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REDISCOVERY OF ARMENIAN BIRCH MOUSE, *SICISTA ARMENICA* (MAMMALIA, RODENTIA, SMINTHIDAE)

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Rediscovery of Armenian Birch Mouse, *Sicista armenica* (Mammalia, Rodentia, Sminthidae). Rusin, M., Ghazaryan, A., Hayrapetyan, T., Papov, G., Martynov, A. — Armenian birch mouse is one of the least known species of mammals of Eurasia. It was described as a separate species based on three specimen trapped in 1986. From that time no other *Sicista* was found in Armenia. In 2015 we surveyed Central and Northern Armenia and established that probably population from the type locality is lost. But we found another population on Sevan Pass. Due to our observations the species meets Critically Endangered B2a+bIV category of the IUCN Red List.

Key words: *Sicista*, Caucasus, Armenia, subalpine meadows, extinction, Critically Endangered.

Introduction

Armenian birch mouse, *Sicista armenica* Sokolov and Baskevich, 1988, is one of the sibling species in the *S. caucasica* group, which are *S. caucasica* s. str., *S. kluchorica*, *S. kazbegica* and *S. armenica*. All of these species were described based on different chromosomal numbers in 1980th: *S. caucasica* 2n = 32, nF = 48; *S. kluchorica* 2n = 24, nF = 44; *S. kazbegica* 2n = 40–42, nF = 50–52; *S. armenica* 2n = 36, nF = 52 (Sokolov et al., 1981, 1986; Sokolov, Baskevich, 1988, 1992). A group of these siblings all occur in the Caucasian Mountains region: first three in the Greater Caucasus and only *S. armenica* found in Lesser Caucasus. The species description was based on three individuals trapped in 1986 in the vicinity of the village of Hanqavan in Kotayk Province on Pambak Ridge (Sokolov, Baskevich, 1988). Old reports on the species are very scarce. One locality was close to the same village of Hanqavan (named Miskhana before 1949) but on Tsakhkunyatz Ridge (Dal, 1954). Other two old reports are mount Maymekh in Pambak Ridge and near the town of Vanadzor, Lori Province (Ognev, 1948). In fact, both these points may come from the same locality, as Mt. Maymekh is located just above Vanadzor. So we can summarize that there were just two groups of localities of *Sicista* previously known in Armenia (fig. 1). No more birch mice were trapped in Armenia since 1986 and it was a goal of our study to find whether the species still exists.

Methods

Results of this research are based on the expedition to Armenia in 2015. The trapping took place in July 2015 in type locality and other places on Pambak and Tsakhkunyatz Ridges and on Sevan Pass (table 1, fig. 1). For trapping birch mice, we used pitfall-traps (seven liters' cylinders) that were put in different open landscapes (subalpine meadows and mountain steppes). All traps were checked every morning and trapped alive animals were released while deceased were taken to the collection of Yerevan State University. Altogether 643 trap-nights were used and 538 small mammals trapped.

Geographical coordinates were recorded using Garmin eTrex30 using GPS+GLONASS operating in WGS84 system. Elevation above sea (in m a.s.l.) was recorded using built-in barometric altimeter in Garmin eTrex30. Map was created in QGIS 2.14 with OpenStreetMap and Natural Earth.

