

LEK TENACITY OF MALE BLACK GROUSE IN CENTRAL SWEDEN

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Dispersal and movement are important processes in conservation biology. Adult males of black grouse normally appear to remain on the same lek throughout their life and young males rarely observed settling further than 2 km from their natal area. Here we report results on a study of site tenacity and philopatry in black grouse males using mark-recapture and lek observations at two sites in central Sweden. We found that all recaptured males that were tagged as chicks (≥ 14 days) were captured on the lek closest to the initial capture site. 81% of adults' and 63% of young's total year round relocations were within 1 km distance from lek where they were 1st captured. Even though adults stayed closer to their lek year round, they were closer in May while the young were closer in April. On the other hand, fewer individuals attended lek during mating than pre-mating period ($t_{15} = 3.06$, $P = 0.008$, paired t-test). Furthermore, more young than adults changed and visited other leks. Nevertheless, the likelihood of interlek movement was negligible (mean \pm se = 0.019 ± 0.005). Thus, our results indicate that black grouse leks have local recruitment, many of the young do not lek during mating period, and adult black grouse males stay closer to their lek year round and consistently attend lek.

THE INFLUENCE OF THE CLIMATE CHANGE,
HABITAT MODIFICATION AND LIVESTOCK ACTIVITIES
ON BLACK GROUSE DYNAMICS AND ECOLOGY
IN THE NORTH EASTERN ITALIAN ALPS

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The climate change and the modification of the habitats are important ecological keys to understand the wildlife population dynamics and distribution of species. In the Alps, the snow cover and the precipitation of snow and rain has showed in the last decades a evident decrease as total amount, but with a dramatic increment in specific periods and with extreme phenomena; in the same time in some areas the black grouse populations has

decreased or has disappeared. Until now the decline of the alpine black grouse population has been considered mainly associated to the change of the use of the alpine pastures, the reducing and modification of livestock activities, more evident in the 1970th-1980th years, and inappropriate hunting management. To test different hypothesis and relative interaction, by ecological view, we have analyzed along 26 years (1987-2013) the evolution of the number censused (from 3000 to 4000 birds during the fall census in the last years) of the black grouse in the North Eastern Alps, in Friuli Venezia Giulia Region, in relation to the meteorological variables and habitats cover and livestock activities; these results have been compared with previous studies. The study area covered over 260.000 ha (not all suitable for the black grouse) in the alpine and prealpine areas, in that area we have studied a total of 70 hunting reserves, with confirmed presence of the species, that constituted 5 different hunting district. The dependence variables studied were the census number in spring and in the fall, the efficiency of shooting (number of birds shot respect the number planned), the rate between the census at time t+1 respect the census at time t, and the rate between the fall census and the spring census and for sampling areas the reproductive success; the independent variables were meteorological data and the habitats cover and livestock presence in different years. In general the alpine black grouse populations showed over long period an evident decline; in the last years the trend of the censused number has showed different behavior in the different districts, instead the rate between the spring census and the fall census appears to decrease in most of the hunting unit, like the rate between successive years. The number of animals censused, the reproductive success and the rate between successive years seems correlated to the number of days with snow cover, the days and period of snowing and to the amount of rain in spring and summer and temperature during winter and summer; the influence of these variables seems to be reinforced by the characteristics of habitats and the trend of the cover change of habitats. The results are discussed in relation to the ecological requirements of the black grouse, in respect to the presence of other species and to the management implication, especially regarding the forest, management and alpine pastures conservation and livestock activities. The appropriate management seems to be helpful to limit the effect to climate change.