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Notes on the Bat Fauna (*Chiroptera*) of Roumanian Dobrogea

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With 8 Figures

Introduction

Generally, the distribution of bats in Roumania has not been known enough so far and as far as bats of Dobrogea are concerned – our knowledge of them corresponds to this state. Comprehensive faunistic studies of this region do not exist yet, and thus the only data on bats are those from works by Călinescu (1931, in Dumitrescu et al. 1963), Dumitrescu, Orghidan and Tanasachi (1958), Dumitrescu, Tanasachi and Orghidan (1963). Regarding this fact and the fact that we are not to continue in our field research in Dobrogea in next years, we suppose it would

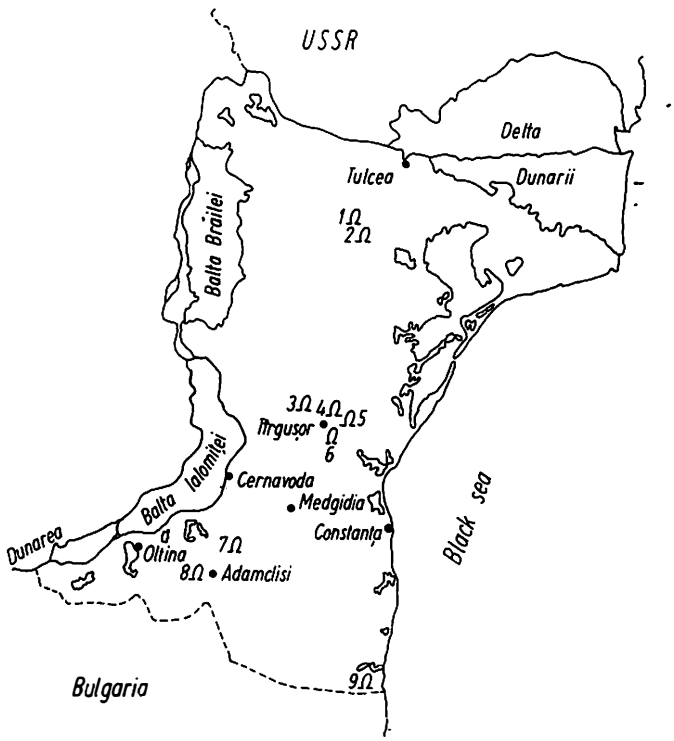

Fig. 1. The localities of bat's findings in Roumanian Dobrogea (Fundplätze der Fledermäuse in der rumänischen Dobrudscha): 1 – "Peştera nr. 1. din Muntele Consul", 2 – "Peştera nr. 2. din Muntele Consul, 3 – "Peştera Ghilingic", 4 – "Peştera din Valea Cheii", 5 – "Peştera Liliecilor de la Gura Dobrogei", 6 – "Peştera La Adam", 7 – "Peştera la Cişmeluţă", 8 – "Peştera Canaraua Fetii", 9 – "Peştera de la Limanu"

be useful to summarize the exist literary data and to complete them by our own results. It is my pleasure to say here my warmest thanks to all who took part in our excursions and who helped in field collecting. They are namely: A. Červená, J. Jirouš, L. Macháčková, M. Malcová, J. Malec and Z. Suchánková.

Methods

We have examined the following caves of the Dobrogean Karst within summers of 1974 and 1979 (Fig. 1 and 2): "Peştera Liliecilor de la Gura Dobrogei", a cave in the valley of the small river Visterna not far from the village Tirguşor (55 m above sea level), "Peştera La Adam", a cave located in same place (25 m above sea level), "Peştera din Valea Cheii", a cave near the village Cheia (35 m above sea level) and "Peştera de la Limanu", a cave near the village Limanu (20 m above sea level). In all of the mentioned caves, bats have been caught in mist nets while attempting to fly in or out the cave. In several cases, nets were given in some open suitable locations, as well. By means of this method we have caught 103 specimens of nine bat species. If a nursing colony occured in a cave, the number of bat individuals was estimated. In several few clear cases the bat species was identified only by means of a direct observation (if we did not succeed to catch it). In caught specimens, we have determined not only its sex but also, as far as possible, its age.

