

Confirmation of the alpine salamander *Salamandra atra* (Laurenti, 1768) on Slovenian side of the Gorjanci Mountains

Potrditev planinskega močerada *Salamandra atra* (Laurenti, 1768) na slovenski strani Gorjancev

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The alpine salamander (*Salamandra atra*) lives in Slovenia mostly above the forest border. However, it can also be found as low as 500 m a. s. l. (Vek et al. 2019). Observations in the Julian Alps, Karavanke Mountains, Kamniško-Savinjske Alps,

Trnovska planota plateau and along Dinaric mountains towards Mt. Snežnik are common (Vek et al. 2019). Therefore, *S. atra* has Alpine and Dinaric distribution in Slovenia (IUCN 2023, Fig. 1). A seemingly disjunct population of *S. atra* lives also in the Gorjanci Mountains, situated in Southeastern Slovenia (Vogrin 1997), where one animal was found on 23. 5. 1994 in the virgin beech forest Gorjanci - Trdinov vrh (lat. 45.800600, long. 15.450350, 1050 m a. s. l.) by the last author of this notice. Additionally, there are two sites of the species near the state border on the Croatian side of the Gorjanci Mountains (Croatian name Žumberak Mountains); first in the Tomaševička pit (870 m a. s. l.; Kletečki 1990) and second in the Kuta virgin forest (800-900 m a. s. l.; Jeran et al. 2011). It seems that the species is rare in that area (Jeran et al. 2011).

On 29. 10. 2022, a team of speleologists of the Šaleški jamarški klub Podlasica Topolšica Speleoclub accompanied speleologists from the Kostanjevica na Krki Speleoclub during their visit of the Gorjanc Cave (lat. 45.800597, long. 15.450349, 760 m a. s. l., Fig. 1), a several hundred-metre-long and deep



Figure 1. Distribution of the alpine salamander (*Salamandra atra*) in Slovenia and its neighbouring countries and its records in the Gorjanci Mountains. General distribution according to IUCN (2023), Croatian sites in the Gorjanci Mountains according to Jeran et al. (2011). Map was prepared by Ali Šalamun.

Slika 1. Razširjenost planinskega močerada (*Salamandra atra*) v Sloveniji in sosednjih državah ter najdišča na Gorjancih. Splošna razširjenost glede na IUCN (2023), najdišča na hrvaški strani Gorjancev glede na Jeran et al. (2011). Karto je izdelal Ali Šalamun.

cave, with approximately 1.7×2 m wide entrance (Fig. 2a). At a depth of 30 m, on the ledge of the entrance pit, they photographed a salamander, which was later determined as *S. atra* (Fig. 2b).

The Gorjanc Cave is just 750 m afar from the closest site of *S. atra* in the Kuta virgin forest, 2 km from the Tomaševička pit and 11 km from the Gorjanci virgin forest (Fig. 1). It is situated at the lowest but still quite similar altitude and in similar environment of a beech forest than the other sites. This indicates a possible *S. atra* continuous area along the peaks of the Gorjanci Mountains connected with the old-growth beech forests. To the best of our knowledge, the population of *S. atra* in the Gorjanci Mountains is approximately 60 km East – NorthEast away from the closest sites on Mt. Snežnik (Fig. 1). However, we do not exclude a possibility of additional findings of the species between these two areas, as there are enough higher-altitude beech forests, which may be a suitable habitat for this species. It is interesting to note that the first Croatian observation is also from a cave (Kletečki 1990), and only intense focused research by Jeran et al. (2011) contributed to additional observations. Therefore, we assume that focused surveys could contribute also to further sightings of *S. atra* also on the Slovenian side of the Gorjanci Mountains.

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Figure 2. The entrance pit of the Gorjanc Cave (left) and the alpine salamander *Salamandra atra* found approximately 30 m below the entrance (right; photo: Matjaž Čuk).

Slika 2. Vhodno brezno jame Gorjanc (levo) in planinski močerad *Salamandra atra* najden približno 30 m pod vhomod (desno; foto: Matjaž Čuk).