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Description of a New Bat, Rhinolophus macrorhinus
sp. n. from the Lower Pleistocene of Hungary

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While studying the Rhinolophus remnants from the Lower Pleistocene of Répáshuta, I have prepared a Rhinolophus skull, hitherto imbedded with a Corvid skull in a clump of breccia, collected by KORMOS in Beremend in 1933. In its original state, only one of its lateral surfaces had been visible, and its label bore in the hand of KORMOS the following note: „Rhinolophus skull, /ferrumequinum-group/". In literature, it was recorded as Rhinolophus cf. ferrumequinum, that is, Rh. aff. ferrumequinum /KRETZOI, 6; KORMOS, 3/. After a thorough examination of the specimen, now freed for study, I came to the conclusion that we have to do with a species as yet unknown for science, which I denote hereby as Rhinolophus macrorhinus sp.n.

Diagnosis. The nasal swelling is larger than on Rh. ferrumequinum; the palatal bridge of the bony palate is more anteriorač, as related to the toothrows, than on the recent species; the maxillary teeth are stronger, the talons of M^1 and M^2 especially developed, and the crown of M^3 is narrower but longer than in the recent taxon.

Holotype. Inventory number of the Paleontological Department of the HUNGARIAN NATURAL HISTORY MUSEUM: V.63/1551. Skull, with posterior portion of brain case and major parts of zygomatic arches and praemaxillae absent; base of skull.

proc. pterygoideus and crista sagittalis considerably damaged. Rostrum whole, maxillary dentition on both sides complete.

Measurements. Length of palatal bridge 2,8 mm, interorbital constriction 3,2 mm, height of nasal protuberance 4,7 mm, width of rostrum at exterior margin of canines 6,7 mm, distance of inner bases of canines 3,0 mm, width of rostrum measured at exterior margin of M^3-M^3 8,7 mm, length of toothrow $C-M^3$ 9,2 mm, length of P^4-M^4 6,8 mm, length of M^1-M^3 5,65 mm, length of cross-section of C 2,40 mm, width of same 1,80 mm, length of M^1 2,24 mm, width of same 3,25 mm, length of M^2 2,16 mm, width of same 2,88 mm, length of M^3 1,44 mm, width of same 2,12 mm.

Locality of type: Site Nr. 4, Berecsend, the Villány Range, South Hungary /cf. KRETZOI: 6, p.162/.

Horizont: the Villány horizon, Lower Pleistocene.

The measurements of Rhinolophus macrorhinus sp.n., are but slightly greater than those of Rh. f. ferrumequinum, and is a near ally of the recent form. For comparison purposes, I used 39 recent specimens, originating mainly from the Carpathian Basin. The differences of the fossil species, as against Rh. f. ferrumequinum, were found to be the following ones. The most striking difference lies in the measurements of the nasal swelling, which is considerably higher and, when viewed from above, also of a greater extension. The two supraorbital cristae meet the crista sagittalis not over the narrowest point of the interorbital constriction but removed further posteriorly. The interorbital width is greater. The longitudinal measurements, thus also those of the toothrows are also greater. On the other hand, the breadth measurements of the rostrum agree with the recent ones, that is, they are even smaller, hence the rostrum is narrowed and the skull of the fossil species is more elongate. The portion of the maxilla, enclosing the roots of the canines, is steeper, and also less projecting when viewed from above. The construction of the bony palate is very characteristic. Its anterior

incision just about reaches the line connecting the paracones of M^1 , thus it extends less posteriorly. Also, the posterior margin of the palatal bridge lies more anteriorad, since it coincides with the line connecting the mesostyli of the teeth.