Fig. 2. A view of the Visterna river valley between the caves "Peştera Liliecilor de la Gura Dobrogei" and "Peştera La Adam"

(Blick in das Tal des Flüßchens Visterna zwischen den Höhlen „Peştera Liliecilor de la Gura Dobrogei" und „Peştera La Adam"). Phot.: J. Červený

Review of findings

1. *Rhinolophus ferrumequinum* (Schreber 1774)

Czech material, i.e. material collected by the author (Fig. 3): "Peştera din Valea Cheii", 18. VII. 1974, 1 ♂ sad. netted; "Peştera Liliecilor de la Gura Dobrogei", 31. VII. 1979, large nursing colony of 200–300 specimens, 2 ♂♂ juv. netted; "Peştera de la Limanu", 21. VII. 1974, 2 specimens sex indet observed during the netting.

Previous records from Dobrogea: "Peştera nr. 1. din Muntele Consul", a cave in Tulcea district, 25. IX. 1958, small number of specimens; "Peştera nr. 2. din Muntele Consul", a cave in Tulcea district, 12. IX. 1956, small number of specimens; "Peştera Liliecilor de la Gura Dobrogei", 1955–1958, summer and winter colony; "Peştera de la Limanu", 2. XI. 1958, a colony (Dumitrescu et al. 1958, 1963).

Fig. 3. The portrait of ♂ of *Rhinolophus ferrumequinum*
(Porträt eines ♂ von *Rhinolophus ferrumequinum*). Phot.: J. Červený

2. *Rhinolophus hipposideros* (Bechstein 1800)

Czech material: "Peştera din Valea Cheii", 18. VII. 1974, 1 ♂ ad., 1 ♀ netted.

Previous records from Dobrogea: "Peştera de la Limanu", 4. X. 1958, 2. XI. 1958, small number of specimens; "Peştera nr. 2. Canaraua Fetii", a cave in Adamclisi district, July 1958, small number of specimens (Dumitrescu et al. 1963).

3. *Rhinolophus mehelyi* (Matschie 1901)

Czech material (Fig. 4): "Peştera din Valea Cheii", 18. VII. 1974, 3 specimens sex indet observed during the netting in the cave; "Peştera Liliecilor de la Gura Dobrogei", 17. VII. 1974, large nursing colony of 500 specimens, 4 ♂♂ ad., 1 ♂ sad., 6 ♀♀ ad., 2 ♀♀ sad. netted, 31. VII. 1979, colony of 100–150 specimens, 3 ♂♂ sad., 4 ♂♂ juv., 5 ♀♀ juv. netted; "Peştera de la Limanu", 21. VII. 1974, 5 ♂♂ ad., 3 ♂♂ juv., 14 ♀♀ ad., 2 ♀♀ juv. netted.

Previous records from Dobrogea: "Peştera Liliecilor de la Gura Dobrogei", 1956–1958, summer and winter colony; "Peştera de la Limanu", 2. X. 1958, 2. XI. 1958, a colony; "Peştera La Cişmeluţă", a cave in Adamclisi district, 3. VII. 1958, 2 ♂♂ (DUMITRESCU et al. 1958, 1963).

