

Interesting high altitude record of two common adders *Vipera berus* (Linnaeus, 1758) on the Pokljuka Plateau (Julian Alps, NW Slovenia)

Zanimiva najdba dveh osebkov navadnega gada *Vipera berus* (Linnaeus, 1758) na visoki nadmorski višini na Pokljuki (Julijске Alpe, SZ Slovenija)

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The common adder *Vipera berus* (Linnaeus, 1758) is the most widely distributed snake species in the world: its range extends from northern Scandinavia to the north of Albania and from Scotland on the west to the Sakhalin Island on Russia's Pacific coast in the east; it is found at altitudes from 0 to 2,600 m a.s.l. (Gasc et al. 1997, Andersson 2003, Carlsson 2003). Its habitats include hedgerows, forest edges, clearings, heaths, meadows, bogs and rocky slopes (Carlsson 2003). In Slovenia, the common adder is found mostly in hilly and mountainous parts of the Alps and the Dinarides (Tome 1996, Krofel et al. 2009). Individuals have also been reported from the Prekmurje region (Cafuta 2010), but the common adder is usually found at higher altitudes and is rare in lowlands (Krofel et al. 2009). It is more adapted to colder temperatures and higher humidity and therefore often found on northern slopes, in contrast with *V. aspis* and *V. ammodytes* (Mebert et al. 2015). The common adder is a protected species in Slovenia; it is legally protected by the Decree on Protected Wild Animal Species (Ur. I. RS 2004) and listed as a vulnerable species (V) in the »Slovenian Red Data List« (Ur. I. RS 2002).

Here we report on two individuals of the common adder, which were found on 2. 4. 2016 on the NE slope of Viševnik Mt above the Pokljuka Plateau in the Julian Alps, at 1,928 m a.s.l. (Fig. 1). Both

were basking on a branch of dwarf mountain pine *Pinus mugo*, just above the entrance to a newly discovered cave (46,35994° N; 13,90077° E) (Fig. 2). The surrounding vegetation is composed of grasses and alpine heath *Erica carnea*, which were overlain by approx. 2 m thick snow cover at the time of its detection. The maximum temperature on that day was 9.6°C, and the lowest -1.5°C during the night (measurements taken at the nearest weather station Rudno polje at 1,344 m a.s.l.; ARSO 2016). The cave is located approx. 600 m higher than the weather station, hence we can assume the temperatures there were several degrees lower. Above the entrance the snow had melted due to the warmer air current coming out of the cave. One common adder individual was coloured sandy brown, with a distinctive zigzag pattern, while the other was melanistic. Both responded to our presence by moving, with one individual coiling into a defensive position (Fig. 1).

Our finding is currently the highest record of the common adder in Slovenia, which includes information on exact location and a photograph of individuals. Up to now, the finding at Mali vrh, Belščica (the Karavanke mountain chain) at 1,886 m a.s.l. was considered the highest based on exact locality (Krofel et al. 2009). Krofel et al. (2009) disregarded the report from the area of Prehodavci in the Julian Alps at 2,100 m a.s.l. (Tome 1996) as the highest, as it contained no information on exact locality.

The common adder hibernates up to eight months, depending on the altitude, latitude, and exposition of its habitat; the hibernation is terminated when the maximum air temperatures reach 8° or 12°C for males and females, respectively (Viitanen 1967). Prestt (1971) reports on the following hibernation period for southern England: from the end of September till the beginning of March for adult males and till the end of March for adult females. Andersson (2003) estimates that the hibernation period north of the Arctic Circle in Sweden lasts from the beginning of September till the beginning of May for adult males and till the middle of May for reproductive females. These data refer to low altitudes (up to 450 m a.s.l.). To the best of our knowledge, there is no information on duration of hibernation of common adder at such high altitudes as our finding. It may be that the relatively warm air, coming from the cave, contributed to an earlier termination of hibernation

in these two individuals. Considering the presence of snow and low air temperatures in the area, we can hypothesize that the two individuals stayed in the vicinity of the cave entrance due to the warmer air, which provided a more suitable environment, especially during nighttime. It may be that caves at high altitudes represent potential refuges for snakes during low temperatures, as they provide more stable temperatures than the surface.

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Figure 1. Two specimens of the common adder (*V. berus*) found on 2. 4. 2016 at the entrance to a cave at 1,928 m a.s.l. on Pokljuka, NW Slovenia (photo: David Škufca).

Slika 1. Navadna gada (*V. berus*), najdena 2. 4. 2016 na vhodu jame na Pokljuki, SZ Slovenija, na 1.928 m nmv (foto: David Škufca).



Figure 2. Cave entrance on Pokljuka, NW Slovenia, above which the two common adders (*V. berus*) were found (photo: David Škufca).

Slika 2. Vhod jame na Pokljuki, SZ Slovenija, nad katerim sta bila najdena navadna gada (*V. berus*) (foto: David Škufca).