

***Argyroploce arbutella* (Tortricidae) associated with a montane peat bog in the Šumava Mountains, Czech Republic**

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Summary. The boreo-alpine tortricid moth *Argyroploce arbutella* (Linnaeus, 1758) seems to be a characteristic cold-adapted species associated with dry stony and rocky treeless habitats. The host plant is usually *Arctostaphylos uva-ursi* (L.), which does not occur on peatbogs. In the Šumava Mts. (SW Bohemia, Czech Republic), an isolated but abundant *A. arbutella* population was discovered in a montane peatbog Chalupská sláň Nature Reserve near Borová Lada, at an altitude of 930 m. The only local host plant is *Vaccinium vitis-idaea* (L.), associated with the treeless central parts of the bog ecosystem. Adults are diurnal and heliophilous, flying from June to August. This Šumava bog population is unique in the Czech Republic. The nearest Austrian and German populations of *A. arbutella* are recorded from the montane rocky and scree communities with *Arctostaphylos* only. There are no other records of a tyrphophilous association of *A. arbutella* with peatlands.

Zusammenfassung. Die boreoalpine Tortricide *Argyroploce arbutella* (Linnaeus, 1758) scheint eine kalt-stenotherme, an trocken-steinige und baumfreie Felszonen adaptierte Art zu sein. Die gewöhnliche Futterpflanze ist *Arctostaphylos uva-ursi* (L.), die nicht in Torfmooren vorkommt. Im Šumava Gebirge (SW Böhmen, Tschechische Republik) wurde eine isolierte, individuenstarke Population von *A. arbutella* auf einem Hochmoor entdeckt – Naturschutzgebiet Chalupská sláň bei Borová Lada, 930 m NN. Die einzige örtliche Futterpflanze ist *Vaccinium vitis-idaea* (L.), die mit den baumfreien Bereichen des Ökosystems Torfmoor assoziiert ist. Die Falter sind tagaktiv und heliophil, und sie fliegen von Juni bis August. Dieses Vorkommen der Art im Šumava Moor ist einzigartig für die Tschechische Republik. Die nächstgelegenen österreichischen und deutschen Populationen von *A. arbutella* sind von montanen, felsigen und steinigen Habitaten mit ausschließlichem Vorkommen von *Arctostaphylos* bekannt. Es sind bisher keine weiteren Vergesellschaftungen von *A. arbutella* mit Torfmooren bekannt.

Résumé. Le tortricide boréo-alpin *Argyroploce arbutella* (Linnaeus, 1758) semble être une espèce caractéristique adaptée au froid dans des habitats pierreux et rocheux, découverts et secs. La plante-hôte est d'ordinaire *Arctostaphylos uva-ursi* (L.), qui ne pousse pas dans les tourbières. Dans les Monts Šumava (sud-ouest de la Bohème, République Tchèque), une population isolée mais abondante de *A. arbutella* a été découverte dans une tourbière de montagne – Chalupská sláň près de Borová Lada,

à 930 m d'altitude. La seule plante-hôte locale est *Vaccinium vitis-idaea* (L.), associée à la zone centrale de la tourbière dépourvue d'arbres. Les adultes diurnes et héliophiles volent de juin à août. Cette population de la tourbière de Šumava est unique en République Tchèque. Les populations les plus proches de *A. arbutella*, en provenance d'Autriche et d'Allemagne, sont recensées de communautés à rochers et éboulis avec seulement *Arctostaphylos*. Il n'y a pas d'autres citations d'association tyrrhophile de *A. arbutella* avec des zones à tourbières.

Key words: Tortricidae, *Argyroplote*, *arbutella*, peatbogs, Czech Republic.

Introduction

The boreo-alpine tortricid moth *Argyroplote arbutella* (Linnaeus, 1758) is a cold-adapted species associated with the rocky habitats of northern Europe and some European highlands (Kennel, 1916; Krogerus, 1972; Bradley *et al.*, 1979; Koponen *et al.*, 1982; Razowski, 1983). In the Czech Republic, this species was discovered in the Šumava Mts. (ca. 1930) and an old record is known from the Krušné hory Mts. in NW Bohemia (Sterneck & Zimmermann, 1933; Klimesch, 1974) (fig. 1). Closest localities

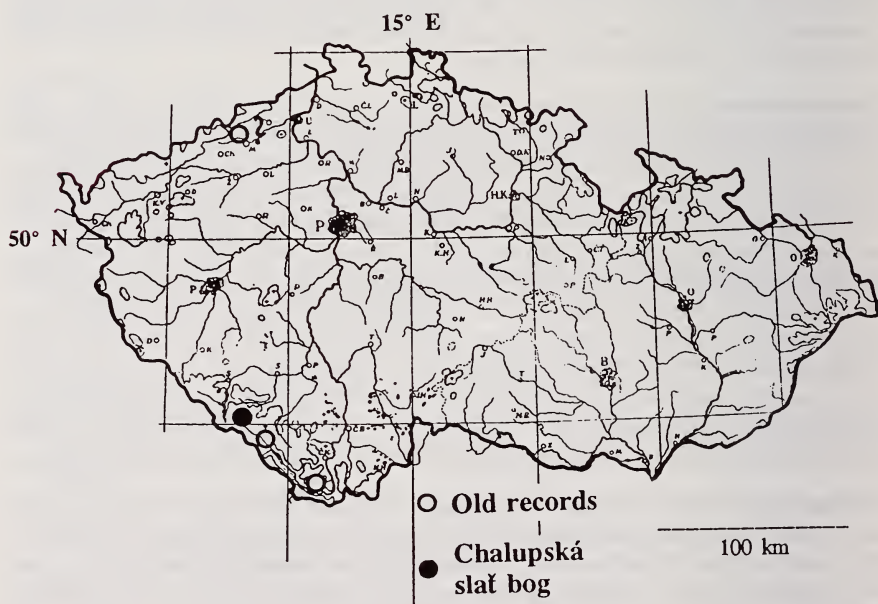


Fig. 1. *Argyroplote arbutella* distribution in the Czech Republic.

