Short Note

First records of *Plecotus auritus* (Linnaeus, 1758) and *Plecotus macrobullaris* Kuzjakin, 1965 in the Republic of Macedonia

Results of a mammal survey in Galicica National Park (II)

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This paper reports the first observation of brown long-eared bat (*Plecotus auritus* (Linnaeus, 1758)) and Alpine long-eared bat (*Plecotus macrobullaris* Kuzjakin, 1965) in the Republic of Macedonia. By the end of July 2006 the presence of five long-eared bats *Plecotus* spec. was established in the south western part of this country. Four of these bats were captured within the Galicica Mountains, between Lake Ohrid and Lake Prespa, while the fifth specimen was caught at Leva Reka, near the city of Resen (figure 1). Four of the *Plecotus* specimens were adults while the fifth, a male (specimen 4) was in his first year. The females, caught on 27, 29 and 31 July respectively, were all lactating.

Details of the long-eared bats, such as sex, forearm length, weight as well as details of the site of capture, such as date, name, altitude, and geographical position, are provided in table 1. From three of the long-eared bats the length of digit 1 was measured according to Schober & Grimmberger (2001). These measurements as well as other characters exclude *Plecotus austriacus* (Fischer, 1829) and *Plecotus kolombatovici* (Đulić, 1980) for specimens 1, 4 and 5, while for specimens 2 and 4 these measurements also exclude *Plecotus macrobullaris*. The tragus length of specimen 1 (14.2 mm) confirms the identification of *Plecotus auritus*, while the tragus length of specimen 5 (16.2 mm) as well as the tragus width (5.7 mm) indicates *Plecotus macrobullaris*; despite the relatively short digit 1 (6.5 mm) not corresponding with reference data for this species. Pictures were made of specimens 1, 2, 3 and 5. The shape of the tragus of specimen 3, and of the big supraorbital gland, indicate *Plecotus auritus* according to Kiefer & Von Helversen (2004a) (photo 1 and 2).

DNA samples of wing membrane tissue were collected from all the bats and were processed by Andreas Kiefer at the University of Mainz. In a personal communication he confirmed the identification of *Plecotus auritus* (eastern lineage) in specimens 1-4, with specimen 5 turning out to be *Plecotus macrobullaris macrobullaris* (= eastern lineage) (photo 3).

All *Plecotus auritus* (specimens 1 to 4) were caught in mistnets stretched out horizontally over three artificial cattle pools: the "Walled Pond", the "Campsite Pond" and the "Grebenine Valley Pond", respectively (table 1). The geographical positions, according to the Universal Transverse Mercator (UTM) co-ordinate system, of these three mistnet sites are situated in two adjacent km UTM squares, denoted (dots) in figure 1. *Plecotus macrobullaris* (specimen 5) was caught in an 18 m mistnet over the Leva Reka stream: a small stream, outside the Galicica National Park, shown in the km UTM square asterisk, north of Resen in figure 1.

On the night of July 27 the sky was partly clouded with temperatures between 14° and 10° C in the mountains. Two days later (July 29) the night-sky was clear and the temperatures dropped to 6.5°C. On July 31 the sky was again partly clouded and

