Comparative landscape genetics of two partly sympatric hare species

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Résumé

In France, the mountain hare (*Lepus timidus*) distribution is restricted to alpine environments. Confined to high altitudes, mountain hare populations are biogeographically isolated and recent evidences indicate a decline in their spatial range. This decrease is most probably due to global warming and human activities (*e.g.*, change of land use), but an additional threat might come from the hybridization and competition with the European hare (*L. europaeus*). While being mostly distinct, the range of the two species overlap over an area from 1000 to 2000 m asl. In this contact zone, hybrids are regularly found, and the larger European hare is supposed to outcompete and displace the smaller mountain hare. Maintenance of mountain hare genetic variation will be of critical importance since low levels will limit its ability to respond to these different threats. As this maintenance is partly depending on gene flow within and among populations, we aimed to characterize the spatial environmental determinants of the gene flow of both species and to assess whether the inter-specific competition impact it or not. We used a machine-learning landscape genetics approach on $>$ 1000 individuals of each species covering most of the French Alps and genotyped at 12 microsatellites loci to identify the main variables affecting connectivity. Results will be used to inform management strategies for the conservation of the mountain hare.

Mots-Clés: Gene flow, Optimization, connectivity, Lepus, Resistance, Landscape genetics, competition

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