

Refocusing Ecocentrism: De-emphasizing Stability and Defending Wildness

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Traditional ecocentric ethics relies on an ecology that emphasizes the stability and integrity of ecosystems. Numerous ecologists now focus on natural systems that are less clearly characterized by these properties. We use the elimination and restoration of wolves in Yellowstone to illustrate troubles for traditional ecocentric ethics caused by ecological models emphasizing instability in natural systems. We identify several other problems for a stability-integrity based ecocentrism as well. We show how an ecocentric ethic can avoid these difficulties by emphasizing the value of the wildness of natural systems and we defend wildness value from a rising tide of criticisms.

There are some who can live without wild things, and some who cannot. . . . Like winds and sunsets, wild things were taken for granted until progress began to do away with them. Now we face the question whether a still higher 'standard of living' is worth its cost in things natural, wild and free. . . . These wild things, I admit, had little human value until mechanization assured us of a good breakfast, and until science disclosed the drama of where they come from and how they live. The whole conflict thus boils down to a question of degree. We of the minority see a law of diminishing returns in progress; our opponents do not.

—ALDO LEOPOLD¹

I. INTRODUCTION

At the beginning of the century, the howl of wolves still haunted Yellowstone National Park. But wolves were considered “varmints” and were poisoned, trapped, and shot as part of an official government policy of predator extermination that succeeded in eradicating wolves from Yellowstone by 1940. Today, most environmentalists believe that the extermination of the wolf was wrong and that its recent restoration was right.

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¹ Aldo Leopold, *A Sand County Almanac* (New York: Oxford University Press, 1949), p. ix.

Several widely held rationales for these judgements are rooted in ecocentric ethics. An ecocentric ethic treats natural systems as intrinsically valuable and/or morally considerable. This ethic is holistic in that it bases moral concern primarily on features of natural systems rather than on the individuals in them. Traditionally, ecocentric ethics has relied heavily on “holistic” ecological theory to provide its empirical foundation. It has evaluated human impacts on the environment primarily in terms of their effect on the integrity, stability, and balance of ecosystems.

Many have argued, for example, that without wolves the Yellowstone ecosystem was incomplete. Wolves were in Yellowstone long before modern settlement of the area, and they are integral to the identity of that ecosystem. Holmes Rolston, III says that Yellowstone is the “largest, nearest intact ecosystem in the temperate zone of earth”² and suggests that the wolf was one of the few missing components. Wolf biologist David Mech supports wolf reintroduction by arguing that “one of the mandates of the national parks is to preserve complete natural systems. Somehow Yellowstone was shorted. For more than sixty years it has preserved an incomplete system.”³ On this view, returning the wolf helps restore Yellowstone’s integrity by making it whole again.

Many also support returning the wolves in order to restore the balance and stability of the Yellowstone ecosystem.⁴ Wolf predation helps to control ungulate populations. Absent a major predator with which they coevolved, the elk population in Yellowstone increased dramatically. Vast herds of elk confined year round in this hunting sanctuary have eaten so much of the aspen and willow that these species are not regenerating. The decline in aspens and willows led to the decline of the beaver, a keystone species in maintaining riparian areas and park hydrology. On these grounds, Alston Chase, among others, argues that the balance of the Yellowstone ecosystem was upset by the restriction of the range of the ungulate population, by fire suppression, and by human eradication of wolves and other predators. Restoring the wolf is perceived to be an important step in allowing the Yellowstone equilibrium to return.

The idea that integrity and stability fundamentally characterize natural systems is far from uncontroversial. According to numerous ecologists, disturbance, disequilibria, and chaotic dynamics characterize many natural systems at a variety of scales.⁵ Ecosystems are frequently interpreted by these eco-

² Holmes Rolston, III, “Biology and Philosophy in Yellowstone,” *Biology and Philosophy* 5 (1990): 242.

³ David Mech, “Returning the Wolf to Yellowstone,” in Robert Keiter and Mark Boyce, eds., *The Greater Yellowstone Ecosystem* (New Haven: Yale University Press, 1991), p. 309.

⁴ The following account comes from Alston Chase, *Playing God in Yellowstone* (San Diego: Harcourt Brace Jovanovich, 1987), pp. 19–30, 382.

⁵ For an overview of this emphasis in ecology, see Donald Worster, “The Ecology of Order and Chaos,” *Environmental History Review* 14 (1990): 1–18.

gists as historically contingent, transient associations, rather than as persisting, integrated communities. Although many ecologists continue to find stable dimensions of some ecosystems, the presence of instability is trouble for traditional ecocentric ethics. It is risky to advocate preserving the integrity of natural systems when such integrity may not exist, and it is questionable to criticize humans for causing instability in what may already be unstable natural systems.

In this article, we assess the implications of instability models in ecological theory for ecocentric ethics. We use the elimination and restoration of wolves in Yellowstone to illustrate troubles for traditional ecocentric ethics caused by ecological models emphasizing instability in natural systems. We identify several other problems for a stability-integrity based ecocentrism as well. We show how an ecocentric ethic can avoid these difficulties by emphasizing the value of wildness in natural systems and we defend wildness value from a rising tide of criticisms. We do not attempt a full-fledged justification of ecocentrism; in particular, we do not defend ecocentrism against individualistic or anthropocentric environmental ethics.

II. THE ECOLOGY OF STABILITY AND TRADITIONAL ECOCENTRISM

The ecological theories on which traditional ecocentric ethics are based, theories we call collectively the "ecology of stability," were developed by Frederic Clements and Eugene Odum, among others. They tended to view natural systems as integrated, stable wholes that are either at, or moving toward, mature equilibrium states. The terms *equilibrium*, *balance*, *stability*, and *integrity* often go unexplained in traditional ecocentric ethics. Kristin Shrader-Frechette and Earl McCoy have identified over twenty different uses of *stability* and *equilibrium* in ecology.⁶ Central among these are the following uses.

