

The Detection of Partial Albinism at Three Species of Bats (Mammalia: Chiroptera) in European Part of Russia

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Abstract

The first time for the territory of European Russia describes the cases of catching bats with signs of albinism. This article describes the detection of three species of bats with partial albinism in European part of Russia. There are four animal units of *Eptesicus serotinus turcomanus* that are stored in Penza State University. They were procured in Astrahan region in 1992 and in 1996. One more animal was found in Volgograd region in 2004. All these animals have white spots of different size and shape on their abdominal part of body. In 2012 it was caught a young female of *Pipistrellus nathusii* in Samarskaya Luka (Samara region) and in 2013 the scientists found a mature female of *Myotis mystacinus*. Both animals had a light-colored fur, red eyes and with almost white ears. Moreover, they had pale-pink noses and extremities.

Keywords

Partial Albinism, *Eptesicus serotinus*, *Pipistrellus nathusii*, *Myotis mystacinus*

1. Introduction

Albinism refers to congenital absence of pigment of skin, hair, and eye membranes. It is currently believed that albinism is caused by the lack of tyrosinase enzyme, which is necessary for the normal synthesis of melanin—a special substance that affects the dyeing.

Although, albinism is rare, it is noticed in virtually in all vertebrate's taxa [1] [2]. It was first described and studied in 18th century by Carl Linnaeus. The first and the most comprehensive list of white animals was published in the mid-20th century and it continues to grow till today. Nowadays, cases of albinism are known for

more than 150 species of mammals [1]. Two types of albinism are distinguished: full and partial albinism. By full or true albinism (amelanism) integument color is absolutely white, without a single black spot, and cases of partial albinism appear as akromelanizma, leykizma, roan (silver), piebald (spotted) or seasonal albinism [3] [4].

Bats extremely rare have full or partial albinism [5]. Nowadays, it was registered only in 17 species in Europe [6], whereas worldwide albinism is noticed in 50 species [1] [2] [4] [7]-[14]. It is predominantly animals from Central and Latin America. Each of these species has from one to five individuals who has abnormal coat color that compose about 75 individuals.

That's why we consider that it is necessary to describe some cases of catching bats with signs of albinism in European Russia.

2. Material and Methods

The results that were obtained on the basis of long-term studies of bats in Volga region, the Urals, the Northern Caucasus are presented in this article. During winter and summer over 200,000 individuals of 23 species were viewed. All of them lived in these areas. Moreover, the bats that are kept in Penza State University (Penza, PGU), Zoological Institute Russian Academy of Sciences (St. Petersburg), Zoological Museum of the Moscow State University (Moscow), Saratov State University (Saratov), Samara State University (Samara) were studied, too.

3. Results End Discussion

Several animals with signs of partial albinism (piebald) were found in Penza State University's collection. This four individuals *Eptesicus serotinus turcomanus* Eversmann 1840 (Figure 1), were found in some parts of the Lower Volga region. Their morphological characteristics are presented in table (Table 1). Among them were one adult male, which was found on June 13th, 1992 on the Lake Baskunchak in Astrakhan region (coll. PGU No. 468). The territory, where the animal was caught, is a slightly hilly steppe plain (Figure 2). The terrain is extremely challenging for erosion and karst forms, dedicated to the areas of the exit on the surface of the ancient Paleozoic and Mesozoic rocks. Karst landforms are presented in the form of beams, sinkholes, wells, niches and caves. The vegetation consists of grass, sagebrush, sagebrush-grass communities, and wood—in the form of artificial planting. Two adult females were caught on the 20th of June, 1996 in the village Kamenny Yar in Astrakhan region (coll. PGU No. 801 and 804). The animals were housed in maternal colony, which was placed under the wooden paneling of the wall of the Muslim mosque. One young female were caught on the 23rd August in 2004 in the Gornay Proleyka village in Volgograd region (coll. PGU No. 1154). The animal was in the colony of 27 individuals, which was placed between the concrete slab outbuildings for keeping cattle. All of these individuals had white spots of different size and shape, which were located on the ventral side of the body and clearly differed from the general background color of the coat.

Two other cases of partial albinism—leykizm were reported on young females *Pipistrellus nathusii* (Keyserling, Blasius, 1839) and adult female *Myotis mystacinus* (Kuhl, 1817). Both individuals were caught on the Samarskaya Luka (Samara region). First caught one on the 8th of July 2012 (Figure 3) on the banks of the Volga river (Figure 4). The animal is fed together with other individuals of its species, flying between the trees at the

Table 1. Morphological indicators of bats with signs of albinism.