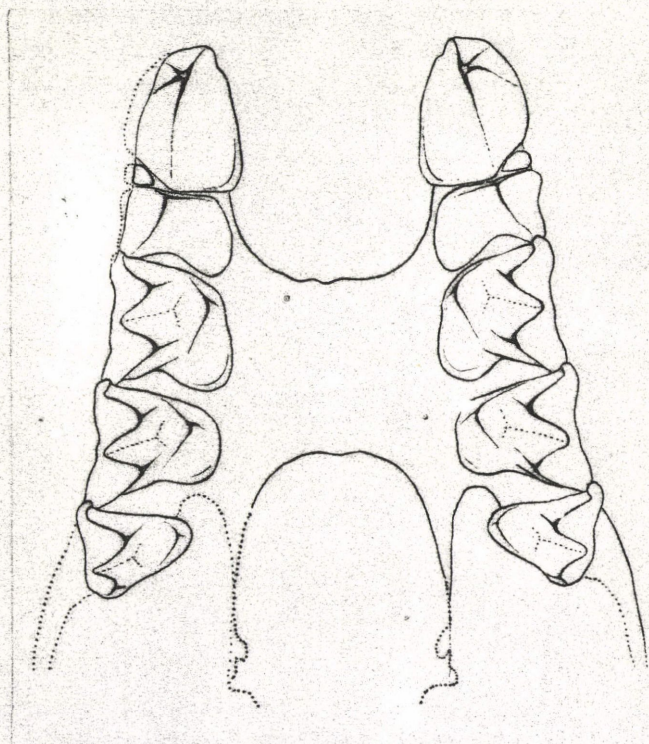


Fig. 1.
Rhinolophus macrorhinus sp. n., palate and
 maxillary dentition /x 7,5/

M^2 . All in all, the palatal bridge is situated more orally, as related to the tooththrows, than in the recent skull /fig. 1/. Its length is greater than the mean of the recent measu-

rements. It is also an important difference that the apices of the canines and P^4 protrude anteriorly when related to the line connecting the alveolar margin of the molars, while, in the recent specimens, these teeth stand erect, indeed, their apices are as if bending backwards. The cross-section of the canine is greater. The bulkier crown subtends a smaller angle with the root; its posterior, cutting edge is straighter. The small premolar $/P^2/$ is larger than in most recent animals, but it is similarly completely excluded from the line of the toothrow. Hence the canine and the large

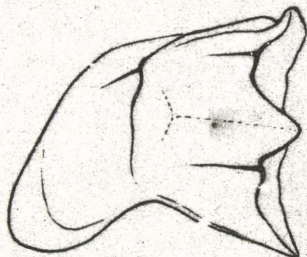


Fig. 2.
Left M^1 of *Rh. macrorhinus* sp. n.,
occlusal view $/x 14/$

premolar $/P^4/$ widely contact one another. The talon of P^4 is wide, its anterior edge subtending a right angle with the axis of the toothrow. The tooth itself is strikingly short when compared with the toothrow, indeed, it is also absolutely shorter than the P^4 of most recent specimens. The large talon of M^1 $/Fig.2/$ and M^2 extends deeply posteriorly and anteriorly. The edge of the talon of M^2 lies strikingly near the posterior margin of the maxilla. $/Fig.1/$. Finally, another important feature of the dentition is that the length of M^3 is 68 % of its width $/Fig.3/$, while this value remains

below 64 % in the recent taxon /Table I/. We can safely assert therefore that M^3 of the recent Large Horseshoe Bat had shortened as related to the ancient state /Rh. macrorhinus/. According to the general view, this is the direction of development in also the other bat-groups. As a corroborating evidence, Rh. macrorhinus is important in the species-group of ferrumequinum.

Of the large-sized Eastern subspecies /Rh. f. tragus and regulus/ of Rh. ferrumequinum, I had, unfortunately, only the figure of Rh. f. tragatus, published on Plate I. of Anderson's work /1/, at my disposal for comparative purposes.



Fig. 3.
Left M^3 of Rh. macrorhinus sp. n.,
occlusal view /x 14/

The bony palate of this taxon shows unequivocally the characteristics of the recent nominate form, hence its identity with Rh. macrorhinus is precluded.

It was also necessary to compare Rh. macrorhinus sp. n. with some earlier, large-sized, Pleistocene Rhinolophus remnants. The oldest of the home finds, Rh. csákvárensis, cannot come into consideration, due to its close alliance with Oligocene to Early Miocene forms /KRETZOI, 5/. Rh. delphinensis, found in Podlesice and Weze in Poland /KOWALSKI, 4/, is far removed from the new species, if for no other reason than owing to the location of its P^2 . The remnants of

