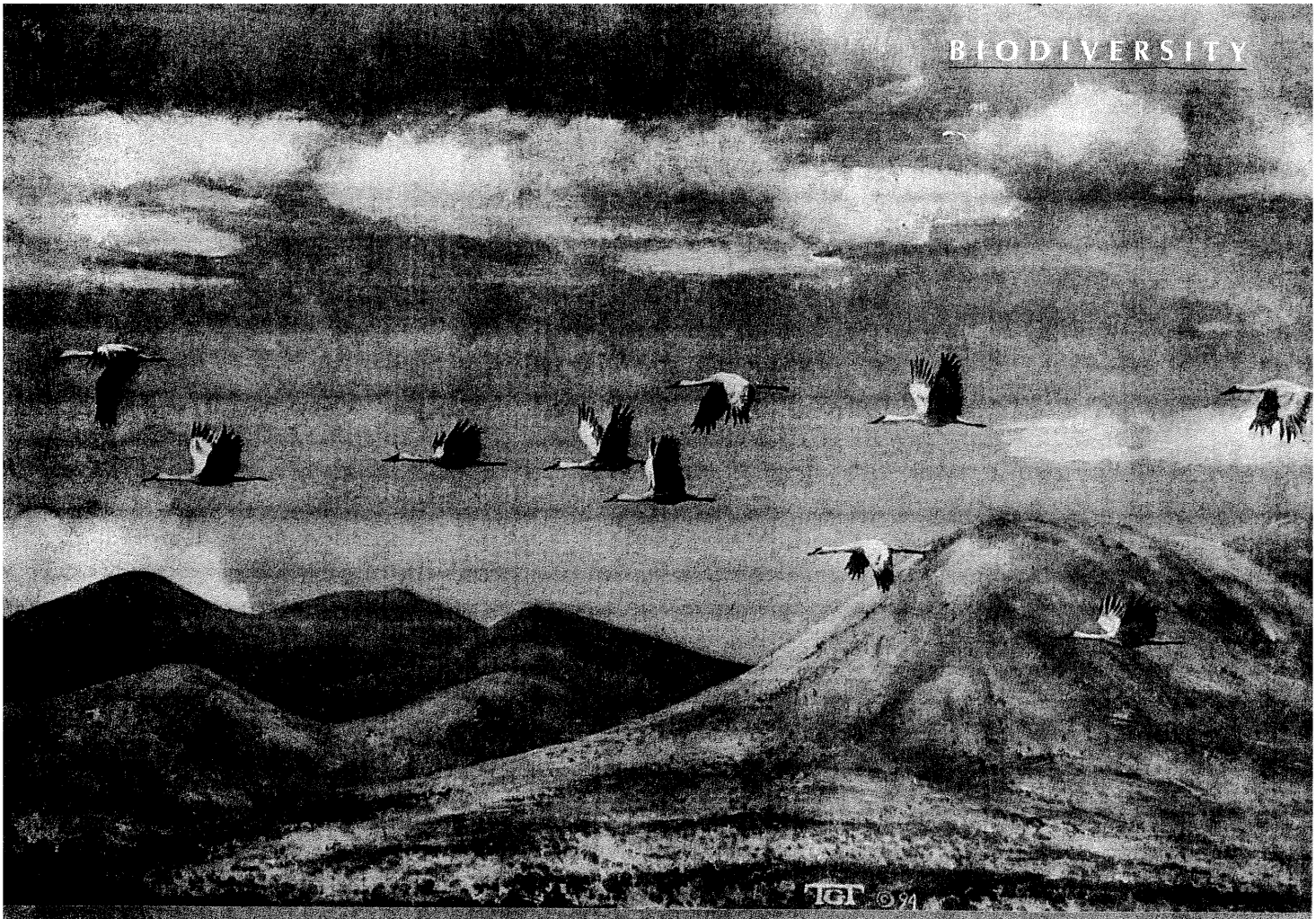


Naturalness and Wildness

The Dilemma and Irony of Ecological Restoration in Wilderness

by Peter Landres, Mark W. Brunson, and Linda Merigliano

The fires throughout the western United States in the summer of 2000 raise a difficult question about all wildlands and especially federally designated wilderness: should fuels accumulated from decades of fire suppression be removed to restore more natural ecological conditions? More generally, when and how do wilderness managers decide to take actions to restore natural conditions in wilderness? What is gained and what is lost by such actions? Here we explore the dilemma and irony surrounding two concepts, naturalness and wildness, that arises over proposals to restore natural ecological conditions in designated wilderness. We assert that the right course of action is not simply doing what is necessary to restore natural conditions because the goal in wilderness is to restore and support *both* naturalness and wildness.

An earlier version of this article originally appeared in: Cole, David N., Stephen F. McCool, William T. Borrie, and Jennifer O'Loughlin (compilers). 2000. Wilderness science in a time of change conference, Volume 5: Wilderness ecosystems, threats, and management. USDA Forest Service Proceedings RMRS-P-15-VOL-5, Rocky Mountain Research Station, Ogden, UT.

illustration by Todd Telander

TERMS AND CONCEPTS

The Wilderness Act of 1964 designated lands "...where the earth and its community of life are untrammeled by man" and defined wilderness as land "retaining its primeval character and influence...which is protected and managed so as to preserve its natural conditions." The meanings and implications of these words have been discussed and debated for decades (McCloskey 1966, Callicott and Nelson 1998, Aplet 1999). In the context of wilderness management, two key words from the Wilderness Act are *untrammeled* and *natural*. Dictionary synonyms for untrammeled include