

## Bats (Chiroptera, Vespertilionidae) from the Cis-Urals and South Urals (Republic of Bashkortostan)

V. P. Snit'ko and L. V. Snit'ko

*Il'men State Reserve, Chelyabinsk oblast, Miass, 456317 Russia*

*e-mail: snitko@ilmeny.ac.ru*

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**Abstract**—New and previously published data on the distribution of 12 bat species in the Cis-Urals and South Urals (Republic of Bashkortostan) are summarized. Data on their subspecies status are given. There is a need to clarify the taxonomic status of the pipistrelle bats *Pipistrellus pipistrellus/pygmaeus*. In terms of composition, the bat fauna of the Republic of Bashkortostan is a variant of the Central European fauna. It was revealed that the territory in question marks the eastern limits of distribution of *Nyctalus leisleri* and *P. pipistrellus/pygmaeus*. An important feature of the territory of Bashkortostan is the presence of places of mass wintering of bats of natural origin: more than 980 karst caves used by bats not only in winter, but also during the period of activity. According to the results of captures in 14 caves, data on the frequency and relative abundance of sedentary bat species in the Republic of Bashkortostan are given.

**Keywords:** Chiroptera, fauna, South Urals, Republic of Bashkortostan

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### INTRODUCTION

The Republic of Bashkortostan is situated at the boundary of Europe and Asia (between 51°34'–56°31' N, 53°08'–60°00' E), with an area of 143600 km<sup>2</sup>, stretching for 524 km from north to south, and 414 km from west to east. The territory belongs to two physiogeographical territories: the Urals and the Russian plain. The following zones are distinguished according to the natural conditions and relief: the Cis-Urals (west Bashkiria), the Ural highlands or mountainous Bashkir (south) Urals, and the Bashkir Trans-Urals. Western Bashkiria adjoins the eastern edge of the Russian platform and the Cis-Urals foredeep. It is a hilly plain in the Trans-Volga Cis-Urals subprovince of the East European forest-steppe province. The main types of vegetative cover are southern broad-leaf forests and meadow steppe (*Rastitel'nost'* ..., 1980). The Ural highlands occupy most of the east half of the republic. To the north of the bend of the Belaya River, the Bashkir Urals are ridgy; to the south, they are of a highland nature. The highest peak is Yamantau Mountain (1640 m above sea level). The eastern slope of the Urals is steeper compared with the western slope. The Ural highland is part of the Ural-West Siberian taiga province. The tops of the Bashkir Urals are covered with forests. Mixed forests grow at a height of 400–700 m, and coniferous forests grow in the belt from 700 to 1000 m. The highest peaks are covered with mountainous tundra. Compared with the western slope, the eastern slope of the Urals is characterized by a signifi-

cant continentality of the climate, owing to which the contrast in the vegetation of both slopes increases from north to south. To the east of the Ural highlands, the Trans-Urals region is situated: a narrow strip of steeply-sloping foothills with vast feather grass steppes and forest-steppes. Bashkortostan has more than 12000 rivers and approximately 2700 lakes, ponds, and water reservoirs. The chiropterans of the Republic of Bashkortostan have been studied insufficiently. According to data in the literature (Ognev, 1928; Polozhentsev, 1949; Marvin, 1969; Il'in et al., 2002a; Bol'shakov et al., 2005; Kurmaeva et al., 2012), 12 bat species inhabit this territory: Daubenton's bat (*Myotis daubentonii*), the pond bat (*M. dasycneme*), Brandt's bat (*M. brandtii*), the whiskered bat (*M. mystacinus*) and Natterer's bat (*M. nattereri*), the brown long-eared bat (*Plecotus auritus*), Nathusius's pipistrelle (*Pipistrellus nathusii*), the common pipistrelle (*P. pipistrellus*), the common noctule (*Nyctalus noctula*), the lesser noctule (*N. leisleri*), the particolored bat (*Vespertilio murinus*), and the northern bat (*Eptesicus nilssonii*). Information on the findings of bats is fragmented and presented for only 22 of the 54 administrative districts. The most recent work on the bats of the Republic of Bashkortostan (Kurmaeva et al., 2012) contains data obtained before 2002. Located in the far east of Europe, the territory in question is of great interest for understanding the patterns of distribution of faunal assemblages of bats.

This paper summarizes new and previously published data on the findings and distribution of bats in Bashkortostan.

## MATERIALS AND METHODS

The material was collected in the Republic of Bashkortostan during the expeditions of 2000–2014. The chiropterans were captured by spider webs (12 × 4 m) and a mobile catch (Borisenko, 1999) using the Magenta Electronic MKII and Pettersson Electronic D240 ultrasonic detectors. Trapping was carried out near caves, ponds, forest edges, clearings, and settlements. As supports, collapsible aluminum stands (up to 10 m), telescopic rods (5 and 6 m), and sometimes trees or rocky protrusions were used when installing the webs (Snit'ko, V.P. and Snit'ko, L.V., 2012). For capturing at caves, the webs were set at the entrance at a distance of 1–2 m or inside the caves. The captured animals were placed in linen bags. Inspection, identification of the species, morphometric measurements, weighing, and banding were performed during daylight hours, using a magnifying lens, a digital caliper (accuracy of 0.01 mm), KERN CM 60-2 electronic scales (accuracy 0.01 g), and a plastic cylinder with a lid, in which the bats were placed for weighing. Age determination was performed visually by the degree of ossification of the epiphyseal bone of the wing: metacarpals and phalanges (Gromov et al., 1963). After the inspection, the animals were released. At night, the acoustic signals of the bats were listened to using a Pettersson Electronic D240 bat-detector with a time expansion function and recorded using an Olympus DS-40 digital voice recorder. Subsequently, to identify the species status, the detected signals were analyzed using the Bat Sound version 3.3 program (Pettersson Electronic AB). The coordinates of the capturing points were determined using a Garmin GPSmap 76C navigator.

In total, in the course of the work on the territory of 13 administrative regions of the Republic of Bashkortostan, 1746 specimens of 10 bat species were captured.

## RESULTS

Summarized data on the findings of chiropterans in the Republic of Bashkortostan territory are given below.

**Daubenton's bat** (*Myotis daubentonii* (Kuhl 1817)). Sedentary species. According to a number of researchers (Gromov et al., 1963; Simmons, 2005), the European part of Russia and Western Siberia is inhabited by the subspecies *M. d. volgensis*, but Bogdanowicz (1990, 1994) includes it in the nominative form (Kruskop, 2012). It is included in the Red Books of the Republics of Bashkortostan (III category) and Tatarstan (III) and Chelyabinsk (III) and Sverdlovsk (V) oblasts (Resolution of the Government of the Republic of Bashkortostan, 2014; Resolution of the Cabinet of Ministers of the Republic of Tatarstan,

2009; Resolution of the Government of the Chelyabinsk oblast, 2014; the Red Data Book of the Sverdlovsk oblast, 2008). A widespread species. The places of finding are the following (Fig. 1).

**Dyurtyulinskii district:** in the environs of the village of Angasyak, floodplain of the lower reaches of the Belaya River, on July 7, 1934, 12 ♀♀ were found (collection of S.I. Ognev, Zoological Museum of Moscow State University).

**Salavatskii district:** in the environs of the village of Lakly (55°11'55.53" N, 58°33'02.1" E), July 12–13, 2002, acoustic signals of the species were registered on the Ai River (Snit'ko, 2004); Laklinskaya cave, 2 km to the west of Lakly (55°11'35" N, 58°31'23" E), on July 14, 2002, at the entrance to the cave, 2 ♂♂ were captured using a mobile trap; at the same site, on August 9, 2005, using spider webs, 29 specimens (4 ♀♀, 25 ♂♂) were captured at the entrance to the cave (Snit'ko, 2011); at the same site, July 14–15, 2012, 31 bats were caught (4 ♀♀, 27 ♂♂).

**Tuimazinskii district:** in the environs of the village of Kandrykul' (54°30'09.8" N, 54°00'31.8" E), August 24–25, 2014, on the western shore of Kandrykul' Lake, 4 specimens (1 ♂ad; 3 ♂♂sad) were caught using spiders webs.

**Iglinskii district:** in Okhlebininskaya cave, environs of the village of Okhlebinino, on the right slope of the Belaya River valley, 1 km lower than the mouth of the Sim River (54°28'57.9" N, 56°25'13.5" E), on July 17–18, 2014, 9 ♂♂ad were captured at the entrance to the cave; Kueshta, 1.5 km to the west of the village of Kuznetsovskii (54°38'29.4" N, 56°36'00.0" E), July 31–August 1, 2014, 76 specimens (8 ♀♀, 68 ♂♂) were captured at the entrance to the cave using a spider web.

**Karmaskalinskii district:** in Karlamanskaya cave, 3 km to the southeast of the village of Karlaman (54°17'18.9" N, 56°10'12.8" E), July 18–19, 2014, 1 ♂ad was captured at the entrance to the cave.

**Aurgazinskii district:** in Veroletnaya cave (Akhmerovskii pit), 1 km to the north of the village of Akhmerovo, 7 km from the village of Ishly (54°14'09.9" N, 55°59'19.8" E), August 1–2, 2014, 8 specimens (3 ♀♀ and 5 ♂♂ad) were captured at the center of the area using a spider web.

**Gafuriinskii district:** in the environs of the village of Novokaramyshevo (53°51' N, 56°14' E), on June 16, 1997, Daubenton's bats feeding over water were visually observed and traced by the detector on the Zifan River (Il'in et al., 2002, 2002a); Oktyabr'skaya cave, 3.7 km southeast of the village of Tash-Asta (54°09'36.5" N, 56°50'48.2" E), on November 7, 1981, the species was found wintering (more than 50 specimens) (Baiteryakov, 1990); Kinderlinskaya cave (30 Years of Victory, or simply, Victory Cave) 5 km to the east of the Tash-Asta (54°09'30.2" N, 56°51'28.6" E), August 11–12, 2014, in the entrance grotto of the cave, 21 specimens were captured (3 ♀♀ and 12 ♂♂ad; 4 ♀♀ and 2 ♂♂ sad) using spider webs and a mobile trap.

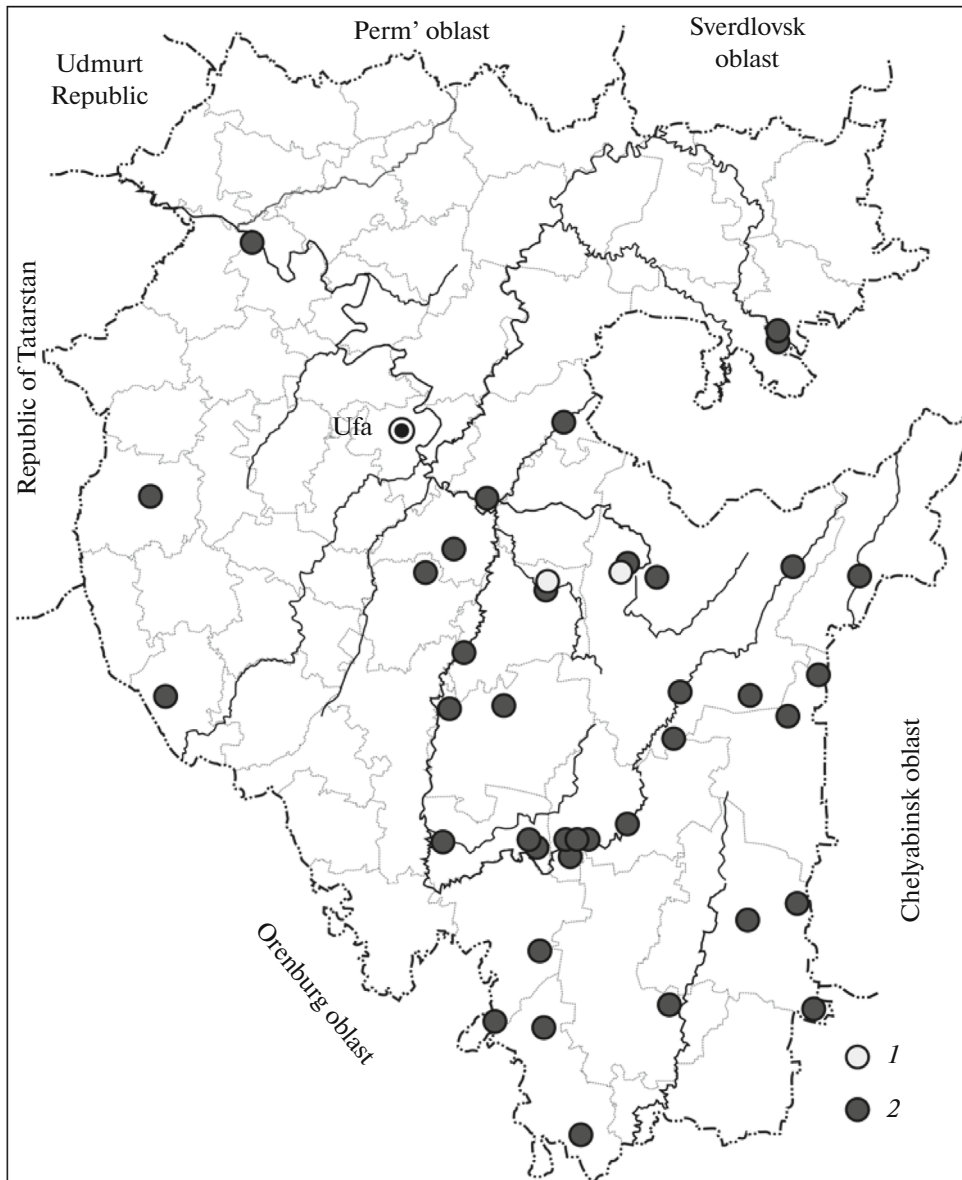


Fig. 1. Places of (1) winter and (2) summer findings of Daubenton's bat in the Republic of Bashkortostan.

