Preferences of Backpackers And River Runners for Allocation Techniques

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ABSTRACT—In a questionnaire study, river runners and backpackers in Oregon reacted most favorably to pricing and reservation as means of allocating scarce recreation resources. Differences in reactions to three other alternatives (lottery, queuing, and merit) apparently reflected differences in the characteristics of the areas and types of recreation studied.

Allocation becomes an issue when the demand for recreation exceeds the supply defined by use limits or "carrying capacities." Capacities specify the number of people or groups that can use an area for a particular kind of recreation. Allocation distributes this limited number of opportunities among potential users; it means deciding who will get to go. There are several mechanisms for allocating use permits (Hardin 1969, Stankey and Baden 1977, Shelby and Danley 1980).

Pricing is used to distribute resources in a market system. In simplest terms, a market adjusts the quantity supplied, the price, or both, until supply equals demand. Supply is limited to the carrying capacity, and when the applications for use exceed this limit the recreation manager can set a fee that is enough to cause those less willing or able to pay to drop out of the market until an equilibrium is reached. Pricing encourages consumers to set priorities and eliminates artificially low (zero) prices that encourage those who place little value on a commodity to compete with those for whom the commodity is important. Pricing can also require users of a resource to pay their own way. Social efficiency may not be maximized, however, for pricing discriminates against those who are unable to pay as well as those who are unwilling. People may also resist paying for public recreation that has previously been available without direct charge.

Reservations set a premium on planning, so that people who reserve their place earliest are the "preferred customers." In reservation systems, many variables, including automation, centralization, method of making the reservation, and specific reservation policies, can all be manipulated to accomplish different goals. Some systems also allow for referrals that increase utilization. Drawbacks of reservations include costs of operating the system and the problem of "no-shows."

Lotteries have long been used to make social choices and allocate scarce resources; examples range from draft lotteries to sweepstakes drawings. In their pure form, lotteries allow each applicant an equal probability of selection. Many lotteries are not pure, however; because selection probabilities can be modified to serve specific equity or efficiency goals, lotteries offer considerable flexibility. Like other nonpricing mechanisms, lotteries may create problems regarding fees, permit transfers, and black market operations.

Queuing (waiting in line) is like pricing in that it allows individuals to assess the value of a resource in relation to their willingness to pay; but in this case, time rather than money is traded for the desired commodity. Although allocation by time may be fairest because time is evenly distributed, queuing discriminates against people who value their time more than those with fewer demands. Because most backcountry areas are remote, queues for permits can be inefficient, and queuing may require facilities and administration for the people waiting in line.

Merit systems distribute permits on the basis of some demonstrable skill, knowledge, or past behavior. They are relatively untried in recreation management, but qualifying examinations for government employees, safety courses for hunters, or tests for drivers are examples from other areas. Although the ability to eliminate the unqualified seems to be the primary purpose and advantage of a merit system, the time, effort, and money spent acquiring skills encourage users to assess the value of the commodity, thereby increasing social efficiency. However, requiring merit beyond minimum qualifications creates difficulties in deciding what makes a person "worthy."

Sometimes congestion or crowding can be reduced with less restrictive measures than the five just mentioned. Because most problems are caused by concentrations of use in time or space, mechanisms that distribute use more evenly will effectively increase supply of permits and alleviate the pinch created by high demand. Such mechanisms may increase utilization and be politically acceptable to users. But they require use limits, so capacities still have to be carefully considered. In addition, redistribution is only a temporary solution; if demand continues to increase, it is only a matter of time before the newly available supply of space will be filled.

This article reports research in which we explored reactions to these five allocation alternatives. Our data are from questionnaire responses by backpackers and river runners in three recreation areas in Oregon. Backpacking and river running are similar in that permit distribution has become an important issue; most backcountry areas and whitewater rivers are in remote locations, many in national forests and parks in the West; and popularity of both activities has increased rapidly, resulting in overuse problems. We would, however, expect user reaction to allocation systems to vary with situation-specific factors such as remoteness of the resource from its clientele, need for advanced trip planning, availability of substitutes if access is denied, relative scarcity of permits, previous user experiences with similar systems, perceived need for rationing, and perceived chances of success in obtaining a permit. In the areas studied these factors varied, allowing some comparisons.

