

Review of the Hungarian data of *Nyctalus lasiopterus* (SCHREBER, 1780)

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ABSTRACT: The Hungarian data of *Nyctalus lasiopterus* are reviewed, taking all published, unpublished data in consideration, including the new results of the authors. The paper summarises the data of 102 individuals of *N. lasiopterus* and data of occurrences without notes on the numbers of specimens. Data after 1990 are more significant and discussed according to geographic areas of Hungary. Lactating females were mist-netted at five localities, which proved the existence of nursery colonies in Hungary. Most of the specimens were mist-netted in the Mátra Mountains and in the Bükk Mountains, parts of the Northern Hungarian Mountain Range. All captured specimens were mist-netted near small lakes and streams in or near woodlands. These water bodies are important elements of the species's habitat as drinking places. The known Hungarian population of the species is located to a few points of mountain woodland habitats. Intensive logging in these habitats are threatening the nursery colonies of *Nyctalus lasiopterus*, resulting the considerable possibility of local extinctions.

Introduction

Nyctalus lasiopterus (SCHREBER, 1780) is a widespread species in the Palaearctic region. The area of the species extends from the westernmost localities in France and Iberia eastwards to the Urals, Iran and Kazakhstan, southwards to Morocco, Libya and possibly Algeria (IBÁÑEZ *et al.* 2004, SIMMONS 2005). Besides this large area the species is considered to be rare all over its range. In many European countries there are only a few known data of the species (IBÁÑEZ *et al.* 2004).

N. lasiopterus (Fig.1.) was first observed in Hungary in 1933 by Vásárhelyi (TOPÁL 1959). Only another three additional specimens were collected in the country till 1974. After two decades of deficiency of occurrences, several individuals were seen and mist-netted in North-East Hungary. These new observations are the results of the increasing numbers of mist-netting in the woodlands of North-East Hungary.

Materials and Methods

In order to summarise the Hungarian data of *N. lasiopterus* between 1933 and 2006, besides our results all publications concerning the observations of the species in the country were examined. Unpublished information of the species was also collected.

At the time of the rediscovery of the species in Hungary, the bat research in forest habitats was getting more active, particularly in North-East Hungary. In the Bükk Mountains we have mist-netted at more than 50 places – all situated in woodland – over 400 times between 1991 and 2006. The observed sites were valleys with streams and small lakes surrounded with different plant associations (*Quercus petraeae-Carpinetum*, *Quercetum petraeae-cerris*, *Aegopodio-Alnetum*, *Melittio-Fagetum*, *Aconito-Fagetum*). We have also mist-netted near four ponds in the neighbouring Mátra Mountains on more than 20 occasions between 1995 and 2006.

Results

Data of 102 specimens, and data of occurrences without notes on the numbers of individuals were collected (Table 1.). *N. lasiopterus* was observed on 10 different locations in Hungary (Fig. 2.). Data were arranged in two sections due to the presence of a considerable hiatus between them.

Table 1. Data of *Nyctalus lasiopterus* in Hungary between 1933 and 2006 – A *Nyctalus lasiopterus* magyarországi adatai az 1933 és 2006 közötti időszakból