Beloretskii district: in the environs of the village of Tirlyanskii ( $54^{\circ}15' N$ ,  $58^{\circ}42' E$ ), on June 22, 1997, 4 ♂♂ad were found in a birch tree hollow on the right bank of the Belaya River (Il'in et al., 2002, 2002a); environs of the village of Mukhametovo ( $53^{\circ}39' N$ ,  $58^{\circ}26' E$ ), on June 23, 1997, 1 ♂ad feeding above the water was captured on the bank of the Malyi Kizil River (Il'in et al., 2002, 2002a); South Urals State Nature Reserve, on May 13, 1986, a male bat was found in stack of wood at the Central premise of the reserve (Revet' village). Hunting Daubenton's bats are regularly registered on the reaches of the Malyi Inzer River (Baiteryakov, 1998); environs of the village of Revet' ( $54^{\circ}10'37.9'' N$ ,  $57^{\circ}36'44.7'' E$ ), July 14–16, 2003, Daubenton's bats were visually observed and

traced with a detector on the Malyi Inzer River (Snit'ko, 2004a); environs of the village of Uzyan ( $53^{\circ}41'26.4'' N$ ,  $57^{\circ}49'58.3'' E$ ), on July 13, 2003, acoustic signals of the species were registered on the Belaya River (Snit'ko, 2004); Nukatovskaya cave (Zhemchuzhnaya) 6 km northeast of the village of Nukatovo ( $54^{\circ}12'25.5'' N$ ,  $57^{\circ}27'03.2'' E$ ), on March 10, 2007, 1 specimen was found wintering (Snit'ko, 2011).

Uchalinskii district: in the environs of the village of Ishkinovo ( $54^{\circ}09'51.8'' N$ ,  $59^{\circ}10'23.1'' E$ ), on July 7, 2003, Daubenton's bats were visually observed and traced by the detector on the Ural River (Snit'ko, 2004).

Bizhbulyakskii district: in the environs of the village of Malyi Sedyak, on June 14, 1997, *M. daubentonii*

feeding above the water were visually observed and traced with a detector on the Sedyak River (Il'in et al., 2002a).

Ishimbaiskii district: in the environs of the village of Makarovo (53°43' N, 56°04' E), on June 18, 1997, *M. daubentonii* feeding above the water were visually observed and traced by a detector on the Sikosya River (Il'in et al., 2002, 2002a); Ishcheevskaya cave on the right slope of the Seleuk River valley (tributary of the Belaya River), opposite the village of Ishcheevo (53°37'40.7" N, 56°08'33.7" E), August 2–3, 2014, 7 ♂♂ad were captured at the entrance to the cave using a net and a mobile trap.

Meleuzovskii district: in the environs of the city of Meleuza, near the village of Smakovo, in 1967, *M. daubentonii* was observed by Marvin (1969); Bashkiria National Park, interfluvium of the Belaya and Nugush rivers, on August 10, 1981, the species was found in Kutuuskaya-2 (stalactite) cave singly (>10) and in Kutuuskaya-4 cave, in small numbers (>50) (Baiteryakov, 1990).

Burzyanskii district: in Shul'gan-Tash Nature Reserve, Kapova cave, 6 km north of the village of Irgizla, at the foot of the right slope of the Belaya River valley (53°02'32" N, 57°03'53" E), on February 5, 1981, the species was found wintering singly (Baiteryakov, 1990); on the Belaya River, 150 m from the Kapova cave, on September 2, 2002, 1 ♂sad was captured; at the same site, on August 28, 2007, 7 specimens (2 ♀♀, 5 ♂♂) were captured; on August 30, 2007, at the cave entrance, 2 ♂♂ were obtained (Snit'ko, 2008); Skazka cave, environs of the village of Akbulatovo (53°01'37.3" N, 57°07'29.3" E), in July 1989, according to the data of I.V. Kuz'min, single individuals were observed (Loskutova and Loskutov, 1998); on September 3, 2002, 3 specimens were captured at the cave (1 ♀ and 2 ♂♂ad) (Snit'ko, 2008); Proval'naya cave, environs of the village of Irgizly (52°57'35.7" N, 57°01'29.3" E), in July 1989, according to the data of Kuz'min, single individuals were observed (Loskutova and Loskutov, 1998); environs of the village of Starosubhangulovo (53°05' N, 57°25' E), on June 20, 1995, *M. daubentonii* feeding on the Belaya River were visually observed and traced using a detector (Il'in et al., 2002a); Bashkirskii Nature Reserve, August 29–September 1, 2002, on the Kaga River, in the environs of the Makarovskii (sq. 107) and Yangi-Yul (sq. 34) cordons and the village of Sargaya, acoustic signals of the species were registered; on July 9, 2003, in the environs of Sargaya, *M. daubentonii* were visually observed and traced using a detector (Snit'ko, 2004).

Abzelilovskii district: in the village of Baimovo (53°43'42.1" N, 58°5'28.9" E), on August 11, 2001, *M. daubentonii* hunting above the Mal'yi Kizil River were visually observed and traced using a detector (Snit'ko, 2004); Bannoe Lake (53°36'01" N, 58°36'56.9" E), on August 13, 2001, acoustic signals of the species were registered along the shore (Snit'ko,

2004); at the same site, June 30–July 1, 2014, 4 specimens were captured (2 ♀♀ and 2 ♂♂ad).

Kugarchinskii district: in Muradymovskoe Ushcheliye Nature Park, environs of the village of Muradymovo, Novomuradymovskaya cave (52°34'05.2" N, 56°52'11.0" E), August 13–14, 2014, 9 specimens were captured (1 ♀ and 4 ♂♂ad; 2 ♀♀ and 2 ♂♂sad).

Zilairskii district: in the environs of the village of Iskuzhino, June 21, 2002, feeding Daubenton's bats were observed over the Krepostnoi Zilair River (Il'in et al., 2002a).

Baimakskii district: on the Khudolaz River, 2–3 km from the town of Sibai (52°46'08.1" N, 58°44'34.0" E), on June 12, 2003, acoustic signals of the species were registered (Snit'ko, 2004); environs of the Ural'skoe segment of the Ural River, above the Iriklienskoe water reserve (52°16'37.4" N, 58°54'14.2" E), on June 14, 2003, acoustic signals of the species were registered (Snit'ko, 2004); environs of the village of Meryasovo, environs of the Grafskoe Lake Children's Camp (52°39'29.7" N, 58°19'00.4" E), August 15–16, 2014, 5 specimens were captured (1 ♀ad; 1 ♀ and 3 ♂♂sad).

Zianchurinskii district: in the environs of the village of Idyash (51°47' N, 57°06' E), on June 12, 1995, *M. daubentonii* feeding over the water were visually observed and traced using a detector on the Kasmarka River (Il'in et al., 2002, 2002a); environs of the village of Kugarchi (52°13' N, 56°30' E), on June 18, 1995, *M. daubentonii* feeding over the water were visually observed and traced using a detector on the Bol'shaya Suren' River (Il'in et al., 2002b); environs of the village of Baidavletovo, June 23–24, 2002, *M. daubentonii* feeding over the water were visually observed and traced using a detector on the Bol'shaya Suren' River (Il'in et al., 2002a).

**Pond bat** (*Myotis dasycneme* (Boie 1825)). Sedentary species. For the Russian part of the range, Ognev (1928) isolated a subspecies *major*, which is not recognized by most authors (Kruskop 2012). The species is listed in the Red Book of the Republics of Bashkortostan (III), Tatarstan (IV), the Udmurt Republic (III), and Orenburg (III) and Sverdlovsk (III) oblasts (Resolution of the Government of the Republic of Bashkortostan, 2014; Resolution of the Cabinet of Ministers of the Republic of Tatarstan, 2009; the Red Book of the Udmurt Republic, 2012; Resolution of the Government of Orenburg Oblast, 2012; the Red Book of Sverdlovsk Oblast, 2008). It is a widespread species in the Republic of Bashkortostan. The places it was found are the following (Fig. 2).

Salavatskii district: in Laklinskaya cave, on August 9, 2005, 12 ♂♂ were captured at the entrance to the cave (Snit'ko, 2011); at the same site, July 14–15, 2012, 2 ♂♂ were captured.

Tuimazinskii district: environs of the village of Kandrykul', west shore of Kandrykul' Lake, August 24–25, 2014, 1 ♂ad was captured using spider webs.

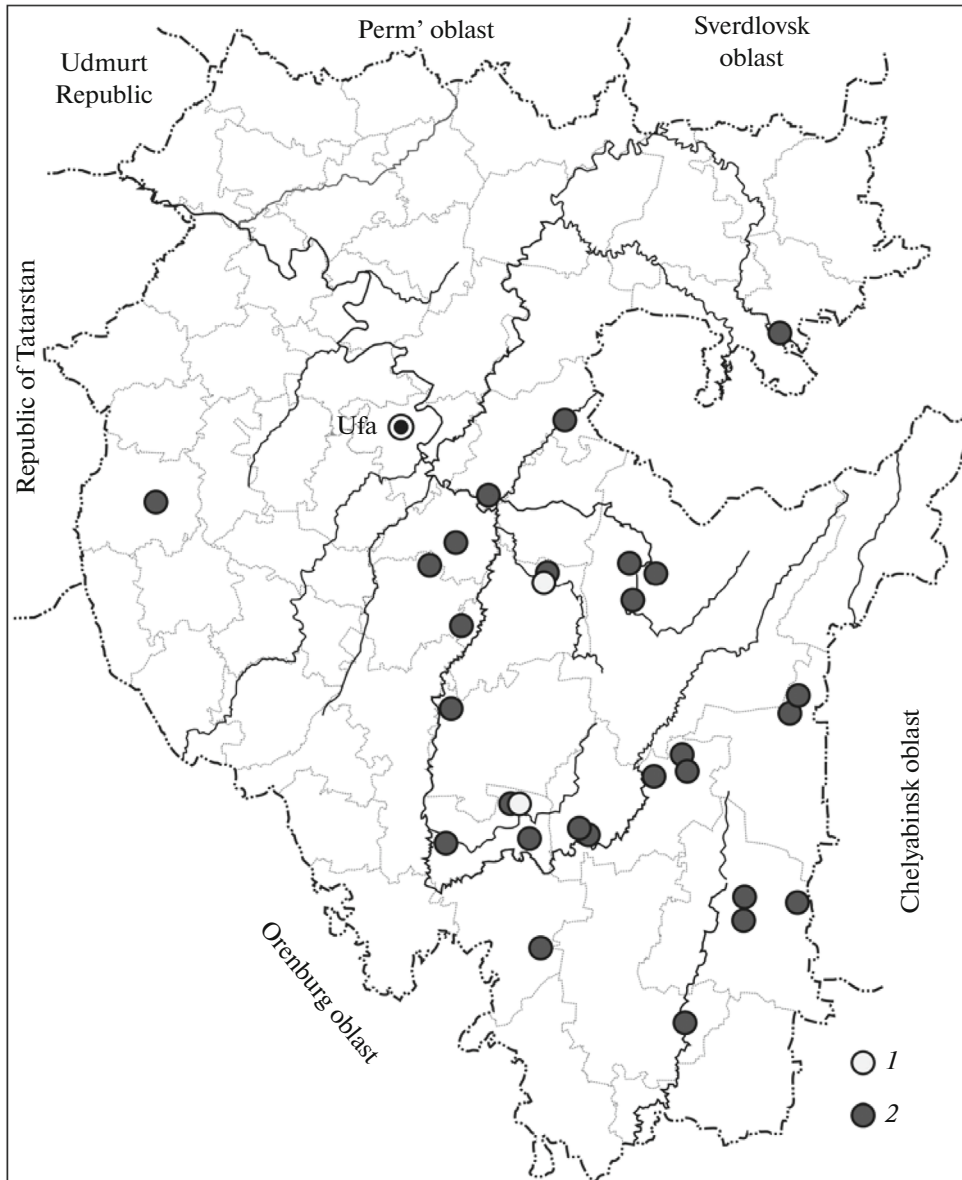


Fig. 2. Places of (1) winter and (2) summer findings of the pond bat in the Republic of Bashkortostan.

Iglinskii district: in Kueshta cave, on September 19, 1980, and March 15, 1982, the species was found in the cave, singly (Baiteryakov, 1990); July 31–August 1, 2014, 15 specimens were captured (3 ♀♀, 12 ♂♂); Okhlebininskaya cave, July 17–18, 2014, 9 ♂♂ad were captured at the entrance to the cave.

Karmaskalinskii district: in the Karlamanskaya cave, July 18–19, 2014, 2 ♂♂ad were captured at the entrance to the cave.

Aurgazinskii district: in Veroletnaya cave, August 1–2, 2014, 9 ♂♂ad were captured at the entrance to the cave.

Gafuriiskii district: in Oktyabr'skaya cave, on November 7, 1981, the species was found wintering, singly (Baiteryakov, 1990); 1 specimen was delivered

to P.A. Polozhentsev from the Beloe Ozero station (Polozhentsev, 1949); Kinderlinskaya cave, August 11–12, 2014, 10 specimens (2 ♀♀ and 7 ♂♂ad; 1 ♀sad) were captured in the cave.

Beloretskii district: in Kyzyl-Yarovskaya (Maksimovicha) cave, 1.2 km northeast of the former village of Kyzyl-Yarovo in the Bol'shoi Inzer River valley (54°04'20" N, 57°27'10" E), on December 20, 1980, the species was found wintering, singly (Baiteryakov, 1990); environs of the village of Revet', on the Malyy Inzer River, July 14–16, 2003, acoustic signals of the pond bats were registered (Snit'ko, 2004); Nukatovskaya cave, on March 8, 2014, an adult male was found wintering.

Ishimbaiskii district: in the environs of Ishcheevskaya cave, August 2–3, 2014, acoustic signals of the species were registered.

