MALZACHER et al. 1998). Larvae are potamobiontic and litho - rheophilic (HAYBACH 1998). Distribution data and biology of *Baetopus tenellus* have been summarized by WEINZIERL & SEITZ (1993).

Centroptilum pulchrum EATON 1885

Material: 1 larva [badly damaged], Wien Auhof / Wienfluß, [W4-BV-St2.], leg. M. Katzmann, det. EB (NMW).

Identification rests on the morphology of gill VI and VII. The single previous record from Austria was collected from the River Lafnitz (BAUERNFEIND & WEICHSELBAUMER (1994). *Centroptilum pulchrum* represents a rare and (probably) endangered species (MALZACHER et al. 1998) in Central Europe. Larvae are considered to inhabit submerged plants in lenitic stretches of lowland rivers. Distribution data and pertinent publications have been summarized by HAYBACH (1998).

Family H e p t a g e n i i d a e

Epeorus assimilis (EATON 1871)

M a t e r i a l : 2 larvae, Kobersdorf / Schwarzenbach, 13.5.1998, leg. AA, BK, KT (MM).

This widespread and rather common species has not been recorded from Burgenland up to now, obviously due to the very limited sampling in this area. It is expected to occur at many suitable sites throughout the hilly parts of the county. Larvae are litho-rheophilic, moderately cold adapted and prefer the ripple sections of streams and rivers.

Rhithrogena germanica EATON 1885

M a t e r i a l : 1 ♂ imago (reared from subimago, WR phot.), Amstetten / Ybbs, 16.3.2002, leg. WR., det. WR (NMW)

The single previous record from Austria dates back to the 19th century (River Danube; BAUERNFEIND 1990) and the population was considered probably extinct. In Central Europe *Rhithrogena germanica* represents a very rare and highly endangered species (MALZACHER et al. 1998). Larvae are rheophilic and inhabit the ripple section of larger rivers (potamal), but ecological requirements are but poorly understood at present. Actual records include tributaries of the River Rhine in Switzerland (distribution map see SARTORI & LANDOLT 1999), France (for a distribution map see MASSELOT 2001) and Germany (Bavaria, Hessa; HAYBACH & MALZACHER 2002). Identification of larvae and females proves sometimes rather difficult and some unpublished previous records of sightings in Austria (without reference specimens) have been discarded as based possibly on misidentifications (EB).

Rhithrogena doriei SOWA 1971

M a t e r i a l : 2 nymphs, Rettenbach Alm / Zubringer Rettenbach, 26.4.2002, leg. EB; 1 ♂, 1 ♀, 1 nymph, Rettenbach Alm / Zubringer Rettenbach, 12.6.2002, leg. WR (NMW)

Rhithrogena doriei has been recorded so far from France (la Leysse à Chambéry, Savoie; locus typicus) and Switzerland (SARTORI & LANDOLT 1999), and has recently been confirmed for Germany (DORN 1999). A hitherto unpublished record (larva) from Austria (Vorarlberg) has been communicated by Hutter & Römer (pers. comm.) The species is supposedly confined to the upper reaches (epirhithral) of small or medium sized rivers between 400-1400 m altitude. Larvae are litho-rheophilic and cold stenothermic, but ecological requirements are only poorly understood at present.

Ecdyonurus macani THOMAS & SOWA 1970

M a t e r i a l : 1 larva, Liebing / Güns, 13.5.1998, leg. AA, BK, KT; 6 larvae, Königsdorf / Lafnitz, 20.4.2000, leg. KBZ, KT; 1 larva, Rosendorf / Lafnitz, 20.4.2000, leg. KBZ, KT; 1 larva, Steinberg-Dörfel / Rabnitz, 13.5.1998, leg. AA, BK, KT; 1 larva, Stoob / Stooberbach, 13.5.1998, leg. AA, BK, KT (MM).

In Austria this species has only been recorded from Lower and Upper Austria up to now. It is expected to occur as well at other suitable sites throughout Austria up to (?) 350 m altitude. Larvae are supposed to prefer smaller, ecologically intact, rivers and streams intersecting broadleaf woodlands, probably restricted to sandstone and limestone areas

similar to the Wienerwald district near Vienna. Occasionally also found in larger rivers. For the distribution in Europe see HAYBACH (1998).