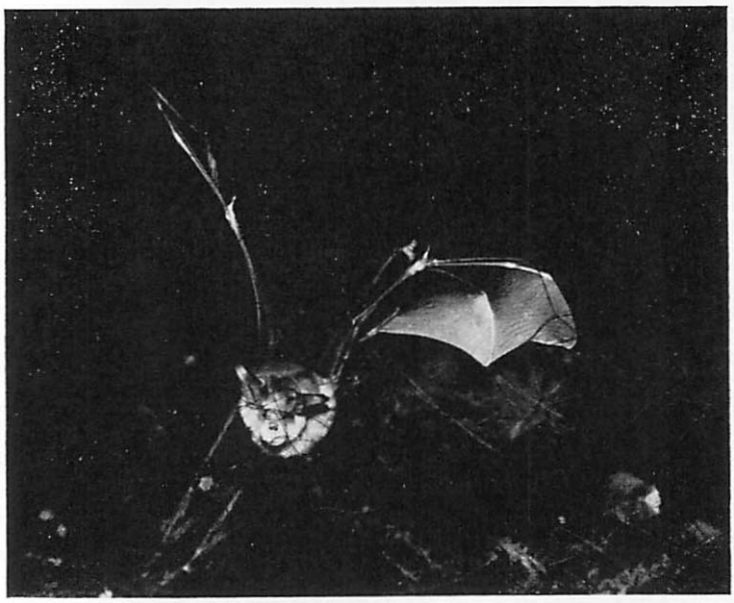

Fig. 4. A netted ♂ of *Rhinolophus mehelyi*
(♂ von *Rhinolophus mehelyi* im Netz). Phot.: J. ČERVENÝ

4. *Myotis mystacinus* (Kuhl 1819)

Czech material: Specimens of this species no collected.

Previous records from Dobrogea: "Peştera Liliecilor de la Gura Dobrogei", 20. I. 1956, winter colony; "Peştera de la Limanu", 2. XII. 1958, 1 ♀; "Peştera La Adam", 1956–1958, fossil remains (DUMITRESCU et al. 1958, 1963).

5. *Myotis emarginatus* (Geoffroy 1806)

Czech material: "Peştera din Valea Cheii", 18. VII. 1974, 1 ♂ ad. netted.

Previous records from Dobrogea: "Peştera Canaraua Fetii", a cave in Adamclisi district, July 1955, July 1958, nursing colony; "Peştera La Adam", 1957, fossil remains (DUMITRESCU et al. 1963).

6. *Myotis nattereri* (Kuhl 1818)

Czech material: "Peştera Liliecilor de la Gura Dobrogei", 31. VII. 1979, 1 specimen observed in a small cave fissure.

Previous records from Dobrogea: "Peştera nr. 1. din Muntele Consul", a cave in Tulcea district, 26. XI. 1957, 1 ♀; "Peştera Liliecilor de la Gura Dobrogei", 1956, subfossil remains; "Peştera La Adam", 1957, fossil remains (Dumitrescu et al. 1958, 1963).

7. *Myotis bechsteini* (Kuhl 1818)

Czech material: Specimens of this species no collected.

Previous records from Dobrogea: "Peştera La Adam", 1956–1958, fossil remains (Dumitrescu et al. 1963).

8. *Myotis myotis* (Borkhausen 1797)

Czech material: Specimens of this species no collected.

Previous records from Dobrogea: "Peştera Liliecilor de la Gura Dobrogei", 1955–1958, summer colony; "Peştera de la Limanu", 4. X. 1958, small number of specimens, "Peştera La Adam", 1956–1958, subfossil remains; "Peştera Ghilingic", a cave in Medgidia district, 1956–1958, fossil remains (Dumitrescu et al. 1963).

9. *Myotis oxygnathus* (Monticelli 1885)

Czech material (Fig. 5): "Peştera Liliecilor de la Gura Dobrogei", 17. VII. 1974, large nursing colony of 4000–5000 specimens, 4 ♂♂ ad., 1 ♂ sad., 6 ♀♀ ad., 2 ♀♀ juv. netted, 31. VII. 1979, nursing colony of 150–200 specimens, 6 ♂♂ juv., 1 ♀ ad. netted; "Peştera din Valea Cheii", 18. VII. 1974, 1 ♂ netted.

Previous records from Dobrogea: "Peştera Liliecilor de la Gura Dobrogea", 1955–1958, a colony (Dumitrescu et al. 1963).

Fig. 5. The portrait of ♀ of *Myotis oxygnathus*
(Porträt eines ♀ von *Myotis oxygnathus*). Phot.: J. Červený

10. *Myotis daubentoni* (Kuhl 1819)

Czech material: "Peştera Liliecilor de la Gura Dobrogei", 31. VII. 1979, 1 ♂ ad. netted.

No previours records are available from Dobrogea.

11. *Vespertilio murinus* (Linné 1758)

Czech material (Fig. 6): "Peştera Liliecilor de la Gura Dobrogei", 31. VII. 1979, 1 ♀ netted.

No previous records are available from Dobrogea.

