

## **Ecosystem management in an era of global change**

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Abstract: Humanity faces unprecedented challenges arising from the scale of human activity and its impacts on the global environment. Humanity depends on vital goods and services provided by ecosystems but human actions are eroding the natural capital that underlies the provision of these ecosystem services. Global change has potentially large impacts upon ecosystems, biodiversity, and the well-being of current and future generations. Analyzing the impacts of human actions on the trajectory of global change and human well-being requires integrated analysis of the dynamics of social-ecological systems. Such an integrated analysis needs to include the links between: a) human actions and impacts on ecosystem functions, b) ecosystem functions and the provision of ecosystem services, c) the contribution of ecosystem services to human well-being, and d) environmental conditions and human actions. Making these links requires close integration of ecology, economics and other disciplines. Even with the best integrated science, however, there will remain considerable uncertainty. Management decisions will be made without complete knowledge of potential consequences. I will use some recent examples of land use and ecosystem management in Minnesota and Oregon to illustrate the benefits of integrated analysis for management and how to think about science and management in a changing and uncertain environment.