

***Plecotus macrobullaris* – new bat species for Albanian fauna (Chiroptera: Vespertilionidae)**

Plecotus macrobullaris – nowy gatunek w faunie nietoperzy Albanii
(Chiroptera: Vespertilionidae)

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Abstract. *Plecotus macrobullaris* was recorded in the mountains of northern Albania (Pukë district) on 9–10 August 2003. This represents the new species of bat in the poorly known mammal fauna of Albania. At the reported locality, *P. macrobullaris* occurred in syntopy with *P. auritus*.

INTRODUCTION

The bat fauna of Albania includes ca. 24 species and belongs to the least studied among European countries, with ca. 60% of species reported from single localities (UHRIN et al. 1996). Moreover, the presence of several species in the country is doubtful after recent changes in taxonomy of *Myotis mystacinus* and *Pipistrellus pipistrellus* complexes, as well as the genus *Plecotus* (BENDA & TSYTSULINA 2000, JONES & BARRATT 1999, KIEFER & VEITH 2001, SPITZENBERGER et al. 2001, 2003). Actually, four species of *Plecotus* are recognized in the continental Europe and all of them can be identified on the basis of external characters (KIEFER & VON HELVERSEN 2004, TVRTKOVIĆ et al. 2005, SPITZENBERGER et al. 2006). Their geographical ranges overlap largely over the Balkan Peninsula.

Previous records of *Plecotus auritus* (Linnaeus, 1758) and *P. austriacus* (Fischer, 1829) published for Albania (HANÁK et al. 1961, HANÁK 1964, LAMANI 1970) have not been documented sufficiently to reject the bat misidentification for their newly defined sibling species *P. macrobullaris* Kuzynkin, 1965 and *P. kolombatovici* Đulić, 1980. The presence of *P. auritus* – a female collected in 1914 in Vermosha (Malësi e Madhe district) – has been confirmed recently in the result of molecular investigation (SPITZENBERGER et al. 2001). The occurrence of *P. austriacus* in Albania, although very probable, demands confirmation.

Herein, we report the first record of *P. macrobullaris* from Albania and comment its identification in the field.

RECORDS

On 9–10 August 2003, 7 individuals of long-eared bats (4 females, 3 males) identified as *P. macrobullaris* were mist-netted in the entrance of a small adit (42° 06' N, 20° 07' E), 787 m a.s.l., east of Qafëmal village, by the road Shkodra – Kukës (N Albania, Pukë district). The adit, cut in serpentinite rocks, has been used as a local water intake, containing a spring and a small pond in the entrance, which is located on the rocky mountain slope, sparsely overgrown with low black pines *Pinus nigra* and bushes (Fig. 1). There have been a small settlement and cultivations in the area nearby, although the dominating habitat in the surrounding was heavily overlogged mountain forest of the black pine and the beech *Fagus sylvatica*. Two adult females of *P. auritus* were caught at the same site, what allowed comparison of characters of both species held in a hand. After being identified, sexed, measured and photographed all bats were released. For the species identification in the field we have used characters given by SPITZENBERGER et al. (2002), MUCEDDA et al. (2002) and later confirmed by TVRTKOVIĆ et al. (2005).

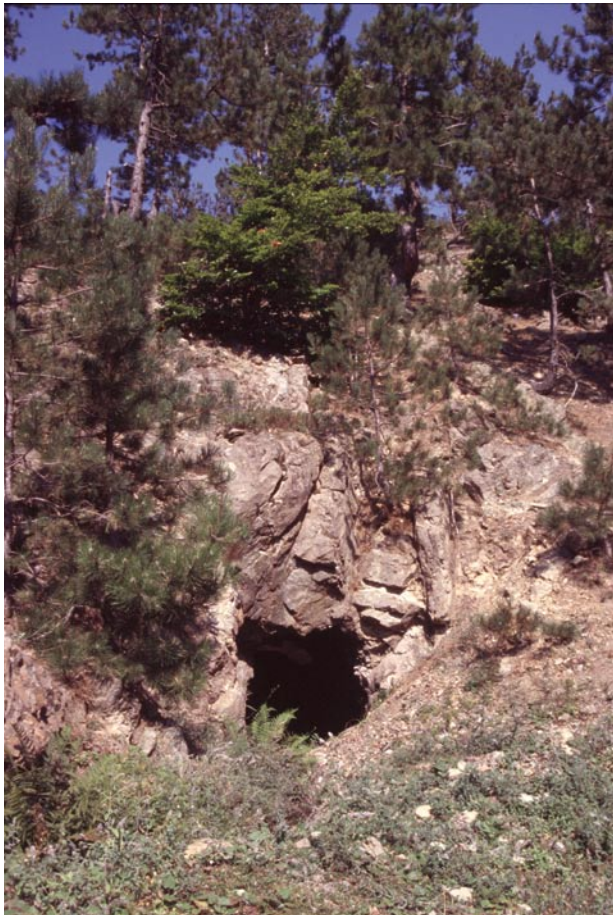


Fig. 1. Entrance of the small adit near the Qafëmal village (K. SACHANOWICZ).

