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Effects of the Gates Park Fire on Recreation Choices

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Abstract—The 1988 Gates Park Fire, along the North Fork of the Sun River in the Bob Marshall Wilderness, provided an opportunity to explore fire effects on wilderness visitor choices. Recreation visitors along the North and South Fork drainages were interviewed to assess the effects of 1988 fires on their 1989 visits. The Gates Park fire had relatively little impact on the choice to visit the North Fork or the South Fork. Visitors placed more importance on remoteness and naturalness in selecting trails and campsites than on the effects of the fires. The fire effects apparently are not seen as an unnatural phenomenon by most visitors. Visitors to both burned and unburned areas expressed strong support for prescribed natural fire policies. Commercial outfitters expressed some concerns about being excluded from preferred areas and some feared their businesses would decline.

Keywords: wilderness, forest fires, visitor behavior, wildland fires, visitor attitudes

Wildfires are considered a natural part of the wilderness ecosystem by scientists and most managers. Fire policies allowing naturally caused fires to burn under prescribed conditions have been justified largely by findings in the biological sciences (Kilgore 1987). Political, economic, social, and physical factors also affect the acceptability of fire policies (Daniels and Mason 1985). The general public (Manfredo and others 1990) and visitors to a specific wilderness (McCool and Stankey 1986; Stankey 1976) have been surveyed about their knowledge of fire effects and likely support of natural fire policies. This paper explores the effects of a large wildland fire on the visitors' recreation choices and attitudes toward fires. This information should help us understand potential reactions to prescribed natural fire policies.

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METHODS

To determine the effects of a large wildland fire on visitor recreation choices and attitudes toward fire, a recently burned study area was selected, a method of sampling wildland recreation visitors was chosen, and the format and content of an interview were developed.

Study Areas

One of the wildland fires occurring during the summer of 1988 was the Gates Park Fire, about 36 air miles west of Choteau, MT, on the Lewis and Clark National Forest (fig. 1). This fire's boundaries included nearly 52,000 acres, all within the Bob Marshall Wilderness. Vegetation consisted primarily of dense, pole-sized lodgepole pine and fescue grasslands. Most large mammals native to the West are found in the area, including black bear, grizzly bear, elk, moose, deer, gray wolf, mountain lion, mountain goat, and bighorn sheep.

This area is most heavily used from July to November. Horseback riders, hikers, and campers use the drainages of the North and South forks of the Sun River. Visitors may also hunt or fish, while enjoying scenic beauty and the opportunity for solitude.

The Gates Park Fire was detected on July 11, 1988. After initial monitoring as a natural fire, it was reclassified a "wildfire" because extremely dry, hot conditions suggested the fire could easily escape the boundaries of the wilderness and pose a significant threat to private property (figs. 2, 3). Controlling the fire became a priority for firefighting crews in the area. The 52,000 acres burned were entirely within the North Fork drainage of the Sun River, leaving the adjacent South Fork unburned.

From a visitor's viewpoint, only about half of the total acreage of the Gates Park Fire showed evidence of fire in 1989. The fire created a patchwork as it moved across the land. This was due primarily to the

