

DATA REGARDING THE BAT COMMUNITIES (MAMMALIA; CHIROPTERA) FROM ABANDONED MINES ROOSTS IN SIBIU COUNTY

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Rezumat

Am investigat comunitățile de lilieci din 3 mine părăsite din județul Sibiu respectiv una la Orlat și două la Sadu. În cele trei locații nu au mai fost citate până acum specii de lilieci. În decursul investigațiilor întreprinse până în prezent am identificat șapte specii de lilieci. Toate cele 3 adăposturi au fost folosite drept colonii de naștere de către *Miniopterus schreibersii*, fiecare găzduind între 50 și 130 de indivizi. Deasemenea grotă și cele două mine au fost folosite ca și adăposturi de împerechere sau adăposturi temporare de celelate șase specii de lilieci cu număr mai redus de indivizi. În continuare cele trei adăposturi vor fi monitorizate dar vor fi investigate și alte mine pentru a putea descoperi coloniile importante de chiroptere, doar așa având șansa unei bune protecții.

Key words: mist netting, *Miniopterus schreibersii*, birth colony, survey

INTRODUCTION

The first data regarding bats from Sibiu county were published by E.A. Bielz, in the paper named "Fauna der Wierbeltiere Siebenbürgens", published in 1856. These data with new research results were published again in the second edition in 1888. The species are presented in systematic order, with their German name. He also described the specific habitat, followed by the localities. The informations were gathered by Bielz, Daday, Haussmann, Römer, Herzog, Frank, Csató, Hermann (Otto). So far there are no data regarding bat communities in Orlat and Sadu areas. On the UTM distribution maps of the rhinolophids and vespertilionids (Valenciuc, 1992-1993, 1994) there are no sites in the area of interest. There is the need to survey old mines for bats, to identify the most important colonies and roosts.

MATERIAL AND METHODS

Abandoned mines can, in fact, provide ideal alternate homes for bats. Two of these abandoned mines are located in Sadu, the locality is situated at 27 km South from Sibiu, and can be reached through Cislădie, on a districtual road (7 km) or from Tălmăciu (9 km). Another cave is in Orlat and is situated at 17 km from Sibiu, at the feet of the Cindrel Mountains, on the valley of the Cibin River. From DN1 (E 15A) Sibiu - Sebeșu de Jos, a modernized road leads to Orlat (6 km). The Orlat cave is in a nearby hill, with no forest around and is approximately 40 metres long and seven metres high. The Sadu I and Sadu II mines are near Sadu village in a forested area. They are about 35 metres long and two metres high. The distance between them is about two hundred meters.

All data was gathered between August and October 2004. There were nine field trips, three for each mine, two-three weeks apart.

Fieldwork consisted of accepted bat sampling protocols, including mist netting. The net was located at the entrance of mine. Special net for bats was used for mist netting, approximately seven meters long and two

meters high. The data recording lasted one night per field trip. Bats captured at sampling locations were identified to species, according to „Mic determinant de lilieci” (APLR, 2003). Sex and parasite status of each animal was recorded. Age was determined for each individual as evidenced by epiphyseal-diaphyseal fusion of long bones in the wing (Anthony, 1988). A standard morphological measurement of individuals was made. After every individual was marked and all data recorded, they were released.

RESULTS AND DISCUSSION

Till now I have investigated over eight abandoned mines and caves in different locations and found bat populations in only three of these places, with over a hundred individuals.

Because a large proportion of remaining bat populations now live in abandoned mines and caves, as roosting sites of last resort it is very important to have information about the level of populational changes. These changes can be measured by monitoring all the important roosts. The main threats to these cave and mine roosts are disturbance from cave explorers and local people.

In all nine field trips were caught a total of 116 individuals (Tab. 1.) belonging to seven species. At the Orlat mine I found the greatest diversity of species. Here were found all the seven species: *Rhinolophus ferrumequinum*, *Rhinolophus hipposideros*, *Nyctalus noctula*, *Miniopterus schreibersii*, *Myotis myotis*, *Myotis blythi*, *Plecotus austriacus*.