Rys. 1. Wejście do sztolni w pobliżu miejscowości Qafëmal (K. SACHANOWICZ).

Table 1. External measurements and weight of *P. macrobullaris* individuals mist-netted in the entrance of the adit near Qafëmal (N Albania) on 9–10 August 2003 (F – female, M – male, ad. – adult, juv. – juvenile, lact. – lactating)

Tab. 1. Wymiary zewnętrzne oraz ciężar osobników *P. macrobullaris* odłowionych przy otworze sztolni w pobliżu Qafëmal (północna Albania) 9–10 sierpnia 2003 (F – samica, M – samiec, ad. – dorosły, juv. – młody, lact. – karmiąca)

No	sex	age	forearm length [mm]	weight [g]	thumb length [mm]	claw length [mm]
1	F	ad., lact.	41.6	9.0	7.2	2.6
2	F	juv.	41.0	7.0	7.0	2.8
3	F	juv.	41.4	7.0	7.1	1.9
4	F	ad.	41.0	7.5	–	–
5	M	juv.	38.5	7.0	7.0	2.9
6	M	juv.	40.8	7.5	7.0	2.7
7	M	ad.	39.4	7.0	7.0	2.9
mean±SD			40.53±1.14	7.43±0.73	7.05±0.08	2.63±0.38

Morphologically, individuals of *P. macrobullaris* resembled rather *P. auritus* than *P. austriacus*, but by the overall, contrasting coloration they were more similar to the latter species. Fur on dorsal and ventral sides was very dense, woolly and unusually long (ca. 10 mm), in which character the species differed markedly from *P. auritus*. The base of hairs on both sides was blackish. Dorsal fur was dark greyish-brown, strongly contrasting with almost pure white (whitish in some adults) on a ventral side. Juveniles had more greyish dorsal fur and brighter ventral side. The head and muzzle were greyish-brown, slightly darker than dorsal pelage. Protuberances above eyes were of the size (ca. 1.0–1.5 mm in diameter) similar to their equivalents in *P. auritus*. The triangular pad on a lower lip was obvious in all individuals of *P. macrobullaris*. It was pale, lip coloured, in adults and darker in juveniles (Fig. 2). The base of the tragus was pale pinkish, while its upper half was dark greyish. The tragus width in two adult females was 5.3 and 5.9 mm. The size of a hind foot was almost the same as in *P. auritus*; feet were also covered with well visible hairs. Penis was broad (ca. 2.2 mm), cylindrical and parallel sided at almost whole length with a pointed tip. A thumb of *P. macrobullaris* was slightly longer than in two *P. auritus* (6.3 and 6.0 mm), while a claw was of similar size (2.6 and 2.5 mm, cf. Table 1). External measurements and weight of *P. macrobullaris* are given in Table 1.

COMMENTS

P. macrobullaris occurs in mountain regions from central Pyrenees to Bosnia and Herzegovina and from central Greece to the Caucasus, Syria and Iran, with a single records from Corsica and Crete (GARIN et al. 2003, JUSTE et al. 2004, KIEFER & VON HELVERSEN 2004, SPITZENBERGER et al. 2006). Astonishingly, in the Balkans the species is known only from the western part of the Peninsula (Slovenia, Croatia, Bosnia and Herzegovina, Greece), while no localities were found in its eastern regions e.g. in Bulgaria (BENDA & IVANOVA 2003). The Albanian record confirms continuous distribution of *P. macrobullaris* in the Dinarian Mts, as well as its syntopic occurrence with *P. auritus*. However, the species apparently is not restricted to higher (above 800 m) altitudes, at least in the Dinarian Mts, as it has been suggested (KIEFER & VEITH 2002, KIEFER & VON HELVERSEN 2004). In Croatia, it was recorded within altitudinal range from the sea level up to 1800 m a.s.l., with most localities – like the only Albanian – located below 800 m a. s. l. (PAVLINIĆ & TVRKOVIĆ 2004). In contrast to other members of the genus, *P. macrobullaris* in

Table 2. Comparison of the forearm length of *P. macrobullaris* from different parts of its range. Data source: Caucasus and Turkey – SPITZENBERGER et al. (2003); Greece, Liechtenstein and French Alps (holotype) – KIEFER & VEITH (2001), P. BENDA, unpubl.; Austria – SPITZENBERGER et al. (2002); Pyrenees – GARIN et al. (2003), P. BENDA, unpubl.; Iran, Syria and Switzerland – P. BENDA, unpubl.; Croatia – TVRTKOVIĆ et al. (2005); Albania – this paper