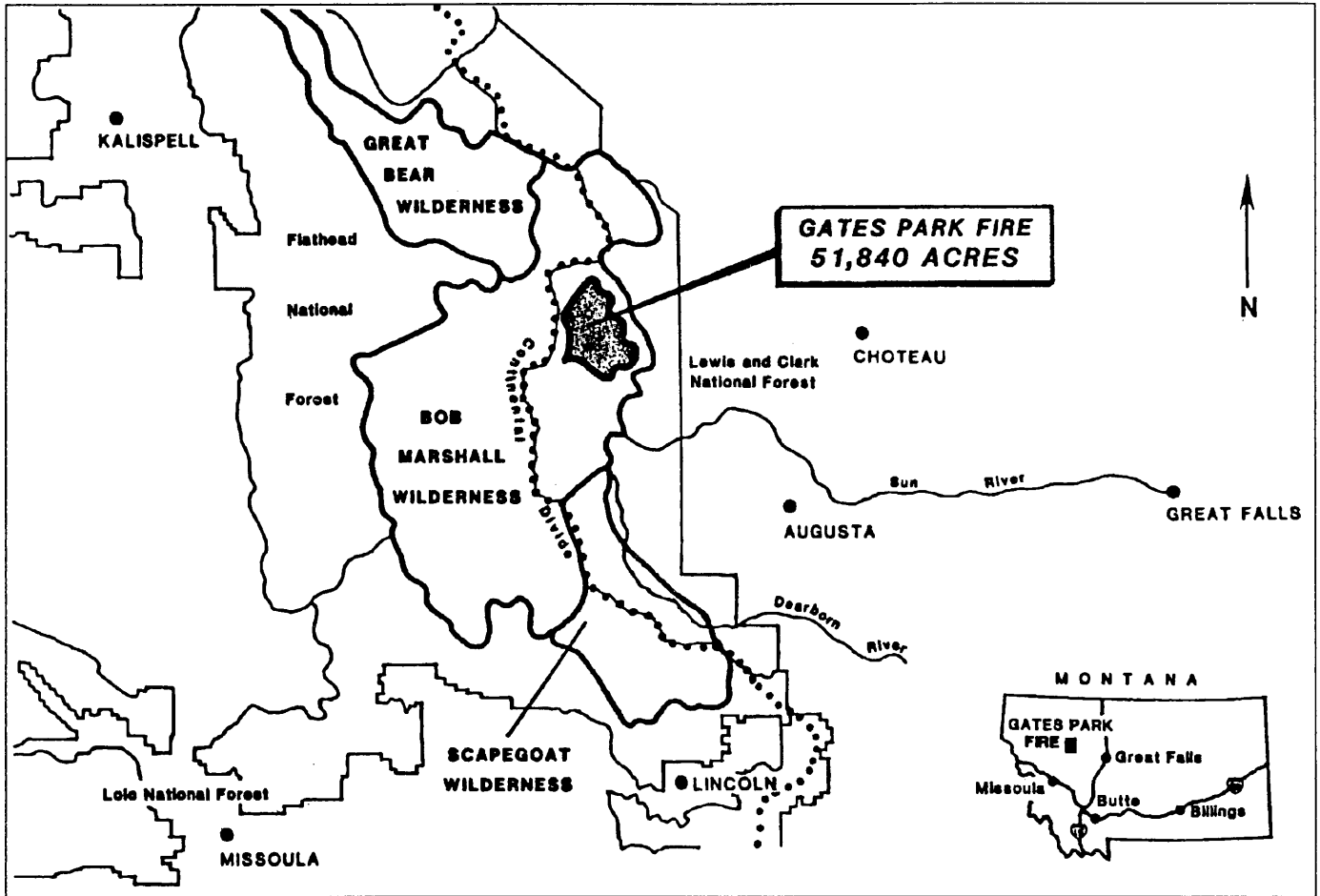


Figure 1—Relative size of the Gates Park Fire to total Bob Marshall Wilderness Complex.



Figure 2—Gates Park Fire actively burning, summer 1988.



Figure 3—Smoke in the North Fork drainage, summer 1988.

variation in fire intensity, the vegetative composition, and the vegetation's response to the fire. In some cases entire stands were consumed, causing "stand replacement" (fig. 4). In other areas low-intensity ground fires burned understory plants and debris, leaving standing trees unscathed (fig. 5). Within days following the fire, new plants quickly began regenerating from seeds and undamaged underground rhizomes. By the summer of 1989, only a keen observer could have recognized that some grassland areas had burned the previous year.

Study Sample

Three study groups were identified. One group consisted of individuals who visited the North Fork of the Sun River for recreation during the summer and fall of 1989. Every visitor to the North Fork



Figure 4—Intensively burned area, North Fork, spring 1989.