***Ecdyonurus subalpinus* Klapálek 1905**

M a t e r i a l : 1 larva, Liebing / Güns, 13.05.1998; leg. AA, BK, KT. 1 larva, Marz / Marzer Bach, 13.05.1998; leg. AA, BK, KT. 1 larva, Windisch Minihof / Doiber Bach, 06.05.1999; leg. AA, KT (MM).

For Austria only two records have been published so far (BAUERNFEIND 1990, BAUERNFEIND & WEICHSELBAUMER 1994), both from the Burgenland. The population in the southeast of Austria is probably more nearly related to *E. siveci*, but more material is necessary to clear the taxonomic situation of *E. subalpinus* and allied forms. Larvae are most probably restricted to the upper reaches (epirhithral) of small streams and rivulets in wooded areas. For the distribution in Europe see HAYBACH (1998).

***Ecdyonurus torrentis* KIMMINS 1942**

M a t e r i a l : 1 larva, Kobersdorf / Schwarzenbach, 13.5.1998, leg. AA, BK, KT; 1 larva, Langeck / Zöberrbach, 13.05.1998, leg. AA, BK, KT (MM).

In Austria this widespread and rather common species has up to now only been recorded from the district of Vienna as well as from Lower and Upper Austria. It is expected to occur at many suitable sites throughout Austria up to (?) 500 m altitude. Larvae are supposed to prefer smaller, ecologically intact, rivers and streams intersecting broadleaf woodlands, probably restricted to sandstone and limestone areas similar to the Wienerwald district near Vienna. For the distribution in Europe see HAYBACH (1998).

Family Leptophlebiidae

***Habroleptoides auberti* (BIANCHERI 1954)**

M a t e r i a l : 4♂♂, 2♀♀, Mitterweißenbach / Traun, 1.6.1990, leg. EB; 3♂♂, 3♀♀, Rettenbach Alm / Zubringer Rettenbach, 15.6.2001, leg. EB; 5 larvae, Rettenbach Alm / Zubringer Rettenbach, 15.5.2002, leg. WR; 3♀♀ subimagines, 1 nymph, Rettenbach Alm / Zubringer Rettenbach, 12.6.2002, leg. WR (phot. WR; NMW).

Habroleptoides auberti has so far been recorded from Italy (BELFIORE 1995), France (only one département, see MASSELOT 2001), Switzerland (locus typicus: Vallorbe; for a distribution map see SARTORI & LANDOLT 1999), and has recently been confirmed for Germany (DORN & WITTLING 1999). The first record for Austria was published by WEICHSELBAUMER (1997) from Stanser Bach, Tyrol. A hitherto unpublished record was communicated by Hutter (pers. comm.) from Vorarlberg. Collection sites in Upper Austria (see above) are the most south-eastern records so far. The species is supposedly cold-adapted (stenothermic) and confined to the upper reaches (epirhithral) of small or medium sized rivers between 400-1200 m altitude. Larvae live among woody debris, rotting logs and in crevices of stones, ecological requirements are only poorly understood at present. Sympatry with *Habroleptoides confusa* has been observed in Switzerland and Germany (see above).

Family Ephemere llid ae

Ephemerella mucronata (BENGTSSON 1909)

Material: 8 larvae, Kobersdorf / Schwarzenbach, 13.5.1998, leg. AA, BK, KT; 1 larva, Königsdorf / Lafnitz, 20.4.2000, leg. KBZ, KT; 1 larva, Langeck / Zöbembach, 13.5.1998, leg. AA, BK, KT; 3 larvae, Liebing / Güns, 13.5.1998, leg. AA, BK, KT; 1 larva, Marz / Marzer Bach, 13.5.1998, leg. AA, BK, KT; 1 larva, Rosendorf / Lafnitz, 20.4.2000, leg. KBZ, KT; 2 larvae, Burgau / Lafnitz, 20.3.2002, leg. AA, JP, KT 3 larvae, Steinberg-Dörfel / Rabnitz, 13.5.1998, leg. AA, BK, KT; 1 larva, Stöb / Stöberbach, 13.5.1998, leg. AA, BK, KT (MM).

