

## A long distance migration in *Nyctalus leisleri* from the Czech Republic to southern France (Chiroptera: Vespertilionidae)

Dálkový přelet netopýřů stromových (*Nyctalus leisleri*) z České republiky do jižní Francie (Chiroptera: Vespertilionidae)

Přemysl TÁJEK<sup>1,2</sup> & Pavla TÁJKOVÁ<sup>2,3</sup>

<sup>1</sup> Nature Conservation Agency of the Czech Republic, Administration of the Slavkovský les Protected Landscape Area, Hlavní 504, CZ–353 01 Mariánské Lázně, Czech Republic

<sup>2</sup> Czech Bat Conservation Society, Viničná 7, CZ–128 44 Prague, Czech Republic

<sup>3</sup> Czech Union for Nature Conservation, ZO ČSOP Kladská, Bezejmenná 480/8, CZ–353 01 Mariánské Lázně, Czech Republic

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**Abstract.** On 28 January 2020, three living individuals of the Leisler's bat, *Nyctalus leisleri*, were found in a shed in Malaucène, southern France (44°11'34"N, 05°07'26"E). Two of these bats had bands with the inscription CESON.ORG used in the Czech Republic since 2019. The whole ring code was detected in one case (CZ03313), in a female captured and banded in a bat-box near Bečov nad Teplou, western Bohemia, Czech Republic (50°05'27"N, 12°51'38"E) on 9 September 2019, 878 km away from Malaucène. This is the first case of a long distance migration in the population of *Nyctalus leisleri* of the Czech Republic. This observation also gives a direct evidence of a flight during the maximum 141 days in late summer or autumn from the central or northeastern Europe to the southwestern parts of the continent.

**Key words.** *Nyctalus leisleri*, migration, bat-box, Czech Republic, France, harem.

Three living individuals of the Leisler's bat, *Nyctalus leisleri* (Kuhl, 1817), were found and photographed during a reconstruction of a shed in Malaucène, southeastern France (44°11'37"N, 05°07'26"E, Vaucluse Department), on 28 January 2020. The locality is situated about 30 km northeast of Avignon near the southwestern margin of the Alps, at 320 m a. s. l. Vineyards, orchards, and fields supplemented by smaller woods are the main habitats in the area. In the wider surroundings there are also limestone hills with large deciduous forests.

Two of these bats had bands with the inscription CESON.ORG. The whole band code was detected in one case: CZ03313, the second one was read only partially: CZ03???. The bat with the code CZ03313 was a female ringed in the Czech Republic on 9 September 2019. The site of banding is situated in the Slavkovský les Protected Landscape Area, in the complex of spruce forests about 1.5 km northeast of Bečov nad Teplou, ca. 15 km south of Karlovy Vary (50°05'27"N, 12°51'38"E, Karlovy Vary Region, western Bohemia) at 674 m a. s. l. The distance between the banding and recapture sites is 878 km, the period of movement is at most 141 days.

This female was a part of a harem composed of one male and nine females roosting in a wood-concrete Schwegler 3FN bat-box placed on a spruce tree. Altogether 36 bat-boxes (18 pairs of the 3FN and 2FN types, respectively) were installed in the forest over the area of ca. 3×4 km (at sunny margins of clearings and forest edges) in 2015. The first Leisler's bats were observed in these bat-boxes in September 2017. Between 2017 and 2020, over 100 individuals of Leisler's bats were banded there, usually creating harems



Fig. 1. Long-distance movement of two Leisler's bats (*Nyctalus leisleri*) from Bečov nad Teplou (Czech Republic) to Malaucène (France).

Obr. 1. Dálkový přelet netopýřů stromových (*Nyctalus leisleri*) z Bečova nad Teplou (Česká republika) do Malaucène (Francie).

of one male and several females. In August and September 2019, 13 bat-boxes were found to be occupied by Leisler's bats (54 females and 12 males). In the bat-boxes in this area, the species is regularly present only during the mating season, in August and September. The second individual documented in Malaucène (CZ03???) was also banded in the Slavkovský les Protected Landscape Area in September 2019 – probably also near Bečov na Teplou, although some individuals with this code were banded in site about 13 km southwest of the above mentioned area.

