

## NEW INFORMATION ON THE DISTRIBUTION OF SOME BAT SPECIES (*MAMMALIA: CHIROPTERA*) FROM BULGARIA

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**ABSTRACT.** New distributional data was reported for 16 bat species in Bulgaria. Six new species were discovered for the fauna from the Sarnena Sredna Gora Mountain, two from the Sakar Mountain, four from the Upper Thracian Valley. Three species were newly discovered for the biogeographic sub-region of the Upper Thracian Valley located in the Middle Bulgarian biogeographic region.

**KEY WORDS.** Bats, *Chiroptera*, distribution, Bulgaria.

### INTRODUCTION

Recently a large amount of information for bat species (*Mammalia: Chiroptera*) distribution in Bulgaria was published by BENDA et al. (2003). All the published data and much of the original records were reported. The information showed that some regions such as the Sarnena Sredna Gora, the Sakar Mountain, the Upper Thracian Valley and the town regions are still not studied in detail. Here we report new information for bat species distribution in Bulgaria, mainly from the areas mentioned above.

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## MATERIALS AND METHODS

The information we report comes from the period 1999-2006. The methods used for bat registering were: collecting of dead individuals, analysis of the contents of owl pellets, observations, mist net capture, and identification by ultra sound bat detector. All captured live bats were released back in the nature after identification. The bats were determined using keys mainly by DIETZ & VON HELVERSEN (2004) and also by ПОПОВ И СЕДЕФЧЕВ (2003), ПЕШЕВ И КОЛ. (2004). For the measurements a caliper was used, and the following abbreviations in the text were accepted (DIETZ & VON HELVERSEN, 2004; ПОПОВ И СЕДЕФЧЕВ, 2003): LR – radius length, D1 – length of the first finger, D3 – length of the third finger, D5 – length of the fifth finger, LC<sup>1</sup>-M<sup>3</sup> – length from the first upper canine to the third upper molar, LI<sup>1</sup>-M<sup>3</sup> – length from the first upper incisor to the third upper molar, LMD – length of the mandible, LCB – condylo-basal length. The biogeographic regions were determined using ГРУЕВ И КУЗМАНОВ (1999).

## RESULTS AND DISCUSSION

### *Rhinolophus ferrumequinum* (Schreber, 1774)

1) The Chaia River (The Chepelarska River) south from Assenovgrad Town, west bank, abandoned concrete store, about 5 m in height, with a dense vegetation around, the Western Rhodopes Mountain, GPS: N41 58 10.0 E024 51 47.0, 281 m a.s.l., UTM: LG24, 27.06.2006, a colony of about 200 individuals, observed by S. Stoycheva, D. Georgiev.

### *Rhinolophus hipposideros* (Bechstein, 1800)

1) The Chaia River (The Chepelarska River) south from Assenovgrad Town, west bank, abandoned concrete store, about 4 m in height, with a dense bush vegetation around, next to the *Rhinolophus ferrumequinum* colony, Western Rhodopes Mountain, GPS: N41 58 10.0 E24 51 47.0, 281 m a.s.l., UTM: LG24, 27.06.2006, a colony of about 60 individuals, observed S. Stoycheva, D. Georgiev.

2) A Newly found cave, about 2 km north-west from village of Hvoyna, The Western Rhodopes Mountain, UTM: LG03, 03.2004, 1 individual, leg. D. Georgiev, E. Tilova.

3) Vassil Levski Cave, south from village of Ostra Mogila, the Sarnena Sredna Gora Mountain, UTM: LH70, 03.2002, 1 individual, leg. D. Georgiev.

4) An Old Hut near village of Baniska, Russe district, UTM: MJ11, 29.04.2005, 20 individuals, leg. E. Tilova.

5) A cave near village of Borilovo, The Sarnena Sredna Gora Mountain, GPS: N42 29 31.4 E25 33 05.7, UTM: LH70, 12.10.2005, 17 hibernating individuals from both sexes, leg. E. Tilova.

6) Toplata Dupka Cave, near village of Borushtitza, the Stara Planina Mountain, GPS: N42 42 32.3 E25 34 34.3, 863 m a.s.l., UTM: LH82, 06.11.2005, 3 individuals, leg. E. Tilova.

7) Cerdzenica Cave, near village of Karlukovo, UTM: KH68, 04.01.2006, 1 active individual, leg. E. Tilova.

***Rhinolophus blasii* Peters, 1866**

1) Jubileina Cave, the Western Rhodopes Mountain, UTM: KG75, 29.02.2004, 1 individual, leg. E. Tilova.

