Diet and habitat preference of the European ground squirrels (*Spermophilus citellus*) in South-Western Slovakia

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Abstract

Research of the DAPHNE Institute involved a cattle pasture (Kuchyna), two grassy airports (Boleráz, Trnava) managed by mowing, and a sheep pasture (Chtelnica) managed by cutting as well (mixed management) in South-Western Slovakia. The research aimed to estimate the average diet preference in the regional populations with identification of the main food plants. Then compare the different habitat sites both in vegetation and diet composition. Furthermore, a search was conducted on the effect of regular extra feeding with sunflower seeds.

Starting after spring emergence and mating season, then care of the juveniles, finally the pre-hibernation – fattening time are the three seasons of the European ground squirrel active period (April, June, August) when we measured their food demands. Non-invasively picking up fresh faecal pellets from 5-10 individual burrow entrances from each measured site for diet analysis. Meantime, vegetation as a food source was recorded in 5 quadrats by identification and botanical cover estimation of all plant species above 1% presence; also, some plant material was collected into a herbarium for later tissue references. The micro-histological analysis was performed in the lab of the University of Sopron (Hungary). As DAPHNE colleagues did regular extra-feeding with dried sunflower seeds on the sites, we divided the four areas into fed and non-fed parts and 5-10 plus individual faecal samples were picked up from those parts. Considering all seasons and sites, 44 species were revealed as preferred food plants among the 113 identified plant species. On grazed pastures, more plant species were found than on mowed airport grasses. In addition, the number of food plants was higher on grazed lands, thus ensuring more diet choice options for the ground squirrels. Diet composition showed local and seasonal differences as we compared proportions of food plants in groups like Monocots, Dicots, Poaceae, Leguminosae, Aromatic plants, Asteraceae and Sunflower seeds. Seasonal comparisons revealed strong Dicot to Monocot (Poaceae) preference in diet, especially of Leguminosae during the year, with regular aromatic plant consumption and seasonally changing Monocot, Asteraceae and seed proportions. Additional animal food was identified as Arthropods. The vegetation quality of each habitat had an effect on diet, so future conservation management should plan and apply habitat-specific measures. Extra feeding had only a moderate effect on the other plants' proportion. For the conservation of the European ground squirrels, it is essential information to evaluate their habitat regarding vegetation composition as a potential food source during the whole active period that helps to manage the sites ground squirrel-friendly, even to search for the most suitable target areas for reintroduction.

Keywords

grassland key-species, micro-histological analyses, vegetation composition. grassland conservation, small mammals, herbivore-plant interaction