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Adult coloured juveniles of *Apodemus flavicollis* (Rodentia: Muridae)

Dospelo sfarbené juvenily *Apodemus flavicollis* (Rodentia: Muridae)

Martina JURČOVIČOVÁ, Zuzana HIADLOVSKÁ & Ľudovít KOCIAN

Department of Zoology, Faculty of Science, Comenius University, Mlynská dolina B1, SK–842 15 Bratislava, Slovakia; matajura@gmail.com

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Abstract. In this paper we describe an interesting case of adult coloration in juveniles of *Apodemus flavicollis* (Melchior, 1834). It is well known that juveniles and also subadults of wood mice of the subgenus *Sylvaemus* are gray and they change this juvenile coloration to adult coloration when they mature. Among 271 juveniles of *A. flavicollis* caught in three localities of Slovakia during the years 2000–2006, two juveniles were adult coloured. These juveniles were very young, one had not even left the nest (weight 2.5 g) and the other one had probably just left the nest (weight 5 g). Usually older juveniles are caught. There are several possible explanations for these cases – individual variability in the development of coloration of juveniles, colour mutation or possibility that juveniles change the colour of their pelage twice.

Key words. *Apodemus flavicollis*, pelage colour, juveniles.

Determination of age groups in wild rodents in the field is a question in which scientists have been interested for many years. There are many methods how to determine the age and one of them is the colour of pelage (Montgomery 1980, Mazurkiewicz & Rajska-Jurgiel 1987, Kamler et al. 1998, Fasola & Canova 2000, etc.). Juveniles of wood mice of the subgenus *Sylvaemus* are gray colored and during adolescence the colour of their pelage changes into a species-specific colour (Záhradníková 1999, Stanko in lit.).

The research of communities of small mammals was carried out in three localities of Slovakia; Sur (48° 13’ N, 17° 13’ E), Fugelka (48° 22’ N, 17° 18’E), Osobita (49° 16’ N, 19° 45’ E). Small mammals were captured by live-traps of the “Chmela” type. The CMR (catch-mark-release) method was used. The site of capture, species, sex, reproductive status, body weight and length of each captured individual were noted. Length of the hind foot of *Apodemus flavicollis* (Melchior, 1834) was measured as well. Molecular identification was used to determine disputable individuals of the genus *Apodemus* (Michaux et al. 2001).

For this analysis we took into consideration only juveniles – individuals which weighted less than 17 g (Gliwicz 1988).

During seven years (2000–2006), altogether 271 juveniles of *Apodemus flavicollis* were caught (35 juveniles weighted less than 10 g). 253 juveniles were gray, without a visible lateral line between back and abdomen. Besides gray juveniles we caught 16 individuals which were just changing the colour of their pelage. Weight of the smallest individual changing its colour

was 13 g, but 60% of the animals weighted from 16 to 17 g. Their pelage did not have a sharp lateral line between back and abdomen or vivid adult coloration.

On 16 August 2005 we accidentally found one individual of *A. flavicollis* (Fig. 1) on the ground. The body weight of this individual was 2.5 g, body length 45 mm, tail length 30 mm and its eyes were not open. We suppose that its mother was just transferring it, when we disturbed her. According to Záhradníková (1999), juveniles of *A. flavicollis* and *A. sylvaticus* open their eyes on their 12th to 14th day after birth. Body features of the captured individual correspond with data in the growth curve for juveniles measured from the 10th to 14th day after birth by Pachinger (1993). We did not manage to identify its sex. In spite of its juvenile appearance, its back was red, abdomen white and the lateral line between back and abdomen was sharp, which is a typical adult coloration. The individual was not able to walk, it just crawled. Pachinger (1993) found that juveniles started walking first on the 17th day after birth. Juveniles are completely haired on the 11th day after birth (Hanáková 1995). According to all above data we consider this juvenile to be about two weeks old.

Another individual with a sharp lateral line, white abdomen and brown back and with an evident throat spot was caught on 21 July 2006. It was a female. The weight of this individual was 5 g, body length 58 mm, length of the hind foot was 19 mm and tail length was 50 mm. The eyes were only half-open. This juvenile was about 18–23 days old, which was determined according to body growth and tail and hind foot length (Pachinger 1993). Záhradniková (1999) and Juškaitis (in litt.) mentioned that subadults have gray coloration as well as juveniles and the throat spot is apparent only after colour changing. Stanko (in lit.) observed colour changing just in individuals which weighted more than 17 g.

