



# Ecosystem Services: A 21<sup>st</sup> Century Policy Challenge

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In the 31 years since Walter E. Westman (1977) published “How much are nature’s services worth?” there has been extensive research into the nature of ecosystem services, the ways in which past and existing public policies influence the viability of ecosystem services, the valuation of such services (see NRC 2005), and the challenges of developing markets in which ecosystem services are traded (see Forest Trends 2008). While the scientific literature reporting this research is also extensive and found in the journals of a number of fields, ecological and economic, the informed discussion about ecosystem services by the lay public and policymakers is just beginning.

Notwithstanding these early discussions, in its proposal for the 2007 Farm Bill, the Bush Administration included a program for a “market-based approach to conservation” structured around environmental benefits (i.e., ecosystem services) produced by rural landscapes (USDA 2007). In the final version of the 2008 Farm Bill approved by Congress over the president’s veto, the USDA is directed “to establish a framework to measure environmental service benefits from conservation and land management activities” as well as to focus on carbon markets for producers (U.S. Senate 2008); both are references to ecosystem services and rural lands.

While many in the research and academic communities are conversant about the nature of ecosystem services, the same cannot be said for those who are and will be impacted by them: landowners and operators, farmers, local agency personnel, policy designers and implementers, congressional staffers, and the members of the general public whose welfare is tightly bound to the continued vitality and availability of a diverse range of ecosystem services (MEA 2005). In the following papers, the authors provide an introduction to ecosystem services and the policy challenges they provide for the 21<sup>st</sup> century.

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In his article, Scott Swinton describes agriculture as a managed ecosystem. As a consequence, agriculture has great potential to generate a broad mix of ecosystem services, going beyond the traditional agricultural commodities of food, fiber and biofuels. However, Swinton points out that a better understanding is needed of how ecosystem services can be produced, measured and valued in order to design policy incentives to assure a for greater supply. J.B. Ruhl points out that landowners have incentives to maximize the production of food, fiber, and energy commodities, but little incentive to provide flows of ecosystem services that benefit other lands and members of the public. Ruhl raises the question whether a renewed focus on agricultural multifunctionality using ecosystem services as its fulcrum can lead to new ideas about how to strike a more socially optimal balance for agricultural production: traditional commodities and ecosystem services. Rhonda Skaggs describes how the awareness of the broad array of ecosystem services from rangelands has grown in

recent years. Rangelands are primarily viewed as contributing to human welfare through primary production and provisioning services; however, these lands also provide regulating and cultural services. Skaggs points out that rigorous economic analysis of nonprovisioning rangeland ecosystem services remains elusive. Stephen Polasky in his paper points out that while nature provides a range of goods and services of value to people, these ecosystem services may not be provided optimally both because of the lack of information and because of public goods problems. Consequently, economists need to work closely with natural scientists to understand the ecological production functions determining the provision of ecosystem services, apply valuation techniques to generate estimates of the value of ecosystem services, and design policies to

internalize externalities and provide correct incentives for the provision of ecosystem services. Stephen Swallow, Elizabeth C. Smith, Emi Uchida and Christopher M. Anderson argue that while governmental and philanthropic actions have been useful for managing the environment and conserving some ecosystem services, little work has been done to link people's individual values for ecosystem services directly into the economy. The authors show how experimental economics could be used to develop new, market approaches based on demand-side values for ecosystem services, which could stimulate entrepreneurship built around ecosystem services. The authors conclude with an preliminary look at an experimental ecosystem service market for grassland nesting birds on farms.

## For More Information

Forest Trends and The Katoomba Group (2008), *Payments for ecosystem services: Getting started—A primer*. Nairobi, Kenya: Forest Trends, The Katoomba Group, and UNEP. Available online: [http://ecosystemmarketplace.com/pages/article.news.php?component\\_id=5897&component\\_version\\_id=8614&language\\_id=12](http://ecosystemmarketplace.com/pages/article.news.php?component_id=5897&component_version_id=8614&language_id=12)

Millennium Ecosystem Assessment (2005), *Ecosystems and human well-being: Synthesis*. Washington, DC: Island Press

National Research Council (2005), *Valuing ecosystem services: Toward better environmental decision-making*. Washington, DC: National Academies Press

U.S. Department of Agriculture (2007), *Administration's 2007 farm bill proposal*. Available online: <http://www.usda.gov/documents/07finalfbp.pdf>

U.S. Senate Committee on Agriculture, Nutrition and Forestry (2008), *The food, conservation, and energy act of 2008, Title II—Conservation*. Available online: <http://agriculture.senate.gov/>

Westman, Walter E. (1977). How much are nature's services worth? *Science* 197, 960–64.

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