

Study on the differences of BMI between olms found in cave and the ones sampled in spring

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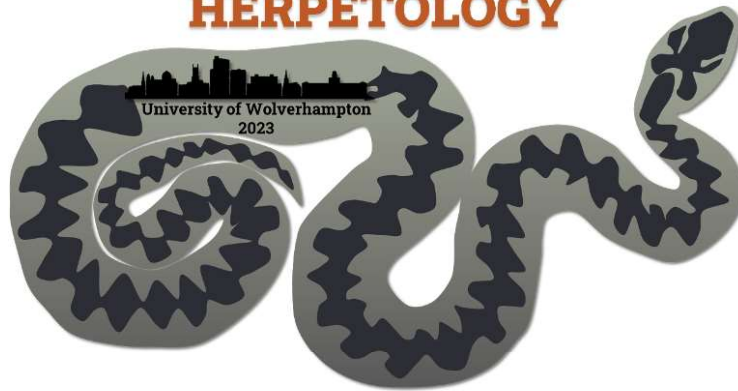
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amphibian and reptile
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Wolverhampton, United Kingdom

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Study on the differences of Body Mass Index between olms found in cave and the ones sampled in spring

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Adaptations to cave life such as blindness, depigmentation and extremely reduced metabolism are key features of stygobiont species (which live in underground aquifers) that should also

prevent their survival in surface habitats. Nevertheless, the olm *Proteus anguinus*, a completely stygobious amphibian, has been reported in spring environments. Moreover, our previous results showed that its presence is linked to very specific factors such as hydroperiod and the absence of potential predators. In light of these results, we conducted a study with the aim of verifying whether the *Proteus* benefits from exploiting the trophic resources of spring habitats. Since June 2020 we have sampled 64 springs and 12 caves in the Monfalcone province (Italy), finding a total of 73 specimens (36 in springs, 37 in caves). We photographed, measured, and weighed each individual and then calculated their Body Mass Index (BMI). At the same time, we sampled the macrobenthos community by counting in a 30x30 cm plot each 2x2 m² to quantify the trophic resources. Finally, we tested the relationship between BMI, place of sampling and macrobenthos using GLMMs. Our results show that olms found in springs had a significantly higher BMI than those found in caves. Furthermore, the BMI of springs' olms was significantly related to the amount of trophic resources available. These findings strongly suggest that *P. anguinus* does benefit from being in surface environments and that its presence in spring habitats is most probably due to the larger amount of trophic resources available.

Key words: *Proteus*, Cave, Spring, Trophic resources, Ecotones