

Present Knowledge of Distribution and Status of *Barbastella barbastellus* (Schreber, 1774) (Chiroptera: Vespertilionidae) on the Balkan Peninsula

Aktueller Kenntnisstand zum Vorkommen und zur Bestandssituation von *Barbastella barbastellus* (Schreber, 1774) (Chiroptera: Vespertilionidae) auf der Balkanhalbinsel

État des connaissances actuelles sur la répartition et le statut de *Barbastella barbastellus* (Schreber, 1774) (Chiroptera: Vespertilionidae) dans les Balkans

By MILAN PAUNOVIC, Belgrade, RUMIANA PANDURSKA, TEODORA IVANOVA, Sofia, and BRANKO KARAPANDA, Belgrade

Abstract

The data of the distribution of *Barbastella barbastellus* on the territory of the Balkan Peninsula (Albania, Bulgaria, Bosnia-Herzegovina, Croatia, Greece, Macedonia-FYR, Romania, Slovenia, Turkey, Yugoslavia) are represented. The literature and last data collected as the result of fieldwork since 1991 have been summarized. Forty-nine localities of *Barbastella* are known up to now in the investigated area. Single individuals hibernating in caves or mist-netted at cave entrances have been mainly recorded. The localities are situated from 70 m a.s.l. (Yugoslavia) to 1533 m a.s.l. (Bulgaria), but most of them in wood hills at middle altitude. It is considered that *B. barbastellus* is rare and not numerous in the observed countries. The data show slight decreasing in number of specimens and localities from western (Slovenia, Croatia), through central (Yugoslavia) to the eastern and southeastern (Romania, Bulgaria, Greece) parts of the peninsula. The present localities describe the south boundary of the species in Europe. The absence or very small number of data in some of the Balkan countries is visible. This leads to the conclusion that future international research and monitoring of the species is necessary to ascertain its real status.

Zusammenfassung

Es werden Daten zum Vorkommen von *Barbastella barbastellus* im Balkangebiet (Albanien, Bulgarien, Bosnien-Herzegowina, Kroatien, Griechenland, Mazedonien-FYR, Rumänien, Slowenien, Türkei, Jugoslawien) vorgestellt. Eine Übersicht der Literatur und die neuesten Daten zu den Ergebnissen der seit 1991 durchgeführten Forschungsarbeiten werden gegeben. 49 Lokalitäten, an denen Mopsfledermäuse vorkommen, sind bis jetzt im Untersuchungsgebiet bekannt. Am häufigsten wurden einzeln über-

winternde oder an Höhleneingängen mit Netzen gefangene Individuen erfaßt. Die Lokalitäten liegen zwischen 70 m NN (Jugoslawien) und 1533 m NN (Bulgarien); die meisten befanden sich auf bewaldeten Hügeln in mittleren Höhenlagen. In den o.g. Ländern gilt *Barbastella barbastellus* als selten bzw. nicht zahlreich. Die Daten zeigen, daß die Anzahl der Exemplare und Fundorte vom westlichen (Slowenien, Kroatien) über den zentralen (Jugoslawien) zum östlichen und südöstlichen (Rumänien, Bulgarien, Griechenland) Teil der Halbinsel hin abnimmt. Die aktuellen Fundorte beschreiben die südliche Verbreitungsgrenze der Art in Europa. Aus einigen Ländern sind keine Daten bekannt bzw. nur in geringem Maß vorhanden. Daraus ergibt sich, daß zukünftige internationale Forschungs- und Monitoringprogramme für die Art notwendig sind, um ihre reelle Bestandssituation aufzeigen zu können.