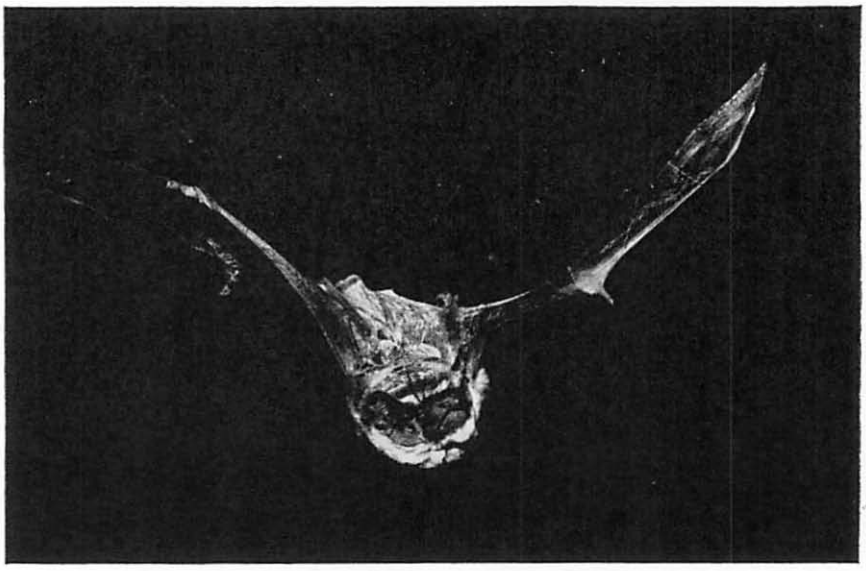

Fig. 6. A netted ♀ of *Vespertilio murinus*
(♀ von *Vespertilio murinus* im Netz). Phot.: J. Červený

12. *Eptesicus serotinus* (Schreber 1774)

Czech material (Fig. 7): "Peştera din Valea Cheii", 18. VII. 1974, 1 ♂ ad. netted; "Peştera de la Limanu", 21. VII. 1974, 1 ♂ sad. netted; "Peştera Liliecilor de la Gura Dobrogei", 31. VII. 1979, 2 ♂♂ ad., 1 ♂ juv. netted.

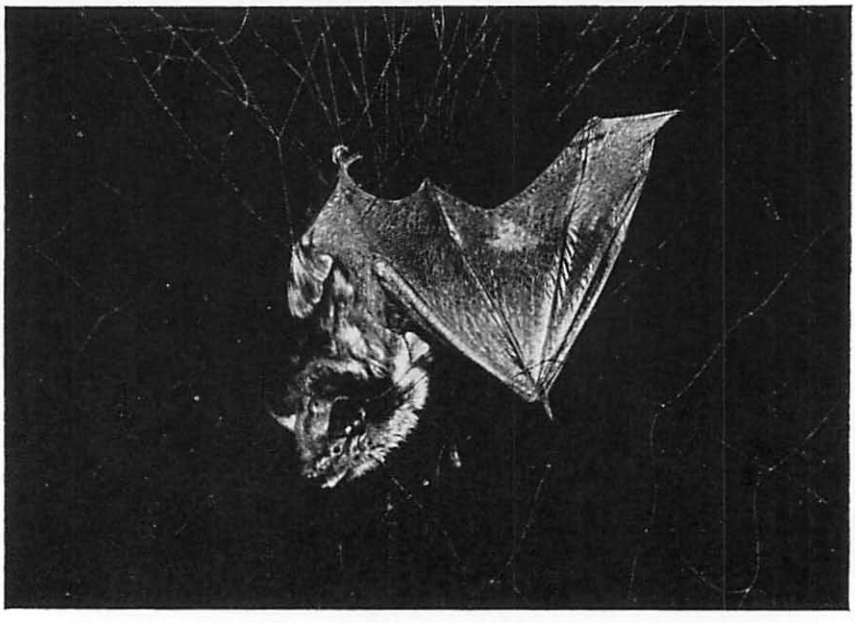

Fig. 7. A netted ♂ of *Eptesicus serotinus*
(♂ von *Eptesicus serotinus* im Netz). Phot.: J. Červený

Previous records from Dobrogea: "Peştera La Adam", 1956–1958, fossil remains (Dumitrescu et al. 1963); localities Constanţa and Cernavoda (Călinescu 1931, in Dumitrescu et al. 1963).

