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Describing Change in Visitors and Visits to the “Bob”

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Abstract: Understanding wilderness use and users is essential to wilderness management. However, there have only been a limited number of studies specifically designed to detect changes in use and user characteristics across time. Recreation use of the U.S. National Wilderness Preservation System (NWPS) has increased since its creation in 1964, along with many other changes in influences on society's relationship with wilderness. This article describes a series of visitor trend studies at the Bob Marshall Wilderness Complex in Montana, and identifies some of the challenges encountered in estimating long-term use and user trends.

Introduction

The call for greater understanding of trends in wilderness visitation is not new (Hendee et al. 1968; Roggenbuck and Lucas 1987; Cole and Hall 1992). Although many wilderness areas have systematically collected data on the amount of visitation, far fewer (approximately a quarter of the units of the NWPS) have even baseline data on visit and visitor characteristics (Cole and Wright 2003). And then, only a handful of those data collection efforts were specifically designed as longitudinal research.

This article highlights some challenges encountered in understanding trends at the Bob Marshall Wilderness Complex (BMWC) in Montana. This area of around 1.4 million acres (600,000 ha), sits astride the Continental Divide of the northern Rocky Mountains in the United States and is composed of three contiguous wildernesses: the Bob Marshall, Great Bear, and Scapegoat. The "Bob," as it is colloquially known, contains a broad and diverse wildlife population that includes representatives of nearly every species present at the time of Euro-American exploration and settlement. It is managed for unroaded, primitive recreation, including backpacking, horseback riding and packing, river floating, and fishing. Big game hunting is popular during the fall (mid-September through October), and there are a number of outfitters and guides that provide services to the public. With around 55 of these small businesses, plus the economic activity generated in nearby towns, visitation to the "Bob" is an important source of local income.

William T. Borrie and Stephen F. McCool in the "Bob." Photo by Polly Cote.

Methods

In 2004 visitors to the "Bob" were surveyed to help understand long-term trends in visit and visitor characteristics. This study replicated methods and questions from two previous studies: 1970 (Lucas 1980) and 1982 (Lucas 1985). Although this article compares data from the 2004 study with the 1970 and 1982 surveys, it is worth noting that another visitor survey was conducted in 2003 (Dear,

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McCool, and Borrie 2005). However, a series of lightning-ignited fires significantly constrained visitation patterns that year in the BMWC. Although there is confidence that the 2003 sample accurately reflects visitation for that year, it was felt that 2003 was not a particularly representative year (Borrie, McCool, and Whitmore 2006), and, thus, is not considered in this article.

The sample population was all summer and fall visitors, aged 16 years or older, who spent three or more hours in or near the BMWC. Sampling began when a majority of the trailheads (and mountain passes) were clear of snow and open to travel (June 18 in 2004), ending when the first significant snow event covered access roads and visitation dropped off sharply (October 18 in 2004). Visitors to the BMWC choose from more than 75 different trailheads, but a relatively few of those trailheads account for the majority of visitation. In each study, the highest used trailheads were sampled proportional to size, such that those with heavier levels of visitation were sampled more frequently (Lucas 1985). Inverse weighting in the analysis provided equal representation in the overall sample. Trailheads were sampled in blocks of four-day weekdays (Monday through Thursday) and three-day weekends (Friday through Sunday). In 1970 40 blocks were sampled, while in 1982, 74 blocks were sampled. Due to financial and logistical limitations, the 2004 study sampled 26 blocks, allocated proportionally across the 13 busiest trailheads.

As visitors entered or left the wilderness they were contacted and asked some questions. Visitors were requested to receive and return a mail-back questionnaire. Follow-up reminder postcards and replacement questionnaires were sent to nonrespondents. Most of the questions asked in 1970 were repeated with identical wording and response format in 1982 and 2004. Several items were, however, dropped from the questionnaire due to less importance to current management concerns, and a few were added reflecting current management interests.

Table 1. Sample sizes and response rates, by year of study, BMWC

	Year		
	1970	1982	2004
Number of questionnaires mailed	552	972	408
Number completed and returned	502	785	294
Percentage completed and returned	91%	82%	72%

Results

Although response rates declined over the three surveys, the 2004 survey still saw 72% of questionnaires returned (see table 1). Some characteristics of visitors to the "Bob" have changed over the years: for example, on average, visitors are older and have more years of education (see table 2). Significantly more of the 2004 visitors are in the 45 years and older group (around 50%). Most visitors to the Bob Marshall are male, although the proportion of female visitors grew from 20% in 1970 to 30% in 1984, and a little less than 30% in 2004.

In general, today's visitor is more likely to have previously visited the BMWC and other wildernesses (see table 2). Nearly all visitors in 2004 (91%) had previous experience in wilderness, whether at the Bob Marshall or elsewhere, and about 65% had previous experience at the "Bob."

