LATVIA UNIVERSITY OF AGRICULTURE
FOREST FACULTY

THE ASSESMENT OF VEGETATION DIVERSITY IN BLACK ALDER WOODLAND KEY HABITATS IN ZEMGALE

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No.2010/0208/2DP/2.1.1.0/10/APIA/VIAA/146,ERAF/Latvia University of Agriculture

The aim of the study

To estimate the edge effect impact on the vegetation of black alder woodland key habitats

Key words

- Black alder
- Vegetation survey
- Edge effect
- Woodland key habitats
- Occurrence

Main tasks

- To determine vegetation composition and structural elements in black alder swamp woods
- To asses edge effect impact on black alder woodland key habitats in Zemgale

Alnus glutinosa distribution map

Black alder habitats has substantially decreased in Latvia. The reason was start of extensive forest drainage(Prieditis 1993, Aunins 2010 etc.)

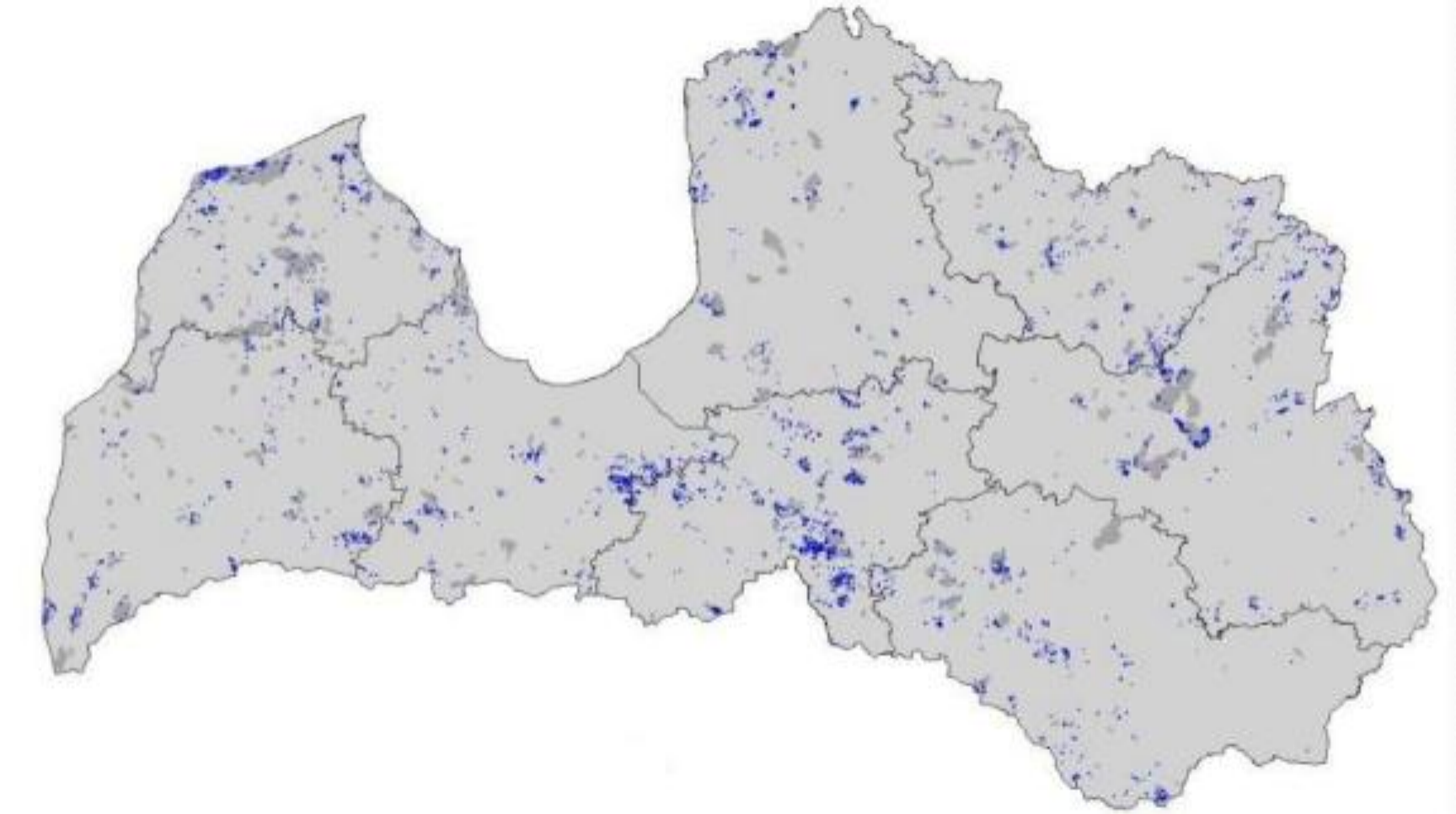
Description

