

## Recent occurrence of moss *Buxbaumia viridis* (Bryophyta, Buxbaumiaceae) in the Kłodzko region (Central and Eastern Sudetes, SW Poland)

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Abstract: A rare epixyloous moss, *Buxbaumia viridis* (Moug. ex Lam. & DC.) Brid. ex Moug. & Nestl., was searched at historical localities in the Kłodzko region, especially in Bialskie and Bystrzyckie Mts. The species was rediscovered at two localities in the upper part of the valley of Jedlnik stream on the east slope of Iwinka Mt. in Puszcza Śnieżnej Białki Nature Reserve. This paper presents data on autecology of *B. viridis* at one of the rediscovered localities as well as shows its current distribution in the Kłodzko region.

Key words: Bryophyta, *Buxbaumia viridis*, threatened species, protected species, distribution, Puszcza Śnieżnej Białki Nature Reserve, Śnieżnicki Landscape Park, Bialskie Mts., Sudety Mts., Poland

### Introduction

*Buxbaumia viridis* is one of two species in the genus known from Europe (Hill *et al.* 2006) and Poland (Ochyra & al. 2003). It is a boreal-montane moss which prefers primeval forests with coniferous wood on which it grows. The species is legally protected in Europe (Annex I of the Bern Convention; Annex II of the “Habitats-Fauna-Flora” directive) and is placed on the European Red-list for bryophytes (Schumacher & Martiny 1995). It has been placed in the group of endangered species (E category) of the Red List of Polish mosses (Żarnowiec & al. 2004) and was recognized as nationally protected in 2001 by the decree of the Ministry of the Environment in Poland (Anonymous 2001). The species requires protection in areas designated as the NATURA 2000 protected area (Stebel 2004), thus its current distribution and ecology is intensively studied in every country involved in this programme. Since 2007 some Polish Protected Areas, Polish National Forests and all historical localities of *Buxbaumia viridis* have been included in the monitoring of this species.

*Buxbaumia viridis* is widely distributed in Poland, however, its stations are very scattered and its populations are usually very scarce. It was found mainly in the mountains and their foothills, but it grows also in the southern uplands and the northern part of Poland (Szmajda & al. 1991). In recent time it was found on many localities in the Polish Carpathians: in Bieszczady Zachodnie Mts (Chachuła & Vončina 2010); Beskid Sądecki range, Małe Pieniny range, Magura Spiska region (Cykowska 2008); Pieniny range (Vončina 2008); Gorce range (Vončina & al. 2011) and the Tatras (Philippe & Ochyra 2004; Vončina & al. 2011). The species was found also on many localities in the Czech part of the Western Carpathians (Plášek & Vacínová 2001; Plášek 2001, 2004, 2006) and in the Czech part of the Eastern Sudetes (Zmrhalová 2001) and only on one locality in the Polish Sudetes (Smoczyk & Wierzcholska 2008). For the reason, it was very interesting to check whether *B. viridis* grows more often in the Polish side of the Sudetes, where in XIX century was very frequent (Szmajda & al. 1991).

### Results

During spring 2011 in the Polish side of the Central and Eastern Sudetes the species was searched at four published localities (Milde 1854, 1855; Berdowski 1979; Smoczyk & Wierzcholska 2008) and many new places with fallen wood chose with cooperation of forest service in Kłodzko region. In spite of many potentially good conditions for existence of *B. viridis* in forests of nearly all entire Kłodzko region the species was rediscovered only on

two places near historical locality published by Berdowski (1979) in Bialskie Mts. The current distribution of the species is presented on Fig. 3.

Newly discovered localities occur in the Puszcza Śnieżnej Białki Nature Reserve situated in the Eastern Sudetes within the area of the Śnieżnicki Landscape Park. The Nature Reserve with surface of 124.68 ha was established in 1953 in order to maintain and protect mountain beach forest *Luzulo nemorosae-Fagetum* with admixture of *Acer pseudoplatanus* L. and *Picea abies* (L.) H.Karst and alpine spruce forest. Two populations of *Buxbaumia viridis* was found on two spruce logs placed close to a small watercourse Jedlnik on east slope of Iwinka Mt. and growing in the similar conditions like the species found on the localities in Carpathians. Details of both new localities are provided below:

ATMOS grid square: Fb 48 – EASTERN SUDETES, BIALSKIE MTS.: NE slope of Iwinka Mt. in Puszcza Śnieżnej Białki Reserve:

1. altitude 990 m a.s.l., 50°14'30.5" N, 16°59'30.7" E, on decaying spruce log above Jedlnik stream in the beech forest with admixture of *Acer pseudoplatanus* and *Picea abies*, 3 capsules. Date of observation: 21 May 2011, by G. Vončina & B. Cykowska. *Associated species*: *Cephalozia bicuspidata* (L.) Dumort., *Dicranum scoparium* Hedw., *Herzogiella seligeri* (Brid.) Z.Iwats., *Lepidozia reptans* (L.) Dumort., *Lophocolea heterophylla* (Schrad.) Dumort., *Orthodicranum montanum* (Hedw.) Loeske, *Polytrichastrum formosum* (Hedw.) G.L.Sm., *Rhizomnium punctatum* (Hedw.) T.J.Kop., *Tetraphis pellucida* Hedw. Vascular plants: *Oxalis acetosella* L., *Salix* sp. (juv.).

