The Skeptical Environmentalist: Measuring the True State of the World

Statistics never lie. Environmental problems are vastly exaggerated and you can believe me because I’m a political scientist and former member of Greenpeace. Sound reassuring? That is the hook (loosely paraphrased) promoting this book. Lomborg proposes the following: (1) The environment is getting better; air pollution has decreased, water is plentiful, forests are stable, extinction rates are low and do not matter anyway, and rain is a myth, global warming may be beneficial, etc. (2) Things will continue to get better because human ingenuity and improved technology will find solutions. (3) Environmentalists exaggerate the state of the world to attract attention. Scientists encourage the fraud to justify funding for pointless research, and media lackeys perpetuate these claims to sell more newspapers. (4) We should not worry so much because continued improvement via the free-market system will happen “almost automatically.”

This line of reasoning is not new. Lomborg essentially regurgitates the flawed logic of economist Julian Simon. On the surface, Lomborg’s arguments are skillfully crafted and deceptively persuasive. The vast bibliography and numerous charts and tables give the book every appearance of a scholarly review. Lomborg claims to have assessed all the important issues and all the facts in reaching his conclusions. But a closer look shows that Lomborg fails far short of the academic standards that he claims to follow. The bottom line is Lomborg does exactly what he criticizes, using statistics erroneously to promote one’s views.

In addition to specific problems outlined below, a more general problem is apparent. He makes clear that humans are his primary concern, not functioning ecosystems. Therefore, he is not asking the same question as environmentalists. Lomborg’s anthropocentric view allows him to sidestep some major issues. This point is important because Lomborg is claiming that environmentalists’ efforts are misguided and human welfare should be emphasized. To the contrary, most environmentalists have long recognized the environmental benefits of improving living conditions for humans.
A detailed examination of the chapter on biodiversity reveals the inherent weaknesses of the book [a longer review with references is available from the author]. Many of you are no doubt familiar with the claim that a significant proportion of earth's species will likely go extinct in the near future as a result of habitat loss and other effects of economic development unless action is taken. Lomborg's strategy of rebuttal is simple: (1) start with a false comparison; (2) distort data and selectively compile evidence to knock down the straw man; (3) use questionable sources, citations out of context, and irrelevant examples while ignoring most of the scientific literature.

Lomborg's biodiversity chapter starts with the estimate that we may be losing 40,000 species annually. After nine pages of convoluted discussion, he concludes that extinction rates are closer to 0.7 percent over the next 50 years. The first problem is that Lomborg does not explain the assumptions of the 40,000-per-year estimate. Species diversity is highest in the tropics, and it is thought that many tropical species, mostly invertebrates, are yet to be discovered. Because habitat loss is a major cause of population decline and extinction, the assumption is that continued habitat loss will inevitably lead to further extinction. Lomborg counters that the observed extinction rate (mostly vertebrates) since 1600 is far lower than estimates based on predicted loss of (mostly) tropical invertebrates. In short, he is comparing apples with oranges.

Lomborg's treatment of observed extinctions brings up the second problem. In earlier sections of the book he makes a big point of the value of long-term data sets and general trends. But he neglects to show the observed extinction rate graphically. Doing so would show clearly that extinction per century since 1600 has risen exponentially. Thus, the general trend apparent from the data is increasing extinction. Lomborg then tackles the theory of island biogeography. One common prediction is that 90% reduction in area leads to 50% loss of species. All three of his examples to refute this idea are wrong. First, he states the loss of 98% of the forest of eastern North America resulted in only 1 bird extinction. The forest, however, was not cut at the same time; the total amount of forest was probably never less than 50%. Fewer than 30 species are restricted to forest in this region and only these species were at risk of extinction. Not one but four bird species were lost; so in fact, habitat loss does predict the number of extinctions.

His second example is similarly flawed. He claims Puerto Rico lost 99% of its forest and 7 of 60 bird species. The true totals are 90% forest reduction and 5 of 19 endemic bird species extinct, plus 4 other species endangered. Readers will find little consolation in Lomborg's astonishment that Puerto Rico now has 97 bird species. Most additional species (32 of 37) were introduced and are not dependent on forest. Few people are encouraged by the establishment of human commensal species at the expense of 5 species found nowhere else in the world.

