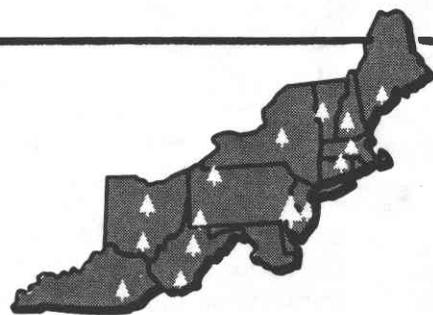


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FACTORS AFFECTING DISPERSION OF BACKCOUNTRY CAMPSITES

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Abstract. A study using observational and survey techniques found that no backcountry users fully complied with rules designed to promote campsite dispersion and to avoid recurrent use of particular sites. Users perceived hiking/camping in general, and movement away from established trails in particular, as involving an element of risk. They indicated that convenience was an important determinant of their site selections. Increased information about the rules did not decrease the use of previously used sites, but did increase the average distance of chosen campsites from established trails.

Our interest in backcountry campsite selection stems from a concern with the issue of camper dispersion in these areas. There appears to be a substantial contradiction between the frequently expressed desire of hikers for solitude and their selections of overnight camping sites. According to studies by Lucas (1964), Stankey (1973), and Lime (1975) wilderness users say they want an uncrowded camping experience, but they often

select campsites that are very close to maintained trails or to other campers and which show signs of heavy previous use.

Use of such sites creates problems where human impact on the environment is to be kept to a minimum, as in fragile ecosystems or where management regimes are designed to maintain the pristine quality of the area and provide uncrowded backcountry experiences.

The objectives of this study were to (1)

document the nature and the pattern of campsite use in a representative area where minimal human impact was a goal explicitly communicated to users; (2) investigate the role in campsite selection of the risks perceived in camping away from the trail, the sources and types of information received regarding site selection in the study area, and the physical characteristics of the selected area; and (3) assess the effects of disseminating supplementary information about what was expected of campers in backcountry areas. In addition, the use of a sign at a heavily impacted site to deter its continued use was examined.

STUDY AREA

The Great Gulf Wilderness Area in the White Mountain National Forest of northern New Hampshire is a 5500-acre tract, bounded on the south by the Mount Washington Auto Road, on the west and north by the northern

Presidential Range, and on the east by the Osgood Trail. It is heavily used by backcountry recreationists during the summer.

Permits have been required of both day and overnight hikers in the Great Gulf since the summer of 1975. Day use is unlimited, but overnight camping is restricted to a maximum of 60 persons.

The area is managed to provide a wilderness experience. To disperse use and help prevent further deterioration of campsites, rules issued with all permits prohibit camping within 200 feet of trails and streams or within ¼-mile of any other camper and ask campers not to camp at sites that show clear signs of previous use.

A 1¼-mile section of one of the major trails in this wilderness area was selected for study because it provided opportunities for dispersal and had several sites that had been eroded and compacted as a result of excessive use (Fig. 1). The surrounding area was in many



Figure 1.—One of the overnight sites selected for study.

Figure 2.—Typical trail segment in the study area.



respects a typical Eastern glaciated mountain slope. The trail paralleled a stream and the general setting was moderately to heavily wooded with occasional rock outcroppings (Fig. 2). Terrain factors notwithstanding, sites that complied with the rules were plentiful, though perhaps not obvious to a neophyte camper.

METHOD

The most common techniques for surveying backcountry users on site have been to wait at an access point or roam at random through the study area to contact hikers or campers (Lucas and Oltman 1971). Mailed questionnaires have also been used to gather data. Each of these techniques, if carried out with appropriate care, should produce results unaffected by sampling error or artifact if the sample of users who are contacted is representative of the total population of users. En-

surging this is often difficult so this investigation sought to interview *all* persons found within the study area in the maximum use period of July and August 1976. To accomplish this, a "sweep" was made of the study area each late afternoon or early evening and all persons encountered were asked to answer the brief (25-item) questionnaire. Some users could have been missed, but the small size of the study area, the general topography, and morning checks for those who entered after dark minimized that possibility.

When an occupied campsite was found, a number of observations were made, including the number, sex, and estimated age of party members, and whether the site was one the party had prepared themselves, or was one of the several used sites that had been identified in the study area. Approximate distance from the trail was paced off and the location of any other nearby campers was recorded.

