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## Report on a collection of Bats (Microchiroptera) from N. W. Iran

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A small collection of bats was made on the 21st August, 1961 by the University College of Wales Expedition to N. W. Iran. They were obtained in the Sulphur Caves at Guter-Su, north of Mt. Sabalan. This locality is in Iranian Azerbaijan, 38° 10' N, 47° 40' E. The material consists of seventeen specimens, including six species of Vespertilionid Bats, several of which are unknown in Iran and therefore of considerable interest. It is unfortunate that the specimens were mostly in poor condition, many of them found in a mummified condition and subsequently preserved in alcohol. They had evidently been overcome by the sulphur fumes in the cave. It has been possible, however, to extract the skulls of most of them and thus to make precise identifications. Because of their condition, only limited external measurements could be taken. The species contained in the collection are listed and discussed below.

### *Myotis blythi* Tomes, 1857 Lesser Mouse-eared Bat

1 specimen No. 6. ♀ ad.

This species is known from several localities in Iran and has been obtained at Resht, on the S. W. Caspian, not far from the present locality. It is also known in this region from Armenia where DAHL (1954) recorded it from several localities, and in N. E. Iraq, where HATT (1959) recorded it from Baradust. HARRISON & LEWIS (1961) reviewed the Mouse-eared Bats of the Middle East and showed that the two Iranian forms *omari* Thomas, 1905 and *risorius* Cheesman, 1921 are both in reality races of *Myotis blythi*, not of *Myotis myotis* as originally described by these authors. The two forms are only distinguishable by average colour difference and the present specimen, being alcoholic, cannot be subspecifically determined. Its measurements, given below, agree well with those of other Iranian specimens of *M. blythi*.

Forearm: 64.3 mms. Hind Foot: 12 mms.

Skull Measurements: Greatest Length: 22 mms. Condylbasal length: 20.6 mms; Breadth of the Braincase 9.3 mms; Interorbital constriction: 4.8 mms; Maxillary cheekteeth c-m<sup>3</sup> 8.9 mms; Mandibular cheekteeth c-m<sup>3</sup> 9.8 mms; Mandible: 16.8 mms.

*Myotis nattereri araxenus* Dahl 1947

2 specimens No. 7 ♂. No. 17 ? sex.

The measurements of these two specimens agree well with those given by DAHL (1947) and KUZYAKIN (1950) for this large and little known race of *M. nattereri*. The skull particularly is outstandingly larger than that of *M. n. nattereri*. It was originally described by DAHL (1947) from specimens obtained in the area of the village of Amagu, Azizbekovski region, Rr. Araxes Valley, Armenia; he subsequently (1954) additionally recorded *M. n. nattereri* from Mosesgekh, Shamshadinski region and from Sevan in Armenia. The present specimens extend its known range into N. W. Iran and its discovery there is not altogether surprising, since Guter-Su is not far distant from the Araxes Valley. The colour of these specimens cannot be determined, but their measurements are given below. According to the Russian authors mentioned above the forearm in this race measures 42.3–47.8 mms; the condylobasal length of the skull ranges from 16.2–16.8 mms and the length of the maxillary toothrow is 6.4–7.3 mms. One of the Iranian specimens is a little smaller than these measurements, but still clearly larger than the typical race.

Table 1

Measurements of *Myotis nattereri araxenus* Dahl (in mms)

Specimen	Forearm	Greatest Length Skull	Condylobasal length	Zygomatic Breadth
7. Guter-Su	42.7	17.2	15.7	—
17. Guter-Su	42.6	17.8	16.4	10.7

Specimen	Breadth of Braincase.	Interorbital Constriction	Maxillary cheekteeth c-m <sup>3</sup>	Mandibular cheekteeth c-m <sup>3</sup>	Mandible
7. Guter-Su	8.0	4.0	6.2	7.0	12.3
17. Guter-Su	8.0	4.1	6.5	7.2	13

Apart from their greater size these specimens of *M. n. araxenus* agree with *M. n. nattereri* in all important features of external, cranial and dental morphology.

*Myotis mystacinus* Kuhl, 1819

3 specimens. Nos. 8, 9, 10. 3 ♂.

