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The sap beetle *Pityophagus quercus* found in the Czech Republic after more than a century

Lesknáček *Pityophagus quercus* nalezen v České republice po více než sto letech

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Abstract. The sap beetle *Pityophagus quercus* Reitter, 1877 is a rare beetle species associated with old oaks. Herein we report two records of the species: A recent finding from Pohansko near Břeclav and a century-old specimen from Prague-Radotín. The first record confirms occurrence of the beetle in the Czech Republic after more than a century, while the second one widens its known distribution to Bohemia. The habitat requirements of the species and its conservation are discussed.

INTRODUCTION

Of the three *Pityophagus* Shuckard, 1839 species known from Europe, only *P. ferrugineus* (Linnaeus, 1761) is common, associated with bark beetles and coniferous forests and plantations. Of the two remaining species, *P. laevior* Abeille, 1872 is associated with pines (*Pinus* spp.) and *P. quercus* Reitter, 1877 is associated with oaks (*Quercus* spp.). While *P. laevior* is rare in the northern part of its range, *P. quercus* is considered among the rarest European beetles (Audisio et al. 2011).

Until recently, *P. quercus* was known only from Central and South-Eastern Europe; it has been recorded from Bosnia and Herzegovina, Bulgaria, Czech Republic, Greece, Hungary, Macedonia, Poland, Romania, Slovakia and western Ukraine (Jelínek & Audisio 2007). Its known distribution range substantially expanded in the last 20 years as *P. quercus* has also been found in northern Spain (Otero et al. 2003), France (Barnouin et al. 2011, Parmain et al. 2016), central Italy (Audisio et al. 2011) and western Anatolia (Avgin et al. 2015).

The species is extremely rare and its distribution is patchy throughout its range. In all countries where *P. quercus* is present, it has been recorded from only one or a few localities. In Central Europe, the only recent records come from Hungary (unpublished records, Tamás Németh, pers. comm.), and of the few older records (Fleischer 1911, Roubal 1936, Nunberg 1976, Audisio 1980), those from Poland (Puszcza Białowieska, Nunberg 1976) and Czech Republic (Fleischer 1911) have been questioned by Jelínek (2014).

In the Czech Republic, the finding of *P. quercus* in Střelice near Brno was reported by Fleischer (1911). The same record is repeated by Reitter (1911) as "Obersanitätsrat Fleischer

fing ihn bei Brünn" and by Fleischer (1927–1930). The species is listed as regionally extinct in the Red List of Invertebrates of the Czech Republic (Jelínek 2017). Here we present a recent finding confirming the occurrence of *P. quercus* in the Czech Republic after at least 100 years and also an older, unpublished record confirming its occurrence in Bohemia.

RESULTS

Material examined. Moravia mer.: Břeclav env., Pohansko, 48°43′21″N 16°54′23″E, 20.iv.–19.v.2022, 1 spec., found in the floodplain of the Dyje (Thaya) river, in an unbaited flight interception trap attached to the trunk of a large (DBH 160 cm), solitary, partially dead pedunculate oak (*Quercus robur*), D. Hauck & L. Čížek leg., D. Hauck det., J. Jelínek revid., coll. O. Konvička (Zlín, Czech Republic).

Bohemia centr.: "Environs de Prague (Boh.), Radotín" [without date], 1 spec., J. Obenberger det., J. Jelínek revid., coll. National Museum Prague, Czech Republic. The collector's name is not given; the appearance of the locality labels suggests that the specimen originates from the collection of J. Obenberger and was collected by him, perhaps, in the 1920s.

The Moravian locality is a large complex (ca. 5000 ha) of alluvial forests and partially wooded meadows. Although mostly managed as a commercial forest, remnants of former pasture woodlands and coppices with standards contain numerous large trees, especially pedunculate oaks several hundreds of years old (Altman et al. 2016). Pedunculate oak is the main tree species in the area together with narrow-leaved ash (*Fraxinus angustifolia*), field maple (*Acer campestre*), European hornbeam (*Carpinus betulae*), limes (*Tilia* spp.), elms (*Ulmus* spp.), poplars (*Populus* spp.), and willows (*Salix* spp.).

The individual from Radotín proves a historical occurrence of *P. quercus* in Bohemia. No additional data concerning the collecting circumstances of the record are available.

DISCUSSION

Most findings of *Pityophagus quercus* are reported from stands of large, senescent deciduous or evergreen oaks *(Quercus cerris, Q. frainetto, Q. pubescens, Q. pyrenaica, Q. suber*) growing in xerophilous and mesoxerophilous conditions. Most records apparently come from ancient oaks growing in open canopy conditions today or for most of their lifetimes i.e. in open forests of agroforestry systems such as "dehesa" in Spain and always in areas of very high conservation value and very high diversity of endangered saproxylic beetles associated with old oaks (Audisio et al. 2011, Barnouin et al. 2011, Parmain et al. 2016, T. Németh, pers. comm.). Possibly its rarity and resulting lack of knowledge have prevented the species from being listed in recent lists of relict or endangered saproxylic beetles of Central Europe (Nietto & Alexander 2010, Eckelt et al. 2017, Cálix et al. 2018).

