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

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INTRODUCTION

The grass snake, *Natrix natrix*, is one of the most widespread snake species in Romania (1). It is known for the widespread polymorphism present in its populations throughout its range. In wild populations most of the individuals varies from gray to dark brown with two yellow spots in the back side of the head, but sometimes we can encounter gray individuals with two dorsal stripes or completely black individuals (2).

Melanistic individuals occur in populations of *N. natrix*, but the distribution of this phenotype is difficult to understand without mention of occurrence.

METHODS

The field research was conducted between 2016 and 2021 in the Danube Delta Biosphere Reserve (DDBR). Grass snakes were identified by morphological characteristics and were captured by hand. Individual measurements were taken for snout-vent length (SVL) and tail length (TL) in order to future analyse size cohorts in such individuals across the population.

RESULTS

During our surveys, 11 melanistic individuals of grass snakes, 5 females, 5 males and 1 juvenile encountered in DDBR from 5 localities: Letea, Maliuc, Sfântu Gheorghe, Histria and Periboina (Fig.2). SVL mean in males was 648.6 mm and in females SVL mean was 588 mm. Also the mean weight in males was 98.76g and in females 143.95g (Tabel 1). Individuals found in the field displayed complete melanism and others partial melanism (Fig.1).



Fig.1.Partial melanic type from DDBR (2021)

RESULTS (cont)

Tabel 1. Biometric measurements of grass snakes

Sex	Measurement	No. of individuals	Min	Max	Mean
F	SVL [mm]	5	185	870	588
	TL[mm]	5	106	170	151,2
	Weight [g]	4	69	284,8	143,9
M	SVL [mm]	5	500	882	648,6
	TL[mm]	4	139	180	161,7
	Weight [g]	5	42,9	191,4	98,7

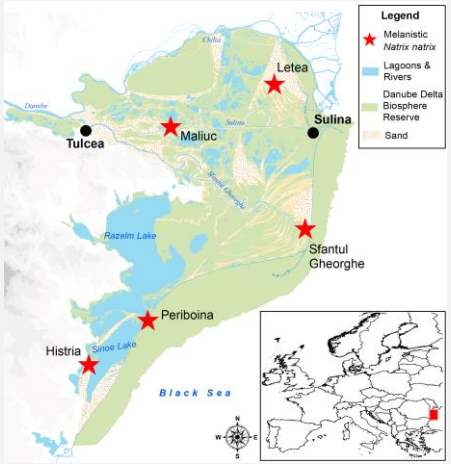


Fig.2. The location records of melanistic grass snakes in DDBR

DISCUSSION

Individuals found in the field displayed complete melanism and others partial melanism. The partial melanistic phenotype has presented few dorsal scales colored with dark brown pigment while others showed brown stripes (2).

Individuals with complete melanism are completely black dorsal and lateral sides. Melanistic individuals tend to be smaller than the normal coloured individuals of both sexes, which suggests an increasing of the predation pressure and minimal thermal benefits (3).

References

(1)Cogălniceanu D et al. (2013). Diversity and distribution of reptiles in Romania. ZooKeys 341: 49–76. doi: 10.3897/zookeys.341.5502
(2)Fuhn, I., Vancea, Ş. (1961). Reptilia (Testoase, Şopîrle, Şerpi) in Fauna R.P.R.', Ed. Academiei R.P.R., Bucureşti, Vol. XIV. p. 299-300
(3)Bury, S. et al. (2020). Melanism, body size, and sex ratio in snakes—new data on the grass snake (Natrix natrix) and synthesis. The Science of Nature, 107, 1-7

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