Table 1. Data of small mammals trapping in Armenia, 2015

Map code	Locality	Elevation m a. s. l.	Dates	Trap-night	<i>Sicista</i>	<i>Microtus</i>	<i>Sylvaemus</i>	<i>Sorex</i>	<i>Neomys</i>	<i>Talpa</i>
1	Hanqavan	2180	2.7.2015	30		21		2		1
2	Hanqavan	1920	2.7.2015	10		3				
3	Hanqavan	2010	2–3.7.2015	44		37		4		
4	Hanqavan	2280	3–4.7.2015	60		81		2		
5	Hanqavan	2415	4.7.2015	19		16		3		1
6	Hanqavan	2405	4.7.2015	15		19		2		
7	Meghradzor	2020	5–6.7.2015	40		38		1		
8	Meghradzor	1975	5–6.7.2015	60		38	2	3		1
9	Artevaz	2100	5–7.7.2015	36		4	1	7		1
10	Buzhakan	2180	10–11.7.2015	40		33		1		
11	Buzhakan	2090	10–11.7.2015	78		52	2	2		
12	Semyonovka	2170	12–13.7.2015	50		29		8		
13	Semyonovka	2120	12–15.7.2015	121	1	64		25	2	2
14	Semyonovka	2100	14–15.7.2015	40		16		12	1	

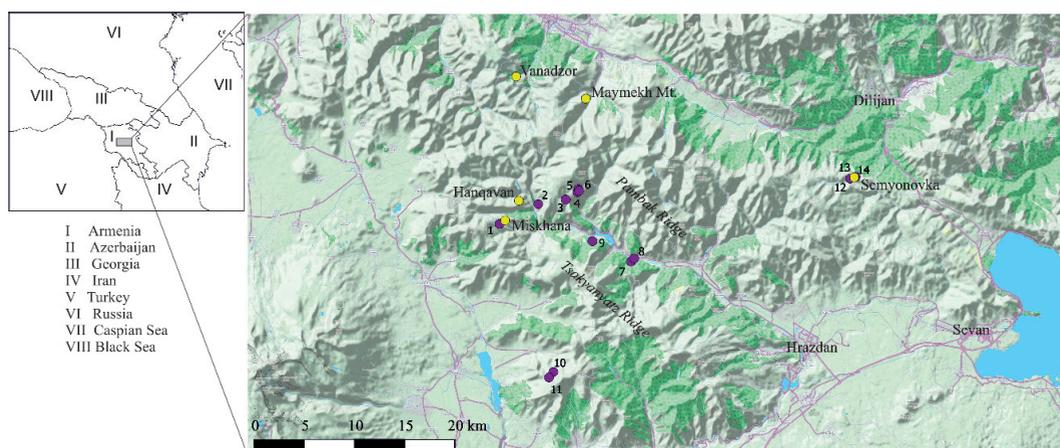


Fig. 1. Known localities of *Sicista armenica* (labelled dots) and our trapping sites (1–14). Old localities (Miskhana, Vanadzor and Maymekh) are placed on the map putatively as no precise information on them is available.

Results and discussion

During our trapping we found just a single specimen of the Armenian birch mouse (fig. 2). It was found on Sevan Pass on 12 July 2015, while in the type region (Valley of the Marmarik River) we failed to record it. It was a female, most probably gestating. But the queer thing is that no other animal was trapped in the same locality. This contradicts with the trapping experience of other *Sicista* species: if the species is present and active at least several specimens would be found during 1–2 days of trapping. Especially this is true for other species of *S. caucasica* group (Cserkesz et al., in press). The relative density of Armenian birch mouse on Sevan Pass is 0.8 specimens per 100 trap-nights.

The habitat of Armenian birch mouse is close to other species of *S. caucasica* group. In particular, this was a steep slope (around 45°) of a dense mesophytic vegetation with *Chaerophyllum* sp., *Urtica* sp., *Heracleum* sp., *Alchemilla* sp., *Trifolium* sp., *Galium* sp., *Rumex* sp., *Pimpinella* sp., *Vicia* sp. as dominating species. The plant projective cover was ~100 % and the mean height was around 1.5 m with some plants up to 2 m (fig. 3). This habitat was very limited and it was around 50 m wide and several kilometers long following the slope on the same elevation (2090–2135 m a. s. l.). Thus we can roughly calculate the area of occupancy of the species on Sevan Pass as 0.15 km².



Fig. 2. Armenian birch mouse, 12 July 2015, Sevan Pass, Armenia (photo by AM).

