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## Editorial

### Species extinction is a great moral wrong<sup>☆</sup>

Nearly three decades ago, Michael Soulé published an article titled “What is Conservation Biology?” (1985). Its strong and enduring influence stemmed partly from Soulé’s success in articulating an appealing ethical vision for this rapidly developing field. At its heart was the belief that the anthropogenic extinction of species is a great moral wrong. “The diversity of organisms is good,” Soulé wrote, and “the untimely extinction of populations and species is bad.” Other species have “value in themselves,” he asserted: an “intrinsic value,” which should motivate appreciation, respect, and restraint in our dealings with them.

In “What is Conservation Science?” (2012), a recent attempt to update Soulé, Peter Kareiva and Michelle Marvier lose sight of this moral commitment. Specifying the practical principles that they believe should guide conservationists, they give prominent place to increasing human wealth (“economic development”) and “working with corporations,” while recognition of the right of other species to continue to flourish is nowhere to be found. Indeed, the article’s rhetoric serves to normalize anthropogenic extinctions and make readers more comfortable with them. For example, it describes concern for the extirpation of wolves and grizzly bears in the United States as “nostalgia” for “the world as it once was,” and states that “some realism is in order” regarding whether or not people should be required to keep other species on the landscape when their continued presence is incompatible with our economic goals.

Unfortunately this position does not appear to be an aberration of this one article, but an essential part of Kareiva and Marvier’s brief for conservationists to accommodate ourselves to the new realities of the Anthropocene Epoch. An earlier piece that they published with Robert Lalasz, “Conservation in the Anthropocene” (2011), also contemplates mass extinction with equanimity, in part, apparently, because such extinctions will not necessarily inconvenience human beings. “Ecologists and conservationists have grossly overstated the fragility of nature,” they argue there. “In many circumstances, the demise of formerly abundant species can be inconsequential to ecosystem function. The American chestnut, once a dominant tree in eastern North America, has been extinguished by a foreign disease, yet the forest ecosystem is surprisingly unaffected. The passenger pigeon, once so abundant that its flocks darkened the sky, went extinct, along with countless other species from the Steller’s sea cow to the dodo, with no catastrophic or even measurable effects.”

Presumably these extinction events were indeed catastrophic for the species in question, and perhaps too for other species that preyed on or parasitized them, or depended on them in other ways. But such catastrophes do not appear to count morally for the authors—they are not real catastrophes—as long as the “ecosystem functions” that benefit people remain intact. (Regarding the near-extinction of the American chestnut and the demise of the passenger pigeon, among the most abundant tree and bird species in temperate eastern North American forests five hundred years ago, if they had no “measurable effects,” we may assume that was because no one bothered to measure them at the time.)

According to recent studies, humanity could extinguish one out of every three species on Earth during the next several centuries, if we continue on our current habitat-destroying, resource-monopolizing path ([Secretariat of the Convention on Biological Diversity, 2010](http://www.biodiversityconvention.org)). In one sign of the times, in 2008 the U.S. Fish and Wildlife Service listed the polar bear as threatened with extinction due to current and potential future effects of global climate change. Those of us who love wild nature receive such news with lumps in our throats. Yet about the polar bear [Kareiva et al. \(2011\)](http://www.sciencedirect.com) have this to say:

“Even that classic symbol of fragility—the polar bear, seemingly stranded on a melting ice block—may have a good chance of surviving global warming if the changing environment continues to increase the populations and northern ranges of harbor seals and harp seals. Polar bears evolved from brown bears 200,000 years ago during a cooling period in Earth’s history, developing a highly specialized carnivorous diet focused on seals. Thus, the fate of polar bears depends on two opposing trends—the decline of sea ice and the potential increase of energy-rich prey. The history of life on Earth is of species evolving to take advantage of new environments only to be at risk when the environment changes again.”