Meleuzovskii district: in the environs of the town of Meleuza, village of Smakovo, in 1967, the species was collected by Marvin (1969); Bashkiria National Park, the Belaya and Nugush interfluvium, Polevaya cave, on August 10, 1981, the species was found wintering, singly; left bank of the Uryuk River (tributary of the Nugush River), 5 km upstream: Uryuk-1 cave, on July 22, 1980, single individuals were found; Uryuk-2 cave, on November 2, 1982, the species was found wintering, singly (Baiteryakov, 1990).

Burzyanskii district: in Kapova cave, on February 5, 1981, the species was found wintering, singly (Baiteryakov, 1990); on November 18, 1994, 4 individuals were registered wintering (Loskutova and Loskutov, 1998); on August 30, 2007, 10 specimens were captured in the entrance part of the cave using nets (2 ♀♀, 8 ♂♂) (Snit'ko, 2008); Skazka cave, on September 3, 2002, 1 ♂ad was captured at the cave (Snit'ko, 2008); Eitash (Yaumbaiskaya) cave, environs of the village of Yaumbaev (53°19'27.63" N, 57°36'14.62" E), on July 9, 2003, 2 ♂♂ad were captured (Snit'ko, 2004); Bashkirskii Nature Reserve, August 30–31, 2002, on the Kaga River, in the environs of the Yangi-Yul (sq. 34) and Makarovskii (sq. 107) cordons, acoustic signals of the species were registered (Snit'ko, 2004).

Abzelilovskii district: in the environs of the village of Niyazgulovo (53°39' N, 58°40' E), on June 24, 1997, a colony of 87 ♂♂ad was found under the slate roof of an outbuilding in the Gornyi Vozdukh Pioneer Camp (Il'in et al., 2002, 2002a); Bannoe Lake, on August 13, 2001, pond bats were observed and detected on the shore line (Snit'ko, 2004); at the same site, on June 30 and July 1, 2014, the acoustic signals of the species were registered.

Kugarchinskii district: in Muradymovskoe Ushcheliye Nature Park, Novomuradymovskaya cave, August 13–14, 2014, 13 specimens were captured (2 ♀♀ and 9 ♂♂ad; 2 ♀♀sad).

Zilairskii district: environs of the village of Staroyakupovo (52°13' N, 57°50' E), on June 26, 1997, 3 ♂♂ad were captured on the bank of the Sakmara River near the face of the rocks (Il'in et al., 2002, 2002a).

Baimakskii district: on the Khudolaz River, 2–3 km from the city of Sibai, on June 12, 2003, flights of pond bats were observed (Snit'ko, 2004); environs of the village of Baimak, on August 12, 2001 (Snit'ko, 2004); environs of the village of Meryasovo, environs of the Grafskoe Lake Children's Camp, August 15–16, 2014, 6 specimens were captured (1 ♀ and 1 ♂ad; 3 ♀♀ and 1 ♂sad).

**Brandt's bat** (*Myotis brandtii* (Eversmann 1845)). Sedentary species. Bashkortostan is inhabited by the nominative race *M. b. brandtii* (Kozhurina, 2009). It is included in the Red Book of the Republic of Tatarstan

(IV), Chelyabinsk (III), and Sverdlovsk (III) oblasts (Resolution of the Cabinet of Ministers of the Republic of Tatarstan, 2009; Resolution of the Chelyabinsk oblast Government, 2014; the Red Book of Sverdlovsk Oblast, 2008). A widespread species. The places of finding are the following (Fig. 3).

Dyurtyulinskii district: in the environs of the village of Angasyak, floodplain of the lower reaches of the Belaya River, on July 27, 1934, 1 ♀ was caught (collection of S.I. Ognev, Zoological Museum of Moscow State University).

Salavatskii district: in Laklinskaya cave, on August 9, 2005, 62 specimens were captured (10 ♀♀, 52 ♂♂) (Snit'ko, 2011); on the same site, July 14–15, 2012, 35 specimens were captured (9 ♀♀ and 26 ♂♂ad).

Tuimazinskii district: in the environs of the village of Kandrykul', west shore of Kandrykul' Lake, August 24–25, 2014, 2 specimens were captured using spider webs (1 ♂ and ♀ sad).

Iglinskii district: Kueshta cave, on September 19, 1980, and March 15, 1982, the species was found in the cave, in small numbers (Baiteryakov, 1990); at the same site, on July 31–August 1, 2014, 69 specimens were captured (18 ♀♀, 51 ♂♂); Okhlebininskaya cave, July 17–18, 2014, 3 ♂♂ad were captured at the entrance to the cave.

Karmaskalinskii district: in Karlamanskaya cave, July 18–19, 2014, 1 ♂ad was captured at the entrance to the cave.

Aurgazinskii district: in Veroletnaya cave, August 1–2, 2014, 1 ♂ad was captured using a net.

Gafuriiskii district: Oktyabr'skaya cave, on November 7, 1981, the species was found wintering, singly (Baiteryakov, 1990); Kinderlinskaya cave, August 11–12, 2014, 67 specimens (10 ♀♀ and 35 ♂♂ad; 10 ♀♀ and 12 ♂♂sad) were captured.

Beloretskii district: in Atysh cave, 10 km from the village of Verkhnie Lemezy (54°33'20" N, 57°16'75" E), on January 2, 1981, the species was found wintering, singly (Baiteryakov, 1990); environs of the village of Kaga (53°34' N, 57°45' E), on June 20, 1997, the ultrasonic signals of the species were registered in the floodplain of the Belaya River (Il'in et al., 2002a); environs of the village of Tirylyanskii, on June 22, 1997, 1 ♂ad was captured in a mixed forest on the right bank of the Belaya River (Il'in et al., 2002a); environs of the village of Mukhametovo, on June 23, 1997, a colony of 20 specimens (2 ♂♂ and 18 ♀♀ad, 1 pregnant and 17 dry ones) was found in a cleft of an old birch tree in the floodplain of the Malyi Kizil River (Il'in et al., 2002a).

Ishimbaiskii district: environs of the village of Mebel'nyi (53°37' N, 56°37' E), on June 17, 1997, in the floodplain of the Belaya River, the ultrasonic signals of the species were registered (Il'in et al., 2002, 2002a); environs of the village of Makarovo, on June 19, 1997, a male and lactating female of the species

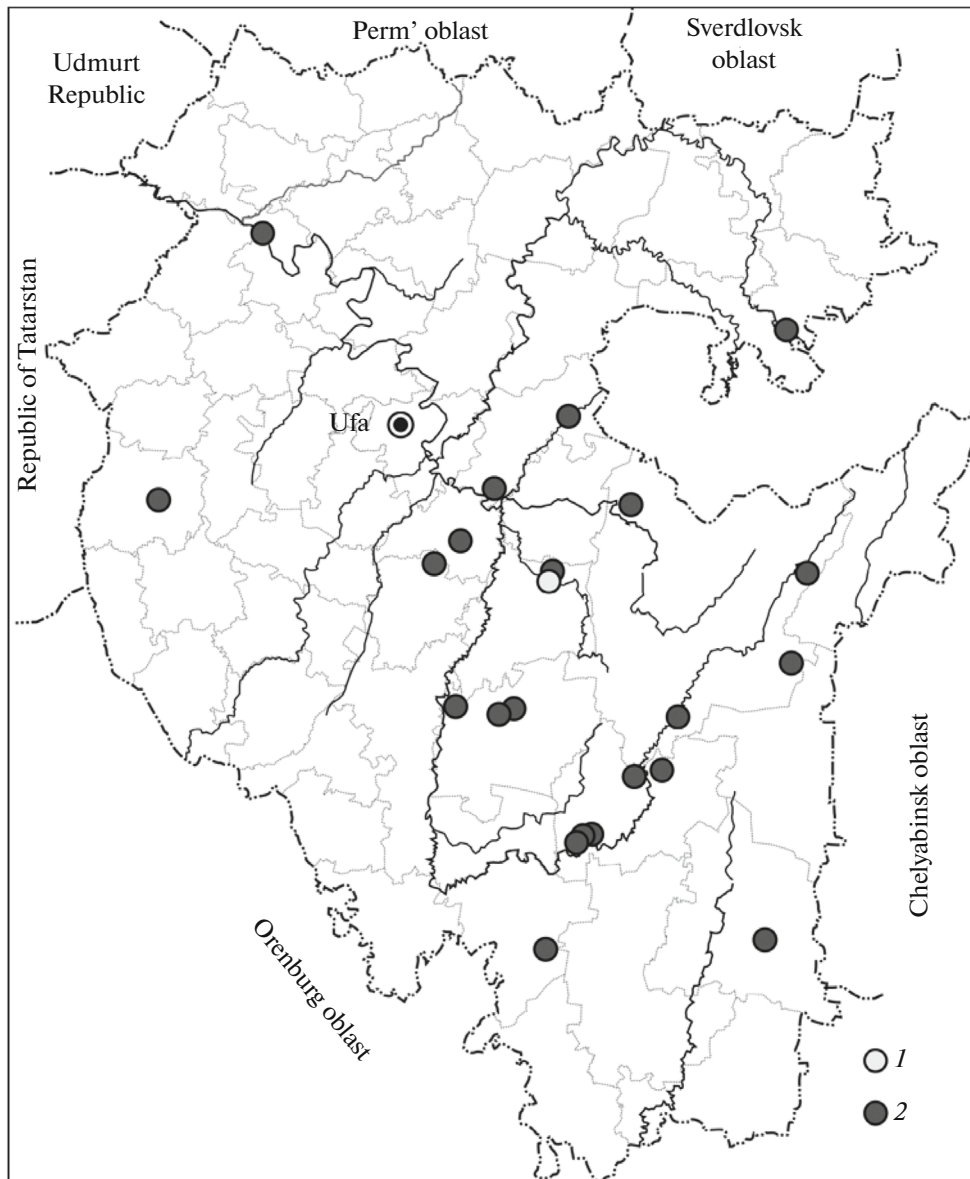


Fig. 3. Places of (1) winter and (2) summer findings of Brandt's bat in the Republic of Bashkortostan.

*M. brandtii* were captured using a net over the Sikosya River at the foot of a mountain 5–6 km to the east of Makarovo (Il'in et al., 2002a); Ishcheevskaya cave, August 2–3, 2014, 2 ♂♂ad were captured.

Burzyanskii district: Shul'gan-Tash Nature Reserve, in July 1989, up to 20 specimens were counted in Proval'naya cave; in Tash-Kelyat (Molodykh) cave located 130 m northeast of the entrance to Kapova cave, 7 specimens were counted; in a grotto in a canyon, 7 specimens were registered; in Dvoynaya cave, the species was found singly; in the village of Irgizly, singly (Loskutova and Loskutov, 1998); Capova cave, 3 wintering specimens were collected (Strelkov and Buntova, 1982); on June 21–22, 1995, in the entrance part of the cave, a dry female was

obtained using nets (Il'in et al., 2002a); environs of Kapova cave, September 4, 2002, in the floodplain of the Belaya River, 1 ♀ad was captured; on August 28, 2007, 3 specimens were captured (1 ♀ and 2 ♂♂ad) (Snit'ko, 2008); Skazka cave, in July 1989, 7 specimens were counted (Loskutova and Loskutov, 1998); at the same site, on September 3, 2002, 1 ♂ad was captured (Snit'ko, 2008); Eitash cave, on July 9, 2003, 1 ♂ad was captured (Snit'ko, 2011); Bashkirskii Nature Reserve, on August 29, 2002, in a forest clearing near the tunnels (sq. 104), 1 ♀sad was captured (Snit'ko, 2004).

Kugarchinskii district: Muradymovskoe Ushcheliye Nature Park, Novomuradymovskaya cave, *n* August 13–14,

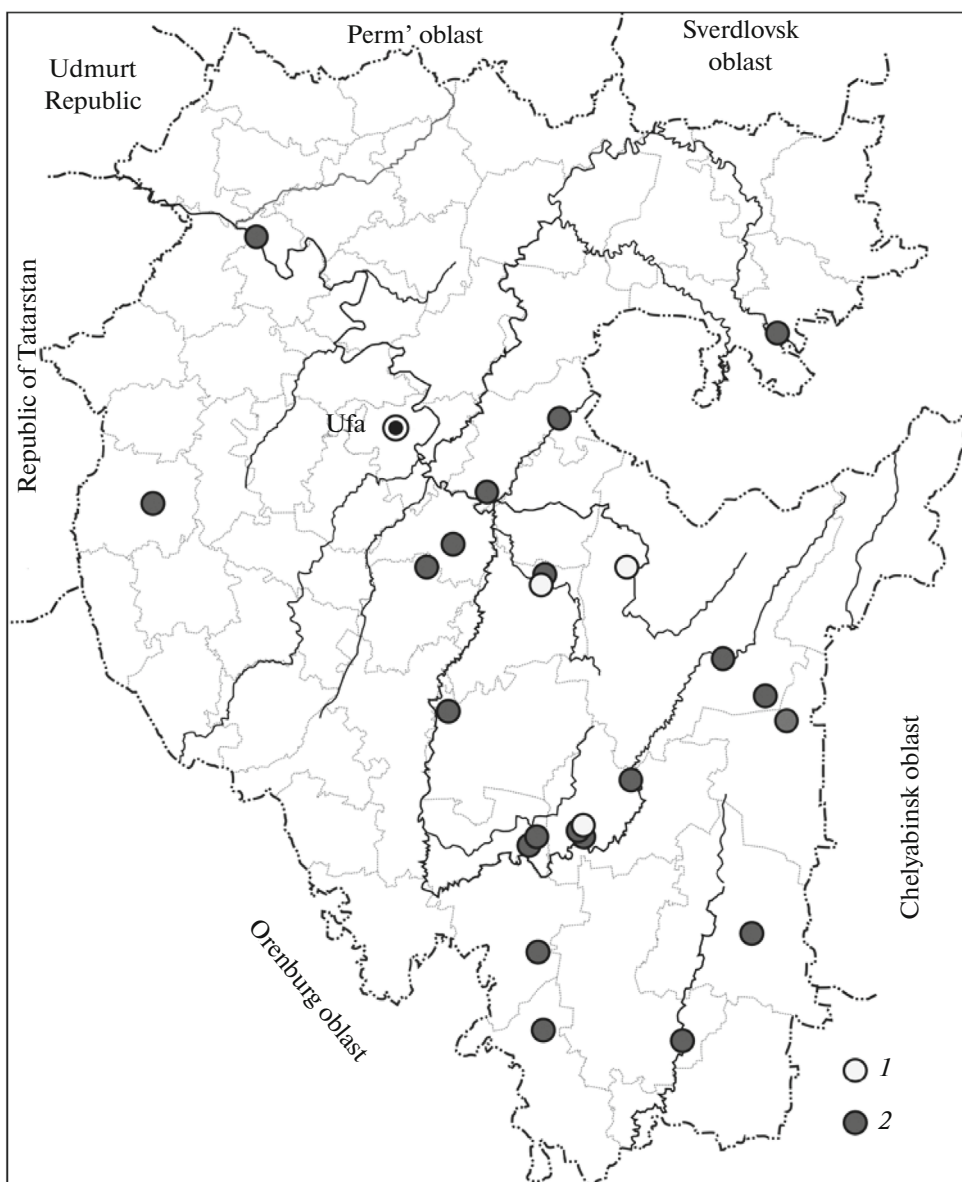


Fig. 4. Places of (1) winter and (2) summer findings of the whiskered bat in the Republic of Bashkortostan.

