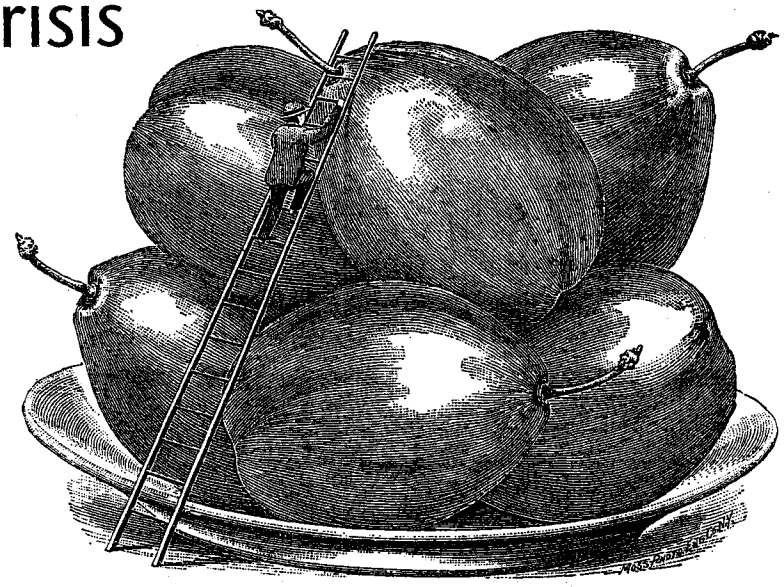
Limits-to-Growth and the Biodiversity Crisis

by Eileen Crist



engraving ca. 1900

If the world's air is clean for humans to breathe but supports no birds or butterflies, if the world's waters are pure for humans to drink but contain no fish or crustaceans or diatoms, have we solved our environmental problems? Well, I suppose so, at least as environmentalism is commonly construed. That clumsy, confused, and presumptuous formulation "the environment" implies viewing air, water, soil, forests, rivers, swamps, deserts, and oceans as merely a milieu within which something important is set: human life, human history. But what's at issue in fact is not an environment; it's a living world.

David Quammen

SINCE PAUL EHRLICH'S *Population Bomb* (1968) and the Club of Rome's *Limits to Growth* (Meadows et al. 1972), many environmental analysts have argued that the assumption of endless growth on a finite planet is irrational and dangerous. They contend that neither the human population nor world economic productivity can continue to increase without inviting scarcity—of energy sources, materials, water, and soil. And constraints are not imposed only through finite resources, but also by the planet's limited capacity to absorb the waste output of an enormous and growing population. Limits-to-growth proponents cannot predict exactly when, or how, industrial civilization—and with it all humanity—will become cornered by its obstinate commitment to endless growth, but ecological modeling makes clear that as limits are breached, overshoot and collapse are all but inevitable (Meadows et al. 1992).

As long as limits-to-growth arguments have been around, so have its detractors, known by the happy-go-lucky name of "cornucopians." The most famous among them is the late economist Julian Simon. For cornucopians, there are no finite limits to the Earth's resources or absorptive capacity. They argue that were "finite limits" a true category, then its parameters should be measurable. However, the argument continues, the quantity of any resource is not an absolute: we cannot be sure that there are no treasure-troves of the resource waiting to be found—a discovery that would alter its quantitative profile; the quantity of the resource is a function of the technologies that extract and process it—more efficient technologies change the "amount" of the resource; recycling can prolong the life of a resource, or make it last indefinitely; our interest in any resource involves the services and uses it provides, so if it can be replaced by another or by an invented substitute, then the question of the resource's finiteness is irrelevant; and finally, outer space "is the limit," offering such future prospects as hydroponic farming in spaceships and extraterrestrial mining (see Simon 1999; Kahn et al. 1976). Cornucopians—also understandably known as "technological optimists"—conclude that the idea of finite limits is a chimera. When it comes to resources, the real player is not a constraining set of natural materials or variables, but human ingenuity regarded as the "ultimate resource" (Simon 1996).

