

The highest documented occurrence of *Crocidura leucodon* in the Western Carpathians (Eulipotyphla: Soricidae)

Najvyšší potvrdený výskyt bielozubky bielobruchej (*Crocidura leucodon*) v Západných Karpatoch (Eulipotyphla: Soricidae)

Andrea LEŠOVÁ^{1,2}, Peter LEŠO¹ & Rudolf KROPIL¹

¹ Technical University in Zvolen, T. G. Masaryka 24, SK–960 01 Zvolen, Slovakia;
andrea.lesova@tuzvo.sk, leso@tuzvo.sk, kropil@tuzvo.sk

² State Nature Conservancy of the Slovak Republic, Tajovského 28B, SK–974 01 Banská Bystrica,
Slovakia; andrea.lesova@soprs.sk

received on 13 September 2018

Abstract. A dead individual of *C. leucodon* was found in the Lower Tatra Mts. (Central Slovakia, Western Carpathians). The site is situated in the westernmost part of the main ridge of this mountain range at the altitude of 1,150 m a. s. l. The prevailing habitat is a mountain meadow surrounded by spruce and beach-maple forests. In Central Europe, the species usually occurs in lowland and hilly areas, records above 600 m a. s. l. are very rare. The finding of *C. leucodon* in the mountain ridge at this extraordinary altitude is the highest documented occurrence of the species in the Western Carpathians and Central Europe as well. It is probably related to expansion of the species range in the recent decades and its spreading to higher altitudes, which is more common at the southern border of its distribution area.

Key words. Lower Tatras, mountain meadow, range expansion, Slovakia.

The bicoloured white-toothed shrew, *Crocidura leucodon* (Hermann, 1870) has been expanding in Central Europe and occupying also untypical habitats (ANDĚRA 2000, 2003, ZBYTOVSKÝ et al. 2004, LEŠO et al. 2008, ZBYTOVSKÝ 2010). Its distribution range covers the central and southern parts of Europe as well as the Palaearctic part of Asia, from 05° W to 55° E and from 35° to 53° N (MITCHELL-JONES et al. 1999). The species is commonly considered to inhabit mainly open landscape, particularly agricultural lands, and at the northern margin of its range it tends to be associated with urban habitats (MITCHELL-JONES et al. 1999).

In Central Europe, this species usually occurs in lowland and hilly areas up to 600 m a. s. l., it prefers mainly warm and dry sites of steppe and forest-steppe character, and rather avoids continuous forest complexes (ANDĚRA 2003, BALÁŽ & AMBROS 2007, KRÍŠTOFÍK & DANKO 2012). However, in the southern parts of its distribution range, records of the species from mountains are not exceptional (KRYŠTUFEK 2009). The latter author mentioned findings from a mountain pine stand at 1,650 m a. s. l. in south-western Slovenia and from altitudes around 2,000 m a. s. l. in Macedonia, Anatolia, Lebanon, Georgia, and Iran.

A dead adult individual of *C. leucodon* was found on the mountain trail at Hadlianka, in the Lower Tatra Mts. (Central Slovakia, Western Carpathians) on 29 July 2017. The site is situated in the westernmost part of the main mountain ridge, at the altitude of 1,150 m a. s. l. (geographical coordinates 48° 51' 37.9" N, 19° 16' 53.8" E; WGS 84). The prevailing habitat is a mountain meadow surrounded by spruce (from the north) and beech-maple (from the south) forests.

Until recently, the hypsometric range of *C. leucodon* in Slovakia was limited to the span of 100–1,100 m a. s. l. (BALÁŽ & AMBROS 2007, KRIŠTOFÍK & DANKO 2012), and the highest altitude was recorded by MOŠANSKÝ (1957; in KRIŠTOFÍK & DANKO 2012) in the Kojšovská hoľa Mt. (Volovské vrchy Mts.), in vicinity of a mountain cottage at 1,050 m a. s. l. An unusual occurrence of one individual inside a fir-beech forest in central Slovakia at the altitude of 850 m a. s. l. was published by LEŠO et al. (2008). The authors considered the increasing fragmentation of the extensive forest complex as one of the reasons of the species presence in unusual habitats. The finding of *C. leucodon* on the mountain ridge at the altitude of 1,150 m a. s. l. is the highest documented occurrence of the species in the Western Carpathians and Central Europe as well. It is probably related to the range expansion of the species in recent decades and its spreading to higher altitudes.

