Stewardship to Address the Threats to Wilderness Resources and Values

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Wilderness resources and values are becoming scarcer every year as they are lost to urban sprawl, roads, resource extraction, human development and intrusions from inholding landowners, global influences, and more; and even well-meaning stewardship may dilute or impact wilderness. In the future wilderness may represent the only remnants of many ecosystems, wild conditions, and opportunities in which to experience solitude and natural landscapes. The degree to which those qualities remain in wilderness tomorrow will reflect our stewardship efforts to deal with the threats to wilderness reviewed here, and more.

We define threats to wilderness here as a general concept, focusing on change agents or processes that negatively or adversely impact wilderness resource conditions and values, as noted by Landres et al. (1998a). We are talking about change agents that come directly or indirectly from human influences and not natural disturbances (e.g., lightning-caused fires, volcanoes, hurricanes, etc.). For example, increasing visitor use of wilderness areas (i.e., a change agent) can impact wilderness experiences through resulting crowding, visitor conflicts, loss of solitude, and from direct impacts on wilderness resources such as loss of vegetative ground cover at campsites, and soil erosion on trails.

We identify 17 categories of threats to wilderness and their impacts, drawing upon relevant literature and our experience and discussions with wilderness users, managers, and researchers. Some threats represent inevitable, though lamentable, global or local change, but for other threats wilderness stewardship can often make a difference. When it can, we urge wilderness managers to exercise the strongest possible protective or mitigating action.

1. Fragmentation and isolation of wilderness as ecological islands disconnect them from surrounding natural habitat so they may not be wholly functioning ecosystems. The 600-plus units of the National Wilderness Preservation System (NWPS) tend toward smaller units (42% are from 10,000 to 50,000 acres) rather than larger units (four wildernesses in Alaska include more than 1,000,000 acres) because of road and rail access.
5 million acres) (Landres and Meyers 2000). The lack of large or “corridor connected” wilderness units most pronounced in the eastern United States often creates ecological “islands” more vulnerable to external and adjacent forces than areas of a million acres or more. Beyond limiting the seasonal migrations of wilderness fauna, small units may limit the mixing of flora and fauna species populations, so essential to genetic diversity and upon which their long-term health and survival depends. Some wilderness species require large undisturbed home ranges, such as wolves and grizzly bears. How to combat fragmentation and isolation of wilderness? We need comprehensive wildland management that maintains wild corridors between small wilderness areas and a wilderness designation strategy that expands and connects areas.

**2. The loss of threatened and endangered species**, and sometimes intrusive actions to save them, can threaten wilderness naturalness and solitude. While the protection of threatened or endangered species may require special efforts, including mechanical intrusions into or manipulation of the wilderness environment to favor them, such well-intentioned and legal activities may cause other impacts. We must ask how much is enough, and try to stick with the minimum, necessary tools. For example, are efforts to protect bighorn sheep in the Cabeza Prieta and other wilderness areas by providing water structures and hauling water actually necessary? Are they a justifiable intrusion on other wilderness resources and values? Are they trying to support unnaturally high sheep populations?

**3. Increasing commercial and public recreation visits** cause impacts forcing managers to increasingly regulate and control use. Recreation use and visitor management are already intense in some high-use locations, in the more popular wilderness areas, and in some places, times and seasons— even in large and remote areas. So the impacts of both commercial and recreation use and efforts to control them may threaten wilderness resources and values (Cole 2000). Clearly, preserving wilderness naturalness and solitude requires visitor regulation in many places, though admittedly such regulation takes away the freedom and spontaneity that characterize wilderness experiences. It is a continuing balancing act, weighing the need to regulate use to control impacts against the impacts of visitor management on freedom and spontaneity of user experiences and the loss of wilderness opportunities for those turned away or limited.

**4. Livestock grazing** by domestic cattle and sheep and recreational pack stock is legally allowed in wilderness where it existed prior to Wilderness designation, but it is often a threat to naturalness and impacts user experiences. Permitting grazing in wilderness was a compromise that was politically necessary to achieve passage of The Wilderness Act (TWA), but it impacts soil and water, and the consumption and trampling of vegetation may directly impact competing wildlife or change the composition of the forage base, which may further impact wildlife (Murray 1997). The presence of domestic livestock also encourages predator control and may discourage programs for the recovery of endangered predators such as wolf and grizzly bear. We must respect the legality of grazing in wilderness, but we need tighter regulation of grazing in wilderness to limit its impacts.

**5. Exotic and nonnative species** are increasingly invading wilderness
ecosystems, impacting naturalness, triggering ecosystem changes, and displacing native species. For example, noxious weeds such as knapweed, star thistle, cheat grass, leafy spurge, and others have outcompeted native species and are rapidly spreading in wilderness (Asher and Harmon 1995). Control efforts are not benign either, as secondary impacts may result from biological, chemical, or physical control mechanisms, and they may not work. The invasion of wilderness by nonnative species, especially noxious weeds, is a very serious threat to wilderness naturalness. What to do? This is a complex dilemma for wilderness managers, with no easy answers that work. But when considering control options, first do no harm.