unimpeded, unhampered, uncontrolled, self-willed, and free. In one of the first and clearest explanations of the word untrammeled, Howard Zahniser (1956) wrote "...there is in our planning a need also to secure the preservation of some areas that are so managed as to be left unmanaged—areas that are undeveloped by man's mechanical tools and in every way unmodified by his civilization." In a 1959 letter, Zahniser also wrote that the idea within the word untrammeled was of "not being subjected to human controls and manipulations that hamper the free play of natural forces" (Scott forthcoming). The word *wildness* strongly connotes this sense of an area free from human control or manipulation. Use of wildness in this way is also supported by Zahniser's statement before a committee of the New York state legislature in 1953 that "We must remember always that the essential quality of the wilderness is its wildness" (Zahniser 1992).

Wildness confers social and biological benefits. Numerous authors (e.g., Dawson et al. 1998) have described the personal, spiritual, and therapeutic benefits of primitive and unconfined recreation, and the larger societal benefit of humility and sense of restraint that we gain from lands that are relatively free from human control. Arguably, the greatest biological benefit of wild landscapes is the protection of landscape-scale disturbance regimes and the movement of organisms, ultimately allowing the process of evolution to be relatively unfettered by human manipulation (Landres 1992).

There has been considerable debate about the definition of the word *natural* in the context of wilderness management (Landres et al. 1998), but from a biological perspective natural may simply be defined as the native biological species composition, spatial and temporal patterns, and processes of an area (Noss and Cooperrider 1994). Synonyms for natural include native, aboriginal, indigenous, and endemic, and we suggest that the term *naturalness* captures this biological sense of wilderness.