2. altitude 1010 m a.s.l., 50°14'30.5" N, 16°59'27.9" E, on decaying spruce log above Jedlnik stream in the beech forest with admixture of *Acer pseudoplatanus* and *Picea abies*, 8 + 1 capsules. Date of observation: 21 May 2011, by B. Cykowska & G. Vončina. *Associated species*: *Dicranum scoparium*, *Herzogiella seligeri*, *Lophocolea heterophylla*, *Polytrichastrum formosum*, *Rhizomnium punctatum* (Hedw.) T.J.Kop., *Sanionia uncinata* (Hedw.) Loeske.

## Conclusions

Only found in the Polish side of the Sudetes populations of *Buxbaumia viridis* from the Bialskie Mts. occurred in the area under strict protection similarly like the majority of species localities in the Carpathians (Cykowska 2008; Vončina 2008; Chachuła & Vončina 2010; Vončina & al. 2011). The species was not rediscovered on any locality situated in a managed forest. It seems to be an important information that the strict protection is the best way to maintain the sites for *B. viridis*. New information about locality of *Buxbaumia viridis* in Bialskie Mts. confirm a conclusion of Wierzcholska & Plášek (2006), that Bialskie Mts. are exceptional bryological area.

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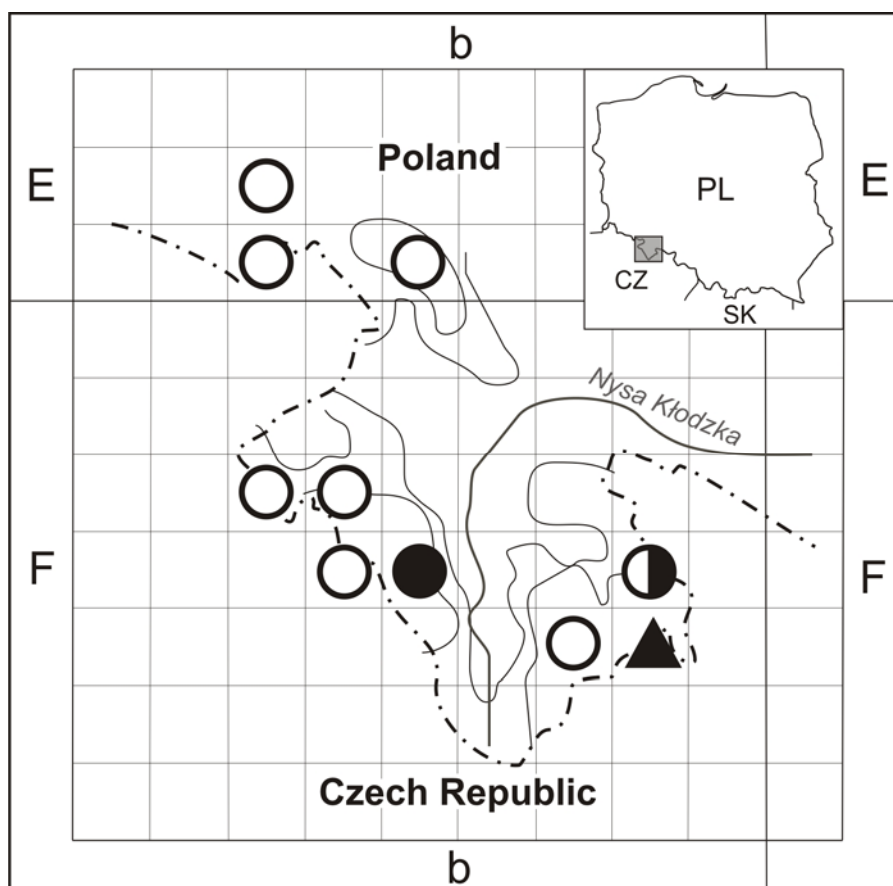
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**Fig 1-2:** 1 - Habit of the sporophyte of *Buxbaumia viridis* in Puszcza Śnieżnej Białki Reserve in the Bialskie Mts. (photo by G. Vončina, 21 May 2011). 2 - A log with *Buxbaumia viridis* in Puszcza Śnieżnej Białki Reserve in the Bialskie Mts. (photo by B. Cykowska, 21 May 2011).





**Fig 3:** Distribution of *Buxbaumia viridis* in the Kłodzko region (Central and Eastern Sudetes); ○ – pre-1900 localities; ● – 1901–1950 localities, ● – locality in Młoty published by Smoczyk & Wierzcholska (2008), ▲ – rediscovered stations.

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