Location	Date	Number of specimens	Sex ratio ♂/♀	Observer (author)	Comments
Lillafüred (Miskolc)	11.09.1933	1	1/0	VÁSÁRHELYI (TOPÁL 1959)	juv.
Szabadegyháza	10.04.1960	2	1/1	(TOPÁL 1976)	male born in captivity
Tápióbicske	1974	1	indet.	(TOPÁL 1976)	mummy
Parád	04.08.1992	?	–	(CZÁJLIK & HARMOS 1997)	flying specimen(s)
Felsőtárkány	19.07.1993	1	0/1	(GOMBKÖTŐ <i>et al.</i> 1996)	mist-net
Felsőtárkány	28.07.1993	?	–	(DOBROSI 1994)	flying specimen(s)
Felsőtárkány	29.07.1993	3	3 indet.	(DOBROSI 1994) and pers. comm.	mist-net
Miskolc	31.07.1993	?	–	(DOBROSI 1994)	flying specimen(s)
Felsőtárkány	01.08.1993	1	0/1	(GOMBKÖTŐ <i>et al.</i> 1996)	mist-net
Felsőtárkány	11.09.1993	1	1/0	(GOMBKÖTŐ <i>et al.</i> 1996)	mist-net
Rudabányácska	23.07.1994	1	0/1	(GOMBKÖTŐ <i>et al.</i> 1996)	mist-net
Felsőtárkány	10.08.1994	1	0/1	(GOMBKÖTŐ <i>et al.</i> 1996)	mist-net
Parád	14.08.1994	?	–	(CZÁJLIK & HARMOS 1997)	flying specimen(s)
Felsőtárkány	31.08.1994	1	0/1	(GOMBKÖTŐ <i>et al.</i> 1996)	mist-net
Parád	23.07.1995	5	0/5	(GOMBKÖTŐ <i>et al.</i> 1996)	mist-net
Parád	24.07.1995	?	–	(CZÁJLIK & HARMOS 1997)	flying specimen(s)
Parád	27.07.1995	?	–	(CZÁJLIK & HARMOS 1997)	flying specimen(s)
Parád	16.06.1996	?	–	(CZÁJLIK & HARMOS 1997)	flying specimen(s)
Háromhuta	13.07.1996	1	0/1	(GOMBKÖTŐ <i>et al.</i> 1996)	mist-net
Parád	07.08.1996	6	2/4	(CZÁJLIK & HARMOS 1997)	mist-net
Parád	08.08.1997	1	0/1	GOMBKÖTŐ	mist-net
Parád	10.08.1997	6	0/6	GOMBKÖTŐ	mist-net
Felsőtárkány	13.08.1997	3	1/2	ESTÓK & GOMBKÖTŐ	mist-net
Arló	31.08.1998	1	indet.	(CSERKÉSZ 1998)	owl pellet
Parád	05.06.1999	1	0/1	PAULOVICS	mist-net
Parád	03.07.1999	4	0/4	PAULOVICS	mist-net
Parád	29.07.1999	8	1/7	ESTÓK	mist-net
Parád	03.08.2000	5	1/4	ESTÓK	mist-net
Regéc	14.08.2000	1	0/1	GÉCZI	mist-net
Parád	22.06.2002	4	1/3	GOMBKÖTŐ	mist-net
Szinpetri	23.07.2003	2	0/1 + 1 indet.	BOLDOGH	mist-net; observation
Parád	26.07.2004	7	1/6	ESTÓK	mist-net
Parád	29.07.2004	6	1/5	ESTÓK	mist-net
Parád	02.08.2004	8	0/8	CSORBA, ESTÓK & GOMBKÖTŐ	mist-net
Parád	04.09.2004	2	1/1	ESTÓK	mist-net
Parád	13.07.2005	9	1/8	ESTÓK	mist-net
Parád	14.07.2005	2	1/1	ESTÓK	mist-net
Parád	16.07.2005	1	1/0	ESTÓK	mist-net

Location	Date	Number of specimens	Sex ratio $\sigma/\text{♀}$	Observer (author)	Comments
Parád	26.06.2006	3	0/2 +1 indet.	ESTÓK	mist-net
Parád	28.07.2006	3	0/3	ESTÓK	mist-net
Total					
10	–	102	15/80; + 7 indet	–	–

Data before 1975

In this period there are only three data of four specimens of *N. lasiopterus*. In 1933, VÁSÁRHELYI collected one juvenile specimen in the Bükk Mountains, in Lillafüred. He listed that individual as *N. noctula*. In 1958, when TOPÁL was observing the *N. noctula* collection of the Hungarian Natural History Museum, he recognised the specimen was actually a juvenile *N. lasiopterus* (TOPÁL 1959). VÁSÁRHELYI noted that he saw much larger bats flying among the specimens of *N. noctula* near his home at the settlement Lillafüred and in the neighbouring Valley Garadna in 1945, 1957, 1959 and 1961 (VÁSÁRHELYI 1964). The bats he observed may have been also *N. lasiopterus*.

