

Individualistic Environmental Ethics: A Reductio ad Exstinctum?

Gregory M. Mikkelson and Colin A. Chapman*

According to standard anthropocentric, zoocentric, and biocentric ethics, the intrinsic value of a species, ecosystem, or other ecological whole derives entirely from the well-being of the individual organisms that it contains. Ecocentrism, on the other hand, values the whole not only for the well-being of its parts, but also for certain other properties such as biological diversity and ecological integrity. This crucial difference gives ecocentrism alone enough moral force for a thorough critique of global biodiversity loss.

Advocates for the well-being and/or rights of individual animals, plants, and/or other organisms have done an admirable job of debunking certain false premises about the relevance of species membership for ethics.¹ Using a variety of arguments, they have shown that no plausible criteria for being a moral “end” (rather than just a means to some other end) fit all and only members of *Homo sapiens*. Such ethicists have thus helped to vindicate anti-speciesist intuitions common among environmental thinkers and activists.

However, the ethicists cited above arguably fail to account for another set of intuitions also widespread among environmentalists: that ecosystems and/or other larger wholes have intrinsic value that is not reducible to the welfares of the individual organisms in them.² Peter Singer and many others subscribe to individualism, according to which the overall value of any situation depends strictly on—i.e., is nothing but some function of—the good of the individual organisms involved in

* McGill School of Environment, 3534 University Street, Montréal, Québec, Canada H3A2A7; email: gregory.mikkelson@mcgill.ca. Mikkelson’s trans-disciplinary research program involves community ecology, philosophy of science, ecological economics, and environmental ethics. Chapman’s research focuses on the ecology and behavior of wild populations, particularly in Africa, and recognizes the need to integrate an understanding of the wants, needs, and behaviors of the local human population to achieve conservation goals. For helpful feedback, the authors thank Sarah Adcock, Robin Attfield, Baird Callicott, Lyndon Entwistle, Jeff Mikkelson, Carolyn Poutiainen, Andrew Reisner, Gregory Mikkelson’s students in the Winter 2013 course PHIL 349: Environmental Philosophy, and an anonymous referee. They also thank the Fonds Québécois de la Recherche sur la Nature et les Technologies for funding work on this paper through its strategic cluster program grant 2010-RS-131018 to the Québec Centre for Biodiversity Science.

¹ See, for example, Peter Singer, *Animal Liberation: A New Ethics for our Treatment of Animals* (New York: Random House, 1975); Tom Regan, *The Case for Animal Rights* (Berkeley: University of California, 1983); Paul Taylor, *Respect for Nature: A Theory of Environmental Ethics* (Princeton: Princeton University, 1986); and James Rachels, *Created from Animals: The Moral Implications of Darwinism* (Oxford: Oxford University, 1990).

² Kenneth E. Goodpaster, “On Being Morally Considerable,” *Journal of Philosophy* 75 (1978): 308–25; J. Baird Callicott, “Introduction to Part 1,” in *Environmental Philosophy: From Animal Rights to Radical Ecology*, ed. Michael E. Zimmerman, J. Baird Callicott, Karen J. Warren, Irene J. Klaver, and John Clark (Upper Saddle River: Pearson/Prentice Hall, 2005), pp. 5–15.

it.³ Individualism thus seems incapable of explaining why—other things being equal—driving a species extinct seems worse than killing the same number of organisms in a more populous species.⁴

In this paper we offer an additional argument against individualism: that it implies a false conclusion. Considered individualistically, the value gained through recent massive expansion in the sheer number of, and resource consumption by, humans may actually outweigh the value lost through the concomitant contraction and extinction of myriad other species.⁵ We sketch one simple way that a holistic alternative can easily avoid this “repugnant conclusion,” and conclude that ascribing non-individualistic intrinsic value to higher-level ecological entities is a more effective way to break the species barrier in ethics than is the individualistic approach.

According to individualism, the value of an overall state of affairs supervenes on the well-beings of the individual organisms in it. For example, according to utilitarianism the overall value of a situation is the sum of the utilities of individual sentient animals. Besides summing, other proposals include taking the average of and assessing the inequality among individuals’ well-being.⁶ Unfortunately, all of these methods yield unacceptable answers to certain questions about the distribution of Earth’s limited resources among different species.