Résumé

Les données sur la répartition de la Barbastelle *Barbastella barbastellus* dans la péninsule des Balkans (Albanie, Bulgarie, Bosnie Herzégovine, Croatie, Grèce, Macédoine, Roumanie, Slovénie, Turquie et Yougoslavie) sont présentées. La littérature et les dernières données du travail de terrain réalisé depuis 1991 ont été résumées. 49 localités abritant l'espèce sont connues jusqu'à présent dans la zone étudiée. Ce sont surtout des individus isolés hibernant dans des grottes ou capturés au filet à l'entrée. Les localités sont dispersées entre 70 m (Yougoslavie) et 1533 m d'altitude (Bulgarie), mais la plupart des sites se trouvent sur des pentes boisées à des altitudes moyennes. On considère la Barbastelle comme une espèce rare et peu nombreuse dans les pays balkaniques. Les observations montrent une diminution progressive des individus et des localités à partir de l'ouest (Slovénie, Croatie), en passant par le centre (Yougoslavie), vers l'est et le sud-est de la péninsule

(Roumanie, Bulgarie, Grèce). Les localités connues actuellement dessinent la limite sud de l'aire de répartition de l'espèce en Europe. L'absence ou le petit nombre de données dans certains pays des Balkans est bien visible. On en conclut que de futures recherches internationales et un suivi de l'espèce sont nécessaires pour vraiment estimer son statut actuel.

Key words: *Barbastella barbastellus*, Balkan Peninsula, distribution, status, habitat and roost preferences

Introduction

The Barbastelle *Barbastella barbastellus* (Schreber, 1774) is considered as a fairly rare European bat species. Its range covers Western Europe (excluding Ireland and most of Scandinavia), Central Europe, to Crimea, East Caucasus, Morocco and some large Mediterranean islands (CORBET 1978). In the southern and southeastern parts of Europe the range is apparently discontinuous (STEBBINGS 1988). The aim of the study is to add and summarize the new data on Barbastelle distribution and status in the Balkan countries. It is highly important for future research, establishing appropriate protecting measures and its implementation in practice to take into consideration all available data from the region, as well as to obtain more detailed knowledge on the Barbastelle's population ecology, habitat and roost preferences.

Material and methods

The presented data are from the literature and our personal fieldwork. In the field the specimens are mostly mist-netted at entrances of caves or observed during hibernation.

The survey covers all Balkan countries, regardless of whether the whole of their respective territories are on the Balkan Peninsula or not, excluding the Asian part of Turkey.

Results

Albania: The species has not been recorded (LAMANI 1970, BEGO & GRIFFITHS 1994), but having in mind its occurrence in the neighbouring regions its presence especially in the mountain regions of NE and E Albania is highly probable (UHRIN et al. 1996).

Bosnia-Herzegovina: According to literature (BOLKAY 1926, DJULI 1954, KRYSTUFEK 1984,

KRYSTUFEK et al. 1992) the species has not been recorded.

Bulgaria: Five localities of the species are known from the literature (Table 1). BESHKOV & BERON (1962), BERON (1994) and PANDURSKA (1994) report single hibernating males in caves (December-February, $T = 1-8^{\circ}\text{C}$). Single individuals were captured by HEINRICH (1936) and HORÁČEK et al. (1982) in summer and fossil and subfossil materials were collected by BESHKOV & BERON (1962) and HORÁČEK (1974). Four new localities have been found since 1990. The species is protected by Nature Conservation Law.

Croatia: KARAMAN (1929) reported the first record for the Balkan Peninsula. Up to now there are 5 records from 4 localities (DJULI 1954, 1959a) (Table 2). The species was considered rare, as only single specimens were found in few localities in central, eastern and southwestern Croatia. No new specimens have been recorded recently (DJULI 1989).

Greece: The species was reported firstly by VOLLETH (1987). Later, v. HELVERSEN & WEID (1990) published 2 localities in Central Greece (Table 3). It is not clear, whether the localities 14 and 15 (see Map 1.) are different. The Barbastelle is protected by law and included in the Red Data Book.

Macedonia: Only one locality of Barbastelle is known from Macedonia (DJULI & MIKUSKA 1966, KRYSTUFEK et al. 1992) (Table 4).

Romania: The data from Romania were reported by DUMITRESCU & TANASACHI (1953), DUMITRESCU & ORGHIDAN (1958), DUMITRESCU et al. (1955, 1962/63), VALENCIUC & ION (1969) and VALENCIUC (1994) (Table 5). Most of the records concern single individuals hibernating in caves from December to April.