The second specimen was found in Szabadegyháza (TOPÁL 1976). It was a pregnant female, which gave birth to its young on 15 June, 1960.

The third occurrence took place at the settlement Tápióbecske. In 1974, a partly destroyed mummy was found among the carcasses of *Eptesicus serotinus* and *N. noctula* in a church's attic. The circumstances of death are uncertain, maybe the specimen was migrating or hibernating (TOPÁL 1976).

Data after 1990

The Bükk Mountains

During our research programme on forest bats, nearly 3500 specimens were mist-netted in the Bükk Mountains. We have observed *N. lasiopterus* first in 1993 (GOMBKÖTŐ *et al.* 1996), 60 years after VÁSÁRHELYI had collected the species in these mountains. In 1993 and 1994 we mist-netted five individuals at Lake Felsőtárkány, four of them were lactating females. DOBROSI (1994) also mist-netted three specimens at the same lake in 1993, and he also found the species at two other locations: he saw flying specimens in a neighbouring valley, and at Tatár-árok near Miskolc. The last occurrence of *N. lasiopterus* at Lake Felsőtárkány dated to 13 August in 1997, when three specimens were mist-netted. Unfortunately, in the following years the lake lost its water, because the bed was dredged, and the water was leaking. In 2004 the water body was reconstructed successfully. Despite of intensive sampling – 74 mist-nettings – *N. lasiopterus* was not observed since 1997. *N. noctula* were observed in big numbers and *N. leisleri* was also present within several weeks after the reconstruction of the lake. We have no data of the species from the Bükk Mountains since 1997.

The Mátra Mountains

The Mátra Mountains are situated in the Northern Hungarian Mountain Range, west of the Bükk Mountains. In 1995, we mist-netted five lactating females near Parád (GOMBKÖTŐ *et al.* 1996). In the next year CZÁJLIK and HARMOS also mist-netted the species (six specimens) at the same lake, and CZÁJLIK noted that he observed the species visually in the area formerly (CZÁJLIK & HARMOS 1997). In the following years we have captured 65 specimens, and PAULOVICS (pers. comm.) mist-netted five specimens. A total of 81 individuals were mist-netted at this locality between 1995 and 2006. There were only 11 males among the captured specimens, the vast majority of the mist-netted animals were lactating females. We conducted mist-nettings at three other lakes in these mountains, but no specimens of *N. lasiopterus* were found there.



Fig. 1. *Nyctalus lasiopterus*

The Zemplén Mountains

The Zemplén Mountains are situated east of the Bükk Mountains, in the Northern Hungarian Mountain Range. In 1996, BIHARI mist-netted two females of *N. lasiopterus* at two points of the mountains, near two small ponds (GOMBKÖTŐ *et al.* 1996). The specimen mist-netted at Rudabányácska was a lactating female. At this location BIHARI saw several flying individuals of *N. lasiopterus* over the pond. GÉCZI (pers. comm.) mist-netted a lactating female in the vicinity of Regéc, not far from the location where BIHARI mist-netted the species firstly.

Heves-Borsodi Hilly Country

One skull of *N. lasiopterus* was found among the pellets and old food remains of tawny owl (*Strix aluco*) (CSERKÉSZ 1998). The date of capture and the sex of the specimen are unknown. Several times we have mist-netted near a small pond in the valley where the skull was found, but only *N. leisleri* and *N. noctula* were captured.

Gömör-Torna Karst Region

BOLDOGH mist-netted one lactating female above a stream on 23 July, 2003 (MATIS *et al.* 2003). It gave the proof of the presence of a nursery colony in the region. During mist-netting another flying individual was also observed.

