



Conference Abstract

Activity of stygobionts in spring habitats: behavioral, ecological and evolutionary insights

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Abstract

Cave-dwelling animals might be regarded as dead-end points when it comes to their evolution and habitat exploitation. However, in the past different observations of the olms' typical troglomorphic populations have been reported for springs of Venetia Giulia, along with a community rich in stygobionts (Bressi et al. 1999; Stoch 2017). The aim of this work is to point out the non-random active use of surface habitats by this community, providing a comparison with the occurrence observed in caves and performing an assessment of factors favouring ecotone habitats exploitation. Since 2020 we started multiple day and night surveys of olms in both 71 springs and 11 caves. Each spring and cave habitat monitored has been characterised by respect to abiotic and biotic features, including planktonic and benthic prey availability. Additionally, cave and spring populations of *Troglocaris* sp. were tested to determine whether they showed any behavioral difference

regarding their response to light stimuli and predatory cues, as potential adaptations to the different conditions found in the two habitats. We used 34 individuals sampled from three springs and 24 from two caves of the Italian karst.

We detected the olm at least once in 12 springs, with a maximum of 9 individuals occurring together. Detection probability in springs and caves was similar. Spring habitats provided higher density of potential prey available. Olms seem to prefer springs without predator fish and temporary hydroperiod. We recorded in one spring a larva of 3.5 cm which could be the smallest ever recorded in the field. Preliminary results of the behavioral experiments show no susceptibility to light neither for spring nor cave populations of *Troglocaris* sp., as for chemical cues we expect a difference in reactivity depending on the habitat of origin of the shrimp, consistently with the top predator present.

We suggest that epigean habitats and borders with surface may have an underestimated importance for animals adapted to subterranean environments (Manenti and Piazza 2021), including the olm. Further studies focusing on the ipogean community which actively exploits spring habitats are underway, with the aim of determining the diel occupation of these complex ecotones.

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Conflicts of interest

None declared.

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