2014, 19 specimens were captured (2 ♀♀ and 8 ♂♂ad; 3 ♀♀ and 6 ♂♂sad).

Baimakskii district: environs of the village of Meryasovo, environs of the Grafskoe Lake Children's Camp, August 15–16, 2014, 5 specimens were captured (1 ♀ad; 3 ♀♀ and 1 ♂sad).

**Whiskered bat** (*Myotis mystacinus* (Kuhl 1817)). Sedentary species. Bashkortostan is inhabited by the nominative race *M. m. mystacinus* (Kozhurina, 2009; Kruskop 2012). It is included in the Red Book of the Republic of Bashkortostan (III), Tatarstan (IV), the Udmurt Republic (III), Chelyabinsk (III), and Sverdlovsk (IV) oblasts (Resolution of the Government of Bashkortostan, 2014; the resolution of Cabinet of Ministers of the Republic of Tatarstan, 2009; the Red

Book of the Udmurt Republic, 2012; Resolution of the Government of Chelyabinsk oblast, 2014; the Red Book of Sverdlovsk Oblast, 2008). A widespread species. The places of finding are the following (Fig. 4).

Dyurtyulinskii district: environs of the village of Angasyak, on the floodplain of the lower reaches of the Belaya Fiver, on August 26, 1933, 1 ♀ was captured (collection of S.I. Ognev, Zoological Museum of Moscow State University).

Salavatskii district: Laklinskaya cave, on August 9, 2005, 50 specimens captured (6 ♀♀, 44 ♂♂) (Snit'ko, 2011); at the same site, July 14–15, 2012, 25 specimens were captured (4 ♀♀ and 21 ♂♂ad).



Tuimazinskii district: environs of the village of Kandrykul', west shore of Kandrykul' Lake, August 24–25, 2014, 1 ♂ ad was captured using spider webs.

Iglinskii district: Kueshta cave, on September 19, 1980, the species was found in the cave, singly (Baiteryakov, 1990); at the same site, July 31–August 1, 2014, 54 specimens were captured (10 ♀♀, 44 ♂♂); Okhlebininskaya cave, July 17–18, 2014, at the entrance to the cave, 3 ♂ ad were captured.

Karmaskalinskii district: Karlamanskaya cave, July 18–19, 2014, at the entrance to the cave 6 ♂ ad were captured.

Aurgazinskii district: Veroletnaya cave, August 1–2, 2014, 2 ♂ ad were captured.

Gafuriiskii district: Oktyabr'skaya cave, on November 7, 1981, more than 50 specimens were found wintering, (Baiteryakov, 1990); Kinderlinskaya cave, August 11–12, 2014, 18 specimens (3 ♀♀ and 13 ♂ ad; 2 ♂ ad) were captured.

Beloretskii district: environs of the village of Kaga, on June 20, 1997, on the bank of the Belaya River, 7–8 km northeast of Kaga, a dry female was obtained (Il'in et al., 2002a); environs of the village of Mukhametovo, on June 23, 1997, in the floodplain of the Malyi Kizil River, in a frost-beaten cleft of an old birch, a brood colony of 9 ♀ ad (1 dry and 8 pregnant females) was found (Il'in et al., 2002a); Nukatovskaya cave, on March 8, 2014, 1 ♀ ad was found wintering.

Ishimbaiskii district: Ishcheevskaya cave, August 2–3, 2014, 3 specimens were captured (2 ♀♀ and 1 ♂ ad).

Meleuzovskii district: Bashkiria National Park, Poleyaya and Kutukskaya-4 caves, on August 10, 1981, the species was found in the caves, singly (Baiteryakov, 1990).

Burzyanskii district: Kapova cave, according to a report by Kirikov (1952), the species was found wintering, singly; 4 specimens were collected in the cave (Strelkov and Buntova, 1982); on September 2, 2002, 2 specimens were captured (1 ♂ and 1 ♀ ad); on September 4, 2002, 2 specimens were captured (1 ♂ ad; 1 ♀ ad); on August 28, 2007, in front of the cave and in the environs, 4 specimens were captured (1 ♀, 3 ♂♂); on August 30, 2007, 2 ♂♂ were captured at the entrance to the cave (Snit'ko, 2008); Skazka cave, on September 3, 2002, 5 specimens were captured using a mobile trap (2 ♀♀ and 1 ♂ ad; 2 ♀ ad); on July 11, 2003, 2 ♂ ad were captured at the entrance to the cave (Snit'ko, 2004); Eitash cave, on July 9, 2003, 1 ♂ ad was captured (Snit'ko, 2004).

Abzelilovskii district: environs of Bannoe Lake, on August 13, 2001, acoustic signals of the species were registered (Snit'ko, 2004).

Kugarchinskii district: Muradymovskoe Ushcheliye Nature Park, Novomuradymovskaya cave, August 13–14, 2014, 8 specimens were captured (3 ♀♀ and 5 ♂ ad).

Zilairskii district: 3–4 km to the south of the village of Staroyakupovo, on June 26, 1997, on the Sakmara

River, ultrasonic signals of *M. mystacinus* were registered (Il'in et al., 2002a).

Baimakskii district: environs of the village of Meryasovo, environs of the Grafskoe Lake Children's Camp, August 15–16, 2014, 1 ♀ ad was captured.

Zianchurinskii district: environs of the village of Baidavletovo, June 23–24, 2002, on the Bol'shaya Suren' River bank, a pregnant female was caught (Il'in et al., 2002a).

**Natterer's bat** (*Myotis nattereri* (Kuhl 1817)). Sedentary species. Bashkortostan is inhabited by the nominative subspecies *M. n. nattereri* (Kozhurina, 2009). It is included in the Red Book of the Republic of Bashkortostan (III), Tatarstan (I), and Chelyabinsk oblast (III) (Resolution of the Government of the Republic of Bashkortostan, 2014; Resolution of the Cabinet of Ministers of the Republic of Tatarstan, 2009; Resolution of the Government of Chelyabinsk oblast, 2014.). In the Republic of Bashkortostan, the species is distributed widely in the mountain area. The places of findings are the following (Fig. 5).

Salavatskii district: Laklinskaya cave, on July 14, 2002, 2 ♂♂ were caught at the entrance to the cave (Snit'ko, 2004a); on August 9, 2005, no less than 100 specimens were caught using a spider web in the course of two hours, 37 specimens were ringed (2 ♀♀, 35 ♂♂) (Snit'ko, 2011); on July 14–15, 2012, 11 ♂♂ were captured.

Beloretskii district: Kyzyl-Yarovskaya cave, according to the oral communication of K.K. Panyutin, Natterer's bat was found wintering in the cave (Strelkov, 1970); on December 20, 1980, two individuals were found wintering (Baiteryakov, 1990); on October 6, 2005, no less than 1000 *M. nattereri* individuals were registered at the entrance to the cave, more than 150 specimens were captured, 110 individuals were examined and ringed (1 ♀, 109 ♂♂) (Snit'ko, 2011); Nukatovskaya cave, on October 5, 2005, 5 ♂♂ were captured in the entrance grotto of the cave using spider webs; at the same site, on March 10, 2007, 1 ♂ ad was found wintering in the cave (Snit'ko, 2011).

Ishimbaiskii district: the floodplain of the Sikosya River, 5–6 km to the east of the village of Makarovo, on June 19, 1997, the signals of Natterer's bat were registered by a detector (Il'in et al., 2002a).

Meleuzovskii district: Kutukskaya-2 cave, on August 10, 1981, R.G. Baiteryakov found a skull of a Natterer's bat identified by P.P. Strelkov (Strelkov and Il'in, 1990); Sumgan-Kutuk cave, 20–25 km to the east of the settlement of Nugush (52°59'50" N, 56°45'09" E), on February 4, 1980, a skull of a Natterer's bat identified by Strelkov was found in the collections of A. Kazennov (Strelkov and Il'in, 1990).

Burzyanskii district: Kapova cave, on September 2, 2002, in the entrance part of the cave, 1 ♂ ad was captured; on July 10, 2003, in the evening, at a distance of 50 m from the cave, 1 ♂ ad hunting on the road was captured under the forest canopy (Snit'ko, 2004a); on

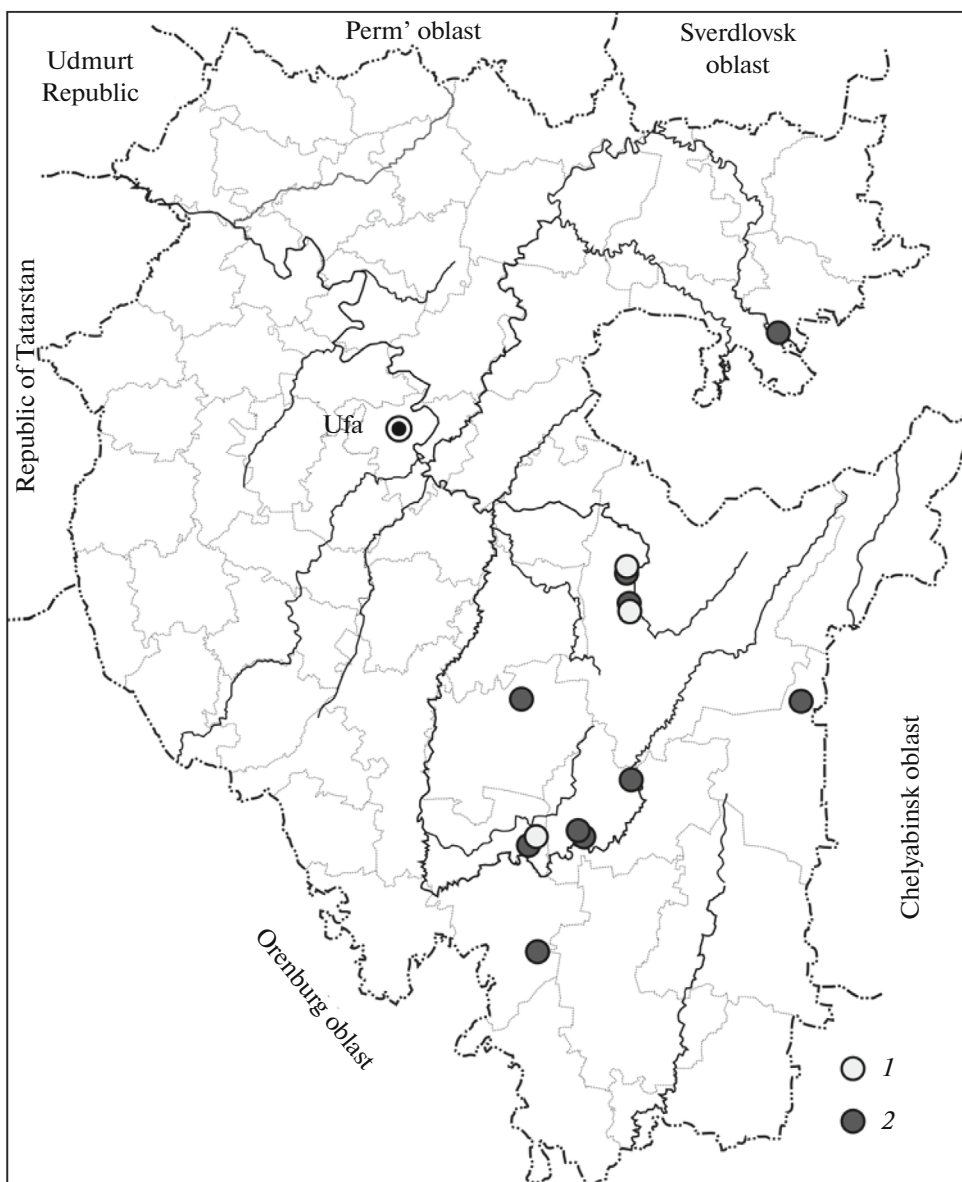


Fig. 5. Places of (1) winter and (2) summer findings of Natterer's bat in the Republic of Bashkortostan.

August 28, 2007, 1 ♂ad was captured in Kapova cave using a mobile trap; at the same site, on August 30, 2007, 7 specimens were captured using spider webs (3 ♀♀, 4 ♂♂) (Snit'ko, 2008); Skazka cave, on September 3, 2002, 18 specimens were caught (1 ♀, 17 ♂♂); at the same site, on July 11, 2003, acoustic signals of Natterer's bat hunting over the slope were registered (Snit'ko, 2004a); Eitash cave, on July 9, 2003, 1 ♂ad was obtained at the entrance to the cave (Snit'ko, 2004a).