are known from Germany, Austria, Poland and Slovakia (e.g. Hannemann, 1961; Razowski, 1983; Gregor, 1986). A new locality in the Šumava Mts. (SW Bohemia) was found in a highland montane peatbog, where the only host plant occurring is *Vaccinium vitis-idaea* (L.). The best known host plant of *A. arbutella* is *Arctostaphylos uva-ursi* (L.), which is not recorded from the Šumava Mts. and is not known to occur in the peatbogs. There are no data at hand to bear witness to an association of *A. arbutella* with peatlands (peatbogs, mires) (cf. Peus, 1932; Mikkola & Spitzer, 1983), but perhaps some old localities and old records in Poland (cf. Razowski, 1983) conform to peatland habitats. In this paper we provide ecological data on an *A. arbutella* relict population feeding on *V. vitis-idaea* and its distribution on a peatbog locality.

Methods

Larvae of the tortricid moths were collected with their leaf spinnings of *V. vitis-idaea* during May 1997 after hibernation (fig. 2). Samples of the leaf spinnings were collected separately from the centre and from the margin ("lag") of the upland peatbog Chalupská slať near Borová Lada, Šumava Mts. (49°00' N, 13°40' E), over an area of 116 ha. The plant community of the edaphic climax is *Pino rotundatae-Sphagnetum* s. l. (see Neuhäusl, 1972). The surrounding area was sampled as well (Table). The leaf spinnings were kept under laboratory conditions ($t = 20^{\circ}\text{C}$) until pupation and adults eclosion (fig. 3). Adult activity was observed in the field. The other 5 species of the leaf spinning guild were also investigated (Table): *Stictea mygindiana* ([Denis & Schiffermüller], 1775), *Phiaris bipunctana* (Fabricius, 1794), *Rhopobota naevana* (Hübner, [1817]), *R. ustomaculana* (Curtis, 1831) and *Acleris maccana* (Treitschke, 1835).

Results and discussion

The unique peatland habitat of *A. arbutella* is a montane peat bog, Chalupská slať, in the Šumava Mts. (SW Bohemia), at an altitude of 950 m. This local abundant population is strictly associated with its host plant *Vaccinium vitis-idaea* in the centre of the peat bog (Table). The alternative and most common host



Fig. 2. Leaf spinning of *Vaccinium vitis-idaea* with larva of *Argyroploce arbutella*, Chalupská slať bog, May 1997.



Fig. 3. *Argyroploce arbutella* female, Chalupská slať bog, July 1997.

Table. Tortricid moth species reared from leaf spinnings on *Vaccinium vitis-idaea* (Chalupská slat bog)

	Peat bog areas		Surrounding area
	Central	Marginal	
Number of leaf spinnings	100	40	90
Species			
<i>Argyroploce arbutella</i>	29	0	0
<i>Stictea mygindiana</i>	7	10	4
<i>Phiaris bipunctana</i>	1	0	5
<i>Rhopobota naevana</i>	4	4	0
<i>Rhopobota ustomaculana</i>	1	8	22
<i>Acleris maccana</i>	1	0	0
Parasitoids and pathogens	57	18	59

plant, *Arctostaphylos uva-ursi* (Kennel, 1916; Krogerus, 1972; Bradley *et al.*, 1979; Razowski, 1983), has not been recorded from the Šumava Mts.; its closest locality is known at a distance of ca. 60 km NE (near Písek, no records of *A. arbutella*). We have never found larvae of *A. arbutella* feeding on *Vaccinium uliginosum* (L.) (cf. Swatschek, 1958; Razowski, 1983), which is very common in all peatbogs of the Šumava Mts.

The larvae and adults of *A. arbutella* occur within the treeless centre of the peatbog only (Table), but the distribution of other tortricid moth leaf spinners of *V. vitis-idaea* and their association with the bog topography is very different (see Table). *S. mygindiana* and *P. bipunctana* are montane tyrphophilous species widely distributed and abundant in most peatlands and natural pine forests of Central Europe (e.g. Peus, 1932; Sterneck & Zimmermann, 1933; Spitzer & Jaroš, 1993 and unpubl. notes). *A. arbutella* seems to be the most stenotopic of all recorded tortricid moths (Table). Adults of *A. arbutella* were always diurnal and heliophilous, flying near the bog centre, from late June to August like several other local boreo-alpine species of the Lepidoptera of the same locality, e.g. *Colias palaeno* (Linnaeus, 1761), *Anarta cordigera* (Thunberg, 1788), *Carsia sororiata* (Hübner, [1813]), *Chionodes viduella* (Fabricius, 1794), *Pediasia truncatella* (Zetterstedt, 1839) and *Crambus alienellus* (Germar & Kaulfuss, 1817). All cold-adapted relict species are very important peatbog (mire) environment state indicators and, as



Fig. 4. Chalupská slať peatbog, Šumava Mountains.

such, are valuable subjects for habitat conservation. *A. arbutella* is not a “classical” tyrphobiont or tyrphophilous peatbog dweller category species (cf. Spitzer, 1981; Mikkola & Spitzer, 1983; Spitzer & Jaroš, 1993): the mire locality of Chalupská slať in the Šumava Mts. seems to be a unique island habitat for this tortricid moth.

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