EVIDENCE FOR EDGE EFFECT ON BLACK ALDER WOODLAND KEY HABITATS IN LATVIA

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Introduction

Baltic and Fennoscandian forests have been intensively managed in the past (Hanski 2005). All these anthropogenic loads have made changes and losses of biodiversity. To protect the small forest stands with high ecological values in Baltic countries and Fennoscandia, the woodland key habitat (WKH) concept has been created. WKH principle has been explicated to the regions where woodlands have been managed and therefore highly fragmented (Timonen et al., 2010). However, as WKHs are small parcels in production forests, they are affect to edge effects (Aune et al., 2010). Fennoscandian deciduous swamp woods are protected under the Habitats Directive (Council Directive 92/43/EEC on the Conservation of natural habitats and of wild fauna and flora) in European Union. The extensive drainage and melioration development during last centuries dramatically influenced these habitat types in country. In Latvia, the gap analysis of woodland key habitats shows serious lack of this habitat type in all regions.

Figure 1. Alnus glutinosa swamp woods are characterized by different mosaic structure (photo:Līga Liepa).

The aim and objectives

The aim of this study was to assess the edge effect impact on the vegetation of black alder woodland key habitats.

First, we estimate the edge effect influence on vegetation regarding to different age classes of forest stands (group A, B, C, see below). Furthermore, we analyze and estimate the edge effect impact on vegetation regarding to distance from the edge (zones: 1st ,2nd ,3rd).

Materials and methods

The study area was situated in southern part of Latvia - in Zemgale. All study sites were located in the territory of JSC “Latvia state forest”. The research has been performed in two forest types on wet peat soils: *Dryopterioso-caricosa* and *Filipendulosa*. In total, 30 study sites were arranged and surveyed (the area of each sample plot is 20x50 m), which has been divided into five 10m wide sample zones. In the south or south west side of the study sites there are stands that correspond to 3 different age groups: young forest stands (group A), middle - aged forest stands (group B) and mature (group C) forest stands (in each group there are 10 study sites). The Braun-Blanquet method was used to describe the plant communities: the total projective coverage of moss (E0), herb (E1), shrub (E2) and tree (E3) layer as well as the coverage of each separate species was evaluated in the sample zones in percentage. In order to assess the influence of edge effect, average ecological values of vascular plants were calculated, and analysis of classification and ordination were used.

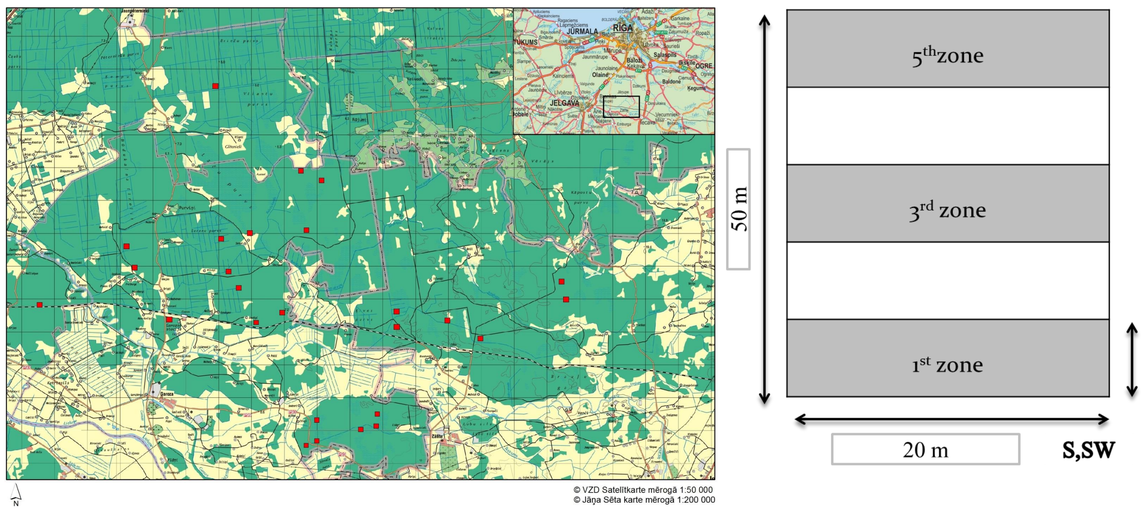

Figure 2 and Figure 3. The study area and study sites (Fig.2). The scheme of sample plot (Fig.3).

