

Bats of Belarus of the 19th century: a retrospective analysis

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Abstract. A literature review, containing information on the bat fauna of Belarus of the 19th century is presented in the paper. Some methodological problems (incorrect or incomplete citations, difficulties in access to the original sources, geographical reference and level of science evolution), which must be taken into consideration at work with the old literature sources, are accentuated. It has been ascertained that in the literature of the 19th century, altogether 14 species of bats were described for the territory of Belarus for the first time. For some species, brief biological data are presented in the paper. Recent occurrence of *Rhinolophus hipposideros* and *Myotis bechsteinii* in Belarus has not been confirmed so far.

Belarus, historical review, bat fauna, 19th century

Introduction

This paper is an overview of historical sources relating to the bat fauna of the territory of modern Belarus. Historical studies of certain animal groups are of great importance which is determined by several factors. In addition to academic value of such data that shed light on the history of zoology and natural science in general, there is an important practical aspect. For example, comparative analysis of historical and contemporary zoological works allows to estimate changes in the quantitative and qualitative composition of the fauna over a long period of time. As the examples of such studies, monographs by Kirikov (1960, 1983) and Sokur (1961) can be mentioned.

The 19th century was especially important for the fauna of Belarus, since intensive transformation of nature by human began in that period, as a result of rapid development of industry and agriculture (Cvikevič 1993).

It should be noted that no specialised papers on this issue in relation to Belarus are available. Brief information on the history of studies of Belarusian bat fauna are represented only in two monographs (Seržanin 1961, Kurskov 1981), which are used as the sources of secondary citation.

This study is the result of an analysis of available literature of the late 18th – early 20th centuries. However, analysis of these sources requires special reservations, and in many cases does not allow for direct comparison. In view of the aforesaid, it is necessary to outline some methodological problems, which may lead to wrong interpretation of historical information.

Belarus in its current state borders was formed in 1945. Prior to this, various regions of the country were a part of the Belarusian Soviet Socialist Republic (BSSR), Poland, Lithuania, the Russian Soviet Federative Socialist Republic (RSFSR), the Russian Empire and the Grand Duchy of Lithuania. Accordingly, the natural science research was conducted in relation either to the territories of these States in general or to the selected natural areas, which often do not correspond to current situation.

Table 1. Bat species of Belarus mentioned by Tyzenhauz (Domaniewski 1931)
Таблица 1. Виды рукокрылых Беларуси, згаданыя Тызенгаўзам (Domaniewski 1931)

species name used by the author відавья назвы, выкарыстаныя аўтарам	present-day name сучасныя назвы	notes заўвагі
<i>Rhinolophus ferrumequinum</i>	<i>Rhinolophus ferrumequinum</i>	Podolia, ?
<i>Vespertilio murinus</i> (<i>Myotis</i> Bechst.)	<i>Vespertilio murinus</i> or <i>Myotis myotis</i>	Volyn
<i>Vespertilio Daubentonii</i>	<i>Myotis daubentonii</i>	Litva, rare
<i>Vespertilio discolor</i>	<i>Vespertilio murinus</i>	Litva, rare
<i>Vespertilio mystacinus</i>	<i>Myotis mystacinus</i> sensu lato	Litva, rare
<i>Vespertilio barbastellus</i>	<i>Barbastella barbastellus</i>	Litva
<i>Vespertilio noctula</i> (<i>proterus</i>)	<i>Nyctalus noctula</i>	Litva
<i>Vespertilio serotinus</i>	<i>Eptesicus serotinus</i>	Volyn
<i>Vespertilio pipistrellus</i>	<i>Pipistrellus pipistrellus</i> sensu lato	Poland
<i>Vespertilio leisleri</i>	<i>Nyctalus leisleri</i>	?
<i>Vespertilio Bechsteini</i>	<i>Myotis bechsteini</i>	Courland
<i>Vespertilio Schreibersii</i>	<i>Miniopterus schreibersii</i>	Galicja, ?
<i>Vespertilio Kuhlii</i>	<i>Pipistrellus kuhlii</i> or <i>Eptesicus nilssonii</i>	Litva, rare
<i>Vespertilio</i> (<i>Plecotus</i>) <i>auritus</i>	<i>Plecotus auritus</i> sensu lato	Litva, rare