This species was quoted from Iran by OGNEV, (vide ELLERMAN & MORRISON-SCOTT, 1951), and KUZYAKIN (1950) gives a distribution map showing its occurrence in the S. W. Caspian region, so that its presence in Iranian Azerbaijan is not unexpected. DAHL (1954) has recorded the race *M. m. przewalskii* Bobrinskii, 1926, from Armenia. According to BOBRINSKII, KUZNETZOV & KUZYAKIN (1944) this race differs in its more round swollen brain case and poorly developed second small premolar as compared with *M. m. mystacinus*, but these characters are not clearly apparent in the present specimens and it appears wiser to leave the question of their subspecific determination open, pending the collection of further material. Their measurements are given below.

Table 2

Measurements of *Myotis mystacinus* (in mms)

Specimen	Forearm	Skull Greatest Length	Condylobasal Length	Zygomatic Breadth	Interorbital constriction.
No. 8 ♂	35.8	14.6	13.7	8.4	3.6
No. 9 ♂	36.1	14.6	13.9	—	3.7
No. 10 ♂	36.1	14.0	—	—	3.7

Specimen	Breadth of Braincase	Maxillary cheekteeth c-m <sup>3</sup>	Mandibular cheekteeth c-m <sup>3</sup>	Mandible
No. 8 ♂	6.9	5.7	5.8	10.2
No. 9 ♂	7.4	5.2	5.7	10.7
No. 10 ♂	6.9	5.1	5.8	10.0

*Eptesicus serotinus* Schreber, 1774

1 specimen. No. 1. ♂ adult.

This specimen agrees well in all essential features with a spirit specimen in the British Museum collection taken at the foot of the Elburz Mountains, S. E. Caspian. Although the colour of both these spirit bats cannot be accurately determined because of immersion in alcohol, it is clear that they are both far too dark to be referable to the pale form *E. serotinus shiraziensis* Dobson, 1871, from S. W. Iran. Furthermore the cranial and external measurements of these N. Iranian Serotines are a little smaller than those of the type of *E. s. shiraziensis*. The species is known from Armenia (DAHL 1954) and the typical subspecies has been recorded from Lebanon and Israel (LEWIS & HARRISON 1962). It is probable that the present specimen also is referable to the nominate race, but freshly skinned material is needed to confirm this. Measurements: Forearm: 52.3 mms. Skull, greatest length 21.3 mms; condylobasal length 20 mms; breadth of the braincase 9 mms; interorbital constriction 4 mms; maxillary cheekteeth c-m<sup>3</sup> 7.6 mms; mandibular cheekteeth c-m<sup>3</sup> 8.1 mms; mandible 15.8 mms.

*Eptesicus bobrinskii* Kuzyakin, 1935

7 specimens. 4 ♂ 3 ♀ Nos. 2, 3, 4, 5, 11, 12, 13.

This rare species is hitherto unknown outside the geographical limits of Russia. It is distinguished from *E. nilssoni* by its smaller size (forearm 34.5–36 mms, as against 38–43 mms in *E. nilssoni*); very flattened skull, its height in the tympanic region 5.4–6 mms. (6.4–7 mms. in *E. nilssoni*) and narrow rostrum, the width across the upper canines being equal to the interorbital constriction or only exceeding this by not more than .2 mm. (vide KUZYAKIN, 1950).

The skulls have been extracted from the seven Iranian specimens and they agree very closely with the description of the species and figures of the skull given by KUZYAKIN (1950). They have been compared with six specimens of *E. n. nilssoni* in the British Museum collection from Norway, Sweden and Harz. They differ completely from those in the smaller size and very marked cranial flattening of this species, with quite straight dorsal profile of the skull and very narrow rostrum. There can be no doubt therefore that these specimens extend the known range of *E. bobrinskii*.

*kii* to Iran. These specimens have also been compared with material of *Eptesicus nasutus* Dobson, 1877, to which this species was provisionally referred by ELLERMAN & MORRISON-SCOTT (1951). There is no doubt that *E. bobrinskii* is quite different from *E. nasutus* and that in fact it is a distinct species. In view of the rarity of this bat and the uncertainties regarding its status it would seem useful to give a detailed description of the Iranian material in comparison with KUZYAKIN's description and with *E. nasutus*.