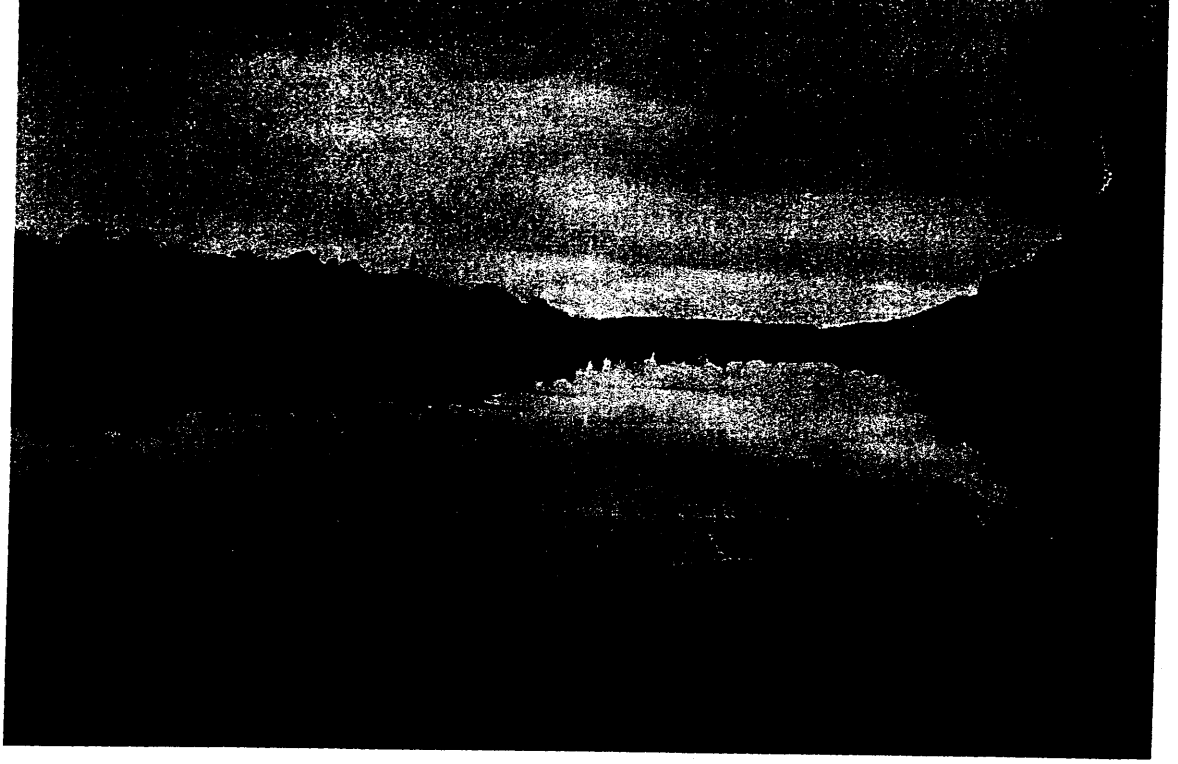
These concepts of wildness and naturalness strongly influence, directly and indirectly, virtually all of the decisions and actions taken in wilderness management. While the concepts of wildness and naturalness differ from one another, both are essential to wilderness (Worf 1997, Barry 1998, Aplet 1999) and are highly valued in our society (Manning and Valliere 1996, Cordell et al. 1998). Wilderness is the idea and place where the concepts of wildness and naturalness reach their highest and fullest expression.

AN EMERGING DILEMMA AND IRONY

In many cases, such as campsite and trail restoration, there is little controversy or conflict between wildness and naturalness. In other cases, wilderness managers today face problems likely unforeseen by those who wrote and debated the 1964 Wilderness Act (Brunson 1995). For example, decades of fire suppression throughout the United States have increased fuel loads and allowed dense undergrowth of trees in areas where frequent, low-intensity fires were common, placing old-growth trees at risk. Typically, proposed solutions include mechanical reduction of fuels, the use of management-ignited fire, or both to restore the natural fire regime. The widespread occurrence of exotic plants alters native plant and animal communities in wilderness, and in the Frank Church River of No Return Wilderness in Idaho the use of herbicides is proposed to eliminate spotted knapweed and rush skeleton weed as the first step in restoring native plant communities. Acid deposition throughout the eastern United States and in certain areas of the West has significantly altered aquatic systems in several wilderness areas. Liming rivers in the Saint Mary's Wilderness in Virginia was proposed to counter this acidity and restore the aquatic system.

In each of these cases, the naturalness of the area has been compromised by unintended consequences of management actions or broad-scale human threats, and some form of manipulation of the environment is proposed to restore naturalness. This situation raises the crucial management dilemma of whether large-scale manipulation in wilderness, however undesirable, should be used to restore natural conditions, thereby sacrificing wildness for naturalness (Cole 1996, 2000). In situations where human-caused impacts have caused wholesale changes to naturalness, we *can* manipulate wilderness to restore naturalness, but *should* we?