Limitations of the debate

In crucial ways, the debate between the limits-to-growth proponents and the cornucopians is extraneous to the ecological crisis, especially to the plight of nonhumans; and it constitutes a digression. The core issue is not the quandary of real-world limits but *what kind* of real world we desire to live in. I submit two points: (1) the biodiversity crisis is essentially sidestepped by the limits-to-growth framework; and (2) what is invidious about the cornucopian view is not that it is (necessarily) wrong-headed, but the dismal reality it envisions and would make of the Earth.

According to the Club of Rome's estimations in the early 1970s, the time available to avoid a "monumental crisis" was a matter of years not decades (Elichirigoity 1999). It is indeed possible (but far from definite) that at some future moment a keystone threshold of biophysical limits will be violated, backfiring unexpectedly, dramatically, and perhaps apocalyptically against humanity's unsustainable economic undertakings and population growth. But we can neither hope that Nature will come to the rescue nor dread the uncontrollable forces we may unleash. It is critical to focus on what is presently dead certain: that overproduction and overpopulation have been driving the dismantling of complex ecosystems and native life, and leaving in their widening wake constructed environments, simplified ecologies, and lost life forms.

A key problem, then, with how the debate is framed is that it refers to *future outcomes*—be they catastrophes or prospects. The (im)possibility of a growth-caused grand-scale ecological crisis is posited for an indeterminable morrow. Limits-to-growth environmental literature falls into this trap of future-oriented thinking—it is replete with portending allusions to what will come, such as "humanity is close to limits," "hazardous times are just ahead," or "we may/will soon see [such and such]." But from an ecological present-day vista such an approach is self-defeating, if only because tomorrow is a slippery idea. While appearing to be a referential concept—isomorphic with "today" and "yesterday"—"tomorrow" is a null set: it never comes, and so essentially refers to nothing. What always arrives is today, and in this madly accelerated world every today is ecologically poorer than yesterday. But directing attention toward future possible disaster(s) can subtly shape how the present moment is experienced and understood. As long as the litmus test for the reality of an ecological crisis is in the future, we become inured against seeing that we are immersed in it, here and now.

The environmental crisis is multidimensional but no facet is more urgent, nor more fundamental, than the biodiversity crisis. The idea of biodiversity has sometimes been regarded as vague and political—assessments that miss the point by a long shot. Far from being vague, "biodiversity" is

inclusive of all levels: from genes, through species (as well subspecies, varieties, and hybrids), populations, ecosystems, and biomes, to processes of ecological interconnectivity and evolutionary speciation. All are dimensions of biodiversity: a plurality of living states and processes, biological actuality and potential, that makes the concept exquisitely versatile, encompassing, and robust. The view, moreover, that "biodiversity" and "the biodiversity crisis" are political motifs—skillfully constructed with the aim of crystallizing problems in order to influence policy—is narrow-minded. Only those focused exclusively on human affairs, and conflicting interests therein, would mistake the intensity and mandate that infuse scientific discourse about biodiversity for *politics*.

The various components of biodiversity, presently being unraveled, required hundreds, thousands, millions, or billions of years to reach a breathtaking level of intricacy and dynamism. The ruination of life that conservation biologists call "the biodiversity crisis" refers to the global events of human-driven extinction, contraction of populations, constriction of organisms' natural ranges and movement, genetic erosion, ecosystem destruction and degradation, habitat fragmentation, the evolutionary standstill of complex life, and receding wilderness. Looking at the whole picture, we are—today—in the midst of inaugurating a *biogeological era* of a decimated biota. Yet there is time to mitigate the worst outcome of this global simplification.

Does the framework of "breaching limits" address the momentous event of the biodiversity crisis? Arguably, it does not. It is perfectly possible that a mass extinction of 50%, 60%, or more of the Earth's species would not be pragmatically catastrophic for human beings. Such a destruction would forever eclipse possibilities for enhancing and prolonging human life through loss of uninvestigated medicines, unknown products, and novel food sources—not to say treasuries of knowledge and beauty. But loss of unexplored possibilities is quite different from breaching limits. And psychologically speaking, human beings experience loss poignantly only for what they become dispossessed of, not for something they never had nor knew. If mass extinction proceeds, human beings will indeed experience loss of a magnitude they do not yet fathom; that grief, however, will not be about having possibly lost the cure for the common cold.