- Alder swamp forests are wet, adapted to water level fluctuation, mosaic cover of vegetation and hummocks
- Important features are decayed logs in different decay stages
- Multi - aged stand, many woodpecker signs and trees with holes
- Sun exposed patches and all these different factors providing the spatial structure for species to co-exist

Endangered factors

- Hidromeloration development
- Infrastructure (roads, ditches etc.)
- Inundation (unnatural processes)
- Felling (changes in water transpiration system)
- Invasive species

(Prieditis 1999)

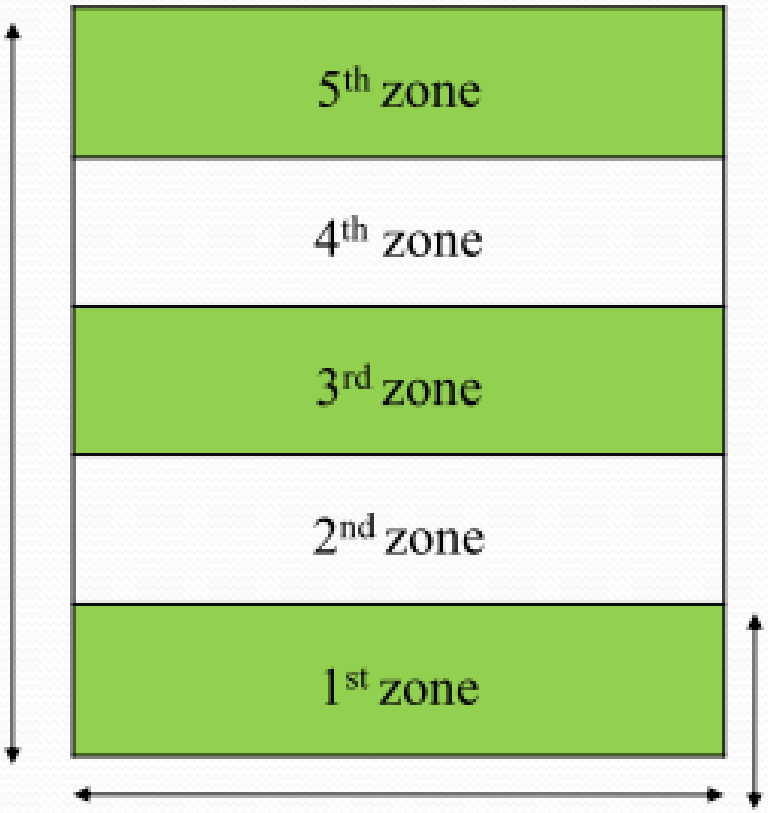


The distribution of the swamp wood key habitats in Latvia (Latvia’s State Forests)

Site description

- The territory of JSC “Latvia state forest” in Zemgale
- 9 study sites
- Woodland types: *Dryopterioso caricosa* and *Filipendulosa* on wet peat soils
- S and SW side there are stands that correspond to 3 different groups: 1-10, 20-30 and 40-50 years old stands

