

First record of the Kuhl's Pipistrelle, *Pipistrellus kuhlii* (Kuhl, 1817), in the Czech Republic

První náález netopýra vroubeného, *Pipistrellus kuhlii* (Kuhl, 1817), v České republice

Antonín REITER¹, Petr BENDA² & Josef HOTOVÝ³

¹ South Moravian Museum in Znojmo, Přemyslovců 8, CZ–669 45 Znojmo, Czech Republic; reiter@znojmuz.cz

² Department of Zoology, National Museum (Natural History), Václavské náměstí 68, CZ–128 44 Praha 2, Czech Republic & Department of Zoology, Faculty of Science, Charles University in Prague, Viničná 7, CZ–128 44 Praha 2, Czech Republic; petr.benda@nm.cz

³ Museum of Eastern Bohemia in Hradec Králové, Eliščíno nábřeží 465, CZ–501 014 Hradec Králové, Czech Republic

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Abstract. An adult female of the Kuhl's pipistrelle (*Pipistrellus kuhlii*) was netted on the left bank of the Dyje river in Znojmo, southern Moravia (48° 51' N, 16° 03' E, 208 m a. s. l.) on 25 August 2007. This record represents the first evidence of this expanding bat species in the Czech Republic. It documents the relationship of marginal populations of the species to human settlements as well as river valleys.

INTRODUCTION

The Kuhl's pipistrelle, *Pipistrellus kuhlii* (Kuhl, 1817), is a bat species present mostly in the Mediterranean part of the Palaearctic region, marginally reaching the Oriental region in the east and the Afrotropical region in the south (HORÁČEK et al. 2000, SPITZENBERGER & BAUER 2001, BOGDANOWICZ 2004, BENDA et al. 2006). It is one of the most common bats in eumediterranean habitats along the Mediterranean Sea and in adjacent lowlands of large rivers, occurring in different habitat types, both urban and natural, however, most of its roosts have been found in buildings and their ruins (BOGDANOWICZ 2004). Since the 1980s, the species has been observed to spread northwards to central Europe, with the first sites north of the Alps recorded in Switzerland, Germany, Austria and Hungary 10–20 years ago (HAFFNER & STUTZ 1991, FEHÉR 1995, BAUER 1996, MESCHÉDE et al. 1998, FIEDLER et al. 1999, SPITZENBERGER & BAUER 2001). Almost all findings documenting the expansion come from urban habitats, a permanent population was evidenced in Vienna already in the 1990s (BAUER 1996, SPITZENBERGER & BAUER 2001). The species has been recently recorded in the two remaining countries neighbouring to the Czech Republic – in southern Slovakia (CELUCH & ŠEVČÍK 2006, DANKO 2007) and in Poland (SACHANOWICZ et al. 2006), although the latter finding may be related to a passively transported individual or a vagrant, or the bats spreading to Poland may originate from a recently expanding population in the Dnester basin in Ukraine (SACHANOWICZ et al. 2006, ZAGORODNJUK & REZNIK 2007). At the same time, first data on breeding of the species in the marginal parts of its range have appeared – in Vienna already in 1994 (BAUER 1996), recently also in northern Hungary

(ESTÓK 2006), southern Romania (DRAGU et al. 2007) and southeastern Slovakia (DANKO 2007). For these reasons, presence of the species in the Czech Republic has been considered very likely. Southern Moravia has been supposed to be the most suitable region and the species has been occasionally searched there.

RECORD

The record was made during a mist-netting session on 25 August 2007. Two nets, 4 and 12 m long, were exposed parallel to the banks of the Dyje river, at the place where there is a gap in tree vegetation separating the river from the road (Fig. 1). The locality is situated at the southern margin of the Znojmo town, in the Louka neighbourhood (48° 50' 35" N, 16° 03' 27" E, 208 m a. s. l.), square no. 7162 of the grid mapping system used in the Czech Republic. The bank vegetation consists of full-grown willow and alder trees. There is a weir about 20 m below the netting place and a race derived above the weir, running very close to large abandoned buildings of the Louka monastery. The closest monastery buildings are situated about 50 m from the netting place. Altogether 16 bats were captured in one of the nets, among them also one adult female of *Pipistrellus kuhlii* (plus a juvenile male and a female of *Pipistrellus nathusii* (Keyserling et Blasius, 1839) and 13 individuals of *Nyctalus noctula* (Schreber, 1774) of both sexes). All *Pipistrellus* bats were netted shortly after sunset at ca. 20.40 CEST.