Tab. 1. Number and weight of captured bats in the three roosts

Species	Roost	Orlat		Sadu I		Sadu II		Total	
		No. ind	Weight (g)	No. ind	Weight (g)	No. ind	Weight (g)	No. ind	Weight (g)
<i>Rhinolophus ferrumequinum</i>		2	56	4	113.5	5	141.5	11	311
<i>Rhinolophus hipposideros</i>		1	8.5	3	25	3	25.5	7	59
<i>Nyctalus noctula</i>		1	30	0	0	1	30	2	60
<i>Miniopterus schreibersii</i>		26	312.71	24	319	17	233.5	67	865.21
<i>Myotis myotis</i>		11	350.5	0	0	5	166	16	516.5
<i>Myotis blythi</i>		3	69	0	0	0	0	3	69
<i>Plecotus austriacus</i>		5	40.5	0	0	5	41.5	10	82
Total		49	867.21	31	457.5	36	638	116	1962.7

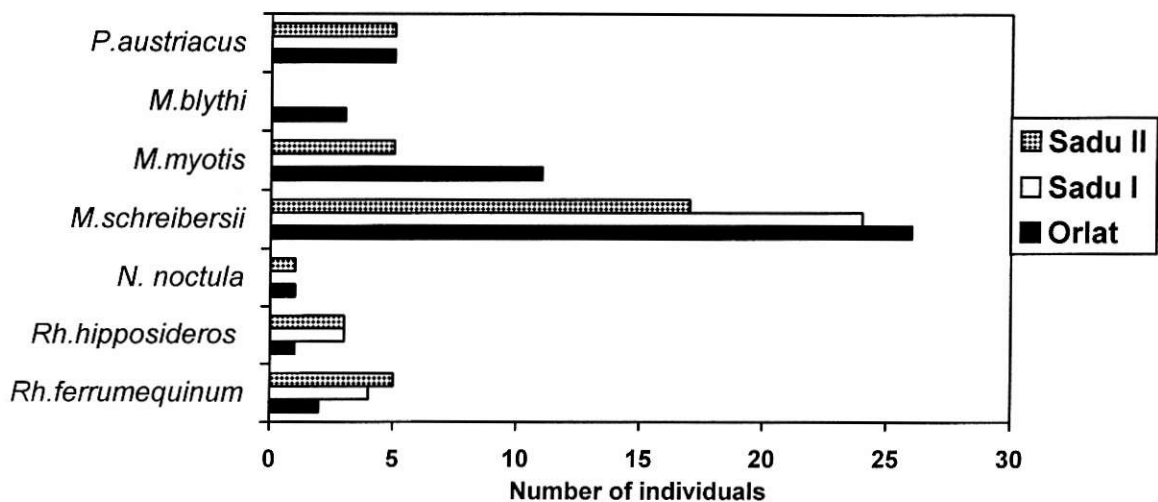


Fig. 1. Distribution of bats in the three roosts

At Orlat the majority of individuals were *Miniopterus schreibersii* (Fig. 1.), because in summer there was a birth colony. That also explains the great number of juveniles caught there. At the time of the study was the mating period and migration process which also explains the great number of species. In the Sadu I and II mines there is also a Common Bentwing Bat (*M. schreibersii*) colony with five other species around but with fewer individuals.