Some visit characteristics also changed (see table 3). Although the "Bob" offers outstanding opportunities for multiday, horse-based travel,

Table 2. Selected visitor characteristicsa, by year of study, BMWC

	Year		
Characteristic	1970	1982	2004
Age, percent 45 and older[b]	26	21	50 [± 4%]
Educational attainment, percent completing college and those with some graduate school	41	47 [± 5%]	62 [± 9%]
Sex, percent female	20	30	29 [± 5%]
Previous experience, percent with prior BMWC visits[b]	55	44 [± 5%]	65 [± 5%]
Previous experience, percent with prior visits to any wilderness[b]	78	78 [± 5%]	91 [± 4%]

a Confidence intervals, where known, shown at 95% level.
b Shows significant statistical difference, at 95% level, between 1982 and 2004.

Table 3. Selected visit characteristicsa, by year of study, BMWC

	Year		
Characteristic	1970	1982	2004
Travel by horseback, percent	50	36 [± 7%]	42 [± 2%]
Travel by raft, percent	4	3 [± 2%]	7 [± 2%]
Average length of stay, in nights	4.1 [± 0.6]	3.7 [± 0.5]	3.3 [± 0.3]
Average size of group	4.9 [± 0.7]	4.3 [± 0.5]	4.6 [± 0.4]
Use of outfitters, percent	31	17 [± 4%]	22 [± 4%]

a Confidence intervals, where known, shown at 95% level.

the days of equal numbers of hikers and horse users have ended. In 1970 about half of the visitors used horses, but in 1982, only about 36% of visitors traveled by horseback. In 2004 this increased slightly to 42%. Floating the South Fork of the Flathead River is increasingly popular, with 7% of wilderness visitors in 2004 traveling by boat (raft, canoe, or kayak) compared with 3% in 1970 and 1982. We found that, on average, visitors' lengths of stay were shorter in 2004, down to 3.3 nights from 3.7 in 1982 and 4.1 in 1970. Nearly 35% of visitors contacted in 2004 were day visitors, compared to 22% in 1982 and 20% in 1970. Group size in the "Bob" has stayed somewhat stable, with an average of 4.6 in 2004, 4.3 in 1982, and 4.9 in 1970. Use of outfitters declined from 1970 to 1982 (31% of visits in 1970, 17% of visits in 1982), then with little change to 2004, when 22% of visitors had an outfitter or guide on their trip (see figure 1).

Respondents were asked to describe and evaluate conditions found on their visits to the BMWC. Whereas the number of other groups encountered on the trip increased, from an average of 1.3 in 1970, to 1.6 in 1982, and 2.3 in 2004 (see table 4), there was little change in the evaluations of these conditions. A slight majority felt that the number of people they encountered was "about right," with 24% saying they met too many, and 20% indicating it didn't matter one way or the other. The proportion preferring no other parties camping within sight or sound did not change significantly (86% in 1970, 81% in 1982, and 83% in 2004). Visitors who had visited the Bob previously were asked if they thought "the quality of this area" was getting better, about the same, or getting worse. In 1970 just over half felt conditions were about the same. This rose to just over three-fourths in 1982 and 2004.

Visitors had the opportunity to indicate how desirable or undesirable they considered some management actions (see table 5). Bob Marshall visitors continue to strongly reject issuing permits that list assigned campsites, with more than 70% rating this action undesirable. Limits on group size, however, were less objectionable, with only 19% saying they were undesirable in 2004 (relatively stable, compared to 19% in 1970, 22% in 1982). In 2004 29% of visitors found a policy of no fish stocking and of leaving barren lakes barren to be undesirable (compared with 48% in 1982 and 55% in 1970). Similarly, only 12% of 2004 visitors found natural forest fires stared by lightning to be undesirable (23% in 1982 and 45% n 1970) (see figure 2). Support for visitor regulations that promote resource protection also seems to be increasing. In 2004 only 40% of visitors found a prohibition of camping within 200 feet of lakes, rivers, and streams to be undesirable, compared to 57% of 1982 visitors. Similarly, 34% of 2004 visitors found a ban on wood fires where firewood is scarce to be undesirable (down from 48% in 1982 and 46% in 1970).

Discussion

Many of the trends seen at the BMWC mirror previous findings, but our investigations have raised some

Figure 1—Around 22% of 2004 visitors to the BMWC had an outfitter or guide go with them, about the same percentage as in 1982. Photo by Josh Whitmore.

Table 4. Evaluation of conditions[a] during visits to the BMWC, by year of study

	Year		
Dimension	1970	1982	2004
Average number of visitor groups encountered per day	1.3	1.6 [± 0.3]	2.3 [± 0.3]
Opinions about number of visitors encountered, percent stating "too many"	24	24	24 [± 7%]
Preferred number of other groups camped nearby, percent stating zero	86	81 [± 4%]	83 [± 3%]
Perceptions of changing conditions,percent saying quality did not change	52	76 [± 4%]	75 [± 5%]

a Confidence intervals, where known, shown at 95% level.

broad questions concerning interpreting and conducting trend studies. Hendee and Dawson (2002) noted a changing age and population structure in the United States, and we found this to be the case at the "Bob." This corresponds with a higher percentage of visitors with previous experience visiting wilderness, at both the "Bob" and elsewhere. What does this mean for the future? Does an aging population with greater experience levels imply greater commitment to wilderness in our society or less? What will the relationship between the next generation and wilderness be like?