***Rhinolophus euryale* Blasius, 1853**

1) Krusta Cave, near village of Karlukovo, UTM: KH68, 06, 2 dead individuals, leg. N. Arabadjiev.

***Myotis blythii* (Tomes, 1857)**

1) Toplata Dupka Cave, near village of Borushtitza, the Stara Planina Mountain, GPS: N42 42 32.3 E25 34 34.3, 863 m a.s.l., UTM: LH82, 06.11.2005, 1 individual, leg. E. Tilova.

***Myotis mystacinus* (Kuhl, 1817) / *Myotis aurascens* (Kusjakin, 1935)**

1) Stara Zagora Town, the Park "Krairechen", mist nets above water surface of the Bedechka River in a deciduous forest, dominants *Salix* spp. L. with sub-dominants *Populus* spp. L. and *Alnus glutinosa* (L.), UTM: LG89, 31.07.2006, 1 juv., male individual, measurements: LR 34.5 mm, morphology: short ears, not getting over of the muzzle top when inclined forwards, dark black-brown muzzle, ears blackish-brown, penis small and thin, leg. S. Stoycheva, E. Tilova, D. Georgiev, Figure 1.2.

**Remark:** The *Myotis mystacinus* complex is consisted of three very similar forms with an un-clear taxonomic status (DIETZ & VON HELVERSEN, 2004). We found 5 skulls of *M. mystacinus* complex in one pellet of *Asio otus* L. from Plovdiv Town (leg. S. Valchanova, 07.11.2005), where the species *Myotis aurascens* (Kusjakin, 1935) was reported by HEINRICH (1936), FEILER (1999), BENDA & TSYTSULINA (2000) (according BENDA et al., 2003). Here we represent cranial measurements of the two best preserved specimens from all collected there: 1 – LC<sup>1</sup>-M<sup>3</sup> 5.1 mm, LI<sup>1</sup>-M<sup>3</sup> 6.3 mm, LMd 10.0 mm; 2 – LCB 13.6 mm, LC<sup>1</sup>-M<sup>3</sup> 5.2 mm, LI<sup>1</sup>-M<sup>3</sup> 6.4 mm, LMd 10.0 mm.

***Myotis brandtii* (Eversmann, 1845)**

1) Village of Trankovo, the Upper Thracian Valley, mist net near a small river with *Salix* spp. L. tree species, GPS: N42 17 28.0 E25 48 22.9, 163 m a.s.l., UTM MG08, 09.08.2006, 1 juv. female individual, measurements: LR 34.8 mm, D3 56.8 mm, D5 44.5 mm; 1 ad. female individual, measurements: LR 34.7 mm, D3 55.2 mm, D5 44.8; morphology: relatively long ears, getting over of the muzzle top when inclined forwards, long tragus projecting above the indentation of the ear, nostrils heart-shaped, bare parts of skin medium to light brown, upper second premolar located within the tooth row and large about 2/3-3/4 of the size of the first upper premolar, leg. S. Stoycheva, D. Georgiev.

***Plecotus austriacus* (Fischer, 1829)**

1) Village of Ravnogor, the Western Rhodopes Mountain, mist nets in a yard near a house and few trees of *Picea excelsa* (Lam.), GPS: N41 57 19.4 E24 22 13.6, 1381 m a.s.l., UTM: KG84, 26.09.2005, 1 female individual, leg. S. Stoycheva, D. Georgiev.

2) Stara Zagora Town, the Upper Thracian Valley, in a cellar of a small block of flats, UTM: LG89, 02.2006, 1 female live individual, leg. Georgi Dilovski.

3) East from village of Sladun, the Sakar Mountain, an abandoned hut, in a crevice near the window hole, GPS: N41 51 36.3 E26 29 01.6, 108 m a.s.l., UTM: MG53, 29.04.2006, 1 male live individual, measurements: LR 40 mm; D5 52,8 mm; D3 64,8 mm, leg. S. Stoycheva, D. Georgiev.

3) East from village of Sladun, the Sakar Mountain, abandoned building near a micro dam, GPS: N41 51 44.9 E26 28 14.1 135 m a.s.l., UTM: MG53, 29.04.2006, 1 dead individual, leg. S. Stoycheva, D. Georgiev.

4) Starozagorski Bani Resort, the Sarnena Sredna Gora Mountain, GPS: N42 27 01.9 E25 29 31.2 - 371 m, UTM: LH70, 08.04.2006, 2 dead individuals in brick gaps of an abandoned building near a micro dam, measurements: 1 – LR 37,5 mm, D5 42,6 mm, D1 5,6 mm, D1- nail length 1,6 mm, hind foot length 5.0 mm, LC<sup>1</sup>-M<sup>3</sup> 6,28 mm, LMd 11 mm, 2 – LR 37.5 mm, D3 62.8 mm, D5 42,6 mm, D1 4.56 mm, hind foot length 6,1 mm, leg. S. Stoycheva, D. Georgiev.

