

## **Patterns of spatio-temporal change in Alpine Ibex (*Capra ibex ibex*, L.) distribution in Gran Paradiso National Park**

M. Zurlo<sup>1,2</sup>, E. Avanzinelli<sup>3</sup> & B. Bassano<sup>1</sup>

<sup>1</sup> Gran Paradiso National Park, Via della Rocca 47, 10123 Torino, Italy

<sup>2</sup> Department of Biosciences, University of Milan, Via Celoria 26, 20133 Milano, Italy

<sup>3</sup> Institute of Atmospheric Sciences and Climate, CNR, Corso Fiume 4, 10133 Torino, Italy

Ibex is the symbolic species of mountain ungulates and currently it is classified at Least Concern by IUCN. In the last few decades there was a drastic decrease in population abundance linked with a reduction of stable occupied territories. Causes are still not completely clear but drastic decline is in partly due to recent climate changes.

The objectives of this study are to analyse the ibex distribution changes in Gran Paradiso National Park (GPNP) in 1985-2014 period, the type of relation between pattern of distribution and population trend and finally the evidence of most used ibex 's territories in GPNP.

To understand distribution patterns ibex census data are been analysed using metrics belonging to landscape ecology, an approach based on the notion that environmental patterns influence ecological processes. In particular 5 metrics are been used to assess the composition and spatial configuration of occupied areas, while distribution statistics provided a statistical summaries of obtained results.

Results showed a reduction of ibex occupied territories from 4587.50 ha in 1985 to 2437.50 ha in 2014 and fragmentation of ibex occupied territories with a strong increase in number of occupied patches from 130 units to 229 units.

We suggest that likely ibex distribution was influenced by different combined factors (landscape change, climate change, anthropic activities), which have to be still examined in depth. Landscape ecology approach may become an useful tool to understand the degree of fragmentation and connectivity of landscape defined on species distribution.

The understanding of processes behind Alpine ungulates distribution have to consider the influence of landscape patterns on environmental processes to improve the conservation efforts at management level.