To illustrate the problem, consider two recent statistics. During the 1990s, the world lost approximately thirty-two million nonhuman primate individuals per year owing to deforestation.⁷ Meanwhile, the world gained around eighty-two million humans per year during the same period.⁸ For the moment, let us pretend these losses and gains were the only morally salient ones occurring at the time. So long as the additional humans were/are, on average, at least 32/82 (around two-fifths) as well-off as the lost monkeys and apes would have been, then (“total—”) utilitarianism entails that the world gained more value than it lost. As long as the individual humans were/are even a tiny bit better off than the other primates would have been, then average-utilitarianism implies the same conclusion. Finally, assuming that utility varies more between species than it does within them, replacing a multispecies host

³ At least one prominent individualist has, however, “converted” to holism since authoring his classic work: see Taylor’s preface to the Chinese translation (2003) of *Respect for Nature*.

⁴ Holmes Rolston, III, “Challenges in Environmental Ethics,” in *Ecology, Economics, Ethics: The Broken Circle*, ed. F. Herbert Bormann and Stephen R. Kellert (New Haven: Yale University, 1991); Ben Bradley, “The Value of Endangered Species,” *Journal of Value Inquiry* 35 (2001): 43–58.

⁵ Here, as elsewhere in this paper, we use terms such as “outweigh” rather than “justify” so as to remain within the realm of value theory—in other words, to avoid taking sides in the debate over consequentialism vs. its purported alternatives.

⁶ Derek Parfit, “Overpopulation and the Quality of Life,” in *Applied Ethics*, ed. Peter Singer (Oxford: Oxford University, 1986), pp. 145–64. While the concept of utility is usually applied only to animals, that of well-being applies to plants, fungi, protists, and prokaryotes as well. As discussed below, our argument may impeach even the broadest version of individualism, i.e., biocentrism, which acknowledges the intrinsic value of every organism.

⁷ Colin A. Chapman and Jan F. Gogarten, “Primate Conservation: Is the Cup Half Empty or Half Full?” *Nature Education Knowledge* 4, no. 2 (2012): 7.

⁸ United Nations, Department of Economic and Social Affairs, “World Population Prospects: The 2012 Revision” (<http://esa.un.org/unpd/wpp>).

of nonhuman simians with human beings should reduce the inequality of well-being. Thus, all three of the best-known criteria for deriving overall value strictly from individual welfares imply a net gain despite the ongoing rape of the natural world⁹ exemplified by the holocaust of nonhuman primates.

Like individualism, holistic environmental ethics also take into account the good of individual organisms. However, according to individualism, the well-being of the individuals within a higher-level ecological whole, such as an ecosystem, completely determine the intrinsic value of that whole. In contrast, holism requires additional information. For example, deep ecologists Naess and Sessions cite the “[r]ichness and diversity of life forms” found in various ecosystems as “values in themselves.”¹⁰

Valuing biological diversity for its own sake brings species membership back into the moral picture—but in a way that runs counter to, rather than facilitating, the speciesist privileging of humans. One way to begin taking biodiversity into account is to posit that the intrinsic value of any given species has a diminishing-returns relationship to its population size.¹¹ This simple assumption is holistic because it requires that to gauge the intrinsic value of an ecosystem, one must know not only the well-beings, but also the species, of the organisms comprising it. The diminishing-returns assumption implicitly favors ecosystems with more species. For example, consider the simplistic ecosystems represented by Tables 1 and 2 (next page). In these tables, each row represents a single individual organism, and the second column describes how well-off these organisms are. As noted above, individual well-being figures into both the individualistic and the holistic calculi under consideration here. For the moment, well-being is undefined, though we later refer to some proxy measures of it. The third column in these tables assigns each organism to a species, which only holism takes into account for its own sake.

Taking the square root of population size is one straightforward way to model diminishing returns. Let us then assume that for our holistic calculus, the intrinsic value of a population is the average well-being of organisms composing it, multiplied by the square root of the number of those organisms. Let us also assume that the intrinsic value of an ecosystem is simply the sum of the values of the populations it contains. This minimally holistic approach ascribes a total intrinsic value of 100 to the ecosystem represented by Table 1, but only seventy to the much less diverse ecosystem denoted by Table 2.¹² This result contrasts with the conclusions prescribed by the individualistic methods cited above. Summing, taking the

⁹ Cf. Clive Ponting, *A New Green History of the World: The Environment and the Collapse of Great Civilizations* (New York: Penguin, 2007).