Either manipulating wilderness to restore naturalness, or not manipulating wilderness to support wildness, compromises one value or the other. The management goal is to protect wildness *and* naturalness, so managers struggle with this irony of having to weigh one value of wilderness against another. Different people hold strong views on this issue. Those who support naturalness note that the Wilderness Act defines wilderness as "land retaining its primeval character and influence...which



is protected and managed so as to preserve its natural conditions and...appears to have been affected primarily by the forces of nature." This is held up as a clear mandate for restoring natural conditions to overcome a myriad of human-caused insults. Indeed, restoration is often expressed in terms of a moral responsibility to correct these insults (Windhager 1998) and take all possible actions to restore naturalness. Proponents of this view acknowledge that, while not all of the desired information is available, there is sufficient information to take action now, and that such actions are better than doing nothing and watching wilderness ecosystems continue to degrade.

Others, citing from the Wilderness Act that wilderness is "an area where the earth and its community of life are untrammeled by man," claim that the fundamental character of wilderness is to be free of human manipulation (Worf 1997, Foreman 1999, Kaye 1999). Here, wilderness is the only place on our ever more crowded planet that is left free from manipulation, and these areas yield vital benefits to society because they are untrammeled and wild. This view acknowledges the ecological problems in wilderness but advocates that, if any intervention is warranted, only the minimum management activity (concentrating on the use of simple, non-mechanized tools) be used to counter these problems. Further, although it is widely recognized that wilderness ecosystems are now compromised—based on our understanding of historical conditions—we have the opportunity to keep these areas as wild as possible from this point on. Proponents of this view assert that the first rule of wilderness management is to do no harm, and there is a long history of negative consequences from even the best of intended actions. Scientific uncertainty about reference conditions and the long-term effects of restoration actions compound this risk, potentially making the results of taking action worse than the results of not taking action. George Nickas (1998) argues that "the burden of proof should always be on those who propose to manipulate Wilderness."

THE CENTRAL DILEMMA OF WILDERNESS RESTORATION: WHEN TO TAKE ACTION?

This dynamic tension between the desire to restore natural conditions and the desire to protect core values of wildness and non-intervention is the central dilemma of wilderness restoration. Before approving a restoration proposal, wilderness managers must reach some kind of conclusion about the consequences and risks of taking action versus not taking action. They must weigh the ecological value of naturalness against the social value of wildness. They must determine how much trammeling is necessary or tolerable in wilderness, and for how long such actions will be needed. More basically, they must agree that it is even appropriate to define a target for desired future ecological conditions in wilderness. And they must be willing to face the possibility that, as suggested by Janzen (1998), they have reluctantly accepted the human "gardenification" of wilderness and compromised values fundamental to the National Wilderness Preservation System.

While these concerns are particularly crucial for managers who have legal responsibility for protecting wilderness values on behalf of all Americans, they must be resolved through dialogue with a full range of wilderness stakeholders.

illustration by Amy Grogan

Public input is required under the National Environmental Policy Act before any action is taken that could transform wilderness conditions. More importantly, the issues raised by the restoration dilemma are ones that require assent from the citizens for whom wilderness is managed and whose social values managers strive to protect.

Separating the concepts of wildness from naturalness helps clarify and partially resolve this management dilemma of when to take action. Some proposed actions, such as manipulating habitat to increase a wildlife species' density, decrease both wildness and naturalness and are not appropriate in wilderness. Conversely, proposed actions that support wildness, or at least do not reduce it, and increase naturalness should be pursued. Closing and restoring a campsite, for example, doesn't manipulate the land in a way that impedes wildness on a large scale, and restoring native plants increases naturalness.

Management dilemma and irony arises when either wildness or naturalness must be compromised to enhance the other. For example, in forests where fire suppression has created fuel loads beyond what occurred historically, a decision not to manipulate fuels through mechanical treatments or management-ignited fire supports wildness, but may increase the susceptibility of the forest to larger-scale and more intense fires than occurred historically, potentially decreasing naturalness, at least in the short term.

