

First record of a grass snake *Natrix natrix* (Linnaeus, 1758) in Postojnska jama

PRVA NAJDBA BELOUŠKE *NATRIX NATRIX* (LINNAEUS, 1785) V POSTOJNSKI JAMI

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Reports on snakes found in caves in temperate regions are rare, which is not surprising, considering that snakes activity is related to ambient temperature (Gould & Keeton 1996). In the time of snakes' inactivity during the winter, temperate caves may represent suitable shelters for hibernation, as it was reported in several cases from North America (Drda 1968, Sexton & Hunt 1980). In tropics, on the other hand, snakes may use caves as shelters from high outside temperatures (Hobbs 2012) or they visit them for feeding (Humphreys 2012, Deharveng & Bedos 2012), either at the cave entrances, where they feed on emerging bats or birds (Esbérard & Vrcibradic 2007, Humphreys 2012), or in deeper cave zones to feed on bats (Herrid 1962, Cary 1981), birds (Price 2003, Waltham & Despain 2012), cave crickets (Brode 1958), and mice (Holman 1958). Yet, some species are reported to probably spend the whole life underground, e.g. the long tailed blind snake *Ramphotyphlops longissimus* (Aplin 1998) from the Barrow Island karst (Humphreys 2012) or Ridley's beauty snake *Orthriophis taeniurus ridleyi* (Butler, 1899) from Malaysia and Thailand. The latter can live only in caves feeding on bats and swiftlets, and even has reduced pigment (Price 2003).

In Slovenia, two reports on snakes found in caves have been published. In Škocjanske jame, a juvenile Aesculapian snake *Zamenis longissimus* (Laurenti, 1768) was found in November 2001, around 150 m from the cave entrance, where it was most likely hibernating (Koselj & Zagmajster 2001). The second report concerns Desna jama v Kalcah (probably Jama 2 v kamnolomu Drenov grič), where an adult grass snake *Natrix natrix* (Linnaeus, 1758) was found in June 2002, only 5

m deep from the cave entrance (Zazula 2003). Here we report on the third finding of a snake in a cave, with the greatest distance from the cave entrance reported so far in Slovenia.

On the 22nd of August 2012, an adult grass snake was found in the Spodnji Tartar part of Postojnska jama, which is about 600 m downstream the Pivka river from the entrance to Postojnska jama and about 400 m upstream from the entrance to Otoška jama. The snake was motionless on stones at least 2 m away from the standing water. This standing water body was within the bed of the Pivka river, but due to the low water levels it was away from the river current. The ambient temperature at the time of finding was not measured, but according to Šebela & Turk's (2011) measurements in different parts of Postojnska jama it was probably close to the interval 9.9 – 11.4 °C. Temperature of the Pivka river measured about 100 m upstream was 15.0 °C. The grass snake was in a seemingly poor body condition; it had loose skin on the rear half of its body and remains of an old injury on the left eye. We collected the individual and released it about six hours later in the surface Pivka river, 250 m upstream from the cave entrance. After its release, the snake swam in the river without any visible problems.

Grass snake is distributed in almost all Europe (Gasc et al. 1997) and is the commonest snake species in Slovenia, distributed from lowland to hilly areas of Slovenia, with the exception of high mountainous regions of the Alps (Krofel et al. 2009). The presence of the grass snake in Postojnska jama could have been a result of different events. The snake could get into the cave passively, i.e. washed in by the water current of the Pivka river. In the time of sampling, the water level was low (about 0.053 m/s 100 m from the entrance to Postojnska jama), yet even in these conditions it would take only about three hours for the snake to be washed to the locality where it was found. The other possibility would be that the individual was washed in when the water levels were greater and currents stronger. In the first part of 2012, precipitation was lower than average (Razdrto Meteorological Station, ARSO 2012), so such event would have to take place at least half a year ago. As the snake was found outside water, its completely passive input by water current to the point of finding is not very likely. The snake could also come into the cave actively, for

example, while searching for shelter from hot temperatures in the surface - in August 2012, the maximum daily temperatures exceeded 29°C (Postojna Meteorological Station, ARSO 2012). Later it could get confused and arrived so deep in the cave accidentally. The possibility of the snake coming into the cave actively for feeding purposes seems very unlikely, as the ambient temperatures inside the cave were low for the snake's active hunting. The possibility of the snake being brought to this part of the cave by a human is practically unfeasible, since this part of the cave is situated far from the general tourist route. We can conclude that the presence of grass snake so deep in Postojnska jama was an uncommon and accidental event.

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Figure 1. Fotografija belouške, najdene v Postojnski jami. Foto: Mateja Deržič.
Slika 1. Photo of a grass snake found inside Postojnska jama. Foto: Mateja Deržič.