Slovenia: There are 21 records of Barbastelle (Table 6). Most of them are from winter roosts in caves (January); only few findings are from the summer period (FRANK 1970).

Turkey: The species is not recorded from the European part of Turkey (STEINER & GAISLER 1994, v. HELVERSEN 1989).

Yugoslavia: The species was not found in Montenegro. There are 1 previous record (MIRI 1990) and only 2 new records – from province of Vojvodina and from East Serbia KARAPANDA & PAUNOVIC (Table 7). The species

N	Date	N.	Sex, age	Locality	alt.(m)	Met.	References
1	16 June '35	3	f, ad	Varna, Kamichia river (2f prog)	150	-	Helmich 1936
2	28 Aug '60			Lovetch, v. Tcherni Oum, r. Kumsnitza, cave No3	1300	subf.	Beškov & Beron 1962
3	17 Dec '61	1	m, ad	Pazardzhik, v. Velingrad, Lepenitza cave	1500	obs.	Beškov & Beron 1962
4	31 July '71	1	m, ad	Samojan, v. Gela, Lodenitza cave	1538	act	Horáček et al. 1974
5	-	-	-	Sofia, v. Kartukova, cave	350	subf.	Horáček 1982
6	19 Jan '92	1	m, ad	Lovetch, v. Goljama Zeljazna, Toplja cave	450	obs.	Pandurska 1994
7	30 Jan '94	1	m, ad	Sofia, g. Biv, Metchata Dupka cave	1000	obs.	Beron P. 1994
8	12 Oct '96	2	m, ad	Vratza, v. Gorna Bjala Retchka, mine	670	act.	Pandurska & Ivanova in print
9	26 Oct '96	1	m, ad	Sofia, v. Lipnitza, cave Kozarnika	700	act.	Pandurska & Ivanova in print
9	21 May '97	1	m, ad	Sofia, v. Lipnitza, cave Kozarnika	700	act.	Pandurska & Ivanova in print

Table 1. - Bulgaria / Bulgarien / Bulgarien

10	20 Oct '98	1	m	Gospic	-	col.	Karaman 1929
11	26 Apr '30	1	-	Vinkovci	-	col.	Djulić 1954
12	30 Nov '53	1	m	Podina Gerovicka Rabor cave	-	col.	Djulić 1954
13	30 Dec '56	1	f	Vokranica cave, Zagreb	-	obs.	Djulić 1959a

Table 2. - Croatia / Kroatien / Kroatien

14	'85	1	f	Phthiosis, Agios Georgios	-	col.	Volčič 1987
15	1 June '85	1	f	Vitoli, Sparchekis r., East from Karpenisi	-	act	Holvenen & Weid 1990
16	9 Aug '88	3/2	m/f	Isti Mt., v. Gargapitana, Katsavotron, cave entrance	-	act	Holvenen & Weid 1990

Table 3. - Greece / Griechenland / Griechenland

17	6 Oct '65	1	-	Demir Kapija (artificial disused tunnel)	-	col.	Djulić & Mikuska 1966
----	-----------	---	---	--	---	------	-----------------------

Table 4. - Macedonia (F.Y.R.) / Mazedonien / Mazedonien

18	27 Jan '53	1	f	Valoca, v. Costesti, Manastira Bistrica, cave Postera Liličilor	850	obs.	Dumitrescu & Tanasachi 1953
19	6 Apr '53	1	-	Valoca, v. Costesti, Manastira Bistrica, cave Postera Liličilor	850	obs.	Dumitrescu et al. 1962/63
20	10 Dec '53	1	-	Hundokara, v. Rosnrod, cave Postera Cinclovina cu Apa	-	obs.	Dumitrescu et al. 1962/63
21	Nov-Dec '54	3/6	m/f, ad	Risnov, cave Postera din Valoca Punctata	788	obs.	Dumitrescu & Orghidan 1958
22	Aug '55-'56	-	-	Hundokara, v. Cimpul lui Neg, cave Postera de la Albuli Negri	-	subf.	Dumitrescu et al. 1962/63
23	'57	-	-	Harghita, v. Meresti, cave N16 Cheile Virghisului	-	subf.	Dumitrescu et al. 1962/63
24	12 March '59	1	f, ad	Harghita, v. Meresti, cave No20 Cheile Virghisului	-	obs.	Dumitrescu et al. 1962/63
25	14 March '66	-	-	Nesam, cave J gheabul cu Gaura	-	-	Valenciuc & Ion 1969
26	-	-	-	Arges, v. Dumbovitica, cave Postera de la Colmi Surpet	850	-	Valenciuc 1994

