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Winter Visitors to Yellowstone National Park: Their Value Orientations and Support for Management Actions

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Abstract

The idea of a National Park contains a diversity of values and missions. This paper takes a multi-dimensional, context-specific approach to measuring the perceived values of Yellowstone National Park. It is an initial step in recording how perceptions of National Parks are changing over time. Responses of 1064 winter visitors to 24 park value items were factor and cluster analyzed to produce four groups. Examination of the relationship between cluster membership and support / opposition to a variety of management actions showed significant differences for all 19 proposed actions. Groups of visitors with different value orientations showed correspondingly different levels of support for management actions. The National Park Service (and other natural resource agencies) can, therefore, expect to encounter and manage for a diversity of perceived values and conflicting attitudes towards park management and planning.

Keywords: parks, value orientations, attitudes, park management

Introduction

The concept of a National Park is one of the most influential and widely adopted ideas of American land management. It is an intriguing amalgamation of national pride, preservation of extraordinary natural beauty, and use and enjoyment by a wide range of people. There are now over 1,000 National Parks worldwide. Prior to the development of the National Park idea in the United States there had not been a major tradition of rural parks anywhere in the world (Sax 1980). National Parks have been variously described as America's exalted places (Frome 1992), as being tied up in American memory and mythology (Foresta 1984), and as being places of great symbolic beauty (Sellars 1997). National Parks are highly valued by Americans and play a distinctive role in how Americans see themselves and their country. But as American culture develops and changes, the relevance or priority of various aspects of the park idea tends to ebb and flow (Foresta 1984). While important values are clearly preserved within National Park boundaries, the perceived purpose of the parks may change over time (McCool 1983).

The origins of Yellowstone National Park show an early diversity of values. After exploring and describing the headwaters of the Yellowstone River and its confluence with the Missouri River, Artist George Catlin in 1832 called for a "nation's park, containing man and beast, in all the freshness of their nature's beauty" (Zaslowsky and Watkins 1994, 14). In 1865 Thomas E. Meagher, Montana's territorial governor, initially proposed the idea of a National Park in the Yellowstone area. In 1870 an exploration led by the surveyor-general of Montana, Henry Dana Washburn, brought public attention to Old Faithful and other such geothermal features. A popular myth is that the various members of the Washburn-Langford-Doane Expedition sat around a campfire near the junction of the Gibbon and Firehole rivers and discussed the need to set aside and preserve Yellowstone's unique curiosities (Barringer 2002). However, it wasn't until March 1, 1872 that Congress was to declare over 2 million acres as "a public park or pleasuring ground for the benefit and enjoyment of the people" (Yellowstone Act, 1872: PL 17 Stat. 32).

As popular and pervasive as the National Park idea is, its organic mission is often viewed as inherently conflicted. The National Park Service Organic Act of 1916 (PL 39 Stat. 535) charges the agency to manage the parks so as to "conserve the scenery and the natural and historical objects and the wildlife therein and to provide for the enjoyment of the same in such a manner and by such means as will leave them unimpaired for the enjoyment of future generations." This conundrum of meeting both the objective for conservation of natural objects and for the use and enjoyment of the people has led one author to describe the mission of the National Park Service as one of "protecting and enhancing the scenic façade of nature for the public's enjoyment, but with scant scientific knowledge and little concern for biological consequences" (Sellars 1997, 45). Some areas of National Parks have been intensely developed, concentrating the many visitors to the park,

while leaving the surrounding lands in a wilder state. This is consistent with early Park ideals of nature being scenic, full of curiosities, and a mere backdrop for the recreation enjoyment of the park. Even at an early age, the National Parks depended on economic development and pork-barrel politics for a sufficient infrastructure to both provide and protect the parks (Ridenour 1994).

However, this common analysis of the conflict inherent within the National Park mandate may be overly simplistic. While many analysts call for increased rigidity in the interpretation of the National Parks Service's organic legislation, it may be the lack of specificity that has allowed the park idea to grow with the culture. Perhaps there were always more values represented within the mission than merely the scenic wonders and opportunities for pleasure. For example, when John Muir was arguing against the damming of Hetch Hetchy, his strategy was to tap into a myriad set of values including spirituality, social restraint, intrinsic worth, beauty, recreation and Yosemite's role as a bastion against the growing power of commercialization (Nash 1982). When the fields of ecology and wildlife management came of age in the 1930's through the 1960's, the parks' mandate allowed for inclusion of the values of wildlife preserves and sanctuaries (Sellers 1997). And when the Wilderness Act was passed in 1964, there was again room within the National Park mission to include and complement the values of wilderness.