RESULTS

A total of 164 campers found in 73 different groups were interviewed. All persons and groups sighted during the study period were contacted and none refused to participate. The respondents, though young (60 percent were 15 to 25 years of age), were in general relatively experienced. Two-thirds of them had camped in the White Mountains before, and 42 percent indicated that they had previously spent a night on the trail under study. Fifty-six percent reported camping or hiking on five or more occasions per year. Only 5 percent of those contacted were camping alone, while 47 percent were in two-person groups, and 19 percent were in three-person groups. The persons encountered were found in primarily mixed-sex (51 percent), or all-male groups (44 percent).

The original intent of the research was to compare the characteristics of campers who did comply with the area rules by dispersing appropriately and by avoiding used sites with the attributes of those who did not comply. Unexpectedly, this was not possible because *none* of the campers encountered during the 2-month study period had established campsites that met all three criteria for a dispersed site: location 200 feet away from a trail or water source, and ¼-mile from other campers, and not showing obvious signs of prior use. Ninety-five percent of the sites selected showed clear signs of previous use, such as the absence of surface vegetation or normal groundcover, compacted and/or eroded soil, stone fire rings, and downed logs for seats or firewood. In fact, six of the most heavily impacted sites received 81 percent of the observed use during the study period (see Fig. 3). In addition, the average distance from a trail for all campsites studied was only 147 feet. Since we were not able to analyze differences between compliance groups, the data reported below represent summaries for the total sample.

Perceived risks

Ninety-five percent of the respondents said they believed that there is greater risk in camping and hiking off the trails than on or near them; 82 percent felt that fewer people would get lost in backcountry areas if only

experienced campers ventured away from the established trails.

To give an indirect indication of the perceived degree of risk in entering the study area, several questions were asked about the preparations that had been made for this trip. Eighty-six percent of the respondents rated themselves as having done "much preparation," 94 percent indicated that they had first-aid materials with them, and 81 percent said that they had brought a full day's extra food supply. Although the issue of perceived risk is rather difficult to assess, the respondents' answers to these items seem to indicate that backcountry camping and hiking in general are felt to entail at least a moderate level of risk and that the level of risk is believed to increase as one moves away from an established trail system.

Convenience

Two-thirds of the respondents indicated that convenience was the main reason they had chosen their campsites. Another quarter mentioned that the information they had received had influenced their choice. The additional risk or danger that might have been perceived as being associated with the establishment of sites farther from the trail was not spontaneously mentioned.