His final example concerns the Atlantic forest of Brazil. The claim that no species "could be properly declared as extinct" despite widespread reduction of forest is contradicted in the footnotes by a more recent study showing 10 extinct species and another only in captivity. Furthermore, nearly 200 species in this region are threatened or endangered and the extent of habitat loss accurately predicts the number of these species facing imminent risk of extinction.

The Brazilian Atlantic forest may be a situation where ecological extinction precedes absolute extinction. For example, small numbers of passenger pigeons lingered for several decades before dying out. Thus, many species may not be "properly declared as extinct" but are committed to extinction. Lomborg also neglects the entire literature on habitat fragmentation and extinction of populations. In doing so, he refuses to acknowledge that habitat loss is an important predictor of extinctions.

So, how did Lomborg arrive at an extinction rate of 0.7 percent over the next 50 years? Basically, he found the lowest estimate and decided it was best. This estimate, derived from extinction rates among British birds and insects and status changes in the IUCN Red List, came with cautionary comments from the authors: "rates of status change tell us more about lack of information . . . than about extinction," and "whether it is possible to use models from the British fauna and flora to make global predictions is impossible to say." It appears that among thousands of pages of scientific literature, Lomborg seized upon the few sentences he could find that supported his view and used them out of context.

Perhaps the most glaring example of Lomborg's poor scholarship is his treatment of biodiversity valuation. As with other parts of the book, his coverage is so pathetically weak that it would be laughable if the public were not so willing to embrace his position uncritically (see reviews on Amazon.com). His evidence to dismiss the value of biodiversity consists of two non-peer-reviewed discussion papers from the Internet. These papers suggest the value for medicine of a species is extremely low. But the same papers note that medicinal use is one of many ways to assess value of species. Lomborg derides conservation efforts because most species are uncharismatic insects, fungi, and bacteria. Apparently Lomborg is unaware that both PCR, a technique that revolutionized genetic research, and Bt corn, a technological innovation of the type he applauds, were derived from bacteria.

The problems with the biodiversity chapter are representative of the entire book. On virtually every issue Lomborg misinterprets data and embraces the most optimistic scenario. Thus, despite Lomborg's rosy outlook, the data reveal that concern about the environment, upon which we all depend, is warranted. We can solve some problems given sufficient attention, but Lomborg's assertion that we should not worry so much is misguided at best and counterproductive at worst.

Lomborg's claim that funding priorities are misplaced also falls flat. It is true that developed countries should do more to alleviate poverty, but that does not mean environmental spending is out of propor-
tion. He does not mention that eliminating environmentally harmful subsidies, estimated at $1 trillion annually, would help the environment and economy directly. Lomborg repeatedly claims that once people get rich enough they will care about the environment. Not only is this view painfully Western and disrespectful of other cultures, but it disregards evidence that the number of species facing extinction increases along with economic prosperity.

These important issues are fraught with uncertainty. The few pages Lomborg devotes to each hardly suffice to explain the complexity to the average reader. Linkages among issues are given even less space. We need good data and reasoned analysis. Instead, this book boils down to the tiresome economics vs. environment debate. Economists and environmentalists speak different languages, but Lomborg (who is neither) fails to bridge that gap. His attempt to mediate will serve to further polarize the debate.

Indeed, some of Lomborg's chief targets have responded with a vengeance. Edward O. Wilson labeled him a parasite, a comment the Economist considered "insufferable arrogance." Although such language does not lend itself to academic debate, the frustration of scientists is understandable. Whether intentional or not, this book is likely to confuse and mislead the public. His poor understanding of science, obvious lack of serious literature review, and misuse of statistics result in misrepresentation of years of research by dedicated professionals. While highly successful as a political manifesto, this book is an utter failure as a scientific analysis and is a disservice to us all.

Reviewed by:
Dan Wenny
Illinois Natural History Survey
Savanna, IL USA