A system is in equilibrium if the various forces acting on it are sufficiently balanced that the system is constant and orderly with respect to those features under consideration; thus *balance* and *equilibrium* are closely related. A balance or equilibrium can be either static or dynamic: equilibrium is displayed both by a constancy in tree species in a mature forest ecosystem and by a regular oscillation in a predator-prey system. A system is stable (1) if it is relatively constant over time, (2) if it resists alteration (i.e., it is not fragile), (3) if upon being disturbed it has a strong tendency to return to its pre-disturbance state (i.e., it is resilient), or (4) if it moves toward some end point ("matures"), despite differences in starting points ("trajectory stability").⁷ Whether a system is in

⁶ K. S. Shrader-Frechette and E. D. McCoy, *Method in Ecology* (New York: Cambridge University Press, 1993), pp. 65–67.

⁷ Compare Gordon Orians, "Diversity, Stability and Maturity in Natural Ecosystems," W. H. van Dobben and R. H. Lowe-McConnell, eds., *Unifying Concepts in Ecology* (The Hague: Dr. W. Junk B. V. Publishers, 1975), pp. 139–50.

equilibrium and/or stable depends on the features under consideration and the scale at which the system is described. Vernal pools that exist for perhaps a dozen weeks each year and then dry up are ephemeral on a time scale of months but constant if the scale is years.

Integrity is also used in a variety of senses. The general idea is that the elements of the ecosystem are blended into a unified whole. This idea is commonly associated with the view that ecosystems come in fixed packages of species whose coordinated functioning creates a unified community. A system which has integrity is characterized by a high degree of integration of its parts. Complex patterns of interdependency weave the parts into a well-integrated unit.

In the ecology of stability, natural systems do undergo some changes, such as fluctuations in the populations of predators and prey, but usually such changes are regular and predictable (as in the cycling of predator and prey according to the Lotka-Volterra equations). Disturbances are considered atypical, and when they occur, ecosystems resist upset. When a natural system is disturbed, it typically returns to its pre-disturbance state or trajectory. Successional ecosystems will move through a predictable series of stages to their mature climax states. In these end states, biotic and abiotic elements of the ecosystems are in balance and the system has "as large and diverse an organic structure" as is possible given available energy and environmental limitations.⁸ According to this paradigm, the loss of a species, such as the wolf, upsets the balance and often results in a decline in ecosystem stability, for species diversity in an ecosystem is thought to be proportional to its stability. Thus, ecosystem integrity, stability, and diversity are seen to be closely interrelated phenomena.

This conception of natural systems provides a powerful and seemingly objective basis for determining when ecosystems have been damaged or their value diminished.⁹ Integrity, stability, and balance are properties that have widespread and powerful normative appeal. In an ecocentric ethic that emphasizes these properties, our duties to natural systems seem to arise from the nature of ecosystems themselves, rather than from human preferences concerning natural systems. An ecosystem missing a top predator is not simply one that environmentalists do not like; it is a damaged ecosystem. Ignoring this damage betrays ecological ignorance. Ecological science thus appears to underwrite environmental ethics and environmentalist policies. Further, because nature tends towards these states absent human intervention, the ethic based on this normative ecological paradigm warrants preserving ecosystems intact, limiting human impacts, and restoring nature after human degradation.

Advocates of ecocentric ethics frequently appeal to the basic notions of the

⁸ See Worster, "The Ecology of Order," p. 41, quoting Odum.

⁹ A number of U.S. environmental laws use concepts like balance and stability to define the goals they set for public policy. See Mark Sagoff, "Fact and Value in Ecological Science," *Environmental Ethics* 7 (1985): 101.

ecology of stability. Aldo Leopold's often quoted summary maxim—"A thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community; it is wrong when it tends otherwise"—relies on these ideas.¹⁰ Many, such as J. Baird Callicott, have taken Leopold's views as the basis for their environmental ethic.¹¹ In articulating his ecocentrism, Holmes Rolston puts considerable evaluative weight on the integrity and stability of biotic communities: "A biotic community is a dynamic web of interacting parts in which lives are supported and defended, where there is integrity (integration of the members) and health (niches and resources for the flourishing of species), stability and historical development (dependable regeneration, resilience, and evolution). . . ."¹² Although Rolston's ecocentrism relies on a number of values that systemically make nature valuable (such as diversity, complexity, creativity, and a tendency to produce increasingly valuable "ecological achievements"), ecosystem integrity and stability are central among them.¹³

III. THE ECOLOGY OF INSTABILITY

An ethic based on the integrity, stability, and balance of natural systems ill accords with some trends in ecology.¹⁴ The more radical proponents of what we call the "ecology of instability" argue that disturbance is the norm for many ecosystems and that natural systems typically do not tend toward mature, stable, integrated states.¹⁵ On a broad scale, climatic changes show little pattern, and they ensure that over the long term, natural systems remain in flux. On a smaller scale, fires, storms, droughts, shifts in the chemical compositions of soils, chance invasions of new species, and a wealth of other factors

¹⁰ Leopold, *Sand County Almanac*, p. 240.

¹¹ J. Baird Callicott, *In Defense of the Land Ethic* (Albany: State University of New York Press, 1989).

¹² Holmes Rolston, III, *Conserving Natural Value* (New York: Columbia University Press, 1994), p. 78.

¹³ In arguing that the most important natural value is the "systemic value" of ecosystems, that is, their ability to create value, Rolston says: "the stability, integrity, and beauty of biotic communities is what is most fundamentally to be conserved" (*ibid.*, p. 177). Rolston is well aware of ecologists' ambivalence toward ecosystem stability and integrity. He ties his discussion of ecosystem stability to a discussion of historical change. At one point, he calls the notion that ecosystems tend toward equilibrium "a half-truth."

¹⁴ For one development of this argument, see Kristin Shrader-Frechette "Ecological Theories and Ethical Imperatives," in William Shea and Beat Sitter, eds., *Scientists and Their Responsibility* (Canton, Mass.: Watson Publishing International, 1989).