The fur coloration of the captured *Pipistrellus kuhlii* female was light brown on the dorsal side, light greyish brown with a yellow tint on the ventral side, the naked parts of the skin were brown (Fig. 2), with



Fig. 1. The site of *Pipistrellus kuhlii* netting in Znojmo.
Obr. 1. Místo odchytu *Pipistrellus kuhlii* ve Znojmě.



Fig. 2. Kuhl's pipistrelle (*Pipistrellus kuhlii*) from Znojmo.
Obr. 2. Netopýr vroubený (*Pipistrellus kuhlii*) ze Znojma.

a typical light fringe of the uropatagium and plagiopatagium (Fig. 3). The fringe was widest at uropatagium, reaching 1.5–2 mm. The female was adult, showing signs of lactation in the season 2007 and with strongly abraded tooth crowns.

Skull was extracted and prepared for an unambiguous identification of the specimen based on dental traits. The preparation shows an apparent unicuspid first upper incisor and the typical position of the first upper premolar, shifted palatally outside the tooth-row and barely visible between the canine and the next premolar in the lateral view.

External and cranial measurements of the specimen were as follows: weight 7.3 g, head and body length 50 mm, tail length 39 mm, forearm length 35.0 mm, ear length 13.4 mm, tragus length 6.4 mm, greatest length of skull 13.38 mm, condylobasal length 12.89 mm, zygomatic width 8.83 mm, interorbital constriction 3.34 mm, neurocranium width 6.91 mm, neurocranium height 4.83 mm, length of the upper tooth-row 5.07 mm, mandible length 9.74 mm, coronoid height of mandible 3.04 mm, length of the lower tooth-row 5.48 mm.

Coloration, external measurements, dental traits as well as skull dimensions are in accordance with description of the species and characteristics given in identification guides (SCHÖBER & GRIMMBERGER 1998, BOGDANOVICZ 2004, ANDĚRA & HORÁČEK 2005, DIETZ et al. 2007, etc.) and congruent with the extensive comparative material coming from the Mediterranean (cf. BENDA et al. 2006). The respective specimen is deposited in the zoological collection of the National Museum, Praha, under the number NMP 91891 (alcohol preparation, skull extracted).



Fig. 3. Coloration of the dorsal side of *Pipistrellus kuhlii* from Znojmo.

Obr. 3. Zbarvení hřbetní strany těla netopýra vroubeného (*Pipistrellus kuhlii*) ze Znojma.

DISCUSSION

Disregarding the old unreliable data on the species' presence in the Czech Republic and Slovakia (cf. ANDĚRA & HANÁK 2007), the closest known site of *Pipistrellus kuhlii* to the new Czech record is Vienna (SPITZENBERGER & BAUER 2001), situated about 75 km SSE, where the species was first documented in 1994 (BAUER 1996). The nearest known sites in Slovakia are situated at approximately the same latitude as Vienna (ca. 48° 04' – 48° 10' N), however, they were registered as late as in the year 2006; Bratislava (ca. 105 km SE; ca. 130 m a. s. l.; CEEUCH ad verb.) and Nitra (ca. 160 km SE; 150 m a. s. l.; CEEUCH & ŠEVČÍK 2006). The eastern Slovakian localities of *P. kuhlii* reported by DANKO (2007), Michalovce and Veľké Kapušany, are found somewhat more to the south and at a lower altitude (48° 45' N, 115 m a. s. l.) than Znojmo. As a result, Znojmo currently is the northernmost known site of the species in central Europe, situated at a relatively high altitude, where the occurrence is likely to be natural.