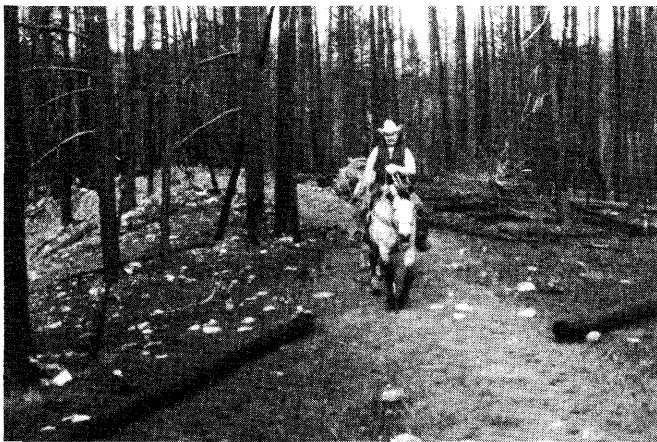


Figure 5—Headquarters Trail, North Fork, spring 1989.

drainage is assumed to have had some exposure to the effects of the 1988 fire. A second study group included visitors to the South Fork of the Sun River during the same period. The South Fork had not experienced large, stand replacement fires in several decades. Individuals visiting these two areas during 1989 were primarily private backpackers, or horse parties which included some outfitted clients. Additionally, all outfitters who have served the North Fork area were included as a separate group.

From July through November, visitors were contacted within the North Fork and South Fork. Use of both areas is light by most standards, making a random sample of visitors difficult. Instead, wilderness rangers were trained to conduct interviews. They contacted visitors whenever they encountered them on appointed rounds (basically a convenience sample). One person per group, at least 18 years old, was asked to participate in a short interview. No estimate of total use of the two drainages during the study is available, so adequacy of the sample cannot be determined. No known biases were involved in subject selection.

This procedure yielded 42 interviews in the North Fork drainage and 43 interviews in the South Fork. We interviewed 11 outfitters at their central outfitting location at the end of the 1989 season. This was a population survey of outfitters serving the North Fork drainage. A total of 96 interviews were conducted.

Interviews

The visitor interview consisted of 24 questions covering three primary areas: (1) visitor characteristics, (2) effects of various environmental stimuli (including the 1988 wildfire) on visitor choices, and (3) trip satisfaction. Visitors' choices were examined for three aspects of the visit: (1) factors affecting selection of a major drainage within the Bob Marshall Wilderness Complex, (2) factors influencing trail selection within the drainage, and (3) factors influencing campsite selection. Visitors also were asked to identify the most and least attractive aspects of the area visited. A separate survey assessed the influences on outfitters' selection of trails and campsites. The survey also tried to determine outfitters' perceptions of the fires' effects on their businesses during and after the year of the fires.

The relative influence of the 1988 fires on visitor and outfitter choices was examined following methods previously used by Lucas in the Bob Marshall (1985, 1990). A standard set of 10 items was used for each of three types of choices. The question read to the visitors was: "How much importance did you attach to each of the following factors in choosing: (a) the North or South Fork of the Sun River, (b) selected trails, or (c) selected campsites?" Responses were

recorded as “not important,” “somewhat important,” or “very important.” In addition to items used by Lucas (1985, 1990), “the recent occurrence of wildland fires” was included among the list of items evaluated.

RESULTS

The North Fork sample included 32 private groups and 10 commercial groups. The South Fork sample included 40 private groups and three commercial groups. Montana residents accounted for two-thirds of both study groups. In the North Fork group, 81 percent reported previous visits to the Bob Marshall Wilderness, compared to 61 percent in the South Fork group. Horse use was higher in the North Fork (86 percent) than in the South Fork (61 percent). Of all visitors 88 percent stayed overnight. The primary visitor activities varied little across the two study areas. From 35 to 50 percent of the groups were in the wilderness to hunt, 12 to 14 percent were there primarily for fishing, and 12 percent were there primarily for horseback riding. In the South Fork, 19 percent of the groups were there for camping. In the North Fork, 12 percent were there for hiking. The remaining visitors were there for miscellaneous reasons, none contributing substantially to identifiable subgroups.

