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Wilderness Zoning: Should We Purposely Manage to Different Standards?

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Introduction

One inherent tension in wilderness management involves balancing recreational access and wilderness protection (Hendee and Dawson 2002). Although recreation is a legitimate use of wilderness, managers are also charged with protecting biophysical resources and visitor experiences. Opinions about how to balance access and protection are diverse. Nowhere has the issue of appropriate wilderness recreation use and need for use limitation been more contentious than in Forest Service wilderness in western Oregon and Washington. Stunning wilderness landscapes are located an hour's drive from millions of urbanites living in and around Portland and Seattle. On summer weekends, more than 200 people per day summit Mount Hood in the Mount Hood Wilderness and groups pass each other every three minutes hiking into Snow Lake in the Alpine Lakes Wilderness (Cole et al. 1997).

The difficulty of managing this issue is exemplified by planning for the Mount Hood Wilderness, where monitoring in the 1990s showed that wilderness standards were being violated. Crowding levels were too high, as was recreation impact. A proposal to bring conditions into compliance with standards, by reducing use as much as 90% in some places and at some times, was met with widespread public outcry. A new proposal was developed that applied more lenient standards in portions of the wilderness, eliminating the need to reduce use so profoundly. This proposal was successfully appealed.

Diverse stakeholders and zoning

The position of the Forest Service—"damned if you do and damned if you don't"—reflects the strong opinions of a diverse public. Any decision the Forest Service makes favors the interests of one group to the detriment of another. One way to meet diverse demands is to give something to each group. Zoning provides a means of providing different conditions or management regimes in different places, so everyone's needs and desires are met somewhere. Zoning has been proposed for decades as a means of increasing equity in decisions about recreational carrying capacity (Schreyer 1979).

Zoning of wilderness has been proposed—and in some places implemented—to accommodate the range of conditions that exist in wilderness and to promote diversity. The Limits of Acceptable Change process (Stankey et al. 1985) includes a step in which wilderness is divided into zones. Haas et al. (1987) point out that variable wilderness conditions are inevitable. Some portions of wilderness lie close to the boundary, within easy trail access of multitudes, while much of the same wilderness is virtually unvisited due to remoteness and

difficulty of access. Similarly, some wildernesses are far from population centers. Other wildernesses have been designated immediately adjacent to large urban populations.

In the absence of restrictions on access, crowding is highly variable both within and among wilderness areas. How should managers respond to this? Should they attempt to reduce this variability by limiting access in some places? Should they purposely maintain this variability (or even expand it) by zoning wilderness explicitly and managing different places to different standards? Or should they just allow conditions to vary as they will, without trying to explicitly manage conditions or their variability? Opinions in the literature and among wilderness advocates are diverse. Little is known, however, about how wilderness visitors feel about zoning. This paper reports the opinions of visitors to Forest Service wilderness in Oregon and Washington regarding within- and among-wilderness zoning.

Study design

In the summers of 2003 and 2004, questionnaires were distributed to visitors exiting 36 trailheads in 12 wildernesses in Oregon and Washington: Alpine Lakes, Goat Rocks, Mark O. Hatfield, Indian Heaven, Mount Adams, Mount Baker, Mount Hood, Mount Jefferson, Norse Peak, Salmon-Huckleberry, Three Sisters, and William O. Douglas. We studied both day and overnight visitors to the most heavily used trailheads in Oregon and Washington, as well as a sample of more moderately used trailheads spread across the states. We attempted to pair heavy- and moderate-use trailheads within the same wildernesses. Ultimately, cases of unreliable use data and the small number of very heavily used trailheads in the region forced us to deviate from this design. We identify three use levels: (1) very heavy use (>20 groups per day and >1,500 permits per year); heavy use (11–20 groups per day and 550–1,500 permits per year); and moderate use (≤ 10 groups per day or ≤ 500 permits per year).

About 12,000 visitors exited from the trailheads on the days when sampling was being conducted; 7,860 (65%) of these visitors were asked to fill out a questionnaire on-site. Seventy-two percent of those asked agreed.

