

Zeitschrift: Mitteilungen der Schweizerischen Entomologischen Gesellschaft =
Bulletin de la Société Entomologique Suisse = Journal of the Swiss
Entomological Society

Herausgeber: Schweizerische Entomologische Gesellschaft

Band: 88 (2015)

Heft: 3-4

Artikel: First record of *Euophyrum confine* (Broun, 1881) (Coleoptera,
Curculionidae : Cossoninae) in Switzerland

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DOI: <https://doi.org/10.5169/seals-583855>

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First record of *Euophryum confine* (Broun, 1881) (Coleoptera, Curculionidae: Cossoninae) in Switzerland

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The weevil *Euophryum confine* (Broun, 1881), native to New Zealand, was recorded for the first time in Switzerland. Two specimens were caught in pitfall traps installed in allotment gardens in the city of Zurich.

Keywords: Adventive species, distribution, garden, neozoa, urban environment, new record, Switzerland

INTRODUCTION

The first checklist of Swiss weevils was published in 2010 (Germann 2010) and was supplemented by two additional summarizing contributions (Germann 2011, 2013). The list has been further expanded with records of single species in the frame of taxonomical and faunistical studies (Germann & Wymann 2014; Germann 2014a; Germann 2014b, Germann 2014c; Pedroni & Bariffi 2014, Giusto & Germann 2015). As of September 2015, there are 1077 known taxa (species and subspecies) of Curculionoidea (weevils sensu lato) in Switzerland. A subfamily of Curculionoidea is Cossoninae, of which 24 species are present in Switzerland, with members generally living on dead or dying wood.

Part of the Cossoninae subfamily is the genus *Euophryum*, which is represented by *E. rufum* (Broun, 1880). There are three known species in the genus *Euophryum* (Thompson, 1989) with two native to New Zealand (*E. rufum* and *E. confine* (Broun, 1881)) and a third that is exclusively known from Chile (*E. chilense* Thompson, 1989). There has been one record of *E. rufum* in Switzerland, which was reported by Linder (1968) who mentioned the discovery of one specimen by Alexander Von Peez near Clarens on the 21st June 1942. Folwaczny (1973) also mentioned this discovery and described the location more precisely as the Gorges du Chaudron above Montreux-Territet in the Canton Vaud. Until now, there have been no records of *E. confine* or *E. chilense* in Switzerland.

Euophryum confine is native to the northern island of New Zealand (Auckland and Wellington) (Thompson 1989). It was accidentally introduced to Europe and recorded for the first time in Great Britain in the 1940's (Allen 1942, 1944; Buck 1948), followed by a record from Ireland in the 1950's (McClenaghan 1987).

Since then, the species has appeared in several Western and Central European countries: namely France (Pas-de-Calais: Menet 1998; Alsace: Schott 1999), Austria (Burgenland, Kärnten, Tirol, and Wien: Schuh 2007), Germany (Bremen, Schleswig-Holstein, Rheinland-Pfalz; Katschak 2008), Czech Republic, Belgium and Denmark (Hlaváč & Maughan 2013). The species has also been recorded in Canada (Newfoundland) with records dating from 1978 (Bright *et al.* 1992).

Euophryum confine has been found in rotten, partly damaged or dying wood, or under the bark of a variety of deciduous trees (*Aesculus*, *Corylus*, *Quercus*, *Salix*, *Ulmus*) and conifers (*Larix*, *Pinus*) in natural habitats in Europe, but also on trees and shrubs in parks (Esser 1998, McClenaghan 1987) and avenues (Hum *et al.* 1980). The species has also been collected from litter (Thompson 1989, Schuh 2007). Indoor records come from damaged timber (Read 1984), furniture (Anderson 1984), boards (Morgan 1978) and dried fruits (Buck 1948).