Major Drainage Selection

Chi-square analysis suggests that a significantly higher proportion of North Fork visitors considered the recent occurrence of wildland fires when selecting a portion of the Bob Marshall Wilderness to visit (table 1). Among North Fork visitors, evidence of

the fires appears to be the least important of the reasons examined for going there. Among South Fork visitors, evidence of fires was also of very low importance, with 20 percent attaching some importance to fires. This suggests they may have come to the South Fork area to avoid fires in other areas, possibly the North Fork drainage.

When visitors were asked to identify attractive and unattractive features of the North or South Fork drainages, most indicated some natural feature as the most attractive (57 percent North Fork, 67 percent South Fork). Nearly one-third (31 percent) of the North Fork visitors and 14 percent of South Fork visitors indicated wildlife viewing or hunting as the most attractive features of the areas they visited. Half of the North Fork visitors reported the effects of fire to be the most unattractive features. In the South Fork, 32 percent of the visitors said sanitation and weed problems were the most unattractive features. Other unattractive features were too many people in the North Fork (36 percent) and too many horses in the South Fork (27 percent).

Trails Selected

North Fork visitors placed significantly more importance on the effects of fires on trail choices (table 2). Half of the North Fork visitors indicated the recent occurrence of fires had some level of importance on their selection of trails; 18 percent of South Fork visitors placed some importance on fires in trail selection, possibly suggesting avoidance of trails in the North Fork area where the fire had burned. Fires were the sixth most important of 10 factors affecting trail selection in the North Fork, but were the least important factor in the South Fork.

Table 1—Importance of factors affecting choice of area to visit in the Bob Marshall Wilderness

Factors	North Fork	South Fork
	----- Percent -----	
Natural place, lacks evidence of humans	100	85
Remoteness, solitude	96	88
Scenic beauty	79	79
Quality hunting	70	46
Quality fishing	61	70
Familiarity	60	60
A new area, variety	56	59
Test outdoor skills	52	58
A friend or family member suggested it	47	39
Recent occurrence of wildland fires	46*	20*

*Significant difference, chi-square = 6.099, $p < 0.05$.

Table 2—Importance of factors affecting choice of trails to travel in the Bob Marshall Wilderness

Factors	North Fork	South Fork
	----- Percent -----	
Natural place, lacks evidence of humans	87	74
Scenic beauty	84	84
Remoteness, solitude	76	82
Familiarity	62	46
Quality hunting	59	38
Recent occurrence of wildland fires	50*	18*
A new area, variety	47	50
Friend or family member suggested it	37	45
Quality fishing	35	56
Test outdoor skills	28	38

*Significant difference, chi-square = 7.84, $p < 0.05$.

When asked about satisfaction with trail conditions, just over 80 percent of groups in both areas were satisfied. Of those dissatisfied with trail conditions in the North Fork, 33 percent mentioned the effects of the fire. Loss of signs, bridges, drainage structures, and down logs were major items of concern.

Campsites Selected

For campsite selection, North Fork visitors reported much higher importance scores for recent fire occurrence than did South Fork visitors (table 3). Recent fire occurrence was the fifth most important of 10 factors in campsite selection. Factors such as remoteness/solitude, appearance of natural conditions, quality of hunting, and scenic beauty were more important than fires. Recent fires were the lowest ranked factor for South Fork visitors.

When campers were asked if they had any trouble finding places to camp, just over 10 percent in both areas reported a shortage of grass for horses. Visitors to the North Fork attributed this shortage to the fire, while South Fork visitors attributed the shortage to overuse.