The pelage is thick, about 9 mms. long on the back, which is considerably longer than that of *E. nasutus* (only about 5 mms. on the back). The colouration cannot be precisely determined in these spirit specimens, but they are probably darker than the material from Russia examined by KUZYAKIN which are described by him as olive yellow on the back and whitish on the underparts, the bases of all hairs dark brownish with a variable mixture of pale yellowish. Certainly in these Iranian specimens the hair bases are dusky, the tips on the back paler, in some specimens with a distinct golden brown sheen little evident in others. The tips of the hairs on the belly appear whitish. The ears and membranes are dusky blackish and semiopaque. It may be noted that in contrast the hairs of *E. nasutus pellucens*, which occurs in Iran, are pale to their bases, while its membranes are very pallid and translucent.

The tip of the tail projects free from the membrane more than 3–6 mms. as described by KUZYAKIN. The tail of *E. n. pellucens* does not project. The calcar is well developed and a small postcalcareal lobe is present. The ear is bluntly rounded above and rather narrow in its upper part. The tragus is bluntly rounded above with a well developed, bluntly rounded basal lobule posteriorly. That of *E. n. pellucens* is narrower and relatively taller, and the posterior basal lobule is not well developed.

The wings are very short and narrow, just as described by KUZYAKIN and the components of the left wing of a specimen from Guter Su are given below, compared with those of a specimen of *E. n. pellucens* in the author's collection from Shaiaba, S. Iraq.

	<i>E. bobrinskii</i> ♂ No. 2, Guter Su	<i>E. n. pellucens</i> ♂ ad. No. 1, 1623. Shaiaba, S. Iraq.
Forearm	34.8	38.5
Metacarpal 2	27	35
Metacarpal 3	28.4	37
Metacarpal 4	28.3	35.7
Metacarpal 5	26.3	34.1
1st Phalanx, Digit 3	11.2	10.1
2nd Phalanx, Digit 3	8	11.2
3rd Phalanx, Digit 3	5.3	6.0
1st Phalanx, Digit 4	9.3	9.3
2nd Phalanx, Digit 4	5.8	6.0
3rd Phalanx, Digit 4	2.2	2.0
1st Phalanx, Digit 5	8	7.0
2nd Phalanx, Digit 5	4.8	5.0

The wing membrane is inserted at the base of the first toe. The penis is swollen in its middle and distal parts, as described by KUZYAKIN; it is almost bare of hairs and somewhat dorso-ventrally flattened.

The baculum is present and small, .6–.7 mm. in length and shaped as shown in the figure, its distal extremity is very slightly enlarged, its base moderately widened and slightly concave in the mid line posteriorly, and excavated ventrally.

The skull is the most remarkable and distinctive feature of this bat. It is both larger and longer than of *E. n. pellucens* and differs in its marked degree of flattening.



The dorsal profile is almost straight from the nasals to the lambda. A further important feature is the narrowness of the rostrum and as described by KUZ'YAKIN the width across the canines is less than or not more than .2 mm. greater than the interorbital constriction. In *E. n. pellucens* the rostrum is noticeably wider than the interorbital constriction. The lambda is not at all elevated in these specimens of *E. bobrinskii*, whereas it is in *E. n. pellucens*. In the dentition <sup>1</sup> is bicuspid in this species, the secondary cusp attaining three-quarters the height of the first. In *E. n. pellucens* <sup>1</sup> is unicuspid.

It is therefore clear that *E. bobrinskii* is quite distinct from *E. n. pellucens* in a number of features and that the two forms are different species. KUZ'YAKIN (1950. loc. cit) recorded *E. bobrinskii* from the following localities in Russia: Kazalinsk; the well of Tyulek, 65 Kms. E. of Aralsk; the Malye Barsuki sands, north of the Sea of Aral; the desert of Bet-pak-dala (Prickuyski Hungry Steppe); 150 Kms. N. of Aralsk; near Irgiz and 60 Kms. N. E. of Irgiz. He also mentions a specimen from near Faskal, N. Osetia and another which is labelled Yakutsk.

The forearm measurements (the other standard flesh measurements in these specimens cannot be relied upon) and the cranial measurements are tabulated below and will be seen to correspond well with those given by KUZ'YAKIN (loc. cit. p. 375) although some of the cranial dimensions average a little smaller in this series.