6. Excessive administrative access, facilities, and intrusive management can threaten naturalness and wilderness values (also see numbers 12 and 14). Mechanized access to wilderness by managers is legal under TWA when it is the minimum method to accomplish a legitimate and necessary wilderness or endangered species purpose, including facility construction and maintenance. Such management may be in support of any legitimate wilderness purpose, such as visitor management, grazing, mining, commercial outfitting, maintaining historic structures, or trail construction. Recent wilderness designation laws, like the California Desert Protection Act of 1994 (P.L. 103-433), expanded management access by providing for mechanized intrusions to support fish and wildlife management (not just endangered species) and law enforcement in the 69 BLM wilderness areas it established. With mechanized access to wilderness so easily justified, management restraint and judgment is especially important in not abusing the privilege. We still need to ask: is mechanized access really necessary? Is it the minimum tool that will work?

7. Adjacent land management and use can impact wilderness and is a concern for managers because they often have little or no control over what happens beyond the wilderness boundary (Landres et al. 1998b). A survey of U.S. wilderness managers in 1995 reported 60 different perceived impacts that adjacent land uses had on the wilderness (Kelson and Lilieholm 1997); the top five were fire management, military overflights, exotic plant introduction, air pollution, and off-road vehicle use. Wilderness managers need to expand their awareness, communication, and educational efforts beyond wilderness boundaries and seek better coordination of adjacent land management activities to minimize their impacts on wilderness.

8. Inholdings of private or public lands within wilderness areas can create impacts because inholders have a right to reasonable access and use of their lands. Some inholdings contain historic impacts, such as old mining claims or homesteads, others serve as active ranches or private retreats, giving their owners prime access to wilderness surroundings. Sometimes motorized access is granted to inholders on primitive roads, by aircraft, or by boats. Inholdings may be used by commercial outfitters and provide sites for supporting facilities and services (e.g., stock facilities, aircraft landing fields), access (e.g., interior private roads), and visitor facilities (e.g., outfitter camps, private dwellings). Wilderness managers need courage here to stand as firm as possible against nonconforming activities taking place on inholdings. A current example is a proposal by an inholder in California’s arid Palen McCoy Wilderness to build an access road to haul a large telescope and well-drilling equipment, all to
support private retreats to the site. We (the wilderness community) can help managers by responding to agency Notices of Proposed Actions (NOPAs) in wilderness with objections to intrusive proposals and insistence that their impacts be minimized.

9. **Mining and extraction from established claims** is allowed in wilderness, although further mineral exploration has been phased out under TWA. For example, oil development is being considered in Alaska and silver mining on existing claims near the Cabinet Mountains Wilderness in Montana. The negative impacts of mining to wilderness naturalness and wildness are extensive. Even old mines that have been “played out” may continue to impact wilderness with their residual buildings, junk heaps, mine tailings, and roads that continue to erode and which invite vehicle trespass, not to mention the visual and ecological impacts of these historical remnants. Managers need public support for imposing conditions as strict as possible on current mining operations, and public participation in efforts to clean up the messes left at old mining sites, such as public lands day cleanup projects and other volunteer rehabilitation efforts.

10. **Wild land fire suppression**, adjacent to and inside wilderness, is changing ecosystems by reducing natural fire frequencies, leading to changes in ecosystem structure and composition. Allowing natural processes like fire to continue to function in their natural role in wilderness ecosystems and landscapes is now recognized as important to providing diversity and natural variation. But the tendency is for federal agencies to suppress most fires, in part because of the fear and risk that they would spread to adjacent, non-wilderness lands and, in part, because of political pressure to suppress them. The massive stand-replacing fires that have occurred in recent years (in 2000 more than 6 million acres burned in 80,000 wildland fires) are confirming that past fire suppression allowed tremendous fuel loads to build up, contributing to today’s larger and more intense wildfires. Wilderness has not been immune from this fuel buildup. Difficult as it is and will be, restoring natural fire regimes in wilderness is important to the integrity of wilderness ecosystems.

11. **Polluted air** is a threat to wilderness naturalness because of its physical and biological impacts and the accompanying reduced visibility that may impact wilderness experiences. Bell et al. (1985) have reported that visual impairment from pollution can cause visitors to change trip schedules or to choose another location that has better visibility. In the eastern United States, acid rain from industrial and urban emissions can be especially harmful to high-elevation ecosystems. In the West, in 1996 the U.S. Forest Service (USFS) notified the state of Washington that visibility in the Alpine Lakes and Goat Rocks Wilderness areas was adversely impacted by a coal-fueled power plant in Centralia, Washington, and subsequently a mediated settlement for air quality improvement was completed (Stokes 1999). The air quality in wilderness serves as an important indicator of overall ambient air quality, and this connects wilderness to concerns of the larger society. Wilderness’s role in monitoring air quality for the nation provides an excellent opportunity to explain how wilderness serves everyone, even those who will never go there.

