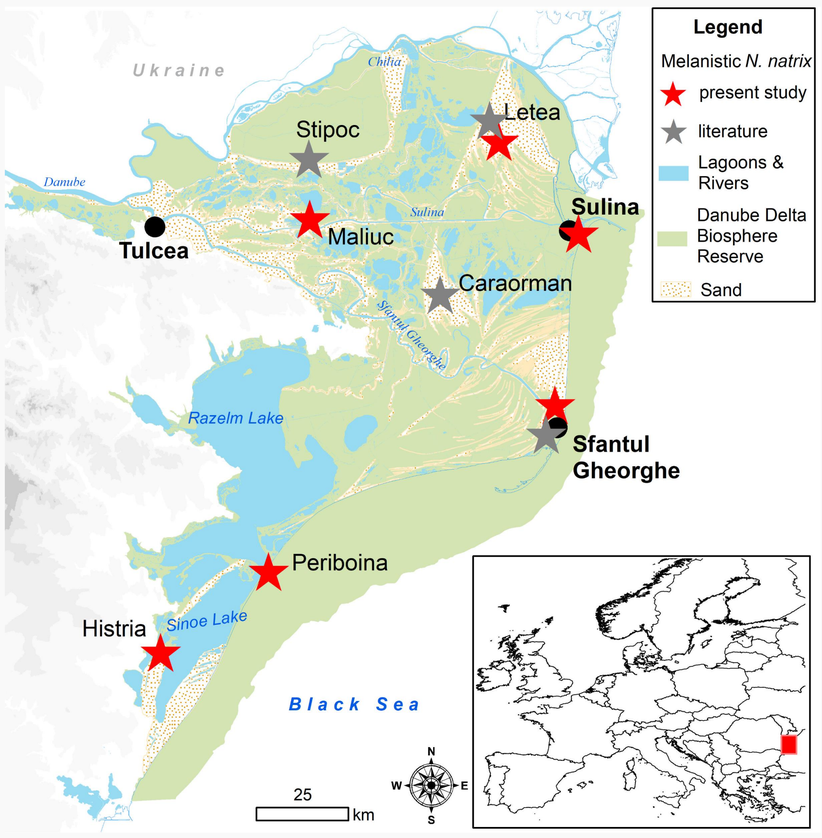
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Melanism in *Natrix natrix* (Linnaeus, 1758) from Danube Delta Biosphere Reserve, Romania

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INTRODUCTION

Melanism has a complex ecological role across animal taxa. Melanistic snakes employ different physiological and behavioral adaptations to gain thermoregulatory advantages.
The grass snake (*Natrix natrix)* is common and widespread in Romania, but melanistic individuals were mentioned only from the Danube Delta Biosphere Reserve (DDBR) in the past.
Our aim was to document the geographic range of melanistic grass snakes in the DDBR and to discuss possible advantages and disadvantages for the occurrence of melanism in the low altitude, warm and sunny climate of the study region.



METHODS

Field research was conducted between 2016 and 2021 in the DDBR.
Melanistic grass snakes were captured by hand, weighed (BM) and measured snout-vent length (SVL).
We categorized melanistic expression after Zuffi (2008) as such:
- complete melanistic morph: complete melanism with a few ventral white scales retained
- melanotic morph: melanism nearly entirely expressed except a few morphological characteristics which break melanistic expression
- partial melanistic morph: normal color pattern has an increased black pigmentation

RESULTS

13 melanistic grass snakes (11 adults, 2 juveniles) were caught in all 6 localities visited:
53.8% complete melanistic
30.8% melanotic
15.4% partial melanistic
All melanistic grass snakes were found in high density reed vegetation.

At Histria, a total of 48 grass snakes were caught.
Only 6.3% of captured snakes were melanistic (n=3).
Differences in BM and SVL between melanistic and non-melanistic grass snakes from this locality were statistically non-significant (df=1, F=0.00, p>0.1).

	SVL (mm) min-max mean	BM (g) min-max mean
Female (n=4)	580-870 688.8	70-284.8 143.6
Male (n=6)	500-882 648.6	42.9-191.4 98.8
Juvenile (n=2)	185-198 191.5	18.8-30 24.4

DISCUSSION

Melanistic *N. natrix* is geographically widespread in the DDBR. Most probably as a result of favorable interaction between climate (warm and sunny with cool, strong winds) and habitat (high density reed vegetation). This offers thermoregulatory advantages in the face of predation pressure.
The most encountered melanistic morph in our study was the complete melanistic, followed by the melanotic. The least encountered was the partial melanistic.
No significant differences were found in body length or body mass between melanistic and non-melanistic grass snakes in our small sample size from Histria locality.
Further studies are needed to test the differences in size and growth rate between color morphs in grass snakes.

References
Zuffi MAL (2008) Colour pattern variation in populations of the European Whip snake, *Hierophis viridiflavus*: does geography explain everything? Amphibia-Reptilia 29



Complete melanistic morph



Melanotic morph



Partial melanistic morph

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