A second reflection of social change relative to National Parks is apparent in the continued relevancy and role that parks play in American life. The appeal of parks has shifted from the exclusivity of the early visitors to include the mass visitation of middle class America. The dominant mode of experience has evolved over the years from that of stage coach tours and grand lodge visits to include backcountry backpacking and hiking, fishing, snowmobiling, and car camping.

The challenge to the National Park Service is to consider and balance all of the purposes that are assigned to it. Even in Muir's early battle over Hetch Hetchy, he cautioned president Roosevelt not to underestimate the power of public values, sentiment, and their constituent's political influence. Muir's challenge was to bring the message to the people. Today, millions of people are bringing their message to the parks each year. While analysts may view the National Park mandate in a superficial way, it is not uncommon to see the visitors (or constituents) painted with a similar, but unjustified, brush. Paul Schullery of the Yellowstone Center for Resources opens an essay on the difficulty of implementing park policy on complex issues with the following opinion:

The American public has never received an adequate introduction to the national park idea. To them, or to most of them, the parks are little more than grassy Disneylands, and the name park has no more meaning to them than forest or monument or any of the other titles the federal government has bestowed upon it holdings (1995, p. 73).

Is this the case with visitors at Yellowstone National Park? Or do park visitors today share to some degree the values of John Muir, Robert Underwood Johnson, Stephen Mather, George Wright, and A. Starker Leopold? The aim of this paper is to begin documenting those prescribed purposes that the public has for the parks. It is hoped that explicit description can help to show how the perception of the parks may be changing over time, and lead to a better understanding of the impacts of management decisions on those socially assigned ideals.

Park Values

This study seeks to measure the relative values or purposes for which visitors feel Yellowstone National Park exists. It is our belief that visitor assessments provide an opportunity to compare contemporary opinion of the purpose of the park with that which has emerged through a long history of debate of the National Park ideal. Further, we are striving for an improved understanding of the value orientation of winter visitors to Yellowstone National Park. We use a multi-dimensional, context-specific approach to the measurement of values, and examine their relationship to support or oppose for a variety of proposed management actions.

There have been many calls for the investigation of values as a necessary component of natural resource management. Values have been called a critical foundation for decision-making (Myers and Close 1998) and their documentation crucial for decision makers to adequately understand the public's expectations regarding land management and desired future use and conditions (Jakes 1998). A better knowledge of divergent public values can "help environmental managers understand the range of perspectives they should expect among the public as well as identify possible shared values they can build upon in forging consensus" (Proctor 1998, 348). Kuentzel and Dennis (1998) suggest that much of the controversy in environmental management is due to different constituencies valuing specific amenities differently. Moreover, Averill and Stevens further state that many natural resource problems are "as much value-based as they are fact-based and we can no longer afford to ignore the value dimensions of decision-making" (1996, 400). Bengston (1993) suggests that the main challenge facing public forest managers is being responsive to diverse and changing forest values. Similarly, Kennedy, Dombeck and Koch state that

"rather than physical resource manipulators, public land managers are often social value brokers ... and will become more so in the future" (1998, 18).

Yankelovich, in an influential text called Coming to Public Judgment, makes a strong case for moving beyond objectivism and reliance upon expert knowledge to a more inclusive use of values and public judgment. In describing a dependence on rational, logical facts, he says, "it is not a bad method for coping with small problems. But it is a disastrous strategy for coping with big ones" (1991, 200). Yankelovich describes values as higher, more stable, and more enduring forms of public judgment. He states that "values reflect the individual's ideals and goals" (1991, 123) and are therefore distinguishable from specific attitudes and opinions with which they may clash. Yankelovich considers values more foundational, more enduring conceptions of the good and desired human condition. Following Rokeach (1979) values are more central beliefs that influence less central beliefs such as attitudes. Values are a product of assigning relative importance. As Myers and Close suggest, "values lead us to regard some goals or ends as more legitimate or correct and other goals as illegitimate or wrong. They also lead us to regard certain ways of reaching those goals or means as proper and appropriate and other ways as improper or inappropriate" (1998, 291).