5) Near Tzarevo Town, the Southern Black Sea Coastal area of the Strandza Mountain, on a road near a forest of *Pinus nigra* Arn., UTM: NG66, 06.2000, 1 dead individual, leg. D. Georgiev.

#### ***Nyctalus noctula* (Schreber, 1774)**

1) Village of Kamburovo, on a road near Village of Omurtag, near agricultural lands and a broad leaf forest, the Eastern Stara Planina Mountain, UTM: MH47, 26.04.2005: 1 dead male individual, measurements: LR 57.0 mm, D3 98.0 mm, D5 61.0 mm, leg. E. Tilova.

2) Stara Zagora Town.

2.1) Stara Zagora Town, the Upper Thracian Valley, winter colony on a terrace in a block of flats, UTM: LG89, 12.2004: about 100 individuals from both sexes, leg. E. Tilova.

2.2) Stara Zagora Town, the Upper Thracian Valley, mist nets above a canal in the southeast part of the town, UTM: LG89, 13.10.2005: 1 male individual, measurements: LR 53.7 mm, leg. E. Tilova, D. Georgiev, S. Stoycheva.

2.3) Stara Zagora Town, the Upper Thracian Valley, the Park “Krairechen”, mist nets above water surface of the Bedechka river in a deciduous forest, dominants *Salix* spp. L. with sub-dominants *Populus* spp. L. and *Alnus glutinosa* (L.), UTM: LG89, 31.03.2006, 1 female individual, measurements: LR 52.6 mm, D3 90.7 mm, D5 50.3 mm; 14.04.2006, 5 male individuals, measurements: 1 – LR 54.5 mm, D5 56.5 mm, D3 92.2 mm, 2 – LR 55.0 mm, D5 57.0 mm, D3 93.5 mm, 3 – LR 55.0 mm, D5 54.0 mm, D3 89.5 mm, 4 – LR 51.5 mm, 5 – LR 50.9 mm, 1 female: LR 57.0 mm; 31.07.2006, 7 male individuals, measurements: 1 – LR 53.3 mm, D5 55.5 mm, D3 89.6 mm; 2 – LR 53.1 mm; 3 – LR 54 mm; 07.08.2006, 25 male individuals, 1 sad. female, leg. E. Tilova, D. Georgiev, S. Stoycheva.

2.4) Stara Zagora Town, the Upper Thracian Valley, UTM: LG89, panel blocks of flats with gaps, the species was found in all of such type of blocks investigated (total number 30 blocks), the highest number of bats per a single gap in panels was 60

individuals, but normally they were 5-20 specimens per a gap, year 2005 – 2006, E. Tilova – 10 blocks observed, S. Stoycheva, D. Georgiev – 20 blocks observed.

2.5) Stara Zagora Town, UTM: LG89, 09.2004, 1 male individual, accepted in the CITES center, with a broken radius, leg. E. Tilova.

2.6) Stara Zagora Town, UTM: LG89, 23.10.2005, 1 dead male individual, measurements: LR 53.5 mm, leg. E. Tilova.

2.7) Stara Zagora Town, the Upper Thracian Valley, UTM: LG89, 28.07.2006, 1 dead individual, near panel block of flats with gaps, leg. D. Georgiev.

2.8) Stara Zagora Town, the Upper Thracian Valley, ornithological nets above water surface of the microdam “Zagorka”, UTM: LG89, 03.08.2006, 4 male individuals, leg. E. Tilova, S. Stoycheva.

2.9) Stara Zagora Town, the Sarnena Sredna Gora Mountain, the Park “Ayazmoto”, above a meadow rounded by tree species as *Robinia pseudoacacia* L. and *Cercis siliquastrum* L., UTM: LG89, 01.08.2006, 1 individual, registered with a bat detector by D. Georgiev.

2.10) Stara Zagora Town, the Upper Thracian Valley, in pellets of *Asio otus* L., year 2004, 1 individual, leg. N. Arabadjiev.

3) East from village of Hvoyna, the Western Rhodopes Mountain, ornithological nets above Chaia River, UTM: LG03, year 2002, 1 individual, leg. E. Tilova.