¹⁵ See Daniel Botkin, *Discordant Harmonies* (New York: Oxford University Press, 1990). In "Nonequilibrium Determinants of Biological Community Structure," *American Scientist* 82 (1994): 427, Seth Reice contends that "equilibrium is an unusual state for natural ecosystems. . . . the normal state of communities and ecosystems is to be recovering from the last disturbance. Natural systems are so frequently disturbed that equilibrium is rarely achieved."

continually alter the structures of natural systems in ways that do not create repeating patterns of return to the same equilibrium states.¹⁶

Many empirical studies show that populations fluctuate irregularly.¹⁷ Simple predator/prey models in which numbers of predators and prey oscillate predictably over time ignore the myriad of factors that affect population size. Major population explosions and declines are inherent features of numerous natural systems. Some ecologists suggest that many interacting populations are chaotic systems, in the mathematical sense of *chaos*.¹⁸ Although these systems are fully deterministic, accurate predictions about them are impossible because tiny (and thus hard to measure) differences in initial conditions can produce drastically different results. Furthermore, ecologists no longer assume a tight correlation between stability and diversity. There is evidence that an intermediate level of disturbance can increase diversity.¹⁹ Also, some stable ecosystems are not very diverse, such as east coast U.S. salt marsh grass ecosystems where *Spartina alterniflora* grows in vast stands that are simple in species composition but quite stable.

With flux taken to be the norm on a variety of levels, it becomes more difficult to interpret natural systems as well-integrated, persisting wholes, much like organisms. Ecosystem integrity becomes problematic when species relationships are opportunistic. Noting that co-occurrence of species is determined by abiotic factors as much as by species interactions and that typical interactions between species involve competition, predation, parasitism, and disease, one well-known conservation biologist claims that "the idea that species live in integrated communities is a myth."²⁰ Evidence suggests that species groupings are historically contingent and are not fixed packages that come and go as units.²¹ Insofar as species associations are transient, individualistic, biotic assemblages, we must begin to question the ideas that ecosystems

¹⁶ See the articles in S. T. A. Pickett and P. S. White, eds., *The Ecology of Natural Disturbance and Patch Dynamics* (Orlando: Academic Press, 1985), for examples of research in this area.

¹⁷ Botkin, *Discordant Harmonies*, chap. 3.

¹⁸ Ibid. For research documenting chaotic behavior of populations independent of perturbations, see Alan Hastings and Kevin Higgins, "Persistence of Transients in Spatially Structured Ecological Models," *Science* 263 (1994): 1133–36.

¹⁹ See Reice, "Nonequilibrium Determinants," p. 428.

²⁰ Michael Soulé, "The Social Siege of Nature," in Michael Soulé and Gary Lease, eds., *Reinventing Nature?* (Washington, D.C.: Island Press, 1995), p. 143.

²¹ Looking at the fossil record of the last 50,000 years, David Jablonski says, "The most important message . . . is that ecological communities do not respond as units to environmental change. . . . Species are highly individualistic in their behavior, so that few, if any, modern terrestrial communities existed in their present form 10,000 years ago." See Jablonski's "Extinction: A Paleontological Perspective," *Science* 253 (1991): 756. In a similar vein, Michael Soulé suggests that historical "studies are undermining typological concepts of community composition, structure, dynamics, and organization by showing that existing species once constituted quite different groupings or 'communities.'" See Soulé's, "The Onslaught of Alien Species, and Other Challenges in the Coming Decades," *Conservation Biology* 4 (1990): 234.

are supposed to have certain species, that without all of its species an ecosystem is “incomplete,” and that exotic species do not belong.

Indeed, the very notion of an ecosystem has become suspect in some quarters. A number of ecologists now investigate the dynamics of “patches” of land, giving up on the idea of homogenous ecosystems. Others retain the notion of an ecosystem, but drop the organismic assumptions often associated with it. We follow the latter course, recognizing that without these assumptions, what counts as an ecosystem depends on our purposes as well as on the empirical facts.

One intriguing response to these worries has been advanced by J. Baird Callicott.²² Callicott points out that, like biotic communities, human communities are neither stable nor typological—that is, they change over time and do not come and go as units. Human communities are also composed of individualistic, self-promoting, and competitive individuals. Callicott concludes that biotic communities are no less integrated and no harder to demarcate than are human communities, and thus that if human communities are sufficiently coherent to generate obligations to them, then so are biotic communities.

One problem with this argument is that human communities are held together by shared purpose and meaning. That people see themselves as part of a human community is essential to its unity. Self-seeking individualism, predatory competition, and parasitism, unchecked by community spirit and identity, tear apart human communities. Sprawl development characterized by vacant strip malls, big-box stores adjacent to diseased local merchants, and aggressive automobile traffic hardly constitutes a community that generates preservationist obligations. Callicott's analogy ignores the fact that the shared purpose and meaning that bind together changing, self-seeking individuals into human communities are lacking in biotic communities.²³

Callicott also suggests that the Leopoldian response to the ecology of instability should be to modify Leopold's dictum to say: “A thing is right when it tends to disturb the biotic community only at normal spatial and temporal scales. It is wrong when it tends otherwise.”²⁴ This implausibly suggests that it is morally permissible to intentionally extirpate other species so long as we do so at rates comparable to normal extinction frequencies in evolutionary history. It also has the unfortunate consequence that extensive restoration projects are impermissible insofar as they disturb nature at nonnormal scales. Callicott has

²² J. Baird Callicott, “Do Deconstructive Ecology and Sociobiology Undermine Leopold's Land Ethic?” *Environmental Ethics* 18 (1996): 353–72.

²³ This fact does not show that there are no biotic communities, for properties essential to human community may not be necessary for biotic ones. Perhaps some communities need not be intentional ones. Or perhaps humans can see themselves as parts of biotic communities and provide the requisite intentionality. In any case, Callicott's insightful analogy between human and biotic communities is insufficient to make the case that biotic communities are robust enough to engender moral obligations to them.

²⁴ Callicott, “Deconstructive Ecology,” p. 372.

not quieted the worries about ecocentric ethics generated by the ecology of instability.

We want to stress that there are important ways in which many natural systems display significant degrees of integrity and stability in various respects. Ecosystems are certainly not mere jumbles of self-sufficient individuals. No one denies the existence of causal connections between individuals in ecosystems or dependencies between species. Species adapt to each other, to disturbances, and to changing environments. Sometimes these adaptations can make ecosystems more resistant (and persistent), as when a keystone tree species on hurricane-prone barrier islands evolves a thicker trunk and begins to hug the ground. Selective pressures also put a brake on species self-aggrandizement, for example, by working against predator species that drive their prey to extinction and parasites that destroy their hosts. Many dimensions of natural systems clearly persist on human time scales.