Given the importance of values for natural resource management decision-making, however, the empirical measurement of values has been relatively rare. Stynes and Stokowski (1996) observed three principle approaches: i) social-psychological methods to measuring broad-based values (eg., Rokeach 1979), ii) economic methods to measuring non-market values (eg. Loomis and Walsh 1997), and iii) inference of values from attitude, preference, and behavior measures. A fourth approach, the qualitative assessment of ethics (eg. Kohlberg 1971, Kahn 1999), is not strictly empirically based (Harding 2002).

The social-pyschological approach to values seeks to measure the universal value orientations that underlie attitudes and behavior. The work of Schwartz (1996), for example, has sought distinct types or groups of values. His typology has since been found to be a good predictor of pro-environmental attitudes and behaviors (Stern, Dietz and Guagnano 1998). Environmental concerns and, in particular, attitudes towards new environmental issues, are rooted in more stable and relatively enduring value orientations (Stern, Dietz, Kalof and Guagnano 1995).

The economic approach has been to extend the identification and assignment of monetary values to objects not typically traded in an economic market place such as recreation, scenic beauty, and water quality. This approach frequently uses willingness-to-pay or contingent valuation measures to estimate benefits and net value of resources. However, the economic approach has been criticized and its applicability to many environmental contexts is uncertain. Authors such as Kellert (1984), Prior (1998), and Trainor and Norgaard (1999) have questioned the comprehensiveness of these methods for less tangible, non-utilitarian values such as spiritual, existence, intrinsic and symbolic values. More et al. (1996), Lockwood (1997), and Holstein (1998) further suggested that moral and ethical values are not appropriately valued through trading or purchasing metaphors. Others such as Bengston (1993) and Atran and Medin (1997) have questioned the ability of a single monetary value to sufficiently capture the values underlying complex decision-making.

The approach taken in this study can be found within the social-psychological tradition, searching for the broad value orientations specific to park settings. Previous studies point the way to the measurement of values in natural resource settings and their relationship to attitudes toward management of those resources. Bengston, Fan and Celarier (1999), for example, constructed four broad categories of benefits and values of forests and forest ecosystems (recreation values, commodity values, ecological values, and moral/spiritual values) using an analysis of their frequency of mention in the U.S. media. Gilbert, Manning, Negra and Koenemann (1996) similarly created a typology of ten major values of parks based on a review of wilderness literature and observed the following order of importance when questioning visitors to 45 Vermont State Parks: aesthetic, recreation, scientific/education, moral/ethical, ecologic, therapeutic, economic, intellectual, historic/cultural, and spiritual. Manning and Valliere (1996) used the same typology in a study of visitors to the Broadloaf Wilderness in Vermont and found that ethics, more so than values, were related to attitudes toward wilderness management. Manning, Valliere and Minteer (1999) found that 6 of 11 similar values explained 49% of variance in attitudes towards national forest management, with aesthetic, ecological and recreational values receiving the highest ratings of importance.

Methods

Based on a review of the literature concerning the National Park idea, in particular the work of Henneberger (1996), 24 items were written to examine the perceived values of Yellowstone National Park. Included in these items are notions of parks as sacred places, where "wildlife would be protected, preserved, viewed and used for scientific research" (Henneberger 1996, 131), as public pleasuring grounds for recreation and human utility, and as ceremonial landscapes for pilgrimage, nationalistic pride, and of natural wonder and awe. The specific wording of the 24 items is shown in Table 1.

Respondents were asked to rate how much they agreed that each was particularly important to the overall value of Yellowstone (using a scale that ranged from 1 ("strongly disagree") through 8 ("strongly agree"), with a "don't know" option).

