

Development of the South-West Lapland conservation area network (NATNET LIFE+ project)

Short description: This spatial prioritization was done to assist in targeting land acquisition within a project for the expansion of the South-West Lapland conservation area network. The analysis utilized forest inventory data, information about woodland key habitats, species distribution data for several threatened species, and information about the present conservation area network. Three main analyses were done (Fig. 1): 1) the ecologically most efficient solution across the area, 2) an analysis for expansion on privately owned land only, and 3) a corridor analysis. Results from these analyses were combined to support decision making (Fig. 2). The highest priority was given to land parcels belonging to the top 2% in all three analyses. The ecologically most efficient solution enabled a raise from 70% to 90% conservation efficiency with only minor additions to the conservation area network (Fig. 3). A separate analysis was done for identification of areas for targeted habitat restoration.

Area: The study area is located between Kemi and Rovaniemi. It is 5 715 km² (571 500 ha) in size. Plot-level forestry data for privately owned forest (from the Forestry Centre) covered 240 600 ha (42 % of area) and the data for state-owned forests from Parks Finland 216 900 ha (38% of area).

Data: Forest inventory data from the Forest Centre, up-to-date information about woodland key habitats, data from Parks Finland about both managed and protected forests, the Hertta and Tiira data bases about threatened and vulnerable species, and the MS-NFI data.

Aim: To find areas that would best complement the existing protected area network, so that the connectivity of the network is improved while as many species as possible gain habitat.

What was the analysis used for? The results were used to target acquisition of land so that the new conservation areas supported the conservation area network as effectively as possible. The goal of land acquisition was to obtain 450 ha of western taiga, 1 000 ha of minerotrophic bogs, 400 ha of peatland forests, 500 ha of herb-rich mires, 100 ha of herb-rich forests, 100 ha of successional coastal habitats, and 250 ha of other habitat types. There were 116 new protected areas acquired with a total of 2800 ha, as planned.

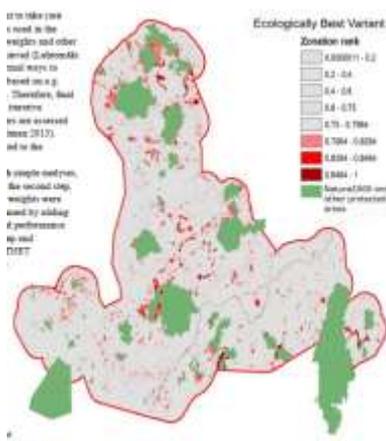


Figure 1. The ecologically most efficient solution.

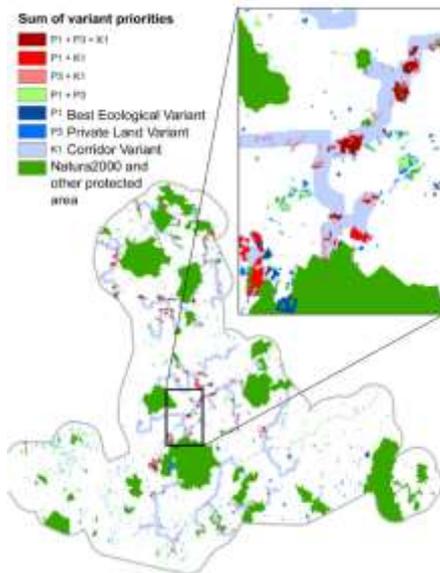


Figure 2. The study area and the combinations of top 2% areas from multiple analysis variants.

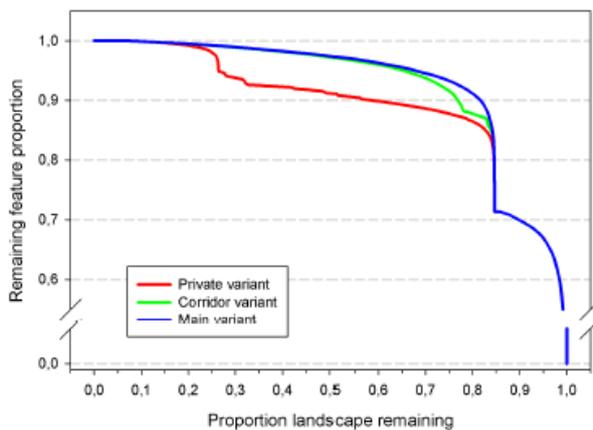


Figure 3. Biodiversity value for alternative analyses. The ecologically optimal analysis (blue) improves conservation performance more rapidly than solutions restricted to private land (red) or the corridor analysis (green).

Special properties of analysis: We used the Zupport package developed at the University of Helsinki to extract information describing conservation value of forest from forest inventory data. Before transformation of data, we obtained information about necessary parameters such as the mean tree diameter in the study area. Before the Zupport transformation, the forest inventory data was brought up-to-date using the MELA software (forest growth) and the NFI data about recent forest clear cuts.

Reference: Increasing the ecological connections and coherence of the Natura 2000 network in South-West Lapland 2012–2017. Report of the planning process. Centre for Economic Development, Transport and the Environment for Lapland. Regional viability 2/2017

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