12. **Water storage facilities require the legal reconstruction and maintenance of dams and reservoirs in wilderness for water storage**, thereby impacting wilderness solitude and naturalness. Such storage is important because of historic use of wilderness water for irrigation in valleys below, and growing competition in the western United States for water to maintain “in stream” flows for fisheries, aquatic biota, and wildlife. But maintenance and reconstruction of water storage facilities in wilderness are very controversial because of the mechanized intrusions that are required.

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risk, and discovery. Technology also intrudes with high-tech outerwear and backpacking gear that insulate visitors from historic wilderness experiences (Knapp 2000). The use of GPS equipment, cell phones, radios, and other electronic technology by search-and-rescue personnel is generally accepted, much like the use of high-technology ropes and climbing gear. The use of mechanical transport in search-and-rescue operations is also accepted when human life is at stake. But the availability of modern electronic communication, navigation devices, and mechanized access may give visitors a false sense of security and contribute to irresponsible behaviors based on the assumption that rescue is only a cellphone call and helicopter flight away. But why can’t users be asked to observe more of a minimum-tool approach to wilderness recreation? We think their wilderness experiences and benefits would be better for it, and we urge wilderness managers to provide leadership in transmitting this message.

**14.** Motorized and mechanical equipment trespass and legal use can dilute wilderness solitude and damage resources. For example, operators of snowmobiles and all terrain vehicles (ATVs) can travel cross-country and enter a wilderness area inadvertently, or the trespass may be deliberate for convenience or recreational purposes, and go undiscovered in remote locations. Management’s use of motorized vehicles and mechanical equipment is legal in wilderness where it is the minimum method for accomplishing a legitimate wilderness purpose, and in some areas for such activities as wildlife management and law enforcement. Examples that might be approved are helicopters for special projects, ATVs for beach patrols, four-wheel-drive vehicles for wildlife management activities, and chain saws for trail construction. When wilderness visitors see managers using mechanized vehicles or equipment, it affects how they view them and shapes visitors’ views of what wilderness should be. To the contrary, when visitors see wilderness managers—and researchers—carrying out their work with primitive tools, it sends a positive message of respect for the wilderness and conveys that living with primitive skills and tools is possible.

**15.** Aircraft noise from aircraft overflights of wilderness by commercial and military aircraft cause noise and visual pollution, and dilute solitude with a dramatic reminder of modern society to which wilderness users object (Tarrant et al. 1995). There are also legal private and public airfields in wilderness in Montana and Idaho used by private visitors as well as outfitters moving supplies and customers (Meyer 1999). In Alaska the preexisting use of aircraft, especially floatplanes, continues in designated wilderness. Low-level military overflights can be traumatic to wilderness visitors and resident fauna, though such privilege is legally sanctioned in many areas. As overflights and the use of aircraft to access wilderness grows, wilderness managers must determine what management discretion is available to limit them or mitigate their impacts, and then face objections from the military, private pilot, and wilderness outfitter organizations that do not want such privileges limited. We hope wilderness managers will exercise their fullest possible discretion and influence to keep overflights and air access into wilderness from escalating, and reducing them when possible.

**16.** Urbanization and encroaching urban development toward wilderness boundaries dilutes wilderness with civilized sights, sounds,
and diminished remoteness. Urban sprawl has dramatically affected wilderness conditions with smog, encroaching roads that make access easier, noise, and casual day use in urban-proximate wildernesses such as San Gorgonio outside Los Angeles. We fear that increasingly diverse and urbanized visitors to wilderness may be satisfied with trips to crowded and heavily impacted wilderness due to their lack of previous experience in more pristine areas and may develop a wilderness frame of reference more tolerant of crowding and oblivious to impacts. Yet these users may need the respite offered by wilderness the most. We urge managers to expand their educational efforts about what wilderness is, what it is meant to provide, why management is necessary—and to do everything possible to see that diverse, urban visitors have the chance to enjoy a wilderness experience. We need the support and understanding of these people to sustain wilderness.

17. Lack of political, and thus financial support for wilderness protection and management is a great concern of the federal agencies, as expressed by then chief of the USFS Mike Dombeck, “...the resources committed to protect and manage wilderness have not kept pace with our needs. ... particularly for field work budgets and staff” (1999). The evidence of such neglect is wide and deep. Long overdue wilderness plans are still in progress or have not been started. Others are in need of revision and updating. Numerous roadless and wilderness study areas are being evaluated to determine if they should be added to the NWPS, and many areas recommended for wilderness years ago have not been acted upon by Congress. This lack of political and financial support for wilderness stewardship may be one of the most serious threats to wilderness in the long run. Funding for people and programs is required to maintain high standards of wilderness naturalness and solitude. We all need to help meet this threat by speaking out for wilderness to elected officials, and enlisting help from organizations and the larger public to whom elected officials are responsive.

Conclusion

This list of 17 threats to wilderness oversimplifies them, their seriousness, their current escalation, and how they might be addressed. We encourage a stronger stand against them by managers, and proactive support for manager resistance to them by the wilderness community. Reducing the dilution of wilderness resources and values by these threats and impacts is essential to help wilderness achieve its potential. 

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