

Melanism variations in *Natrix natrix* (Linnaeus, 1758) and *Zamenis longissimus* (Laurenti, 1768) in Croatia

Varijacije melanizma kod *Natrix natrix* (Linnaeus, 1758) i *Zamenis longissimus* (Laurenti, 1768) u Hrvatskoj

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Melanism is considered as a common and highly variable phenomenon in snakes (LORIOUX ET AL., 2008), offering a variety of advantages: faster heating rates, higher mean body temperatures, protection from overheating (LUISELLI, 1992, FORSMAN, 1995, CLUSELLA-TRULLAS ET AL., 2008, BITTNER ET AL., 2002, TANAKA, 2005, GIBSON & FALLS, 1979), but also disadvantages, such as higher predation risk (CLUSELLA-TRULLAS ET AL., 2008). In some species, melanism is a Mendelian trait (KING, 2003) and it's appearance varies in frequency due to random genetic drift (BITTNER & KING, 2003). It is not rare among Grass Snake (*Natrix natrix*) (Linnaeus, 1758) populations, and dark specimens can be found throughout the distribution area (JANDZIK, 2004). The occurrence of melanistic colouration among Aesculapian Snakes (*Zamenis longissimus*) (Laurenti, 1768) is also known, but is far less frequent (EDGAR & BIRD, 2006). In this paper we present several individuals of *Natrix natrix* and *Zamenis longissimus*, displaying incomplete melanistic colouration, from various locations in Croatia, found between 2008 and 2010: Diviška (Island of Krk) (two *N. natrix*, X: 5481675, Y: 4984181), Zmajevac (Baranja) (two *N. natrix*, X: 5796776, Y: 5080849; one *Z. longissimus*, X: 5795946, Y: 5080155), Jezero (Island of Krk) (one *Z. longissimus*, X: 5466553, Y: 5003106), Bizek (Zagreb) (one *N. natrix*, X: 5566555, Y: 5077558), Majkovi (Dubrovnik) (one *N. natrix*, X: 5738792, Y: 4740729).



Figure 1. Melanistic Grass Snakes from (a,c) Zmajevac, (b) Bizek, (d,g) Diviška, (e,f) Majkovi

Slika 1. Melanističke bjelouške iz (a,c) Zmajevca, (b) Bizeka, (d,g) Diviške, (e,f) Majkova



Figure 2. Melanistic Aesculapian Snakes from (a) Zmajevac, (b) Jezero

Slika 2. Melanističke bjelice iz (a) Zmajevca, (b) Jezera

REFERENCES:

- BITTNER, T.D., KING, R.B. & KERFIN, J.M. (2002): Effects of body size and melanism on the thermal biology of Garter Snakes (*Tamnophis sirtalis*). *Copeia*. 2002: 477-482.
- BITTNER, T. D., KING, R. B. (2003): Gene flow and melanism in garter snakes revisited: a comparison of molecular markers and isnad vs. coalescent models. *Biological journal of the Linnean Society* 79: 389-399.
- CLUSELLA-TRULLAS, S., TERBLANCHE, J. S., BLACKBURN T. M. & CHOWN, S.L.K (2008): Testing the thermal melanism hypothesis: a macrophysiological approach. *Functional ecology* 22: 232-238
- EDGAR, P. & BIRD, D.R. (2006): Action Plan for the Conservation of the Aesculapian Snake (*Zamenis longissimus*) in Europe. Convention on the Conservation of European Wildlife and Natural Habitats.
- FORSMAN, A. (1995): Heating rates and body temperature variation in melanistic and zigzag *Vipera berus*: does colour make a difference? *Ann. Zool. Fennici* 32: 365-374

- GIBSON, A.R. & FALLS, J.B. (1979): Thermal biology of the common garter snake *Tamnophis sirtalis* (L.). *Oecologia* 43: 99-109.
- JANDZIK, D. (2004): Partial melanism in the Grass snake *Natrix natrix* (Reptilia: Colubridae) from northeastern Slovakia. *Acta Zoologica, Universitatis Comenianae* 46 (2): 75-77
- KING, R.B. (2003): Mendellian inheritance of melanism in the garter snake *Tamnophis sirtalis*. *Herpetologica* 59 (4): 484-489
- LORIOUX, S., BONNET, X., BRISCHOUX, F. & DE CRIGNIS, M. (2008): Is melanism adaptive in sea kraits? *Amphibia-Reptilia* 29: 1–5.
- LUISELLI, L. (1981): Reproductive success in melanistic adders: a new hypothesis and some considerations on Andrén and Nilson's (1981) suggestions. *Oikos* 64, 3: 601-604
- TANAKA, K. (2005): Thermal aspects of melanistic and striped morphs of the snake *Elaphe quadrivirgata*. *Zoological science* 22: 1173-1179