

Determining Use Levels for the Rogue River

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WRRI-63

July 1979

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Final report of a project concerning "Use Levels and Crowding on the Rouge River." Project was supported by the School of Forestry, Oregon State University, with cooperation from the Bureau of Land Management and U. S. Forest Service. Bo Shelby is a Resource Sociologist in the School of Forestry; Richard Colvin is a Research Assistant in the Department of Geography. Publication and dissemination costs were funded by the Institute under the provisions of the Water Research and Development Act of 1978, P.L. 95-467.

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FINDINGS AND CONCLUSIONS

FINDING: Monday is the heaviest use day for commercial trips, while Friday and Saturday are most popular for private launches (pp. 15).

CONCLUSION: It may be desirable to increase the proportion of commercial use on week days and the proportion of private use on weekends. Without increasing or changing the proportions of overall use, this might better accommodate the needs of each user group.

FINDING: July is the highest use month. The 4th of July and Labor Day weekends are the highest use weekends (pp. 15).

FINDING: An average river trip during the 1977 season had 11 encounters on the river each day, saw 85 people outside their own party, and spent an hour and forty minutes in sight of other groups. River encounters increase as use levels increase (pp. 15-17).

CONCLUSION: Regulating use levels would have a major impact on the number of river encounters.

FINDING: The most popular attraction sites are Howard Creek, Kelsey Creek, Zane Grey's Cabin, and Tate Creek. The chances of meeting other parties at these places are about the same, regardless of use levels. The highest number of people is encountered at Tate Creek (pp. 17-20).

CONCLUSION: Tate Creek is the attraction site most likely to develop overuse problems. If regulation is desirable, some form of scheduling is the option most likely to be effective.(pp. 20).

FINDING: Most trips met someone else at Rainie Falls and Blossom Bar. Time spent waiting to run the rapids averaged 2-6 minutes (pp. 20).

CONCLUSION: Encounters at rapids do not appear to be a problem at this time.

FINDING: An average trip spent 1 out of 3 nights camping within sight or hearing of another party. Camp encounters appear to be caused by geographical factors (pp. 20-22).

CONCLUSION: If it is desirable to decrease camp encounters, problem areas should be considered individually. The most promising solutions are scheduling or closing one camp when two are close together. (pp. 22).

FINDING: River users defined appropriate encounter levels for the Rogue. A two-thirds majority felt that river encounters should be 5 or less per day, and time in sight of others should be less than 2 hours. Attraction site encounters were acceptable at 2 out of 5 stops, with a 50% chance of meeting others. Most users want no more than 1 night out of 5 with camp encounters (pp. 23).

FINDING: Average river and campsite contact levels during the 1977 season exceeded user norms, even though average use (82 people per day) was below the 120 person per day limit. Time in sight of other parties and probabilities of meeting other parties approximated user norms (pp 23).

CONCLUSION: River contact levels can be expected to increase as average use approaches the 120 person per day limit. This means that river contact levels will continue to exceed user norms, by an even greater margin (pp. 23).

FINDING: River users defined appropriate encounter levels for alternative Rogue River experiences. Norms for a semi-wilderness experience approximated norms for the current situation. Norms for wilderness were lower, and norms for undeveloped recreation were higher. Most users think the Rogue now offers a semi-wilderness experience (pp. 26-27)

FINDING: Users were divided about the kind of experience they thought the Rogue should provide; 48% favored wilderness, while 46% favored semi-wilderness. Very few favored a higher-density undeveloped recreation experience (pp 28).

FINDING: There are some differences in the norms of different user groups, but no group strongly supports the higher-density undeveloped recreation option. Jet boaters feel that higher numbers of river encounters are acceptable. The limited information available to us suggests that the norms of local

users (from Jackson, Josephine, and Curry Counties) are not substantially different from those of other users (pp.28-32).

CONCLUSION: There is little support among users for increasing use levels. Actual river encounter levels already exceed what most users consider appropriate, and those encounter levels can be expected to increase as average use approaches the 120 person per day limit.

FINDING: The average number of encounters per day reported by commercial passengers was about 5, although actual encounters averaged 11. The number of encounters reported increases as use increases (pp 33).

CONCLUSION: Commercial passengers either do not notice or fail to recall about half of their river encounters with other parties. The average number reported (5) approximates the user norm of 5 or less per day. Like actual encounters, reported encounters can be expected to increase as average use approaches the 120 person per day limit (pp. 33).

FINDING: About one-third of the users felt the river wasn't crowded at all. The remainder felt it was slightly, moderately, or extremely crowded. Perceived crowding is not related to actual use or encounter levels (pp. 33-36).

FINDING: Overall, most users were satisfied with their trip. Satisfaction is not related to use or encounter levels (pp. 36).

