

Diversified management provides multiple benefits in boreal forests

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Forests provide multiple social and environmental benefits and play a key role in bioeconomy particularly in the Nordic countries. For example, the Finnish bioeconomy strategy aims to considerably increase the use of forest-based biomasses and forest harvesting by 2025. However, new research shows that there are strong conflicts between intensive timber harvesting and the provision of other benefits or the maintenance of biodiversity. The results are part of a research project lead by Professor Mikko Mönkkönen and funded by the Academy of Finland and Kone foundation. The project aims at identifying conflicts and synergies between ecosystem services and biodiversity at forest landscape scale.

Combining forest growth simulations with multiobjective optimisation, the researchers found that it was not possible to achieve high levels of environmental benefits (such as climate regulation through carbon storage) or biodiversity if the objective of forest management was to maximise timber harvest revenues. However, with small reductions of timber revenues it was possible to greatly increase the multifunctionality of the landscape, especially the biodiversity indicators.

"Forest management actions alternative to the recommended intensive management, such as reducing thinnings, extending the rotation period and increasing the amount of area set-aside from forestry, may be necessary to safeguard biodiversity and other benefits provided by boreal forests in Fennoscandia," says María Triviño, postdoctoral researcher at the University of Jyväskylä.

The results of the project show that no forest management type alone is able to maximise timber revenues, [carbon storage](#) and biodiversity individually or simultaneously, and that a combination of different regimes is needed to resolve the conflicts among these objectives.

"We conclude that it's possible to reduce the trade-offs between different objectives by applying diversified [forest management](#) planning at the boreal landscape-level, and that we need to give up the all-encompassing objective of very intensive timber production, which is prevailing particularly in Fennoscandian countries," says Mikko Mönkkönen.

More information: María Triviño et al. Optimizing management to enhance multifunctionality in a boreal forest landscape, *Journal of Applied Ecology* (2016). [DOI: 10.1111/1365-2664.12790](https://doi.org/10.1111/1365-2664.12790)

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