Table 3

Measurements of *Eptesicus bobrinskii* (in mms)

Specimen	Forearm	Skull Greatest Length.	Condylolbasal Length.	Zygomatic Breadth	Interorbital constriction.	Height at Tympanum
No. 2	34.8	14.8	14.2	—	3.8	5.2
No. 3	35.3	15.0	14.0	8.7	3.9	5.5
No. 4	34.9	—	—	—	—	—
No. 5	34.6	15.2	14.6	8.3	4.0	5.2
No. 11	35.6	15.1	14.3	—	3.9	5.3
No. 12	33.6	—	—	—	—	—
No. 13	34.3	14.8	14.2	—	—	—

Specimen	Distance across upper canines	Breadth of braincase	Maxillary cheekteeth c-m <sup>3</sup>	Mandibular cheekteeth c-m <sup>3</sup>	Mandible
No. 2	3.7	7.2	4.7	5.3	10.2
No. 3	3.8	7.6	4.8	5.2	—
No. 4	—	—	—	5.1	—
No. 5	3.7	7.2	4.8	5.2	9.2
No. 11	3.8	7.7	4.9	—	—
No. 12	—	—	—	5.2	9.6
No. 13	3.7	—	4.9	5.2	10.8

*Plecotus wardi* Thomas, 1911

3 specimens, No. 14, 15, 16. ♂ ♂ ♂

LANZA (1960) has shown that two sibling species of the Genus *Plecotus* exist together in southern Europe and that *P. auritus* Linnaeus and *P. wardi* Thomas are

only distinguishable from one another for certain by the form and size of the baculum, although the cranial measurements and size of the tympanic bulla are also helpful in European material. The penis of each of these three male *Plecotus* from N. W. Iran was treated with 5% Potassium Hydroxide and stained with alizarin red. The baculum of each has been extracted and compared with those of two British examples of *P. auritus*. In each case the baculum is smaller (.8 mm long in each of these 3 specimens) and differs in form from those of *P. auritus* in precisely the manner described by LANZA (loc. cit. fig. 1. p. 11). The basal part of the bone is shorter and broader and its shaft is more gradually widened as it passes back towards the base. There can be no doubt therefore that these specimens represent *P. wardi* and material from other Middle Eastern countries must be re-examined for precise identification by the morphology of the baculum.

The measurements of the three specimens are given below.

Table 4  
Measurements of *Plecotus wardi* (in mms)

Specimen	Forearm	Skull Greatest Length	Condylbasal Length	Zygomatic Breadth	Interorbital constriction
No. 14 ♂	41.3	17.3	15.8	8.6	3.2
No. 15 ♂	40	16.9	15.6	8.4	3.2
No. 16 ♂	40.8	16.9	15.8	—	3.2

Specimen	Breadth of Braincase	Tympanic Bulla	Maxillary cheekteeth c-m <sup>3</sup>	Mandibular cheekteeth c-m <sup>3</sup>	Mandible
No. 14 ♂	8.3	4.6	5.6	5.8	10.7
No. 15 ♂	8.2	4.3	5.2	5.9	10.6
No. 16 ♂	8.2	4.4	5.2	5.8	10.4

These measurements agree quite closely with those of the North African specimens of *P. wardi* studied by LANZA, which have smaller skulls than S. European examples of the species, but large tympanic bullae. LANZA considered that *P. auritus* probably does not exist in N. Africa and that the form *P. christiei* Gray may be referable to *P. wardi*. It is unfortunate that the type specimen of *P. christiei* is in poor condition, its sex cannot be determined, nor was a precise type locality given in the original description. The present specimens certainly establish the presence of *P. wardi* in N. W. Iran.

It seems likely that the name *Plecotus austriacus* Fischer, 1829, will prove to be the valid specific name for the *P. wardi* group of LANZA.

### Summary

A collection of bats from Iranian Azerbaijan is listed and described. All were obtained at Guter-Su, N. of Mt. Sabalan, 30° 10' N. 47° 40' E. They include six forms, of which *Eptesicus bобринский*, *Myotis nattereri araxenus* and *Plecotus wardi* are new additions to the fauna of Persia. *Eptesicus bобринский* is considered to be a distinct species from *E. nasutus*.