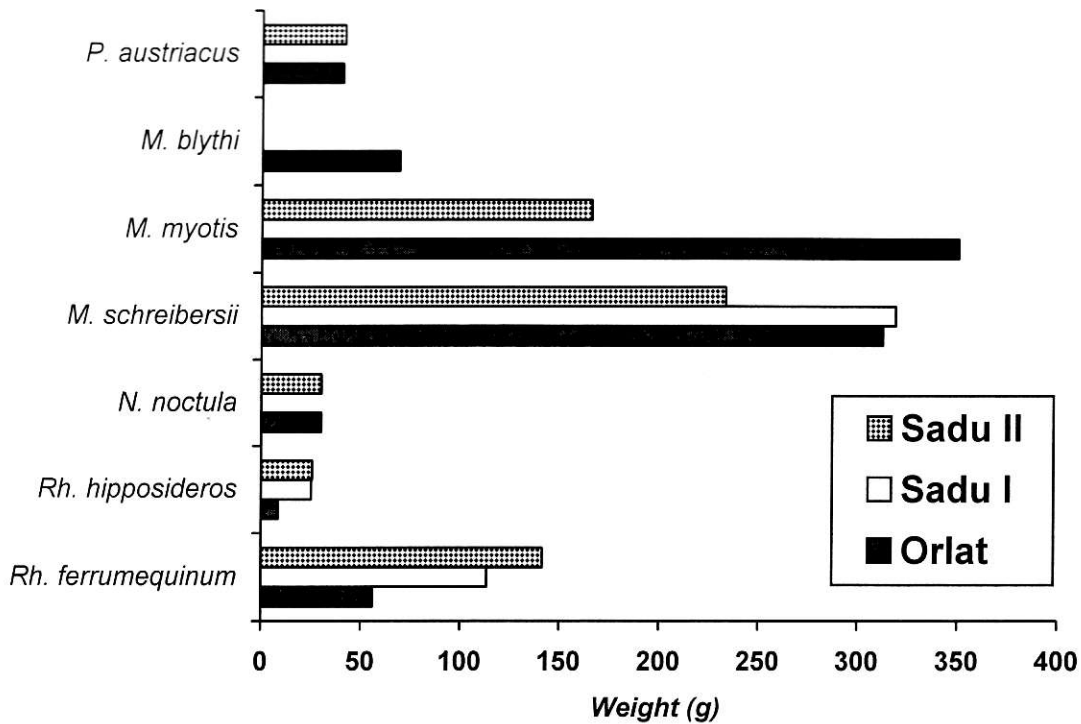


Fig. 2. Structure of bat communities in the three investigated roosts (weight)

Although there were caught more *M. schreibersii* individuals, the weight structure of this bat communities shows that *M. myotis* individuals are heavier (Fig. 2.). A *M. myotis* individual weights about 32 grams, while a *M. schreibersii* weights about 13 grams.

Tab. 2. *Miniopterus schreibersii* population structure in the three roosts

Station	Orlat	SADU I	Sadu II
Males	69.23%	54.16%	47.05%
Females	30.76%	45.83%	52.94%
Juveniles	96.16%	91.66%	70.58%
Adults	3.84%	8.33%	29.41%
Parasited ind.	65.38%	54.16%	47.05%
Nonparasited ind.	34.61%	45.83%	52.94%

As shown in the *Miniopterus schreibersii* population' structure in all three roosts the majority of individuals are juveniles, this shows that all three roosts were used as birth colonies. The worst enemies are parasites, unfortunately about 50% of individuals are parasitized (Tab. 2.). *M. schreibersii* is a cave-dwelling bat, inside they hang close together, so it is easy for the parasites to change host. The membranes with all their blood vessels are ideal food sources for fleas, ticks and mites.

CONCLUSIONS

All data regarding the bat communities was gathered from two abandoned mines in Sadu area and one cave near Orlat, and so far there are no data regarding bat communities in Orlat and Sadu area. Nine field trips were made, three for each roost, seven species found, 116 individuals caught and measured. All three sites were used as birth colonies by *Miniopterus schreibersii*, a cave-dwelling species. The main threats to these cave and mine roosts are disturbance from cave explorers and local people. To protect the bats we need to know where the main hibernation and summer roosts are. I plan to survey the caves and abandoned mines of Sibiu County to determine what bat species are present and which caves are most important roosts. This was only preliminary data, the research will continue in 2005 when I will gather comprehensive information on species composition, diversity and habitat usage of bats. The knowledge gained will be used to protect significant roosts.

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