

Short note

*Successful Wintering of the Noctule *Nyctalus noctula* on a Balcony in Warsaw (Central Poland)*

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Abstract. Wintering of the noctule *Nyctalus noctula* was recorded on a balcony in Warsaw (central Poland) in winter 2018/2019. About 40 individuals of this species inhabited a shopping bag closed on top. At the end of February and the beginning of March 2019 bats ended hibernation and flew out of this provisional roost. Three dead individuals remained there. Recent climate change resulting in milder winters makes noctules able to overwinter in central Poland even in shelters poorly isolated from external conditions.

Key words: bats, Chiroptera, behaviour, hibernation, climate warming, urban habitats, Poland.

Introduction

Several decades ago, in the second half of the 20th century, the noctule *Nyctalus noctula* (Schreber, 1774) from central and eastern Europe was considered a species performing regular seasonal migrations at distances as long as 1500 km or more (STRELKOV, 1969; HUTTERER *et al.*, 2005). Polish noctules were found during hibernation in areas located south and south-west from Poland (HUTTERER *et al.*, 2005). Its natural roosts are known mostly from tree holes (GEBHARD & BOGDANOWICZ, 2004) which makes difficult hibernation in colder parts of Europe. Recently, the cases of overwintering of this species, especially in urban areas, have been more and more often recorded in central part of the continent (GAISLER, 1999; KAŃUCH & CEŁUCH, 2000; DZIĘGIELEWSKA & DZIĘGIELEWSKI, 2002; BIHARI, 2004; CEŁUCH *et al.*, 2006; CICHOCKI *et al.*, 2015) as well as in

eastern part of the continent (GODLEWSKA, 2015). The number of hibernating noctules also markedly increased in various regions of Poland, including eastern part of the country (ŁUPICKI *et al.*, 2007). This species is common in the whole territory of the country and belongs to the most abundant bats (SACHANOWICZ *et al.*, 2006).

Results and Discussion

Wintering noctules were found on a balcony on the second storey of a residential block (Fig. 1) in Warsaw, central Poland (52.28 N, 20.98 E). The distance of this site to central point of a city is 6 km. Owners of the apartment found bats in a shopping bag made of thick linen and closed atop (Fig. 2). On 29th January 2019 the place was searched and it appeared that noctules winter there in an aggregation of about 40 individuals (Fig. 2). After raising the bag most bats slightly moved,



Fig. 1. Residential building where noctules hibernated (Photo: K. Janus).



Fig. 2. Wintering shelter of a group of the noctule on a balcony (Photos: K. Janus).

which evidenced that animals were alive. In the end of February and the beginning of March the bats left their wintering place. Three dead individuals remained there.

Winter 2018/2019 was relatively mild in central Poland. Mean air temperature of the coldest month (January 2019) was -1.6°C . Minimum recorded temperatures were: -7.3°C

(November 2018), -10.5°C (December 2018), -11.9°C (January 2019) and -7.3°C (February 2019). The longest periods when the lowest daily air temperatures fell below -5°C occurred in January and lasted five and three days (data of IMGW-PIB). According to information provided by the owners, bats were seen in previous years in late autumn

and early winter entering a crack in the wall just above the balcony. This roost was used by wintering individuals. In 2018 the crack was sealed when the wall was insulated. Hibernation site selected by noctules close to previous roost indicates a high level of site fidelity of this species.

Regular and frequent wintering of the noctule in Warsaw is a relatively new phenomenon. Two decades ago, winter findings of this species were still rare (LESIŃSKI *et al.*, 2001), while in the last years the bats have been frequently noted (unpublished data of authors). In this part of Europe bat hibernation in poorly isolated sites is difficult. The noctule belongs to species resistant to periodical temperature declines below 0°C. It was found that winter aggregations are able to survive several-day-long frosts even fifteen degrees below zero (SLUITER *et al.*, 1973). This feature may explain successful overwintering of most individuals that chose shelters poorly protected against frosts in Warsaw. Attempts of wintering on a balcony were also noted in Wrocław in south-western Poland (CICHOCKI *et al.*, 2015) where winters are definitely warmer than those in Warsaw. Circumstances of that finding were similar – bats occupied the balcony when they lost shelters on attic due to renovation of the whole building.