Tab. 2. Porównanie długości przedramienia osobników *P. macrobullaris* z różnych części zasięgu. Źródła danych: Kaukaz i Turcja – SPITZENBERGER et al. (2003); Grecja, Liechtenstein i Alpy Francuskie (holotyp) – KIEFER & VEITH (2001), P. BENDA, unpubl.; Austria – SPITZENBERGER et al. (2002); Pireneje – GARIN et al. (2003), P. BENDA, unpubl.; Iran, Syria i Szwajcaria – P. BENDA, unpubl.; Chorwacja – TVRTKOVIĆ et al. (2005); Albania – niniejszy artykuł

region	males					females				
	mean	SD	min	max	n	mean	SD	min	max	n
Caucasus	42.77	0.48	42.1	43.2	6	43.10	1.45	40.7	44.2	5
Iran	41.73	1.63	39.6	43.2	6	42.80	1.32	41.8	45.1	5
Syria	41.30	0.96	40.2	42.0	3	42.68	1.44	39.8	44.6	11
Turkey	–	–	–	40.9	1	42.67	1.23	40.5	44.2	9
Greece	39.85	0.21	39.7	40.0	2	–	–	–	–	–
Albania	39.57	1.16	38.5	40.8	3	41.25	0.30	41.0	41.6	4
Croatia	39.95	1.57	37.3	42.5	25	41.22	1.26	39.0	43.5	30
Austria	40.59	0.59	39.6	41.5	7	41.91	0.86	40.5	43.5	11
Liechtenstein	–	–	–	–	–	–	–	–	39.7	1
Switzerland	41.55	1.20	40.7	42.4	2	40.67	0.60	40.1	41.7	6
French Alps	–	–	–	40.5	1	–	–	–	39.6	1
Pyrenees	42.00	1.13	41.3	43.3	3	42.55	0.66	42.1	43.5	4

Croatia is restricted to karstic areas, where its coexistence with *P. auritus* was observed at three sites (TVRTKOVIĆ et al. 2005).

The forearm length of Albanian *P. macrobullaris* includes within the variation range of specimens from the Alps and Croatia (KIEFER & VEITH 2001, SPITZENBERGER et al. 2002, TVRTKOVIĆ et al. 2005). Individuals from the Pyrenees, Caucasus and the Middle East seem to have longer forearms (SPITZENBERGER et al. 2006, Table 2). From the other hand, bats from Albania have significantly longer thumb than the Pyrenean individuals of *P. macrobullaris* (Mann-Whitney U-test, $U=0$, $p<0.005$, $n=12$; data from GARIN et al. 2003 and Table 1). Our data, as well as those from Spain (GARIN et al. 2003) seem to contradict that thumb and claw of *P. macrobullaris* are shorter than in *P. auritus* (SPITZENBERGER et al. 2006). The coloration of the tragus, facial mask as well as contrasting greyish-brown and white pelage of Albanian bats correspond with characters of specimens from the Alps and Croatia (KIEFER & VEITH 2001, TVRTKOVIĆ et al. 2005) but differ from the Pyrenean and other populations (GARIN et al. 2003, SPITZENBERGER et al. 2006). Finally, measurements and external characters of Albanian bats may suggest their affiliation to smaller subspecies *P. m. alpinus* distributed from the Alps to Bosnia and Herzegovina (SPITZENBERGER et al. 2003, 2006, KIEFER & VON HELVERSEN 2004). The Pyrenean population shows measurements and characters more similar to larger *P. m. macrobullaris* ranging from the north-eastern Italy to the Caucasus, Syria and Iran (KIEFER & VON HELVERSEN 2004, SPITZENBERGER et al. 2006, Table 2), but the results of genetic analysis have placed that population within the western subclade (SPITZENBERGER et al. 2006). Therefore, the zone at least from the eastern Alps to the southern Dinarian Mts should be inhabited by sympatric western and eastern populations. Moreover, this



Fig. 2. *Plecotus macrobullaris* from the area of Qafëmal, northern Albania (K. SACHANOWICZ).
Rys. 2. *Plecotus macrobullaris* z okolic Qafëmal w północnej Albanii (K. SACHANOWICZ).

may contradict the statement that in *P. macrobullaris* the forearm length decreases towards the west (SPITZENBERGER et al. 2003), suggesting rather different pattern of geographical variation – with smaller individuals in central part of the range and larger in its marginal parts. However, larger samples for morphometric and molecular studies are required to solve the problem of external variation and differences in skull measurements (SPITZENBERGER et al. 2003, 2006) among populations of *P. macrobullaris* from different parts of its range.

STRESZCZENIE

Nowy gatunek dla fauny nietoperzy Albanii – *Plecotus macrobullaris* – został stwierdzony w górach północnej części kraju (region Pukë) 9–10 sierpnia 2003. Na opisanym stanowisku gacek alpejski współwystępował z gackiem brunatnym *Plecotus auritus*.

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