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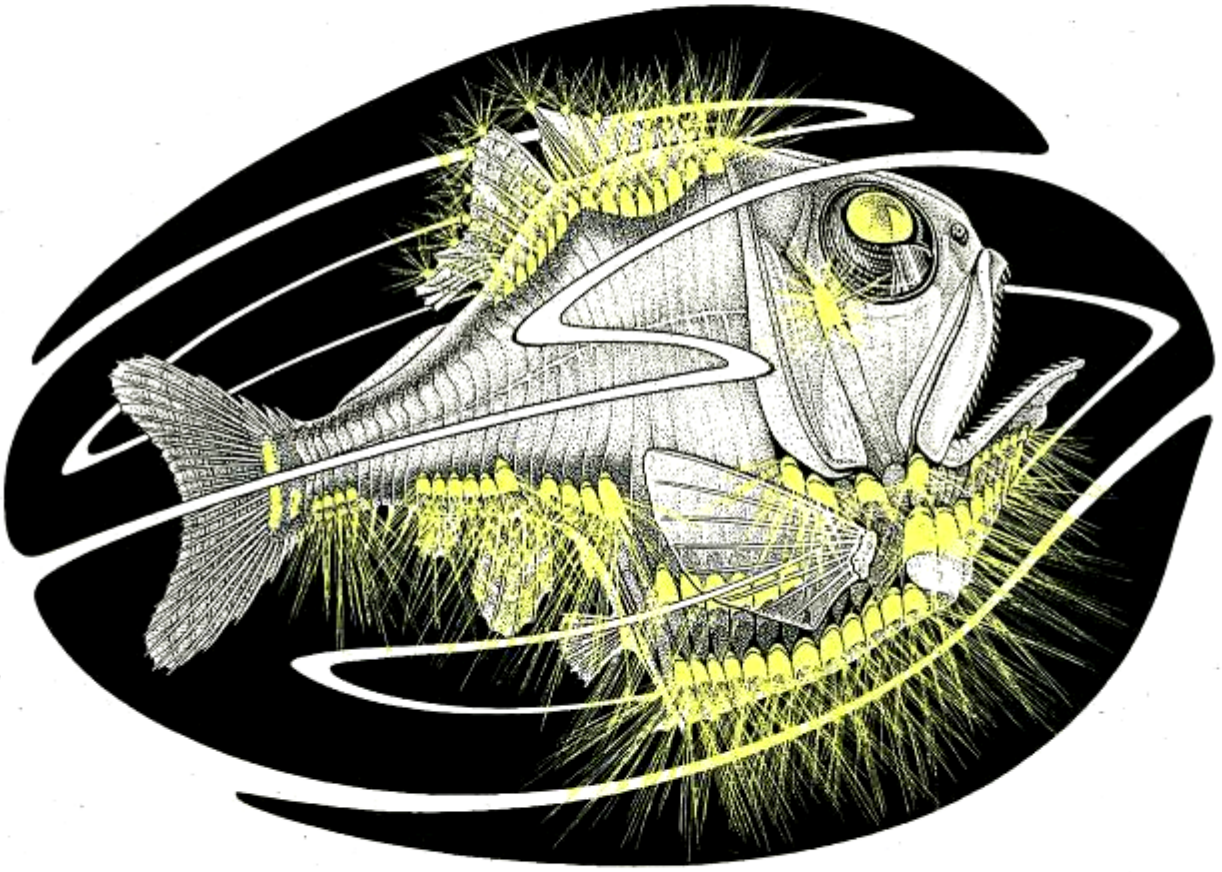
Global biodiversity

An International Forum on the Variety of Life on Earth...
research, conservation and wise use



TURNING THE TIDE

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THE PARADOX OF PARASITES

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ASSESSING INSECT BIODIVERSITY

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Global biodiversity

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Islands: Biological diversity and ecosystem function

Ecoligical Studies, Vol. 115. Edited by P.M. Vitousek, L.L. Loope, H. Andersen. 1995. Springer-Verlag, New York. ISBN 0-387-57947-8. 258 pp.

There is a feverish race underway to find markers of global change so that we can better develop policies to avert deterioration of the biosphere as well as ecological disasters. This lean volume explores the potential of oceanic islands as markers for better ecosystem management on continents. This book is the proceedings of the 1993 Workshop on Biological Diversity and Ecosystems and Ecosystem Function on Islands held in the Bahama Islands under the auspices of SCOPE (Scientific Committee on Problems of the Environment).

The editors begin by outlining the centrality of oceanic islands to 19th century biology, particularly to the pioneering notions of evolution and speciation of Darwin and Wallace, and to the paradigms of contemporary conservation science, especially the theory of island biogeography. Early on the editors argue that "lessons learned from success and failures in conserving the biological diversity on islands might guide us in developing strategies for protecting continental diversity." But exactly what can islands tell us about larger terrestrial ecosystems and how to conserve them? According to this book, the jury is still out.

All the articles in the book confirm that island conditions are often unique and that island biota are often vulnerable. Beyond these axioms, it becomes clear that while islands can give us many insights, the patterns gleaned from "island life" are often contradictory and are not always directly transferable to conservation in larger, more landlocked areas. There are pressures to make questionable generalizations such as Henning Andersen's statement that "the main worry in continental reserves may be ecosystem contamination in terms of chemical pollutants, whereas island reserves suffer from biodiversity contamination in terms of alien organisms." Alas, in recent decades many islands have suffered the devastating synergies of both invasion of alien species *and* chemical contamination.