Our finding supports the current hypothesis that *P. kuhlii* has been expanding northwards (FIEDLER et al. 1999, BOGDANOVICZ 2004, CEEUCH & ŠEVČÍK 2006, SACHANOWICZ et al. 2006, DANKO 2007). The region where the record was made has been subjected to a relatively intensive bat survey in the last two decades, including numerous mist-netting sessions at different sites (cf. REITER et al. 1997, 2003). We thus consider unlikely that the species would have stayed unrevealed in the region for such a long time, even though the urban environment of Znojmo

has been relatively little surveyed, as far as the methods registering bats outside their roosts are concerned. (A special bat-detecting survey focussed on *P. kuhlii* was carried out in the autumn 2006, covering larger settlements along the Dyje river (e.g. Jaroslavice, Tasovice, Znojmo, etc.), however, this attempt was not successful.) Znojmo along with the above mentioned Slovak sites are situated at the northern margin of the Pannonian region, thus representing a biogeographical boundary of the continuous expansion of the species northwards. It will be of interest to document whether the expansion in central Europe will stagnate or continue further across the Carpathians and the Bohemian Massif. Other true Mediterranean elements present in the bat fauna of the Czech Republic, particularly *Rhinolophus ferrumequinum* (Schreber, 1774), *Myotis blythii* (Tomes, 1857), and *Hypsugo savii* (Bonaparte, 1837), reach northern margins of their distribution ranges in southern and central Moravia (HANÁK & ANDĚRA 2005, 2006, ANDĚRA & HANÁK 2007).

The habitat where the bat was captured can be considered typical of the species (cf. BOGDANOWICZ 2004). Regarding its arrival at the river used as a watering or foraging place shortly after dusk, the roost of the individual (individuals?) was probably situated very close to the netting site, most likely in the nearby uncared-for monastery, with a number of fissures present in external rendering and stucco decorations. Another possible location of the roost is in prefab houses situated in the valley only tens of metres from the netting site (Fig. 4). Roosts in prefab houses or old



Fig. 4. View at the locality in the context of the surrounding habitats; the arrow indicates the netting site.

Obr. 4. Pohled na lokalitu odchyty v kontextu okolních biotopů. Místo odchyty je označeno šipkou.

buildings in the marginal parts of the distribution range have been mentioned by SACHANOWICZ et al. (2006), DANKO (2007) and DRAGU et al. (2007). Moreover, CELUCH & ŠEVČÍK (2006) caught the species in a very similar habitat (foraging place) at a water body inside a town.

DANKO (2007) discussed the coloration and body size variability of marginal populations of *P. kuhlii*. In such comparison (cf. STRELKOV et al. 1985, SPITZENBERGER & BAUER 2001, BOGDANOWICZ 2004, SACHANOWICZ et al. 2006, DRAGU et al. 2007, etc.), the female captured in Znojmo would rank among rather dark specimens, however, with a relatively wide light fringe on the wing membrane.

Pipistrellus kuhlii is the 26th bat species known in the Czech Republic (HANÁK & ANDĚRA 2005, 2006, ANDĚRA & HANÁK 2007), considering the records of *Nyctalus lasiopterus* (Schreber, 1780) mentioned by ŘEHÁK et al. (2003) as trustworthy. Although the finding of one individual does not document the existence of a local population of the species, the bat's body condition suggests it to be very likely (a several-year old female, according to tooth abrasion, with the signs of lactation in the year of the finding). Proving the existence of such population, estimating its size and finding the roosts will be the aims of a next study.

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SOUHRN

Na levém břehu Dyje ve Znojmě (jižní Morava, 48° 51' s. š., 16° 03' v. d., 208 m n. m., kvadrát mapovací sítě 7162) byla 25. srpna 2007 do nárazové sítě odchycena dospělá samice netopýra vroubeného (*Pipistrellus kuhlii*). Tento nálezh představuje první záznam tohoto z jihu se šířícího druhu na území České republiky. Odchyt také potvrzuje patrně úzkou vazbu okrajových populací tohoto druhu na synantropní prostředí a blízkost říčních údolí.

POZNÁMKA. Pro české označení druhu *P. kuhlii* dovolujeme si doporučit k používání starší jméno navržené JIRSIKEM v překladu *Života zvířat* (BREHM 1926), které nezaměnitelně tento druh vykresluje. Považujeme jej za vhodnější vzhledem k charakteristice druhu a systematickým změnám, které někdy užívané jméno netopýr jižní činí matoucím. Posledně jmenované jméno navrhuje pro *Pipistrellus hesperidus* (Temminck, 1840), druh před nedávnem z druhového ranku *P. kuhlii* vymezený (KOCK 2001), žijící skutečně jižně (výlučně v afrotropické oblasti) a postrádající charakteristické světlé vroubení křídelních blan.

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