If biodiversity continues to be whittled down daily on a global scale, the inevitable consequence will be the planet's large-scale transformation into a human satellite of technological, managed, and constructed landscapes. Again, the question of violating limits is potentially moot. The conversion and leveling of, for example, countless European, North American, and Asian ecosystems has not been catastrophic for their human citizens: on the contrary, the appropriation of wild Nature's wealth has been the (profoundly under-recognized) source of so-called "affluence." From the limits-to-growth perspective, time-delays in the penalties of destruction are precisely what can lead to inadvertent overshoot—so such delays should not be assumed to signify that extreme penalties for humans are not forthcoming. Even if this reasoning is correct, again it is problematic in defining ecological calamity as a potential future state. Focus on the future, however, may not only implicitly normalize the present, but also make the evaluation of the present state ultimately contingent on whether or not a future "monumental crisis" ensues. If no such big-time crisis emerges, are we to conclude that the comprehensive conversion of the biosphere to serve a human materialism gone rampant is benign?

It is realistically possible for the Earth to be colonized by *Homo sapiens* without infraction of basic life-support conditions for the human species. Consider some possibilities. Natural forests could be largely replaced with tree plantations—even genetically engineered to absorb more carbon dioxide or grow faster to maturity. Degraded agricultural fields might become arable if stocked with crops engineered to grow on them; and extensive co-optation of the rational methods of agroecology, such as composting, crop rotation, and inter-cropping, could breathe some life into depleted soils. Exhausted fisheries and extinct fish might be replaced with large-scale aquaculture operations providing protein for humans. Problems of water scarcity could be managed through rationing, more efficient technologies, or mammoth engineering projects such as converting salt water to fresh water.

In short, over the face of the Earth, wild Nature's original services might become massively tweaked—and substituted for—by life-support enterprises of engineered Nature. While the latter world would be a wasteland by any ecological standard of comparison to the former, it might be capable of *physically* sustaining human beings, perhaps even in very large numbers. And so, while the limits-to-growth debate keeps questions circling around the reality or chimera of an upcoming collision with biophysical limits, what can be lost from sight is an unfolding slow-motion avalanche that is "ending" the natural world, to quote the poet, not with a bang but a whimper.

The limits-to-growth entreaty to sustain the world's "natural capital" in order to provide for human needs by harvesting its "interest" also leaves the plight of biodiversity by the wayside. The function of capital is to generate wealth for its owners, stockholders, and customers; by analogy, the function of natural capital is to generate wealth for people. Even ignoring the anthropocentrism of identifying the natural world as capital, the characterization "natural capital" does not dictate or foreclose what the biological wealth to be sustained should, exactly, *look like.* Extensive tree cover (in lieu of ancient and/or mature forests) is clearly definable as natural or biological capital—not only is it a source of timber products, but it also generates oxygen and absorbs carbon dioxide, can counter erosion on sloping grounds if planted successfully, and might even function as a wildlife refuge and watershed of sorts. Salmon with growth hormone genes spliced into their DNA—fattened swiftly for slaughter—might also be regarded as biological capital: this engineered variety can be harvested in 18 months rather than three years (Turner 2001), thus generating "interest" faster than the wild and free varieties of salmon "natural capital."

To contend that we need to sustain "natural capital" for human well-being and survival is not an ecological argument, and bears no necessary connection to the conservation mission. At its deepest recesses, this way of conceptualizing the biological world can bolster—despite the best intentions—the cornucopian worldview for which Nature is nothing but raw material to be harnessed and milked for the production of wealth. If technological optimists start waving the banner of "conserving/creating natural capital," it should not come as a big surprise; the "capital-interest" idiom easily lends itself to appropriation by the ideology of free-market humanism.

