An economic evaluation of strategies for the conversion from even-aged to near-natural forestry in a conifer dominated forest in Denmark

Erik Schou*, Jette Bredahl Jacobsen

In recent years conversion to near-natural forestry has been initiated in many European forests - main reasons for this are lack of ecological and economical stability in present forests. A conversion will in general imply an increase in stand heterogeneity. To achieve this present stands need to be harvested gradually. When using target diameter harvesting as a mean of conversion one cannot do this strictly due to the narrow diameter distribution of most stands. Either termination of the old stand has to be accelerated or prolonged compared to the optimal rotation age. The study investigates the economic impact of different conversion strategies in conifer dominated forests when transforming the forest management system from a traditional even-aged to a near-natural mixed species system. A simulation approach will be used. Strategies will be represented by various target diameters and harvest cycles. A stationary Markov chain combined with a dynamic yield table is used to model implications of the different scenarios for a Danish forest where transformation has been initiated recently. The analysis is carried out for a group of adjacent stands in the forest – a forest development type. Results are thus achieved on an aggregated stand level with the main species being Norway spruce, European beech, Sitka spruce and Douglas fir. The long term-economic performance of the different strategies is measured in terms of expectation value at the beginning of the conversion period. Short term-implications will be evaluated by liquidity measures. The overall purpose of this study is to contribute to the description of how to carry out transformation to near-natural forestry in a specific case, thereby providing forest managers with an example of the economic consequences of their actions in relation to conversions.

Keywords: Conversion strategy, near-natural forestry, economic evaluation, Markov chains.

University of Copenhagen, Forest and Landscape, Denmark
eschou@life.ku.dk