The ecology of instability is far from achieving the status of a dominant paradigm. There continues to be ongoing fruitful work on stability at larger scales and in systems where the disturbance interval is long relative to recovery time.²⁵ Some recent experimental research supports the claim that increases in diversity produce increases in stability.²⁶ Additionally, ongoing research in group selection (i.e., natural selection operating on higher levels of organization than the individual), including selection at the community level, may provide support for ecosystem stability and integrity of certain sorts.²⁷

Some respected ecologists even suggest that the emphasis on disturbance, instability, and chaos is as much a function of sociological factors, such as the novelty of research on disequilibrium, as it is of new data in ecology.²⁸ Ecologists are exploring a variety of fruitful metaphors drawn from other sciences and society at large. The success of population biology and of chaos theory outside ecology, as well as our culture's increasing individualism, provide resources for plausible sociological explanations of the popularity of the metaphors and models informing contemporary ecology. Nonetheless, these models have also proved to be empirically fruitful.

²⁵ See Stuart Pimm, *The Balance of Nature?* (Chicago: University of Chicago Press, 1991) and Monica G. Turner et al., "A Revised Concept of Landscape Equilibrium: Disturbance and Stability on Scaled Landscapes," *Landscape Ecology* 8 (1993): 213–27. Frank Golley's informative *A History of the Ecosystem Concept in Ecology* (New Haven: Yale University Press, 1994) traces the development of ecosystem ecology and responds to some of the important challenges to it.

²⁶ See Elizabeth Culotta, "Exploring Biodiversity's Benefits," *Science* 273 (1996): 1045–46.

²⁷ Charles Goodnight, "Experimental Studies of Community Evolution I: The Response at the Community Level," *Evolution* 44 (1990): 1614–24.

²⁸ David Ehrenfeld calls this emphasis a "fad." See "Ecosystem Health and Ecological Theories," in Robert Costanza, Bryan Norton, and Benjamin Haskell, eds., *Ecosystem Health* (Washington, D.C.: Island Press, 1992), p. 140. For another suggestion that the focus on instability is due to sociological factors, see P. Koetsier et al., "Rejecting Equilibrium Theory—A Cautionary Note," *Bulletin of the Ecology Society of America* 71 (1990): 229–30.

Although it would be unreasonable to reject wholesale the ecology of stability, the dangers of basing an environmental ethic on that ecology are significant. An ecocentrism that emphasizes preserving the stability and integrity in ecosystems would seem to leave those ecosystems which lack significant stability or integrity largely unprotected. If an ecocentric ethic is based on valuing stability and integrity, would it not follow, implausibly, that less stable and integrated ecosystems were less valuable and thus less worthy of protection? Michael Soulé thinks it positively dangerous to emphasize the equilibrial, self-regulating, stability producing tendencies of ecosystems.²⁹ If nature is so stable, it ought to be able to handle human disturbance. If it can, it seems we ought to be protecting the more fragile ecosystems rather than the more stable ones. Moreover, what about the different kinds of stability? Would ecosystems that lacked resilience, but had constancy, such as tundra ecosystems, be subject to more or less protection than those that are resilient, but less constant, such as fire-prone chaparral? Would more tightly integrated biotic communities (e.g., ecosystems with keystone species) take precedence over looser species assemblages? Such questions indicate how developments in ecology muddy the waters for an ecocentrism that emphasizes stability and integrity and leave it with a range of unpalatable implications. Leopold's dictum that what is right is what "preserves the integrity, stability and beauty of the biotic community" seems all too vulnerable to the charge that we may be obligating ourselves to preserve something that frequently does not exist.

In particular, consider the implications of viewing the case of the Yellowstone wolves through the lens of the ecology of instability. It is no longer clear that ecocentrists can justify the claims that elimination of wolves from Yellowstone damaged the ecosystem and that their restoration is desirable. Perhaps those who hunted and poisoned the wolves did not disrupt any significant stability and integrity of the system. They may have merely changed the system, much like other phenomena might change it (e.g., an ice age, disease, etc.); now it is governed by a different set of dynamics.

Of course, it may be that characteristics of the Yellowstone ecosystem relevant to wolves can be most fruitfully explained by stability models. But what if, in relevant respects, Yellowstone is better interpreted using instability models? Suppose that elk populations would fluctuate dramatically and irregularly with or without wolves and that such fluctuations had a variety of unpredictable impacts on animals dependent on elk forage. Do we want our obligations to Yellowstone to depend on how stable or unstable, integrated or loosely organized it is? We think not. We may, of course, decide that we should restore wolves to Yellowstone for other reasons, perhaps because we enjoy seeing wolves and want our children to be able to experience them. But then we have abandoned an ecocentric ethic, and this, we believe, is premature.

²⁹ See Soulé, "The Social Siege of Nature," p. 160.

IV. WILDNESS AND ECOCENTRISM

We think that advocates of ecocentric ethics should shift the emphasis away from integrity and stability toward other intrinsically valuable features of natural systems, such as diversity, complexity, creativity, beauty, fecundity, and wildness. For reasons we outline below, we think that the value of wildness plays a central role in this nexus of values. Emphasizing wildness provides the most promising general strategy for defending ecocentric ethics. Others have suggested that the wildness of some natural systems gives us a strong reason for valuing them intrinsically.³⁰ We support this claim by showing how wildness value is in reflective equilibrium with many considered judgements, by showing how a focus on wildness avoids a number of problems with traditional ecocentrism, and by defending the value of the wild from a host of criticisms.

The term *wild* has a variety of meanings, many of which are not relevant to our defense of ecocentrism. For example, by *wild* we do not mean “chaotic,” “fierce,” or “uncontrollable.” As we use the term, something is wild in a certain respect to the extent that it is *not humanized* in that respect. An entity is humanized in the degree to which it is influenced, altered or controlled by humans. While one person walking through the woods does little to diminish its wildness, leaving garbage, culling deer, or clear cutting do diminish wildness, although in different degrees. Do we tend to value wildness so defined?