Table 5. - Romania / Rumänien / Rumänien

27	-	-	-	Ilg	-	-	B. Petrov in litt.
28	1 Feb '57	-	-	Plave, Divja jama	-	-	Djulić 1959b
29	29 Jan '57	-	-	Prodjama	-	-	Djulić 1959b
30	summer '57, '59, '70	1	-	Prodjama	-	obs.	Frank 1970
31	1 Dec '68	1	m	Lubnik, Kreydre	-	col.	Kryžufek 1984
32	31 Jan '73	-	-	Kamna Gorica	-	col.	Kryžufek 1984
33	winter '81	-	-	Planinska jama	-	obs.	Kryžufek 1984
34	winter '81	-	-	Križna jama	-	obs.	Kryžufek 1984
35	winter '81	-	-	Pokolna jama	-	obs.	Kryžufek 1984
36	7 Jan '78	1	f	Krapčičova jama	-	col.	Kryžufek 1984
37	11 Jan '78	1	m	Ovčje pečko	-	col.	Kryžufek 1984
38	13 Jan '78	1	m	Bistriški graben	-	col.	Kryžufek 1984
39	19 Jan '78	1	m	Šturmovi graba	-	col.	Kryžufek 1984
40	3 Jan '79	1	m	Škoberjeva votica	-	col.	Kryžufek 1984
41	7 Jan '79	1	m	Spoglicova jama	-	col.	Kryžufek 1984
42	15 Jan '79	1	m	Panovska kuka	-	col.	Kryžufek 1984
43	19 Jan '79	1	m	Brdajcova jama	-	col.	Kryžufek 1984
44	-	1	m	Škacjanska jama	-	col.	Kryžufek 1984
45	-	-	-	Cerknica, Dolensko jeno	-	col.	Kryžufek in litt.
46	-	-	-	Ribnica, Dolenja vna, Jama Kekec	-	col.	Kryžufek in litt.

Table 6. - Slovenia / Slowenien / Slowenien

47	29 Nov '89	1	m ad	Podina under Babina Glava Ptak	450	col.	Mirić 1990
48	15 May '95	1	f ad	Obodska Bara marsh, v. Obret	70	act.	Karapandža & Pasmović in print
49	5 Aug '96	1	m ad	Podina Bela Sala cave, gorge of Savinja river	450	act.	Karapandža & Pasmović in print
50	16 Aug '96	2/1	m/f ad	Savinja river	-	-	Karapandža & Pasmović in print

Table 7. - Yugoslavia / Jugoslawien / Jugoslawien

Table 1 - 7. The records of *Barbastella barbastellus* from Balkan countriesTab. 1 - 7. Erfassung von *Barbastella barbastellus* auf dem BalkanTableau 1 - 7. Les observations de *Barbastella barbastellus* dans les pays des Balkans



Carte 1. Distribution de la Barbastelle dans les Balkans (voir tableau 1-7 et texte pour les différents symboles)

Karte 1. Verbreitung von *Barbastella barbastellus* auf der Balkanhalbinsel (Ziffern siehe Tab. 1-7 und Text)

Map 1. Distribution of *Barbastella barbastellus* on the Balkan Peninsula (see table 1-7 and text)

Légende / Legende / Legend:

- quartiers d'hiver / Winterquartiere / winter roosts
- gîtes temporaires / Zwischenquartiere / intermediate roosts
- ◐ quartiers d'hiver et gîtes temporaires / Winter- und Zwischenquartiere / winter and intermediate roosts
- colonies de reproduction / Wochenstuben / nursery roosts
- ◑ quartiers d'hiver et colonies / Winter- und Wochenstubenquartiere / winter and nursery roosts
- ◒ type inconnu / Quartiere unbekannter Art / unknown roosts

is protected by law. According to SAVI et al. (1995) the category of the species is „data deficient”.

