

Publications

The Law and Policy of Ecosystem Services

by J.B. Ruhl, Steven E. Kraft and Christopher L. Lant (2007), x + 345 pp., Island Press, Washington, DC, USA. ISBN 9781559630955 (pbk), USD 35.00; 9781559630948 (hbk), USD 70.00.

Research on ecosystem services, the end products of nature that benefit humans, is a growth industry. Each month sees the publication of more papers, many published in top-tier journals, on the geography, ecology and economics of ecosystem services. Much of the research is smart and sophisticated. However, almost without exception, it is not embedded in a social process designed to ensure effective on-the-ground management of areas that deliver ecosystem services. In other words, there is no real-world, implementation context.

Consequently, the growth in our knowledge of ecosystem services is not paralleled by an increase in our ability to safeguard them. There is a good reason for this: safeguarding ecosystem services is difficult. Each and every day many of us are exposed to the destruction, for short-term gain, of natural capital that is critical for the persistence of species, including our own. We are frustrated, even outraged, by the primacy of selfish, short-sighted policies that posit economic growth and wealth creation as the solution to complex problems that the world faces today. We have known for a very long time that draining wetlands for golf estates, converting mangrove swamps to shrimp farms, trapping beach dunes under holiday homes, and overgrazing watersheds will generate feedbacks that will be shocking in their intensity and tragic in their consequences. Some day, someone will pay; but whom and when? This then is the 'tragedy of ecosystem services', a concept described in this extremely timely and useful book. There are no incentives for rational people to safeguard something they own that will deliver, in uncertain ways and perhaps only some time in the future, benefits to others who live somewhere else.

But if we are going to have a reasonable chance of sustaining human societies on this Earth, we are going to need to overcome the tragedy of ecosystem services. This will require us to bridge the gap between knowing about these services on the one hand, and doing something about saving them on the other. This book is an admirable step in this direction: a first of its kind.

Ruhl *et al.* have delved deeply into policy and law as they pertain to natural capital and ecosystem services. With a few exceptions, they find the larder bare. It's worth quoting them, if only to re-enforce the point: 'Although a consensus is building that ecosystem services hold tremendous values that we should seek to understand and incorporate into decision making about the environment, regulatory frameworks and social norms for efficiently managing ecosystem services have not materialized. The status of ecosystem services in law and society, in other words, is that they have none' (p. 10).

This is a dense, scholarly book; it is not an easy read. But it is well structured and potentially very useful as a reference for, and guide to, an extremely wide-ranging literature on issues not normally read by the natural scientists and economists who dominate contemporary ecosystem service research. The book is coherently divided into four substantive sections. Part I (The context of ecosystem services) provides a comprehensive and up-to-date review of the ecological, geographical and economic aspects of ecosystem services. I appreciated in particular the focus on scale, both spatial and temporal, in all three contexts, and the fact that authors do not shy away from the often overwhelming complexity of the topic. Natural scientists will find the cogent treatment of economic aspects especially useful.

Part II (The status of ecosystem services in law and policy) is, from an information perspective, the heart of the book, as it comprises an investigation of the policy sources for managing and safeguarding ecosystem services. These sources, each occupying a chapter, are property rights, regulation and social norms. The chapters makes depressing reading. For example, property rights have evolved to facilitate the transformation of natural capital, historically in surplus, into manufactured capital. But much natural capital is now in short supply, yet legal frameworks are not yet responding to this reality. The authors are equally pessimistic about the potential of contemporary regulatory and normative institutions to provide for the effective management of ecosystem services.

Part III (Empirical case studies in ecosystem services law and policy) provides nine case studies that demonstrate real-world application of the issues discussed in Parts I and II. Thus, one is able to see just how this complexity plays out in relation to actual

pieces of land and water. Given the current economic paradigm, the chapters are an assessment of the successes and failures of market-based instruments for safeguarding ecosystem services. This is a very useful section indeed.

In the final section of the book (Part IV; Designing a new law and policy for ecosystem services), the authors provide useful and detailed pointers for the kinds of legal and other institutional frameworks required to ensure that ecosystem services are effectively safeguarded. These boil down to (1) changes in common law policy, (2) accounting for the economic value of ecosystem services, and (3) the development of 'geographically defined institutions for the regulation of natural capital and the provision of ecosystem services as public goods' (p. 295). None of these recommendations is new or even revolutionary. But getting them in place will not be easy. The book provides detailed lists of steps that need to be followed to manage the transitional phases, deal with the inevitable trade-offs, and establish the institutions and organizations required to implement the new policies.