Abzelilovskii district: environs of the village of Niyazgulovo, Gornyi Vozdukh Pioneer Camp, on

June 24, 1997, 1 ♂ad was captured in a birch tree hollow (Il'in et al., 2002a).

Kugarchinskii district: Muradymovskoe Ushcheliie Nature Park, Novomuradymovskaya cave, on August 13–14, 2014, 25 ♂♂ad were captured.

**Lesser noctule** (*Nyctalus leisleri* (Kuhl 1817)). Migratory species. Bashkortostan is inhabited by the nominative subspecies *N. l. leisleri* (Kozhurina, 2009; Krusko, 2012). It is included in the Red Book of the Republic of Bashkortostan (IV) and Orenburg oblast (III) (Resolution of the Government of the Republic of Bashkortostan, 2014; Resolution of the Govern-

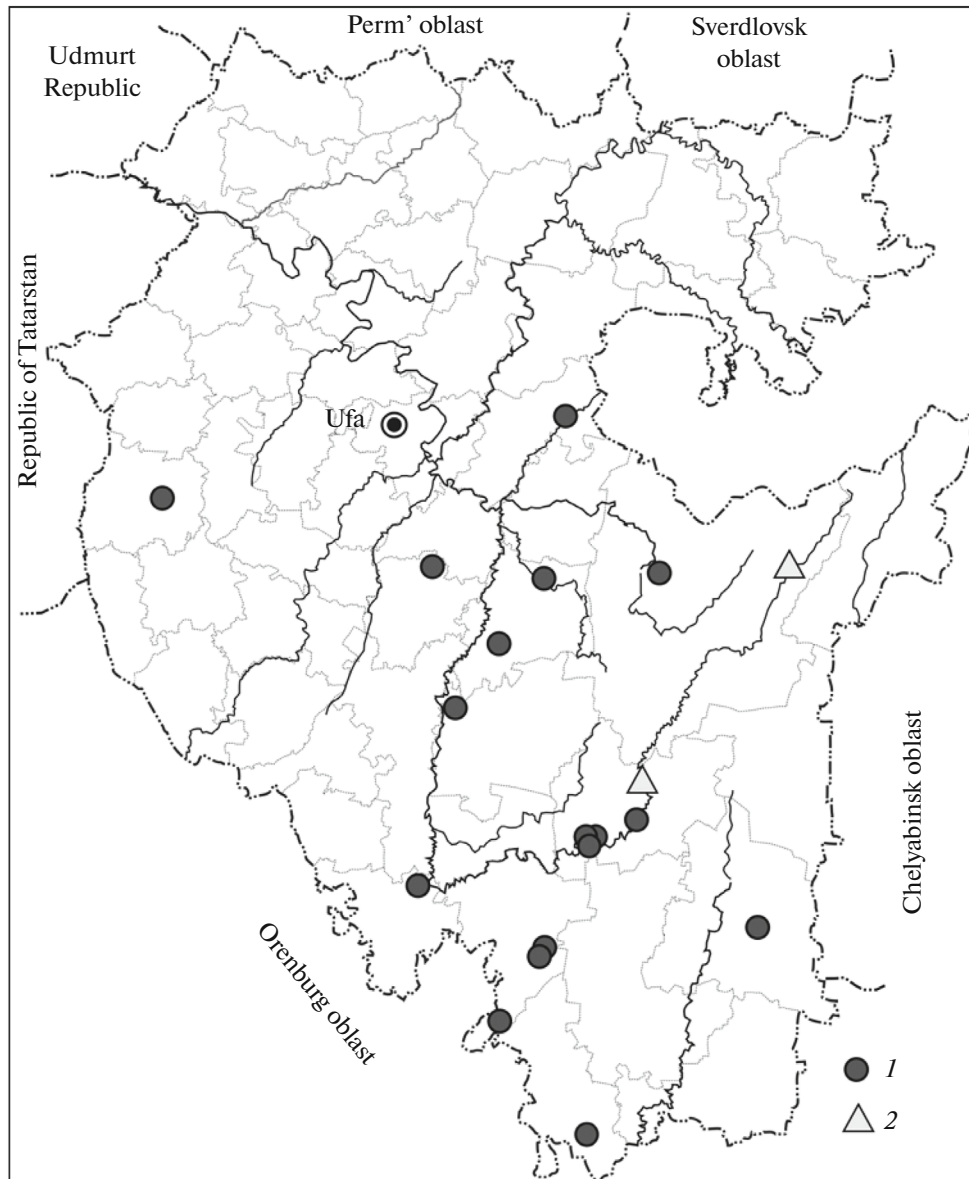


Fig. 6. Places of findings of (1) the common and (2) lesser noctules in the Republic of Bashkortostan.

ment of the Orenburg oblast, 2012). Rare species, lives on the eastern border of the range. According to Evesmann (1850), the lesser noctule is distributed between the Volga and the Urals (Ognev, 1928, p. 523). Two registrations of the species are known on the territory of the Republic of Bashkortostan; however, they require further validation (Fig. 6).

Burzyanskii district: in the Bashkirskii Nature Reserve on the territory of the Pribel'skii branch in 1959, 1 specimen was obtained. The exact place and date of collection are not indicated (Tkachenko, 1971). At present, no longer part of the reserve collection.

Beloretskii district: environs of the village of Tirylyanskii, on June 22, 1997, on the bank of the Belaya River, acoustic signals of *N. leisleri* were registered (Il'in et al., 2002a).

**Common noctule** (*Nyctalus noctula* (Schreber 1774)). Migratory species. Bashkortostan is inhabited by the nominative subspecies *N. n. noctula* (Kozhurina, 2009; Krusko, 2012). It is included in the Red Data Book of the Republic of Udmurtia (III) (Krasnaya kniga Udmurtskoi Respubliki, 2012). A widespread species in the Republic of Bashkortostan. The sites where the species was found are the following (Fig. 6).

According to a report by Polozhentsev (1949), in Bashkiria, the common noctule "is one of the most common mice," it was found in the Bakalinskii, Sharsanskii, Ufinskii, and Tuimazinskii (Prisyunskii pine-wood) areas.

Tuimazinskii district: environs of the village of Kandrykul', west shore of Kandrykul' Lake, on August 24–25, 2014, 1 ♀sad was captured using spider webs.

Iglinskii district: Kueshta cave, July 31–August 1, 2014, 1 ♂sad was captured.

Aurgazinskii district: Veroletnaya cave, August 1–2, 2014, 1 ♂sad was captured.

Gafuriinskii district: environs of the village of Krasnousol'skii (53°54' N, 56°15' E), on June 27, 1995, a lactating female was obtained (Il'in et al., 2002a); environs of Kinderlinskaya cave, August 11–12, 2014, acoustic signals of the species were registered.

Beloretskii district: South Ural State Nature Reserve, mentioned by A.M. Volkov (Baiteryakov, 1998).

Ishimbaiskii district: environs of Ishcheevskaya cave, August 2–3, 2014, acoustic signals of the species were registered.

Burzyanskii district: environs of the village of Starosubkhangulovo, on June 20, 1995, flying *N. noctula* were registered on the bank of the Belaya River (Il'in et al., 2002a); village of Irgizly, in 1989, I.V. Kuz'min procured one specimen (Loskutova and Loskutov, 1998); Kapova cave, June 21–22, 1995, one common noctule was registered visually and using a detector in the entrance part of the cave (Il'in et al., 2002a); on the same site, on August 30, 2007, 8 specimens were captured at the cave entrance using spider webs (3 ♀♀; 2 ♀♀ and 3 ♂♂sad) (Snit'ko, 2008); on the bank of the Belaya River in the environs of the village of Akbulatovo (53°01'32.4" N, 57°07'18.9" E), on September 3, 2002, three individuals were registered visually and using a detector (Snit'ko, 2003).

Kuyurgazinskii district: in the environs of the village of Bugul'chan (52°50' N, 55°58' E), June 24–26, 1995, 3 ♀♀ (lactating) and 1 ♂sad were captured on the Belaya River using a net (Il'in et al., 2002, 2002a).

Kugarchinskii district: Muradymovskoe Ushcheliye Nature Park: Golubinyi Grot cave (52°35'08.8" N, 56°52'59.7" E), August 12–13, 2014, 4 specimens were captured (1 ♀ and 3 ♂♂sad); Novomuradymovskaya cave, August 13–14, 2014, 3 ♀♀sad were captured.

Baimaskii district: environs of the village of Meryasovo, environs of the Grafskoe Lake Children's Camp, August 15–16, 2014, 5 specimens were captured (2 ♀♀ and 3 ♂♂sad).

Zianchurinskii district: environs of the village of Idyash, on June 12, 1995, flying *N. noctula* were registered on the bank of the Kasmarka River (Il'in et al., 2002a); in the environs of the village of Kugarchi, on

June 18, 1995, flying *N. noctula* were registered on the bank of the Suren' River (Il'in et al., 2002a).

**Common pipistrelle** (*Pipistrellus pipistrellus* (Schreber 1774)). Migratory species. Owing to the slight differences with the double species, the soprano pipistrelle (*Pipistrellus pygmaeus* (Leach 1825)) distinguished by the vocalization frequency and genetic data (Kruskop, 2007, 2012), the species status of the pipistrelles distributed in Bashkiria needs to be specified. It is included in the Red Data Book of the Republic of Bashkortostan (IV) and Tatarstan (I) (Resolution of the Government of the Republic of Bashkortostan, 2014; the Resolution of the Cabinet of Ministers of the Republic of Tatarstan, 2009). It is a rare species in the Republic of Bashkortostan. In Orenburg krai and the Ural Mountains, the species was found by P.S. Pallas (Marvin, 1969). The places of finding (Fig. 7) are the following.

Chishminskii district: 1 specimen was captured in the village of Chishmy (Polozhentsev, 1949).

Meleuzovskii district: in the environs of the city of Meleuza, village of Smakovo, in July 1967, 2 specimens were obtained (Marvin, 1969), a later publication (Kozheva et al., 1973) reports the collection of 9 specimens at the same time (4 ♀♀, 5 ♂♂).

Burzyanskii district: in the Shul'gan-Tash Nature Reserve, the species was registered in 1962 by Kirikov (1952) and in 1992 by Loskutov (Loskutova and Loskutov, 1998).

**Nathusius's pipistrelle** (*Pipistrellus nathusii* (Keyserling et Blasius 1839)). Migratory species. Earlier, the species was mistakenly included in the "pipistrellus" group of species; currently, no subspecies are distinguished (Kruskop, 2012). It is included in the Red Data Books of the Republic of Bashkortostan (III), the Republic of Tatarstan (III), and Chelyabinsk (III) and Sverdlovsk (III) oblasts (Resolution of the Government of the Republic of Bashkortostan, 2014; Resolution of the Cabinet of Ministers of the Republic of Tatarstan, 2009; Resolution of the Government of Chelyabinsk oblast, 2014.; Krasnaya kniga Sverdlovskoi oblasti, 2008). A widespread species in the Republic of Bashkortostan (Fig. 7).

Dyurtyulinskii district: environs of the village of Angasyak, floodplain of the lower reaches of the Belaya River, on September 3, 1933, 1 ♀ was found; on July 7, 1934, 3 specimens were captured (2 ♀♀, 1 ♂) (collection of S.I. Ognev, Zoological Museum of Moscow State University).

Salavatskii district: Laklinskaya cave, July 14–15, 2012, 3 specimens were captured in front of the cave (1 ♂ad; 2 ♂♂sad).

Tuimazinskii district: environs of the village of Kandrykul', west shore of Kandrykul' Lake, August 24–25, 2014, 5 specimens were captured using spider webs (2 ♀♀ad; 2 ♀♀ and 1 ♂sad).

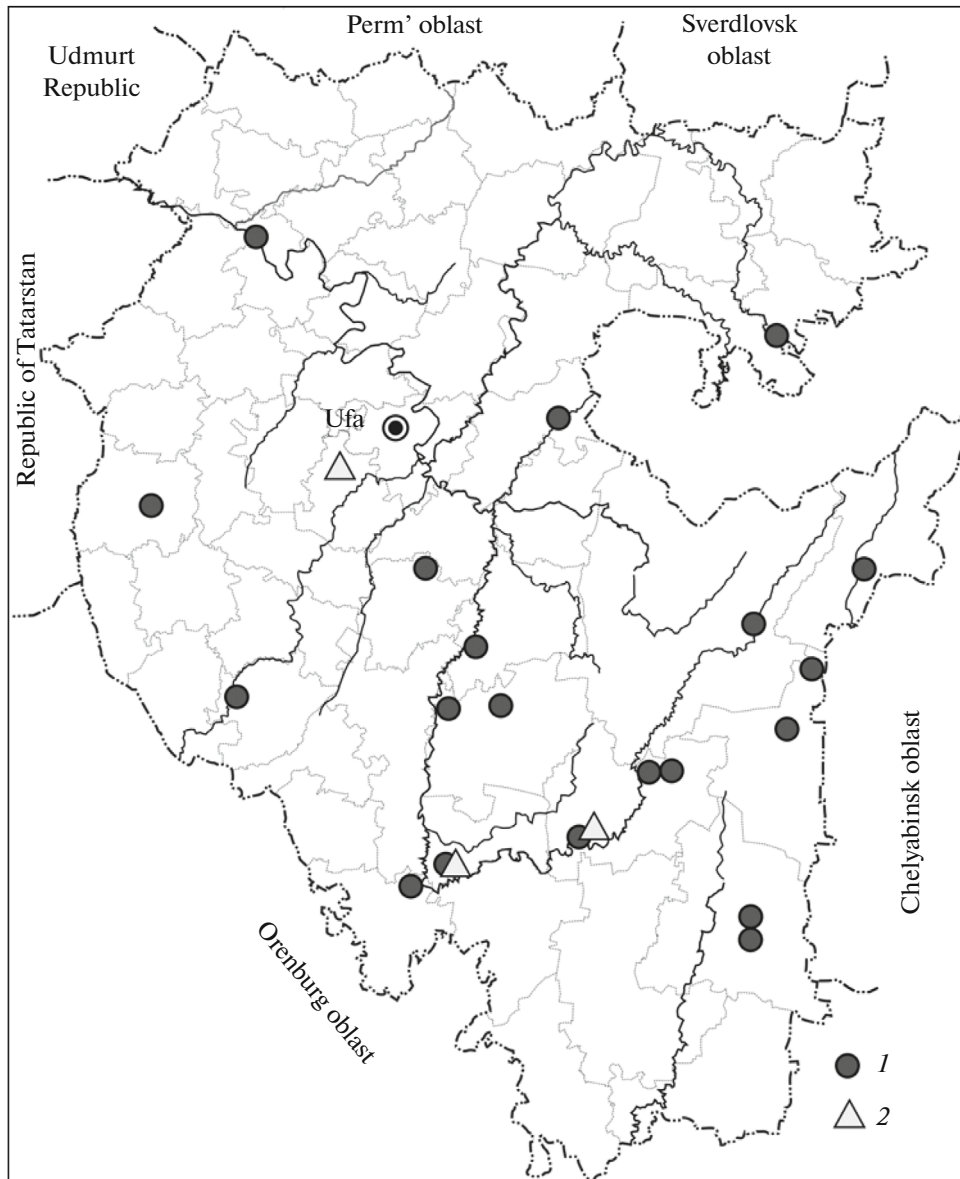


Fig. 7. Places of findings of (1) *Nathusius's* pipstrelle and (2) common pipstrelle in the Republic of Bashkortostan.

