

The first record of the rare beetle *Phloeostichus denticollis* W. Redtenbacher, 1842 (Coleoptera: Phloeostichidae) from the Bohemian Forest with a note on the biology of the species

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Abstract

The presence of the endangered beetle *Phloeostichus denticollis* was confirmed at two sites (Liščí Hřbetý near Kubova Huť and Zátoňská Hora Nature Reserve) in the Bohemian Forest (Šumava in Czech, Böhmerwald in German), Czechia. In total four individuals were captured by peeling the bark of sycamore maples. These are the first published records of *P. denticollis* from western and southern Bohemia. They confirm the importance of old sycamore maples for this rare species and suggest its possible association with the fungus *Hymenochaete carpatica*.

Key words: Coleoptera, *Phloeostichus denticollis*, faunistics, Šumava Mts., Czech Republic

INTRODUCTION

Phloeostichus denticollis W. Redtenbacher, 1842 is a rare species reported mainly from Europe (KOLIBÁČ 2003, VOGT 1967). It has been recorded in France (ROSE & CALLOT 2007), Germany (REIBNITZ 1987, KLAUSNITZER 2002), Denmark (STOLTZE & PIHL 1998), Poland (KUBISZ et al. 1998), Czechia (KOLIBÁČ 2003), Slovakia (FRANC 2002), Switzerland, Italy, and Romania (HORION 1960). *P. denticollis* is known also from the Caucasus (NIKITSKY 1991) and from the Sikhotealin Range in eastern Siberia (KRIVOLUSHKAYA 1992). From Czechia, *P. denticollis* has been reported from the mountain ranges of the Moravskoslezské Beskydy Mts. (NOHEL 1970, KOLIBÁČ 2003, KULA 2009, WEISS et al. 2016), Slezské Beskydy Mts. (Schlesische Beskiden in German; Wanka 1920), Orlické Hory Mts. (MACKOVČIN et al. 2002), the Broumovsko Protected Landscape Area, including the Čáp mount (Storchberg in German; GERHARDT 1910, HAMET & VANCL 2016), the Hrubý Jeseník Mts. (Altwatergebirge in German), and the Kralický Sněžník Mts. (Glatzer Schneegebirge in German; GERHARDT 1910, HORION 1960). Nearby finds across the border of Czechia have been reported from Wolibórz (Volpersdorf), the Góry Stołowe Mts. (Heuscheuergebirge in German) and the Góry Sowie (Bögenberge in German) near Świdnica in Poland (GERHARDT 1910, HORION 1960), from several sites in the Bavarian Forest National Park in Germany (MÜLLER et al. 2007), and from one site in the Gratzener Bergland Mts. in Austria (MITTER 1998). So far, there were no published records from the Czech part of the Bohemian Forest (Šumava in Czech) or, more generally, from western and southern Bohemia. The bionomy of the species

is still unknown. Adults are rarely found under the bark scales of living sycamore maples in well-preserved beech–fir forests (VÁVRA 2017). *P. denticollis* is classified as endangered in the Czech red list (VÁVRA 2017).

MATERIAL AND METHODS

Study sites

The site of Liščí Hřbety (nearby Kubova Hut' village, Kubohütten in German, 1014 m a.s.l., 48°59' N, 13°43' E, Fig. 1) is situated in an old-growth beech-dominated forest interspersed with silver fir (*Abies alba* Mill.), Norway spruce (*Picea abies* L.), and sycamore maple (*Acer pseudoplatanus* L.). The vegetation was classified following CHYTRÝ (2013) as a mesotrophic beech forest (*Galio odorati-Fagetum sylvaticae* Sougnez et Thill 1959).

The Zátoňská Hora Nature Reserve (nearby the village of Zátoň, 976 m a.s.l., 48°57' N, 13°50' E) is situated in an old-growth beech-dominated forest interspersed with Norway spruce (*Picea abies* L.) and sycamore maple (*Acer pseudoplatanus* L.). Vegetation was classified following CHYTRÝ (2013) as a eutrophic beech forest (*Mercuriali perennis-Fagetum sylvaticae* Scamoni 1935). The site was surveyed for the occurrence of selected ground beetle taxa by LINHART et al. (2015), but a thorough inventory of beetle fauna in the nature reserve is lacking.

Sampling methods

Peeling of sycamore (*Acer pseudoplatanus* L.) bark was used in a targeted search for the given species. Five flight interception traps were also placed at each of the two sites to collect saproxylic beetle fauna, but no *P. denticollis* specimen was captured using this method.