### Zusammenfassung

Eine Sammlung Fledermäuse aus dem persischen Asserbaidjan wird beschrieben. Alle Tiere wurden bei Guter-Su, nördlich Mt. Sabalan, 30°10'N, 47°40'O gesammelt. Die Sammlung

umfaßt 6 Species, von denen *Eptesicus bобрinski*, *Myotis nattereri araxenus* und *Plecotus wardi* für die persische Fauna neu sind. *Eptesicus bобрinski* wird als von *E. nasutus* artlich verschieden aufgetaßt.

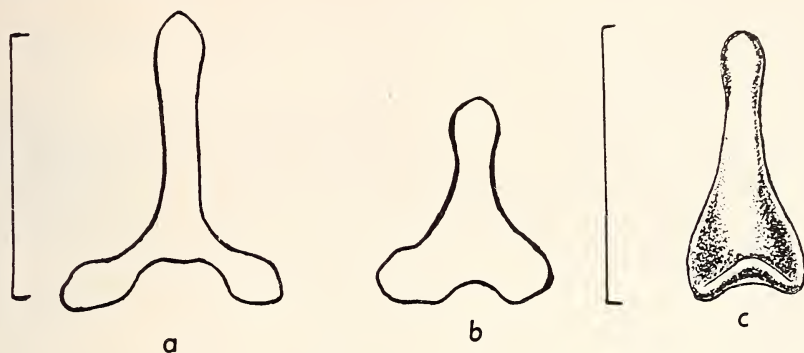


Fig. 1. Bacula of *Plecotus*. a. *Plecotus auritus* No. 19. 1227 ♂ Godstone, Surrey. 24. XI. 1951 — b. *Plecotus wardi* Guter Su. Azerbaijan. Aug. 1961. Scale = 1 mm. — c. Baculum of *Eptesicus bобрinski* No. 5 Guter Su, Azerbaijan. Scale = 6 mm

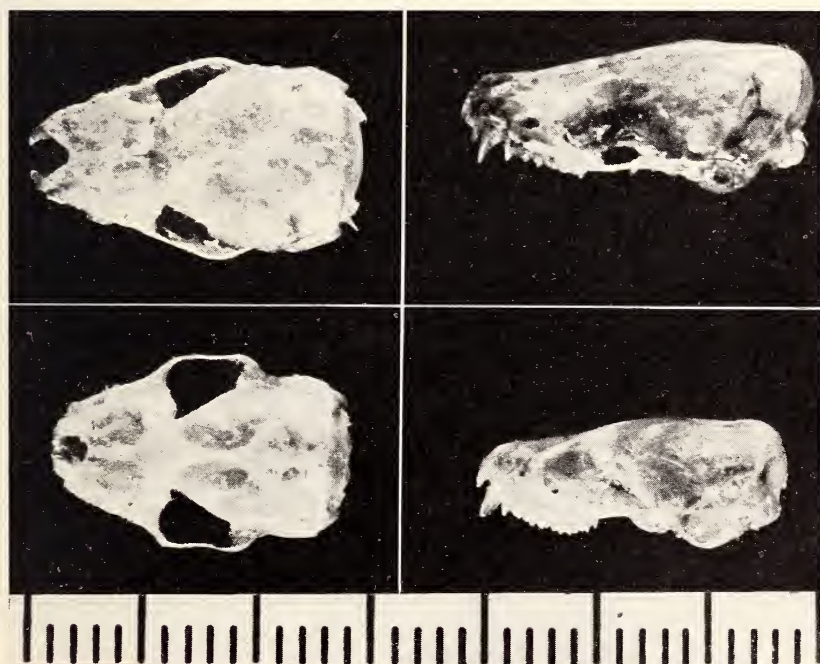


Fig. 2. Above. Skull of *Eptesicus bобрinski*, No. 3. Guter Su, Azerbaijan, below: *Eptesicus nasutus pellucens*, No. 1. 1623. Shaiaba, S. Iraq. 8. III. 1955. Dorsal and lateral views

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Fig. 3. Above. Skull of *Myotis nattereri araxenus*, No. 17. Guter Su, Azerbaijan, below: *Myotis nattereri nattereri*, No. 3. 857. Pampisford, Cambridgeshire, July, 1949. Dorsal and lateral views

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