CONCLUSION: Because they are unrelated to use or encounter levels, perceived crowding and satisfaction are poor criteria for choosing a use level. More specific user norms which define appropriate encounter levels are much more helpful. Because perceived crowding is related to user expectations and perceptions of human impact, feelings of crowdedness can be decreased by clearly defining the experience to be provided and by minimizing signs of over-use (such as litter and trampling of vegetation) (pp. 36-38).

FINDING: The average floater on the Wild section of the Rogue is 31 years old; 60% are male and 40% female. Most have some college education, average income is \$24,000 - \$28,000; about half are married, and most come from urban areas. About half have been on some other whitewater river, and 33% have previously run the Rogue (pp. 38).

FINDING: There are some differences between private and commercial users. On the average, private boaters are more likely to be male, have lower incomes, and had shorter planning horizons for their 1977 trip. Private users also tend to have more experience on the Rogue, on other rivers, and in the outdoors generally (pp. 38-40)..

CONCLUSION: Current permit procedures are apparently "forcing" many private users to restructure their planning horizons (pp. 40).

CONCLUSION: Once we understand how use levels affect the Rogue, we need to develop criteria for choosing the "right" use level. This depends on what kind of experience is to be provided. There are a variety of sources for management goals (pp. 40-41).

CONCLUSION: There are several alternatives available regarding use levels, ranging from a decrease in use to an increase in use (pp. 42-43.) The desirability of each one depends on management goals and constraints.

INTRODUCTION

The Rogue River is one of the best known and most heavily used whitewater rivers in the Pacific Northwest. It provides outstanding recreational opportunities, including picnicking and sightseeing, salmon and steelhead fishing, and whitewater boating. In 1968 the Rogue came under the auspices of the National Wild and Scenic Rivers Act, and hence, under federal management.

The Wild and Scenic Rivers Act designated eighty-four continuous miles of the Rogue as suitable for the Act's three river classifications--Scenic, Recreational, and Wild. The Scenic and Recreational portions of the Rogue offer easy access to the river by road. There are many public boat landings, picnic sites, and other attractions which allow for a wide range of recreational opportunities. These portions of the Rogue run from White Horse Park to Grave Creek Landing and from Watson Creek to Lobster Creek Park.

The Wild Section of the Rogue runs from Grave Creek to Watson Creek, a distance of approximately forty miles. The "wild" classification provides for river-based recreation in a primitive setting. The river is essentially preserved in its natural condition, and this segment contains the most spectacular scenery and the best whitewater. There are some commercial lodges and private cabins along this portion. Access to these is generally by boat or trail, although in certain cases there is access by road or small aircraft.

This study is primarily concerned with floaters on the Wild Section from Grave Creek to Foster Bar. Floaters travel in inflatable boats (rafts and inflatable kayaks) or hard shell craft (drift boats and standard kayaks). There are commercial outfitters who offer guided trips as well as private users who run the river on their own. Trips last from two to five days. An average commercial trip contains 14 people, while private trip size averages about 8.

At the time data were collected, outfitters were limited to four starts per day, while private launches were unlimited. Commercial starts were reserved in advance, while private users arrived at Grave Creek and filled out a permit on the spot. A campsite "reservation" system was also in effect whereby parties indicated at the beginning of their trip the places they intended to camp.

The study included two other groups of users for comparison purposes. Day users are those who float the section of river between Grants Pass and Grave Creek Landing. There are roads paralleling the river in this section with numerous access points as well as picnic and camping areas. This stretch is designated as "recreational," and users may travel by raft, drift boat, tube, or swimming. Only those who left the river at Grave Creek were included in the study.

Jet boat excursion passengers are those who ride power boats upstream from the mouth of the Rogue at Gold Beach to just below Blossom Bar. Tour boats make daily trips along this 54-mile stretch, passing through the Scenic and Recreational portions of the Rogue and running twelve miles of the Wild Section before turning around. There are three jet boat excursion companies in Gold Beach and each company makes at least one round trip daily. Boats carry ten to twenty-five passengers and it takes about eight hours to complete the 104-mile round trip, including a two-hour lunch stop at a commercial lodge.

The goal of this study is to assess the effects of different use levels on the "Rogue River Experience" in the Wild Section. Primarily this means finding out how much people interact: on the river, at attraction sites, and at camps. At higher use levels, do parties "bump into" each other more frequently? Does this mean sharing attraction sites with other groups or difficulty in finding a camp? Does the nature of the experience change?

Previous studies have shown that interaction rates are affected but not completely determined by use levels. Geographic barriers and departure schedules

which separate parties in space and time also appear to affect the rate of interaction. We expect to find similar relationships on the Rogue. In order to test this hypothesis, we measured the number of parties launching each day as well as actual contacts on the river, at attraction sites, and at camps.