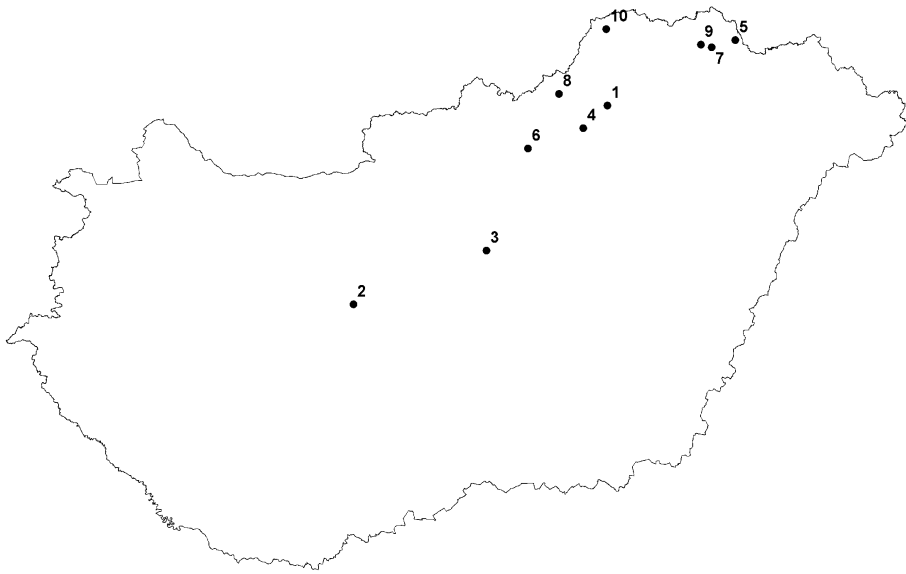


Fig. 2. The localities of *Nyctalus lasiopterus* in Hungary
A Nyctalus lasiopterus magyarországi lelőhelyei (1 Lillafüred /Miskolc/, 2 Szabadegyháza, 3 Tápióbicske, 4 Felsőtárkány, 5 Rudabányácska, 6 Parád, 7 Háromhuta, 8 Járdánháza, 9 Regéc, 10 Szinpetri)

Discussion

All available data of the species were collected, 102 individuals were observed at 10 locations between 1933 and 2006. Only two specimens are originating from Transdanubia. 100 individuals had been detected east of the Danube, all but one in the Northern Hungarian Mountain Range. At present, one significant locality of the species is known in Hungary.

The reproduction of *N. lasiopterus* in Hungary was undoubtedly proven in the 1990's, when lactating females were mist-netted in the Bükk Mountains, Mátra Mountains and Zemplén Mountains (GOMBKÖTŐ *et al.* 1996). The earlier data were not sufficient to prove the presence of a nursery colony in Hungary, because of the time of the observations. The juvenile specimen of VÁSÁRHELYI was captured in September, it may have been migrating, and the pregnant specimen found in Szabadegyháza was captured in an atypical environ for the species in April, so it was probably a migrating bat.

Mist-netting took place between April and September. The biggest numbers of *N. lasiopterus* were observed in July and August, during and after the nursing period. The vast majority of the specimens were lactating females, indicating the presence of nursery colonies. The sex ratio was female dominant (ESTÓK 2007), only 15.8% of the sex-identified specimens were males, most of them juveniles (not all bats were checked regarding age). These results are in contrast with the sex ratio of *N. lasiopterus* noted in Greece (HELVERSEN & WEID 1990), which was male dominant, there was only one female among the observed specimens. It is likely that the females are migrating from Hungary to mating and hibernating sites as the species of *Nyctalus* genus show considerable migrating ability.

All of mist-netted individuals were captured next to water bodies. Small lakes and streams with calm surfaces situated in, or in the vicinity of woodlands are important elements of the habitat of the species. Specimens of *N. lasiopterus* were often observed together with the two other *Nyctalus* species, *N. noctula* and *N. leisleri* at these drinking places. *N. lasiopterus* is an aerial hawking bat, individuals are hunting for insects in considerable heights, far above vegetation. They fly low only when they are leaving from or arriving to their roosts or when drinking. This feature makes these little streams and ponds very important for observing the species, capturing individuals for marking (radio tags, rings etc.) or getting information about them (age, reproductive status and condition etc.).

The known Hungarian population of *N. lasiopterus* located only at a few points of the country. This feature means that local extinctions are quite possible to happen, mainly due to the intensive logging activity in the woodlands of the Northern Hungarian Mountain Range.

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