Iglinskii district: Kueshta cave, July 31–August 1, 2014, 1 ♂ was caught.

Aurgazinskii district: Veroletnaya cave, August 1–2, 2014, 1 ♀ was caught.

Gafuriinskii district: environs of the village of Novokaramyshevo, on June 16, 1997, at the mouth of the Zigan River, ultrasonic signals of *P. nathusii* were registered (Il'in et al., 2002a); Kinderlinskaya cave environs, August 11–12, 2014, acoustic signals of the species were registered.

Beloretskii district: city of Beloretsk, on August 28, 2002, 3 individuals were noted (Snit'ko, 2004).

Uchalinskii district: environs of the village of Ishkinovo, on July 7, 2003, 3 specimens were visually observed and traced by a detector on a clearing in a birch copse (Snit'ko, 2004).

Miyakinskii district: environs of the village of Kanbekovo (53°40' N, 54°34' E), on June 15, 1997, on the Dema River bank, a pregnant female was captured (Il'in et al., 2002, 2002a).

Ishimbaiskii district: near the village of Makarovo, on June 18, 1997, in the floodplain of the Belaya River, the ultrasonic signals of *P. nathusii* were registered (Il'in et al., 2002a); Ishcheevskaya cave, August 2–3,

2014, in the environs of the cave, 1 ♀ad was captured using a mobile trap.

Meleuzovskii district: village of Smakovo in the environs of the city of Meleuza, July 24–August 6, 1967, 9 specimens were found under the peeling bark of elm trees (4 ♀♀, 5 ♂♂) (Kozheva et al., 1973).

Burzyanskii district: in Bashkirskii Nature Reserve, the findings of the Nathius's pipistrelle were registered until 1961 (Tkachenko, 1971); in the environs of the Yangi-Yul and Makarova cordons, from August 28, 2002, to September 2, 2002, the acoustic signals of the species were registered (Snit'ko, 2004); in the Shul'gan Tash Nature Reserve, floodplain of the Belaya River, July 10–13, 2003, acoustic signals of the species were registered (Snit'ko, 2008).

Abzelilovskii district: Bannoe Lake, on August 13, 2001, the acoustic signals of the species were registered (Snit'ko, 2004); in the environs of the village of Baimovo, June 11–12, 2003, acoustic signals of the species were registered (Snit'ko, 2004); at the same site, on June 30, 2014, acoustic signals of the species were registered.

Kuyurgazinskii district: in the environs of the village of Bugul'chan, June 24–26, 1995, in a poplar–willow copse on the Belaya River, 6 specimens were captured (4 ♀♀ad lactating ones; 2 ♀♀sad) (Il'in et al., 2002a).

Baimakskii district: in the environs of the village of Baimak, on August 12, 2001, the acoustic signals of the species were registered (Snit'ko, 2004); in the environs of the village of Meryasovo, environs of the Grafskoe Lake Children's Camp, August 15–16, 2014, 2 ♀♀sad were captured.

**Northern bat** (*Eptesicus nilssoni* (Keyserling et Blasius 1839)). Sedentary species. Bashkortostan is inhabited by the nominative subspecies *E. n. nilssonii* (Kruskop, 2012). It is included in the Red Data Book of the Republic of Bashkortostan (III), the Republic of Tatarstan (I), Sverdlovsk oblast (III) (Resolution of the Government of the Republic of Bashkortostan, 2014; Resolution of the Cabinet of Ministers of the Republic of Tatarstan, 2009; Krasnaya kniga Sverdlovskoi oblast, 2008). It is a widespread species in the Republic of Bashkortostan (Fig. 8).

Salavatskii district: Laklinskaya cave, on March 19, 1956, 12 specimens were found (3 ♀♀, 6 ♂♂, 3??) (Strelkov, 1958); on July 14, 2002, 17 specimens were captured (1 ♀, 16 ♂♂); on the same site, on August 9, 2005, 50 specimens were captured (8 ♀♀, 42 ♂♂) (Snit'ko, 2011); on the same site, July 14–15, 2012, 72 specimens were caught (20 ♀♀ and 48 ♂♂ad; 2 ♀♀ and 2 ♂♂sad).

Tuimazinskii district: in the environs of the village of Kandrykul', west shore of Kandrykul' Lake, August 24–25, 2014, 2 specimens were captured using spider webs (1 ♂ad; 1 ♂sad).

Ufimskii district: Vyrabotka cave, on March 22, 1981, October 20, 1981, February 8, 1982, the species was found in the cave, singly (Baiteryakov, 1990).

Iglinskii district: Kueshta cave, on September 19, 1980, and March 15, 1982, the species was found in the cave, singly (Baiteryakov, 1990); at the same site, July 31–August 1, 2014, 33 specimens were captured (3 ♀♀ and 29 ♂♂ ad; 1 ♂sad); in Okhlebininskaya cave, July 17–18, 2014, 31 specimens were captured at the cave entrance (4 ♀♀ and 27 ♂♂ad).

Belebeevskii district: in the environs of the town of Belebei, collection of the Zoological Museum of Kazan State University contains one specimen obtained on July 21, 1914 (Kurmaeva et al., 2012).

Karmaskalinskii district: Karlamanskaya cave, July 18–19, 2014, 7 specimens were captured at the entrance to the cave (1 ♀ and 6 ♂♂ad).

Aurgazinskii district: Veroletnaya cave, August 1–2, 2014, 34 specimens were captured (8 ♀♀ and 26 ♂♂ad).

Gafuriiskii district: Oktyabr'skaya cave, on November 7, 1981, the species was found wintering, singly (Baiteryakov, 1990); environs of the village of Krasnousol'skii, on June 27, 1995, on the Belaya River, 1 ♂ad was captured using nets (Il'in et al., 2002a); Kinderlinskaya cave, August 11–12, 2014, 31 specimens (6 ♀♀ and 14 ♂♂ad; 4 ♀♀ and 7 ♂♂sad) were captured.

Beloretskii district: in Atysh cave, on January 2, 1981, the species was found wintering, singly (Baiteryakov, 1990); in the South Ural State Nature Reserve, on May 20, 1986, in a forest clearing in the floodplain of the Bol'shoi Inzer River, a male was procured. Another animal was captured on September 24, 1990, in living quarters in the central premise of the nature reserve (Baiteryakov, 1998); in the environs of the village of Kagarmanovo, on June 21, 1997, a dry *E. nilssonii* female was captured using nets on the Belaya River (Il'in et al., 2002a); in the environs of the village of Mukhametovo, on June 23, 1997, a dry *E. nilssonii* female was captured using nets on the Malyi Kizil River (Il'in et al., 2002a); in Nukatovskaya cave, on October 5, 2005, 2 specimens were found wintering; at the same site, on March 10, 2007, 7 specimens were found (Snit'ko, 2011); at the same site, on March 8, 2014, 3 specimens were found wintering; in Kyzyl-Yarovskaya cave, on December 20, 1980, the species was found wintering, singly (Baiteryakov, 1990); at the same site, on October 7, 2005, 1 ♀ad was captured in front of the cave (Snit'ko, 2011).

Ishimbaiskii district: in Ishcheevskaya cave, March 2–3, 2014, 24 specimens were captured (1 ♀ and 23 ♂♂ad).

Meleuzovskii district: Bashkiria Nature Park, on August 10, 1981, the species was found in Kutuuskaya-2 cave, singly; in Uryuk-2 and Uryuk-3 caves, on November 2, 1982, the species was found wintering, singly (Baiteryakov, 1990).

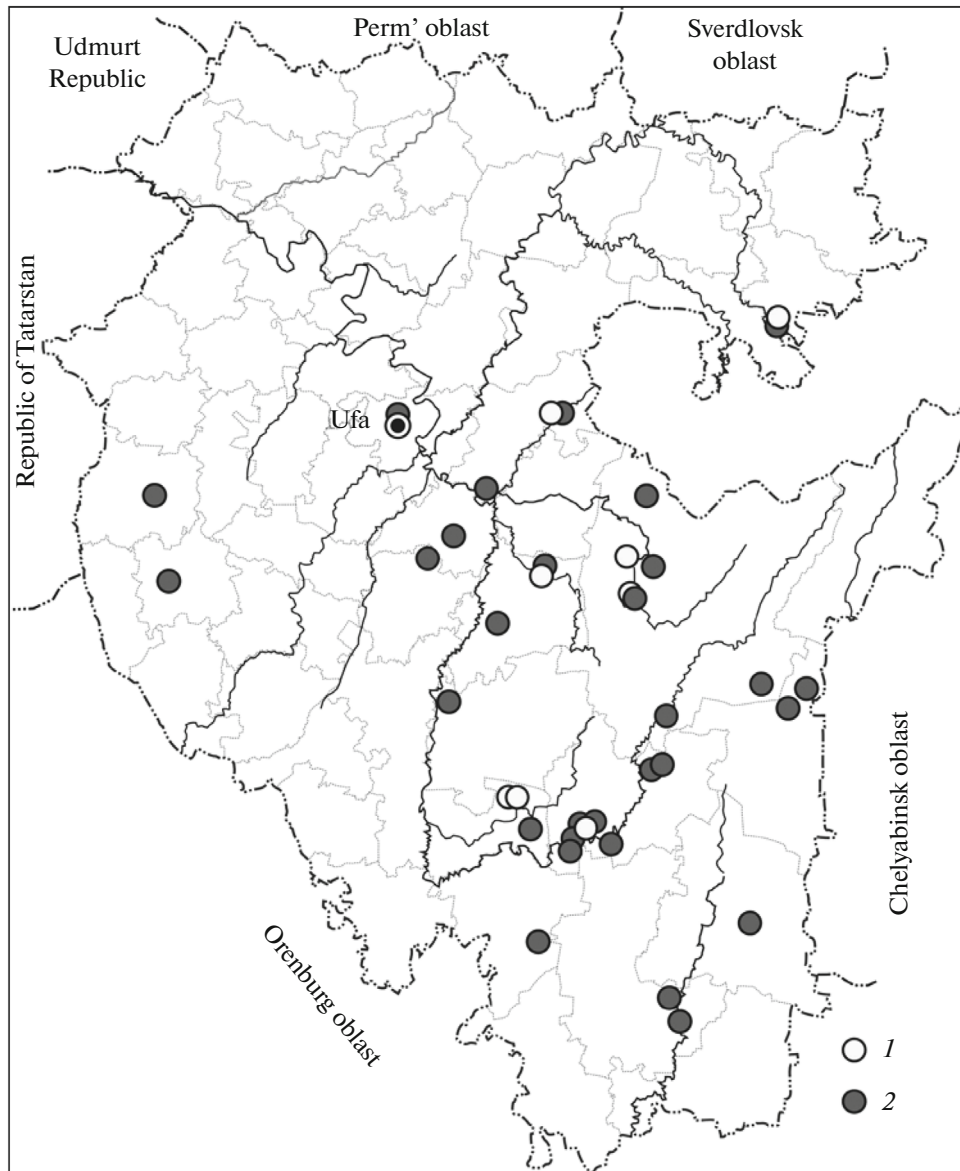


Fig. 8. Places of (1) winter and (2) summer findings of the northern bat in the Republic of Bashkortostan.

Burzyanskii district: in Shul'gan-Tash Nature Reserve, Kapova cave, on May 3, 1964, D.P. Morozov obtained a male northern bat in the first hall of the cave (Tkachenko, 1971); at the same site, on February 6, 1980, the species was found wintering, singly (Baiteryakov, 1990); in the entrance part of the cave, June 21–22, 1995, 2 ♂♂ad were captured (Il'in et al., 2002a); at the same site, on September 2, 2002, 1 ♂♂ad was captured, and on August 28, 2007, 1 ♂♂ad was caught; on August 30, 2007, at the cave entrance, 4 specimens were captured using spider webs (3 ♀♀, 1 ♂) (Snit'ko, 2008); in the environs of the village of Irgizly, on June 23, 1995, 1 ♂♂ad was obtained in a cleft on the Irgizly River (Il'in et al., 2002a); in Proval'naya cave, in July 1989,

Kuz'min counted 15 individuals (Loskutova and Loskutov, 1998); in Tash-Kelyat cave, in July 1989, Kuz'min observed single specimens (Loskutova and Loskutov, 1998); in Skazka cave, in July 1989, Kuz'min observed single specimens (Loskutova and Loskutov, 1998); in Eitash cave, on July 9, 2003, 2 specimens were captured (1 ♀ and 1 ♂♂ad); in Bashkirskii Nature Reserve, near the village of Sargaya, on July 8, 2003, the acoustic signals of the species were registered (Snit'ko, 2004).