Simply knowing the relationship between use levels and numbers of contacts will not determine a use level. It will also be necessary to know the kind of experience which is to be provided, and the appropriate number of contacts for that experience. The former is partially determined by legislative mandates and agency guidelines. In addition, our follow-up questionnaire asked river users to indicate what kind of experience (wilderness, semi-wilderness, or undeveloped recreation) they think the Rogue should provide. The questionnaire also asked people to indicate what level of contact is appropriate for each kind of experience, so we have been able to define users' contact norms. Both kinds of information are helpful in determining an appropriate use level.

In addition to use levels and interaction rates, this study is concerned with individuals' perceptions and evaluations of different contact levels. To explore these issues, we measured reported contacts, perceived crowding, and overall trip satisfaction. Reported contacts are the number of encounters that users recall having had during the trip. This is the first time that both actual and reported contacts have been measured in the same study, so we have been able to assess the accuracy with which users recall encounters with other trips.

Perceived crowding has been assumed to be affected by actual density and interaction rates. But "crowding" is a subjective evaluation in which an individual essentially says, "This rate of interaction is too high." Several recent studies have shown that crowding is dependent on both the situation in question and the individual's idea of the interaction rate which is appropriate for that situation. Crowding thus depends more on individual expectations and preferences than it does on actual interaction rates.

Similarly, it has been assumed that satisfaction is affected by crowding. Although this may be true in certain circumstances, recent studies have shown that satisfaction depends on a variety of factors (such as the weather and the congeniality of travel companions) which are beyond control of resource managers.

The "bottom line" here is that perceived crowding and satisfaction will probably not be useful criteria for selecting a use level. The process we would suggest is as follows:

1. Determine the type of experience to be provided (wilderness, undeveloped recreation, etc.). Legislative mandates, agency guidelines, managerial expertise, public involvement, and the preferences of users may all play a part here. This determination will provide a basis for selecting appropriate interaction levels as well as helping clarify users' expectations and make them more realistic. It may be desirable to provide more than one kind of experience (e.g., wilderness on week days and undeveloped recreation on weekends and/or holidays).
2. Determine the appropriate contact level for the desired experience. Legal, administrative, and philosophical guidelines may be of some help, but they are not usually sufficiently specific. User norms from questionnaire data are more useful in selecting contact rates.
3. Find the use level which corresponds to the appropriate contact level. This should be a simple matter of reading off of a table, but several factors complicate the issue. First, the chosen contact level must be understood to represent a range (e.g. "5 to 10 contacts per day"). Insuring a precise contact level would involve severe regimentation of travel patterns, a policy which is probably undesirable. Second, users' perceptions of contacts may differ from actual contact levels and it may be desirable to account for this. Third, the introduction of scheduling is likely to affect the relationship between use levels

and contacts. For example, spreading out departure times may allow more parties to launch without increasing the number of down-river contacts. This is a possibility which could be explored through use of a computer simulation model. The advantages of scheduling need to be carefully weighed against the disadvantages, which might include further administration and regimentation.

RESEARCH METHODS

The field phase of the study was designed to simultaneously measure use levels, actual contacts, reported contacts, perceived crowding, and satisfaction. Information on these factors comes from several sources. Use level information was obtained from BLM records of use and trip departure schedules.¹ Data on the actual number of contacts was collected by participant observers who accompanied river trips. Information regarding reported contacts, perceived crowding, and overall satisfaction was obtained from river users at the completion of their trip.

Field data were collected during a two month period from June 21 to August 20, 1977. A sample of 34 commercial float trips was obtained, and a trained participant observer accompanied each trip. The observers kept extensive records for each trip; their reports include records of all contacts with other trips, an accurate trip schedule, and a summary sheet describing the trip as a whole. A "Participant Observer Handbook" detailed the methods for collecting the data and gave common definitions for field situations. Each observer carried a handbook for reference while on the river. As a result, data collected by any particular observer are comparable

¹Use levels can be measured as the number of either people or trips launching on a given day. The former has more intuitive meaning, but the latter is more closely related to interaction rates because contacts occur among trips, regardless of size. The two measures are highly correlated ($r = .75, p < .001$)

to those of any other observer. Sampling procedures and the recording techniques used by observers were described in detail in our first Progress Report.

At the end of each trip, the trip participants were asked to complete a short, one-page interview form. These were self-administered, and took less than three minutes to complete. Respondents reported perceived contacts, perceived crowding, density expectations, and overall satisfaction with the trip.

During the field period, information was also gathered from private trip participants floating the Wild Section, jet boat passengers starting from Gold Beach, and day use floaters debarking at Grave Creek. At the end of their respective trips, participants were asked to complete an interview form similar to that given to commercial passengers. Interview response rates for commercial passengers, private boaters, and jet boaters were 90%, 74%, and 96%, respectively.