Sample plots



Materials and Methods

- The vegetation was surveyed in the 1st, 3rd and 5th zones

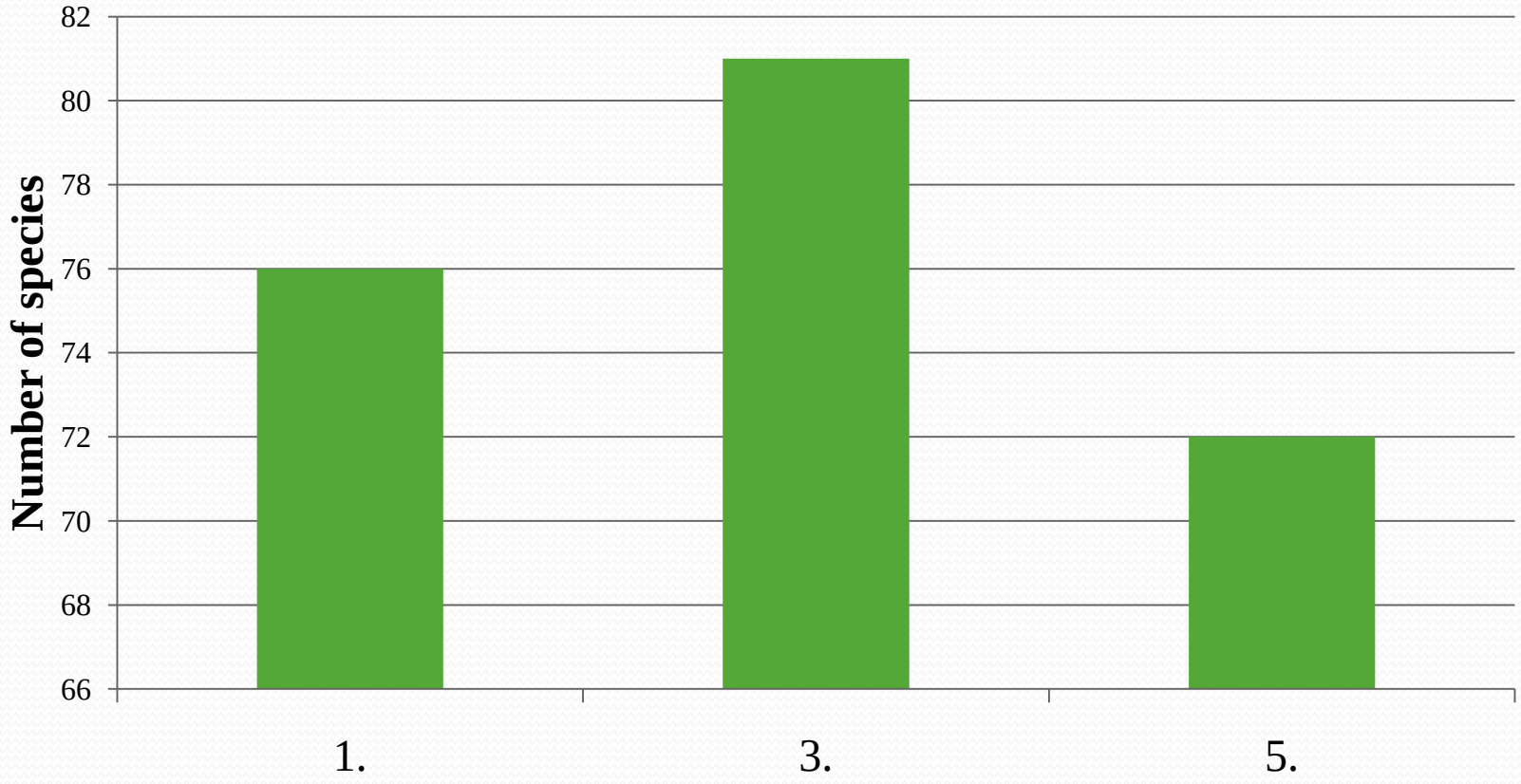
- The Braun – Blanque method has been used to describe plant communities (projective coverage %):