Numerous examples from ordinary life suggest that people do value wildness in a variety of contexts. For instance, admiration of a person’s attractive features is likely to diminish when it is learned that they were produced by elective plastic surgery. People prefer the birth of a child without the use of drugs or a Caesarean section, and they do so not just because the former may be more conducive to health. Picking raspberries discovered in a local ravine is preferable to procuring the store-bought commercial variety (and not just because of the beauty of the setting). Our appreciation of catching cut-throat trout in an isolated and rugged mountain valley is reduced by reports that the Department of Fish and Game stocked the stream the previous week. Imagine how visitors to Yellowstone would feel about Old Faithful if they thought that

³⁰ Although a number of philosophers have appealed to wildness and the related notion of naturalness, there is no uniform agreement on its meaning or justification. See Robert Elliot, “Extinction, Restoration, Naturalness,” *Environmental Ethics* 16 (1994): 135–44, and “Faking Nature,” *Inquiry* 25 (1982): 81–93; Eric Katz “The Big Lie: The Human Restoration of Nature,” *Research in Philosophy and Technology* 12 (1992): 231–41, and “The Call of the Wild,” *Environmental Ethics* 14 (1992): 265–73; and Holmes Rolston, III, *Environmental Ethics* (Philadelphia: Temple University Press, 1988), pp. 32–44, and *Conserving Natural Value*, pp. 1–9, 12–16, 72–73, 102, 184–92, 197–202, 223–28. Some philosophers interpret *integrity* in a way that seems to include wildness. See Laura Westra, *An Environmental Proposal for Ethics: The Principle of Integrity* (Lanham, Md.: Rowman & Littlefield, 1994). Mark Woods, “Rethinking Wilderness” (Ph.D. diss., Ann Arbor, Michigan, 1997), chap. 6, draws useful distinctions between kinds of wildness.

the National Park Service put soap into the geyser to regulate and enhance its eruptions. In each example, people value more highly what is less subject to human alteration or control than a more humanized variant of the same phenomenon. The value differential may result from several features of these cases, but central among them is the difference in wildness. Notice that if we focus on different aspects of these situations, the judgment of wildness changes: the mountain stream may be wild in many respects, even if its fish are not. Although we value wildness in many things, an ecocentric ethic will focus on the value of the wildness of natural systems.

In addition to such specific judgments, there are powerful and widespread general intuitions that support the value of the nonhumanized. People rightfully value the existence of a realm not significantly under human control—the weather, the seasons, the mountains, and the seas. This is one reason why the idea of humans as planetary managers is so objectionable to many.³¹ Consider a world in which human beings determine when it rains, when spring comes, how the tides run, and where mountains rise. The surprise and awe we feel at the workings of spontaneous nature would be replaced by appraisal of the decisions of these managers. Our wonder at the mystery of these phenomena would not survive such management. People value being a part of a world not of their own making. Valuing the wild acknowledges that limits to human mastery and domination of the world are imperative.

Humans also need to be able to confront, honor, and celebrate the “other.”³² In an increasingly secular society, “Nature” takes on the role of the other. Humans need to be able to feel small in comparison with something nonhuman which is of great value. Confronting the other helps humans to cultivate a proper sense of humility. Many people find the other powerfully in parts of nature that do not bend to our will and where the nonhuman carries on in relative autonomy, unfolding on its own.

With dramatic humanization of the planet, wildness becomes especially significant. In general, when something of value becomes rare, that value increases. Today, the spontaneous workings of nature are becoming increasingly rare. Reportedly, humans appropriate between twenty and forty percent of the photosynthetic energy produced by terrestrial plants.³³ Humans now rival the major geologic forces in our propensity to move around soil and rock.³⁴ Human population, now approaching six billion, is projected to increase by fifty percent by the middle of the next century. Leaving out Antarctica, there

³¹ For a powerful treatment of this topic, see Rolston, *Conserving Natural Value*, pp. 223–28.

³² Tom Birch discusses wildness as “otherness” in “The Incarceration of Wildness: Wilderness Areas as Prisons,” *Environmental Ethics* 12 (1990): 3–26.

³³ See Edward O. Wilson, *The Diversity of Life* (Cambridge: The Belknap Press of Harvard University Press, 1992), p. 272.

³⁴ Richard Monastersky, “Earthmovers: Humans Take Their Place alongside Wind, Water, and Ice,” *Science News* 146 (1994): 432.

are now 100 humans for every square mile of the land surface of the Earth.³⁵ Almost everyone knows a special natural area that has been “developed” and is now gone. The increasing importance of biotechnology further manifests our domestication, artificialization, and humanization of nature. Wildness is threatened on a variety of fronts, and the passions that fuel many environmental disputes can often be explained by this rapid loss of the wild and the consequent increase in the value of what remains.

By positing wildness as a significant value-enhancing property, we account for a wide range of intuitions. Of course, the nature that we value in virtue of its wildness is also valuable because it is complex, creative, fecund, diverse, beautiful, and so on. Why focus on wildness, rather than on biodiversity, as is currently fashionable (or on some other characteristic)? We believe that the emphasis on wildness is justified by the transformative and intensifying roles it plays in this nexus of values. These roles suggest that wildness is a kind of “root” value, that is, a significant source of these other values.

Wildness is transformative in that it can combine with a property that has neutral or even negative value and turn the whole into a positive value. For example, wildness helps to transform biodiversity into the powerful value it is in today’s environmental debates. Biodiversity is not by itself valuable. If it were, we could add value to ecosystems by integrating large numbers of genetically engineered organisms into them. But doing so seems unacceptable. It is *wild* biodiversity that people wish to protect. Wildness transforms biodiversity into a significant value-bearing property. The presence or absence of wildness frequently transforms our evaluation of things; a beautiful sunset is diminished in value when it is caused by pollution. Wildness also intensifies the value of properties that are already valuable.³⁶ For example, wildness often significantly enhances the value of beauty. As Eugene Hargrove argues, “our aesthetic admiration and appreciation for natural beauty is an appreciation of the achievement of complex form that is entirely unplanned. It is in fact because it is unplanned and independent of human involvement that the achievement is so amazing, wonderful, and delightful.”³⁷

An ecocentrism that emphasizes wildness value also puts a brake on alleged human improvements of nature through anthropogenic production of the properties in virtue of which we value nature. A stability and integrity based ecocentrism would have to judge human activity that enhanced ecosystem

³⁵ Donald Worster, “The Nature We Have Lost,” in *The Wealth of Nature* (New York: Oxford University Press, 1993), p. 6.