During the follow-up phase of the project, a more extensive questionnaire was mailed to all study participants. Mailing was done in the spring of 1978. The questionnaire measured various perceptions, preferences, and opinions, including users' definition of the kind of experience which should be available on the Rogue and the appropriate encounter level for that experience. Final response rates for each group were: commercial passengers, 78%; private floaters, 83%; jet boat passengers, 83%; and day users, 72%. The follow-up questionnaire can be found in Appendix A of this report.

FINDINGS

DISTRIBUTION OF USE

Use levels on the Wild Section of the Rogue vary by day of the week during the season (see Table 1). Fridays and Saturdays tend to be high use days, with densities averaging 105 and 115 people per day, respectively.

Table 1
AVERAGE PEOPLE PER DAY
LEAVING GRAVE CREEK LANDING

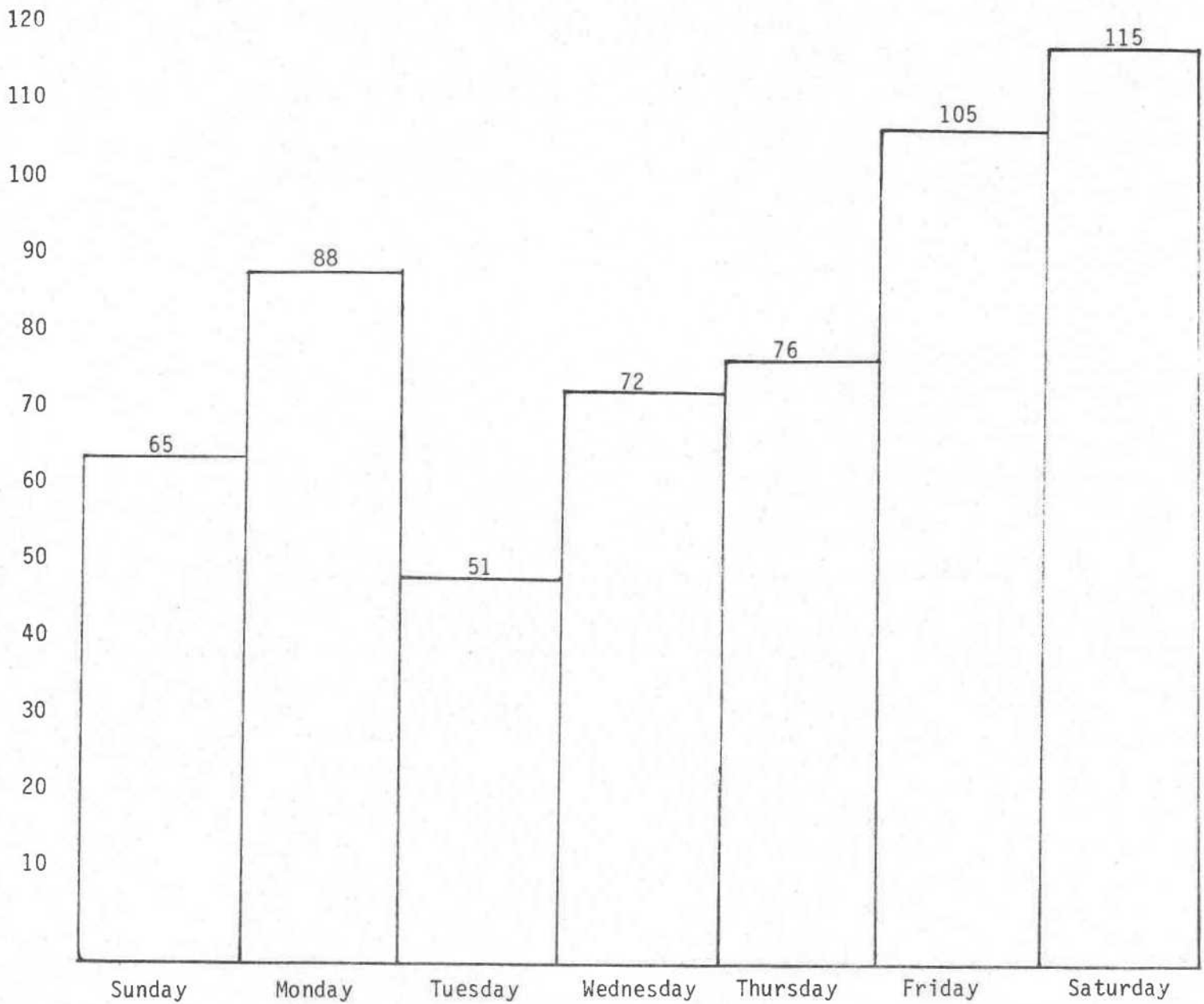


Table 2
 AVERAGE PEOPLE PER DAY
 LEAVING GRAVE CREEK, SEPARATED
 BY TRIP TYPE

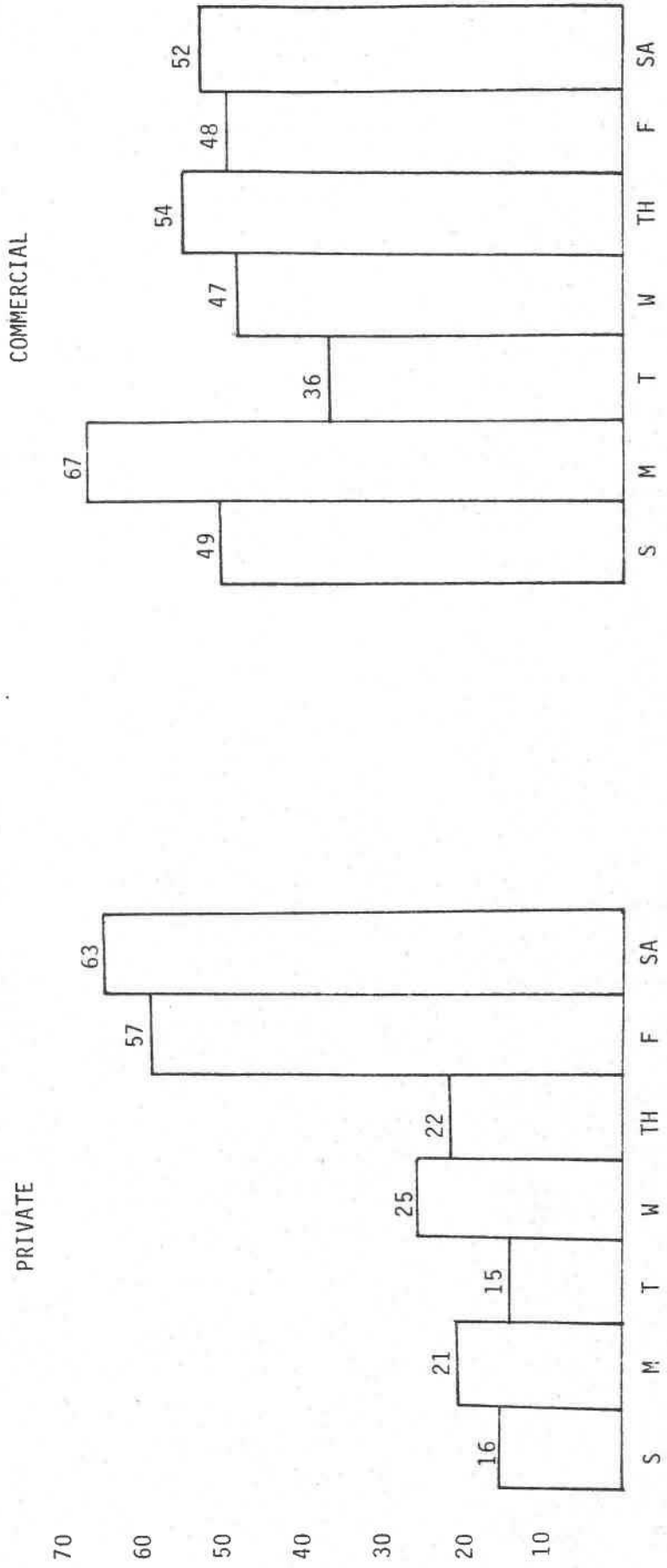
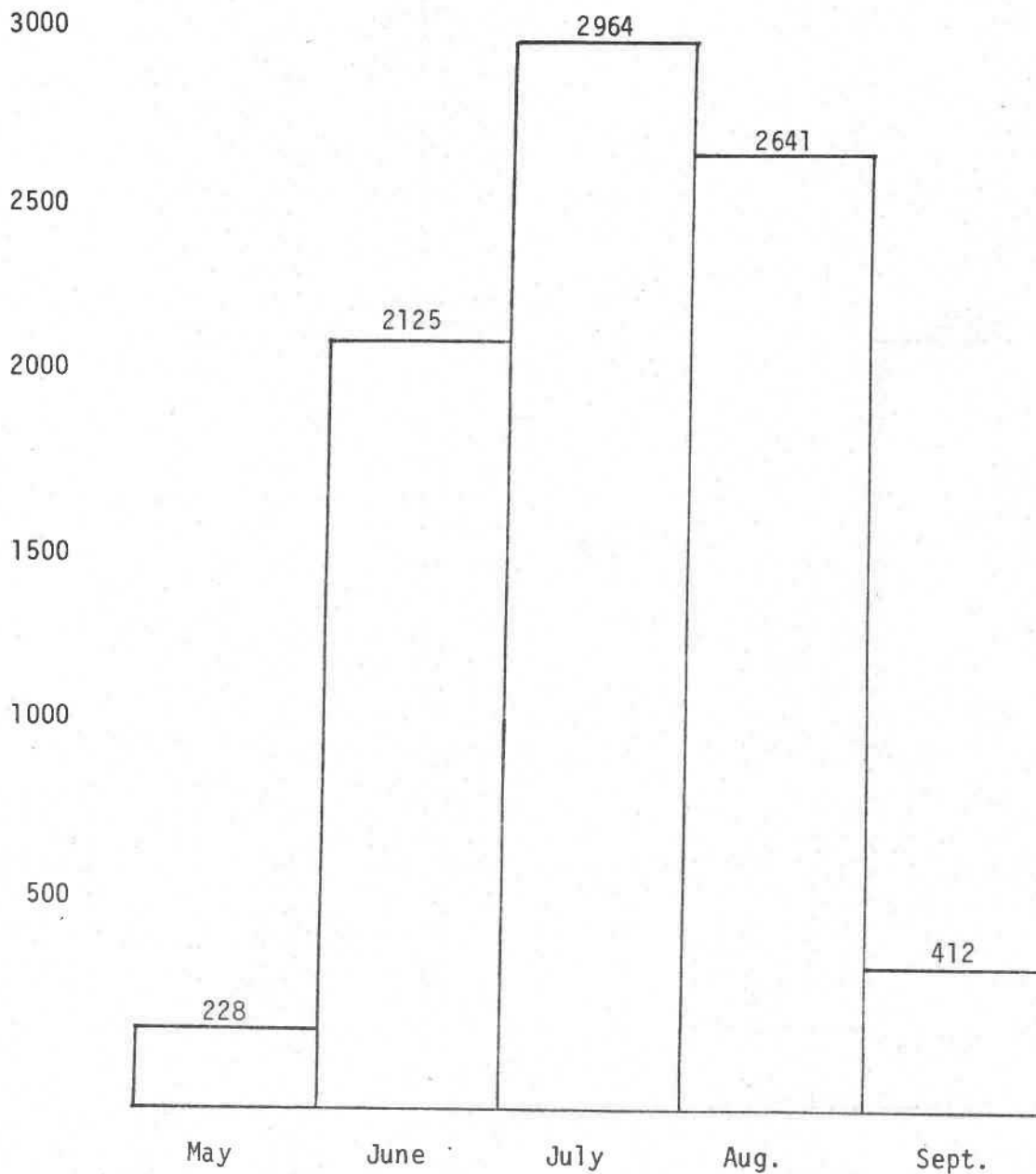