The appropriate course of action in this case is not clear. The chosen course should be based on the spatial and temporal scale of the proposed actions and their effects, how well-defined the target conditions are, and the quality of information about restoration actions and their effects. If the degraded area and restoration actions are localized, if the actions taken today will allow managers to reduce their interference with the "will of the land" in the future, if there are good reference sites to know what the undisturbed condition is, if the short- and long-term effects of restoration actions (as well as the likely consequences of not taking actions) are known with reasonable certainty, manipulative actions may be justified. In contrast, if restoration actions are being considered over a large area and there is uncertainty about the effects of these actions or about the target conditions, much more caution and scrutiny is warranted. Each of these criteria—spatial scale, temporal scale, understanding of undisturbed conditions, and understanding the effects of taking or not taking restoration actions—span from small (for example, a small area, a short time frame, and a small amount of understanding) to large. A pressing task for wilderness managers is forging guidelines about how to weigh these criteria in choosing whether to take action.

Understanding the differences between wildness and naturalness doesn't solve this dilemma of wilderness management. But making these concepts explicit starts to create a rough frame for restoration guidelines by clarifying when proposed actions are clearly inappropriate and when they are acceptable. Furthermore, they clarify what issues need to be discussed and weighed in determining whether proposed restoration actions should be taken.

UNDERSTANDING AND RECONCILING THE SOCIAL IRONY

Wilderness was established by Congress to uphold both wildness and naturalness. As discussed above, wilderness managers now often find themselves in the ironic situation of choosing

illustration by Amy Grogan

between wildness and naturalness. What are the social origins and implications of this irony?

Fine (1997) identified three overarching philosophical views of the relationship between Nature and culture that have predominated over the course of human history. The first view is the "utilitarian" perspective, wherein Nature is seen primarily as a storehouse of goods that can meet human needs. In this view, often associated with western societies in the Industrial Revolution and colonial expansion era (Nash 1967), Nature and culture are seen as two separate entities, with Nature existing primarily for the benefit of culture.

The second view, the "preservation" perspective associated with many environmental advocacy groups, also holds Nature and culture to be separate. But in this view, Nature is seen to exist *in spite of* culture, and the best role for Nature is to be protected from the influences of humanity (Fine 1997).

The third view is the "organic" perspective. Fine (1997) points out that this is both the oldest and newest orientation toward Nature—characteristic of many pre-industrial cultures, as well as the modern sustainable development movement, among others—in which the natural world and human world are integrated and even inseparable.

The Wilderness Act, passed at the beginnings of the modern American environmental movement when our society was just beginning to recognize the full extent of ecological degradation caused by modern industrial expansion, is legislation born of dichotomy between Nature and culture. The preservationist view is seen clearly in its description of wilderness as a place "where man himself is a visitor who does not remain." Wilderness management has solidified this dichotomous perspective, as required by the language of the act itself, by distinguishing between natural and human-caused influences. Thus, for example, lightning-ignited fires typically are allowed to burn, but human-ignited fires are not, even if their ecological benefits to wilderness ecosystems would be identical. Or bare ground may be mitigated if attributed to humans or domestic livestock but not wild ungulates.

Since passage of the Wilderness Act, however, other movements have begun to try to close the gap between Nature and culture, even to inject culture into Nature to redress some of the failures of culture. The dilemma over management action in wilderness today is born of our recognition of these later movements, which represent a re-emergence of the ancient holism seen in some pre-industrial views of humans in Nature.