The trend toward shorter visits to wilderness has been recognized previously (Roggenbuck and Lucas 1987; Hendee and Dawson 2002). However, many other characteristics of visits to the "Bob" have not changed. For example, group size and the percentage traveling with a guide or outfitter have changed little. Also, as Hendee and Dawson (2002) suggested, "Despite some managerial concerns about declining quality of wilderness conditions and experiences, there is little evidence that user dissatisfaction is negatively influencing wilderness use levels" (p. 403). The evaluations of visitors to the "Bob" have remained stable, despite encountering different conditions.

Support by visitors for group size limits remains high, and attitudes toward visitor regulations that promote resource protection seem to be increasing. Likewise, support is increasing for resource management policies that favor natural fisheries and natural fire regimes. This may be indicative of an increased understanding and appreciation of natural processes, and perhaps a shift in the values that visitors associate with wilderness (Watson 2000).

We found it difficult to exactly replicate previous sample plans, and we are not confident that the assumptions underlying those earlier sample plans were still applicable to a later study. Some sampling locations changed (such as changes in infrastructure at the trailhead and along the trail), and this may have changed the numbers and types of visitors using those locations. We necessarily used past estimated use levels to allocate sampling intensity across trailheads (as we did not know current use intensities). New constraints on sampling, such as increased awareness of safety concerns of field workers and differences in availability of housing for survey technicians, also limited our ability to exactly replicate earlier study designs. A major constraint was the budget allocated to accomplishing this trend study, possibly signifying an even

Figure 2—Visitor support for natural forest fires started by lightning is increasing in the BMWC. Photo by Josh Whitmore.

Table 5. Visitor attitudes toward management policies, by year of study, BMWC

		Year		
Percent finding management policy undesirable		1970	1982	2004
Visitor management policies				
	Issue trip permits so visitors could only camp each night in the area assigned to them	75	79	72
	Allow visitors to catch fish to eat in the wilderness, but not to bring out	30	26	13
	Limiting the size of parties to 12 people	19	22	19
Resource management policies				
	A natural fishery—no stocking and barren lakes left barren	55	48	29
	Natural forest fires started by lightning	45	32	12
Campsite management policies				
	Prohibiting camping within 200 feet of lakes, Wild and Scenic Rivers, or streams	—	57	40
	Prohibiting wood fires where dead wood is scarce	46	48	34
Trail management policies				
	A few trees blown down across the trail, maybe 1 or 2 per mile	30	41	35
	High standard trails (wide, steady grades, fairly straight)	33	16	12
	Low standard trails (somewhat like a game trail—narrow, grade varies, winding, not the shortest route)	15	18	22

greater challenge in recognizing the value of trend studies by funding organizations or simply tightened budgets among federal management agencies.

Furthermore, as we designed the study within our constraints and analyzed data, we were confronted with a fundamental question of what trends are important to consider. That is, are trends in visitation or trends in visitors more important? Contact with some previous visitors who may now be recreating elsewhere, perhaps displaced by changing conditions, would provide different insight than gained in this study. Those still visiting may be more satisfied, more or less critical, or more or less experienced, than those now choosing to go elsewhere. However, panel studies that contact the same sample of visitors across time are particularly prone to difficult logistics and profound threats to external validity such as biases associated with "mortality" of respondents.

Conclusions

Even considering the difficulties mentioned above, trend studies are of great importance to managers. Good stewards of the land need to know who is visiting the area and how their visits are changing. Understanding change in evaluations of conditions and perceptions of visitors are valuable components in any monitoring program, such as is commonly part of most planning approaches, such as the Limits of Acceptable Change (McCool 2005; Stankey et al. 1984).

Should studies indicate a change in visit or visitor characteristics, however, changes in management approaches should be carefully considered. Two dynamics in particular can be exacerbated by changes in management. First, displacement, where new management policies can displace existing groups, thus leaving only visitors who endorse those new policies. Similarly, cascading expectations, where the status quo serves as a standard for evaluations, without acknowledgment of what that starting comparison point represents.

Finally, it is not always clear what has caused changes in visit and visitor characteristics and in the attitudes and evaluations of those visitors. Large-scale social forces, well beyond the influence of wilderness managers, can be at play. For example, it may be more difficult for a family to schedule or afford travel for a two-week pack trip than it was in the past. Instead, that same family may be making more frequent, shorter visits to home-proximate wilderness. This is not to imply that those home-proximate experiences are less important or meaningful. Instead, this points out the need for resources to develop a good understanding of the relationship people have with wilderness, how it evolves across a person's life course and potentially across several wilderness areas, and the value of such knowledge to managers compared to additional one-time, single-area studies focused on current evaluations of conditions experienced. **IJW**

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Many of the trends seen at the BMWC mirror previous findings, but our investigations have raised some broad questions concerning interpreting and conducting trend studies.

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