Results

The total number of species in 30 sample plots were 192. In the moss layer – 41, herb layer – 150, shrub layer – 14 and tree layer – 6 species were indicated. As expected, the number of species and projective coverage decreases with increasing the distance from the edge.

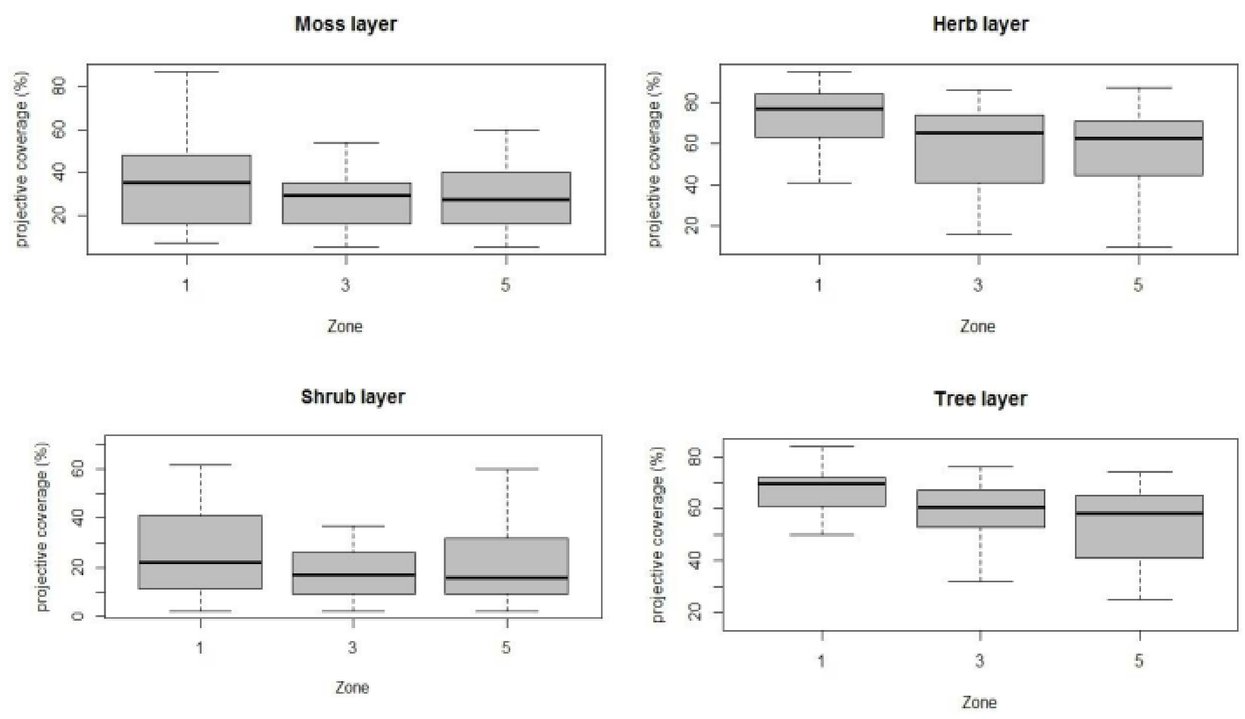

Figure 4. The comparison of projective coverage (%) in different layers.

Conclusions

The results of this study suggest that vegetation in black alder swamp woods are strongly affected by forest drainage and felling activities nearby, therefore the buffer zone creation around these woodland key habitat type is essential required to provide the specific microclimate into it. However, when evaluating edge effect on vegetation there are many other aspects to take into account. For instance, as important aspects could be habitat patch size, the occurrence and richness of focal species.

Acknowledgments

We thank Amanda Zeltiņa and Skaidrīte Taukule for help with the field work. The part of the research was carried out in the framework of the project ‘Support system of decision making in sustainable forest resource management planning’ (agreement No. 2010/0208/2DP/2.1.1.0/10/APIA /VIAA/146, ERAF/ Latvia University of Agriculture).

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