For example, in the 19th century, the western part of Belarus was called Litva or Litvanian Polesie and could be regarded as a historical part of Poland. Sometimes ‘Litva’ in a broad sense of this word is understood as the whole territory of the former Grand Duchy of Lithuania, i.e. modern Belarus and Lithuania, together. The place name ‘Belarus and the Upper Dnieper region’ is understood as the area “consisting of provinces of Vitebsk and Smolensk, Mogilev and Minsk”, of which “only the eastern edge grabs the northwest corner of the Central Russian Upland, irrigated by the Volga and the Oka river network, the center also lies in the belt of elevated portages between the river basins of the Black Sea and Baltic Sea (Dnieper with Pripyat, Neman and Western Dvina), stretching along the Moscow–Brest railway” (Semenov et al. 1905). Similar problems may be related to administrative and territorial division of the Russian Empire in the 19th century. If the boundaries of Minsk, Grodno, Vitebsk and Mogilev provinces, in general, correspond with the current Belarusian borders, the Vilna province included the northwestern part of Belarus and the southeastern part of Lithuania. All this is important, because earlier descriptions of fauna, with few exceptions, had no strict geographical references to settlements or geographical coordinates, and often characterized fauna of a relatively large area.

Certain difficulties may be caused by the fact that until 1884 prime meridians were sometimes used. For example, on maps of the Russian empire, the Pulkovsky meridian, which runs through the center of the Round hall of the main building of the Pulkovsky observatory, was used.

Table 2. Bat species of Belarus listed by Korev (1861)
Таблица 2. Виды рукокрылых Беларуси, згаданыя Корэвым (1861)

species name used by the author відавья назвы	present-day name сучасныя назвы	notes заўвагі
<i>Vespertilio noctula</i> et <i>Serotinus</i>	<i>Nyctalus noctula</i> or <i>Eptesicus serotinus</i>	
<i>Vespertilio pipistrellus</i>	<i>Pipistrellus pipistrellus</i> sensu lato	near water, under tree bark
<i>Vespertilio Kuhlii</i>	<i>Pipistrellus kuhlii</i> or <i>Eptesicus nilssonii</i>	old buildings
<i>Rhinolophus Bihastatus</i>	<i>Rhinolophus hipposideros</i>	old houses and underground

Table 3. Bat species of Belarus listed by Nikol'skij (1899)
Віды рукакрылых Беларусі, згаданыя Нікольскім (1899)

species name used by the author відавья назвы	present-day name сучасныя назвы	notes заўвагі
<i>Rhinolophus hipposideros</i>	<i>Rhinolophus hipposideros</i>	southern and western Polesie, Kiev, South-Eastern Poland
<i>Plecotus auritus</i>	<i>Plecotus auritus</i>	the whole territory of Polesie
<i>Synotis barbastellus</i>	<i>Barbastella barbastellus</i>	Lublin province
<i>Vesperugo noctula</i>	<i>Nyctalus noctula</i>	the whole territory of Polesie, predominantly in the forests
<i>Vesperugo leisleri</i>	<i>Nyctalus leisleri</i>	occasionally found in Kiev
<i>Vesperugo Nathusii</i>	<i>Pipistrellus nathusii</i>	common in Polesie, near the edges of the forests
<i>Vesperugo pipistrellus</i>	<i>Pipistrellus pipistrellus sensu lato</i>	common in Polesie, in depth of coniferous forests, and hibernates under pine bark
<i>Vesperugo Nilsonii</i>	<i>Eptesicus nilssonii</i>	Lublin province, much rarer than <i>Pipistrellus pipistrellus</i>
<i>Vesperugo discolor</i>	<i>Vespertilio murinus</i>	in Kiev, human dwellings
<i>Vesperugo serotinus</i>	<i>Eptesicus serotinus</i>	common in cities and villages of Polesie
<i>Vespertilio Bechsteinii</i>	<i>Myotis bechsteinii</i>	Lublin province
<i>Vespertilio mystacinus</i>	<i>Myotis mystacinus sensu lato</i>	–
<i>Vespertilio Daubentonii</i>	<i>Myotis daubentonii</i>	very common in Poland
<i>Vespertilio dasycneme</i>	<i>Myotis dasycneme</i>	Lublin province

