

Though in general the coverage of diversity measures in this book is admirable, the lack of coverage of measures of taxonomic diversity (also called phylogenetic diversity) is an important omission. Coverage in this area is largely confined to several recent articles by K. R. Clarke and R. M. Warwick. Taxonomic diversity gives greater weight to species without close genetic relatives. One can justify interest in taxonomic diversity by claiming that an objective of conservation is to preserve evolutionarily unique species or to preserve those that contain unique genetic material. Incorporating taxonomic distinctness poses an interesting intellectual challenge not present with measures of species richness or relative abundance. With only two species, a measure of dissimilarity is sufficient. But with three or more species, such pairwise dissimilarity measures are no longer sufficient. The challenge is to come up with a reasonable measure of mutual dissimilarity among a larger set of species. One solution to this challenge is to use the branch length of a phylogenetic tree of the set of species.

This question of how to summarize in a single statistic the general notion of mutual dissimilarity of a set of objects is a general issue, one that is also relevant to the discussion of species turnover across space ( $\beta$  diversity), the topic of Chap-

ter 6. Measures of  $\beta$  diversity typically focus on pairwise comparisons of similarity between two areas. With more than two areas, however, one would like to know more, namely how many species have ranges restricted to a small subset of the areas. Current methods to measure  $\beta$  diversity are insufficient for this task. As Magurran points out, this is an area of recent development and further work is needed.

In terms of style, there are several places where the book is not as clear or as precise as it should be. Sometimes measures are mentioned but not formally discussed until later. Notation is not always clearly defined.

On the whole, however, this book is clearly written and covers much useful material. It will be a useful reference book and educational tool for years to come for those interested in the measurement of biological diversity.

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#### A CURE FOR A WORLD OF WOUNDS?

Speth, James Gustave. 2004. **Red sky at morning: America and the crisis of the global environment**. Yale University Press, New Haven, Connecticut. xv + 299 p. \$24.00, £16.95, ISBN: 0-300-10232-1 (alk. paper).

Last summer's crop of blockbuster movies was unleashed with *The day after tomorrow* highlighting the peril of ignoring the increasing pace of climate change. In this movie, which world-wide grossed \$155 million in its first weekend of release, unbridled resource use has caused—in a cataclysmic seven days (Armageddon or re-Creation, anyone?)—the breakup and melting of the polar ice caps, the collapse of the ocean circulation system, the destruction of Los Angeles by tornadoes, and the onset of a new ice age as the Earth re-equilibrates rapidly to these new conditions. The Vice President (and Dick Cheney look-alike) had dismissed the warnings of the world's scientists and persisted in supporting the unbridled excesses of a petroleum-based economy. With tangible irony he is forced to flee the onrushing ice age by crossing the Rio Grande southward, after which he takes up residence in a Mexican refugee camp.

While setting into sharp relief one potential consequence of global warming, *The day after tomorrow* fundamentally misrepresents our scientific understanding of the tempo and mode of climate change. Nevertheless, this movie is likely to reach a wider audience and may have more electoral impact than Gus Speth's careful and thoughtful assessment of the current and future state of the planet. This is a truly unfor-

tunate state of affairs and illustrates clearly the moral, political, and intellectual trough in which the commonweal is currently foundering. Lift your head out of the trough! Buy this book (it's a steal at \$24.00); then buy copies for your parents, your children, teachers in your local schools, and your local library. Better yet, buy copies for your local, state, and federal representatives and senators. Send copies to the White House. Work at getting people out of the movies and back into reality. We are out of time.

Currently Dean of the School of Forestry and Environmental Studies at Yale, Gus Speth has spent his entire career identifying and addressing through direct, personal action the most pressing national and international environmental issues. He founded both the World Resources Institute and the Natural Resources Defense Council; chaired the Council on Environmental Quality (CEQ) for President Jimmy Carter; was an environmental advisor to President Bill Clinton; and was the chief executive officer of the United Nations Development Program. (Now that he's reached the pinnacle of his career through a deanship at Yale, if he's truly fortunate, he'll follow in the footsteps of former Yale President A. Bartlett Giamatti and ascend Mount Olympus to the commissioner-ship of Major League Baseball.) He was on the front lines successfully fighting for the passage of landmark environmental regulations in the 1960s and 1970s, including the Clean Air and Clean Water Acts. But as the chair of the CEQ and co-author of their *Global 2000 Report to the President*, he realized that "we were building a fool's paradise here in America by concentrating on local environmental concerns

while ignoring these global-scale ones.” *Red sky at morning* is his assessment, 25 years on, of what this fool’s paradise looks like.