13. *Pipistrellus pipistrellus* (Schreber 1774)

Czech material: Specimens of this species no collected.

Previous records from Dobrogea: Localities Constanţa and Cernavoda (Călinescu 1931, in Dumitrescu et al. 1963).

14. *Pipistrellus nathusii* (Keyserling et Blasius 1839)

Czech material: Specimens of this species no collected.

Previous records from Dobrogea: "Peştera La Adam", 4. IX. 1957, colony of 12 specimens (Dumitrescu et al. 1963); locality Oltina, Adamclisi district (Călinescu 1931, in Dumitrescu et al. 1963).

15. *Plecotus* spec.

Czech material: Place in the river Visterna valley near the railway station of the village Tîrguşor, 1. VIII. 1979, 4 specimens observed during the netting.

Previous records from Dobrogea: "Peştera Liliecilor de la Gura Dobrogei", 20. I. 1956, small numbers of specimens (Dumitrescu et al. 1958, 1963); localities Constanţa and Cernavoda (Calinescu 1931, in Dumitrescu et al. 1963). All these specimens have been determinated as *Plecotus auritus*.

16. *Miniopterus schreibersi* (Kuhl 1819)

Czech material: "Peştera din Valea Cheii", 18. VII. 1974, 6 ♂♂ ad., 1 ♂ sad., 3 ♀♀ ad., 2 ♀♀ sad. netted; "Peştera Liliecilor de la Gura Dobrogei, 16. VII. 1974, large nursing colony of 2000–3000 specimens, 3 ♂♂ ad., 6 ♀♀ ad. netted, 31. VII. 1979, nursing colony of 100–200 specimens, 1 ♂, 2 ♀♀ netted; place in the valley of the river Visterna near the railway station of the village Tîrguşor, 1. VIII. 1979, 1 ♀ netted.

Previous records from Dobrogea: "Peştera Liliecilor de la Gura Dobrogei", 1955–1958, winter and summer colony; "Peştera de la Limanu", 4. X. 1958, 2. XI. 1958, a colony; "Peştera La Cişmeluţă", a cave in Adamclisi district, 3. VII. 1958, a colony; "Peştera La Adam", 1956–1958, fossil remains (Dumitrescu et al. 1958, 1963).

Discussion and conclusions

There may be seen an obvious heterogeneity of the presented data on findings of singular species. The majority of findings concerns typical cave species that have been netted directly in front of cave entrances (Fig. 8). From this point of view the following species seem to be dominant for the Dobrogean Karst: *Rhinolophus ferrumequinum, Rh. mehelyi, Myotis oxygnathus, Eptesicus serotinus* and *Miniopterus schreibersi*. The other species caught or found in caves *Rhinolophus hipposideros, Myotis mystacinus, M. emarginatus, M. nattereri, M. daubentoni, Vespertilio murinus, Pipistrellus nathusii, Plecotus* spec., are essentially more rare in the studied region or they are not restricted to caves and hence they hitherto avoid our attention. The only species ascertained in the Roumanian Dobrogea, that has not been found in caves so far, is *Pipistrellus pipistrellus*. A very interesting is the question of occurrence of *Myotis myotis*. This species has been recorded by the Roumanian authors (Dumitrescu et al. 1958, 1963) from the cave "Peştera Liliecilor de la Gura Dobrogei" as found in the mixed colony together with *Myotis*

oxygnathus, however, in spite of a large sample collected by us in the cave, we could not conform its presence there. Regarding the age of the mentioned papers it seems to be possible that a confusion with *M. oxygnathus* could take place in the case of Roumanian authors. Because of the same reason we can not consider the data on *Plecotus auritus* to be conclusive. The occurrence of *Myotis bechsteini* has been conformed only according to fossil remains, however its recent occurrence is very probable since it lives for instance at the Bulgarian Black Sea coast (Horáček et al. 1974). Catching of ♂ *M. daubentoni* and ♀ *V. murinus* may be looked upon as the most valuable findings. The finding of *M. daubentoni* represents the only sixth finding in Roumania and the second one at Black Sea coast, the first finding there being recorder (as mentioned above) by Horáček et al. (1974).