Results

Within-wilderness zoning. To assess support for within-wilderness zoning, respondents were informed that “Forest Service managers must find an appropriate balance between allowing all people to visit the wilderness when they want and providing opportunities for solitude.” Then they were asked for their opinion about “which of the following options strikes the best balance for this wilderness

- A. Do not restrict use to manage for solitude anywhere, even if use is heavy.
- B. Manage for solitude along a few wilderness trails. The number of people allowed to use these few trails will be limited, but the majority of trails will have no use limits and may be heavily used.
- C. Manage for solitude on most wilderness trails, by limiting the number of people using these trails. A few trails will have unrestricted use. Use levels will be high on these trails.
- D. Manage for solitude everywhere in wilderness, even though this may mean that use will be restricted and people will be turned away.”

The vast majority of visitors supported zoning, selecting options that involve managing for variable conditions within the wilderness. Support was highest (44%) for managing *a few trails* for solitude. Another 34% preferred managing *most trails* for solitude. Support for not restricting use anywhere (17%) was higher than support for managing for solitude *everywhere* (5%). One possible explanation for lack of support for managing for solitude everywhere is that many of these trailheads are not very heavily used and we asked about the appropriateness of zoning *in this wilderness*. However, support for these options did not vary significantly with amount of use (Pearson chi-square = 7.55, df = 6, p = 0.27). People visiting high- and low-use wilderness were equally likely to support zoning, as well as equally supportive of restricting access to provide solitude.

Although differences between day and overnight users were statistically significant (Pearson chi-square = 9.38, df = 3, p = 0.03), differences were not substantial. The primary difference was in support for managing few trails for solitude (preferred by 46% of day users and 41% of overnight users) in relation to support for managing most trails for solitude (preferred by 31% of day users and 39% of overnight users). The proportion of people supporting one of the zoning options did not vary significantly between day and overnight users.

Support for either of the two zoning options (as opposed to the two non-zoning options) did not vary with any other user characteristics we examined. However, the response options can also be viewed as a continuum from less to more willingness to support use restrictions to provide solitude. We asked, "How important to you personally is the way this area is managed?" We found that visitors who thought a lot about wilderness management were more likely to support restrictions (Somers' d = 0.15, p < 0.001). Support for restrictions did not increase significantly with self-reported knowledge about the Wilderness Act (Somers' d = 0.04, p = 0.10). Support for restrictions decreased significantly with increases in a visitors' experience in this area (Somers' d = -0.06, p < 0.01), but was not significantly related with either experience with other wildernesses ("How many other wildernesses have you visited?") or with the frequency of wilderness visits.

We asked people about the experiences they were seeking on this visit (their motivations), as well as the extent to which they experienced what they hoped to. Support for restrictions was highly correlated with motivations. Support increased significantly with increases in every motivation we asked about ("a sense of freedom," "solitude," "to think about who I am," "closeness to nature," "to learn about this place," "wilderness opportunities," "a feeling of remoteness," "surroundings not impacted," "away from crowds," "a sense of challenge," "away from modern world," "to be my own boss," and "to develop personal, spiritual values"). Even those who sought "to be near others who could help if needed" (a distinct minority) were more supportive of restrictions. In contrast, support for restrictions was seldom significantly related to the degree that visitors experienced what they hoped to. That is, those who reported that they were seeking solitude were more supportive of restrictions than those not seeking solitude. But those who reported they found solitude were no more supportive of restrictions than those who did not find it.

Among-wilderness zoning. Visitors' opinions about among-wilderness zoning were explored by asking a question that began by stating that "some wilderness areas are within an hour's drive of large cities like Seattle and Portland, while others are far from such cities."

They were then asked to indicate the extent to which they agree or disagree about ways in which wilderness close to cities should differ from wilderness far from cities. Two items addressed appropriate conditions and four items addressed appropriate management.

Overall, there was modest support for among-wilderness zoning (Table 1). The only item that was not supported by a majority of respondents was the statement that “in wilderness areas close to cities, it is OK to have more wear and tear on the vegetation from recreation use than in remote wilderness.” In contrast to lack of support for more lenient biophysical impact standards in urban-proximate wilderness, there was strong support for more lenient crowding-related standards in urban-proximate wilderness. Only 7% of respondents disagreed with the statement that “in wilderness areas that are close to cities, it is OK to see more people than in remote wildernesses.”

In wilderness close to cities:	Percent agree ¹	Mean ²	Median ²
It's OK to see more people	79	1.5	2
It's OK to have more impact	41	-0.1	0
People should be allowed to visit whenever they want	68	1.1	1
Behavior should be more restricted	59	0.7	1
More acceptable to manipulating the environment to increase durability	54	0.4	1
Use limits more likely necessary	67	0.9	1

¹ Neutral responses (0) are NOT included in the percent that agree.

