Roberto Rosà
Fondazione Edmund Mach, San Michele all'Adige (TN) - ITALY
e-mail: `rosa@cealp.it`
Luca Bolzoni
Fondazione Edmund Mach, San Michele all'Adige (TN) - ITALY
Andrea Pugliese
Dipartimento di Matematica, Universita' di Trento, Povo (TN) - ITALY
Fausta Rosso
Fondazione Edmund Mach, San Michele all'Adige (TN) - ITALY
Annapaola Rizzoli
Fondazione Edmund Mach, San Michele all'Adige (TN) - ITALY

Modelling the impact of helminth parasite on rock partridge population dynamics

The aim of this work was to explore the effect of helminth parasites on rock partridge (*Alectoris graeca saxatilis*) population dynamics in the Dolomitic Alps (northern Italy). Specifically, we investigated the hypothesis that the nematode parasite *Ascaridia compar* can drive population cycles in rock partridge dynamics. In order to support this hypothesis, we compared the predictions obtained from a host-macroparasite interaction model with multi-annual empirical data of *A. compar* infection in natural host populations. We estimated host demographic parameters from rock partridge census data, and the parasitological parameters from a series of experimental infections in a rock partridge captive population. Our model predicts higher levels of *A. compar* infestation for rock partridge population with a cyclic dynamics respect to those with a non-cyclic dynamics. In addition, for populations exhibiting cyclic dynamics, the model predicts a positive correlation between the mean parasite burden and the length of cycle period. Model predictions are well-supported by field data; in fact, a significant differences in parasite infection between cyclic and non cyclic populations and within cyclic populations with different oscillation periods were observed. On the basis of these results, we conclude that helminth parasites can be a possible driver for rock partridge population dynamics and must be considered when planning conservation strategies of this threatened species.