MATERIAL & METHODS

An arthropod survey was conducted within the frame of the Sinergia SNF project BetterGardens (www.bettergardens.ch) led by the Research Institute of Organic Agriculture (FiBL) in collaboration with the Swiss Federal Research Institute (WSL). The survey was carried out in 85 urban gardens distributed across the city of Zurich, which consisted of 43 private gardens, 41 allotment gardens and one school garden. Within each garden, surface dwelling arthropods were caught using six 70 mm diameter pitfall traps covered with transparent roofs as rain protection. Each trap was filled with 0.2 % Rocima solution (bactericide and fungicide from Acima, Buchs, Switzerland) and placed in the most typical and abundant garden habitats; namely lawn, flower- or vegetable-bed and berry cultivations, along a management intensity and structural complexity gradient ranging from extensive and structurally rich to intensive and structurally poor. Within each garden habitat, traps were arranged in two equilateral triangles with a side length of 1 m or in lines of 1 m in length, where the arrangement in triangles was not possible. Traps were emptied on a weekly basis between 18 May 2015 and 19 August 2015. Trapped arthropods were sorted in the lab into specific orders and/ or families and sent to specialists for further determination.

RESULTS

Two female individuals of *Euophryum confine* were sampled in two allotment gardens in the western part of the city of Zurich in May 2015. After preparation of the female genital organs, the spermatheca was compared with the illustrations by Thompson (1989), which enabled attribution of the specimens to the «northern form» of *E. confine* (Fig. 1). The following section summarizes the records:

1. Switzerland, city of Zurich, allotment garden area «Vulkan», N 47° 23' 44.27", E 8° 28' 39.25", 394 m, 25 Mai 2015, 1 ♀, pitfall trap placed in a vegetable bed (det. C. Germann).

2. Switzerland, city of Zurich, allotment garden area “Herrenbergli”, N 47° 23' 38.40", E 8° 28' 5.38", 426 m, 25 Mai 2015, 1 ♀, pitfall trap placed in a meadow (det. C. Germann).

The specimens of *Euophryum confine* are conserved in the first author's collection and in the collection of the Natural History Museum Bern.



Fig. 1. Habitus of *Euophryum confine* (Broun, 1881), city of Zurich (Photo: C. Germann).

DISCUSSION

In this contribution, we report the first discovery of individuals of *Euophryum confine* in Switzerland, which is the second species within the genus *Euophryum* to be discovered in Switzerland. Both trap sites in which individuals of *Euophryum confine* were captured lay in structurally rich and extensively managed gardens and were close to dead wood that had been deliberately placed within the gardens as refuges for animals.

Comparison of the spermatheca with the illustrations by Thompson (1989) enabled attribution of the specimens to the morphologically weakly differentiated «northern form» of *E. confine*. All closely examined European records have been attributed to this northern form (Thompson 1989).

Euophryum confine has been reported in three adjacent countries to Switzerland, so the discovery of the species in Switzerland was to be expected. The two specimens found in allotment gardens in Zurich, although of low predictive value, do not indicate an invasive potential of this neozoon in Switzerland (or in this climatic zone) due to their rarity. Furthermore, the first species of *Euophryum* (*E. rufum*) to be discovered in Switzerland did not become an invasive species.

We conclude that the likelihood of *E. confine* becoming an invasive species in Switzerland is rather low, and rather give it the preliminary classification of an inconspicuous, rather harmless neozoon.

ACKNOWLEDGEMENTS

The BetterGardens'-project is financed by the Swiss National Science Foundation (Sinergia) (no. 154416). We thank Giulia Benazzi, Sofia Mangili and Simon Tresch for the data sampling, sorting work and the help in the field; the garden owners and the Swiss allotment garden association (Schweizer Familiengärtner-Verband) and their local sections for providing access to their properties; and Grün Stadt Zurich for their support, Robert Home for the revision of the English version of the manuscript and a referee for his helpful comments on the manuscript.

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(received October 2, 2015; accepted October 19, 2015; published December 31, 2015)