

OCEANS

A Critical Course Change

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Ecosystem-based management (EBM) represents a novel strategy to create enduring wealth while balancing trade-offs among social and ecological considerations. Born from management disasters caused by narrow, species- or issue-specific decision-making processes, the approach represents a profound shift in natural resource management. It emphasizes human dependence on ecosystems, humility, and precaution in how we interact with and use the environment. It also highlights

the need for institutional adaptation to change and ecological resilience. The degree to which stakeholders, scientists, and managers must consequently expand their worldview, understanding, and ethics is daunting. *Ecosystem-Based Management for the Oceans* provides a synthetic, cohesive perspective on these issues, making it essential reading for EBM researchers and practitioners in the oceanic, terrestrial, and freshwater realms alike.

Editors Karen McLeod (Oregon State University) and Heather Leslie (Brown University) and their diverse team of over 40 contributors offer the first comprehensive guide to the science and practice of EBM for the oceans. Their insightful chapters are organized into five sections. These set the stage, present underlying concepts, connect concepts to practice, discuss several marine case studies, and look ahead. Together, they synthesize the current state of EBM for an informed but nonexpert audience.

Coastal development, agriculture, shipping, fishing, aquaculture, tourism and recreation, and oil and gas extraction are among the human activities that affect marine ecosystems. Without comprehensive EBM, the cumulative impact of these activities leads to the prevailing phenomenon of death by a thousand cuts. Ecosystem management has generally been conducted piecemeal, with separate management of individual sectors and little attention to the often-critical connections among them. In retrospect, the

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Sound management. A large-scale EBM process has been implemented for Puget Sound, Washington.

resulting failures are no surprise: when one treats a complex web as separate strands, it can unravel in unanticipated ways. Various chapters effectively describe the scientific and political barriers to implementing EBM, and several also describe how those can be (and are being) overcome, largely through interdisciplinary research.

Contributors describe how EBM provides an integrated approach to maintaining healthy marine systems. Their discussions of the inextricable connections among people, institutions, and the multitude of ecosystem components emphasize two core concepts long studied separately: socio-ecological resilience and ecosystem services. The four chapters on these topics succinctly present the state of knowledge and central issues in these fields. Another highlight is the chapter “Integrating local and traditional ecological knowledge,” the most accessible treatment of these topics that we have encountered. Practitioners, especially in the United States, will find the comprehensive and incisive chapter on building the legal and institutional framework for EBM essential reading.

The timely volume substantially advances EBM thinking. Nonetheless, the overly theoretical or narrow treatment of some topics (e.g., scaling, value systems) and the use of important concepts without sufficient discussion (e.g., cumulative effects, sustainability, historic baselines) reflect the field’s youth; EBM remains more of an idea than a reality. Fulfilling its promise will require progress in several areas.

Adopting ecosystem services as a key conceptual framework strengthens the values foundation of environmental management. But by limiting themselves to utilitarian values tied to human well-being, the authors largely default to the current ethical framework. Discussion of the intrinsic values of nonhuman organisms and ecosystems, questions of process (rightness and justice), and virtue is essentially limited to the chapter on ethics. That chapter, however, provides a valuable description of how current EBM operates in a reduced moral space, the expansion of which would foster responsible management.

We reject two important claims in the book that could handicap efforts at EBM. First, although the well-being of nonhuman organisms ought to be granted much more weight than currently, we do not believe that human-centered morality is inconsistent with an ecological worldview—except in a purely metaphorical sense. That human beings are not uniquely valuable in an ecological sense does not demonstrate that we are not uniquely valuable in a moral sense.

Second, we disagree with the pervasive implication (both within and beyond this book) that managing people is much easier than managing ecosystems. We are equally incompetent at the conscious direction of human behavior and ecosystems. Management levers are both human (e.g., fishery closures)

and ecological (e.g., species reintroductions, habitat restoration, culling). And managers are much more constrained regarding what they can do with people than with nonhumans and ecosystems. The view has meant that much less attention is paid to the human dynamics (e.g., psychology, sociology, anthropology) of these coupled social-ecological systems. Given that people’s responses to management can diverge greatly from those desired and these variances can ripple through the coupled system, an integrated understanding of psychological and social behavior is essential for sound ecosystem management.

As several case studies demonstrate, effective EBM requires substantive involvement of local and indigenous people that goes well beyond gathering knowledge. The examples also illustrate the rarity of comprehensive participation, which suggests that additional practical guidance on implementing participatory approaches would have benefited many readers.

