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# Evoluzione

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## Book of Abstracts



## **Sympatric *Lepus* spp. in the central Italian alps host significantly different gut microbiotas**

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The mountain hare (*Lepus timidus*), an arctic–alpine species with relictual populations in the Italian Alps (>2000 m a.s.l.), is threatened by habitat fragmentation and the upward expansion of the European brown hare (*L. europaeus*), risking resource competition and hybridization. The gut microbiota is vital for animal health; therefore, investigating it in species exposed to rapid biotic and abiotic environmental changes may improve our understanding of their conservation status and extinction risk. However, the effects of sympatry on gut microbiota diversity and composition remain largely unexplored. Here, we compared the gut microbiota of these two species within an overlap zone in the central Alps (Val Mazia, Italy) by analyzing fresh fecal pellets collected along an elevational gradient (1000–2500 m a.s.l.). Species identity was confirmed using mtDNA barcoding, while the gut microbiota was characterized via amplicon sequencing (prokaryotic 16S rRNA V3-V4 and fungal ITS2). Distinct prokaryotic and fungal communities were detected for each species, even in areas where their distributions overlapped. Moreover, predicted functional profiles derived from taxonomic composition revealed differences in biosynthetic and metabolic potential between the host-associated microbiotas of the two species. Elevation influenced fungal, but not prokaryotic, diversity in both species. Overall, our findings suggest that sympatry has so far had a limited impact on the gut microbiota composition of either species. Considering climate warming and continued hunting restocking of *L. europaeus*, this study provides an important baseline for assessing the health and adaptability of *L. timidus*, as well as the effectiveness of conservation measures. Extending this research to additional areas of sympatry will be essential to determine whether gut microbiota composition can serve as an indicator of *L. timidus* conservation status across its range.