The first of these movements is ecosystem management, which acknowledges human dependence on biotic integrity and seeks to blur the boundaries between social and biotic systems (Yaffee 1999). The second movement is that of ecological restoration, which represents recognition of society's ethical responsibility to try to make things right in our relationship with Nature (Gobster and Hull 1999). Some thinkers such as Jordan (1985) have tried to create a "participatory ideal," in which restoration is best when it meets a wide range of human needs. Restoration is *not* simply fixing things and then leaving them alone, but rather a continued community action. The convergent view of Nature/culture relationships is also reflected in Limits of Acceptable Change (LAC) type planning processes (McCool and Cole 1997) used by many wilderness managers. These public involvement processes can help frame the right questions when managers are faced with conflicting but equally valid societal goals. Brunson (2000) suggested that these tools provide a useful framework for societal dialogue about restoration activities both in and outside of designated wilderness.

The dilemma we face—whether to side with wildness by stressing the Nature/culture dichotomy, or to side with naturalness by restoring Nature whenever possible—is rooted in the ongoing ambiguity of a wilderness policy and other environmental policies that arise from both the preservationist and organic views of Nature and culture. Where we fall on the spectrum from dichotomy to holism is often intertwined with our view of risk and uncertainty: Do we dare trust science? Do we dare not? If we trust scientists to make wise, informed judgments about what "Nature" would be without human intervention, we are more likely to approve of manipulations intended to produce those conditions. Alternatively, if we're concerned about the possibility of restoration going awry, we may be too risk-averse to allow restoration in wilderness.

Seen another way, if we believe that wild Nature is doomed, we may be more likely to want to restrict further manipulation in order to save whatever's left in the least "damaged" condition possible. Alternatively, we may believe that leaving things alone will only make matters worse, as may be the case in systems

A matrix showing suggested outcomes when proposed restoration actions support or decrease wildness and increase or decrease naturalness.

NATURALNESS	WILDNESS: Decrease	WILDNESS: Support
Decrease	No Action	Dilemma & Irony
Increase	Dilemma & Irony	Action

we've simplified through fire suppression, so that the only justifiable action is to try to reverse the trends.

There are questions of trust not only about science, however, but also the people who apply it: scientists and land managers. When people oppose manipulative restoration, is it the science they distrust or is it managers and the agencies they represent? These are questions that we need to confront if we are to make reasoned decisions about whether to allow restoration of naturalness or protect wildness at all costs.

CONCLUSIONS

Large-scale wilderness restoration based on manipulating the environment will often cause a dilemma and may entail the irony of balancing wildness against naturalness. In one way, this dilemma is good because it forces us to carefully consider our actions and their consequences. Doing the right thing for wilderness may come down to sometimes making a choice between wildness and naturalness—but we should always strive for a solution that allows for both. Not surprisingly, individuals and organizations may differ, sometimes strongly, in their opinions about what is right for wilderness. One of the biggest hurdles facing wilderness policy-makers, managers, and advocates today is how to reconcile these views and manage wilderness for both wildness and naturalness. Managers who assume there is but one definition of the problem and but one course of action will be resisted by those with different views about what is appropriate for wilderness. Protecting and preserving wilderness that is wild and natural requires approaching decisions with humility, giving equal consideration to wildness and naturalness, understanding what we gain and what we lose with our decisions and actions, and open, vigorous discussion among people with different views about what is right and respectful in wilderness. ☾

ACKNOWLEDGEMENTS We thank Greg Aplet, Josh Brown, David Cole, Tim Hogan, Marion Hourdequin, Roger Kaye, George Nickas, David Parsons, and Chris Ryan for their comments and discussion which helped clarify and focus our thoughts in this paper.

Peter Landres *is research ecologist at the Aldo Leopold Wilderness Research Institute (PO Box 8089, Missoula, MT 59807).* **Mark W. Brunson** *is associate professor in the Department of Forest Resources, Utah State University (Logan, UT 84322).* **Linda Merigliano** *is natural resource specialist in the Bridger-Teton National Forest (PO Box 1888, Jackson, WY 83001).*

LITERATURE CITED

Aplet, G.H. 1999. On the nature of wildness: exploring what wilderness really protects. *Denver University Law Review* 76:347–367.

Barry, D. 1998. Toward reconciling the cultures of wilderness and restoration. *Restoration & Management Notes* 16:125–127.