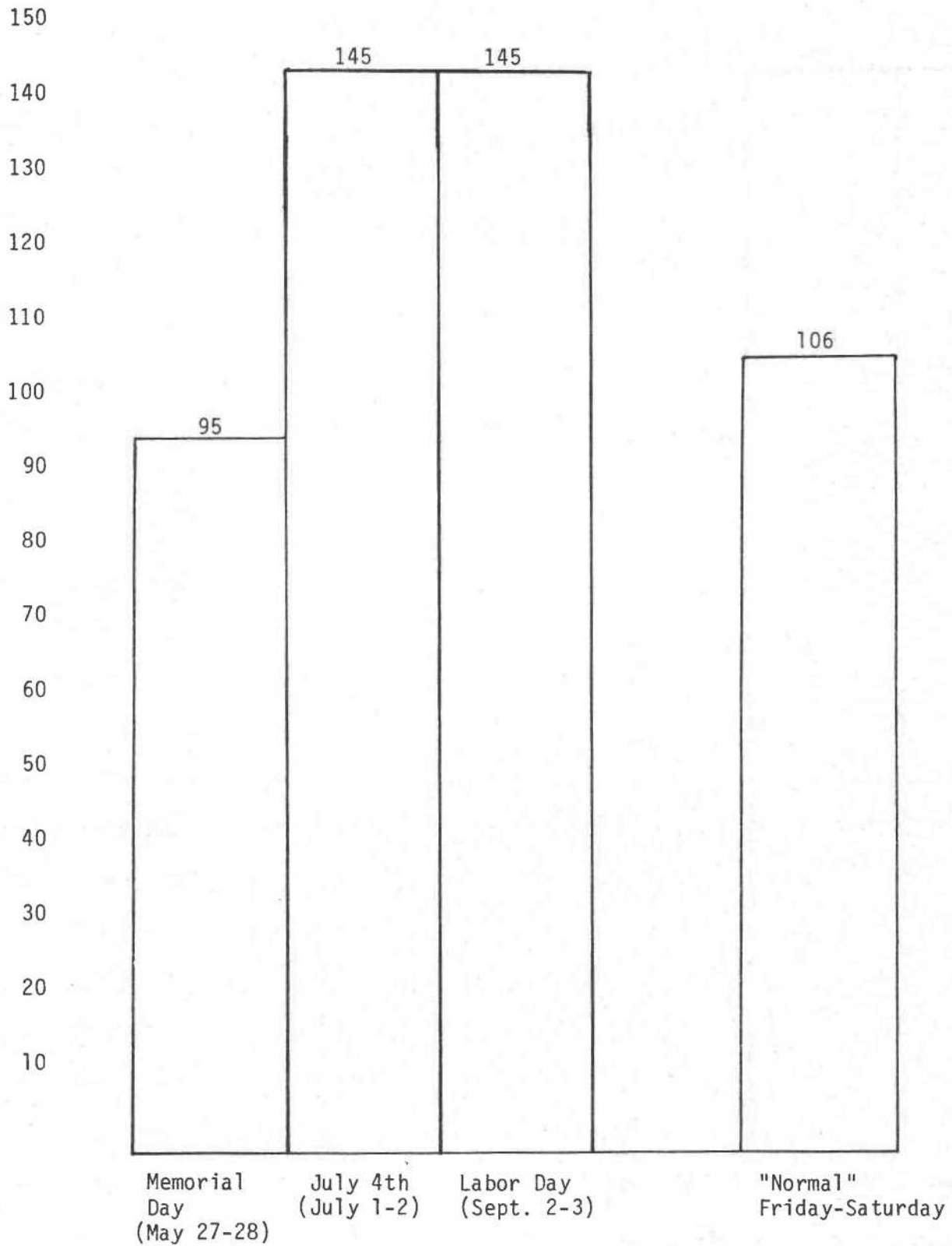
Table 3
TOTAL PEOPLE PER MONTH
LEAVING GRAVE CREEK LANDING^a