1. Tree layer (E3)
2. Shrub layer (E2)
3. Herb layer (E1)
4. Moss layer (E0)

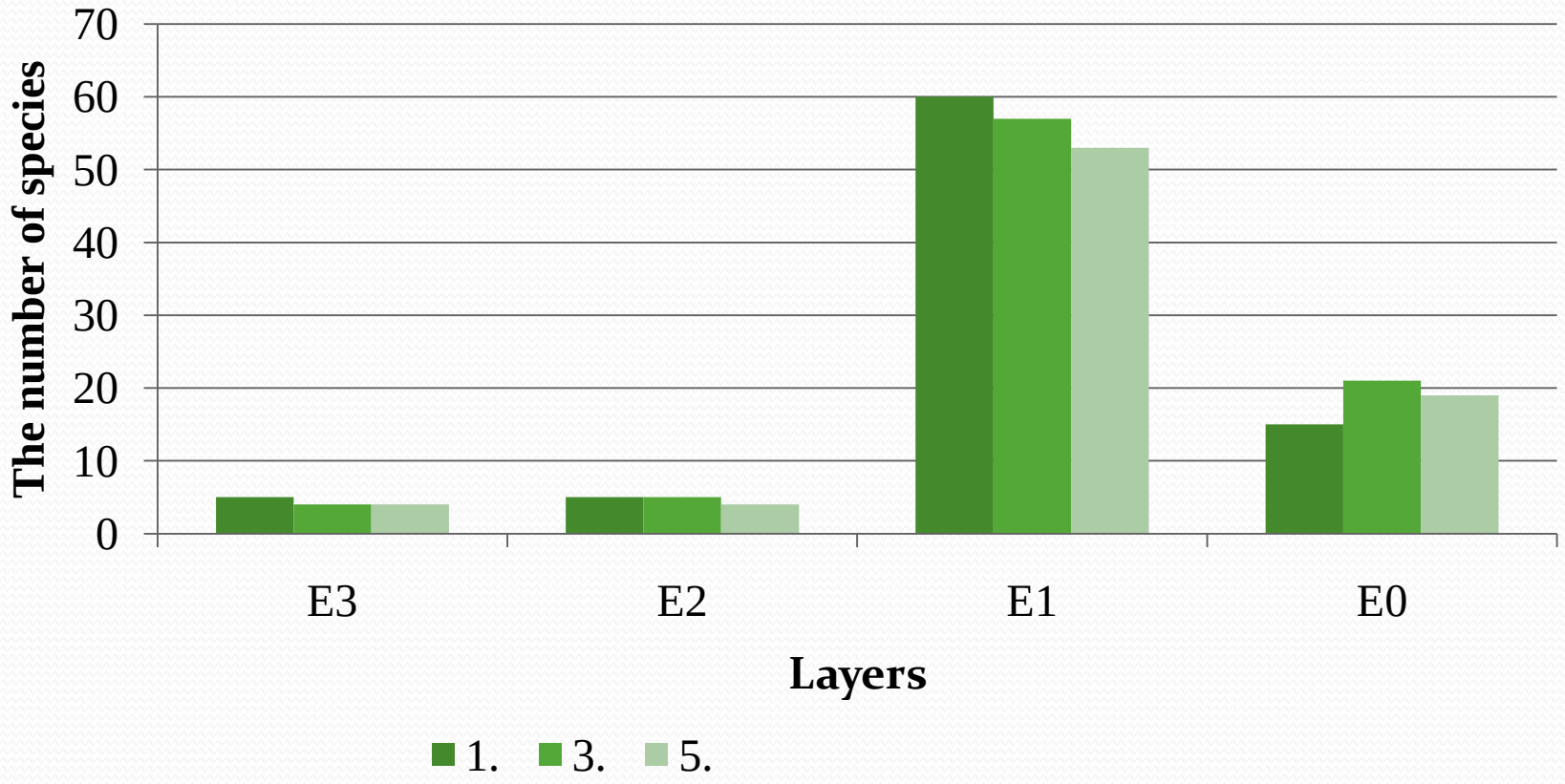
Data processing methods

- The estimation vegetation composition (Occurance and constacy classes)
- PCA (Principal component analysis)
- One way analysis of variance

