First record of a flavistic lesser horseshoe bat *Rhinolophus hipposideros* (Bechstein, 1800) in Slovenia

Prva najdba flavističnega malega podkovnjaka *Rhinolophus hipposideros* (Bechstein, 1800) v Sloveniji

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An unusually coloured lesser horseshoe bat (*Rhinolophus hipposideros*) individual was observed by the Group for bats during the Biology Students Research Camp »Pivka 2012« on 21. 7. 2012 in the Church of St. Lovrenc at Dolenja vas near Cerknica in the SW part of Slovenia (Gauss-Krüger coordinates: 71347, 449179 (ARSO 2012)). It was part of the nursery colony that consisted of 58 adults, 26 of which were females with juveniles. Bats were positioned in the belfry, in the partition above the bells. At the time of our survey, the church's attic was being renovated, but the belfry remained untouched. Bats disturbance and change of roosting site can probably be excluded as the records from 2006 and 2010 confirmed presence of the bats only in the belfry (CKFF 2012). It is very likely that the attic renovation did not affect conditions in the belfry also due to the lack of direct connection between the attic and the belfry.

The observed individual with colouration anomaly was an adult female with a normally coloured juvenile. It had beige-coloured fur and the same colouration of the skin on the hairless areas of the muzzle and ears. Membranes and protuberances on the nose were not translucent. Due to the absence of pigments on the membrane, carpals and metacarpals were pink-coloured. The observed female meets the criterion of flavism, type of hypochromatism, where affected individuals have yellow or red hair on the insufficiently pigmented skin (Červený 1980). In the case of flavistic male lesser horseshoe bat from Jeseníky Mountains (Czech Republic), the colouration was described as ochre (Červený 1980) and we could apply this description also to the individual from Dolenja vas. Dorsal fur of adult lesser horseshoe bats is usually greyish brown to yellowish brown, while ventral side is paler grey-white (Dietz et al. 2009, Petrinjak 2009). Young animals are generally grey (Dietz et al. 2009).

We were not able to catch the observed individual, but we had the opportunity to observe it for quite some time and to take some in loco photos. A reddish colour was seen in the eyes, but it is hard to confirm that the iris was completely red, because of the distance from which the individual was observed, and due to the photos' insufficient quality. Some authors define red or pink iris as an indicator of the degree of albinism, because red tinge in the iris shows absence of pigments (Murariu & Chisamera 2006).

Our observation is the first observed hypomelanistic lesser horseshoe bat in Slovenia and, according to the available literature, the first observation of a flavistic female with juvenile for the species, which suggests that flavism does not represent a mating barrier. In Europe, coloration anomalies have been recorded in at least 17 different bat species (Gaisler & Pokorný 2002), while complete albinism in bats was recorded in at least 8 bat families and 38 species all over the world (Uieda 2000). Among bats leucism, localized lack of pigment, is more often found (Bartonička & Buřič 2007, Haarsma 2008), while observations of flavism are, at least in literature, rarely described. Albinism among lesser horseshoe bats is suggested to be relatively frequent (Gaisler et al. 2011, Uieda 2000). Observations of complete albinism in lesser horseshoe bats are known from different localities in Austria (Reitter 2010), from the Czech Republic (Horáček 1995, Bartonička and Buřič 2007, Gaisler et al. 2011) and possibly from eastern Slovakia (Danko 1995). The repeated observations in Jeseníky Mountains in the Czech Republic suggest that the Jeseníky local population has a fixed frequency of the albinotic allele (Bartonička & Buřič 2007). Finding the causes of colouring anomalies that occur in some of the mammals is continuing, given that the lack of respective pigments in food or environmental factors are not sufficient for a convincing explanation (Murariu & Chisamera 2006).

Among all the bat species present in Slovenia, the highest number of maternity roosts is known in lesser horseshoe bat (Petrinjak 2009). Since their roosts are well known, we will have the opportunity to observe possible specimens with colouration anomalies in the vicinity of our record in the following years.

References

ARSO (2012): Atlas okolja. http://gis.arso.gov.si/atlasokolja [accessed on 20.8.2012]

Bartonička T., Buřič Z. (2007): Records of the albino lesser horseshoe bats (*Rhinolophus hipposideros*) in the Jeseníky Mts (Czech Republic). Vespertilio 11: 167-169.

CKFF (2012): Database of the Centre for Cartography of Fauna and Flora, state on 20.8. 2012.

Červený J. (1980): Abnormal coloration in bats (Chiroptera) of Czechoslovakia. Nyctalus 1: 193-202.

Danko Š. (1995): A finding of conspicuously coloured specimen of the lesser horsehoe bat (*Rhinolophus hipposideros*). Netopiere 1: 103-104.

Dietz C., von Helversen O., Nill D. (2009): Bats of Britain, Europe and northwest Africa. A and C Black, London, 400 pp.

