

Summer observation of serotine (*Eptesicus serotinus* Schreber, 1774) at 1481 m altitude in the Republic of Macedonia Results of a mammal survey in Galicica National Park (I)

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This paper reports a summer observation of serotine (*Eptesicus serotinus* Schreber, 1774) at high altitude in south-east Europe. On 31 July and 3 August, 2006, the presence of three serotines was established in the southern part of the Republic of Macedonia. The serotines (photo 1) were caught in an 18 m mist-net stretched out horizontally over an artificial cattle pool (the "Walled pond"). The pool is situated in an almost treeless valley in the Galicica Mountains, east of Lake Ohrid (coordinates 41° 01' 50" N, 20° 51' 07" E), at an elevation of 1481 m (figure 1).

Details of the bats, such as sex, forearm length and dental status, as well as parasite takings during the captures are given in table 1. Based on the interphalangeal articulations all animals were adults. Their dental status indicated that two of the bats, respectively a male and a female, were rather old while the third, also a male, was one year old.

Both of the males had small testicles, and neither showed signs of sexual activity; the female

obviously had suckled a young in the same year. The males and the post-lactating female did not indicate the immediate presence of a nursery colony.

During the nights in the mountains, the sky was partly clouded on 31 July and temperatures stayed between 17.5 and 16° C. On 3 August the sky was partly clouded, with temperatures dropping from 18 to 13.5° C.

This mist-net session was part of 14 sessions performed by the field study group of the Dutch Society for the Study and Conservation of Mammals (VZZ). During eight nights at ten different locations, a total of 52 bats were caught in mist-nets. Apart from the serotines these included: *Myotis blythii* (n=12), *M. cf. aurascens* (n=4), *M. myotis* (n=11), *M. myotis/blythii* (n=3), *Nyctalus leisleri* (n=10), *Pipistrellus pipistrellus* (n=1), *Plecotus cf. auritus* (n=5), and *Minioterus schreibersii* (n=3) (Buys 2006). During the workshop in the Republic of Macedonia no bat-detector observations of serotines have been

Table 1. Data on serotine (*Eptesicus serotinus*) captures; FA: forearm length (mm); W: weight (g).

Date	Sex	FA	W	Dental status	Parasites present
31 July 2006	Male	51.6	29.0	extensive wear	yes
3 August 2006	Female	54.7	34.0	extensive wear	yes
3 August 2006	Male	51.1	27.0	no signs of wear	no



Photo 1. Serotine (*Eptesicus serotinus*); female, Republic of Macedonia, 3 August 2006. Photograph: Jeroen van der Kooij.

recorded.

In addition to the bats a nightjar (*Caprimulgus europaeus*) was captured, indicating the narrow time gap between the onset of drinking by nightjars and by bat species. All animals were released afterwards.

The serotine captures are noteworthy because there are only few observations of this species from higher altitudes. In mountainous areas of Central Europe the serotine is quite commonly reported from areas under 1000 m elevation (Baagøe 2001). During a survey in Switzerland, Stutz (1989) found the species mostly at lower elevations, between 210 and 433 m. Spitzenberger (1993), during a survey for bats in summer roosts in Carinthia (Austria) between 300 and 1500 m elevation, found serotine roosts up to a maximum of 700 m. One breeding colony was found at 879 m and there were some (un documented) observations between 900 and 1000 m. Hibernacula were reported at higher elevations

of up to 1200 m. Ognev (1962) reported one observation from the Southern Alps (5000 feet), but did not specify the season or type of shelter. Also Benda et al. (2003) mentioned a record at 1540 m in Bulgaria from the Lednicata Cave near Gela in the Smoljan District, Rhodope Mountains, without providing further details.

Cited observations from literature of serotines thus mention maximum altitudes of 879 m for nursery colonies and 1200 m for hibernacula. The Macedonian summer serotine observations discussed here differ from others in the literature, because they did not part of a nursery colony and because they were captured by a different method: mist-nets. This may account for the higher altitude of our observations. Furthermore, it is likely that the relatively southerly location of our study area may partly explain the occurrence of the species at high altitude.

The serotine is a widespread and common bat, distributed across most of Europe, through to



Figure 1. The Republic of Macedonia in Southeast Europe with the location of Galicica National Park (rectangle).

Central Asia. Although the number of reported serotines in countries around the Mediterranean is lower than in north-western European countries (Catto & Hutson 1999), this seems to be based on an observers' effect rather than genuinely lower numbers (Benda et al. 2003). In addition bat-detectors are more widely used in north-western Europe than in Mediterranean countries.

On the same expedition J. Willemsen and J. P. Bekker also collected a sub-adult male serotine as a road casualty at the A1 Motorway in Croatia, 14 km West of Slavonski Brod (45° 09' 33" N, 17° 50' 12" E; altitude 88 m) on the August 5, 2006. This find fills a gap in the map of the distribution of the serotine developed by Catto and Hutson (1999).

Kryštufek and Petkovski (2003) describe the serotine as widespread, but uncommon in the Republic of Macedonia and mention just five observations in the country. The distribution and numbers of serotines at high altitudes, especially in southern Europe, are unclear; a combined effort of research with mist-netting, identifying nursery colonies, listening with bat-detectors and visiting hibernation sites, although difficult because of extremely hidden nature of these sites, could contribute to improving knowledge of the whereabouts and distribution of this bat species.

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Samenvatting

Tijdens twee vangacties met mistnetten in het Galicicagebergte, tussen het Ohridmeer en het Prespameer in de Republiek Macedonië, werden drie laatvliegers (*Eptesicus serotinus*) gevangen op 1481 m hoogte. Het betreft een zomerwaarneming van dieren die niet zijn gebonden aan een kraamkolonie.

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