¹⁰ Arne Naess and George Sessions, “Deep Ecology Platform” (<http://www.deepecology.org/platform.htm>).

¹¹ Thomas Hurka, “Value and Population Size,” *Ethics* 93 (1983): 496–507; Alan Carter, “Some Groundwork for a Multidimensional Axiology,” *Philosophical Studies* 154 (2011): 389–408; Gregory M. Mikkelsen, “Weighing Species,” *Environmental Ethics* 33 (2011): 185–96.

¹² We call this approach “minimally” holistic, because a more robustly holistic calculus would not only ascribe diminishing returns to the population size of any given species—thus implicitly valuing species diversity—but also (or instead) include terms or factors that explicitly value higher-level properties of ecological systems, such as their biological diversity or ecological integrity. Both of the best-known

TABLE 1: A SEVEN-SPECIES ECOSYSTEM

Organism	Well-Being	Species
Individual 1	20	A
Individual 2	20	A
Individual 3	20	A
Individual 4	20	A
Individual 5	10	B
Individual 6	10	C
Individual 7	10	D
Individual 8	10	E
Individual 9	10	F
Individual 10	10	G

TABLE 2: A TWO-SPECIES ECOSYSTEM

Organism	Well-Being	Species
Individual 1	20	A
Individual 2	20	A
Individual 3	20	A
Individual 4	20	A
Individual 5	20	A
Individual 6	20	A
Individual 7	20	A
Individual 8	20	A
Individual 9	20	A
Individual 10	10	B

average of, and measuring the inequality between individual well-beings all entail that the more diverse ecosystem has lower value. To wit, the sum of individual welfare in the more diverse ecosystem described by Table 1 is 140, while the less diverse Table 2 ecosystem has a summed welfare of 190. Average (mean) welfare is therefore fourteen and nineteen, respectively, in these two ecosystems. The Gini coefficients—a standard measure of inequality—are .17 and .05. The more diverse ecosystem denoted by Table 1 thus has greater welfare inequality, and therefore lesser value according to egalitarian criteria.

Diminishing returns mean that growing a large population adds relatively little, but shrinking a small population subtracts much value.¹³ For example, adding one

forms of ecocentrism, i.e., land ethics and deep ecology, as well as the lesser-known “richness theory” (see Mikkelsen, “Weighing Species”), imply robust holism in this sense.

¹³ Ibid. Mikkelsen provides a graphical illustration of this point.

individual to the population of Species A denoted in Table 1 would increase the intrinsic value of that population from forty to around forty-five. But killing the one individual of Species B would decrease that population's intrinsic value from ten to zero. This is despite the fact that organisms in Species A have much higher individual well-being (twenty) than do organisms in Species B (ten). Right now the already huge human population is growing—in numbers and in consumption of resources, including land—while the already tiny populations of many other primate species are shrinking fast. Holistic environmental ethics thus offer a much stronger basis than individualism does for critiquing the depopulation and extinction of nonhuman primates caused by runaway economic growth.

Holism retains this edge over individualism when other vertebrate animals besides primates are taken into account. Among thousands of wild vertebrate populations canvassed recently, the number of individuals declined by an average of thirty percent between 1970 and 2008.¹⁴ Given that we share the planet with around 80,000 other vertebrate species,¹⁵ and assuming an average per-species global starting population size in 1970 of between 100,000 and 1 million,¹⁶ this suggests that the number of wild vertebrate individuals on Earth declined by some tens of billions from 1970 to 2008. Meanwhile, over the same period human population size increased by more than three billion.¹⁷ Thus, assuming that average human well-being is at least thirty or so times greater than the well-being of a typical vertebrate (such as a frog), then again, the three individualistic methods described above all entail that the value of having more humans around more than offsets the devastation visited upon our fellow vertebrates.¹⁸ In contrast, even the minimally holistic method given above implies that declines harmed the nonhuman vertebrate world far more than growth benefited humanity. (Contact the authors for details of this latter calculation.)