Brunson, M.W. 1995. The changing role of wilderness in ecosystem management. *International Journal of Wilderness* 1(1):12–16.

Brunson, M.W. 2000. Managing naturalness as a continuum: Setting limits of acceptable change. In Gobster P., R.B. Hull, eds. *Restoring Nature*. Washington, DC: Island Press.

Callicott, J.B., and M.P. Nelson, eds. 1998. *The Great New Wilderness Debate*. Athens, GA: University of Georgia Press.

Cole, D.N. 1996. Ecological manipulation in wilderness: An emerging management dilemma. *International Journal of Wilderness* 2(1):15–19.

Cole, D.N. 2000. Paradox of the primeval: Ecological restoration in wilderness. *Ecological Restoration* 18:77–86.

Cordell, H.K., M.A. Tarrant, B.L. McDonald, and J.C. Bergstrom. 1998. How the public views wilderness. *International Journal of Wilderness* 4(3):28–31.

Dawson, C.P., J. Tanger-Foster, G.T. Friese, and J. Carpenter. 1998. Defining characteristics of USA wilderness experience programs. *International Journal of Wilderness* 4(3):22–27.

Fine, G.A. 1997. Naturework and the taming of the wild: The problem of "overpick" in the culture of mushroomers. *Social Problems* 44:68–88.

Foreman, D. 1999. Will-of-the-land. *Wild Earth* 9(2):1–4.

Gobster, P., and R.B. Hull. 1999. The restoration and management of nature. *Ecological Restoration* 17:44–51.

Janzen, D. 1998. Gardenification of wildland nature and the human footprint. *Science* 279:1312–1313.

Jordan, W.R. 1985. On the imitation of nature. *Restoration & Management Notes* 3:2–3.

Kaye, R.W. 1999. The Arctic National Wildlife Refuge. *Wild Earth* 9(4):92–101.

Landres, P.B. 1992. Temporal scale perspectives in managing biological diversity. *Transactions of the North American Wildlife and Natural Resources Conference* 57:292–307.

Landres, P.B., P.S. White, G. Aplet, and A. Zimmermann. 1998. Naturalness and natural variability: definitions, concepts, and strategies for wilderness management. In D.L. Kulhavy, M.H. Legg, eds. *Wilderness & Natural Areas in Eastern North America: Research, Management and Planning*. Nacoghoches, TX: Center for Applied Studies, College of Forestry, Stephen F. Austin University.

Manning, R.E., and W.A. Valliere. 1996. Environmental values, environmental ethics, and wilderness management. *International Journal of Wilderness* 2(2):27–32.

McCool, S.F., and D.N. Cole, compilers. 1997. *Proceedings—Limits of Acceptable Change and related planning processes: Progress and future directions*. USDA Forest Service General Technical Report INT-GTR-371, Intermountain Research Station, Ogden, UT.

McCloskey, M. 1966. The Wilderness Act: its background and meaning. *Oregon Law Review* 45(4):288–321.

Nash, R. 1967. *Wilderness and the American Mind*. New Haven, CT: Yale University Press.

Nickas, G. 1998. Wilderness fire. *Wilderness Watcher* 10(1):3–5.

Noss, R.F., and A.Y. Cooperrider. 1994. *Saving Nature's Legacy*. Washington, DC: Island Press.

Scott, D. 2001. The meaning of the word "untrammeled" in the Wilderness Act of 1964. *Wild Earth*, forthcoming.

Windhager, S. 1998. Biotic citizenship: A response to Barry. *Restoration & Management Notes* 16:128.

Worf, B. 1997. Response to "Ecological manipulation in wilderness" by Dr. David Cole. *International Journal of Wilderness* 3(2):30–31.

Yaffee, S.L. 1999. Three faces of ecosystem management. *Conservation Biology* 13:713–725.

Zahniser, E. 1992. *Where Wilderness Preservation Began: Adirondack Writings of Howard Zahniser*. Utica, NY: North Country Books.

Zahniser, H. 1956. The need for wilderness areas. *The Living Wilderness* Winter–Spring(1956–57):37–43.