^a May and September reflect only Memorial Day weekend and Labor Day weekend, respectively.

Table 4

AVERAGE NUMBER LAUNCHING ON SPECIAL WEEKENDS
(FRIDAY AND SATURDAY ONLY)



Other days have low or moderate use, with densities ranging from 51 to 88 people per day. Monday is the heaviest use day for commercial trips, while Friday and Saturday are the most popular days for private launches (see Table 2).

July was the highest use month in 1977, with 2,964 people leaving Grave Creek (see Table 3). August was next with 2,641 starting on the river, followed by June with 2,125. The figures for May and September reflect only the portions of those months which lie within the managed river running season (Memorial Day and Labor Day weekends).

Average daily use for the three "special" weekends (Memorial Day, July 4th, Labor Day) is shown in Table 4. The 4th of July and Labor Day weekends saw the highest use, with an average of 145 people leaving Grave Creek on Friday and Saturday mornings. Memorial Day was the lowest with 95 people per day. The average for "normal" Fridays and Saturdays is 106.

USE LEVELS AND ENCOUNTERS

Past studies have shown a relationship between use levels and contact rates, and we expected that the Rogue would be similar. Encounters were recorded on the river, at attraction sites, at rapids, and at campsites.

River Encounters

The effect of use levels on river encounters is shown in Table 5. Looking at the far left column, it can be seen that commercial trips averaged about 11 encounters each day. People on an average trip saw about 85 river runners outside their own party and spent about an hour and forty minutes in sight of other groups. It should be pointed out that these figures represent ranges, the size of which is shown by the numbers in parentheses. For example, the average number of contacts can be read as "most commercial trips meet 7-15 other parties each day." It is important to keep the ranges in mind, although further discussion will, for the sake of clarity, focus on averages.

Table 5

USE LEVELS AND RIVER CONTACTS^a

	Overall average (people per day)	1-4 trips (60 people)	5-9 trips (61-90 people)	10-14 trips 91-120 people)	15-23 trips (120 people)	Correlation with use level (trips per day)
average contacts per day	10.5 (±4.0)	7.5 (±0.6)	9.6 (±2.6)	11.7 (±3.4)	20.8 (±4.9)	.71**
average number of people seen per day	85 (±28)	74 (±25)	82 (±24)	90 (±38)	118 (±21)	.29*
average time in sight of other parties each day (minutes)	100 (±49)	77 (±42)	88 (±30)	121 (±67)	177 (±80)	.44**

^aThese are mean values which represent ranges. Standard deviations are given in parentheses. The sample had 5, 19, 8, and 2 commercial trips in the respective categories (low to high).

*p < .05
**p < .01

The right-hand columns in Table 5 show how river encounters increase as use levels increase. At low use levels (less than 60 people per day), commercial trips encounter about eight parties containing a total of 74 people. They spend about an hour and a quarter in sight of other groups. At high use levels (more than 120 people per day), contacts increase to 21 per day, with a total of almost 120 people seen; the time in sight of others while on the river goes up to almost three hours. These high use figures should be interpreted with some caution because there were only two trips sampled in this period.

In general, then, river contact rates increase as use levels increase. This means that regulating use levels would have a substantial effect on river encounters. The other major factor likely to affect contact rates is scheduling of departures, which will be discussed in the "Implications for Management" section.