SÚHRN

V júli 2017 bol náhodne objavený kadáver dospelého jedinca bielozubky bielobruchej (*Crocidura leucodon*) na lokalite Hadlianka, v najzápadnejšej časti hlavného hrebeňa Nízkych Tatier, v nadmorskej výške 1150 m (geografické súradnice 48° 51' 38" N, 19° 16' 54" E; WGS 84). Ide o najvyššie doložený výskyt druhu na území Západných Karpát a strednej Európy. Biotop na lokalite je tvorený horskou lúkou nesúvislo sa tiahnucou hlavným hrebeňom západnej časti pohoria. Z južnej strany lúku lemujú bukové lesy s prímiesou javora horského, zo severnej strany prevažne smrečiny. Ojedinelé výskyty druhu vo vyšších polohách objavujúce sa v poslednom období v strednej Európe pravdepodobne súvisia s rozširovaním areálu druhu,



Fig. 1. A dead individual of *Crocidura leucodon*, found in the Lower Tatra Mts., Slovakia, at 1,150 m a. s. l. Obr. 1. Uhynutý jedinec bielozubky bielobruchej (*Crocidura leucodon*) nájdený v Nízkych Tatrách v nadmorskej výške 1150 m.



Fig. 2. View of the site of the *Crocidura leucodon* record in the Lower Tatra Mts., Slovakia.

Obr. 2. Pohľad na stanovište s nálezom bielozubky bielobruchej (*Crocidura leucodon*) v Nížkych Tatrách (stredné Slovensko).

vrátane hypsometrického. Zatiaľ čo v strednej Európe ide o ojedinelé záznamy v takýchto habitatoch, v južnej časti areálu (južná Európa, Blízky východ) sú takéto výskyt zaznamenávané oveľa bežnejšie.

A c k n o w l e d g e m e n t s

Preparation of this contribution was supported by the Slovak Research and Development Agency under the Contract No. APVV-14-0637.

REFERENCES

- ANDĚRA M., 2000: *Atlas of the Mammals of the Czech Republic. A Provisional Version. Insectivores (Insectivora)*. Národní muzeum, Praha, 108 pp (in Czech, with a summary in English).
- ANDĚRA M., 2003: Vývoj areálu bělozubky bělobřiché (*Crocidura leucodon*) v ČR [Forming of the distribution range of the bicoloured white-toothed shrew (*Crocidura leucodon*)]. P.: 166. In: BRYJA J. & ZUKAL J. (eds.): *Zoologické dny. Brno 2003. Sborník abstraktů z konference 13.–14. února 2003 [Zoological Days. Brno 2003. Abstract Book of the Conference held on 13–14 February 2003]*. Ústav biologie obratlovců, Brno, 244 pp (in Czech).
- BALÁŽ I. & AMBROS M., 2007: *Rozšírenie, habitus populácie a rozmnožovanie druhov Crocidura Herm. a Neomys Kaup (Mammalia: Eulipotyphla) na Slovensku. Edícia Prírodovedec 277 [Crocidura Herm.*

- and *Neomys Kaup* (Mammalia: Eulipotyphla) Species Distribution, Population Habitus and Reproduction in Slovakia]. FPV UKF, Nitra, 99 pp (in Slovak, with a summary in English).
- KRIŠTOFÍK J. & DANKO Š. (eds.), 2012: *Cicavce Slovenska. Rozšírenie, bionómia a ochrana* [Mammals of Slovakia. Distribution, Bionomy and Protection]. Veda, Bratislava, 711 pp (in Slovak).
- KRYŠTUFEK B., 2009: Unusual occurrence of the bicoloured white-toothed shrew (*Crocidura leucodon*): perspective from Slovenia (Soricomorpha: Soricidae). *Lynx, n. s.*, **40**: 133–134.
- LEŠO P., LEŠOVÁ A. & KROPIL R., 2008: Unusual occurrence of the bicoloured white-toothed shrew (*Crocidura leucodon*) in a fir-beech forest in central Slovakia (Soricomorpha: Soricidae). *Lynx, n. s.*, **39**: 191–194.
- MITCHELL-JONES A. J., AMORI G., BOGDANOWICZ W., KRYŠTUFEK B., REIJNDERS P. J. H., SPITZENBERGER F., STUBBE M., THISSEN J. B. M., VOHRALÍK V. & ZIMA J., 1999: *The Atlas of European Mammals*. Academic Press, London, 484 pp.
- ZBYTOVSKÝ P., 2010: První nálezy bělozubky bělobřiché (*Crocidura leucodon*) v Třeboňské pánvi [First records of the bicoloured white-toothed shrew (*Crocidura leucodon*) in the Třeboň Basin (Czech Republic)]. *Lynx, n. s.*, **41**: 235–236 (in Czech, with an abstract in English).
- ZBYTOVSKÝ P., ANDĚRA M. & HANÁK V., 2004: Drobní savci jižní části Českomoravské vrchoviny (Insectivora, Chiroptera, Rodentia) [Small mammals of the southern parts of the Českomoravská vrchovina Highland (Insectivora, Chiroptera, Rodentia)]. *Lynx, n. s.*, **35**: 141–245 (in Czech, with an abstract in English).