



## Biodiversity and Ecosystem Services in Danish Forests: Optimizing Multiple Objectives

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### ABSTRACT

Timber production used to be the main purpose of the Danish forests. However, there is an increasing demand for other ecosystem services such as carbon storage, ground water protection, outdoor recreation and biomass for energy production. Thus, a central question is whether overall gains can be made from a differentiation of functional targets across forest areas relative to the current multifunctional forest policy ideally pursuing several targets simultaneously in the same areas? Answering this question is an important aim of the present project. The results will support the future forest policy and may feed in to the national ecosystem service assessment that Denmark has to compile as part of its EU obligations. Using quantitative analyses we combine biodiversity data on the national distribution of forest species with data or models on CO<sub>2</sub> storage, groundwater, recreational value and production of timber and biomass. Furthermore knowledge is compiled on the relation between forest management and ecosystem services. Some specific questions to be answered are: Which forests in Denmark constitute together the most cost-efficient network to ensure the preservation of forest biodiversity? Given the optimal solution for biodiversity, what are the trade-offs in terms of other ecosystem services? Are there geographical patterns in how optimization of ecosystem service values for biodiversity and the other services interact in terms of cost and provision? We present the intentions and technical setup of the project as well as initial analyses of the geographical distribution of the Danish forest biodiversity the other ecosystem services and thus where potential conflicts or synergies are most likely to occur.