#### ***Nyctalus lasiopterus* (Schreber, 1780)**

1) Southeast of village of Manole, the Upper Thracian Valley, GPS: N42 10 02.5 E24 56 24.5, 165 m a.s.l., UTM: LG37, 22.10.2005, 1 individual flying and hunting during the day (near a kestrel *Falco tinnunculus* L., to which size it was compared), above an open grassland habitat, about 10 meters in height, observed D. Georgiev, S. Stoycheva.

#### ***Pipistrellus pipistrellus* (Schreber, 1774)**

1) Starozagorski Bani Resort, the Sarnena Sredna Gora Mountain, in a brick crevice in an abandoned building next to a pond, GPS: N42 27 01.9 E25 29 31.2, 371 m, UTM: LH70, 08.04.2006, 1 live male individual, measurements: LR 30.0 mm, D3 50.0 mm, D5 36.2 mm, leg. D. Georgiev, S. Stoycheva.

2) East from village of Sladun, the Sakar Mountain, abandoned hut, in a crevice near the window hole, GPS: N41 51 36.3 E26 29 01.6, 108 m a.s.l., UTM: MG53, 29.04.2006, 1 live female individual, measurements: LR 31.0 mm, D3 53.2 mm, D5 37.2 mm, leg. D. Georgiev, S. Stoycheva.

3) Stara Zagora Town.

3.1) Stara Zagora Town, near a block of flats, UTM: LG89, 27.10.2005, 1 dead individual, measurements: LR 31.0 mm, leg. A. Mechev.

3.2) Stara Zagora Town, the Park “Krairechen”, mist nets above water surface of the Bedechka River in a deciduous forest, dominants *Salix* spp. L. with sub-dominants *Populus* spp. L. and *Alnus glutinosa* (L.), UTM: LG89, 31.07.2006, 2 female juv. individuals, measurements of one of them: LR 30.1 mm, D5 37.7 mm, D3 48.6 mm, leg. E. Tilova, S. Stoycheva, D. Georgiev.

3.3) Stara Zagora Town, the Park “Ayazmoto”, above a meadow rounded by tree species as *Robinia pseudoacacia* and *Cercis siliquastrum*, 01.08.2006, 2 individuals, registered with a bat detector by D. Georgiev.

***Pipistrellus pygmaeus* (Leach, 1825)**

1) Stara Zagora Town.

1.1) Stara Zagora Town, the Park “Krairechen”, mist nets above water surface of the Bedechka river in a deciduous forest, dominants *Salix* spp. L. with sub-dominants *Populus* spp. L. and *Alnus glutinosa* (L.), UTM: LG89, 31.07.2006, 1 female individual, measurements: LR 28.6 mm, D5 35.3 mm, D3 50.0 mm, morphology: obvious internarial ridge between the nostrils, in dorsal view, short muzzle parallel sided for approximately two-thirds of its length, then converging, pale bald areas on the face, and between the ears, facial skin and ears pale, leg. E. Tilova, S. Stoycheva, D. Georgiev.

1.2) Stara Zagora Town, the Park “Ayazmoto”, above a meadow rounded by tree species as *Robinia pseudoacacia* L. and *Cercis siliquastrum* L., 01.08.2006, 1 individual, registered with a bat detector by D. Georgiev.

***Pipistrellus nathusii* (Keyserling et Blasius, 1839)**

1) Starozagorski Bani Resort, the Sarnena Sredna Gora Mountain, in a brick crevice in an abandoned building, GPS: N42 27 00.2 E25 29 43.3, 351 m a.s.l., UTM: LH70, 07.05.2006, 1 male individual, leg. E. Tilova.

2) Near village of Studena, the Sakar Mountain, in pellets of *Tyto alba* Scop. collected in a building near a micro dam, UTM: MG53, 28.03.1999, 1 individual, measurements: LMd 9.1 mm, leg. D. Georgiev.

***Pipistrellus kuhlii* (Kuhl, 1817)**

1) Plovdiv Town, mist nets above an influx of the Maritza River, west part of the town, near the railway bridge, the Upper Thracian Valley, GPS N42 09 09.1 E24 42 53.3, 140 m, UTM: LG16, 05.04.2006, 1 male individual, and another male one on 18.04.2006, measurements: 1 – LR 35.3 mm, D3 58.3 mm, D5 43.0 mm, 2 – LR 35.9 mm, D3 56.7 mm, D5 43.3 mm, leg. S. Stoycheva, D. Georgiev, Figure 1.3a and 1.3b.

***Hypsugo savii* (Bonaparte, 1837)**

1) Village of Malka Vereya, the Sarnena Sredna Gora Mountain, between the Sazliika River and agricultural buildings, UTM: LG89, 17.08.1999, 1 dead individual, LR 33.0 mm, leg. D. Georgiev.