Study Areas and Data Collection

Study areas.—The river runner data come from Hells Canyon on the Snake River. Located on the border between Idaho and Oregon, the 85-mile stretch of river is managed by the USDA Forest Service as part of the

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National Wild and Scenic Rivers System. Float parties normally run the 85 miles in five days, although shorter trips are becoming popular. Hells Canyon is isolated from major population centers, and users travel an average of 300 miles to reach it. River trips are planned an average of 19 weeks in advance. Because the Snake is the only large whitewater river in the area, no substitutes are immediately available if users are denied access after reaching it. When data were collected (1977), there was a daily launch limit, but permits could usually be had for either the first- or second-choice launch date. Because launch limitations are in effect on many popular rivers, river runners seem used to the idea of limited availability of permits and of sometimes participating in lottery or reservation systems to obtain them.

Backpacker data come from two wilderness areas in Oregon. The Eagle Cap Wilderness is just west of Hells Canyon in the Wallowa Mountains, in a remote area whose summer-use season is short. The 293,735-acre wilderness is accessible by numerous trails but, like Hells Canyon, is far from major metropolitan centers; users travel an average of 175 miles to reach it. The average trip is four days and is planned eight weeks in advance. Although Eagle Cap is the best wilderness in the area, other backcountry is available in the surrounding national forests, and several other wildernesses exist within a two-hour drive. Permits are issued to all who request them, with no limitations on use; this arrangement is typical of national forest wilderness areas, where users seldom have to compete for permits. Because backpacking in national parks is often more restricted, some users may be familiar with queuing or reservation systems in those areas.

In contrast to Hells Canyon and Eagle Cap, the 100,208-acre Mount Jefferson Wilderness is accessible to the major population centers of Oregon's Willamette Valley. Because users travel an average of 100 miles to reach the area, day trips are more common than in the other two areas. Trips are planned an average of four weeks in advance, and numerous comparable wilderness resources are available within one-half to two hours' drive. As at Eagle Cap, permits are issued to all recreationists requesting them; again, some users may have had experience with allocation systems for backpacking in other areas.

Data collection.—The sample of river runners included all those leaving the Heller Bar take-out point during the study period (August 4–22, 1978). The samples of backpackers included people leaving the wilderness areas via trailheads that we selected at random in both high- and low-use areas. The Mount Jefferson study was made during July and the second week in September 1979; the Eagle Cap study took place during August and the first week in September of the same year. Response rates were 87 percent for Hells Canyon, 84 percent for Eagle Cap, and 73 percent for Mount Jefferson.

As they left each area, users were given a questionnaire to be returned by mail. They were asked to consider each allocation alternative, and to assume that all users, including themselves, would be required to obtain a permit for that area by that system. Permit systems were then described essentially as follows.

Purchase permits. All individual users would be required to purchase permits from the Forest Service during the summer season. A nominal fee would be charged for permits during low-use days (such as mid-week). For the high-use days (weekends and holidays), the permit would cost more. This would mean: (1) Individuals could purchase permits for as many dates as they wished. (2) Permits could be transferred to individuals other than the original purchaser. (3) Individuals could choose between the low-use permit and the high-use permit. (4) Permits could be purchased at any time prior to the trip, including the day of the trip, until all trips for the day were taken.

Advance reservations. All permits for trips during the summer season would be reserved before the desired trip date. Priority would be given to those persons who reserved a particular date the earliest. This would mean: (1) Persons planning the furthest in advance would have the best chance at receiving a particular date. (2) Once a date was "filled" no more permits would be issued for that day. (3) Persons would be allowed to reserve more than one launch date per season. (4) Priority would be given to those whose reservations were made the earliest.

