

HEATHLAND CONTROLLED BURNING INFLUENCE ON DIVERSITY OF ORTHOPTERA IN THE MILITARY TRAINING AREA „ĀDAŽI”

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Military training area “Ādaži”, a part of the ecological network of protected areas Natura 2000, includes the largest heathlands of Baltic States. The heathland is formed due to military interaction which has decreased in the last years. Because of secondary succession, the cover of scots pine *Pinus sylvestris* is expanding, and the existence of the heathland habitat is endangered. To maintain the structural heterogeneity in the study site regular controlled burning is carried out every year since 2009. Though it is not yet known how the burning influences various groups of living organisms. The goal of this study is to analyze the heathland burning and the following vegetation succession influence on the diversity of Orthoptera.

The research is made in 20 sampling sites. For each burning year respectively 4 plots were randomly selected- two burned and two unburned areas. In every plot 6 Barber traps were situated in the soil, making a total of 120 traps that were exposed for a period of one month, from 12th August to 8th september 2013. In every trap location the height of vegetation was measured, and vegetation cover abundance was determined from projective photographs using Braun-Blanquet scale. Data was analyzed using PCORD (version 5.0) where NMS and indicator species analysis were applied, as well as Shannon-Weiner index was calculated for each plot.

As a result, 192 individuals of 16 Orthoptera species were collected, which is more than one third of the Orthoptera species present in Latvia. The most abundant species were *Myrmeleotettix maculatus* Thnbg., *Tetrix undulata* L. and *T. bipunctata* L. Two red listed species were found- *Psophus stridulus* L. and *Oedipoda caerulea* L., which is also a protected species in Latvia. The results show the main variables that determined the differences between the burned and unburned plots. Shannon index, number of Orthoptera species, cover of grasses and open soil was greater in burned areas, while the minimal and the average height of vegetation, cover of *Calluna vulgaris* and mosses were greater in unburned plots. NMS ordination also showed a difference in species occurrence. The indicator species analysis suggests *Chorthippus brunneus* and *Omocestus haemorrhoidalis* as indicators for burned areas and surprisingly the nymphs of *T. undulata* as indicators for unburned areas. The last had the highest of all indicator values- 64.6, with p-value 0.01.

According to the results, with decreasing human interaction and no habitat management the vegetation structure becomes uniform, providing less ecological niches. After burning there is a higher chance for other plants than *Calluna vulgaris* to exist for a certain time, providing grasshoppers and crickets a variety of food and structural resources. Also the open soil cover can be critical for some Orthoptera species that were not present in the dense heath massifs. According to NMS and indicator species analysis, we can speculate that *T. undulata* is laying eggs in the unburned areas where the majority of nymphs were found, while imago's were mainly caught in burned areas. Finally we conclude that on the habitat scale heathland burning has a positive effect on Orthoptera species diversity.