Discussion and conclusions

On the Balkan Peninsula *Barbastelle* was found at 49 localities with over 60 individuals, almost males. Although the species has not been considered as numerous, the above presented records make a clear picture of its basic ecological preferences.

During winter, *Barbastelle* hibernates at middle (500 - 1000 m a.s.l.) and high altitudes (over 1000 m) in caves (100%), individually or by forming small clusters (up to 6 inds.). In the transitory periods (between nursing and hibernating) it was recorded in caves (57%), in forests (22%), in old mines (14%) or in artificial tunnels (7%). In the nursing period it mostly prefers riparian forests, marshes or deciduous forests at low altitudes (Kamtchia, Bulgaria – 150 m a.s.l., and Obedska Bara, Yugoslavia – 70 m a.s.l.).

It is known that in Western and Central Europe the *Barbastelle* is migrant on small distances (AELLEN 1983, SPITZENBERGER 1993). Bearing this in mind, as well as the high diversity and mosaic distribution of different habitats on the Balkan Peninsula, there is no doubt that the *Barbastelle* may find appropriate roosts during the whole year.

The absence of data in Albania and Bosnia-Herzegovina, a single old record from Macedonia FYR and a few old records from Croatia are visible on Map 1. In Yugoslavia the records derived from the beginning of this decade, and they are the result of the long-term stationary fieldwork in some regions. The same can be mentioned for Bulgaria and Rumania, although there were a couple of previous records. The *Barbastelle* „richest” country is Slovenia, which is placed at the natural north border of the Balkan Peninsula and is under the influence of Middle Europe climate, relief and other factors. It is also the most intensively investigated country.

The *Barbastelle* is considered as a rare or very rare species on the whole investigated territory. Having in mind the habitat and roost preferences

of the species, as well as the high habitat diversity of the Balkan Peninsula the scarce findings may be explained also by the lack of appropriate investigations.

The increasing of data on the biology and ecology of *Barbastelle* requires more intensive research on all tree-dwelling bat species on the Balkan Peninsula, which are very poor in data. Rising knowledge on these species (*Barbastelle* included) is very important for establishing and implementation of real and adequate protective and conservation measures, so desperately needed in Balkan countries.

References

- AELLEN, V. (1983): Migrations des chauves-souris. Bonn. zool. Beitr., Bonn., 34: 1-3.
- BEGO, F. & H. GRIFFITHS (1994): Preliminary data on the bats (*Mammalia, Chiroptera*) of Albania. Stud. Speleol., 9: 21-25.
- BERON, P. (1994): Résultats des recherches biospéléologiques en Bulgarie de 1971 à 1994 et liste des animaux cavernicoles bulgares. Série Tranteeva-I, ed. FBS, Sofia, 137 p.
- BESHKOV, V. & P. BERON (1962): Notizen über die Verbreitung und die Biologie einiger seltener Fledermäuse in Bulgarien. Bull. Inst. Zool., Sofia, 12: 35-39.
- BOLKAY, S. (1926): Additions to the Mammalian fauna of the Balkan Peninsula. Glasn. Zem. muz. BiH, Sarajevo, 38: 159-179.
- CORBET, G. B. (1978): The Mammals of the Palearctic Region: a taxonomic review. Brit. Mus (Nat. Hist.), Cornell University Press., London. 314 p.
- DJULI, B. (1954): Prilog poznavanju vrste *Barbastella barbastellus* (Schreber, 1774) u našim krajevima. „Speleolog”, Zagreb, 2: 32-37.
- DJULI, B. (1959a): Beitrag zur Kenntnis der geografischen Verbreitung der Chiropteren Kroatiens. Glasnik Prirodnjackog Muzeja, B14: 67-112.
- DJULI, B. (1959b): O öiömiöima iz nekih peäina Slovenije. Naše jame, Ljubljana, 1: 10-17.
- DJULI, B. (1989): Bats in the Red Data List of Croatia (Yugoslavia). In: European Bat Research 1987. V. HANÁK, I. HORÁČEK, J. GAISLER (eds.), Charles Univ. Press, Praha: 389-392.
- DJULI, B. & J. MIKUSKA (1966): Two new species of bats (*Mammalia, Chiroptera*) from Macedonia with notes on some other bats occurring in this territory. Fragmenta balcanica, Skopje, 6 (136): 1-13.
- DUMITRESCU, M. & T. ORGHIDAN (1958): Pestera din Valea Fundata (Risnov). Anuarul Comitetului Geologic, Bucuresti, 31: 421-459.
- DUMITRESCU, M. & J. TANASACHI (1953): *Barbastella barbastellus* chiropternou pentru R.P.R. Rev. Universitatii Parhon, Bucuresti, 3: 185-193.
- DUMITRESCU, M., J. TANASACHI & T. ORGHIDAN (1955): Contributii la studiul biologiei chiropterelor. Dinamica si hibernatia chiropterelor din pestera Lilieciilor de la manastirea Bistrita. Bul. stiint. sect. stiint. biolog., agr., geolog. geogr.,

