

# Hares in a changing environment: Mountain and Brown Hare interactions monitored in an alpine area through non-invasive genetics and camera traps

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## Premise

The genetic and ecological impacts of climate change on the mountain hare (*Lepus timidus*) are currently under investigation within the Adamello-Brenta Nature Park (Trentino, Central-Eastern Alps). In order to assess potential altitudinal range shifts and spatial overlap with the more thermophilic brown hare (*Lepus europaeus*), a non-invasive genetic survey has been implemented, relying on collection and genotyping of faecal samples. This approach also aims to evaluate the extent of climate-induced hybridization between the two species with potential adaptive consequences for *L. timidus*.

 **Prediction 1** – mountain hare is driven upwards by climate change and competition with the thermophilic brown hare

 **Prediction 2** – in overlapping ranges the two species hybridize, with possible adaptive introgression in the mountain hare

## Fecal sampling and hybridization analysis

Collection period: May 2023 – Dec 2024

**770** fecal samples collected (938 – 2548 m a.s.l.)

< 1600 m	n = 144
1600-1800 m	n = 167
1800-2000 m	n = 306
> 2000 m	n = 153

**200** selected samples genotyped at **12 autosomal STRs**

Species determination and hybridization analysis are in progress to determine spatial overlap and introgression.

## Camera trapping

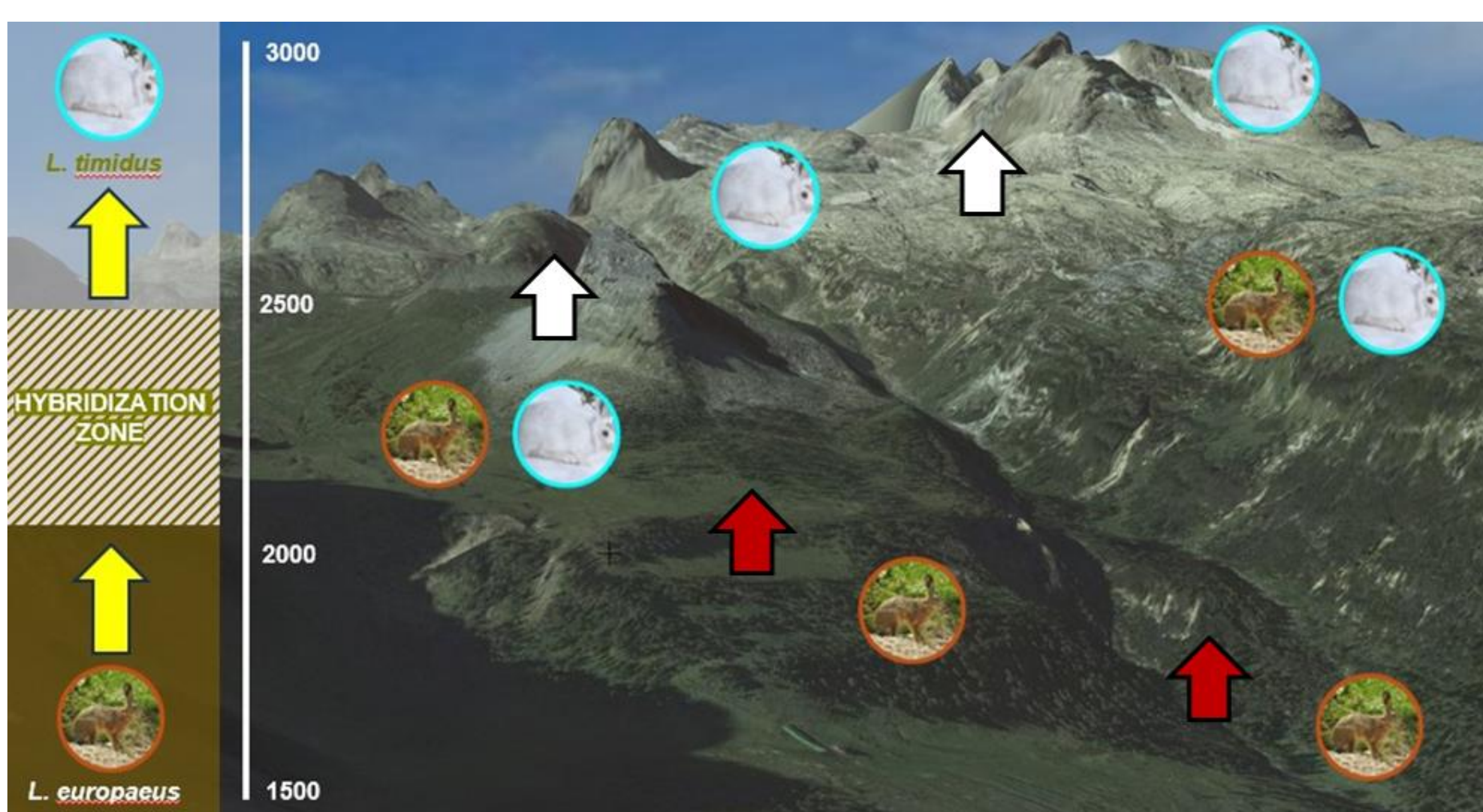


**24.242** photos analysed

**2.242** hares

- 391 brown hare (*L. europaeus*)
- 206 mountain hare (*L. timidus*)

**Large overlap in the detection range of the two species (900-2100 m a.s.l.)**



## Perspectives

The integration of non-invasive genetics with spatially-explicit camera trap data provides a powerful framework to assess species' responses to environmental changes in alpine ecosystems. Results from this study will contribute to understanding the dynamics of range shifts, interspecific interactions, and potential consequences of climate-driven hybridization in mountain hare populations.

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