This is a very useful book that I strongly recommend to anyone interested in ecosystem services research, policy and implementation. But don't expect an easy read; I sweated through Parts II and IV. Also, other than a brief mention of a case study from Europe in Part III, the book is entirely focused on the USA. So don't expect any insights from legal and policy frameworks elsewhere in the world. An engaging and global treatment of the topic remains to be written.

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Systematic Conservation Planning by

Chris Margules and Sahotra Sarkar (2007), vii + 270 pp., Cambridge University Press, Cambridge, UK. ISBN 9780521703444 (pbk), GBP 35.00/USD 65.00; 9780521878753 (hbk) GBP 75.00/USD 145.00.

Systematic conservation planning is a target-driven process for designing protected area systems and other ecological networks. This important topic has been written about extensively in the scientific literature by everyone from data-mining academics to

workshop-weary practitioners, with many articles describing how biodiversity data has been used to identify priority areas. This array of publications can be overwhelming and we have long needed an informed synthesis of all this work. Fortunately, this book by Margules and Sarkar does a great deal to fill that gap, providing an important resource for students, academics and practitioners.

The book's first chapter sets the scene nicely and describes an 11 step planning process that starts with stakeholder identification and ends with periodic conservation network reassessment. This chapter also includes a telling example from Sarkar's home state of Texas, where tax exemptions given to landowners for maintaining or restoring natural habitats were worth more than USD 1 billion in 2003. Such funding could help transform conservation in the region but there is no prioritization of where money would be best spent to achieve conservation goals. Unfortunately, this situation is far from unique: agri-environmental schemes in Europe are often equally unfocused (van der Horst, 2007, *Journal of Environmental Management*, 85, 1076-1087), and protected area network development continues to be poorly planned in many countries (Rodrigues *et al.*, 2004, *Bioscience*, 54, 1092-1100). This lack of a systematic framework also make it difficult for countries to integrate the funding priorities of different conservation donors (Smith *et al.*, 2006, *Oryx*, 40, 400-410) and target proposed avoided deforestation schemes (Gullison *et al.*, 2007, *Science*, 316, 985-986).

The book provides a guide to collecting and analysing the data needed for such a systematic approach, beginning with chapters on identifying suitable biodiversity surrogates, collecting biodiversity distribution data and using modelling to map species and habitat distributions. All of these aspects are well explained and each section includes worked examples and case studies that help illustrate the different approaches and techniques. The fifth chapter describes the principles behind systematic conservation planning, detailing the problems associated with *ad hoc* approaches to designing conservation area networks and explaining the limitations of traditional methods based on scoring and ranking techniques. The sixth chapter covers issues of persistence and vulnerability, discussing methods for incorporating biological processes, as well as population and habitat-based viability analysis. This chapter also reviews methods for setting targets to ensure the persistence of the selected conservation features and provides helpful worked examples.

The seventh chapter is on satisfying multiple criteria and is the first to focus on non-biological information. It briefly describes the type of quantitative socio-economic data that can be incorporated and then reviews a range of mathematical techniques for including these data in priority setting exercises. The eighth chapter discusses systematic conservation plans and again adopts the useful approach of illustrating the process using case studies. The concluding chapter includes sections on

coping with data uncertainty and the role of conservation planning in agricultural and urban landscapes. This chapter also re-emphasises that systematic conservation planning is designed to help local experts make policy decisions, and so needs to feed into a broader implementation framework.

The importance of such a framework is perhaps best illustrated by work from the Cape Floristic Region, one of the case studies used in the conservation plans chapter to illustrate the value of engaging with a wide range of collaborators. The trail-blazing nature of this project is widely recognised (Balmford, 2003, *Trends in Ecology & Evolution*, 18, 435-438) but it is also unusual for adopting a self-reflective approach that involves discussing limitations and identifying potential improvements (Knight *et al.*, 2006, *Conservation Biology*, 20, 739-750). This self-assessment concluded that the Cape project focused too much on the scientific aspect of the work and not enough on implementation (Marris, 2007, *Nature*, 450, 152-155), emphasizing that collecting and analysing biological data often plays a vital but relatively minor role in the whole process. So, I hope that we will soon see a synthesis of the growing literature on the social aspects of conservation planning. Such a resource would complement this book by Margules and Sarkar and fill another important gap.

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