Trip Satisfaction

When asked to rate their satisfaction with the wilderness trip, 81 percent of North Fork visitors and 93 percent of South Fork visitors gave ratings of over 8 (on a scale of 1 to 10). Nearly three-fourths (71 percent) of North Fork visitors and over two-thirds (69 percent) of South Fork visitors indicated they were very or extremely likely to recommend the area they visited to others.

When asked if they expected their recreation experience to be affected or if it had been affected by the 1988 fires, 50 percent of North Fork visitors answered yes. The negative effects included diminished scenic values (30 percent), displacement of persons who otherwise would have used the North Fork (25 percent), effects on hunting (15 percent), and water quality (5 percent). Positive effects included improved game habitat (10 percent), educational benefits (10 percent), and stimulated vegetative growth (5 percent). Of all North Fork visitors interviewed, 86 percent reported they were aware of recent fires in the area.

Visitor response about the appropriateness of Forest Service fire policy did not seem to be influenced by spending the trip in an area with recent fires (table 4). In both areas, about 25 percent of visitors felt the policy was inappropriate.

Outfitter Response

Of the 11 outfitters, nine felt that the 1988 fires had influenced their selection of trails during 1989

Table 3—Importance of factors in selecting campsites in the Bob Marshall Wilderness

Factors	North Fork	South Fork
	----- Percent -----	
Remoteness, solitude	97	84
Natural place, lacks evidence of humans	93	79
Scenic beauty	77	95
Quality hunting	76	37
Recent occurrence of wildland fires	47*	16*
A new area, variety	43	58
Familiarity	43	50
Quality of fishing	42	66
A friend or family member suggested it	37	38
Test outdoor skills	33	40

*Significant difference, chi-square = 7.32, $p < 0.05$.

Table 4—Visitor evaluations of appropriateness of controlled burn policy

Response	North Fork	South Fork
	----- Percent -----	
Appropriate	71	72
Not appropriate	27	23
No opinion	2	5

trips. These outfitters specifically mentioned trails that had been burned over and blocked by downed logs and lost or damaged trail structures such as drainage improvements, bridges, and signs. Only three outfitters reported that clients indicated they did not want to travel through country that had been badly burned.

During the 1989 season, the fire affected campsite choices for eight outfitters. All eight indicated their choices were influenced by closure of some trails due to the fire, a shortage of grass after the fire, campsites which had been burned over, and avoidance of some large burned areas.

When asked how client levels in 1989 compared to those in 1988, three outfitters reported a decrease, three reported an increase, and five reported no change. Those who reported a decrease attributed it to the Gates Park Fire. They felt that clients perceived the area as "burned out" and believed elk populations would be adversely affected. Other ways outfitters believed the Gates Park Fire influenced their business including displacement due to closures during the fires, rescheduling of trips, disappointed clients, and clients upset because of the amount of smoke reaching the lodge where they were staying.

Four believed their future business would be affected by the fires of 1988. They believed clients may be unhappy and fail to return. They also were concerned about possible negative effects on water quality, fish populations, and scenic values.

CONCLUSIONS

It appears that evidence of large fires in large wilderness areas in the West does not greatly impact visitor experiences. Recent fires in the Bob Marshall Wilderness were a relatively unimportant consideration in selecting a portion of the wilderness to visit, trails to travel, and campsites. Visiting a burned drainage did not adversely affect satisfaction. While the fire had significantly more influence on the choices of those in a burned area than an unburned area, traditional wilderness values of naturalness, scenic beauty, and remoteness were more important influences.

For all types of choices examined (drainages, trails, and campsites), naturalness was the most important or second most important factor considered. A high percentage of visitors expressed high satisfaction inside and outside the burned watershed. It appears that for these visitors the tendency is to look at the fire as a component of the natural environment, contributing little to dissatisfaction and possibly contributing to satisfaction.

