

First record of *Labiobaetis atrebatinus* (Eaton, 1870) in Germany (Insecta: Ephemeroptera: Baetidae)

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With 3 figures

Keywords: Labiobaetis, Ephemeroptera, Wiese, Rhine, Black forest, Baden-Württemberg, Germany, distribution, new record, faunistics

Schlagwörter: Labiobaetis, Ephemeroptera, Wiese, Rhein, Schwarzwald, Baden-Württemberg, Deutschland, Verbreitung, Neufund, Faunistik

In September 2019, 4 nymphs of *Labiobaetis atrebatinus* were recorded in Germany for the first time. They were found in the river Wiese, a tributary of the river Rhine in the Black forest.

1 Introduction

The mayfly fauna in Germany encompasses about 116 species (Haybach 2013). The Wiese River is a 57 km stream in Baden-Württemberg that flows in the Rhine in Basel (Switzerland). It shelters the only Swiss populations of *Ecdyonurus insignis* Eaton, 1870 and *Electrogena affinis* (Eaton, 1883). *Labiobaetis atrebatinus* was described from England (Eaton, 1870). On the continent, it is known in Bulgaria, Spain, France, Lithuania, Latvia, Portugal, Poland, Russia, Slovakia (Bauernfeind & Soldán 2012), Mongolia, North Korea and Japan (Aydinli & Ertorun 2015), and was found for the first time in 2010 in Belgium (Lock & Goethals 2011), in 2012 in Turkey (Aydinli & Ertorun 2015) and in 2017 in Switzerland (Wagner 2018).

2 Methods

In September 2017, *L. atrebatinus* was found for the first time in the south of the Swiss Jura. In 2018 and 2019, samples were made in the entire range of the Swiss Jura to better know its distribution. In September 2019, one kick-sampling was made in the Wiese in Germany and two kick-samplings in the Swiss part of the Wiese where *L. atrebatinus* was found in all places.

3 Identification characters

The main nymphal characters are: antennal scape with apicolateral lobe, segment 2 of maxillary palp with a prominent incurvation on inner margin, segment 2 of labial palp with considerably developed apico-internal lobe, labrum with 1 + (15-20) bristles, mostly bidentate or multidentate apically (See figs 1, 2, 3, 14, 15 in Wagner 2018). Nymphs and imago females with a pair of light markings on the abdominal tergites (Fig. 1). Imago males reared from Swiss Jura with two pairs of dark markings on light tergites 2-6 and red-brown tergites 7-10 (Fig. 2). Hind wing without costal process (Fig. 3).



Fig. 1-3: *Labiobaetis atrebatinus*. Fig.: 1: Imago female, Fig. 2: Imago male, Fig. 3: Hind wing

4 Results

Four nymphs were found in the stream Wiese in Shopfheim, Baden-Württemberg. (N 47.6509° E 7.7987°, 526 m ASL). This discovery is the first mentioned of species for Germany. We found the 4 *L. atrebatinus* in association with 1 *Alainites muticus* (Linné, 1758), 17 *Baetis fuscatus* (Linné, 1760), 34 *Baetis liebenauae* Keffermüller, 1974, 6 *Baetis lutheri* Müller-Liebenau, 1967, 65 *Baetis rhodani* (Pictet, 1843), 60 *Baetis scambus* Eaton, 1870, 1 *Centroptilum luteolum* (Müller, 1776), 2 *Procloeon bifidum* (Bengtsson, 1912), 86 *Procloeon pennulatum* (Eaton, 1870), 32 *Ecdyonurus dispar* (Curtis, 1834), 6 *Ecdyonurus venosus* (Fabricius, 1775), 1 *Epeorus assimilis* Eaton, 1881, and 2 *Serratella ignita* (Poda, 1761).

5 Discussion

Until recently, *L. atrebatinus* was known mostly at low altitude, below 100 m ASL in England and below 250 m in France. The altitude of many new known localities seriously increases the altitudinal range since a few years. Wiese (D/CH) 250-526 m; Birse (CH) 386 m; Vendline (CH) 430 m; Alaine (CH) 446-478 m; Lot (F): 632 m; Areuse (CH) 722 m; Orbe (F/CH) “continuous” colonization over 10 km from 1005–1058 m; Doubs (F/CH) several samples with numerous nymphs from 430 to 550 m, but no sample was made at a higher altitude where the species is supposed to be.

The colonized streams are 1-40 m wide with usually abundant populations. *L. atrebatinus* lives with many species with Saprobic Index from 2.1 to 2.4 (β -mesosaprobic to mesosaprobic): *Baetis rhodani* (2.1), *Serratella ignita* (2.1), *Baetis fuscatus* (2.2), *Baetis vardarensis* Ikononov, 1962 (2.2), *Baetis vernus* (Curtis, 1834) (2.3), *Procloeon pennulatum* (2.3), *Baetis buceratus* Eaton, 1870 (2.4). As it seems to be in expansion in many countries, in different kinds of streams and as the populations are often numerous, it is likely that the species will continue to colonize new streams and rivers in Germany and elsewhere.

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Received/Accepted: 2019-10-18