This widespread and rather common species has not been recorded from Burgenland so far, obviously due to the very limited sampling in this area. It is expected to occur at suitable sites throughout the more hilly parts of the county. Larvae are usually moss dwelling, moderately rheophilic and cold adapted, but may be found on various substrates. In central Europe they prefer streams and rivers of submontane (to alpine) elevation about 500-1000 m. Occurrence in lowland rivers (as documented above: Rosendorf / Lafnitz) is quite remarkable, where the species has been found together with *E. notata* (see below), living on detritus and woody debris. It is rather interesting that similar circumstances have been reported from Poland (Haybach, in litt.).

From Hungary all records belong to the area bordering on Burgenland, from streams and rivers rising in Austria: Gyöngyös - 270m, Lajta - 122m (KOVÁCS et al. 1998); Lapincs - 215m, Rába - 207-215m (KOVÁCS & AMBRUS 2001); Pinka - 190m (KOVÁCS & AMBRUS in press). From all these localities the species was found several times only in the stream Gyöngyös. KOVÁCS et al. (1998) proposed the possibility of accidental occurrence caused by floods (in upstream tributaries) in connection with the specimens recorded from the River Lajta.

Ephemerella notata EATON 1887

Material: 1 larva, Kobersdorf / Schwarzenbach, 13.5.1998, leg. AA, BK, KT; 3 larvae, Königsdorf / Lafnitz, 20.4.2000, leg. KBZ, KT; 3 larvae, Rosendorf / Lafnitz, 20.4.2000, leg. KBZ, KT; 1 larva, Burgau / Lafnitz, 20.3.2002, leg. AA, JP, KT; 2 larvae, Steinberg-Dörfel / Rabnitz, 13.5.1998, leg. AA, BK, KT (MM).

Only very few records have been published so far from Austria (Burgenland), one unpublished record from Upper Austria (River Naarn) has been communicated by Graf (pers. comm.). Larvae live mostly among submerged plants or roots in the potamal section of lowland rivers. Populations are patchily distributed and may reproduce parthenogenetically (summarized by HAYBACH 1998).

Family Caenid ae

Caenis luctuosa (BURMEISTER 1839)

Material: 3 larvae, Apetlon / Warmsee, 13.5.1998, leg. AA, BK, KT; 1 larva, Doiber / Doiber Bach, 24.6.1998, leg. AA, BK, KT; 2 larvae, Neumarkt / Raab, 24.6.1998, leg. AA, BK, KT (MM, NMW).

In Austria this widespread and rather common species has up to now only been recorded from Lower and Upper Austria. It is expected to occur at many suitable sites throughout

Austria up to (?) 500 m altitude. Larvae live in eutrophic watercourses among submerged plants and in silty stretches, are relatively pollution tolerant and (probably) prefer still-waters.

Zusammenfassung

Neue Nachweise von Eintagsfliegen (Insecta, Ephemeroptera) für Österreich.

Zur Aktualisierung der letzten verfügbaren Artenliste der Eintagsfliegen Österreichs nach Bundesländern (BAUERNFEIND & WEICHSELBAUMER 1994) werden publizierte Nachweise und unpublizierte Neufunde kurz zusammengefasst. Hinweise zur Ökologie und aktuelle Angaben zur außerösterreichischen Verbreitung sollen auch dem Nichtspezialisten die Orientierung erleichtern.

Ametropus fragilis, *Baetopus tenellus* und *Rhithrogena doriei* werden erstmalig für Österreich nachgewiesen. Die seit dem 19. Jahrhundert verschollene Art *Rhithrogena germanica* konnte wieder aufgefunden werden. Erstnachweise für das Burgenland sind *Ecdyonurus macani*, *Ecdyonurus torrentis*, *Epeorus assimilis*, *Ephemerella mucronata* und *Caenis luctuosa*. Für *Centropilum pulchrum*, *Ecdyonurus subalpinus* und *Ephemerella notata* werden neue Fundorte aufgelistet. Derzeit sind damit 118 nominale Eintagsfliegen - Taxa durch Belegexemplare für Österreich dokumentiert.

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