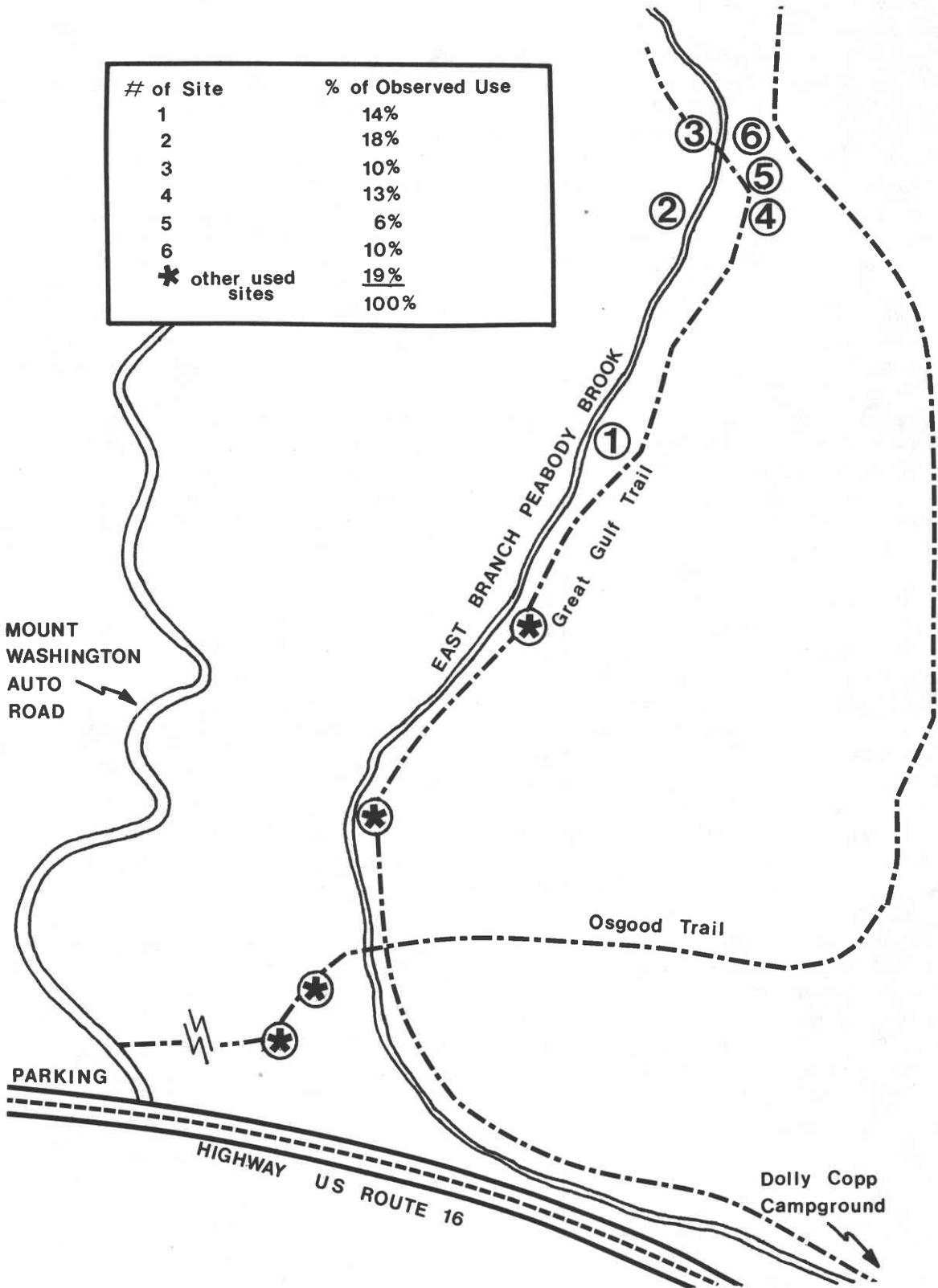
Information

Another group of questions dealt with sources of information that might affect campsite selection. Slightly more than three-quarters of the individuals indicated that they *had* read the rule sheet that was given out with their permits. Half of the population had received additional information from acquaintances or from Forest Service personnel, either in the study area or when they got their permits.

Effects of added information

The influence that increased information might have on dispersion was also examined. During the second month of the study, campers applying for overnight permits were given, in addition to the standard rule sheet, a letter that reiterated where camping was and was not permitted, gave a brief rationale for these restrictions, and asked for cooperation in prac-

Figure 3.—Schematic map of study area and campsite locations.



ticing dispersed camping and in avoiding previously used sites. This additional information was associated with a substantial and statistically significant ($p < .01$) increase from 131 feet to 163 feet in the average distance of the campsites from the trail. However, campers continued to select *only* previously used sites, although they chose established sites farther from the trail.

A "no camping" sign was put on one site that had been used intensively during the first month of the study. This popular spot had been the location of a wooden shelter, which had been dismantled and packed out because it was inappropriate in this wilderness area. The cleared and leveled site that remained received fully 13 percent of the total use in the study area during the first month of the investigation. Once the sign was installed, however, no further use was observed, although people continued to camp in used sites nearby.

CONCLUSION

Clearly, the most dramatic outcome of this study is its documentation of the extremely strong attraction that previously used sites have for backcountry campers. Only 5 percent of the persons contacted during the 2-month study period had established new sites for themselves. Our evidence indicates that the convenience of sites with obvious signs of prior use and a strong preference for locations close to the trail promoted this behavior. Other responses from campers supported the inference that perceived risk in moving away from the trail may also have influenced site selection. The results do indicate that using a brochure to reinforce awareness of regulations and provide a rationale for them can encourage dispersion. It should be emphasized, however, that compliance with the rules regarding campsite distance from the trail appears to be only a secondary determinant of site selec-

tion. The specific effect of the added information was to induce campers to choose previously used sites farther from the trail than had been the case in the absence of such information. Campers persisted in selecting locations almost exclusively from the available *used* sites, however. Finally, signing specific sites does appear to deter campers from using them, at least where alternative sites are readily available.

It seems clear that the strong attraction previously used sites have for campers creates a problem for managers charged with dispersing campsites and maintaining areas in their natural state. This investigation suggests that most campers are unaccustomed to establishing appropriately dispersed new campsites and seldom avail themselves of opportunities to develop or practice skills in doing so. Simply publicizing rules that require them to use new, dispersed sites is unlikely to succeed. Signing specific sites and disseminating additional information on the reasons for the rules may help.

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