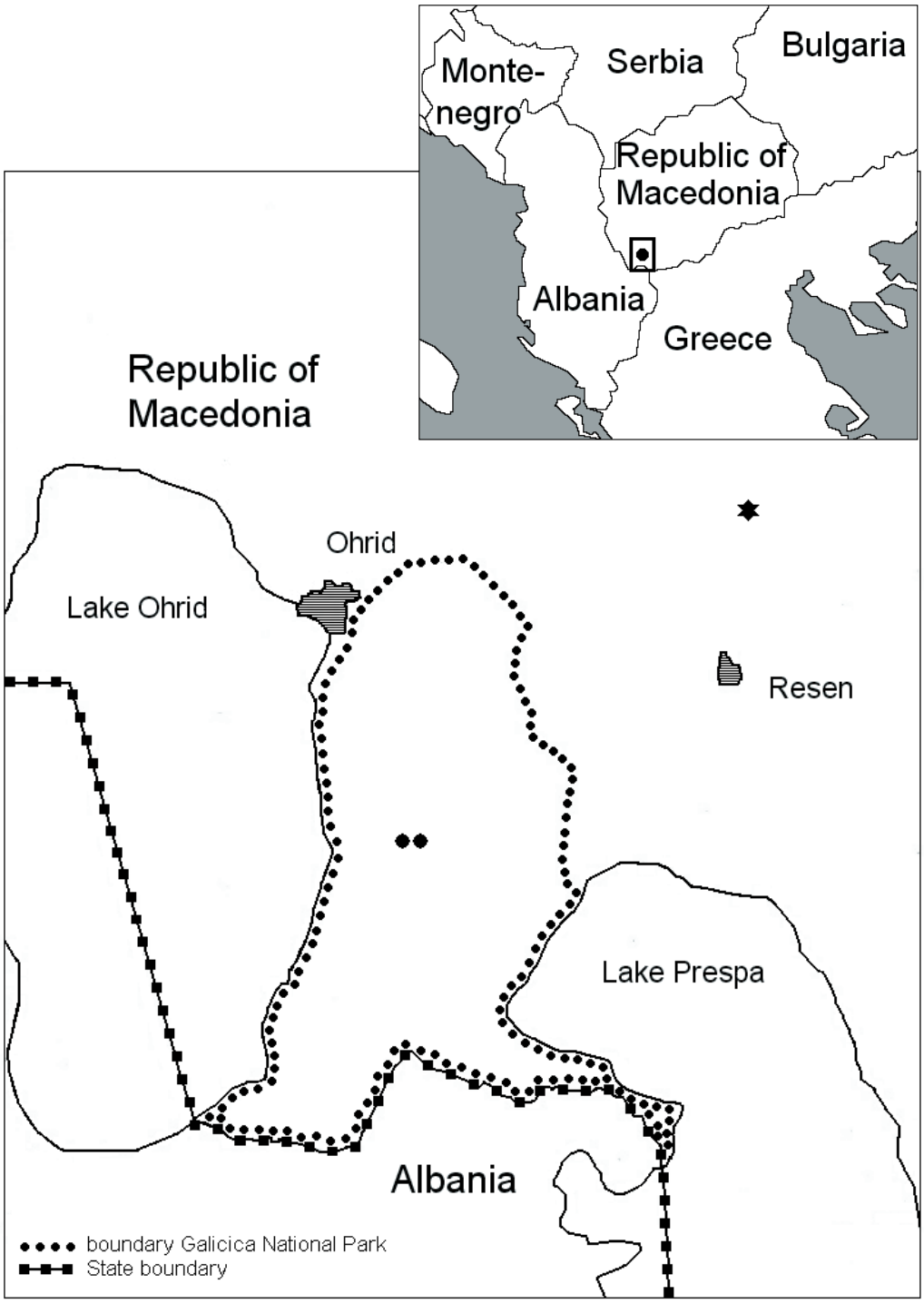

Figure 1. The recorded locations of brown long-eared bat *Plecotus auritus* (dot) in Galicica National Park and of Alpine long-eared bat *Plecotus macrobullaris* (asterisk) near Resen, Republic of Macedonia, Southeast Europe.

Photo 1. Brown long-eared bat (*Plecotus auritus*); female, Macedonia, July 28, 2006. The pointed shape of the tragus is clearly visible. *Photograph: Rollin Verlinde*.

Photo 2. Brown long-eared bat (*Plecotus auritus*); female, Macedonia, July 28, 2006. The big supraorbital glands are clearly visible. *Photograph: Rollin Verlinde*.

Photo 3. Alpine long-eared bat (*Plecotus macrobullaris*); female, Macedonia, July 31, 2006, showing the lancet-shaped tragus. *Photograph: Jeroen van der Kooij*.

Photo 4. Mistnetting near Leva Reka. *Photograph: Jeroen Willemsen*.

Table 1. Details of captured long-eared bats (*Plecotus* spec.) and weather conditions; FA: fore-arm, dig1: length of digit 1, W: weight, trl: tragus length, trb: tragus breadth, n.r.: not recorded.