Commercial outfitters expressed more concern than private parties about the fire's effects, although concerns were not unanimous. The greatest effects occurred when the fire was burning. Area closures created scheduling problems. Commercial use concentrated in smaller areas was reported to have caused conflicts and concerns about overuse. The sight and odor of smoke from wilderness fires was disconcerting to clients. Outfitters reportedly feared for their personal property.

DISCUSSION

Publicity about wildland fires during the summer of 1988 expressed the concern of politicians, news media, and the public about the effects such fires would have on places like Yellowstone National Park. During that year nearly 4 million acres burned in the West. The fires have been referred to as the most significant ecological event in the history of national parks (Schullery 1989).

Manfredo and others (1990) recently examined public support for natural fire policies in the United States. Their intent was to increase knowledge related to social considerations of fire policy—particularly attitudes and beliefs regarding fire policy and knowledge about the effects of wildfire. Public preference is acknowledged to be a major factor in making policy decisions.

Manfredo and others (1990) concluded that biological support for wildland fire policy is not enough for implementation. People appear poorly informed about the outcomes of fire policy and fire effects, leading to controversy. This sociopolitical component of fire policy can be managed better through improved education about biological research and better explanation of the proposed fire policy.

Other social, political, and economic considerations for adopting wildland fire policies should include some knowledge about how fires may affect benefits of wilderness visits. Even though visitor behavior and preference will not be the sole guide for fire policy development, better knowledge of public preference can lead to better explanation of recommended fire policies and the biological justifications.

After the 1988 fire season, the Secretaries of the Interior and Agriculture appointed a national review team to address fire management policies on Federal lands. The team authored a report that concluded, "The objectives of prescribed natural fire programs in national parks and wildernesses are sound, but the policies need to be refined, strengthened and reaffirmed" (USDA, USDI 1989). In response to the national review team's recommendations, the Forest Service developed criteria that must be addressed in each wilderness fire management plan (USDA 1990). One criterion requires managers to consider the consequences of a prescribed natural fire on social, economic, environmental, and political factors.

The conclusions drawn from the study of visitors to burned and unburned areas of the Bob Marshall Wilderness contributes to our understanding of the potential social, economic, and political consequences of wildland fire policies. Threats do exist to commercial businesses operating in the wilderness. Many things besides fires pose threats to both commercial and private use of wilderness. When compared to opportunities to experience solitude, naturalness, and scenic beauty, the effects of fire are of relatively minor importance when wilderness visitors choose destinations and travel routes.

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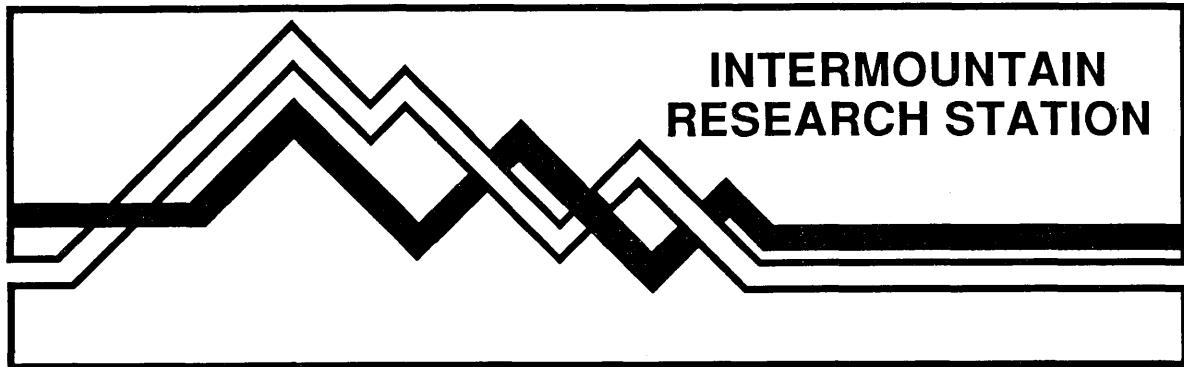
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