2) Stara Zagora Town, the Upper Thracian Valley, the Park “Krairechen”, mist nets above water surface of Bedechka River in a deciduous forest, dominants *Salix* spp. L. with sub-dominants *Populus* spp. L. and *Alnus glutinosa* (L.), UTM: LG89, 31.07.2006, 2 female individuals (1ad. – LR 34.6 mm, D3 55.5 mm, D5 42 mm; juv. – LR 34.1 mm, D3 55.2 mm, D5 41.5 mm).

3) Village of Trankovo, the Upper Thracian Valley, mist nets near a small river with *Salix* spp. L. tree species, GPS: N42 17 28.0 E25 48 22.9 163 m a.s.l., UTM MG08, 09.08.2006, 1 juv. female individual, measurements: LR 32.8 mm, D3 52.9 mm, D5 37.1 mm, leg. S. Stoycheva, D. Georgiev.

***Eptesicus serotinus* (Schreber, 1774)**

1) Stara Zagora Town, the Upper Thracian Valley, the Park “Krairechen”, mist nets above water surface of the Bedechka River in a deciduous forest, dominants *Salix* spp. L. with sub-dominants *Populus* spp. L. and *Alnus glutinosa* (L.), UTM: LG89, 07.08.2006, 1 male individual, measurements: LR 47.6 mm, D3 82.4 mm, D5 58.7 mm, and 1 female: LR 53.1 mm, D3 88.6 mm, D5 64.3 mm, leg. E. Tilova, D. Georgiev, S. Stoycheva.

**CONCLUSIONS**

New distributional data was reported for 16 bat species in Bulgaria.

Six species were newly found for the fauna of the Sarnena Sredna Gora Mountain (*Nyctalus noctula*, *Pipistrellus pipisrellus*, *Pipistrellus pygmaeus*, *Pipistrellus nathusii*, *Hypsugo savii*, *Plecotus austriacus*), two for the Sakar Mountain (*Pipistrellus pipisrellus*, *Plecotus austriacus*), four for the Upper Thracian Valley (*Myotis brandtii*, *Pipistrellus pygmaeus*, *Pipistrellus kuhlii*, *Hypsugo savii*, *Plecotus austriacus*).

The species *Pipistrellus kuhlii*, *Pipistrellus pygmaeus* and *Myotis brandtii* were newly found for the biogeographic sub region of the Upper Thracian Valley of the Middle Bulgarian biogeographic region.



**Fig.1.** Bat (Mammalia: Chiroptera) species reported from new localities: 1 – *Myotis brandtii* (Eversmann, 1845), village of Trankovo; 2 – *Myotis mystacinus* (Kuhl, 1817) / *Myotis aurascens* (Kusjakin, 1935), Stara Zagora Town; 3a, 3b – *Pipistrellus kuhlii* (Kuhl, 1817), Plovdiv Town.

**Фиг.1.** Някои видове прилени (Mammalia: Chiroptera) съобщени от нови находища: 1 – *Myotis brandtii* (Eversmann, 1845), село Трънково; 2 – *Myotis mystacinus* (Kuhl, 1817) / *Myotis aurascens* (Kusjakin, 1935), град Стара Загора; 3a, 3b – *Pipistrellus kuhlii* (Kuhl, 1817), град Пловдив.

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## **НОВИ МАТЕРИАЛИ ЗА РАЗПРОСТРАНЕНИЕТО НА НЯКОИ ВИДОВЕ ПРИЛЕПИ (МАММАЛИА: CHIROPTERA) В БЪЛГАРИЯ**

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(Резюме)

Представени са нови данни за разпространението на 16 вида прилепи (*Mammalia: Chiroptera*) в България. Съобщени са и някои соматометрични данни, както и информация за местообитанията на видовете. Шест нови вида се съобщават за Сърнена Средна Гора (*Nyctalus noctula*, *Pipistrellus pipisrellus*, *Pipistrellus pygmaeus*, *Pipistrellus nathusii*, *Hypsugo savii*, *Plecotus austriacus*), два за Сакар планина (*Pipistrellus pipisrellus*, *Plecotus austriacus*), четири за Горнотракийската низина (*Myotis brandtii*, *Pipistrellus pygmaeus*, *Pipistrellus kuhlii*, *Hypsugo savii*, *Plecotus austriacus*). Видовете *Pipistrellus kuhlii*, *Pipistrellus pygmaeus* и *Myotis brandtii* се съобщават за пръв път за подрайона на Горнотракийската низина на Среднобългарския биогеографски район.