Abzelilovskii district: in the village of Baimovo, on June 12, 2003, the acoustic signals of the species were registered (Snit'ko, 2004); in the environs of Bannoe Lake, on August 13, 2001, at the recreation camp of

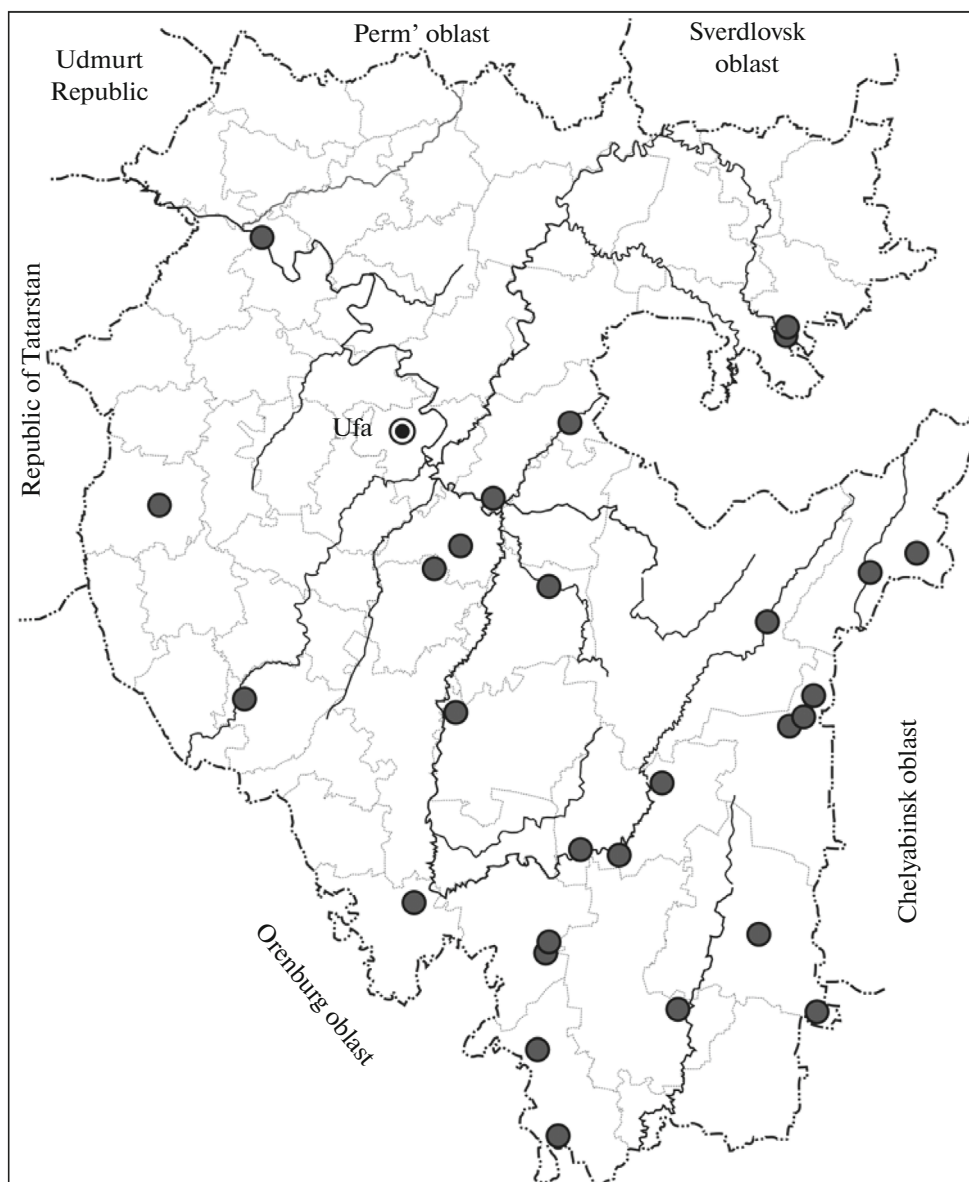


Fig. 9. Places of findings of the particolored bat in the Republic of Bashkortostan.

Magnitogorsk Technical University, the acoustic signals of the species were registered (Snit'ko, 2004); at the same site, on June 30, 2014, 1 ♀sad was captured; at the same site, on July 1, 2014, 1 ♀ad with signs of lactation was caught.

Kugarchinskii district: in Muradymovskoe Ushcheliie Nature Park: in Golubinyi Grot cave, August 12–13, 2014, 2 ♀♀sad were captured; in Novomuradymovskaya cave, August 13–14, 2014, 2 specimens were captured (1 ♀ad; 1 ♀sad).

Zilairskii district: in the environs of the village of Staroyakupovo, on June 26, 1997, 1 ♂ad was procured on the Sakmara River (Il'in et al., 2002a); in the envi-

rons of the village of Iskuzhino, on June 21, 2002, in the Krepostnoi Zilair River valley, ultrasonic signals of the species were registered (Il'in et al., 2002a).

Baimakskii district: in the environs of the village of Meryasovo, environs of the Grafskoe Lake Children's Camp, August 15–16, 2014, 5 specimens were captured (1 ♀ad; 3 ♀♀, and 1 ♂sad).

**Particolored bat** (*Vespertilio murinus* Linnaeus 1758). Migratory species. Bashkortostan is inhabited by the nominative subspecies *V. m. murinus* (Simmons, 2005; Kozhurina, 2009). It is included in the Red Data Book of the Republic of Tatarstan (IV) (Resolution of the Cabinet of Ministers of the Republic of Tatarstan,



2009). It is a widespread species in the Republic of Bashkortostan (Fig. 9).

According to a report by Polozhentsev (1949, p. 66), the particolored bat “is common, it was found not only in the forest or rural settings, but in urban areas as well (in attics).”

Dyurtyulinskii district: in the environs of the village of Angasyak, in the floodplain of the lower reaches of the Belaya River, on August 21, 1933, 1 ♂ was found; at the same site, June 7–July 7, 1934, 70 specimens were obtained (38 ♀♀ and 15 ♂♂ad; 7 ♀♀ and 5 ♂♂sad; 5??) (collection of S.I. Ognev, Zoological Museum of Moscow State University).

Salavatskii district: in the village of Lakly, July 12–13, 2002, in a building at the edge of the village, a brood colony of the particolored bat was registered (Snit'ko, 2004); July 14–15, 2012, 40 specimens were captured in front of Laklinskaya cave (4 ♀♀ and 7 ♂♂ad; 18 ♀♀ and 11 ♂♂sad).

Tuimazinskii district: in the environs of the village of Kandrykul', west shore of Kandrykul' Lake, on August 24–25, 2014, 21 specimens were caught using spider webs (1 ♀ad; 8 ♀♀ and 12 ♂♂sad).

Iglinskii district: in Kueshta cave, July 31–August 1, 2014, 10 specimens were captured (8 ♀♀ and 2 ♂♂sad); in Okhlebininskaya cave, July 17–18, 2014, 2 specimens were caught at the entrance to the cave (1 ♀ and 1 ♂sad).

Karmaskalinskii district: in Karlamanskaya cave, July 18–19, 2014, 5 specimens were captured at the entrance to the cave (1 ♀ad; 2 ♀♀ and 2 ♂♂sad).

Belebeevskii district: one specimen was sent to Professor N.F. Kashchenko by M.D. Ruzskii (Ognev, 1928).

Aurgazinskii district: in Veroletnaya cave, August 1–2, 2014, 17 specimens were captured (1 ♂ad; 11 ♀♀ and 5 ♂♂sad).

Gafuriinskii district: in the environs of Kinderlinskaya cave, August 11–12, 2014, the acoustic signals of the species were registered.

Beloretskii district: in the city of Beloretsk, on August 28, 2002, acoustic signals of the particolored bats were registered (Snit'ko, 2004).

Uchalinskii district: in the town of Uchaly, July 7–8, 2003, acoustic signals of the species were registered; in the environs of the village of Ishkinovo, July 8–9, 2003, on the Ural River, acoustic signals of the species were registered (Snit'ko, 2004).

Miyakinskii district: in the environs of the village Kinbekovo, on June 15, 1997, ultrasonic signals of *V. murinus* were registered in the floodplain of the Dema River (Il'in et al., 2002a).

Ishimbaiskii district: in Ishcheevskaya cave, August 2–3, 2014, 2 specimens were captured (1 ♂ad; 1 ♂sad).

Burzyanskii district: in Kapova cave, Kirikov (1952) reported finding 3–5 wintering particolored

bats, but he probably observed the northern bat; in the entrance part of the cave, June 21–22, 1995, 2 ♂♂ad were obtained using nets (Il'in et al., 2002a); at the same site, July 11–12, 2003, at the cave entrance, over Shulgan Lake, acoustic signals of the species were registered; at the same site, on August 30, 2007, 13 specimens were captured using spider webs (1 ♀ad; 6 ♀♀ and 6 ♂♂sad) and a day shelter of a brood colony of particolored bats was found in a rock crevice at a distance of 50 m from the cave entrance (Snit'ko, 2008); in the environs of the village of Irgizly, on June 23, 1995, 1 ♂ad was caught on the Irgizly River (Il'in et al., 2002a); in Bashkirskii Nature Reserve, near the village of Sargaya, on July 15, 2003, acoustic signals of the species were registered (Snit'ko, 2004).

Abzelilovskii district: in the environs of the village of Niyazgulovo, on June 24, 1997, 1 pregnant *V. murinus* female was obtained at the Gornyi Vozdukh Pioneer Camp (Il'in et al., 2002a); in the village of Baimovo, the acoustic signals of the parti-colored bats were registered (Snit'ko, 2004); in the environs of Bannoe Lake, August 13–14, 2001, 1 ♀ad particolored bat was obtained from a group of no less than 20 individuals; at the same site, on June 30 and July 1, 2014, acoustic signals of the species were registered.

Kuyurgazinskii district: in the environs of the village of Bugul'chan, June 24–26, 1995, 7 specimens were captured on the Belaya River (4 ♀♀ad lactating; 2 ♀♀ and 1 ♂sad) (Il'in et al., 2002a).

Kugarchinskii district: in Muradymovskoe Ushcheliye Nature Park: Golubinyi Grot cave, August 12–13, 2014, 19 specimens were captured (8 ♀♀ and 11 ♂♂sad); in Novomuradymovskaya cave, August 13–14, 2014, 2 ♂♂sad were captured.

Zilairskii district: in the environs of the village of Iskuzhino, on June 21, 2002, ultrasonic signals of *V. murinus* were registered in the floodplain of the Krepostnoi Zilair River (Il'in et al., 2002a).

Baimakskii district: in the environs of the village of Ural (Ural department of the Zilairskii sovkhov), on June 19, 2002, ultrasonic signals of *V. murinus* were registered in the floodplain of the Ural River (Il'in et al., 2002a); in the environs of the village of Meryasovo, environs of the Grafskoe Lake Children's Camp, August 15–16, 2014, 10 specimens were captured (2 ♀♀ad; 2 ♀♀ and 6 ♂♂sad).

Zianchurinskii district: in the environs of the village of Idyash, on June 12, 1995, 1 pregnant female was captured on the Kasmak River (Il'in et al., 2002a); in the environs of the village of Kugarchi, on June 18, 1995, 5 ♀♀ad were captured on the Bol'shaya Suren' River (3 pregnant and 2 lactating) (Il'in et al., 2002a).

