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genetic variation, habitat suitability and climate
change impact*

The impact of human activities in high altitude ecosystems is threatening the persistence of endangered and vulnerable species with dramatic consequences on population dynamics, genetic variability and integrity, and long-term population viability. Indeed, for sustainable conservation management, it is crucial to understand the ecological requirements of vulnerable and endangered species.

The Walia ibex is an endangered species currently confined to a small area in the Simen Mountains, Ethiopia. Human population growth, habitat loss and fragmentation have reduced its natural habitats. Moreover, climate change is expected to further compromise long-term survival. This study investigates the conservation status of this national symbolic species of high ecological and cultural significance, using a combination of genetic and ecological approaches

Genetic and ecological assessment demonstrated that the Walia ibex represents a distinct species in a single population, emphasizing the uniqueness of the species, with important implications to conservation and management. With a global distribution of merely 400 km², the species may be highly vulnerable to population decline and extinction. One potential threat could be dense populations of livestock. Indeed, the study demonstrated considerable overlap in dietary preferences between Walia ibex and the closely related domestic goat. This indicates a potential for competition between the two species, especially during the dry season, which should be taken into account in future conservation planning.

On the positive side, we identified potential suitable habitats in Simen Mountains and outside, where the species is not currently present. The Alpine ibex, endemic to the Alps in Europe, was driven very close to extinction in the early 19th century. The re-introduction to several sites within the historical range of the Alpine ibex in 1911 allowed the population to grow and to colonize many areas across all of the Alps (Hirzel et al. 2002). Such efforts are needed in order to conserve the Walia ibex in the Highlands of the Ethiopian mountains. A future presence of the Walia ibex in several interconnected mountain fragments would certainly increase the viability and future prospects of this charismatic flagship species.