Table I. Measurements in mm.
/mean values in parentheses/

Length of palatal bridge	Rhinolophus meorhinus sp. n. Holotype	2,25-2,90 /2,58/	Rhinolophus cf. ferrum-equinum Schreb.	-	Rhinolophus cf. ferrum-equinum Püspökfürdő	2,50-2,70 /2,67/	Rhinolophus cf. ferrum-equinum Parkó	2,40-2,55 /2,48/
Interorbital constriction	3,2	2,40-3,10 /2,72/	4,00-4,35 /4,18/	-	4,10-4,65 /4,38/	3,00	4,20	2,95
Height of nasal swelling	4,7	6,30-7,20 /6,63/	-	-	-	-	6,80	-
Rostral width at C-O	6,7	8,30-9,10 /8,68/	-	-	8,50	8,65	8,60-8,80 /8,70/	8,65
Rostral width at M ³ -M ³	8,7	8,25-9,05 /8,68/	6,30-6,90 /6,46/	-	6,40-6,45 /6,43/	6,45-6,65 /6,54/	6,45-6,65 /6,54/	6,45-6,65 /6,54/
C-M ³ length	9,2	5,15-5,60 /5,35/	-	-	5,20-5,30 /5,24/	5,20-5,45 /5,31/	5,20-5,45 /5,31/	5,20-5,45 /5,31/
P ⁴ -M ³ length	6,8	1,28-1,40 /1,33/	-	1,34-1,36 /1,35/	1,18-1,36 /1,27/	1,20-1,32 /1,28/	1,20-1,32 /1,28/	1,20-1,32 /1,28/
M ¹ -M ³ length	5,65	2,12-2,32 /2,19/	-	2,28-2,38 /2,33/	2,06-2,20 /2,14/	2,12-2,22 /2,18/	2,12-2,22 /2,18/	2,12-2,22 /2,18/
M ³ length	1,44	56,5%-63,5% /60,5 %/	-	56,5%-59,5% /58 %/	57,5%-63,5% /59,5 %/	55,5%-62,5% /58,5 %/	55,5%-62,5% /58,5 %/	55,5%-62,5% /58,5 %/
M ³ width	2,12	-	-	-	-	-	-	-
M ³ length in % of M ³ width	68 %	-	-	-	-	-	-	-

the large-sized Rhinolophus remains, found recently in Csarnósta /KRETZOI, 6,7/ still await examination. Some agreements could be showed with the upper C teeth and one of the separate M^1 discovered in the Lower Pleistocene sites of Kövesvárad near Répáshuta /TOPÁL, 6/, but any possibility of identity is excluded by the two M^3 found in the same locality /Table I/. The three rostra, collected by KORMOS in Püspökfürdő, stand much nearer to the recent species, sufficiently displayed also by their measurements /Table I/. The situation of the bony palate and the formation of M^3 also entirely correspond with those of Rh. ferrumequinum. On the other hand, the nasal swelling is larger on these specimens than on the recent taxon, and this feature points towards Rh. macrorhinus. The Middle Pleistocene remains found in the Tarkó rock-niche /JÁNOSSY, 2/ also agree, in essentials, with the recent species.

It is my agreeable duty to express my thanks to DR. D. JÁNOSSY for his submitting the type specimens for study as well as his ceding the fossil materials deposited in the Paleontological Department of the HUNGARIAN NATURAL HISTORY MUSEUM for examination; to DR. M. KRETZOI, the loan of materials from the Collection of the HUNGARIAN GEOLOGICAL INSTITUTION; and to DR. K. KOWALSKI, the presenting of some Podlesice specimens.

Új denevéraj, a Rhinolophus macrorhinus n. sp. leírása magyarországi alsópleisztocénból

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Szerző a KORMOS TIVADAR által Beremenden, 1933-ban gyűjtött alsópleisztocén kori Rhinolophus koponyáról megállapítja, hogy orri dudora nagyobb, mint a Rh. f. ferrumequinum-on, a csontos szájadlás hidja a fogsorokhoz viszonyítva előbbre

helyezkedik el /1. ábra/, mint a recens fajon, a maxilláris fogak erőteljesebbek, az M^1 /2. ábra/ és M^2 talonja erősen fejlett, az M^3 koronája /3. ábra/ keskenyebb, de hosszabb mint a recens fajé. Fentiek alapján a tudománvra új fajként, Rhinolophus macrorhinus n. sp. néven írja le. Megkísérli az új fajnak a Rh. ferrumequinum keleti alfajaival való összehasonlítását és összeveti néhány egyéb idősebb kora és pleisztocén nagy Rhinolophus maradvánnyal /I. táblázat/.

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