The highly contentious nature of winter recreation in Yellowstone National Park (Sacklin, Legg, Ceachbaum and Helfrich 2000) provided an opportune research setting and 1818 winter visitors were contacted for this study between 1/17/98 and 3/7/98. Names and addresses of visitors were collected, voluntarily, at the four entrance stations throughout the day on thirteen randomly selected days. Sample size at each entrance station was proportionately representative of the number of visitors accessing the park at each entrance over the previous winter season. A random sample of 1505 of those 1818 visitors was mailed a questionnaire. This repre-

Table 1. Mean scores for park value items.

	Mean *	Std. dev.
I believe Yellowstone National Park is particularly important as:		
A place of scenic beauty	7.6 $_a$	1.06
A wildlife sanctuary	7.2 $_b$	1.45
A place everyone should see at least once	7.2 $_b$	1.57
Protection for fish and wildlife habitat	7.1 $_c$	1.42
A place for education about nature	7.0 $_d$	1.42
A display of natural curiosities	7.0 $_d$	1.14
A historic resource	6.9 $_{de}$	1.50
A place for the use and enjoyment of the people	6.9 $_{ef}$	1.60
A place for all living things to exist	6.8 $_{ef}$	1.73
A place for wildness	6.8 $_{efg}$	1.84
A symbol of America's identity	6.8 $_{fg}$	1.66
A protector of threatened and endangered species	6.7 $_g$	1.82
A display of natural curiosities	6.7 $_g$	1.66
A place for recreational activities	6.4 $_h$	1.69
A place for scientific research and monitoring	6.3 $_h$	1.72
A tourist destination	6.2 $_i$	1.80
A site to renew your sense of personal well being	6.1 $_i$	1.88
A family or individual tradition	5.6 $_j$	2.10
A reserve of natural resources for future use	5.4 $_{jk}$	2.64
A sacred place	5.3 $_k$	2.49
A social place	4.7 $_l$	2.11
An economic resource	4.5 $_m$	2.29
A place to develop my skills and abilities	4.2 $_n$	2.01
A place to be free from society and its regulation	4.2 $_n$	2.42

Question Wording: **Role of Yellowstone National Park**. We are interested in your opinions about the values of Yellowstone. Please indicate for each of the following, how important they are to the overall value of Yellowstone National Park (1 = strongly disagree, and 8 = strongly agree):

* Letters indicate statistically significant difference using paired students' t-tests. If a group has the same letter then they are statistically similar. If the two groups have a different letter then they are statistically different. If they have two or three letters, then they are statistically similar to groups that share at least one of those letters

sented approximately fourteen percent of the total visitors through each entrance to the park. After the initial mailing, a subsequent reminder, and then a replacement questionnaire, a response rate of seventy-one percent was attained resulting in 1064 returned questionnaires.

Reponses to the 24 items were factor analyzed using a principal components approach and a varimax rotation to delineate the underlying dimensions associated with the values of Yellowstone National Park. The following criteria were used in extracting the factors: all factors had an eigenvalue greater than one, and each one explained at least 4% of the total variance in the value items. Next, a cluster analysis of respondents was conducted using the four identified factor scores. Based on examination of the dendrogram (hierarchical agglomerative method), a four-cluster solution was suggested. Using an SPSS quick cluster (k-means) technique, four cluster groups were developed. The relationship between cluster membership and support/opposition to a variety of proposed management actions was examined with an analysis of variance. These management action items were taken from recent winter research at Voyaguers National Park and from proposed winter visitor use management planning documents for Yellowstone National Park.

Results

The factor loadings and corresponding reliabilities (using Cronbach's coefficient alpha) of the four resulting factors are shown in Table 2. The four factors explain a cumulative 56.4% of the variance in item response. Each of the four scales has a satisfactory Cronbach alpha, ranging from 0.87 to 0.64. Item-scale total correlations were all in the range 0.33 to 0.80. An initial interpretation of those four factors suggest that Factor 1 emphasizes *natural* values such as protection of wildlife, wildlife habitat, wildness, and the education and study of nature. Factor 2 reflects an emphasis on the ceremonial, *symbolic, and historic* role of Yellowstone National Park: as a symbol of America's identity, and as a historic and scenic resource that individuals and families should see at least once. Factor 3 shows a prioritization of the *recreation and tourism resource* values of Yellowstone as a tourist destination, a place for recreation, use and enjoyment of the people, and as a social place. Factor 4 emphasizes *personal growth and development* values such as the opportunity to develop skills and abilities, the chance to be free from society, and as a place to renew personal wellbeing. The item on sacred values of Yellowstone loaded on both the first and fourth factors. This could be interpreted for the first factor as a sacred place associated with the natural environment. For the fourth factor, we interpret it as an opportunity for a sacred or spiritual personal experience.