**Brown long-eared bat (*Plecotus auritus* (Linnaeus 1758)).** Sedentary species. The territory of Bashkortostan is inhabited by the nominative subspecies *Pl. a. auritus* (Kozhurina, 2009; Kruskop, 2012). It is included in the Red Data Book of the Republic of Bashkortostan

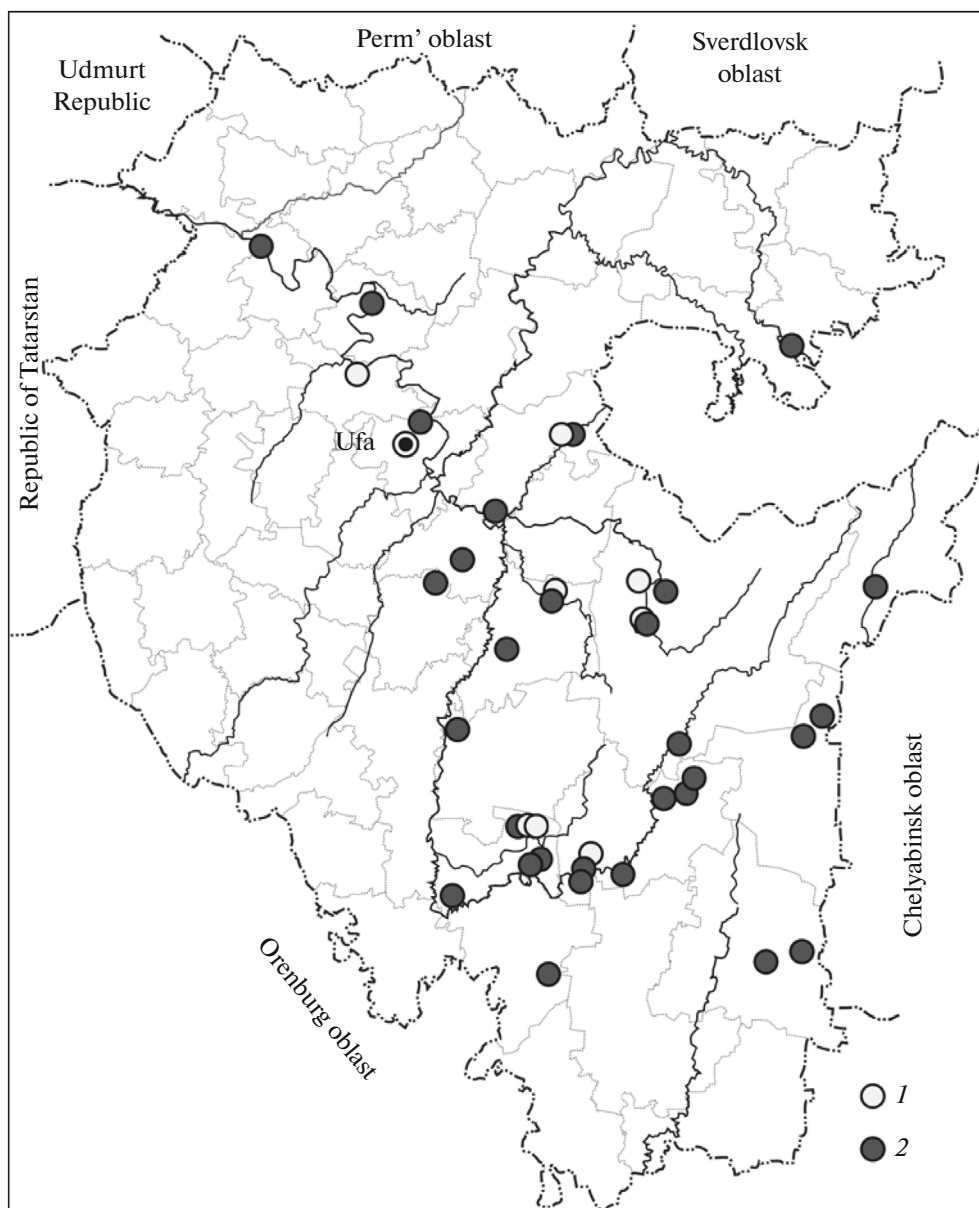


Fig. 10. Places of (1) winter and (2) summer findings of the brown long-eared bat in the Republic of Bashkortostan.

(III), Tatarstan (IV), the Udmurt Republic (III), and Chelyabinsk (III) and Sverdlovsk (III) oblasts (Resolution of the Government of the Republic of Bashkortostan, 2014; Resolution of the Cabinet of Ministers of the Republic of Tatarstan, 2009; Red Data Book of the Udmurt Republic, 2012; Resolution of the Government of Chelyabinsk oblast, 2014; the Red Data Book of Sverdlovsk oblast, 2008). It is a widespread species in the Republic of Bashkortostan (Fig. 10).

Dyurtyulinskii district: in the environs of the village of Angasyak, the floodplain in the lower reaches of the Belaya River, on June 14, 1974, 1 ♀ was found

(collection of the Zoological Museum of Moscow State University).

According to a report by Polozhentsev (1949), the brown long-eared bat is “common and numerous everywhere”; it was found in the Birsksii (Birsksii district) and Voskresenskii (Meleuzovskii district) forests and near Ufa (Ufinskii district, Milovka village).

Blagoveshchenskii district: in Blagoveshchenskaya (Gorodkovskaya) cave, in the environs of the city of Blagoveshchensk, on February 8, 1980, the species was found wintering, in small numbers (Baiteryakov, 1990).

Salavatskii district: in Laklinskaya cave, on August 9, 2005, 22 specimens were captured (3 ♀♀, 19 ♂♂) (Snit'ko, 2011); at the same site, July 14–15, 2012, 16 ♂♂ were captured.

Iglinskii district: in Kueshta cave, on September 19, 1980, and March 15, 1982, the species was found in the cave, singly (Baiteryakov, 1990); at the same site, July 31–August 1, 2014, 38 specimens were captured (11 ♀♀, 27 ♂♂); in Okhlebininskaya cave, July 17–18, 2014, 1 ♂ad was captured at the entrance to the cave.

Karmaskalinskii district: in Karlamanskaya cave, July 18–19, 2014, 28 ♂ad were captured at the entrance to the cave.

Aurgazinskii district: in Veroletnaya cave, August 1–2, 2014, 3 specimens were captured (1 ♀ and 2 ♂ad).

Gafuriinskii district: in Oktyabr'skaya cave, on November 7, 1981, the species was found wintering, few in numbers (Baiteryakov, 1990); environs of the village of Krasnousol'skii, on June 27, 1995, 1 ♂ad was captured (Il'in et al., 2002a); Kinderlinskaya cave, August 11–12, 2014, 8 specimens (3 ♀♀ and 5 ♂ad) were captured.

Beloret'skii district: in South Ural State Nature Reserve, on June 30, 1991, in the southern part of the reserve, 1 specimen was caught behind a window frame. Hunting animals were also encountered singly throughout the reserve (Baiteryakov, 1998); in the environs of the village of Kaga, on June 20, 1997, 4 specimens were captured (1 ♀ and 3 ♂ad) (Il'in et al., 2002a); K.K. Panyutin reported "numerous brown long-eared bats" wintering in Kyzyl-Yarovskaya cave (Strelkov, 1970); at the same site, on December 20, 1980, more than 50 specimens were found wintering (Baiteryakov, 1990); at the same site, on October 7, 2005, 57 specimens were captured (7 ♀♀, 50 ♂♂) (Snit'ko, 2011); in Nukatovskaya cave, on March 10, 2007, 3 specimens were found wintering (Snit'ko, 2011); at the same site, on March 8, 2014, 1 specimen was found wintering.

Uchalinskii district: in the environs of the village of Ishkinovo, on July 7, 2003, one specimen was registered on a clearing of a birch copse (Snit'ko, 2004).

Ishimbaiskii district: in Ishcheevskaya cave, March 2–3, 2014, 3 specimens were captured (1 ♀ and 2 ♂ad).

Meleuzovskii district: in Bashkiria Nature Park, Plevaya and Kutukskaya-2 caves, on August 10, 1981, 1 brown long-eared bat was found; in Uryuk-1 cave, on July 22, 1980, 1 specimen was found; on November 2, 1982, the species was found wintering in Uryuk-2 cave, singly, and Uryuk-3 cave, in small numbers (Baiteryakov, 1990).

Burzyanskii district: in Shul'gan-Tash Nature Reserve, the brown long-eared bats were few in number (Kirikov, 1952); at the same site, on February 6, 1980, and February 5, 1981, it was found wintering, singly (Baiteryakov, 1990); in 1961, in Kapova cave, the wintering brown long-eared bats constituted 7–

10% (data by A.V. Ryumin) (Loskutova and Loskutov, 1998); at the same site, in 1994, 6 specimens were found wintering (Loskutova and Loskutov, 1998); at the same site, on September 2, 2002, 2 specimens were captured at the entrance to the cave (1 ♂ad; 1 ♂sad); at the same site, on August 28, 2007, 8 specimens were captured at the cave entrance (3 ♀♀, 5 ♂♂); at the same site, on August 30, 2007, 9 specimens were captured at the cave entrance (3 ♀♀, 6 ♂♂) (Snit'ko, 2008); in July 1989, according to the data of Kuz'min, the brown long-eared bat was registered in the village of Irgizly, in Proval'naya (2 specimens), Chasovnya (1 specimen), Kostyanaya (3 specimens), and Tash-Kelyat (1 specimen) caves, and in several small grottos of the Belaya River valley (Loskutova and Loskutov, 1998); in Skazka cave, on September 3, 2002, 6 specimens were captured at the cave entrance (5 ♂ad; 1 ♀sad) (Snit'ko, 2008); in Eitash cave, on July 9, 2003, 1 ♂ad was captured at the cave entrance (Snit'ko, 2004); in Bashkirskii Nature Reserve, the tunnels in the environs of the village of Sargaya (sq. 104), on August 29, 2002, 1 ♂ad was captured; in the environs of the Yangi-Yul cordon, on August 31, 2002, 2 ♀♀ and 1 ♂ of the four discovered were obtained; on the road between the villages of Kulganino and Sargaya, on September 1, 2002, one individual was visually registered in a forest clearing; in Sargaya, on July 8, 2003, 1 ♂ad was captured in a wooden building in the afternoon (Snit'ko, 2004).

Abzelilovskii district: on Bannoe Lake, on August 13, 2001, 2 specimens were registered on the shore (Snit'ko, 2004); in the village of Baimovo, on August 11, 2001, in the floodplain of the Malyi Kizil River, 3 individuals were registered (Snit'ko, 2004).

Kugarchinskii district: in Muradymovskoe Ushcheliye Nature Park: Golubinyi Grot cave, August 12–13, 2014, 2 ♂ad were captured; in Novomuradymovskaya cave, August 13–14, 2014, 22 specimens were captured (6 ♀♀ and 15 ♂ad; 1 ♂sad).

Baimak'skii district: in the environs of Kultuban Lake, on August 12, 2001, acoustic signals of the species were registered in the village gardens (Snit'ko, 2004); in the environs of the village of Meryasovo, environs of the Grafskoe Lake Children's Camp, August 15–16, 2014, 2 specimens were captured (1 ♀ and 1 ♂ad).

## DISCUSSION

The population of Chiroptera in the Republic of Bashkortostan is one of the variants of the middle-European fauna. Of the 12 species of 6 genera of the family Vespertilionidae inhabiting the republic, 7 (*M. daubentonii*, *M. dasycneme*, *M. brandtii*, *M. mystacinus*, *M. nattereri*, *Pl. auritus*, *E. nilssonii*) belong to the sedentary group, and 5 (*P. nathusii*, *P. pipistrellus*, *N. noctula*, *N. leisleri*, *V. murinus*), to the migratory group. It should be noted that, so far, the species status

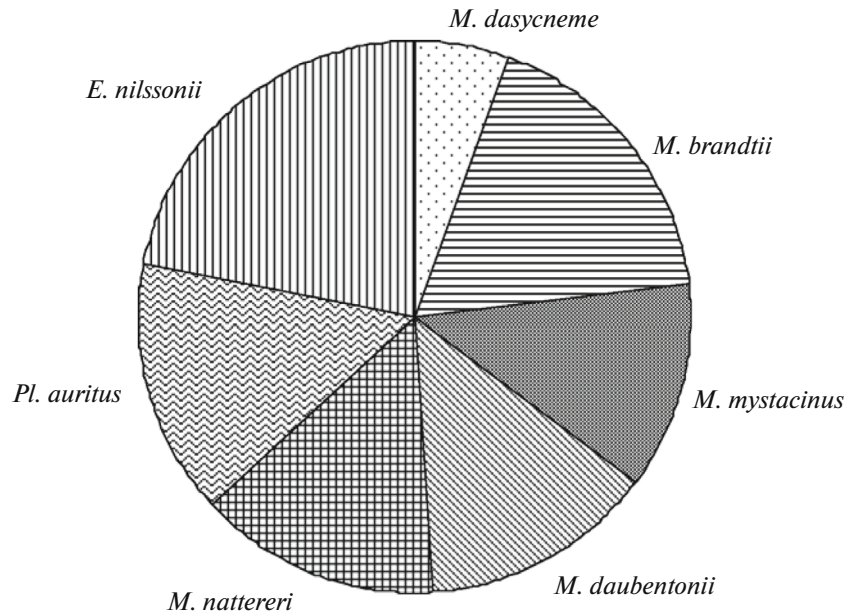


Fig. 11. Relative abundance of sedentary bat species in the caves of Bashkortostan according to the data of captures in 2000–2014.

of the pipistrelles *Pipistrellus pipistrellus/pygmaeus* discovered in Bashkortostan remains unclear. According to some researchers (Kozhurina, 2009), the range of the soprano pipistrelle (*P. pygmaeus*) can reach the Southern Urals.

The findings suggest that Bashkortostan marks the eastern borders of the distribution of *N. leisleri* and *P. pipistrellus/pygmaeus*, which occur rarely in the republic and have not been found on the eastern slopes of the Urals. The other three migratory species *P. nathusii*, *N. noctula*, and *V. murinus* are widespread in the country.

An important feature of the habitat of bats in Bashkortostan is the presence of historical places of mass wintering of bats. The Republic is Russia's largest karst area, where 983 caves of natural origin are registered with a total length of 103 km (Lavrov et al., 2010). The caves are used by bats not only in winter, but also during the period of activity. The data of visual surveys of bats wintering in the caves, due to irregularity of internal cavities and the availability of shelters hidden from inspection, do not reflect the real composition and abundance of the wintering animals. Therefore, bat populations were assessed by trapping conducted in caves during the period of activity. In 14 caves 1528 specimens were captured. According to the observations, *Pl. auritus* and *E. nilssonii* were found in all caves, *M. brandtii* and *M. daubentonii* in 12, *M. mystacinus* in 11, *M. dasycneme* in 10, *M. nattereri* in 7. The relative abundance indices by species were the following: *E. nilssonii* 22%, *M. brandtii* 17.4%,

*Pl. auritus* 14.9%, *M. nattereri* 14.3%, *M. daubentonii* 13.5%, *M. mystacinus* 12.3%, and *M. dasycneme* 5.6% (Fig. 11).

In addition to the species identified in the southern and southeastern parts of the Republic, Kuhl's pipistrelle (*Pipistrellus kuhlii* (Kuhl 1817)) may be found, as it was found wintering in the border area, the city of Magnitogorsk, Chelyabinsk oblast (Snit'ko, 2010), as well as *Eptesicus serotinus turcomanus* (Eversmann 1840)), living in the neighboring Orenburg oblast (Zarudnyi, 1898, Il'in et al., 2002a) and the greater noctule bat (*Nyctalus lasiopterus* (Schreber 1780)), which was found in Buzulukskii Forest in the western part of Orenburg oblast (Ognev, 1928; Popov, 1960).

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