Due to recent climate change and offer of alternative roosts in urban areas, the noctules have probably adjusted their migratory behaviour from long-distance seasonal migrations towards south hibernacula to occasional hibernation in the area of summer residence. This change is beneficial because migrations pose numerous risks and increase biological exhaustion of an organism. One may expect that the sedentary individuals of the noctule will achieve a slightly greater longevity. The longest lifetime of the species recorded so far is about 12 years (HEISE & BLOHM, 2004). If similarly mild winters will happen more regularly, one may expect that the

number of noctules wintering in Poland will increase, also in eastern part of the country, which is characterised by a colder climate.

References

- BIHARI Z. 2004. The roost preference of *Nyctalus noctula* (Chiroptera, Vespertilionidae) in summer and the ecological background of their urbanization. – *Mammalia*, 68: 329-336. [DOI]
- CELUCH M., Š. DANKO, P. KAŃUCH. 2006. On urbanisation of *Nyctalus noctula* and *Pipistrellus pygmaeus* in Slovakia. – *Vespertilio*, 9-10: 219-22.
- CICHOCKI J., D. ŁUPICKI, J. BOJARSKI, A. WAŻNA. 2015. The impact of the moon phases on winter activity of the noctule bats *Nyctalus noctula*. – *Polish Journal of Ecology*, 63: 616-622. [DOI]
- DZIĘGIELEWSKA M., K. DZIĘGIELEWSKI. 2002. Untypical winter shelters of *Nyctalus noctula* in the urban-industrial agglomeration. – *Nietoperze*, 3: 299-300. (In Polish with English summary).
- GAISLER J. 1999. Synurbanization of the noctule *Nyctalus noctula*. – In: Cruz M., K. Kozakiewicz (Eds.): *Bats and Man. Million Years of Coexistence. Abstracts of the VIIIth EBRS 23-27 August 1999*, CIC ISEZ PAN, Kraków: 18.
- GEBHARD J., W. BOGDANOWICZ, 2004. *Nyctalus noctula* (Schreber, 1774) – Grosser Abendsegler. – In: Krapp F. (Ed.) *Handbuch der Säugetiere Europas*. Vol. 4/II: Fledertiere (Chiroptera) II, pp. 607-694.
- GODLEVSKA L.V. 2015. Northward expansion of the winter range of *Nyctalus noctula* (Chiroptera: Vespertilionidae) in Eastern Europe. – *Mammalia*, 79: 315-324. [DOI]
- HEISE G., T. BLOHM, 2004. Zum Migrationsverhalten uckermärkischer Abendsegler (*Nyctalus noctula*). – *Nyctalus* (N.F.), 9: 249-258.

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- HUTTERER R., T. IVANOVA, C. MEYER-CORDS, L. RODRIGUES. 2005. Bat migrations in Europe. A review of banding data and literature. - *Naturschutz und Biologische Vielfalt*, 28: 1-162.
- KAŃUCH P., M. CELUCH. 2000. The occurrence of *Nyctalus noctula* in prefabs in 1998-1999 (E-Slovakia). - *Vespertilio*, 4: 146-148.
- LESIŃSKI G., E. FUSZARA, M. KOWALSKI. 2001. Characteristics of urban bat community of Warsaw. - *Nietoperze*, 2: 3-17. (In Polish with English summary).
- ŁUPICKI D., R. SZKUDLAREK, J. CICHOCKI, M. CIECHANOWSKI. 2007. The wintering of noctule bat *Nyctalus noctula* (Schreber, 1774) in Poland. - *Nietoperze*, 8: 27-38. (In Polish with English summary).
- SACHANOWICZ K., M. CIECHANOWSKI, K. PIKSA. 2006. Distribution patterns, species richness and status of bats in Poland. - *Vespertilio*, 9-10: 151-173.
- SLUITER J. W., A. M. VOÛTE, P. F. VAN HEERDT. 1973. Hibernation of *Nyctalus noctula*. - *Periodicum Biologorum*, 75: 181-188.
- STRELKOV P. P. 1969. Migratory and stationary bats (Chiroptera) of the European part of the Soviet Union. - *Acta Zoologica Cracoviensia*, 14: 393-439.

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