Table 2. Factor and reliability analysis of park values scales.

Item Wording	Mean	Factor 1	Factor 2	Factor 3	Factor 4	Item-scale Correlation
Protection for fish and wildlife habitat	7.1	.80	28	- .02	.01	.80
A protector of threatened and endangered species	6.7	.80	.11	- .14	.17	.70
A wildlife sanctuary	7.2	.79	.28	- .01	- .02	.76
A place for all living things to exist	6.8	.68	.18	.09	.13	.63
A place for education about nature	7.0	.66	.29	.09	.09	.64
A place for wildness	6.8	.64	.07	.11	.04	.54
A place for scientific research and monitoring	6.3	.62	.03	.28	.05	.49
A display of natural curiosities	6.7	.48	.39	- .07	.06	.50
A symbol of America's identity	6.8	.30	.69	.13	.19	.66
A historic resource	6.9	.34	.68	.15	.15	.70
A place everyone should see at least once	7.2	.14	.63	.37	- .01	.57
A place of scenic beauty	7.6	.51	.60	.20	- .15	.63
A display of natural curiosities	7.0	.41	.60	.15	.02	.59
A family or individual tradition	5.6	- .01	.47	.27	.44	.43
A tourist destination	6.2	.11	.18	.76	.01	.61
A place for recreational activities	6.4	.09	.20	.76	.08	.63
A place for the use and enjoyment of the people	6.9	.10	.49	.68	- .01	.63
A social place	4.7	- .08	.12	.61	.46	.59
An economic resource	4.5	- .06	.01	.51	.41	.41
A reserve of natural resources for future use	5.4	.11	.04	.38	.36	.37
A place to develop my skills and abilities	4.2	.18	- .08	.14	.68	.41
A place to be free from society and its regulation	4.2	- .02	.07	.09	.60	.33
A site to renew your sense of personal well being	6.1	.24	.43	.02	.52	.49
A sacred place	5.3	.45	.21	- .35	.51	.38
Percentage variance explained		31.6	13.1	7.2	4.5	
Coefficient alpha		0.88	0.81	0.78	0.64	
Scale mean (divided by # items)		6.9	6.9	5.8	5.1	

The four cluster groups of respondents and their cluster means (for the four factor scores) are shown in Table 3. These clusters represent winter visitors grouped on the similarity of their values. Cluster 1 (labeled *naturalists*) represents those who highly value natural and symbolic values, and place less emphasis on human oriented tourism and recreation values. Cluster 2 (labeled *human oriented*) has higher scores on human oriented values, but lower scores on natural and personal growth and development values. Cluster 3 (labeled *players*), is a small but distinct cluster. Cluster three's scores for personal growth and development values were relatively high but very low on natural and symbolic values. Cluster 4, the largest group, (labeled *park enthusiasts*) subscribes to most of the on-site values of Yellowstone National Park offered in this instrument, with specifically high importance on natural, human oriented, and personal growth and development values.

A significant difference was found between the cluster groups for the mean level of support for all nineteen proposed management actions. Using an ANOVA, the F statistic was significant at a .05 level for all nineteen items, and at a .001 level for seventeen of the nineteen. Members of cluster 1 (the naturalists) are much more likely to be supportive of stricter noise and emission standards, and more supportive of establishing alternate use periods to help minimize conflict between user groups. This group is also significantly more likely to be less supportive of grooming snowmobile trails more often, less supportive of providing more information about things to see and do, and less supportive of providing more trails for winter recreation. They are also significantly more opposed to plowing the road from West Yellowstone to Old Faithful. To typify this group, they tend to support greater protection of the park resources, and tend to offer less support for encouraging or facilitating use. Cluster 2 (human oriented) is more strongly against closing or restricting roads to oversnow vehicles. This group is significantly more supportive of providing more park rangers to educate and assist visitors. Describing this cluster, they tend to support making it easier for visitors to use and enjoy the park and do not support restrictions on access. Cluster 3 (players) is more sup-

Table 3. Clustering of visitors based on factor scores.