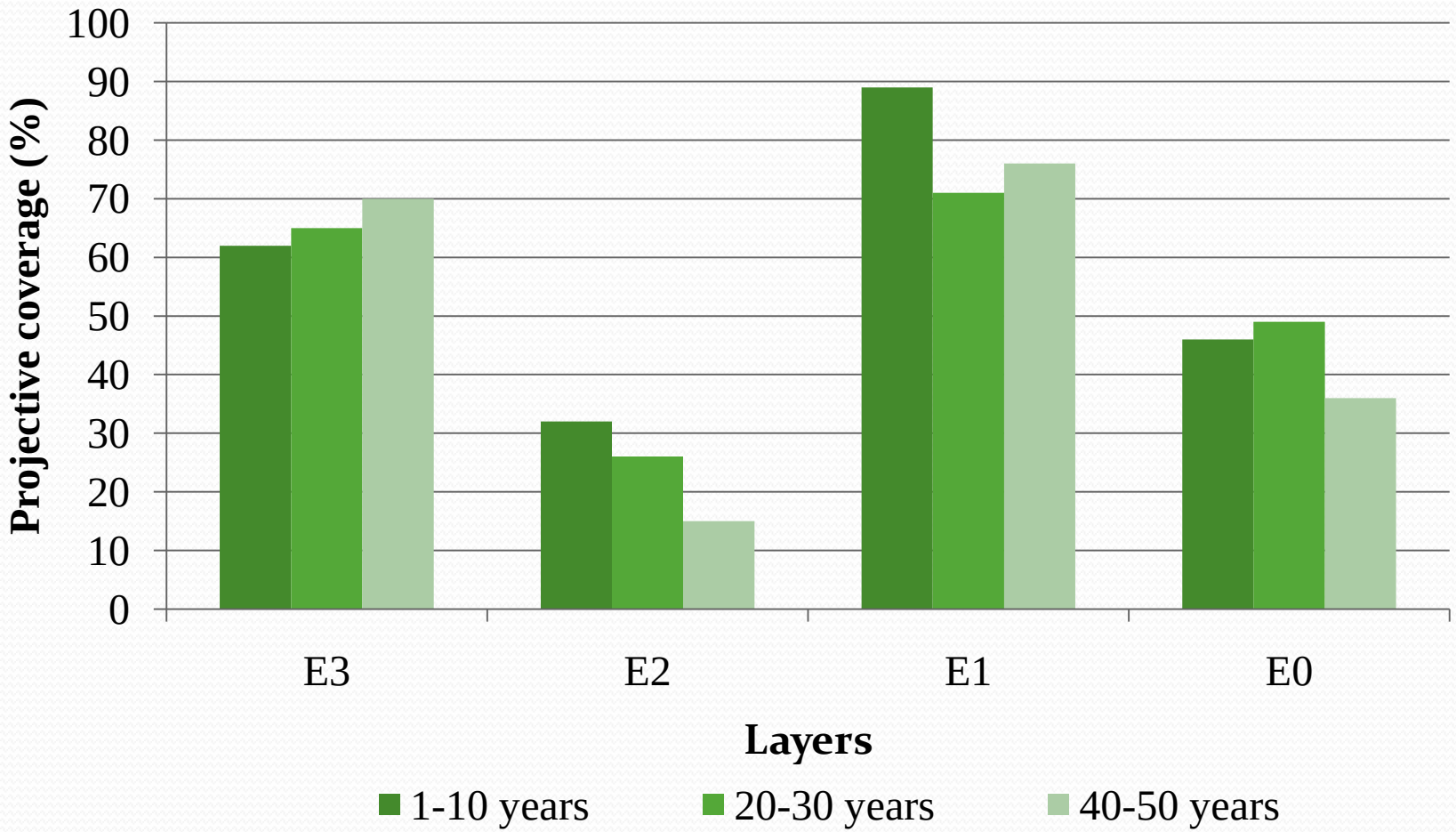
Results



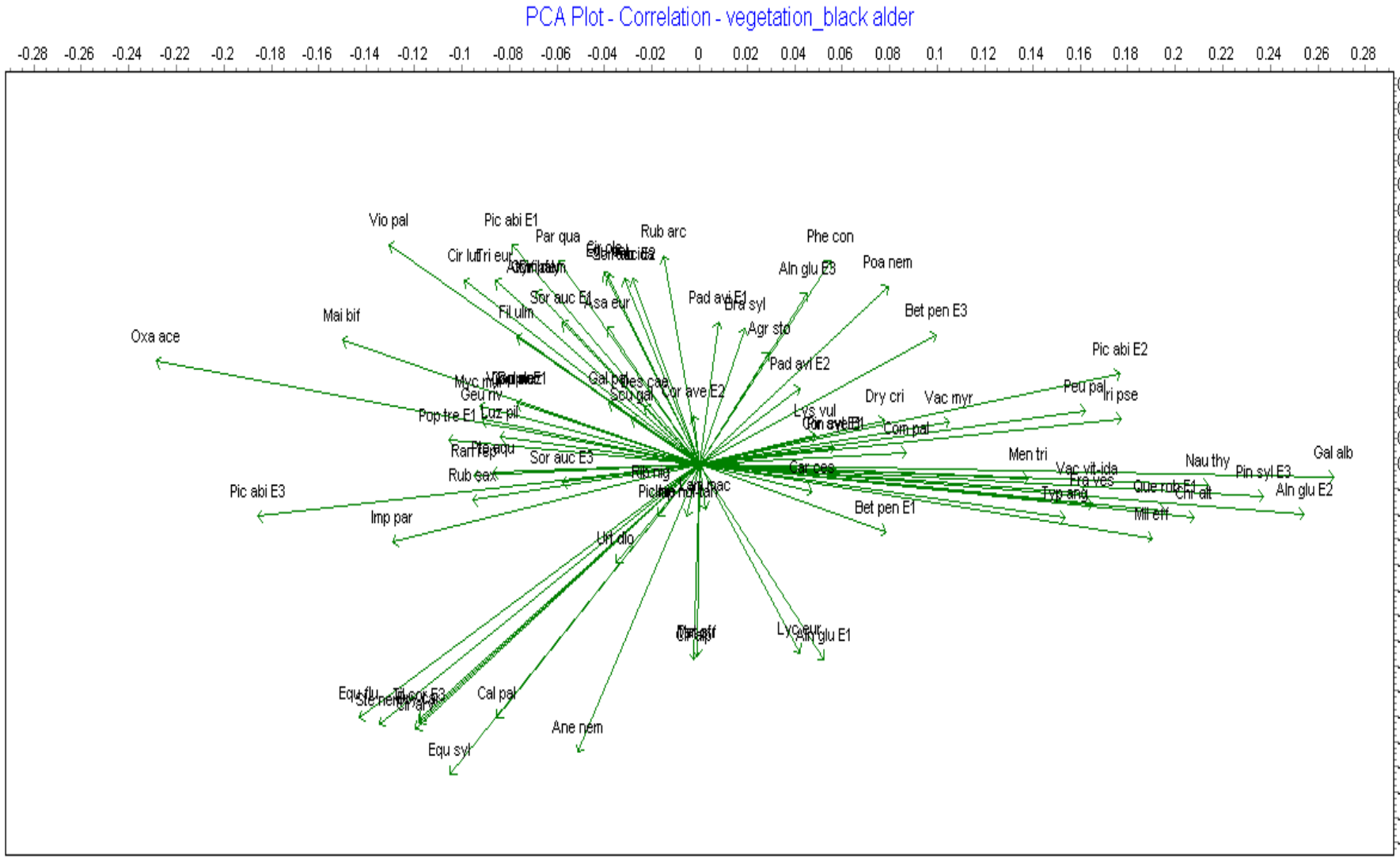
Results


70
60
50
40
30
20
10
0
The number of species
E3
E2
E1
E0
Layers
1.
3.
5.

Results


Projective coverage (%)
100
90
80
70
60
50
40
30
20
10
0
E3
E2
E1
E0
Layers
1-10 years
20-30 years
40-50 years

Results


PCA Plot - Correlation - vegetation_black alder
-0.28 -0.26 -0.24 -0.22 -0.2 -0.18 -0.16 -0.14 -0.12 -0.1 -0.08 -0.06 -0.04 -0.02 0 0.02 0.04 0.06 0.08 0.1 0.12 0.14 0.16 0.18 0.2 0.22 0.24 0.26 0.28
0.3 0.28 0.26 0.24 0.22 0.2 0.18 0.16 0.14 0.12 0.1 0.08 0.06 0.04 0.02 0 -0.02 -0.04 -0.06 -0.08 -0.1 -0.12 -0.14 -0.16 -0.18 -0.2 -0.22 -0.24 -0.26 -0.28 -0.3
Vio pal
Pic abi E1
Par qua
Rub arc
Phe con
Cir luf
Aln glu E3
Poa nem
Sor auc E1
Asa eur
Pad avi E1
Bra syl
Mai bif
Fil ulm
Agr stø
Bet pen E3
Oxa ace
Pad avi E2
Pic abi E2
Gal pal
Cor ave E2
Peu pal
Geu riv
Dry cri
Vac myr
Pop tre E1
Loz pil
Lys vul
Com pal
Sor auc E3
Men tri
Gal alb
Rub sax
Vac vit-ida
Nau thy
Pin syl E3
Pic abi E3
Fra ves
Que rub E1
Aln glu E2
Imp par
Bet pen E1
Mil eff
Ult dio
Cal pal
Ane nem
Equ syl

Conclusions

- The vegetation analysis shows that number of species and composition in sample plots in different zones are variable; particularly the influence from edge is in the herb layer
- In study sites vascular plant and bryophyte indicator species have been identified, as well as protected species: *Circaea lutetiana* in a one site and *Plagiothecium undulatum* in three sites

Conclusions

- The differences among the sample plots within different age classes of the next stands and among the zones have not been significant for the impact of edge effect on vegetation diversity (with credibly level 95%)
- Black alder woodland key habitats is the import and priority protected habitat type whose preservations can be achieved in implement of several preventative activities, for example, buffer zone creating around habitats, decreasing the impact from drainage and others

Acknowledgements

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)

Thanks for attention!

No.2010/0208/2DP/2.1.1.0/10/APIA/VIAA/146,ERAF/Latvia University of Agriculture