It would be very difficult to specify the result of extrapolating the thirty percent average loss even further, to the remaining ten million or so species on Earth. Most

¹⁴ World Wildlife Fund, *Living Planet Report 2012: Biodiversity, Biocapacity and Better Choices* (http://awsassets.panda.org/downloads/1_lpr_2012_online_full_size_single_pages_final_120516.pdf, 2012).

¹⁵ Brett R. Scheffers, Lucas N. Joppa, Stuart L. Pimm, and William F. Laurance, "What We Know and Don't Know about Earth's Missing Biodiversity," *Trends in Ecology and Evolution* 27 (2012): 501–10.

¹⁶ Ben Collen, personal communication; see also Henrique M. Pereira, Laetitia M. Navarro, and Inês S. Martins, "Global Biodiversity Change: The Bad, the Good, and the Unknown," *Annual Review of Environment and Resources* 37 (2012): 25–50.

¹⁷ United Nations, *World Population Prospects*.

¹⁸ Is it safe to assume that the well-being of an average human is thirty or more times greater than that of an average wild vertebrate (e.g., amphibian)? Relative brain size—the most widely-recognized proxy for animal intelligence, and thus presumably the ability to experience well-being—indicates an affirmative answer to this question. The human brain is 200 to 300 times larger than would be expected for an amphibian with a human-sized body. See P. A. M. van Dongen, "Brain Size in Vertebrates," in *The Central Nervous System of Vertebrates*, edited by R. Nieuwenhuys, H. J. ten Donkelaar, and C. Nicholson (New York: Springer, 1998), pp. 2099–34; and Ursula Dicke and Gerhard Roth, "Intelligence Evolved," *Scientific American Mind* 19 (2008): 70–77.

other species of animals, plants, fungi, protists, and bacteria have different body size, and therefore population size, than vertebrates. Since most other species are insects, their body sizes are much smaller than most vertebrates, and their population sizes thus much larger. This means that for life, in general, a thirty percent loss would entail many more organisms lost per species than it does for vertebrates in particular. However, the average cognitive capacity and presumably thus the well-being of organisms in general (e.g., insects) is much lower than vertebrates. So it is very difficult to say whether, considered individualistically, a thirty percent average loss in population size for species in general is bad enough to outweigh the human gains.

We thus conclude that individualistic environmental ethics—whether anthropocentric, zoocentric, or biocentric—fail to clearly support a conviction deeply held by many individualists and holists alike: that “current extinctions and the rate at which they are being perpetrated are massively unjustified.”¹⁹ An individualist could object by pointing out that the current mass extinction threatens human well-being, thus potentially tipping the individualistic calculi discussed above toward biodiversity conservation. We wholeheartedly agree on the importance of biological diversity for sustained human flourishing. However, to rely so heavily on this point tremendously weakens the case for conservation, by restricting it largely to epistemically shaky ground, i.e., the future.²⁰ Over the past century or so, indicators of individual human well-being dramatically improved, despite ruinous damage to the ecosphere. For example, during the period over which wild vertebrate populations declined by an average of thirty percent (1970–2008), world human life expectancy at birth improved from fifty-eight to sixty-eight years.²¹

Such evidence shows why adopting a solely anthropocentric approach to environmental protection—or even, as argued in this paper, a broader but purely individualistic approach—cripples the argument for protecting our fellow species from catastrophic population decline and extinction. Only nonanthropocentric holism—i.e., ecocentrism—can incorporate arguments based on all three of the following: human well-being, the well-being of individual nonhuman organisms, and the emergent intrinsic value of species, ecosystems, and other ecological wholes. Thus, only ecocentrism can marshal enough “moral force” for a thorough critique not only of the potential future effects of biodiversity loss, but also of what we already know about what our economic system has done and is doing to the living world.

¹⁹ Robin Attfield, “Biocentric Consequentialism and Value-Pluralism: A Response to Alan Carter,” *Utilitas* 17 (2005): 88.

²⁰ Attfield reaches *extremely* far into the future—“billions or even trillions of years” into it—in his attempt to answer a similar objection to individualism; Robin Attfield, “Can Biocentric Consequentialism Meet Pluralist Challenges?” in *Consequentialism and Environmental Ethics*, ed. A. Hiller, R. Ilea, and L. Kahn (New York: Routledge, 2014), pp. 35–53.

²¹ United Nations, *World Population Prospects*.