Cluster	Factor 1 (Natural Values)	Factor 2 (Heritage and Symbolic Values)	Factor 3 (Recreation and Tourism Resource Values)	Factor 4 (Personal Growth and Development Values)	% Cases
1 Naturalists	.31	.28	-1.08	.08	28.2%
2 Human Oriented	- .71	.19	.56	- .73	29.2%
3 Players	-3.56	-3.78	-1.66	1.46	2.4%
4 Park Enthusiasts	.43	- .19	.56	.64	40.2%

portive of grooming the trails and the provision of more information about things to see and do outside the park. Cluster 4 (park enthusiasts) is supportive of providing more accommodations in the park, and of providing more facilities to encourage visitors to use other areas of the park.

Conclusions

Perhaps the most important managerial implication of this study is that the majority of winter visitors to Yellowstone were able to strongly align themselves with a diverse set of core purposes ascribed to the national parks.

The purposes they reviewed were consistent with those that have been proposed through time by the founders of the contemporary park ideal. We also saw distinct disagreements among visitors grouped on those values relative to the management actions they supported. That is, visitors with different values tend to support different management actions.

This suggests that although attitudes toward management proposals may be swayed or influenced by information, explanation, and/or promotion, there could still be underlying disagreement or frustration with the agency. Attitudes and preferences for different management actions are related to, and perhaps derivative of, more stable and enduring values.

Table 4. Support or opposition for management actions across visitor park value clusters.

Proposed Management Action	Mean[a]					F	Signif. level
	Entire Pop.	Cluster 1 Naturalists	Cluster 2 Human Oriented	Cluster 3 Players	Cluster 4 Park Enthusiasts		
Require all snowmachines to meet strict, but reasonable emissions and noise standards	3.99	4.44 [c]	3.59 [a]	3.78 [a b]	4.00 [b]	25.4	0.000
Provide more information to snowmobilers concerning appropriate behavior	3.93	4.14 [c]	3.73 [a]	3.89 [a b]	3.94 [b c]	7.3	0.000
Provide more information concerning snow and trail conditions	3.82	3.58 [a]	3.91 [b]	3.94 [a b]	3.90 [b]	8.4	0.000
Provide more information along trails identifying points of interest	3.80	3.49 [a]	3.91 [b]	3.56 [a b]	3.94 [b]	12.5	0.000
Maintain and groom snowmobile trails more often	3.76	3.35 [a]	4.03 [c]	4.17 [b]	3.84 [b]	16.0	0.000
Provide more information about things to see and do outside the park	3.75	3.53 [a]	3.72 [b]	4.10	3.91 [b c]	8.7	0.000
Provide more information about things to do in the park	3.63	3.25 [a]	3.71 [b]	3.78 [b]	3.82 [b]	18.1	0.000
Be more aggressive enforcing snowmobile speed limits	3.63	3.95 [c]	3.29 [a]	3.47 [a b]	3.66 [b]	14.3	0.000
Be more aggressive enforcing safety rules and regulations in the park	3.59	3.87 [c]	3.25 [a]	3.56 [a b]	3.63 [b]	16.3	0.000
Provide more trails/locations for winter recreation use	3.56	3.06 [a]	3.70 [b]	3.77 [b]	3.79 [b]	19.0	0.000
Continue and increase advertisement of other winter areas to disperse use	3.56	3.46 [a b]	3.59 [a b]	3.15 [a]	3.63 [b]	2.7	0.048
Provide more park rangers in the park to educate and assist visitors	3.39	3.52 [b]	3.16 [a]	3.74 [b]	3.45 [b]	8.4	0.000
Increase facilities provided to visitors to encourage them to use other areas of the park	3.37	3.04 [a]	3.44 [b]	3.15 [a b]	3.56 [b]	11.7	0.000
Provide guided snowmobile trips by National Park Service staff	3.01	2.99 [b]	2.87 [a]	3.31 [b]	3.11 [b]	2.8	0.041
Establish alternate use periods to help minimize conflict between user groups	2.96	3.26 [c]	2.62	2.72 [a b]	3.00 [b]	15.2	0.000
Provide more winter accommodation options in the park	2.95	2.57 [a]	2.97 [b]	3.05 [a b]	3.19 [c]	11.9	0.000
Close roads to oversnow vehicles	2.12	2.57 [c]	1.69 [a]	2.38 [b]	2.11 [b]	19.5	0.000
Restrict groomed roads to snowcoach travel only	2.05	2.57 [c]	1.62 [a]	2.36 [b]	1.99 [b]	22.1	0.000
Plow the road from W. Yellowstone to Old Faithful	2.00	1.77 [a]	1.89 [a b]	2.31 [a b]	2.21 [c]	6.3	0.000

