

Unusual colour form of Siberian pit viper (*Gloydius h. halys*) from the northern edge of its area

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Abstract. In this report, I describe the unusual colour form of Siberian pit viper (*Gloydius h. halys*) from the marginal population in Novosibirsk region (West Siberia, Russia). This morph was named “bronze” and occurs of 16% of individuals. To the best of my knowledge, such colour pattern does not known from other parts of *G. halys* area.

Keywords. Pit viper, *Gloydius halys*, “bronze” pattern.

Diverse colour patterns of Squamates perform different important functions: thermoregulation, predators avoidance, mimicry, crypsis, protection of vital organs, and some other (Jackson et al., 1976; Sweet, 1985; Brodie, 1993; Brodie and Janzen, 1995; Tanaka, 2005). Within one species various colour forms (morphs) may reflect local adaptations to a given stimulus. For instance an increase of dark (melanistic) individuals may be affected by non-optimal thermal conditions as dark coloured individuals have some advantages for thermoregulation (e.g., Tanaka, 2005). On the other hand, proportion of different morphs may be influenced by random genetic drift (e.g., Bittner and King, 2003).

The Halys pit viper [*Gloydius halys* (Pallas, 1776)] is the most widespread species of the subfamily Crotalinae with 6 to 9 recognised subspecies (Orlov and Barabanov, 1999; Uetz and Hallermann, 2009). Since 2006, I have been carrying out on ecological and morphological research on this species in the southeastern part of Novosibirsk region (West Siberia, Russia) in the valley of river Berd'. A detailed description of study area is provided in Simonov (2009). This locality represents the isolated northwesternmost point of Halys pit vipers' distribution. Nearest neighbour populations are between 190 and 250 km distance (Simonov, 2008). During four years, 106 individuals of *G. h. halys* (except neonates) were captured and examined. To avoid repeated measurements, I used individual recognition of head coloration patterns combined with clipping of ventral scales.

Most of pit vipers in this population have a typical colour pattern, but 16% (n = 17) of snakes have a reduced band pattern. These individuals have a uniform color of brown-

ish tints covering dorsal and lateral parts of body, whereas head and ventral side display common pattern (Fig. 1). Some of them have a light or dark narrow vertebral strip and/or dotted lateral strips (Table 1). In addition, all abnormal coloured snakes have a light marks on the nape of the neck. This morph was named “bronze”, as Nilson et al. (1995) named very similar colour form encountered among *Vipera dinniki* and *Vipera lotievi*. Within *G. h. halys* the “bronze” morph occurs in both sexes, but it was also met in one juvenile snake.

Although the Halys pit viper is a very polymorphic species, individuals without typical banded pattern are very rare. Occurrences of completely black and red individuals of *G. halys* are known from Kirghizia and south Kazakhstan (Yakovleva, 1964; Kolbincev, 2006). Pestov (2003), who first discovered the considered population of *G. halys*, shortly mentioned the encounter of two “monotonous brown” specimens. Besides it, no addition-



Fig. 1. Bronze colour form (A) and normal colour pattern (B) of *Gloydius halys halys* from Novosibirsk region.

Table 1. Frequencies of Siberian pit viper (*G. h. halys*) colour forms in examined population from Novosibirsk region.

Colour form	Frequency, n (%)
Normal	89 (84%)
Bronze (uniform)	10 (9.4%)
Bronze (striped)	7 (6.6%)
Bronze (total)	17 (16%)

al records about bronze, not banded, individual snakes, apart those presently described, are available to date.

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