7 (2): 317-357.

DUMITRESCU, M., J. TANASACHI & T. ORGHIDAN (1962/63): Raspindirea chiropterelor in R.P. Romina. Lucr. institut. speol. „Emil Racovita”, Bucuresti. 1/2: 509-575.

FRANK, H. (1970): Beobachtung an Fledermauswinter-schlafplätzen in einigen Höhlen Sloweniens. Naše jame, Ljubljana, 12: 57-62.

HEINRICH, G. (1936): Über die von mir im Jahre 1935 in Bulgarien gesammelten Säugetiere. Bull. Naturalhist. Inst., Sofia, 9: 33-48.

v. HELVERSEN, O. (1989): New records of bats (*Chiroptera*) from Turkey. Zool. Middle East, 3: 5-18.

v. HELVERSEN, O. & R. WEID (1990): Die Verbreitung einiger Fledermausarten in Griechenland. Bonn. Zool. Beitr., 41: 9-22.

HORÁČEK, I. (1982): K poznání glacialních poměrů v krasu severního Bulharska. Čs. kras, Praha, 32: 95-103.

HORÁČEK, I., J. Ěrvený, A. Tauš, D. Vít (1974): Notes on the Mammal fauna of Bulgaria (Insectivora, Chiroptera, Rodentia). Vest. Čs. spol. zool., Praha, 38 (1): 19-31.

KARAMAN, S. (1929): Oslepim miševima Jugoslavije. Glasn. Skop. nauc. dr., Skopje, 6 (2): 217-221.

KARAPANDA, B. & M. PAUNOVIC (in print): New records of *Barbastella barbastellus* (Schreber, 1774) in Serbia. Proc. of fauna of Serbia, SANU, Belgrade.

KRYSTUFEK, B. (1984): New and rare bats (*Chiroptera*, *Mammalia*) in the Slovene Fauna. Biol. Vestn., Ljubljana, 32 (1): 45-54.

KRYSTUFEK, B. (1989): Distribution of bats in Slovenia (Yugoslavia). In: European Bat Research 1987. V. HANAK, I. HORÁČEK, J. GÄSLER (eds.), Charles Univ. Press, Praha: 393-397.

KRYSTUFEK, B. (1991): Sesalci Slovenije. Prirodoslovni muzej Slovenije, Ljubljana: 104-105.

KRYSTUFEK, B., V. VOHRALIK, J. FLOUSEK & S. PETKOVSKI (1992): Bats (*Mammalia: Chiroptera*) of Macedonia, Yugoslavia. Prague Studies in Mammalogy, I. HORÁČEK, V., VOHRALIK (eds.), Charles Univ. Press, Praha: 93-111.