Date / Site	Specimen	Altitude	Geographical position	Sex	FA	dig1	W	trl	trb
27-7-2006 / Campsite Pond	# 1	1473	N: 41° 01' 38'' E: 020° 51' 28''	F	41.2	7.3	8.4	14.2	n.r
28-7-2006 / Grebenine Valley Pond	# 2	1400	N: 41° 01' 50'' E: 020° 50' 35''	M	38.0	n.r.	6.3	n.r.	n.r.
28-7-2006 / Grebenine Valley Pond	# 3	1400	N: 41° 01' 50'' E: 020° 50' 35''	F	40.0	n.r.	7.5	n.r.	n.r.
29-7-2006 / Walled Pond	# 4	1481	N: 41° 01' 50'' E: 020° 51' 07''	F	39.8	8.0	7.9	n.r.	n.r.
31-7-2006 / Leva Reka stream	# 5	963	N: 41° 09' 10'' E: 020° 00' 24''	F	40.7	6.5	9.5	16.2	5.7

temperatures remained between 17.5° and 16°C. On July 31 in the plains near Leva Reka the night temperatures ranged from 25° to 20°C (table 1). No weather recordings were made on July 28.

A total of 52 bats were caught in mistnets over eight nights at ten different locations in 14 sessions (Buys 2006). The captures of three serotines (*Eptesicus serotinus*) were published earlier in this journal (Boshamer & Bekker 2006).

Kiefer (2004) recently described the rather complex status of the genus *Plecotus* in Europe and we follow him in our recognition of *Plecotus macrobullaris*, based on morphological and DNA (ndI) criteria, as well as *Plecotus sardus*, *Plecotus kolombatovici*, along with undisputed species such as *Plecotus auritus* and *Plecotus austriacus*. This would lead to a redrawing of the distribution of *Plecotus auritus* in southeast Europe. Von Horáček & Đulić (2004) accept this, categorising specimens from Crete and Sardinia as *Plecotus kolombatovici* or *Plecotus alpinus* (= *Plecotus macrobullaris*) and *Plecotus sardus* respectively.

The distribution map of *Plecotus auritus* in *The atlas of European mammals* (Entwistle 1999) shows that this species has been observed in the eastern 50 km UTM square (Greece), adjacent to the area where we did our fieldwork. Kryštufek & Petkovski (2003) mention the presence of the *Plecotus austriacus* in the Republic of Macedonia. *Plecotus auritus* has not previously been recorded in this country and this is the first observation of the brown long-eared bat in the Republic of Macedonia.

To date records of *Plecotus macrobullaris* are mostly restricted to the Alps; with single observations from the isles of Sardinia and Crete, the Pyrenean Mountains and two locations in the north of Greece (Kiefer & Helversen 2004b). The presence of *Plecotus macrobullaris*, in this area, establishes a third location, clustered around northern Greece and southwest Macedonia.

Acknowledgements: We would like to thank all the participants of the Field Study Group of the Dutch Society for the Study and Conservation of Mammals (VZZ) who voluntarily helped in 2006 with the "Results of a mammal survey in Galicica National Park I and II". We are grateful to Andreas Kiefer (University of Mainz) for processing the DNA samples. We also would like to thank Dr. Svetosar Petkovski and Dr. Vesna Sidorovska, President and Vice-President of Bioeco, for permits and Mr. Andon Bojdan, Director of the Galicica National Park, for permission to carry out the survey.

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Samenvatting

Eerste waarneming van Plecotus auritus (Linnaeus, 1758) en Plecotus macrobullaris Kuzjakin, 1965 in de Republiek Macedonië – Resultaten van een zoogdierinventarisatie in Galicica Nationaal Park (II)

Tijdens vangacties met mistnetten in het Galicicagebergte, tussen het Ohridmeer en het Prespameer in de Republiek Macedonië, werden eind juli 2006 vijf grootoorvleermuizen in mistnetten gevangen. DNA-analyse bracht aan het licht dat het vier gewone grootoorvleermuizen (*Plecotus auritus* (Linnaeus, 1758)) betrof en een Alpen-grootoorvleermuis (*Plecotus macrobullaris* Kuzjakin, 1965). Hiermee werden deze twee soorten voor het Macedonische faunagebied vastgesteld.

Received: 4 April 2007
Accepted: 16 May 2007