However, this meridian was put into practice only in the 1840s, and in earlier works it is possible to find coordinates, which focused on the Ferro meridian (Catalogue of Tyzenhauz), Parisian meridian etc.

Characteristics of primary sources

Due to the behavior of bats, their distribution and ecology remained unknown in Belarus for a long time. The main attention of researchers in the 18th–19th centuries was focused, as a rule, on the mammals which were of hunting or economic importance. For example, no information about bats can be found in one of the first fundamental reports on fauna of the Polish-Lithuanian Commonwealth «Actuarium historiae naturalis curiosae Regni Poloniae, magni ducatus Lithuaniae, annexarumque provinciarum» (Rzaczynski 1745), despite the fact that about 40 species of mammals were described in it. In addition, general volatility of zoological nomenclature in the 19th century should be taken in account. This led, in some cases, to the impossibility to include correctly the previously described species in the modern faunistic lists relying solely on literature data. In this study, the monograph by Ognev (1928) is used for the definition of synonymous names in works of old authors.

The first data on the fauna of bats for the territory of modern Belarus was presented by Count Konstantin Tyzenhauz. Tyzenhauz (1786–1853) was a zoologist and painter, founder of the Belarusian Ornithology (his ornithological collection contained about 3 000 species of birds of the world fauna), a member of many scientific societies in Europe (Warsaw, Berlin, Paris etc.) and author of over 20 scientific papers in Polish, Latin and French (Vinčevsky 2006). In his work *Catalogus avium et mammalium, quae habitant in regionibus Europae positis inter gradum*

Table 4. Bat species of Belarus listed by Semenov et al. (1905)
Віды рукакрылых Беларусі, згаданыя Сяменавым et al. (1905)

species name used by the author Відавья назвы	present-day name сучасныя назвы	notes заўвагі
<i>Plecotus auritus</i>	<i>Plecotus auritus</i>	these species occur in the Moscow industrial and Central Russian regions
<i>Vesperugo noctula</i> <i>Vesperugo pipistrellus</i>	<i>Nyctalus noctula</i> <i>Pipistrellus pipistrellus</i> sensu lato	common, it inhabits coniferous forests
<i>Vesperugo discolor</i> <i>Vespertilio Daubentoni</i> <i>Vespertilio dasycneme</i> <i>Vesperugo abramus</i>	<i>Vespertilio murinus</i> <i>Myotis daubentonii</i> <i>Myotis dasycneme</i> <i>Pipistrellus nathusii</i>	these species probably inhabit the Smolensk province
<i>Vespertilio mystacinus</i> <i>Rhinolophus hipposideros</i>	<i>Myotis mystacinus</i> sensu lato <i>Rhinolophus hipposideros</i>	probably present in the SW part of the Minsk province (Pinsk marshes), occurs in SE Poland and in the N part of the Kiev province
<i>Vesperugo serotinus</i>	<i>Eptesicus serotinus</i>	common, inhabits towns and villages of the Minsk Polesie
<i>Vesperugo Nathusii</i>	<i>Pipistrellus nathusii</i>	common, near edges of forests of the Minsk Polesie
<i>Synotis barbastellus</i>	<i>Barbastella barbastellus</i>	these species may migrate from the Lublin prov. to the Minsk prov. through the W part of Volyn
<i>Vesperugo Nilsonii</i> <i>Vespertilio Bechsteini</i> <i>Vesperugo leisleri</i>	<i>Eptesicus nilssonii</i> <i>Myotis bechsteinii</i> <i>Nyctalus leisleri</i>	probably may migrate from the Kiev prov. to the Minsk province