Fig. 8. Relciving bats of the mist net
(Befreien von Fledermäusen aus dem Netz). Phot.: J. Červený

The another very important piece of knowledge is the fact that there comes to a remarkable reduction of bats' population in South Europe. For instance – during our first visit to the cave "Peştera Liliecilor de la Gura Dobrogei" on July 1974 we could estimate the number of individuals of all bat species of the local cave population to be about 6500–8000 while on July 1979 this number counted only 600–800 specimens. Of course, we cannot draw any find conclusions after these isolated numbers, however the rapid change may signalize a decrease in bats – a similar situation as in Central Europe.

Diskussion und Zusammenfassung

Die Mitteilungen über die einzelnen Fledermausarten sind recht ungleichwertig. Die überwiegende Mehrzahl der Funde betrifft typische Höhlenarten, die vor den Höhleneingängen in Netzen gefangen wurden. Unter Berücksichtigung dieses Gesichtspunkts scheinen besonders folgende Arten im Dobrudschakarst dominant zu sein: *Rhinolophus ferrumequinum*, *Rh. mehelyi*, *Myotis oxygnathus*, *Eptesicus serotinus* und *Miniopterus schreibersi*. Die anderen in den Höhlen gefangenen oder festgestellten Arten sind: *Rhinolophus*

hipposideros, Myotis mystacinus, M. emarginatus, M. nattereri, M. daubentoni, Vespertilio murinus, Pipistrellus nathusii und *Plecotus* spec. Sie sind im Karst der Dobrudscha entweder wesentlich seltener oder nicht an Höhlen gebunden und entgehen deshalb bis jetzt unserer Aufmerksamkeit. Die einzige in der rumänischen Dobrudscha festgestellte Art, die bisher nicht in den Grotten gefunden wurde, ist *Pipistrellus pipistrellus.* Interessant ist auch die Frage des Vorkommens von *Myotis myotis.* Diese Art wurde von den rumänischen Verfassern (Dumitrescu et al. 1958, 1963) in der Höhle „Peştera Liliecilor de la Gura Dobrogei" gemeinsam mit *Myotis oxygnathus* in einer gemischten Kolonie festgestellt. Wir konnten das aber nicht bestätigen, obwohl wir ein ziemlich großes Tiermaterial untersuchten. Angesichts des Alters der angeführten Arbeiten ist es aber auch möglich, daß es in diesem Falle zur Verwechslung mit *Myotis oxygnathus* gekommen ist. Aus demselben Grund müssen wir auch das Vorkommen von *Plecotus auritus* bezweifeln. Das Vorkommen von *Myotis bechsteini* wurde bisher nur auf Grund von Fossilien bestätigt. Ein rezentes Vorkommen ist aber sehr wahrscheinlich, weil diese Art z. B. an der bulgarischen Schwarzmeerküste lebt, was von Horáček et al. (1974) belegt wurde. Am wertvollsten sind die Fänge eines ♂ von *Myotis daubentoni* und eines ♀ von *Vespertilio discolor.* Für *M. daubentoni* ist es erst der 6. Fund in Rumänien und der 2. an der Schwarzmeerküste (Erstnachweis durch Horáček et al. 1974).

Eine andere sehr wichtige Feststellung ist die Tatsache, daß es auch in Südeuropa zu einer beträchtlichen Abnahme der Fledermäuse kommt. In der Höhle „Peştera Liliecilor de la Gura Dobrogei" schätzten wir z. B. bei unserem ersten Besuch im Juli 1974 die Gesamtanzahl aller in der Höhle lebenden Fledermäuse auf 6500–8500 Ex., während wir im Juli 1979 dort nur noch etwa 600–800 Ex. fanden. Obwohl sich aus diesen wenigen Daten noch keine endgültigen Schlüsse ziehen lassen, signalisieren sie doch eine rapide Abnahme der Fledermäuse, wie es ähnlich schon in Mitteleuropa der Fall ist.

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