Gaisler J., Kovařik M., Štefka L. (2011): Two unusual records of the lesser horseshoe bat (*Rhinolophus hipposideros*) in the Moravian karst (Czech Republic). Hystrix It. J. Mamm. 22: 73-79.

Gaisler J., Pokorny M. (2002): Second case of a partial albinism in the noctule bat (*Nyctalus noctula*). Nyctalus, Berlin: NABU, 8(2): 179-181.

Haarsma A. (2008): Manual for assessment of reproductive status, age and health in European Vespertilionid bats. Electronic publication, Version 1. Hillegom (Holland), 62 pp. http://www.vleermuis.net/index.php?option=com_docman&task=doc_download&gid=197&Itemid=449 [accessed on 20.8.2012]

Horáček I. (1995): A total albinism in *Rhinolophus hipposideros*. Netopiere 1: 105-106.

Murariu D., Chisamera G. (2006): Partial albinism in noctule bat – *Nyctalus noctula* (Schreiber, 1774) (*Mammalia: Chiroptera*) from Romania. Travaux du Muséum National d'Histoire Naturelle »Grigore Antipa« 49: 353-357.

Petrinjak A. (2009): Mali podkovnjak. In: Presetnik P., Koselj K., Zagmajster M. (Eds.), Atlas netopirjev (Chiroptera) Slovenije, Atlas of bats (Chiroptera) of Slovenia. Atlas faunae et florae Sloveniae 2. Center za kartografijo favne in flore, Miklavž na Dravskem polju, pp. 44-47.

Reitter G. (2010): Kleine Hufeisennasen einmal anders. Kopfüber 2: 4.

Uieda W. (2000): A review of complete albinism in bats with five new cases from Brazil. Acta Chiropterol. 2(1): 97–105.

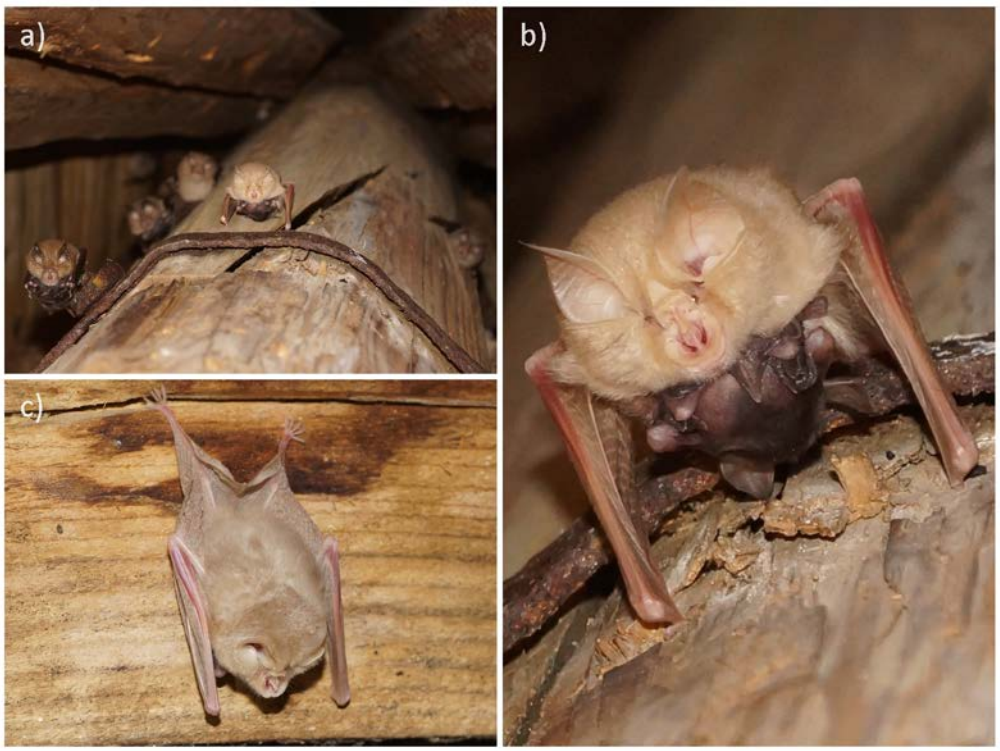

Figure 1. Flavistic lesser horseshoe bat *Rhinolopus hipposideros* female with a juvenile in a church belfry at Dolenja vas, SW Slovenia; a) flavistic female in a nursery colony, b) uniform beige colouration and red eyes indicate flavism, juvenile is normally pigmented, c) dorsal view of flavistic female (photo: Aja Zamolo).

Slika 1. Flavistična samica malega podkovnjaka *Rhinolopus hipposideros* z mladičem v zvoniku cerkve v Dolenji vasi, JZ Slovenija; a) flavistična samica v porodniški koloniji, b) enotna bež obarvanost in rdeče oči nakazujejo flavizem, mladič je normalno obarvan, c) flavistična samica s hrbtne strani (foto: Aja Zamolo).