46°–57° latitudinis septentrionalis et 35°–55° longitudinis a Ferro (Domaniewski 1931), some data on species composition and biology of birds and mammals, which inhabit the area between 46° 57' N and 35° 55' E, focusing on the Ferro meridian, are presented. In the modern system of geographical coordinates this region corresponds to the current territories of Belarus, southern Latvia, Lithuania, Smolensk region of Russia and central and western areas of Ukraine.

For the territory of historical Litva (in the broad sense), Tyzenhauz mentioned seven species of bats (Table 1). Occurrence of these species, except the *Pipistrellus kuhlii* (Kuhl, 1817), has been confirmed recently. However, one should take into account that in the works of the 19th – early 20th centuries, «*Vespertilio kuhli*» could stand either for *P. kuhlii* or for *Eptesicus nilssonii* (Keyserling et Blasius, 1839). In the same way, the species name «*Vespertilio murinus* (*Myotis* Bechst.)» probably corresponds to *Myotis myotis* (Borkhausen, 1797) (Ognev 1928). However, Zagorodnuk (2009) notes that in the 19th century the species name «*Vespertilio murinus*» could refer to any large-sized species of the genus *Myotis*. It should also be noted that the species *Pipistrellus pipistrellus* (Shreber, 1774), *Myotis mystacinus* (Kuhl, 1817) and *Plecotus auritus* Linnaeus, 1758 listed by Tyzenhauz, could nowadays also include *Pipistrellus pygmaeus* (Leach, 1825), *Myotis brandtii* (Eversmann, 1845) and *Plecotus austriacus* (Fisher, 1829) respectively.

Fairly complete data are presented in the multi-volume edition *Materials for Geography and Statistics of Russia, collected by General Staff officers* which were published in the middle and in the second half of the 19th century. Each issue was focused on a separate province of the Russian Empire. Unlike earlier similar reports (Streng 1848 for the Minsk province and Nordenstreng 1848 for the Vilna province), containing predominantly data of military character (cross-roads, the direction of possible military incursions, supplies, and so on), some of these issues comprised detailed faunistic lists. The most comprehensive work was referred to the Vilna province (Korev 1861). It should be noted that the information on flora and fauna was picked up by Korev from the works of Gabriel Rzaczynski, Jan Kluk, Stanislaw Ūndzill, Felix Ârotsky, Anthon Waga, Gorsky and Konstantin Tyzenhauz as stated in the text. At the same time, the sequence of taxa was borrowed from the paper by Count Adam Plater *Spis zwierzat ssacych, ptakow i ryb krajowych* ... (Plater 1852).

Korev (1861) cites data on the occurrence of four bat species in the territory of the Vilna province (Table 2). However it is not clear, which species are meant by “*Vespertilio noctula* et *Serotinus*”. Probably, there was an error caused by incorrect quoting of the primary source. It can be assumed that the author accepted enumeration of various species as one species name. Thus, taking into account the nomenclature of the first half of the 19th century (Table 1), this could mean *Plecotus auritus*, *Nyctalus noctula* (Schreber, 1774) or *Eptesicus serotinus* (Schreber, 1774). Reference of *Rhinolophus hipposideros* (Borkhausen, 1797) to the Vilna province is of special interest.

The volumes of *Materials for Geography*, which report on the Grodno (Bobrovskij 1863) and Minsk (Zelenskij 1864) provinces, unfortunately do not contain any data on the species composition of bats. However, the Zelenskij’s work includes the following interesting statement: “Hedgehog, mole and bat (*Vespertilio*) can be considered as useful animals, as they consume a lot of harmful insects”. This statement, in all probability, can be considered as one of the first notes on the practical importance of bats for the Russian-language literature on the fauna of Belarus.

