Skogssällskapet

Slutrapport för projektet Management and assessment of sufficient natural regeneration in mature forest stands

Projektrubrik:	Management and assessment of sufficient natural regeneration in mature forest stands
ID-nummer:	2016-013
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Populärvetenskaplig sammanfattning

Target diameter cutting is an alternative method to harvest mature forest stands in southern Sweden. The created forest canopy gaps emulate natural disturbances and are important to initiate natural regeneration in multi-layered conifer-dominated forests. In the research project, a model was developed to estimate the development of natural regeneration in order to quantify the need for planting or not.

The project leader Lars Drössler stated at the end of the project: "In my opinion, natural regeneration potential is not the limiting factor in mixed conifer stands older than 90 years, but the skills of forest managers to assess future stand development and regeneration." To deal with such considerations professionally, an adequate regeneration survey that includes seedlings of all plant sizes is indispensable. During the project, practical workshops were carried out in different Swedish municipalities with forest practitioners to assess future stand development, income and regeneration. An introduction to various assessment tools when managing more heterogeneously structured stands can be found in "Heterogen skog – för komplex för skogsbruk och tillämpad skogsforskning?" Fakta skog nr 9 2016.

Studiens ursprungliga syfte

The study had two goals: forest regeneration research and extension work in Scandinavian forest ecosystems. The supporting objectives were to (1) evaluate and model seedling density and species composition establishing after various partial harvesting practices and (2) use and verify the derived findings in close collaboration with landowners and managers to demonstrate how to use partial harvest methods to successfully regenerate Scandinavian forests naturally.

Målbeskrivning

The first major goal to evaluate and model seedling density and species composition after various partial harvesting practices was achieved, but only for multi-layered forest (depending on target diameter cutting with and without soil preparation, gap size, basal area removal, site characteristics).

Regarding the second major goal to use and verify the derived findings in close collaboration with landowners and managers, 40 forest professionals and owners participated in 4 workshops in different municipalities (Linköping, Östersund, Gothenburg, Bjärnum). The participants learned how to assess future development, management options, income and regeneration potential in forests that were neither even-aged nor single-tree selection under equilibrium conditions. The participants were satisfied with the learning outcome of the workshop, and they are able to apply the tools in another stand or to disseminate their newly acquired knowledge.

Many study stands could not be included in the project as proposed - for the following reasons: When data was requested from the Swedish shelterwood trial on peatland, data on 25 years old floppy discs could not be restored. When data from the large shelterwood trial (22 study sites) and Naturkultur (9 sites) was requested, all study plots included artificially planted seedlings. Another experiment (Mb99 Skogaby) could not be included as the person in charge now did not want to join our study.

Kommunikation och nyttiggörande av resultat

We developed a natural regeneration model to predict occurrence, density and tree species proportions for mature, multi-layered conifer-dominated stands in southern Sweden. The model is based on data from different study stands and was used to predict future regeneration in single stands. The approach can include new data. Therefore, we provide the scientific base to optimize regeneration planning procedures in Swedish forest companies.

Our research was actively communicated through four workshops, Skogssällskapets webpage, a newsletter, teaching, and two popular-science publications.