³⁶ According to Robert Elliot, “Extinction, Restoration, Naturalness,” p. 138, “intensification of value occurs when the co-instantiation of value-adding properties yields more value than the sum of the values of the properties would if they were instantiated singly.”

³⁷ Eugene Hargrove, “The Paradox of Humanity: Two Views of Biodiversity and Landscapes,” in Ke Chung Kim and Robert D. Weaver, eds., *Biodiversity and Landscapes* (Cambridge: Cambridge University Press, 1994), p. 183.

stability or integrity as value increasing. A highly humanized ecosystem could be more stable, integrated, and diverse than a natural ecosystem that it replaced. For example, an engineered beach with breakwaters and keystone exotics that held the sand might be more stable, integrated, and diverse than the naturally eroding beach it replaced. Only an ecocentrism that puts its central focus on wildness value can prevent the unpalatable conclusion that such human manipulation of nature would, if successful, increase intrinsic value.

While we argue that it is now reasonable to strongly value wildness, it was not always reasonable to do so. The value of wildness varies with context. For example, clearing an old-growth forest in the late twentieth century has very different value implications from doing so ten thousand years ago. In early periods of human history, wildness was ubiquitous and threatening. Controlling a small patch of land was a significant achievement for humanity and had significant value in itself. In contrast, wildness had little or no value in itself: there was simply too much of it relative to humanized environments. This contextualization of the value of wildness fits well with the "holistic" insight that the seriousness of environmental threats depends on what else is taking place on the planet. Humans extirpating the wolf from the Yellowstone region in the first part of this century had a vastly different impact on wildness value than did comparable prehistoric anthropogenic extinctions.

The value of wildness depends not only on the larger historical context, but also on the kind of object it characterizes. For example, a vegetable garden gone wild is less valuable than one under the gardener's control because of the purposes implicit in the description "vegetable garden." We do not here undertake the difficult task of providing a theory of the appropriate contexts and object descriptions for evaluating wildness. One may worry that contexts could be gerrymandered or objects artificially described so that implausible appraisals of wildness result. For example, wildness on the Earth is of great value given its relative rarity, but if the context is the solar system with its abundance of wildness, we might reach a different conclusion. In most cases people can recognize such clearly inappropriate contextualizations or descriptions, but it is often difficult to specify how they do so. This difficulty applies to almost any theory of value, as the contextualization of value is pervasive.

In arguing that ecocentrism should emphasize wildness value, we are not suggesting that wildness is always an overriding value or that highly wild ecosystems are always more valuable than less wild places. Wild things can have value-subtracting qualities that are more weighty than wildness value. Both anthropocentric values and nonanthropocentric values may trump wildness values in some situations. For example, to protect biodiversity, we might put out a fluke lightning-lit fire in order to protect the biodiversity of an island packed with endemic plants. Moreover, a somewhat wilder, but much less biodiverse landscape (e.g., Antarctica) is not necessarily of greater intrinsic value than a somewhat less wild, but much more biodiverse landscape (e.g., the

Amazon rain forest). A full theory of wildness value would include some priority principles indicating when wildness value will trump other goods. We cannot provide such thorough guidance here, though we do suggest that as the planet becomes more humanized, wildness value will increasingly trump other values.

Some may worry that an environmental ethic that emphasizes wildness value abandons ecocentrism in favor of an instrumental anthropocentrism because it apparently appeals to human pleasure at contemplating wildness. But this worry confuses what is being valued with the valuing itself (or with a byproduct of the valuing). Valuing nature for its wildness is not valuing wild nature for the pleasure it brings us, anymore than valuing a friend is simply valuing the pleasure one derives from the friendship. Pleasure may be a sign of value without being its source.

We are not maintaining that the value of wildness inheres in natural systems themselves independent of consciousness of them. We remain neutral on the issue of whether wildness value is objective in this sense or is a function of a valuing subject. We also remain neutral about what kind of a value wildness is. Some may think that wildness value is an aesthetic or religious value rather than a moral value. As long as the presence of aesthetic or religious value can obligate us in significant ways, we need not decide whether wildness value is aesthetic, religious, or moral (or some combination of these).

V. OBJECTIONS AND RESPONSES

Wildness has come under increasing criticism. One concern is that intuitions about the value of wildness are idiosyncratic. Many people do not seem to value wildness, but instead fear it or profess dislike for things not under human control.³⁸ David Orr identifies a trend he calls “biophobia” and claims that the more “we dwell in and among our own creations,” the more we become “uncomfortable with nature lying beyond our direct control.”³⁹

We are not suggesting that everyone will immediately assent to the claim that wildness is valuable. Rather, we claim that valuing wildness is a rational and reflective response to the current situation on the planet.⁴⁰ We grant that it is not the only rational response. No doubt, the valuing of wildness springs from and reflects certain cultural traditions.⁴¹ In this respect, it is no different from many other values that orient ethics and policy, such as the value of human

³⁸ We thank Baird Callicott for forcefully drawing our attention to this criticism.

³⁹ David Orr, *Earth in Mind: On Education, Environment and the Human Prospect* (Washington, D.C.: Island Press, 1994), p. 131.

⁴⁰ We presume that one’s warranted value judgments may be some distance from one’s initial judgments, as in ideal observer accounts of value. See Tom Carson, *The Status of Morality* (Boston: D. Reidel Publishing, 1984).

⁴¹ For the charge that wildness value is ethnocentric, see Ramachandra Guha, “Radical American Environmentalism and Wilderness Preservation: A Third World Critique,” *Environmental Ethics* 11 (1989): 71–83.

equality or freedom of political speech. Even if the valuing of wildness originated in Western culture, wildness value can have much wider significance. After all, the notion of human rights arose from movements in Western thought, but it is now believed to have universal validity. We believe that, for a wide range of people, increased education about the massive humanization of the Earth will lead to greater recognition of the value of wildness.