LAMANI, F. (1970): Nouvelles espèces de chauves-souris dans notre pays. Buletinul Științific al Școlii Naționale de Științe, 2: 143-150.

MIRI, D. (1990): *Barbastella barbastellus* (Schreber, 1774) (*Chiroptera*, *Mammalia*) – a new species in the fauna of Serbia. Bull. Nat. Hist. Mus., Belgrade, B 45: 171-172.

PANDURSKA, R. (1994): Distribution and biology (foraging, hibernation, reproduction) of cave-dwelling bats (*Chiroptera*) in Bulgaria. PhD thesis, Sofia, 174 p. (in Bulgarian).

PANDURSKA, R. & T. IVANOVA (in print): Distribution and

present status of *Barbastella barbastellus* (Schreber, 1774) in Bulgaria. Workshop „On the situation of the *Barbastella barbastellus*”, Mansfeld, September 1997.

SAVI, I., M. PAUNOVIC, M. MILENKOVIC & S. STAMENKOVI (1995): Diverzitet faune sisara (*Mammalia*) Jugoslavije, sa pregledom vrsta od međunarodnog značaja. – In: STEVANOVIC, V., VASIE, V. (eds.): Biodiverzitet Jugoslavije sa pregledom vrsta od međunarodnog značaja. Biološki fakultet i Ecolibri, Beograd.

SPITZENBERGER, F. (1993): Die Mopsfledermaus (*Barbastella barbastellus* Schreber, 1774) in Österreich. Mammalia Austriaca 20. Myotis, Bonn, 31: 111-153.

STEBBINGS, R. E. (1988): The conservation of European bats. Publ. Christopher Helm, London. 246 p.

STEINER, H. M. & J. GÄSLER (1994): On a collection of bats (*Chiroptera*) from NE Turkey and N Iran. Acta Sc. Nat. Brno, 28 (1): 1-37.

UHRIN, M., I. HORÁČEK, J. ĀIBL & F. BEGO (1996): On the bats (*Mammalia: Chiroptera*) of Albania: survey of the recent records. Acta Soc. Zool. Bohem., 60: 63-71.

VALENCIUC, N. (1994): The distribution of some species of *Chiroptera* – Fam. *Vespertilionidae* – in Romania and their representation in the U.T.M. system. Analale științifice ale Universității „A.I. Cuza” din Iași, s. Biologie animala, 90: 45-70.

VALENCIUC, N., I. ION (1969): Date noi privind raspindirea chiropterelor in Romania. Analale științifice ale Universității „A.I. Cuza”, Iași, 1: 135-138.

VOLLETH, M. (1987): Differences in the location of nucleolus organizer regions in European vespertilionid bats. Cytogenet. Cell Genet., 44: 186-197.

Authors' addresses:

MILAN PAUNOVIC
Natural History Museum, Njegoševa 51, 11000 Belgrade,
YUGOSLAVIA

RUMIANA PANDURSKA
Institute of Zoology, Tzar Osvoboditel 1, 1000 Sofia,
BULGARIA

TEODORA IVANOVA
National Museum of Natural History, Tzar Osvoboditel 1,
1000 Sofia, BULGARIA

BRANKO KARAPANDA
Biological Research Society „Josif Pancic”,
Studentski trg 16, 11000 Belgrade, YUGOSLAVIA

ZOBODAT - www.zobodat.at

Zoologisch-Botanische Datenbank/Zoological-Botanical Database

Digitale Literatur/Digital Literature

Zeitschrift/Journal: [Nyctalus – Internationale Fledermaus-Fachzeitschrift](#)

Jahr/Year: 2002

Band/Volume: [NF_8](#)

Autor(en)/Author(s): Paunovic Milan, Pandurska Rumiana, Ivanova Teodora, Karapanda Branko

Artikel/Article: [Present Knowledge of Distribution and Status of *Barbastella barbastellus* \(Schreber , 1774\) \(Chiroptera: Vespertilionidae\) on the Balkan Peninsula 633-638](#)