Species	No.	Sex	A	L	C	Au	Tr	R	W
<i>E. s. turcomanus</i>	468	♂	ad	67.5	54.0	21.2	-	47.5	16.5
<i>E. s. turcomanus</i>	801	♀	ad	72.7	49.3	18.6	10.0	48.8	16.8
<i>E. s. turcomanus</i>	804	♀	ad	71.5	46.1	19.4	8.9	48.1	17.9
<i>E. s. turcomanus</i>	1154	♀	s/ad	74.0	48.3	18.3	10.0	48.0	17.4
<i>M. mystacinus</i>		♀	ad	40.0	34.7	14.7	6.7	34.2	6.0
<i>P. nathusii</i>		♀	s/ad	49.9	38.4	12.1	6.7	38.4	7.9

No.—number in a collection; A—Age; L—body length; C—tail length; Au—ear length; Tr—tragus; R—forearm length; W—Weight (body mass).



Figure 1. *Eptesicus serotinus turcomanus* with symptoms of partial albinism.



Figure 2. The surroundings of lake Baskunchak Astrakhan region, mountain Bogdo: habitat *Eptesicus serotinus turcomanus* (photo by D. Smirnov).

level of CZK. The second animal is detected on the 20th of November in 2013 (**Figure 5**) during hibernation in artificial dungeon on the destruction of 200 m from the entrance (**Figure 6**). Animal wintered on the ceiling in a group of four individuals of their own species. The animals had dirty yellow and yellow-fawn color of the coat, red eyes, almost white ears, pale-pink colored limbs and noses. For other morphological indices (forearm length, dentition), they had no differences with other individuals of the same species.

It should be noticed that the detection of the individuals of one breed with signs of albinism is not unique. For example, the capture of the full albino *E. serotinus* in Moldova [15] is well-known, while in the Netherlands was

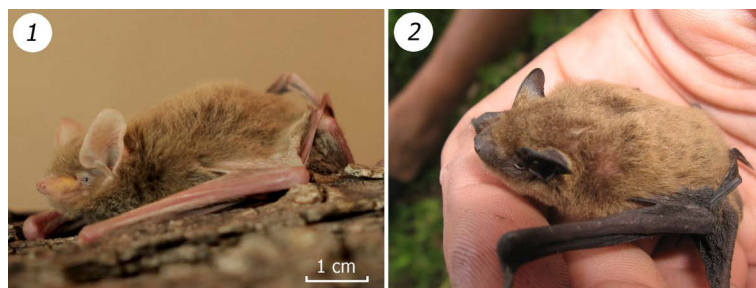


Figure 3. Young individuals of *Pipistrellus nathusii* with symptoms of partial albinism (1) and with normal coloring of a wool cover (2).



Figure 4. Bank of the Volga river, overgrown with woody vegetation: Habitat *Pipistrellus nathusii* (photo by D. Smirnov).

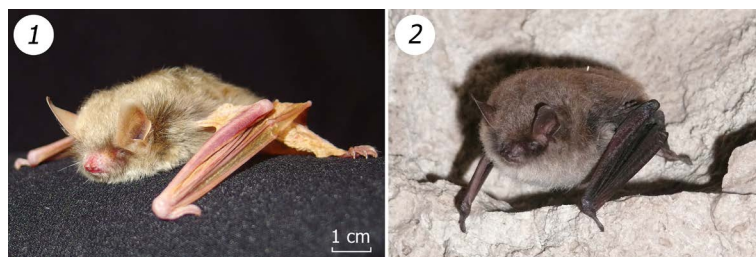


Figure 5. *Myotis mystacinus* with symptoms of partial albinism (1) and with normal coloring of a wool cover (2).

caught bat with partial albinism (<http://www.natuurbericht.nl/?id=3897&cat=zoogdieren>). All this can't be said about the second breed, because the finding of such animal with an anomaly was made for the first time. However, recently in England with exactly the same features as the *P. nathusii* had, was produced the individual *P. pygmaeus* Leach 1825 (<http://www.inmagine.com/imagebrokerrm-081/ptg01125051-photo>). Among other relatives of the species *P. nathusii* the full albinism known in *Pipistrellus abramus* Temminck 1840 [16], *P. pygmaeus* [7], *P. pipistrellus* (Schreber, 1774) and *P. subflavus* (Cuvier, 1832) [2].

M. mystacinus's partial albinism was first registered in the Netherlands [17]. There was caught a male with white colored belly and tips of both wings.

In conclusion, we should notice that detection animals with complete albinism in Russia are virtually unknown.



Figure 6. Artificial underground (tunnel) in the Samarskaya Luka: Wintering *Myotis mystacinus* (photo by D. Smirnov).

The only exception was the only case when the second half of September 2010 in the east part of Russia on Kunashir Island (Southern Kuriles) was caught an almost white individual *Myotis macrodactylus* (Temminck, 1840) (<http://cryptozoology.ru/index.php?name=News&file=print&sid=117>). According to the staff of the Kuril Reserve the animal should be sent to the Zoological Museum of the Biologosoiiled Institute, Eastern Branch of the Russian Academy of Sciences.

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