



Sustaining ecosystem services in forest landscapes

Book of Abstracts

IUFROLE WG Conference in Tartu, Estonia, 2015



IUFRO Landscape Ecology Working Group Conference, 2015: Abstracts

Compiled by Tiia Lillemaa, Urmas Peterson, and Ajith Perera

English language editing by Krista Kallis

Layout by Tiia Lillemaa

Design by Triinu Sarv

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ISBN 978-9949-9715-0-3 (pdf)

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Using ecosystem services trade-offs analysis to promote the incorporation of change into planning and management in a conservation area in Northeastern Portugal

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The Montesinho Natural Park in Northeastern Portugal was established in 1979 to preserve a rich and diverse land mosaic maintained by moderate levels of human disturbance. The area has gone through fast social and economic changes that impacted the landscape and its natural values. However, the Natural Park has been unable to incorporate these changes into planning and management. In this work we analysed changes in landscape composition and configuration and in the provision of various ecosystem services in a medium-sized watershed within the natural park from 1990 to 2006. Ecosystem services such as timber, firewood, mushrooms as well as agricultural production and freshwater (provisioning services) and carbon storage and sequestration, also water regulation and purification (regulating services) were evaluated and mapped using published statistics, land use/land cover data, and modelling tools. Trade-off analysis between different ecosystem services helped to identify and quantify trends of social-ecological change in the area. Based on our results, we discuss strategies of incorporating change into planning and management and supporting adaptive management in the natural park by establishing a framework of indicators of ecosystem services.