Furthermore, many people value wildness without understanding their evaluations in these terms. Wildness comes in degrees and often people value things in virtue of lesser degrees of wildness. People value gardening, bird watching, golfing, dinner on the porch, or walks in the park, partially because these activities put them in touch with nonhuman nature. Even the ranchers who opposed the restoration of wolves into Yellowstone seem to love the outdoor lives they have chosen in part because it involves an encounter with the relatively nonhumanized.

An increasingly frequent objection to “wilderness environmentalism” is that by privileging big wilderness areas, it ignores the value of more local, humanized landscapes.⁴² Our position avoids this objection by valuing some natural systems, such as pasture and parks, for their intermediate degrees of wildness. It would be a mistake to equate wildness with wilderness, though wilderness is an important manifestation of wildness and would be strongly protected by the proposed ecocentrism. A related concern is that a focus on wildland preservation ignores the central importance of finding a way for humans to live in nature without destroying it.⁴³ We too believe that turning human societies toward a sustainable use of nature is crucial. An ecocentric ethic that emphasizes wildness value does suggest that we should diminish our impacts on nature, and this is one aspect of sustainability. But clearly other values, including anthropocentric ones, are needed to fully guide humans to a more sustainable relationship with the Earth. We believe, however, that without an emphasis on wildness value, sustainability will all too likely result in human domination of the Earth.⁴⁴

Embracing degrees of wildness also allows for a response to the objection that there is no wild nature left to value. Recent work in ecology, anthropology, and environmental history points to long-standing and sustained human impact on the planet. On the basis of such research, J. Baird Callicott (among others)

⁴² See, for example, Anthony Weston, *Back to Earth* (Philadelphia: Temple University Press, 1994), pp. 130–32.

⁴³ See William Cronon's, “The Trouble with Wilderness,” in William Cronon, ed., *Uncommon Ground: Toward Reinventing Nature* (New York: W. W. Norton & Company, 1995), p. 85.

⁴⁴ Both Guha and Cronon worry that “wilderness environmentalism” results in native peoples being forced off their land to create wilderness areas. By distinguishing between wildness and wilderness, by recognizing wildness in humans, by valuing intermediate degrees of wildness, and by allowing that anthropocentric concerns—as well as ecocentric ones—play a large role in sustainability, we believe that we have significantly diminished the potential that wildness value could be used to justify such activities.

has attacked the idea of wilderness, claiming that “in 1492, Antarctica was the only true wilderness land mass on the planet”—that is, the only place “undominated by the works of man.”⁴⁵ If we add to this large-scale early human influence the impact of more numerous and technologically powerful modern humans, then valuing the wildness of natural systems may appear to be a will-o'-the-wisp.

We have noted that relatively less humanized places carry significant wildness value. It may be arbitrary to make fine discriminations in degrees of wildness, but that should not obscure obvious distinctions. The following environments are ordered in clearly increasing degrees of wildness: an air conditioned building, a parking lot with weeds sprouting up, a garden, a tree farm, a national park, a wilderness area. Even extensively humanized places like backyards, gardens, or New York's Central Park carry important wildness value in the right context and when contrasted with more humanized places.

This objection also fails to account for ways in which humanization “washes out” of natural systems. Early human influence on a system is dampened by intervening epochs with little impact. A system can recapture previous levels of wildness as human influence diminishes. Intuitively, Dartmoor in England and the Western Adirondacks in the U.S. (both areas once stripped of their tree-cover by humans) are examples of high degrees of wildness returning after significant human impact.

Some charge that emphasizing the value of wildness dichotomizes humans and nature and ignores the Darwinian insight that humans, like any species, are a part of nature and are not separate from it.⁴⁶ Many are inclined to view humans, especially native peoples, as “biotic citizens” who are members of the natural communities they alter, just as beavers are members of the natural communities they radically alter. We do not deny that humans are part of nature in important senses of this phrase. To a significant extent, humans are the result of and are embedded in natural processes. Certain dimensions of human life are properly understood and valued as manifestations of wild nature. Allowing our bodies to reflect the impacts of sun, wind, and aging is to partake in wildness. Acting on instinct is letting the spontaneous processes of nature unfold within us. We value the wild in humans as well as in nonhuman nature.⁴⁷ Of course, we do not always value wildness in humans, just as we do not always value wildness in ecosystems. Much depends on competing values and the context. It is obviously appropriate for humans to civilize themselves and civilization clearly has enhanced human value. Nonetheless, we agree with Thoreau when

⁴⁵ J. Baird Callicott, “The Wilderness Idea Revisited: The Sustainable Development Alternative,” *Environmental Professional* 13 (1991): 241.

⁴⁶ *Ibid.*, p. 240.

⁴⁷ For a discussion of how wildness in humans can be valuable, see Bill Throop, “Humans and the Value of the Wild,” *Human Ecology Review* 3 (1996): 3–7.

he says, "I would not have every man nor every part of a man cultivated, any more than I would have every acre of earth cultivated."⁴⁸

Although humans are a part of nature in the above senses (and others), there are important reasons to distinguish human activity from the activity of wild nature.⁴⁹ Human transformations of the land are different in evaluatively relevant ways from transformations imposed by nonhuman species or processes. For example, only human activities are fully morally assessable. Also, human activities can affect nature on a scale and speed much greater than the activities of other individual species. Rolston has identified important differences in the methods and speed by which humans transfer and use information.⁵⁰ Little in nonhuman nature approaches the deeply layered intentional, cultural, social, economic, and technological dimensions of much human activity.

As a group, humans have become too powerful and too populous to be simply "plain members and citizens" of biotic communities. Given the intense human domination of the planet, the metaphor of the biotic citizen is as likely to mislead as it is to help. It suggests that modern humans should be fully assimilated into natural systems, but doing so would have a disastrous effect on many ecosystems. For an environmental ethic to interpret the human presence in, and influence on, natural systems as not different in evaluatively relevant ways from that of any other species or natural phenomenon is to carry a valid Darwinian insight to absurd lengths.