(1 = strongly oppose, 2 = oppose, 3 = neither support or oppose, 4 = support, 5 = strongly support)
[a] Taking each management action separately, a common letter indicates clusters did not have significantly different means. If a group has the same letter then they are statistically similar. If the two groups have a different letter then they are statistically different. If they are two or three letters, then they are statistically similar to groups that share at least one of those letters.

This pattern in our data reaffirms Garrett Hardin when he said that agreement on park management would only come from reconciliation of basic human *values* (Dustin et al. 1995).

Managers, who view visitors from a simplistic perspective, or identify them primarily by the mode of activity they participate in, could misinterpret visitor frustration. For example, while visitors using snowmobiles dominated our sample, nearly thirty percent of them were most closely aligned with naturalist values and were supportive of some restrictions on the very mode of transportation they were using. That is, believing that all snowmobilers are alike and value the same things misinterprets the demands and opinions of many of them.

The items within the scale used in this study reflect the cultural development of the park idea over time. Multiple values may have been discussed around the campfire of the 1870 Washburn Expedition that helped motivate the establishment of Yellowstone National Park. However, societal internalization of that set of values occurred incrementally. What began as a set of natural curiosities grew into a "place everyone should see once," a "historic resource," "a place for education about nature" and "a symbol of America's identity."

We believe that the need for an understanding of human values results partly from a limit to technical solutions for park management issues. The evolution of snowmobile access to Yellowstone may provide a distinct case in illustrating this point. Winter snowmobile use started in the 1960's when the number of snowmobiles was small, and it appeared quite possible to accommodate a range of values including personal growth and development experiences in the park. As use increased, conflict among values emerged and it became clear that technical planning was required. The planning resulted in numerous studies of the issues, including that reported in this paper. Advocacy organizations rooted in the traditions of natural values sued the park to force the consideration of the impacts snowmobiles had on the natural values of the park (Sacklin et al. 2000). After consideration of years of research, managers proposed a ban on snowmobile access. This form of intervention was popular with none of the clusters, even those most aligned with the natural values of the park. The ban, in turn, was contested by industries and localities aligned with human oriented access values. Recent discussion has centered on a resolution that includes limited access by cleaner, quieter snowmobiles. This form of resolution seems to address the central interest of each cluster and focuses on a form of management action that was highly supported by each group. Developing a proposed resolution based on multiple values earlier in the process may have saved substantial time and money. Large scale management actions can rarely play to just one set of values without expecting other values to be expressed through legal and political outlets.

In the larger society, it is understandable why National Parks enjoy such broad public support, given the range of values and purposes they represent. While the flexibility of National Park legislation has allowed for broad expression of these values in the way people enjoy the parks, it has also allowed for the increased recognition of ecological importance. But much as the conflict between value clusters was apparent in this analysis, we can expect there will be similar conflict within mainstream America. There is still a need to know how the alignment of values demonstrated by the visitors in this study compares to those of the broader population. We also need a greater knowledge of what visitors are willing to trade off within their own experience to pursue the values they hold, and how they feel about imposing sanctions on those who do not share their values. Furthermore, the managers themselves have their own values that are also deserving of examination. The value orientations of managers might be more or less aligned with those of the visitors.

Applying scales such as the one used here could document the ebb, flow and change of the park ideal over time. Continued development of the scale may increase the amount of variance explained and help assess the values prescribed to different parks and regions. We believe that the predictive power of underlying values for those attitudes is worthy of further investigation.

Endnote

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