Lottery. In this variation of a reservation system, users would apply for a trip date of their choice, and applicants would be selected at random for those days when applications exceeded the limit. This would mean: (1) A user's chance of obtaining a permit on any given day would depend on how many other persons applied for that particular day....(2) Users would have to apply for a date four to eight weeks in advance; successful and unsuccessful applicants would be notified at least four weeks in advance. (3) Persons would be allowed to apply for more than one date per season. (4) Applicants for a given date would be allowed alternate choices in the event they did not obtain their first-choice date. (5) Dates not filled by the lottery would be available by telephone reservation or on a first-come, first-served basis.

First come, first served (queuing). Permits would be issued until the daily capacity was reached. This would mean: (1) Priority would be given to those who arrived the earliest. (2) Users could not reserve permits in advance. (3) Users arriving after the daily permit quota was filled would not receive a permit.

Merit. Preference would be given to users who demonstrate outdoor skills, knowledge of environmental practices, and safety. This would be similar to requiring a safety test for hunters or a "rules of the road" test for drivers. On days when applications for permits exceeded capacity, those users who demonstrated merit would be given priority. This would mean: (1) Persons who did not meet the "merit" criteria might not be able to go on more popular days such as weekends or holidays. (2) Persons wishing to receive merit priority would have to take some kind of Forest Service test. (3) Merit criteria would be subject to interpretation and evaluation by the Forest Service.

Following each description, users were asked (1) how they thought that system would affect their chances of getting a permit, (2) whether they thought it was a fair method for distributing permits, (3) whether the system was acceptable to them, and (4) whether they would try to obtain a permit by that method. Subjects answered by checking one of the responses that followed each question.

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Users' Preferences

Chances of obtaining permits.—All three groups felt that reservations and pricing would have the least effect on their ability to obtain permits (*table 1*). Most backpackers (66 percent) felt that the merit option would have little effect on them, but only 37 percent of the river runners agreed. All groups believed that lotteries and queuing would have a greater impact than other systems on obtaining a permit, although river runners saw lotteries more favorably and queuing less favorably than did backpackers.

Fairness.—When asked if systems were fair, users responded most favorably to pricing and reservations (*table 1*), although river runners favored reservations more than backpackers. Lottery, queuing, and merit were seen as fair by fewer than 40 percent of the users in each area. River runners regarded lotteries more positively and queuing more negatively than did backpackers.

Acceptability.—Reservations were acceptable to about 73 percent of all backpackers and 95 percent of river runners, whereas pricing was approved by 55–66 percent of all users (*table 1*). Lotteries were acceptable to 50 percent of river runners but only 28–30 percent of backpackers, whereas queuing was acceptable to about 50 percent of backpackers but only 25 percent of river runners. Merit did not receive majority support from any group.

Willingness to try the system.—Most users (62–84 percent) were willing to try pricing and reservations (*table 1*). About half the river runners were willing to try a lottery, but backpackers were considerably less interested. Although the majority (53–60 percent) of backpackers were willing to try queuing and merit, river runners were much less willing to do so.

In summary, users from all three areas reacted most favorably to pricing and reservations. These systems were seen as least detrimental to permit availability, fairest, most acceptable, and the largest percentages of users were willing to try them. River runners were the strongest supporters of reservations, probably because they plan further in advance than hikers do and because this was the existing system on the Snake and, therefore, the most familiar. In a study of river runners on the Middle Fork of the Salmon River in Idaho, Utter et al. (1981) found similarly strong support for reservation systems (pricing was not considered in that study).

Reactions to the other three systems were more varied. Results showed that the views of backpackers from both wilderness areas were similar but collectively differed from those of river runners. River runners were more likely to rate lotteries as fair or acceptable and more willing to try them, probably because lotteries for permits have been used on other rivers and because river runners are less likely than hikers to think this system would impair their ability to get permits. Results from the Utter et al. (1981) study also indicate river runner support for lotteries. River runners were less likely than backpackers to rate queuing as fair or acceptable and less willing to try it, probably because this option was felt to limit advance planning, to add risk to a long trip to the launch site with no substitutes if access were denied, and to diminish chances of getting permits.