VI. RESTORATION, WOLVES, AND THE WILD

Appealing to the value of wildness provides strong reasons to believe that it was wrong to extirpate wolves from Yellowstone. Eliminating wolves involved significant human alteration of the processes that characterized that system. In the context of the twentieth century, this loss of wildness in Yellowstone carried with it significant loss of value. Nonetheless, we cannot directly infer from the loss of wild value in Yellowstone that wildness counts in favor of restoration of wolves, for reintroducing wolves involves significant additional human alteration and management of Yellowstone, and it is hard to see how such a reintroduction can be sanctioned by the value of wildness. Indeed, intuitions about the positive value of restoration result in another objection to wildness value. As

⁴⁸ Henry David Thoreau, "Walking," from *The Natural History Essays*. Reprinted in Susan Armstrong and Richard Botzler, eds., *Environmental Ethics: Divergence and Convergence* (New York: McGraw-Hill, 1993), p. 114.

⁴⁹ In "The Paradox of Humanity," Eugene Hargrove points out the need for a more sophisticated view of the human/nature relationship than the simplistic views that either humans are, or are not, a part of nature.

⁵⁰ Holmes Rolston, III, "The Wilderness Idea Reaffirmed," *The Environmental Professional* 13 (1991): 370–71.

Robin Attfield puts the point, "How can anything be restored by human agency the essence of which is to be independent of human agency?"⁵¹ Restoration is a contentious environmental issue. Some philosophers disparage restorations as fakes or artifacts.⁵² Other philosophers stress our obligations to restore nature and suggest that certain types of restoration can increase value significantly.⁵³ We believe that an ecocentric ethic that emphasizes the value of wildness has the virtue of maintaining and explaining this ambivalent attitude. Although restoration typically fails to increase wildness in the short run, it can speed recovery of wildness by helping humanization wash out of natural systems.

Notice that a stability-integrity ecocentrism must be quite sanguine about restoration (at least in theory). If an ecosystem's stability or integrity is restored, no loss has occurred. In contrast, restoration designed to enhance wildness value wears its limitations on its sleeve. Not only will the additional human activity involved in restoration tend to detract from wildness value, but restoring the original system's wildness will not be possible in one respect: human activity will forever remain part of the causal chain leading to that ecosystem. Nevertheless, wildness value can count in favor of restoration projects. By returning the system to what it would have been had humans not altered it, restoration can help diminish human influence.

A number of factors affect the speed and extent of "washout." In general, the greater the human influence on a system, the longer it will take for the humanization to wash out. For example, previous levels of wildness will return more quickly to a selectively-cut forest than to a clear-cut forest. Temporal distance from the humanization also affects washout. The mere fact that it has been at least six hundred years since humans removed the trees from Dartmoor makes that landscape significantly wilder than it would be had the deforestation occurred fifty years ago. Complete washout of human influence can occur rapidly. A volcanic eruption that destroys a humanized landscape and covers it with a thick layer of lava would seem to return the full wildness of the landscape almost instantaneously. The land becomes very much like what it would have been whether or not it had been humanized. Such transformations suggest that washout is also a function of the extent to which a system instantiates a pattern it would have displayed absent some relatively recent humanization. A fourth factor affecting washout is the extent to which natural processes rework an humanized area, whether or not the result instantiates what it would have been absent humanization. For example, Dartmoor has recovered more of

⁵¹ Robin Attfield, "Rehabilitating Nature and Making Nature Habitable," in Robin Attfield and Andrew Belsey, eds., *Philosophy and the Natural Environment* (New York: Cambridge University Press, 1994), p. 45.

⁵² See Elliot's "Faking Nature" and Katz's "The Big Lie."

⁵³ See, for example, Richard Sylvan's "Mucking with Nature," in Sylvan, *Against the Main Stream*, Discussion Papers in Environmental Philosophy, no. 21 (Canberra: Research School of Social Sciences, Australian National University, 1994).

its lost wildness than has the cliffs of Mount Rushmore because natural processes have been more successful in changing the humanized state.

We think that restoring wolves to Yellowstone is a case in which additional human activity can help humanization washout of a natural system. The human involvement in the restoration does initially subtract from wildness in important respects: humans transporting wolves from Canada into the park, attaching radio collars to the animals, and then tracking their movements involves additional and significant human activity in natural systems and it alters natural systems as they are currently constituted. Yellowstone would become wilder sooner if wolves returned without human assistance. Still, we believe this additional human activity will eventually decrease the degree to which Yellowstone is a humanized environment. By putting wolves back, we diminish the overall impact of humans on Yellowstone, much the way picking up litter in a forest diminishes the human impact on the forest or removing a dam reduces the human impact on a river—despite involving additional human activity. Contrast wolf restoration with introducing snow leopards into Yellowstone. Wildness value counts significantly in favor of wolf restoration rather than snow leopard introduction because wolves and not snow leopards would have been in Yellowstone today. An ecocentrism based on stability would have no reason to support putting back the native species rather than a functionally equivalent exotic.

VII. CONCLUSION

We have argued that an ecocentric ethic that emphasizes the value of wildness of natural systems has a number of virtues in comparison with traditional ecocentrism. Most importantly, it avoids the ecologically and philosophically troubling assumptions that natural systems worthy of protection are integrated and stable. Moreover, by focusing on wildness, ecocentrism can avoid the counterintuitive result that humans can improve ecosystems' value by increasing their integrity, stability, biodiversity, and so on. An ecocentrism that emphasizes wildness allows for a more ambivalent assessment of restoration than the overly sanguine approach resulting from traditional ecocentrism.

We have shown how focusing ecocentrism on the wildness of natural systems can explain a wide range of intuitions, including beliefs about our obligations to preserve and restore natural systems like Yellowstone. We have also shown how common objections to emphasizing wildness can be avoided. It seems unwise to ground ecocentrism in general theories, such as the ecology of stability or the ecology of instability, when nature displays so much variation and complexity. Powerful intuitions about the value of wildness that are accepted by many people can provide that grounding. Other values can also play important roles in a fully developed ecocentric ethic, though, if we are right, their roles will usually depend on wildness.