

FIRST RECORD OF A MATERNITY COLONY OF *NYCTALUS NOCTULA* IN AUSTRIA: DOES THE EUROPEAN NURSING AREA EXPAND?

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RIASSUNTO - *Prima segnalazione di una colonia riproduttiva di *Nyctalus noctula* in Austria: una prova dell'espansione dell'area di riproduzione europea?* Malgrado in Austria la Nottola *Nyctalus noctula* sia una specie relativamente frequente, la sua riproduzione non è mai stata accertata. La recente (Luglio 2006) cattura di 12 femmine adulte allattanti nel Burgenland, rappresenta quindi la prima segnalazione certa di un evento riproduttivo in Austria. Unitamente ad altre osservazioni verificatesi nell'ultimo decennio, questo ritrovamento suggerisce la possibilità di una recente espansione verso sud ovest dell'area di riproduzione europea della specie.

Parole chiave: *Nyctalus noctula*, Chiroteri, riproduzione, areale, Austria

In Austria, *Nyctalus noctula* is very common during migration and hibernation. While males are found here throughout the year, almost all females leave this country in April and return in August for mating. Until now, only few and single females have been found during the summer months. Nursing has been indicated a few times, but has never been proved (Spitzenberger, 1992 and 2002). The aim of this note is to report on the first nursing record of the common noctule in Austria.

The database of Austrian mammals comprises 1600 records of the common noctule, 330 (20.6%) of which refer to females. Their seasonal distribution is conspicuously uneven: during spring migration (March - April), the average number of observed females was 27, during autumn migration and mating (August - November) 21, during hibernation (December - January) 32, and during the nursing time (May - July) only 5. All females found during the summer months were

single and did not show evidence of parturition or lactation.

On 17 July 2006, however, the capture of members of a maternity colony at the western border of the Pannonian basin in Burgenland (Fig. 1) provided the first evidence of nursing of the common noctule in Austria. Among other bat species, 12 adult female, 10 young male and five young female as well as 12 adult male common noctules were captured in nine mist-nets between 21 15 h and 02 00 h. The nets were set across a small fish pond in the military training area of Bruckneudorf, located about 25 km SW of Eisenstadt, Burgenland (48 00 N, 16 44 E, 158 m a.s.l.). The pond is formed by a very small brook (Steinbach) bordered by low bushes, 0.8 km south of the river Leitha and 0.6 km south of the Leitha channel. Most of the pond area is surrounded by fields and fallow land, but on two sides very small stands of old trees (poplar, willow, ash and false acacia) adjoin the water surface.

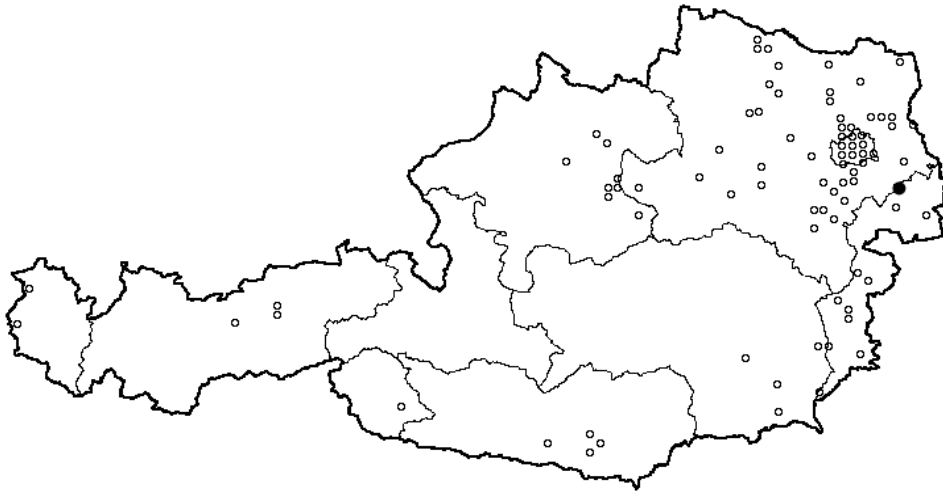


Figure 1 - Distribution of female common noctules in Austria (full circle: location of the maternity colony).

Ten adult males had well developed testes. In one adult male the testes were medium sized, in another one only slightly enlarged. The young males' testes were barely palpable. All adult females had visible nipples, which were absent in the young females. The fur of all young individuals and all but one adult male was dark brown, whereas in all adult females and one adult male (the one with only slightly enlarged testes) it was pale. This corresponds to the fact that moulting in males starts before the end of June and is finished by the beginning of July, while in adult females it starts only when the young are weaned at the end of July (Gebhard and Bogdanowicz, 2004).

According to Strelkov (1997a, b), parturition and lactation in *N. noctula* take place in geographically limited breeding centres lying in high latitudes of the vast Palaearctic range stretching from western Europe and south Scandinavia to the Urals and western Siberia, and from southern Europe through Asia Minor, the Levant and the Caucasus to Central Asia and the Himalayas, Vietnam and Malaysia

(Simmons, 2005). After weaning, adult females and young of the year migrate long distances to hibernate in milder climatic zones in the southwest of the nursing areas. On their way, they mate with males defending individual territories in the migration corridors. Breeding centres are known in northern and central Europe eastwards to the Urals, in the Caucasus, southeast Kazakhstan, Kyrgyzstan and western Siberia (Strelkov, 1997a, b). The European breeding area lies north of the 48° - 49° N parallel and east of the prime meridian (0° longitude).

Strelkov (2000) suggested that the breeding centres are of relict origin, being situated in former glacial refugia. The hypothesis that the Carpathians served as a refuge for the recent European breeding colonies would be supported by the results of a genetic analysis performed on 13 European nursery colonies in Germany and Poland, Russia, France and Italy (Petit *et al.*, 1999). These authors found a reservoir of high genetic variability in the German nursery colonies situated north of 53° N and low genetic diversity in the eastern, western and

Nyctalus noctula breeding in Austria

southern European nursing colonies. The role played by the Carpathians as a refuge for deciduous forest species during the last glacial maximum was recently proved by Kotlík *et al.* (2006).

In the last decade, several nursing colonies of *N. noctula* were found next to or even outside the geographical limits of the European nursing areas described by Strelkov (1997a, b) in Spain (Ruedi *et al.*, 1998), France and Italy (Petit *et al.*, 1999; Strelkov, 2000), Baden-Württemberg (Häussler and Nagel, 2003), Slovakia (Kaňuch and Ceľuch, 2004), Bavaria (Zahn *et al.* 2004) and Italy (Scaravelli, 2005).

The possibility that these recent discoveries are a result of increased research effort can not be rejected. On the other hand, the hypothesis of a real south-westwards expansion of the European nursing area from its former glacial refuge can be considered. This could be a process still ongoing since the last glaciation and which could have been recently quickened by global warming, enhancing breeding success and population growth of noctules.

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