

FAUNA AND ECOLOGY OF CARABID BEETLES (COLEOPTERA, CARABIDAE) IN FOREST HABITATS OF ZIEMEĻVIDZEME BIOSPHERE RESERVE, LIMBAŽI AND SALACGRĪVA FORESTRIES

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Carabid beetles are good indicators of habitat quality, but in Latvia, although fauna of carabid beetles in different habitats is well-known, there is lack of information about their ecology and possibility to use them to evaluate environmental changes.

The aim of the work is to characterize species composition and number of individuals of carabid beetles in different forest habitats and to find out main biotic and abiotic factors that have influence on carabid beetle communities. The research was done in forests of Ziemeļvidzeme biosphere reserve near Vitrupe; beetles were caught with pitfall traps. The cover of plant species was evaluated and stand formula was determined. Also information about main abiotic factors that could have an influence on carabid beetles (soil moisture, pH and shading) was collected.

Together 6050 carabid beetles belonging to 60 species were caught. The most common species were *Pterostichus oblongopunctatus* (873 individuals), *P. melanarius* (820 individuals), *Carabus arcensis* (386 individuals), *C. granulatus* (330 individuals) and *P. niger* (364 individuals).

Different forest types were inhabited by different carabid beetles. Dry clear-cuts were associated with open habitat species. Deciduous forests were inhabited by hygrophilous species that prefer moist soil and productive, well-shaded habitats. Many species were also associated with semi-dry or dry coniferous forests. Plant species diversity had a significant negative impact on carabid beetle individual numbers. In comparison, Shannon index of vegetation had insignificant positive impact on Shannon index of carabid beetles.

Abiotic factors had insignificant impact on carabid beetles. Soil pH had an optimum range for carabid beetles, with their numbers decreasing if pH was higher or lower. Soil moisture did not influence carabid beetles significantly, while shading had a positive effect.