Melanism in the grass snake *Natrix natrix* (Linnaeus, 1758) from the Danube Delta Biosphere Reserve, Romania

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Abstract

Animal colouration has a significant ecological role in defense, reproduction, and thermoregulation. Besides potential disadvantages such as higher risk of predation, melanistic ectotherms may have certain physiological advantages such as more efficient thermoregulation in colder climates and thus, reduced basking time. The common grass snake (*Natrix natrix*) is a widespread species throughout Europe and Asia. Throughout its range it exhibits a wide range of colour polymorphisms, from olive to dark grey, even albinistic and melanistic. The melanistic morph of *N. natrix* from the Danube Delta Biosphere Reserve (DDBR) has been previously recorded. Between 2016 and 2021, we conducted fieldwork in DDBR with the aim to document the geographic range of melanistic grass snakes. During our surveys we observed *N. natrix* individuals with melanotic, complete, and partial melanistic expression in six localities, suggesting that the occurrence of grass snakes melanistic individuals in the DDBR is geographically widespread. However, the proportion of melanistic individuals in the general population of N. natrix from DDBR is unknown (i.e. at Histria 6.3% of the snake observed were melanistic). We observed both juveniles (n=2) and adults (n=11) with melanism, suggesting that individuals are born melanistic. Body size comparisons are not statically significant because of the low sample size. The *N. natrix* melanistic morph's geographical distribution in the DDBR is most likely due to an interaction of climate and habitats, which offer a thermal advantage in the face of predation pressure.

Keywords: colour morphs, melanotic, polymorphism, ectotherms