² Values range from +3 (strongly agree) to -3 (strongly disagree).

Table 1. Visitor opinions about managing wilderness areas close to cities to different standards and in different ways from that of remote wilderness areas.

About two-thirds of respondents supported allowing people to visit wilderness whenever they want, in urban-proximate wilderness, “so they can get relief from the city.” A similar proportion agreed that use limits are more likely to be needed in urban-proximate wilderness. Interpreted strictly, these results are not logically consistent. This inconsistency likely reflects the personal values conflict many wilderness users feel about wanting access to wilderness, to get away from the city, and recognizing the need for limits. Taken together, most respondents seem to believe that crowding standards should be more lenient in urban-proximate wilderness, resulting in an increased ability to allow people to visit these wildernesses when they want to, but also believe that, even with more lenient standards, use limits are still more likely in these wildernesses. Majorities also support more behavioral restrictions in urban-proximate wilderness, as well as more environmental manipulation (Table 1).

As was the case with support for within-wilderness zoning, support for among-wilderness zoning did not vary substantially with amount of use on the trail where the visitor was contacted. Nor did it vary much between day and overnight visitors. There were a few statistically significant differences. Visitors contacted in more lightly used places were more likely to support the need for more behavioral restriction in urban-proximate wilderness

(Somers' $d = 0.82$, $p < 0.01$) and more likely to agree that use limits are more likely to be needed in urban-proximate wilderness (Somers' $d = 0.11$, $p < 0.001$). But differences were small. For example, 73% of respondents at the more lightly used trailheads agreed that use limits were more likely in urban-proximate wilderness, compared with 62% of respondents at the most heavily used trailheads. Day users were significantly more likely than overnight users to agree that in urban-proximate wilderness people should be allowed to visit whenever they want (Pearson chi-square = 7.55, $df = 6$, $p = 0.27$). Again differences were small, 70% agreement versus 64% agreement.

Visitors who think a lot about and are concerned about how wilderness is managed are less supportive of more lenient biophysical impact standards in urban-proximate wilderness (Somers' $d = -0.14$, $p < 0.001$) and less supportive of more manipulation in those wildernesses to increase the ability of the environment to withstand recreation use (Somers' $d = -0.06$, $p = 0.02$). Conversely, they are more supportive of the need to restrict visitor behavior (Somers' $d = 0.15$, $p < 0.001$) and limit use in urban-proximate wilderness (Somers' $d = 0.12$, $p < 0.001$).

Visitors who report that they have a high level of familiarity with the legal definition of wilderness are also less supportive of more lenient biophysical impact standards in urban-proximate wilderness (Somers' $d = -0.06$, $p = 0.03$) and less supportive of more manipulation in those wildernesses to increase the ability of the environment to withstand recreation use (Somers' $d = -0.11$, $p < 0.001$). They are less likely to agree that in urban-proximate wilderness people should be allowed to visit whenever they want (Somers' $d = -0.07$, $p = 0.01$) and more likely to agree that use limits are needed in urban-proximate wilderness (Somers' $d = 0.08$, $p < 0.01$).

Conclusions

Most visitors support the concept of wilderness zoning. Support for within-wilderness zoning is stronger than support for among-wilderness zoning. There is substantial agreement that crowding standards should be more lenient in urban-proximate wilderness, but little support for allowing more biophysical impact in urban-proximate wilderness. Most visitors believe that management of urban-proximate wilderness will have to be more intensive (more use limitation, behavioral restriction, and environmental manipulation).

While some wilderness visitors do not support zoning, it would be incorrect to conclude that these visitors are much more (or less) likely to be knowledgeable about the Wilderness Act or to be more concerned or thoughtful about wilderness management. Nor would it be correct to conclude that they are more experienced, more likely to seek out less crowded places in wilderness, or more likely to be an overnight visitor. Support for restrictions varies more consistently with visitor characteristics. Day users, visitors to very heavily used trailheads, and visitors who frequently return to the same location are somewhat less supportive of restrictions, while visitors who are particularly concerned about management and knowledgeable about the Wilderness Act tend to be more supportive of restriction. However, differences are not substantial.

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