much more on methodology than on personal expertise. So, our emphasis tends to be on training scientists in technique, rather than in, say, logic or creativity.” Although both books reviewed here advocate for adding creativity to statistical analysis, I worry that students and young researchers will hear the message that you cannot be a great scientist without also being a statistician or a computer scientist. I sense impatience from students to get through the foundations and on to the fancier methods they must use in their research. I often wonder what many sciences, and particularly ecology, would look like today if Fisher’s methods had not become so central to the science. In Ecological Statistics, an author actually states, “For young ecologists to be able to keep up with the phenomenal advance, old ways of teaching statistics (based on memorizing which ready-made test to use for each data type) no longer suffice; ecologists today need to learn concepts enabling them to understand overarching themes.” I agree with this statement, but to me it means that students should spend more time on the foundations, rather than less. Boiling the introduction to statistical inference down to a chapter or very short book with lots of computer code is not how we should be solving this problem. As a statistician who embraces the ideas and foundational concepts behind statistical inference, along with its underlying mathematics, I find myself becoming more worried about the potential mistakes of relying too heavily on statistical methods.

So should you spend your money on the books? For me, this ultimately comes down to whether I would recommend them to my non-statistics students as an additional resource during or after my class. The answer for The New Statistics with R is a fairly easy no. However, for Ecological Statistics, the question is more difficult. If someone already has the necessary background to skip the introductory material and focus on whether the methods and ideas presented are relevant to their own research (as well as the commitment to find and use other more in-depth resources on the topic), then this book will be fun to spend time with. It may also be helpful to those reviewing manuscripts or grant proposals because it provides relatively short overviews of some advanced methods reviewers that may be unfamiliar with. Just read it with the healthy understanding that one book cannot do everything.

The authors of the books mention several times the benefits of meeting with a statistician. Unfortunately, I do not think they followed their own advice to the extent they should have. As statistical sophistication in ecological research continues to grow, it will be increasingly important for the union between ecology and statistics to be defined through collaboration between biologists and statisticians—rather than a “one person can do it all” strategy. Things have evolved enough that we need both the theoretical strengths of statisticians and the expertise and insight of the quantitative ecologists who are pushing the envelope of how we use statistical methods. The criticisms and worries conveyed in this book review are as reflective of the current health of the union of ecology and statistics as they are of the books themselves; now is the perfect time for more discussion.

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The Anthropoceniacs are represented in the book by Erle C. Ellis and Emma Marris but in the world at large by Peter Kareiva, chief scientist at the Nature Conservancy, and Ted Nordhaus and Michael Shellenberger, of the Breakthrough Institute. A central argument of the Anthropoceniacs is that the environmental movement’s focus on preserving wilderness is misplaced, because nothing, not even wilderness, was pristine in the first place and certainly will not be now that we are altering the climate and other major biochemical processes. Therefore, we need not worry about further engineering or—in the lexicon of Marris—“gardening,” the planet. Ellis, for example, concludes that “the biggest problem with nature is that we’ve outgrown it” and that “we must stop imagining ourselves nurtured by a nonhuman nature and accept the reality that it is only by transforming nature that we survive and thrive.” Marris likewise concludes that “everything is humanized” and generally chides “traditional” conservationists for their dependence on wilderness as the “moral heart” of their action.

Several of the essays fault the Anthropoceniacs and the use of the term Anthropocene for dangerous hubris. John A. Vucetich and colleagues, for example, state that “naming something or someone after oneself runs the risk of great hubris” and further note that “hubris is one of the great problems with our relationship to nature.” Emma Marris acknowledges this problem, stating, “There’s a cultural problem with both the Anthropocene and the gardening metaphor. They sound arrogant. People, myself included, running around talking about how humans ‘control’ and ‘dominate’ the planet can sound like assholes.”

This hubris is on full display in Earle C. Ellis’s essay, “Too big for nature.” Ellis presents a fantastical vision of the future that is based as much on life in a Star Trek episode, in which problems both societal and environmental have all been put in the past, as on a careful analysis of humanity’s current trajectories. In Ellis’s view, as well as that of the folks at the Breakthrough Institute, the problems we currently sustain with 7 billion people on the planet—including tremendous inequities that leave more than a billion people hungry, the over-exploitation of fisheries and wildlife populations, habitat destruction, the pollution of water and air, and many others—rather than growing worse with an increase to 9 billion by 2050, will get better. In other words, the party can keep raging, nothing to see here folks, and full steam ahead as long as we build a lot of windmills and nuke plants. Scantly mentioned is the cost in terms of the loss of human lives and the loss of perhaps millions of other species.