The above described habitat requirements also perfectly fit the circumstances of the herein reported recent record. The lower Morava/Dyje floodplain is known for a large number of old, senescent trees, especially pedunculate oaks (*Quercus robur*) found in remnants of former pasture woodlands and coppice with standards (Miklín et al. 2018). Organisms associated with these veteran trees include several internationally protected beetle species e.g. *Osmoderma barnabita* Motschulsky, 1845 (Scarabaeidae), *Cerambyx cerdo* Linnaeus, 1758 (Cerambycidae), and *Limoniscus violaceus* (P. W. J. Müller, 1821) (Elateridae) as well as rarities such as

e.g. *Eurythyrea quercus* (Herbst, 1780) (Buprestidae), *Microrhagus pyrenaeus* Bonvouloir, 1872 (Eucnemidae), *Paranovelsis moravicus* Háva, 2018 (Dermestidae).

The presence of *P. quercus* further confirms the importance of the area, which still lacks adequate protection status. The ancient, open-grown oaks on which *P. quercus* and other threatened saproxylic species depend are relics of management abandoned in the 19th and 20th century. Their health rapidly declines and there is a lack of suitable, younger oaks that could replace the current veterans. Active management actions are thus urgently needed to sustain the unique biodiversity of the area.

The record from Radotín is evidence of the historical presence of *P. quercus* in Bohemia. Radotín (now part of Prague) is surrounded by the steep slopes of the Berounka and Radotínský potok valleys. Today, the presence of the species seems unlikely due to land use changes during the past century. Historical aerial photos show the slopes of both valleys were largely covered by steppes, forest steppes and open oak woodlands. These habitats we replaced by large quarries, stands of exotic trees such as black pine (*Pinus nigra*) and black locust (*Robinia pseudoacacia*) and other closed canopy forests. Such conditions compromise the survival and recruitment of large and old oaks required by *P. quercus*.

The herein presented records confirm the recent occurrence of *Pityophagus quercus* in Moravia and its historical occurrence in Bohemia. *P. quercus* should thus be considered as critically endangered in the Czech Republic and in Moravia, while in Bohemia it should be considered regionally extinct.

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SOUHRN

Lesknáček *Pityophagus quercus* je velmi vzácný druh s ostrůvkovitým rozšířením. Donedávna byl známý jen ze střední a jihovýchodní Evropy (Jelínek & Audisio 2007), v posledních 20 letech byl ale nalezen i ve Španělsku, Itálii, Francii a západní Anatolii (Otero et al. 2003, Audisio et al. 2011, Barnouin et al. 2011, Avgin et al. 2015). Ze střední Evropy je známo jen několik, většinou starších nálezů (Fleischer 1911, Roubal 1936, Nunberg 1976, Audisio 1980), pouze v Maďarsku byl nalezen i recentně (T. Németh, pers. comm.). Z našeho území byl znám jen Fleischerův nález ze Střelic u Brna (Fleischer 1911, Reitter 1911, Fleischer 1927–1930), který zpochybnil Jelínek (2014). V článku uvádíme nový nález lesknáčka *P. quercus* z Pohanska u Břeclavi, kde byl odchycen do nárazové pasti umístěné na kmeni starého solitérního dubu. Ve sbírkách Národního muzea v Praze se nachází exemplář nalezený v Radotíně pravděpodobně J. Obenbergerem ve dvacátých letech minulého století, který dokládá jeho historický výskyt také v Čechách. Lesknáček *P. quercus* je vázaný na velké, staré duby, často rostoucí ve světlých lesích, které byly součástí agrolesnických systémů hospodaření. Vždy bývá nacházen na lokalitách s velmi vysokou ochranářskou hodnotou a diverzitou saproxylických brouků vázaných na staré duby (Audisio et al. 2011, Barnouin et al. 2011, Parmain et al. 2016, T. Németh, pers. comm.). Výše

popsanému přesně odpovídají i okolnosti zde prezentovaného recentního nálezu. Pohansko a jihomoravské lužní lesy jsou známy vysokým počtem starých stromů, především dubů letních, rostoucích v pozůstatcích pastevních a středních lesů a jsou domovem velmi bohaté fauny saproxylických organismů, včetně mnoha ohrožených i mezinárodně chráněných druhů. Bohužel, oblast stále postrádá adekvátní ochranu. Mohutné staré stromy zde vyrostly díky metodám hospodaření, které byly opuštěny během 19. a 20. století, dnes rychle odumírají a chybí za ně náhrada. Pro zachování přírodní rozmanitosti jihomoravských luhů je proto nezbytná aktivní péče o vhodné stromy. Svahy hlubokých údolí Berounky a Radotínského potoka v okolí Radotína dříve pokrývaly stepi, lesostepi a světlé dubové lesy, které jsou dnes většinou nahrazeny velkolomy, porosty exotických dřevin jako borovice černá (*Pinus nigra*) a akát (*Robinia pseudoacacia*) a jinými stinnými lesy. Přítomnost lesknáčka *P. quercus* je tu proto již málo pravděpodobná. Vzhledem k výše uvedenému by měl být *P. quercus* u nás a na Moravě považován za kriticky ohrožený druh, kdežto v Čechách za vyhynulý druh.