RESULTS AND DISCUSSION

We found four adults of *Phloeostichus denticollis* W. Redtenbacher, 1842 (Fig. 2) – Liščí hřbety: 8 June 2017, 1 specimen; 30 August 2017, 2 specimens; Zátoňská hora: 28 August 2017, 1 individual; leg. et det. J. Procházka. All specimens were collected between one and two metres above ground under the bark scales on trunks of old living trees of *Acer pseudoplatanus* in old-growth forests. Beetles are deposited in the Moravian Museum, Brno. At the Liščí Hřbety site, the fungus *Hymenochaete carpatica* Pilát 1930 from the order Hymenochaetales (leg. et det. J. Běřák) was found under bark scales on the same maple tree as *P. denticollis*.

The present records of *Phloeostichus denticollis* are the first ones from the Czech side of the Bohemian Forest (Šumava), although some entomologic surveys have been conducted in the area (e.g. HEYROVSKÝ 1923, FLEISCHER 1925, BOHÁČ & MATĚJČEK 2004, MÁČA 2008). However, this rare beetle is known from Bayerischer Eisenstein, Albrechtshachten, Rachel, and Ruckowitzschachten at the Bavarian part of the mountain range (HORION 1960, MÜLLER et al. 2007). There are no published records from the Upper Austrian part of the Bohemian Forest (Böhmerwald in German), but there is one from Rosenhof (MITTER 1998) in the Austrian part (Freiwald) of the Gratzener Bergland Mts. (Novohradské Hory in Czech), adjacent to the southeast. Most of the Austrian records are from the Alps (HORION 1960, MITTER 1998).

The bionomy of *P. denticollis* is unknown (JELÍNEK 2005). What is known is that it occurs under the bark scales of old living trees of *Acer pseudoplatanus* and rarely under the bark of *Fagus sylvatica* or under mosses covering trunks of these species (HORION 1960, VOGT 1967). ROSE & CALLOT (2007) mentioned a find of *P. denticollis* under the bark of fir in Slovakia,



Fig. 1. Old sycamore maple (*Acer pseudoplatanus*), on which *Phloeostichus denticollis* was found at the site of Liščí Hřibety in August 2017.

MITTER (1998) reported a find under the bark of larch in Austria. In our study, surprisingly, no individual was captured by flight interception traps operated in 2017 at these and several similar sites in the area, even though some individuals of *P. denticollis* have been collected by this trap type elsewhere (e.g. DODELIN 2005, MÜLLER et al. 2007, ROSE & CALLOT 2007, WEISS et al. 2016). It was assumed that the beetle is active in winter or that it lives on sycamore in winter and on beech in summer (J. VÁVRA – pers. comm.). Our finding of living beetles in the late spring and summer together with the above-mentioned captures using flight interception traps and some of the records presented by HORION (1960) show that the species is active during the vegetation season. Though adult beetles were mostly found overwintering under the sycamore bark scales, a trophic connection with sycamore maple is uncertain (J. VÁVRA – pers. comm.). DODELIN (2005) speculated about the connection of *P. denticollis* with decaying beech, but maples were also present at the locality. As his only individual was found in a window trap, no direct information about the biology of this species could be obtained (DODELIN 2005).

Our finding of *P. denticollis* under bark scales together with the fungus *Hymenochaete carpatica* suggests a possibility that the beetle might be feeding on its mycelia. However, further research is needed to learn about the feeding biology of *P. denticollis*. The fungus *Hymenochaete carpatica* is an inconspicuous, often overlooked species. It grows only on the bark scales of old live *Acer pseudoplatanus* and has not been found on any other host (TOMŠOVSKÝ 2001). Describing the bionomy of *P. denticollis* might prove difficult, as larvae are extremely rare and hard to identify (J. KOLIBÁČ – pers. comm.). For instance, the larval specimen found by CROWSON in Slovenia and used in the interactive key by LAWRENCE et al. (1999), as well as the two larvae described as *P. denticollis* by KOLIBÁČ (2003), were considered to be misidentified (LESCHEN et al. 2005). Larvae were described briefly by WEISE (1897) from specimens collected from mossy bark of old maple trees. Morphological chara-



Fig. 2. *Phloeostichus denticollis* W. Redtenbacher, 1842, Zátoňská Hora Nature Reserve, August 2017.

cters of the larva, collected by N.B. NIKITSKY under the bark of maple, were described and compared with other Phloeostichidae by LESCHEN et al. (2005).

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