

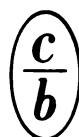
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NATURE OF THE VARIABILITY OF THE COLOR
OF WOOD MICE IN VARIOUS REGIONS OF THE
RANGE OF THE SPECIES

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Most of the subspecies of the wood mouse Apodemus sylvaticus L. are isolated on the basis of negligible differences in color, size, and shape of the spots, body and skull size. Moreover, many researchers (Larina, 1958; Morgilevskaya, 1958; 1962; Kadatskii, 1964, etc.) emphasize the substantial variety in the variability of morphological characteristics of the species, especially the color.

We studied the variability of the color of wood mice within one population, among populations of one subspecies, and, for comparison, in a series of mice of different subspecies inhabiting the territory of the USSR (Larina, 1958). The use of the colorimetric method permits an objective evaluation of the differences in color in groups compared (Bol'shakov, 1967). The animals (600 specimens) were trapped in the summer period in various regions of the range of the species, the largest series in the Southern Urals, in Udmurtskaya ASSR, and in the Chimkent region (Aksu-Dzhabagly National Forest).

In summer mice from the mountain forest belt of the ridges of the Southern Urals, two groups are distinguished according to color: "dark" — whiteness 5.4 ± 0.2 , color index $123 \pm 1.1\%$ — and "light" — whiteness 6.5 ± 0.2 and color index $124 \pm 1.4\%$. Investigations conducted for two years have revealed that such dimorphism of the color of individuals of a population is not associated with their inhabiting a definite type of biotope; it is maintained in different years and can be considered as a unique manifestation of intra-population variability. Zimmerman (1956) believes that in wood mice the appearance of dark mutants is associated chiefly with regions characterized by high moisture content. The variability of the color of wood mice is especially substantial with respect to whiteness: the coefficient of variation of this index in wood mice of the Southern Urals was 22.4%; in wood mice of the Aksu-Dzhabagly National Park it ranged from 14.6 to 21.8% in various biotopes. The variability of the color index was lowered by 4.0 and 2.7-4.3%, respectively. In animals from the Aksu-Dzhabagly National Park, a biotopic variability of color is also observed: mice inhabiting rock piles differ from the mice of regions with shrubbery. It is characteristic that the silver voles from the same locality have no color differences. Similar variability has been noted in wood mice in the Carpathians (Andreev and Gorbik, 1954), in the Talysh Mountains (Kadatskii, 1964), and in a number of other regions.

A comparison of series from different parts of the range of the species showed that dark individuals from the Southern Urals show no significant differences either in whiteness or in color index from wood mice from the European part of the USSR (mixed forests of the Udmurtskaya ASSR — whiteness 5.3 ± 0.1 , color index 122 ± 1.5), while lighter individuals are entirely similar in whiteness to the wood mice of the Adzharo-Imeretinsk mountain range (5.4 ± 0.2); the differences existing between these groups in color index are statistically insignificant (119 ± 2.3).

Thus, as a result of substantial intrapopulation variability in the mountains of the Southern Urals, specimens may be encountered belonging to different subspecies according to color: Apodemus sylvaticus uralensis Pall., A. s. sylvaticus L., A. s. ciscaucasicus Ogn.

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Wood mice trapped at the upper boundary of the range (Pamir, natural boundaries of the Bordabo and environs of the Dzhilyands village of the Gorno-Badakhshanskaya autonomous region) differ greatly in color from the wood mice of the Gissarsk mountain range, although territorially they should belong to the same subspecies A. s. pallipes Barret-Ham. The differences pertain both to whiteness (7.3 ± 0.3 and 7.9 ± 0.1) and to color index (119 ± 2.0 and $126 \pm 1.6\%$). The very light color of individuals from the Tabobsk gap (Tadzhikistan), as well as from the high mountain belt of the mountains of Talasskii Alatau (Aksu-Dzhabagly National Park, natural boundary of Ul'ken-Kaindi — whiteness 11.02 ± 0.35). The differences in the color of wood mice trapped close to the village of Kobi (Main Caucasian mountain ridge) from the mice of the Adzharo-Imeretinsk mountain ridge are more substantial than those between the latter and animals of the Southern Urals.

Hence, the very substantial intrapopulation and interpopulation variability of the color of the wood mouse can entirely cover the geographical differences, in view of which the use of this characteristic for the isolation of subspecies in Apodemus sylvaticus is relatively unacceptable.

LITERATURE CITED

- Andreev, I. F. and Gorbik, P. V., "Systematic characterization of wood mice of the Carpathian region," Uch. Zap. Kishinevskogo Gosuniversiteta, No. 13 (1954).
- Bol'shakov, V. N., "Study of intraspecies variability of the red vole by the method of colorimetric evaluation of fur color," Trudy MOIP, 25 (1967).
- Kadatskii, N. G., "Rodents of Talysh and the Lenkoransk lowlands and their range over geographical regions," Zool. Zh., 43, No. 11 (1964).
- Larina, N. I., "The evolutionary significance of geographical variations and interspecies hybridization in rodents," NDVSh, Biol. Nauki, No. 4 (1958).
- Morgilevskaya, I. E., "The Klukhorsk population of the wood mouse," Tr. Inst. Zoologii AN GruzSSR, 16 (1958).
- Morgilevskaya, I. E., "A new subspecies of the wood mouse from Georgia," Soobshch. AN GruzSSR, 29, No. 6 (1962).
- Zimmerman, K., "Der Umbrons-faktor bei Waldmaus," Zool. Jahrb., Part 3, 84, Nos. 4-5 (1956).