



## The second record of *Pipistrellus kuhlii lepidus* Blyth, 1845 (Chiroptera: Vespertilionidae) in Warsaw (central Poland)

Grzegorz LESIŃSKI<sup>1</sup> and Krzysztof JANUS<sup>2</sup>

<sup>1</sup>*Institute of Animal Science, Warsaw University of Life Sciences – SGGW, Ciszewskiego 8, 02-786 Warsaw, Poland, e-mail: grzegorz\_lesinski@sggw.edu.pl; <https://orcid.org/0000-0003-3471-4821> (corresponding author)*

<sup>2</sup>*Nature Research Office, Krafcowa 59/82, 02-493 Warsaw, Poland, e-mail: biuro@ornitolog.com.pl*

**Abstract:** A male of *Pipistrellus kuhlii lepidus* was found in a large housing estate in Warsaw (central Poland) on 9<sup>th</sup> March 2023. The bat hibernated in a crevice on balcony on the sixth storey of a residential house. This is the second finding of this species in Warsaw, which may suggest that a stable population of the species has been formed there. The presence of *P. k. lepidus* in Warsaw is probably an effect of its natural expansion from south-east Europe.

**Key words:** Kuhl's pipistrelle, range expansion, synurbization, hibernation, climate warming, Central Europe

*Pipistrellus kuhlii* was first noted in Poland in Warsaw in the year 2004 (Popczyk et al. 2008). Individual found there showed traits of the eastern subspecies *P. kuhlii lepidus*. Initially, it was not clear whether this finding was a result of natural migration or an anthropogenic translocation. However, it soon appeared that in the last decades, south-eastern Europe faces the natural expansion of this species (Sachanowicz et al. 2006, Shpak & Larchenko 2016, Sachanowicz et al. 2017, Piskorski & Sachanowicz 2022) and now its compact range may include south-eastern Poland with boundaries north of Lublin Region (Piskorski & Sachanowicz 2022). Noted individuals probably reached Poland mainly from Ukraine. Recently, a juvenile male of *P. kuhlii kuhlii* has been found also in Cracow, which indicates the expanding range also of this subspecies and its reproduction in southern Poland (Postawa & Marchewka 2021). The nominative subspecies has been recorded in few localities in Czechia (Lučan et al. 2020).

The next individual of *P. kuhlii lepidus* was found in Warsaw on 9<sup>th</sup> March 2023. One male was found in a large housing estate Marymont Potok (52.28°N, 20.97°E) on the sixth storey of a residential house. The bat hibernated in a crevice behind styrofoam and a cupboard on the balcony and was found during cleaning. The owner did not see bats there earlier. Apart from *P. kuhlii lepidus*, the male of *Vespertilio murinus* was also found there.

The housing estate where bats were found is typical for large cities with buildings of several or more storeys. It is situated 0.5–1 km from the large Vistula River in the close neighbourhood of peripheral forest of an area of 150 ha (old deciduous tree stand with oaks up to 400 years old) mostly protected as the nature reserve „Las Bielański” (132.6 ha). The estate neighbours also a narrow floodplain lake from about fifteen to about fifty metres wide and 2 km long.

Found individual displayed typical species-specific traits. The fur of its back was light cream-brown with yellowish coating, especially near head (Fig. 1). Abdominal part was covered by dirty white fur (dark grey at the base and yellowish near head) clearly lighter than that on the back. Snout and ears were relatively light, flesh-coloured to brown. The edge of patagium between the fifth finger and the hind limb had a whitish belt up to 1 cm wide (the widest near finger). Tail membrane was also white at the edges (Fig. 2). Penis was pear-shaped, about two times narrower at the base than in the widest place, light flesh-coloured to grey and coated by



Fig. 1. A head and a back side of the male of *Pipistrellus kuhlii lepidus* found in Warsaw (photo by Krzysztof Janus).



Fig. 2. Abdominal part of the male of *Pipistrellus kuhlii lepidus* with clear features of its colouration (photo by Krzysztof Janus)

whitish hair. The bat was in good condition and its mass was 7.5 g. Its forearm was 34.9 mm long. After measurements, the male of *P. kuhlii lepidus* was placed in a substitute roost on the balcony of a house about 5 km away from the place it was found. In the new site, the bat hibernated until the night 14/15 March when it left the roost without human interference. The day before was much warmer with maximum temperature reaching +15°C.