Beyond limits

In conclusion, the limits-to-growth framework is inadequate to address the central crisis of our day: (1) because mass extinction could conceivably come to pass without jeopardizing the survival of the human species; and (2) because people might be materially sustained by a technologically managed biota made to yield services and products required for human life. The crucial question, then, is not whether a colonized world is viable but rather: Who (besides Simon and company) wants to live in such a world? Presented with a portrait of a planet largely divested of native ecosystems, wildlife, and big wilderness, people might awaken to the bleak world now taking shape.

If biophilia is inborn to the human soul, as E.O. Wilson has eloquently maintained, then devastating the biosphere is tantamount to the betrayal of love. Such is the treason at the heart of the biodiversity crisis. While this can be harped on in ways that quickly descend into sentimentality, there are other ways to point to it so that more people see it in the present. One is to be as clear and precise as possible about the consequences of the humanized order under construction: in this emerging reality it is not our survival and well-being that are primarily on the line, but *everybody else's.* ☾

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SOURCES AND RECOMMENDED READING

Brown, Lester, Gary Gardner, and Brian Halweil. 1999. *Beyond Malthus: Nineteen Dimensions of the Population Challenge.* New York: W.W. Norton & Company.

Ehrlich, Paul. 1968. *Population Bomb.* New York: A Sierra Club/Ballantine Book.

Ehrlich, Paul and Anne Ehrlich. 1996. *Betrayal of Science and Reason: How Anti-Environmental Rhetoric Threatens Our Future.* Washington, D.C.: Island Press.

Elichirigoity, Fernando. 1999. *Planet Management: Limits-to-Growth, Computer Simulation, and the Emergence of Global Spaces.* Evanston, IL: Northwestern University Press.

Foreman, Dave. 2001. The Cornucopian Myth. *Wild Earth* 11(2): 1–5.

Goodland, Robert. 1992. The case that the world has reached limits. In *Population, Technology, and Lifestyle: The Transition to Sustainability,* ed. Robert Goodland, Herman Daly, and Salah El Serafy. Washington, D.C.: Island Press.

Irvine, Sandy. 1997/98. The great denial: Puncturing pro-natalist myths. *Wild Earth* 7(4): 8–17.

Meadows, Donella, Dennis Meadows, Jørgen Randers, and William Behrens III. 1972. *Limits to Growth: A Report for the Club of Rome's Project on the Predicament of Mankind.* New York: Universe Books.

Meadows, Donella, Dennis Meadows, and Jørgen Randers. 1992. *Beyond the Limits: Confronting Global Collapse and Envisioning a Sustainable Future.* Post Mills, VT: Chelsea Green Publishing Company.

McKibben, Bill. 2002. A special moment in history. In *Globalization and the Challenge of a New Century,* ed. Patrick O'Meara, Howard Mehlinger, and Matthew Krain. Bloomington: Indiana University Press.

———. 1989. *The End of Nature.* New York: Anchor Books.

Orr, David. 1993. Love it or lose it: The coming biophilia revoloution. In *The Biophilia Hypothesis,* ed. Stephen R. Kellert and Edward O. Wilson, 415–440. Washington, D.C.: Island Press/Shearwater Books.

Quammen, David. 1998. The weeds shall inherit the earth. *The Independent* (November 22): 30–39.

Simon, Julian. 1996. *The Ultimate Resource 2.* Princeton: Princeton University Press.

———. 1999. *Hoodwinking the Nation.* New Brunswick: Transaction Publishers.

Terborgh, John. 1999. *Requiem for Nature.* Washington, D.C.: Island Press/Shearwater Books.

Turner, Jack. 2001. The wild and its new enemies. In *Return of the Wild: The Future of Our National Lands,* ed. Ted Kerasote, 119–135. Washington, D.C.: Island Press.

Tuxill, John. 1998. Losing Strands in the Web of Life: Vertebrate Declines and the Conservation of Biological Diversity. *Worldwatch Paper 141.*

Wilson, Edward O. 1996[1984]. *Biophilia.* Cambridge: Harvard University Press.