

## The highest-altitude recorded find of the adder *Vipera berus* (Linnaeus, 1758) in Slovenia on Mt Mali Kanin (Western Julian Alps)

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**Abstract.** The article describes the find of a single individual of the adder (*Vipera berus*) on Mt Mali Kanin (Western Julian Alps, Slovenian-Italian border) at 2,570 m a.s.l. on 8.7.2023. The animal with a total length of about 40 cm was photographed on a patch of soil and low alpine vegetation in a predominantly rocky habitat. According to the available published and unpublished data, this find is 325 m higher than the previous highest-altitude recorded find of the species in Slovenia.

**Izvelek. Najvišja dokumentirana najdba navadnega gada *Vipera berus* (Linnaeus, 1758) v Sloveniji z Malega Kanina (Zahodne Julijske Alpe)** – Prispevek opisuje najdbo enega osebk navadnega gada (*Vipera berus*) na Malem Kaninu (Zahodne Julijske Alpe, slovensko-italijanska meja) na nadmorski višini 2570 m dne 8.7.2023. Žival v skupni dolžini okoli 40 cm je bila fotografirana na zaplati zemlje in nizkega alpskega rastlinja v pretežno skalnatem okolju. Glede na razpoložljive objavljene in neobjavljene podatke je ta najdba 325 m višja od doslej najvišje zabeležene najdbe navadnega gada v Sloveniji.

On 8.7.2023, at 10:03 a.m., the second author of this field note (M.B.) noticed a snake while hiking at Mt Mali Kanin. The snake was basking on a hiking trail on a flat terrain about 13 m northwest of the Slovenian-Italian border milestone, which is positioned on the highest point of Mt Mali Kanin / M. Canin Basso (2,571 m a.s.l.) (Fig. 1). According to the Naravovarstveni atlas (ZRSVN 2021), the location of the find (46.357270° N, 13.437504° E; accuracy 3 m) lies in the Slovenian-Italian border area at an altitude of 2,570 m a.s.l., which corresponds to the estimated altitude in the field. M. B. managed to take photos of an individual and

later sent them to the first author of this field note (V. C.), who identified the individual as an adder (*Vipera berus*).



**Figure 1.** The highest point of Mt Mali Kanin (2,571 m a.s.l.) marked with a milestone. The adder (*V. berus*) was found close to the milestone (photo: Marko Berginc).

**Slika 1.** Z mejnikom označena najvišja točka Malega Kanina (2571 m n. m.). V bližini mejnika je bil najden navadni gad (*V. berus*) (foto: Marko Berginc).

The snake, measuring roughly 40 cm in total length, was light brown with clearly marked continuous dark brown zig-zag vertebral stripe (Fig. 2). This type of colouration is frequent in female adders (Arnold 2002; Kreiner 2007). Head scalation, visible on the photos, was typical of adders (Kreiner 2007; Speybroeck 2016) – the top of the head was covered with more than 12 scales, including a large frontal scale and two parietal scales that were all undivided. The animal was found on a patch of soil and low alpine vegetation between rocks in a predominantly rocky habitat. During the observation, the weather at Mt Mali Kanin was sunny with temperatures around 20°C and almost no wind. There were no other hikers to be seen on the hiking trail.

Mt Mali Kanin is part of Kaninsko pogorje (Kanin mountain range), the largest mountain massif in the Western Julian Alps in NW Slovenia. Kaninsko pogorje consists of limestone and some dolomite. The surface is heavily cracked and has numerous karst formations, a large number of abysses, and a small number of caves. Due to its high elevation, proximity and openness to the Adriatic Sea, Mt Kanin has a special mountain climate. Kaninsko pogorje is considered one of the wettest places in Slovenia, but the rainwater and melted snow sink rapidly (ZRSVN 2021).



**Figure 2.** The adder (*V. berus*) found on 8.7.2023 on Mt Mali Kanin at 2,570 m a.s.l. (Western Julian Alps, Slovenian-Italian border) (photo: Marko Berginc).

**Slika 2.** Navadni gad (*V. berus*), najden 8.7.2023 na Malem Kaninu na 2570 m n. v. (Zahodne Julijske Alpe, slovensko-italijanska meja) (foto: Marko Berginc).

The adder lives in most parts of northern Europe and Great Britain, has a fragmented distribution pattern in western and central Europe and the Balkans, and ranges far into Russia to Sakhalin, northern Mongolia, and northwestern China (Speybroek 2016; Munkhbayar et al. 2021). In the Alps, adders occur particularly between 1,500 and 2,400 m a.s.l., with occasional maximum altitude records of up to 3,000 m a.s.l. (Kreiner 2007). In Italy, the adder is extremely rare above 2,500 m, with the highest recorded elevation reaching 2,958 m a.s.l. (peak of Sassopiatto) (Sindaco et al. 2006). Austria's maximum altitude record is at 2,420 m a.s.l. (Cabela et al. 2001), while Switzerland's is at 2,700 m a.s.l. (Hofer et al. 2001).

In Slovenia, Škufca & Premate (2016) reported on a find of adders on the northeastern slope of Mt Viševnik at 1,928 m a.s.l. At the time, the find was considered the highest-altitude record of the species in Slovenia, which included details of the exact location and a photo of the individuals. Until now, the highest recorded published observation of the adder has been at 2,245 m a.s.l., near the peak of Mt Travnik (2,256 m a.s.l., Julian Alps) (Vek et al.

2019), where Damjan Šonc photographed an adult adder on 22.7.2009 at the exact coordinates 46.337504° N 13.744254° E (CKFF 2023, D. Šonc pers. comm.). The review of publicly available data on the distribution of the adder in Slovenia in the web databases Biportal (CKFF 2023) and iNaturalist (2023) shows that there are currently no unpublished records with an exact location above 2,245 m a.s.l. The adder from Mt Mali Kanin was observed 325 m higher than the individual from Mt Travnik and thus represents the highest recorded find of the species in Slovenia to date.

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