Found individual was quite similar in colouration to the one first observed in Warsaw (Popczyk et al. 2008). It is very probable that the individuals of *P. kuhlii lepidus* found in the city represent already established population of this species. Certainly, the population is not numerous because this species is very rare among all bats being accidentally found in Warsaw (unpubl. data). This bat, often roosting in buildings, finds suitable habitats in a large city. A greater number of findings of this bat facilitated by recent climate warming may be expected in the future. Climate changes experienced in the last decades contributed to the presence of new bat species in Poland. Apart from *P. kuhlii*, these species include: *Myotis blythii* (Piksa 2006), *Hypsugo savii* (Uhrin et al. 2015) and *Miniopterus schreibersii* (Piksa & Gubała 2021).

#### REFERENCES

- LUČAN R. K., REITER A., CHYTL J., HORÁČEK I. & BARTONIČKA T. 2020. *Pipistrellus kuhlii* in the Czech Republic: 2007–2020 (Chiroptera: Vespertilionidae). *Lynx* (Praha), n. s. 51: 81–94. doi.org/10.37520/lynx.2020.007
- PIKSA K. 2006. First record of *Myotis blythii* in Poland (Chiroptera: Vespertilionidae). *Lynx* (Praha), n. s. 37: 197–200.
- PIKSA K. & GUBAŁA W. 2021. First record of *Miniopterus schreibersii* (Chiroptera: Miniopteridae) in Poland – a possible range expansion? *Mammal Research* 66: 211–215. doi.org/10.1007/s13364-020-00533-8
- PISKORSKI M. & SACHANOWICZ K. 2022. Different songflight calls of *Pipistrellus kuhlii* and *Pipistrellus lepidus* (Vespertilionidae, Chiroptera) in Europe. *Journal of Vertebrate Biology* 71: 21058. doi.org/10.25225/jvb.21058
- POPCZYK B., LESIŃSKI G., BAUMANN A. & WOJCIWICZ B. 2008. Kuhl's pipistrelle, *Pipistrellus kuhlii* (Kuhl, 1817) or *Pipistrellus lepidus* Blyth, 1845, in Central Poland – accidental record or a result of expansion? *Nyctalus* (N.F.) 13: 279–281.
- POSTAWA T. & MARCHEWKA A. 2021. The first record of a maternity colony of Kuhl's pipistrelle *Pipistrellus kuhlii* (Chiroptera) in Poland. *Theriologia Ukrainica* 22: 94–99. doi.org/10.15407/TU2210
- SACHANOWICZ K., PISKORSKI M. & TEREBA A. 2017. Systematics and taxonomy of *Pipistrellus kuhlii* (Kuhl, 1817) in Central Europe and the Balkans. *Zootaxa* 4306: 53–66. doi.org/10.11646/zootaxa.4306.1.2
- SACHANOWICZ K., WOWER A. & BASHTA A.-T. 2006. Further range extension of *Pipistrellus kuhlii* (Kuhl, 1817) in Central and Eastern Europe. *Acta Chiropterologica* 8: 543–548. doi.org/10.3161/1733-5329(2006)8[543:FREOPK]2.0.CO;2
- SHPAK A. & LARCHENKO A. 2016. Range expansion of Kuhl's pipistrelle (*Pipistrellus kuhlii*) into Belarus. *Proceedings of the Theriological School* 14: 99–102. doi.org/10.15407/ptt2016.14.099
- UHRIN M., HÜTTMEIR U., KIPSON M., ESTÓK P., SACHANOWICZ K., BÜCS S., KARAPANDŽA B., PAUNOVIĆ M., PRESETNIK P., BASHTA A. T., MAXINOVÁ E., LEHOTSKÁ B., LEHOTSKÝ R., BARTI L., CSÖSZ I., SZODORAY-PARADI F., DOMBI I., JÉRE C., POCORA I. & BENDA P. 2015. Status of Savi's pipistrelle *Hypsugo savii* (Chiroptera) and range expansion in Central and southeastern Europe: a review. *Mammal Review* 46: 1–16. doi.org/10.1111/mam.12050

#### STRESZCZENIE

#### [Powtórne stwierdzenie *Pipistrellus kuhlii lepidus* Blyth, 1845 (Chiroptera: Vespertilionidae) w Warszawie]

Na dużym osiedlu mieszkaniowym w Warszawie 9 marca 2023 odnaleziono samca *Pipistrellus kuhlii lepidus*. Nietoperz hibernował w szczelinie na balkonie na szóstej kondygnacji bloku mieszkalnego. Wykazywał typowe cechy podgatunku (Ryc. 1 i 2), masa ciała – 7,5 g, a długość przedramienia – 34,9 mm. Jest to drugie stwierdzenie tego gatunku w tym mieście, wskazujące, że mogła się tu już utworzyć stała jego populacja. Obecność tego nietoperza w Warszawie jest prawdopodobnie efektem naturalnej jego ekspansji z południowo-wschodniej Europy.