To avoid false determination, we identified these two juveniles also using molecular methods, which confirmed our previous determination to *Apodemus flavicollis*.

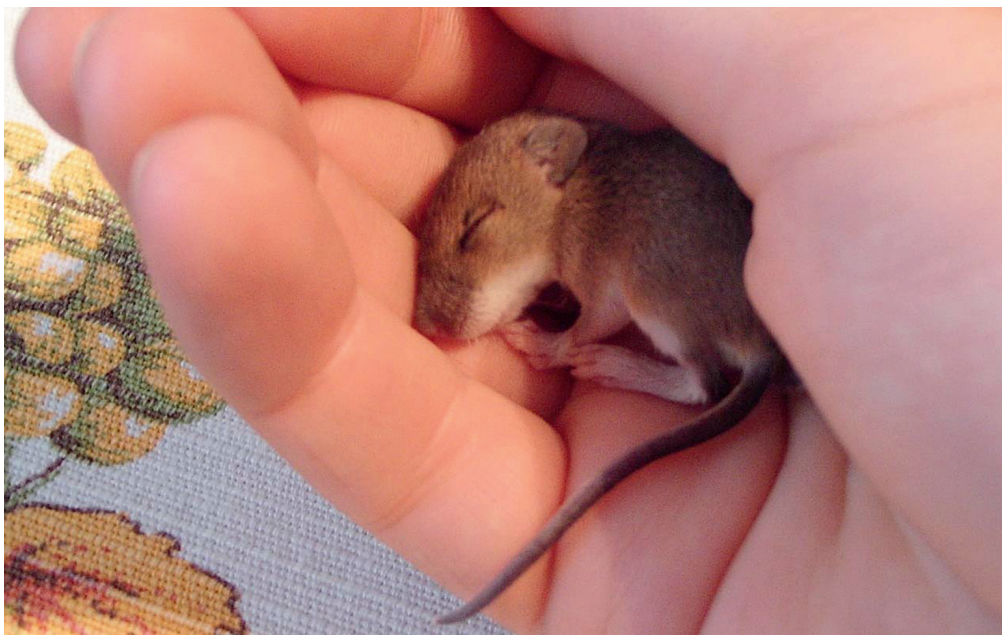

Fig. 1. Juvenile caught in August 2005 with eyes not open.
Obr. 1. Juvenilný jedinec odchytený v auguste 2005 s neotvorenými očami.

There are some possible explanations. The first one is that this kind of coloration was a result of individual variability in the development of coloration of juveniles.

Another possible explanation is that both of these cases were colour mutations. Colour mutations are known among wild living small mammals (Baláž et al. 2007, Kocian & Žiak 1992, Literák & Zejda 1995, Pachinger 1974, Holišová et al. 1964, etc.), but these mutations were studied only in adult individuals, while no data are available on colour mutations of juveniles.

The last explanation could be that young animals change the colour of their pelage twice, for the first time just before leaving the nest to gray colour and for the second time when they mature to adult colour. Because the two juveniles either had not left the nest or had left the nest just before we caught it and it is not usual to caught so young animals. To confirm this explanation, laboratory experiments with juveniles from their birth to maturation are required.

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Je všeobecne známe, že juvenilné a subadultné jedince ryšaviek z podrodu *Sylvaemus* sú šedo sfarbené a prefarbujú sa počas dospievania. Spomedzi 271 juvenilov *A. flavicollis* Melchior, 1834) ktoré sme odchytili počas 7 rokov (2000–2006) na troch lokalitách v rámci Slovenska, boli 2 juvenily adultne sfarbené. Tieto jedince boli veľmi mladé, jeden ešte neopustil materské hniezdo (vážil 2,5 g, predpokladáme, že ho matka práve prenášala, keď sme ju vyrušili) a druhého sme odchytili pravdepodobne v čase opúštania hniezda (vážil 5 g). Zvyčajne sú odchytávané jedince omnoho staršie. Núkajú sa nám viaceré vysvetlenia – individuálna variabilita vo vývine sfarbenia mláďat, farebná mutácia alebo možnosť, že juvenily menia farbu srsti dvakrát.

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