A detailed summary of fauna the Polesie region (Table 3) was presented by Nikol’skij (1899). Aleksandr M. Nikol’skij was a Russian zoologist, professor of the Kharkiv University, member of the Academy of Sciences of Ukraine and director of the herpetology department at the Zoological Museum of the Academy of Sciences (in the Russian Empire), author of more than 100 scientific publications (Mazurmovič 1983). His work *Fauna of Polesie*, was an addendum to the “Essay on the work of Western expedition to drain the swamp” (Žilinskij 1899). This expedition in Polesie was supervised by Lieutenant-General Žilinskij over a 25-year period from 1873 to 1898. The disadvantage of the work by Nikol’skij was the fact that the species composition of bats of Polesie he described, was based mainly on literary sources, without original data. Under “Polesie” he understood “the space of European Russia, which was limited by Dnieper in the east, from the northwest by the line running from Brest to Mogilev, from the southwest by the line from Brest to Kiev” (Nicol’skij 1899).

For the territory of Belarusian Polesie, Nikol’skij specifies seven species of bats (Table 3). The mention of large colonies of hibernating *P. pipistrellus* “under the peeled cortex of old pines” is especially interesting. There is only one other report on a similar way of hibernation of bats in the accessible literature (Velikaniv 1930). Velikaniv suggested the high number of individuals to be a key factor enabling their survival during winter.

At the end of the 19th and at the beginning of the 20th centuries, a famous geographer V. P. Semenov Tân-Šanskij, together with P. P. Semenov Tân-Šanskij and V. I. Lamanskij, based on the analysis of the statistical material, undertook to release the fundamental work *Russia. The Complete Geographical Description of our Fatherland*. Originally 22 volumes were planned to

be published, however, because of the beginning of the World War I and the subsequent events, only 11 books were finished. The ninth volume *The Upper Dnieper region and Belarus* was issued in 1905 (Semenov et al. 1905). Based on a number of sources, the authors list 15 species of bats for the described region (Table 4). In spite of the fact that the mention of seven species has a presumable character, only two species from the list by Semenov et al. (1905) – *Myotis bechsteinii* (Kuhl, 1817) and *Rhinolophus hipposideros* – have not been registered for the territory of Belarus so far.

Conclusions

As a result of the work of several researchers of the 19th century, altogether 14 species of bats were listed for the territory of modern Belarus. However, recent occurrence of *Rhinolophus hipposideros* and *Myotis bechsteinii* has not been confirmed so far. The data of Tyzenhauz are apparently original, since he was the first to mention occurrence of eight species. It can be assumed that the reports of these authors were compiled on the basis of published data, which is often explicitly mentioned in the text. However, the value of these works is great because they cite the data from hardly available sources.

Summary

У артыкуле прадстаўлены агляд літаратурных крыніц 19 стагоддзя, якія змяшчаюць дадзеныя аб фаўне рукакрылых Беларусі. Акрэслены шэраг метадалагічных праблем (няпоўнае і памылковае цытаванне, цяжкасці ў доступе да першакрыніц, гісторыка-геаграфічныя пытанні, а таксама ўзровень развіцця навукі), якія неабходна ўлічваць пры аналізе ранніх літаратурных крыніц. Было устаноўлена, што на працягу 19 стагоддзя для тэрыторыі Беларусі было ўпершыню апісана 14 відаў рукакрылых. Для некаторых відаў прыведзены кароткія біёлага-экалагічныя звесткі, прыгаданыя аўтарамі. Знаходкі *Rhinolophus hipposideros* і *Myotis bechsteinii*, апісаныя ў прааналізаванай літаратуры не былі пацверджаны дагэтуль.

Acknowledgement

I wish to thank I. Zagorodnûk, V. Gričik, L. Balciauskas and P. Lina for their help and comments and an anonymous referee, whose remarks greatly improved the quality of this manuscript.

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received on 1 June 2011