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National ecosystem service indicators: Measures of social-ecological sustainability

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Highlights

- â€¢ We developed a national ecosystem service indicator framework.
- â€¢ 28 nationally important ecosystem services were identified.
- â€¢ We apply cascade model and use four indicators for all ESs to describe the ES flows.
- â€¢ Results are accessible to everyone at www.biodiversity.fi/ecosystemservices.
- â€¢ Results support decision-making in different levels, and implementation of MAES.

Abstract

Until present, it has been challenging to turn the concept of ecosystem services into a practical tool in the formulation of day-to-day policies on a national or regional scale. This is largely due to the overarching nature of the concept of ecosystems services (ESs) and the lack of concrete ecosystem service typologies. In this paper, we describe the foundation process of a national ecosystem service indicator framework for Finland, beginning with the selection of nationally important ESs. We also evaluate how this set of national indicators could be scaled down to regional circumstances, or integrated in the international ecosystem assessment processes. Our aim was to develop a national framework that complies both with national circumstances and with international typologies such as the Common International Classification of Ecosystem Services (CICES) and the cascade model. We developed indicators for 28 ecosystem services (10 provisioning, 12 regulating and maintenance, and 6 cultural services), a set of four indicators for every stage of the cascade model; altogether 112 indicators. We hope that the indicator framework draws attention to questions of resilience by providing information on the different aspects of ecosystem functioning that are crucial to the provisioning of ecosystem services. Furthermore, we hope to highlight the societal dependence on ecosystem services by providing indicators of both benefits and values. Besides higher-level decision-making processes, our attempt was to provide novel ecosystem service information for regional environmental managers and decision-makers, as well as the wider public interested in local issues. Integrating both ecological and socio-economic data into one platform may help to bridge the gap between science and practical decision-making resulting in more sustainable environmental management.



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Keywords

Cascade model; CICES; Decision-making; Ecosystem services; Environmental management; Environmental policy; Monitoring; MAES; Valuation

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