This is the first known case of a migration of the Leisler's bat between the Czech Republic and another country. Several similar movements of Leisler's bats are known between Germany and Spain and between Belgium and Spain (OHLENDORF et al. 2000, WOHLGEMUTH et al. 2004, ALCALDE et al. 2013), with one of them comprising a two-way migration (OHLENDORF et al. 2001). The common feature of these movements is the NE-SW direction, seasonality, late summer or autumn presence of the bats in bat-boxes, and only females being recaptured. There are still only a few such observations, but it is likely that in the behaviour of the Leisler's bat sexual segregation due to long-distance migration exists – females migrate up to several thousand kilometres, whereas males seem to travel for short distances or stay at the same place year-round (IBAÑEZ et al. 2009).

Due to the incomplete information on the band code of the second individual it is not possible to say whether the group of Leisler's bats migrated from its breeding area to the hibernaculum together, while it seems to be very likely though.

*Nyctalus leisleri* have a wide distribution range across much of Europe but is considered rather rare almost in all parts of it. In the Czech Republic it is still an insufficiently known species despite intensive investigations and increasing numbers of records over the last decade – the Leisler's bat was recorded in 19% of the grid mapping squares in the territory of the Czech Republic until 2010 and in 29% of the squares until 2020 (HORÁČEK & UHRIN 2010, AOPK ČR 2020). The species is more regularly detected only in regions with old deciduous forests with sufficient amount of tree holes (ANDĚRA & HORÁČEK 2005). In the region of the Slavkovský les Mts., where coniferous forests prevail, Leisler's bats were observed only in bat-boxes in the August–September period (plus two females once in March). It is therefore possible that *Nyctalus leisleri* use the bat-boxes as a stopover for mating and rest during their migration from other regions of Europe situated northeast of Bohemia. A similar pattern of behaviour is known in the Nathusius' pipistrelle (*Pipistrellus nathusii*) – the late summer migration period of this bat spans approximately two month with intermittent stopovers for mating (ALCALDE et al. in press).

High occupancy rate of the bat-boxes by *Nyctalus leisleri* probably also indicates the lack of natural tree holes in some regions and an importance of the protection of old forests, trees, and even the usefulness of bat-boxes that are used as compensatory daytime roosts by migrating individuals. The finding of Leisler's bats in the shed in southern France also suggests (in accordance to WOHLGEMUT et al. 2004) that this species is not a pure forest-dwelling bat but may roost in various artificial structures, including houses.

## SOUHRN

Dne 28. ledna 2020 byli při opravě kůlny u venkovského domu obklopeného vinicemi a sady u obce Malaucène v jižní Francii nalezeni tři zimující netopýři stromoví (*Nyctalus leisleri*). Dva z těchto netopýřů měli kroužky se znaky CESON.ORG, které jsou od roku 2019 používány pro kroužkování netopýřů v České republice. Z pořízených fotografií se podařilo u jednoho z netopýřů odečíst celou kombinaci znaků (CZ03313). Šlo o samici odchycenou a okroužkovanou 9. září 2019 v netopýří budce v komplexu smrkových lesů na Bečovsku v CHKO Slavkovský les. Samice zde byla okroužkována společně s dalšími devíti netopýři stromovými (jedním samcem a osmi samicemi), tedy v harému – uskupení, které netopýři vytvářejí během páření na konci srpna a v září.

Záznam je prvním dokladem dálkové migrace netopýra stromového z území České republiky – vzdálenost místa zimování a kroužkování je 878 km. Pozorování rovněž podává přímý důkaz o tom, že netopýři stromoví jsou koncem léta či na podzim schopni z oblasti střední nebo severovýchodní Evropy migrovat do jihovýchodní části kontinentu během poměrně krátké doby (časové rozmezí mezi pozorováními je 141 dní). Všechna doposud známá zpětná hlášení týkající se dálkového přesunu netopýřů stromových totiž vždy od data kroužkování dělilo nejméně šest měsíců, častěji však i několik let.

U druhého z netopýřů se podařilo odečíst jen počátek kódu (CZ03???). Jde o jedince okroužkovaného ve stejném roce rovněž ve Slavkovském lese. Tento kód byl použit pro dalších 16 netopýřů stromových, z nichž 12 bylo okroužkováno na Bečovsku, čtyři byli ale okroužkováni ještě v oblasti 13 km dále na jihozápad. Nelze tedy s jistotou tvrdit, že by šlo o jedince ze stejné budky, kteří by pak sdíleli i stejné zimoviště (a možná se na něj i společně přesouvali).

Je pravděpodobné, že Slavkovský les leží na migrační trase netopýřů stromových žijících přes léto v severnějších oblastech a ve Slavkovském lese (a zdejších budkách) se zdržují pouze během poměrně krátkého období během srpna až září.

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