This locality is in the buffer zone of the Dilijan National Park, but there is no real protection there. It is close to the village of Semyonovka, thus there is a certain amount of human impact on the area. Though for grass mowing local rural population prefer more flattened parts and the number of cattle and sheep there is not significant. After the construction of the Dilijan tunnel on Sevan Pass in the early 2000th, Semyonovka — that is almost at the saddle of the Pass — became a forgotten destination. Now it is a depressive village with very few cars climbing up to the highest point on the Pass. Still this situation may be considered as good for the conservation of Armenian birch mouse as there is no new road construction, no cottages built or any skiing centers as these are big threats for habitats of *S. caucasica* and *S. kluchorica* in the Greater Caucasus. Thus we may conclude that the found locality is in rather stable condition and it does not require immediate actions for its preservation. Still the constant monitoring is needed and perhaps the breeding program may be required. But it is important to stress that due to our experience with two siblings of *S. armenica* (*S. caucasica* and *S. kluchorica*) these dwellers of high mountains suffer greatly while descending lower than 1000 m a. s. l. and we failed to bring any specimen alive to the breeding center. Usage of compact transportable decompression chambers may be an option.

Two possible negative factors can influence on conservation measures of the species. First one is that the Armenian Plateau is a very dry region compared to the Greater Caucasus. The mesophyte plant associations are very rare here. And the other possible negative factor is that there is a certain amount of pasture pressure on the subalpine meadows.

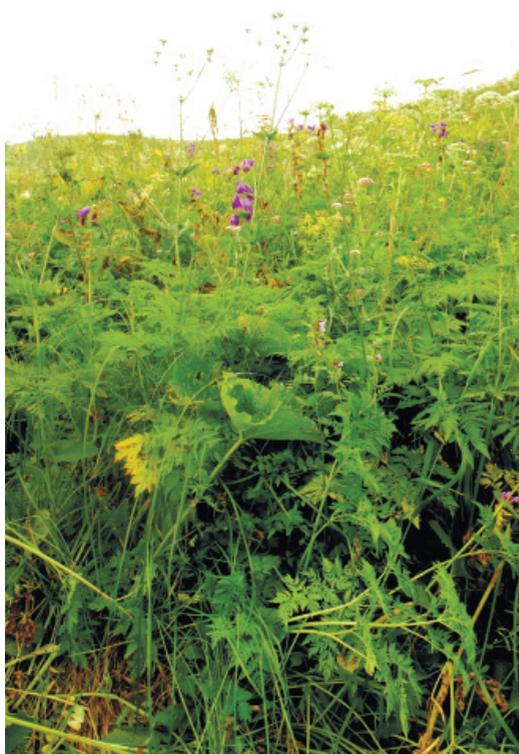


Fig. 3. Mezophyte habitat of *Sicista armenica* on Sevan Pass, 2100 m a. s. l., Armenia.

Conclusion

As a result of our study we can assume that the type locality (Hanqavan) may be already lost. This conclusion is supported by the data provided by A. Ghazaryan: in 2012 they carried out an extensive survey of the area around Hanqavan (with up to 15000 trap-nights using both pitfalls and box-traps) and found no birch mice.

Currently the species is listed in the IUCN Red List as Endangered (Baloyan et al., 2015). As a result of our research we can conclude that due to ongoing decline of number of active populations and very tiny area of occupancy the species qualifies for Critically Endangered B2a+biv protection status due to IUCN Categories & Criteria (2001). This is based on next proofs:

(1) B2: “Area of occupancy estimated to be less than 10 km², and estimates indicating at least two of a-c.” In our case known area of occupancy is 0.15 km².

(2) B2a: “Severely fragmented or known to exist at only a single location”. Indeed, the species currently is known from a single locality. Even all old localities were severely fragmented.

(3) B2biv: “Continuing decline, observed, inferred or projected, in any of the following: number of locations or subpopulations”. We observe the decline of the number of populations. At least there is a bunch of evidences that the type locality may be lost.

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