

Improving ecosystem services research for better policy integration

IN EVALUATING ECOSYSTEM SERVICES—THE BENEFITS

humans derive from the natural world—complexity is king. All too often, however, this research focuses on patterns alone without understanding the underlying mechanisms of the ecosystem services. This leads to poor predictive power and, therefore, potentially inaccurate policy decisions. In a kind of ecological researcher's call to arms, Nicholson et al. (2009) urge scientists to take an interdisciplinary approach to quantifying ecosystem

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services. For a field that is “still based on static analysis and single services, ignoring system dynamics, uncertainty, and feedbacks,” ecosystem services research needs to broaden its scope and tackle more intricate and necessarily complex areas of inquiry that are based on process, not just pattern. According to Nicholson et al. (2009), “A social-ecological approach addresses not only the dynamics within each of the social, economic, and ecological components, but also explicitly deals with the linkage and feedbacks between them.”

The authors contend that a lack of understanding of many processes that underpin the dynamics of ecosystem services, even at a basic level, significantly hinders the capacity to develop predictive models. According to the authors, no study to date has integrated dynamic models of multiple ecosystem services to include feedback between social and ecological components of a system. For instance, there can be synergies when the increased provision of some services improves provision of others, as when carbon sequestration is benefited by the increased biodiversity of forested areas. Another area of concern is representing uncertainty in a model, a notoriously neglected and difficult dynamic to quantify. The authors contend that the necessary extensive sampling and sophisticated statistical methods employed in ecosystem services quantification research should be used to incorporate uncertainty, or at least acknowledge its complexity, lest policy recommendations be made that are “misleading or flawed.”

Nicholson et al. (2009) identify areas of research that are ripe for progress. These include understanding “the linkage between biodiversity and ecosystem function” (an area well suited to national parks), interdependencies among multiple ecosystem services, and the role of economics and human activities in these systems. The authors also highlight the need to detect “potential changes in ecosystem services before it’s too late.” Managers need to know when the systems in their care are approaching a tipping point, and research may be able to identify indicators that signal impending change. The authors argue that if the challenge of integrating multiple areas of research and crossing traditional communication barriers is met, the result will be potent for effective policy recommendations.

Reference

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