Reactions to merit also showed an interesting pattern. Although users tended to agree on fairness and acceptability ratings, river runners were less willing than backpackers to try this option. This is probably because many were passengers on commercial trips and had no experience of their own; as a result, merit was seen as hurting their chances of getting permits. Utter et al. (1981) found majority support among river runners for a merit option, but the questionnaire item was sufficiently vague that commercial passengers may have thought it referred to their guide's experience rather than their own.

Table 1. Percentages of users agreeing with four assessments of allocation alternatives.

Allocation alternative	River runners Hells Canyon (N = 295)	BACKPACKERS Eagle Cap (N = 118)	BACKPACKERS Mt. Jefferson (N = 261)	Chi square[1] (d.f. = 2)
		Percent		
Little or No Effect on Chances of Obtaining Permits				
Pricing	48	70	54	13.12[2]
Reservation	64	56	45	35.07[2]
Lottery	31	20	19	11.41[2]
Queuing	14	41	38	47.27[2]
Merit	37	66	66	46.69[2]
System Is Fair				
Pricing	45	49	43	1.51
Reservation	78	50	48	53.14[2]
Lottery	39	19	21	26.16[2]
Queuing	12	34	29	36.08[2]
Merit	23	24	34	7.45
System Is Acceptable				
Pricing	66	66	55	5.85
Reservation	95	73	74	46.19[2]
Lottery	50	28	30	23.97[2]
Queuing	25	50	51	40.40[2]
Merit	37	42	49	5.91
Willing to Try System				
Pricing	62	68	64	1.16
Reservation	84	71	64	32.32[2]
Lottery	51	35	37	11.88[2]
Queuing	16	53	55	96.35[2]
Merit	36	56	60	32.97[2]

[1] *Chi squares are based on 3×2 tables comparing responses across the three user groups.*
[2] *$p<0.005$.*

Inferences

In a more general sense, do users support the *idea* of limiting use to reduce crowding or protect resources? The present study is of little help here because respondents were asked to assume that a permit system would be instituted. But survey data from other areas provide some evidence. Comparing the heavily used Desolation Wilderness and the more lightly used Spanish Peaks Wilderness, Stankey (1980) asked visitors to respond to the statement, "It would be better to be able to go to the wilderness whenever you want to, even if it was being used beyond capacity, than to have any kind of regulations on use." In the Desolation, 83 percent *disagreed*, as did 74 percent in the Spanish Peaks. In addition, 92 percent of Desolation visitors and 76 percent of Spanish Peaks visitors agreed that "If a wilderness becomes overcrowded, restrictions on the number of people allowed to visit it should be enforced."

These sentiments have been expressed in other areas as well. Schreyer and Nielson (1978, p. 45) asked river runners in Westwater and Desolation canyons to rank four management objectives. Almost none favored "no restriction" policies and most appeared to support efforts to avoid crowding and ensure a wilderness experience. In addition, 70 percent favored a permit system to limit maximum use, and 94 percent favored a limit on the

number of parties launching each day. In a study on Oregon's Illinois River (Shelby and Colvin 1981), 79 percent of river runners said they would be willing to have less chance of getting a permit on a weekend day, knowing that when they did get a permit there would be fewer people on the river.

These are, of course, hypothetical questions. Do people still support regulations when it means losing their opportunity to participate? In a study of backpackers in Rocky Mountain National Park, an on-site survey of visitors who had just been denied permits found that 67 percent still felt the permit system was necessary (Fazio and Gilbert 1974). In a similar study of California's San Gorgonio Wilderness, 81 percent of the unsuccessful applicants supported the permit system. People giving reasons for their support were evenly split between protecting the resource and protecting the experience (Stankey 1979).

These studies indicate that users generally support management policies designed to protect the quality of backcountry experiences. When managers decide to limit use, however, allocation becomes an issue. The present study suggests that characteristics of different areas or activities affect user assessments of allocation systems. The presumption is that systems should be tailored to the expected clientele. ■

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