

Runaway ibex on a steep slope: life history and dynamics of a declining population

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Alpine ibex (*Capra ibex*) went almost extinct, due to excessive hunting in the 19th century, surviving, allegedly with less than 100 individuals, only in the area now covered by the Gran Paradiso National Park (GPNP) in the North-western Italian Alps. Following a great conservation effort, in the last century ibex was reintroduced all over the Alps, and the "mother" population of GPNP in 1993 reached its peak population size (4990 ibex counted). Since then, however, the GPNP ibex population declined by 53% over the following 16 years. We show that adult survival and, to a lesser extent, fertility are determined by density dependence and winter snow cover. Despite milder winters since the mid eighties, possibly due to climate change, while the survival probability of adults increased, survival of kids declined dramatically, passing from an average value of 58% (% of kids which reach the yearling stage in 1981-1990) to an average of 36% in the last 10 years. Furthermore, female productivity (kids/females) declined although not as strongly (43% in 1981-1990 vs 36% in 1999-2008). With a simple simulation model we show how the strong decline in kid survival can explain, to a great extent, the population crash recorded since 1993. On the other hand, the recorded decline in female productivity can not explain the negative population trend in GPNP. In this presentation we discuss what factors could be responsible for this dramatic decline in kid survival focusing in particular on the peculiar life history of this species and on the possible effects of climate driven changes in the availability of high quality forage.