Note the way this account equates past extinctions due to natural causes with the possible extinction of the polar bear due to human-caused climate change. That’s just “the history of life,” adapting or failing to adapt to changing conditions. Note the disappearance of any sense of human agency for the threat to the polar bear: *Ursus maritimus*’ fate depends on “two opposing trends” as “the environment changes”—not on whether or not humanity ratchets back greenhouse gas emissions. Finally, note the glibness with which the authors talk about the extinction of this magnificent beast (“seemingly stranded on a melting ice block”).

Extinguishing species through the continued expansion of human economic activities appears to be morally acceptable to Kareiva, Marvier and some other Anthropocene proponents (e.g.

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Bradbury, 2012), as long as this destruction does not rebound and harm people themselves. But this view is selfish and unjust. Human beings already control more than our fair share of Earth's resources. If increased human numbers and economic demands threaten to extinguish the polar bear and many other species, then we need to *limit* our numbers and economic demands (Cincotta and Gorenflo, 2011; Noss et al., 2013). Exactly how to curb human demands or reform dysfunctional economic institutions that endanger wild nature may be open questions, but they are not optional questions for conservationists, nor can we ignore moral issues in answering them (Rolston, 1994).

Conservation biologists, with our knowledge and appreciation of other species, are the last people who should be making excuses for their displacement, or making light of their extinction. It is particularly inappropriate for Peter Kareiva to do so, given his position as chief scientist at the Nature Conservancy, an organization dedicated to preserving biodiversity. TNC's fundraising rests in part on appeals to a strong and widely shared moral sense that other species have a right to continued existence. Much of the conservation value of TNC's easements and land purchases depends on society-wide moral and legal commitments to preserve threatened and endangered species. Kareiva and Marvier (2012) state that they "do not wish to undermine the ethical motivations for conservation action," or presumably, conservation law. Yet their articles do precisely that, with potentially disastrous implications for practical conservation efforts, particularly in the long-term.

To be clear: we do not think there is anything wrong with people looking after our own legitimate needs. This is an important component of conservation, as conservation biologists have long recognized (Greenwald et al., 2013). Kareiva and Marvier are right to remind us that protecting ecosystem services for human beings is important. They are right, too, that concern for our own wellbeing can sometimes motivate significant biodiversity preservation. We believe that people should preserve other species both for their sakes and for ours (see Primack, 2010, chapter 6, for a fuller treatment of these ethical claims).

However, it is a mistake to reduce conservation *solely* to a self-concerned prudence, or to anthropocentrically assume that it is acceptable to extinguish those species that do not provide us with important ecosystem services. As with marriage, education, or any other important human institution or activity, an overly economic approach to conservation leads us astray morally. It makes us selfish, and that is the last thing we want when the very existence of so many other life forms is at stake. Fairly sharing the lands and waters of Earth with other species is most importantly a matter of justice, not economic convenience (Staples and Cafaro, 2012).

Natural species are the primary expressions and repositories of organic nature's order, creativity, and diversity. They represent thousands of millions of years of evolution and achievement. They show incredible functional, organizational, and behavioral complexity. Every species, like every person, is unique, with its own history and destiny. When people take so many resources or degrade so much habitat that another species is driven extinct, we

have taken or damaged too much, and brought a valuable and meaningful story to an untimely end.

At its core, conservation biology affirms that knowledge about the living world should go hand in hand with love and respect for it. Colin Tudge puts it well, writing in *The Variety of Life* (2000): "The prime motive of science is not to control the Universe but to appreciate it more fully. It is a huge privilege to live on Earth and to share it with so many goodly and fantastical creatures." From this perspective, even one anthropogenic extinction is one too many. From this perspective, the goodness of the human career on Earth depends as much on how well we appreciate and get along with other species, as on how well we do so with other people.

Michael Soulé (1985, 2013) is right: other species have value in themselves and a right to continued existence free from anthropogenic extinction, whether or not we find them beautiful, useful, profitable, or interesting, and whether or not preserving them is convenient or economically beneficial for people.

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