In a short book lauded by a former President of the United States (Jimmy Carter) and a former President of the Ecological Society of America (Simon Levin), and through readable and concise prose, Speth surveys the decline in the Earth’s environment, a decline that continues to accelerate despite local and national legislation and international agreements. The assessment of international efforts is stark and severe: “the climate convention is not protecting climate, the biodiversity convention is not protecting biodiversity, the desertification convention is not preventing desertification, and even the older and stronger Convention on the Law of the Sea is not protecting fisheries.” The take-home message (“[t]he current system of international efforts to help the environment simply isn’t working. The design makes sure it won’t work, and the statistics keep getting worse”) should be obvious to a pithed frog: why it hasn’t occurred to those who make the decisions that affect our lives—from local planning boards and commissions to heads of state around the world—is the defining mystery of our time.

The first three parts of the book will come as no surprise to ecologists and environmentalists whose knowledge condemns them to live in what Aldo Leopold (1953) called “a world of wounds” (*Round River: from the journals of Aldo Leopold*. Oxford University Press, New York). In seven brief chapters, Speth illustrates with welcome clarity that the causes of environmental decline are obvious: the population is too large (a theme that unfortunately is absent from most discussions of environmental degradation); the planet’s biodiversity (“resources” in economic-speak) has been raped and pillaged; the use of toxic pesticides has skyrocketed (nearly  $6 \times 10^9$  pounds, or  $2.7 \times 10^6$  metric tonnes *per year*); fossil fuel use and deforestation are (politicians: note the simple unambiguous declarative) resulting in increasing concentrations of atmospheric CO<sub>2</sub>, which increases the temperature at the Earth’s surface; the bulk of the world’s nitrogen and water are appropriated, *and wasted*, by human industrial activities. We truly have reached Bill McKibben’s “end of nature” (1989. *The end of nature*. Random House, New York): no longer is it possible to view “nature” as being independent of human activities. And not only are these causes obvious, but despite seemingly heroic efforts, the situation is worse, much worse, than it was a quarter century ago. It is impossible to read these first 147 pages without sinking into a deep slough of despond.

In the last part, in a scant 50 pages, Speth lays out his prescription for a transition to a sustainable future. He calls it an “eightfold way”—“eight broad, linked transitions that seek to redefine and redirect growth.” These eight transitions are: stabilize and shrink the global population; eliminate poverty; modernize industry and agriculture through environmentally friendly technologies; develop environmentally honest prices in all markets; reduce consumption to sustainable levels; insist on universal environmental education; govern responsibly; change our consciousness. Plausible mechanisms for each of these transitions are proposed, although a political framework is lacking. His clarion call is for citizens

to engage in JAZZ: an undefined acronym of the World Business Council for Sustainable Development in which “people and businesses create a world full of unscripted, voluntary initiatives that are decentralized and improvisational, like jazz.” JAZZ will be realized through global action via web-based resources and citizens’ organizations (all collected at <http://www.redskyatmorning.com>). This is a grand vision in the best utopian tradition, and Speth’s optimism is almost infectious.

But in spite of his thorough, thoughtful, and insightful summary of where environmental reform went astray, I found his prescription disappointing. Perhaps it’s my age—I was in elementary school when Speth founded NRDC and when the major pieces of environmental legislation were enacted in the United States in the late 1960s and early 1970s. Whereas Speth’s formative years were spent in the trenches successfully combining citizens’ action and national legislation, mine were spent under the aegis of Reagan, Bush (I and II), and Clinton, who scaled back the environmental agenda that Speth and his colleagues had developed. He has lived optimism and seen political success; I have lived pessimism and seen political cowardice and failure. Further, I simply don’t believe that a global community whose “environment” consists of images on the silver screen or the world-wide-web and whose members spend more time in electronic chat rooms than in voting booths or on town boards is going to find a way through this proposed path to sustainability. Lastly, I have a deep distrust of any business council that includes “sustainability” in its moniker and that emphasizes voluntary initiatives and market-based solutions. These have been the defining positions of our leaders since 1980; the concomitant, progressive decline of the environment illustrates the hollowness of this approach and the emptiness of this vision.

More than two millennia ago, Buddhists recognized that all life is suffering, and they developed the Eightfold Path to enlightenment and Nirvana (which is the escape from the continual cycle of birth and rebirth into a wounded world of suffering): right speech, right action, right livelihood, right effort, right mindfulness, right concentration, right view, and right intentions. This Eightfold Path is encapsulated (assuredly unintentionally) by David W. Orr, who has recently written: “[t]here are legitimate grounds for hope in hard times, but not one speck of ground for wishful thinking of any kind. We won’t be rescued by more research, hypertechnology, or some *deus ex machina*. . . hope can be nurtured by good work, openness to life, and rising above our lesser selves. Hope, real hope, comes from doing the things before us that need to be done in the spirit of thankfulness and celebration, without worrying about whether we will win or lose” (2004. Hope in hard times. *Conservation Biology* 18: 295–298). Perhaps Speth, and all of us, need to learn that it really isn’t whether we win or lose, it’s simply how we play the game.

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