The treatment of moving from theory to

Ecosystem-Based Management for the Oceans

Karen McLeod and Heather Leslie, Eds.

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practice would also have been enhanced with more discussion of tools for making decisions. Place-based planning tools (e.g., Marxan, InVEST, MarineMap, EcoSpace, NatureServe Vista) provide enormous opportunities for EBM education and implementation. Interested readers can find descriptions of these tools and illustrations of their use at the EBM Tools Network (www.ebmtools.org).

The volume's integrative, conceptual style makes it relevant to diverse jurisdictions and ecosystems around the world, although the U.S. focus of many chapters means they offer

less insight for developing countries. Modifications will be required in areas with limited rule of law or abject poverty. In addition, the data-intensive nature of EBM in developed countries suggests that sustainable ocean management in countries deficient in social and ecological data will require different strategies.

Several chapters allude to the crucial context and opportunity provided by historical studies of socio-ecological systems, but the topic merits a chapter of its own. Without deeper discussion, one is left with the impres-

sion that historic reconstruction is simple or self-evident. In practice, it is every bit as complex as ecosystem-service valuation and trade-off assessment.

Ecosystem-Based Management for the Oceans heralds a timely call for action. Ocean scientists, resource managers, and policymakers should take careful note of the volume and connected developments. They chart a critical new course for marine management—steering us away from destruction and toward a bountiful future for Earth's oceans.

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HIGHER EDUCATION

Addressing the Graduation Gap

Richard C. Atkinson¹ and Saul Geiser²

Since retiring as president of Princeton and assuming leadership of the Mellon Foundation, William G. Bowen has been lead author of an extraordinary series of books on topics in American higher education such as affirmative action (1), the role of intercollegiate athletics (2), and access for low-income students (3). Bowen's hallmark has been "building large, linked databases and seeing what lessons can be learned from them." *Crossing the Finish Line*, written with Matthew M. Chingos, a Mellon associate, and Michael S. McPherson, president of the Spencer Foundation, continues in this tradition but on an even grander scale.

The book is concerned with the alarming slowdown of improvement on most measures of educational attainment, particularly college completion rates, since the 1970s. During the first three-quarters of the 20th century, the United States made substantial progress in improving both access to higher education and completion of baccalaureate degrees. That progress slowed dramatically in the mid-1970s and has since remained almost flat. With its current college-completion rate of 56%, the United States now ranks near the bottom of the 30 Organisation for Economic Co-operation and Development countries. And among its college-age population, disparities in college graduation by

Crossing the Finish Line
Completing College at
America's Public Universities

by William G. Bowen, Matthew M. Chingos, and Michael S. McPherson

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race, ethnicity, and socioeconomic status have continued and in some cases worsened. Whereas Bowen's earlier books focused on elite, private institutions, public institutions account for over three-fourths of college enrollments in the United States. For *Crossing the Finish Line*, he and his colleagues constructed a massive, longitudinal database of students at 21 public "flagship" universities and four state university systems. Students were tracked for six years following their matriculation in 1999. The unprecedented scale of the database and its linkage to student-level, standardized-test data permit the most comprehensive look yet possible at the determinants of graduation rates—and what might be done to improve them.

Bowen and McPherson are economists and bring economists' sensibilities and methods to their subject. Much of the book uses regression analysis to assess the impact of various factors on college completion (e.g., socioeconomic status, financial aid, and institutional selectivity) after adjusting for other factors such as students' high-school grades and test scores. Individual chapters deftly summarize what is known about each topic and then often extend that knowledge substantially.

One finding likely to draw wide attention

is that, of the criteria commonly employed in college admission decisions, high-school grades are by far the best predictor of college completion. Once those grades are known, scores from the SAT and the ACT add little to the prediction. This pattern holds irrespective of the quality or type of high schools that students attend and across colleges and universities at all levels of selectivity. The authors also find that grades are less closely associated with socioeconomic status than are SAT or ACT scores. Together these findings suggest that selective institutions could admit students from a broader range of socioeconomic backgrounds, with no deterioration in graduation rates, by giving greater weight to high-school grades.

Yet the authors by no means close the door on standardized admissions tests. They find that achievement tests (such as the SAT Subject Tests and Advanced Placement exams) that measure students' knowledge of spe-



cific college preparatory subjects are better predictors of college completion than the generic SAT or ACT exams. Subject-based admissions tests also have important "signaling" effects for high schools, encouraging teaching and learning of a more rigorous academic curriculum. *Crossing the Finish Line* will surely enliven and deepen the national dialogue about the role of standardized tests in college admissions.

Another provocative finding concerns

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