Ultimately, After Preservation makes clear that the central question is not whether geologists decide that the present time is worth recognizing as an epoch known as the Anthropocene, a move expected in 2016, but rather, the issue is how we approach our relationship to nature. As Vucetich and colleagues observe, “The problem is that ‘living in the Anthropocene’ is not an argument. It cannot, by itself, support any conclusion for how we ought to behave.”

And this is where the Anthropoceniacs really drop the ball. Rather than provide any alternative to the current practices of our society that are leading to species extinction and so many other problems, the Anthropoceniacs lamely offer only the observation that humans increasingly dominate the planet and that we might as well embrace it.

Fortunately, many of the essays in After Preservation do provide insight into how we might change our relationship with nature in order to preserve as much of the natural world as we can. As but one example, the environmental historian, Donald Worster, concludes:

Only the human species could mourn another creature’s extinction or work to protect Earth’s ecosystems. It is our unique contribution to conservation. The conservation of energy and...
matter for the sake of survival are common behaviors throughout the plant and animal kingdoms, but not the conservation of otherness, of wholeness and balance, of endangered communities of life. Those require the evolution of what we might call the higher altruism, an intentional selflessness that may have an element of self-interest but expands to find moral purpose in the act of preservation.

The view of many of the authors in After Preservation, and one that I share, is that it is exactly this kind of compassion that has the best shot at saving both us and the millions of species with which we share this planet.

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THE OXYMORON OF SUSTAINABLE DEVELOPMENT


In the late 1960s and early 1970s, the authors of The Population Bomb and Limits to Growth warned that humans were using the finite resources of the planet to fuel unsustainable population growth. Since 1975, the global population has grown from 3 billion to the current 7.3 billion, and it is predicted to reach 9 billion to 10 billion by 2050. There is compelling scientific evidence that present trends in global population, resource use, and economics cannot continue for more than a few decades. The only question is whether there will be a gradual and managed decline or a catastrophic crash. Nevertheless, self-proclaimed experts maintain that “sustainable development” can be achieved if we can just summon the necessary technical expertise, political will, and popular support.

Of the more than two dozen titles on global sustainability listed on Amazon.com, The Age of Sustainable Development by Jeffrey Sachs is likely to be especially influential. As the publisher proudly proclaims, “Sachs is a world-renowned economics professor, leader in sustainable development, senior UN advisor, best-selling author, and syndicated columnist. He serves as the director of the Earth Institute, Quetelet Professor of Sustainable Development, and professor of health policy and management at Columbia University. He is special advisor to Secretary-General Ban Ki-moon of the United Nations on the Millennium Development Goals, and . . . director of the UN Sustainable Development Solutions Network.”

The book starts with a bold assertion: “We have entered a new era . . . , the Age of Sustainable Development.” The first chapter articulates Sachs’s concept of sustainable development, “a world in which economic progress is widespread; extreme poverty is eliminated; social trust is encouraged . . . ; and the environment is protected from human-induced degradation.” Subsequent chapters lay out an ambitious agenda, termed Sustainable Development Goals (SDGs), for the United Nations and world leaders. The SDGs are intended to reverse the dire state of the Anthropocene—the current era of human domination and degradation of the biosphere—and to solve its big, challenging problems: extreme poverty, poor health and education, social and political inequality, ineffective policies and governance, unsustainable population growth and resource use, changing climate, and declining biodiversity.

This is a bad book. Despite endorsements from Ban Ki-moon, Edward O. Wilson, Jared Diamond, and other notables, it is deeply flawed from a scientific perspective and dangerously misleading from a policy perspective. Sachs is a social scientist, but there is not much science, social or natural, in this book. Science is an objective, evidence-based way of learning fundamental truths about the world. Sachs presents lots of graphs, tables, and maps to illustrate past trends, current conditions, and future projections, but he fails to use these data to assess the feasibility of the SDGs.

After chapters on social and economic topics, in “Planetary boundaries,” Sachs asks the crucial questions, “How can the world economy and population continue to grow if the Earth itself is finite?” and “Can economic growth be reconciled with environmental sustainability?” He responds, “By very careful and science-based attention to the real and growing environmental threats, we can indeed find ways to reconcile growth—in the sense of material improvement over time—with environmental sustainability.”