This enigmatic book raises far more questions than it answers; it contains many interesting threads that may well preoccupy biogeography and conservation biology for much of the next century including:

- The theme of oceanic islands as anomalous, rather unpredictable, engines of speciation — ones inherently difficult to extrapolate "lessons" from.
- The vulnerability of oceanic island ecosystems, especially to invasions of aggressive and often lethal species. This may suggest that protected areas on continents may well share this devastating fate.
- The implications of the relatively impoverished nature of island biota, compared with similar conditions on mainlands.
- The debunking of the myth that islands are relatively stable environments.
- The surprising fact that virtually all of the so-called "natural" archipelagos that sparked modern biology (except for the Galapagos Islands in Ecuador) have already suffered significant human-induced losses of groups of vertebrates (notably ground birds) and plant species.

Halfway through the book, one begins to wonder if it is not more about how island ecosystems are *less* relevant to conservation on continents than we once thought. For example, J.H. Fownes suggests that the same species may behave ecologically differently on different islands. But other articles discuss subjects such as the intriguing mutualisms associated with island "passengers." It is these frequently archipelago-specific relationships between species that indicate most about the vulnerability of underlying ecological architectures.

The volume is strongest when reviewing and enhancing relatively established debates in biogeography. Its forays into spatial analysis and land management are more limited. Vitousek and Benning's key overview of island landscape ecology was disappointing. (For one reason, the simple commonality of ecosystem types is not fully acknowledged.) M. Maunder's stark description of St. Helena did not foresee much conservation in its future without a considerably increased level of economic development. This article and several others point to an outdated intellectual collapsing of the factors influencing island biodiversity, island ecosystems, and island conservation. This collapsing contradicts the assertions that all oceanic islands, with very few exceptions, have been the products of erratic human, as well as more predictable biogeographic, processes.

For Canadians this book is most relevant to those living in the more far-flung and ice-free regions of the Maritimes and the Pacific Coast — few of which are fully

"oceanic." Perhaps the book's greatest contribution is to remind us of the uniqueness of the ecosystems of each insular land mass and that ecological generalizations that work on the mainland may not be enough of a basis for protection of these precious margins.

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Environmental values in American culture

By Willett Kempton, James S. Boster and Jennifer A. Hartley. 1995. MIT Press. Cambridge, Massachusetts, US. Hardcover ISBN 0-262-11191-8, $42.00; Paper ISBN 0-262-61123-6, $15.00. 336 pp.

Consider the "truisms" of environmental politics:

- concern about the environment is fragile, easily displaced by more pressing matters like crime and taxes;
- people usually focus on short-term, not long-term problems like climate change; and
- environmental politics is about conflicting values.

Such statements are often viewed as beyond debate. But, as *Environmental Values in American Culture* demonstrates, they may also be largely incorrect.

The authors of this book are anthropologists. Using the methods of their discipline, including surveys, interviews, and other strategies customarily applied to the study of foreign cultures, they have generated a series of conclusions about how Americans view their environment. Most important, they conclude that concern about the environment is not a fad.

Over the last 30 years, this concern for nature has become pervasive, and closely associated to other core values, including concern for future generations, parental responsibility, and religious faith. Only a small minority of Americans continue to believe that nature's only function is to serve humanity. And while the media tends to focus on conflict when reporting environmental politics, there actually exists a rough consensus, with most people holding views that could be classified as environmentalist. Even opponents of environmental laws often share these values, although they may give more weight to concerns about taxes or unemployed coal workers.

"If environmental concerns are so widespread, why does not this translate into action?"

To better understand these values, the authors sought to define the "cultural model" — the underlying perspective on nature. According to this model, nature is an interdependent, balanced, often delicate system, vulnerable to "chain reactions" triggered by human impact and interventions. Such a model tends to imply caution toward such interventions, because of their potentially unpredictable, irreversible consequences.

This cultural model diverges from scientists' understanding of the world. Some ecologists, for example, no longer consider nature to be a fragile balance. Scientists and the public, however, do tend to agree on the implications of climate science: that society should act on the basis of uncertain information, and not wait for final "proof" of climate change.

These conclusions have implications for both education and policy. Those who communicate scientific results to the public should not assume they are writing on a blank slate. Most people are predisposed to protecting the environment, but an understanding of the most effective way of doing so may be less widespread. For example, while specialists see energy conservation as the most effective strategy to forestall climate change, non-scientists see climate change as a problem to be addressed through pollution controls (as have previous environmental problems). As a result, fuel efficiency standards, carbon taxes, or other energy conservation measures may not receive wide support even among those concerned about climate change, because these measures are seen as irrelevant.

This book is strongest in its analysis of contemporary environmental values and their underlying cultural models. It is less successful in addressing an obvious question: If environmental concerns are so widespread, why does this not translate into action? Barriers to action, both economic and structural (for example, the absence of convenient alternatives to private cars), are part of the explanation. Inappropriate cultural models (such as the