Attraction Site Encounters

The attraction sites visited by commercial trips on the Rogue are listed in Table 6. The most popular sites (those visited by more than 30% of the trips sampled) are Howard Creek, Kelsey Creek, Zane Grey's Cabin, and Tate Creek.

The probability of meeting another river party at these more popular sites is shown in Table 7.² The chances of meeting someone at Howard Creek are about 60%, at Kelsey Creek 45%, at Zane Grey's Cabin 30%, and at Tate Creek 45%. The middle column in Table 7 shows that the probability of meeting other parties at these sites is not significantly correlated with use level. This means that the chances of meeting someone are about the same, regardless how busy Grave Creek is on the day a trip launches. For those who did encounter

²BLM data are used for Howard Creek, Kelsey Creek, and Zane Grey's Cabin because all patrol trips stopped at these places while only a fraction of commercial trips did so. OSU data are used for Tate Creek because patrol trips did not run this section of the river.

Table 6

ROGUE RIVER ATTRACTION SITES^a

<u>SITE NAME</u>	<u>PERCENTAGE OF TRIPS WHICH STOPPED</u>
Whiskey Creek	6 % (2)
Rum Creek	12 % (4)
Howard Creek	35 % (12)
Big Windy	21 % (7)
Black Bar	3 % (1)
Little Windy	3 % (1)
Horseshoe Bend	9 % (3)
Kelsey Creek	32 % (11)
Zane Grey's Cabin	68 % (23)
Long Gulch	9 % (3)
Mule Creek	6 % (2)
Stair Creek	21% (7)
Devils Stairs	3 % (1)
Paradise	24 % (8)
Huggins Canyon	3 % (1)
Tate Creek	41 % (14)
Fall Creek	9 % (3)
Floradell	6 % (2)

^aBased on 34 commercial trips

Table 7

USE LEVELS AND ATTRACTION SITE CONTACTS

	Overall	Correlation with use level (trips per day)	Average number of people met by those having encounters
Howard Creek ¹	.62 (±.54)	.19	5.6
Kelsey Creek ¹	.45 (±.55)	.04	2.3
Zane Grey's Cabin ¹	.31 (±.47)	.15	4.1
Tate Creek ²	.46 (±.52)	-.26	22.0

¹BLM Patrol data only; n=44

²OSU data only; n=14

other parties, the average number of people met is 6 at Howard Creek, 2 at Kelsey Creek, 4 at Zane Grey's Cabin, and 22 at Tate Creek. It appears that Tate Creek is most likely to develop over-use problems because of its universal appeal and proximity to good campsites.

Encounters at Rapids

Virtually all trips stop at Rainie Falls to run through the fish ladder, and most trips stop to scout the rapids at Blossom Bar. We thought these areas might become "bottlenecks," so observers recorded encounters and kept track of the time spent "waiting in line" to run the rapid.

Most trips met someone else at Rainie Falls; the probability of encounter was .78, and the average number of people met was 14. Time waiting to run the rapid, however, was minimal (an average of 2 minutes). None of these measures was significantly correlated with use levels. Rainie Falls seems to be a "natural" congregation spot, where people eat lunch and/or watch others run the fish ladder.

Encounters at Blossom Bar are similar to those at Rainie. The probability of meeting another party was .77, the average number of people met was 13, and time waiting in line was about 6 minutes. Again, none of these measures was correlated with amount of use.

Campsite Encounters

The commercial trips accompanied by OSU observers spent a total of 98 nights on the river. Of these, 25% were spent within sight or hearing of another party and an additional 10% were spent camped right next to another party. This means that on the average commercial trips spend 1 out of 3 nights (35%) in contact with at least one other group. Observers also recorded the number of times that boatmen passed up an intended campsite because it was occupied. This happened 10% of the time. None of these campsite contact measures is significantly correlated with overall use, which means that changing use levels will probably have little effect on camp encounter rates.

Table 8
 ROGUE RIVER CAMPS AND CONTACTS^a

Camp Name	Number of Nights Camped Here	Number of Nights With Contact	Number of Nights Right Next to Other Party
Rainie Falls	1		
Whiskey Creek/Rum Creek	4	4	1
Doe Creek	4		
South Russian	7	2	
Howard Creek	1	1	
Big Windy	1	1	
Little Windy	8		
Jenny Creek	1		
Meadow Creek	3		
DuLog	6	4	
Kelsey Creek	5	2	2
Battle Bar	5		
Long Gulch	1		
John's Riffle	2		
China Bar	1		
Marial	9	3	2
Blossom Bar	2		
Gleason Bar	8	2	1
Generals Cabin	1		
Brushy Bar	6	3	
Tate Creek	14	9	2
Floradell	7	3	2
Flea Creek	1		
Total	98	34	10

^aCommercial Trips Only

The camps used by the commercial trips in our sample are listed in Table 8. The most heavily used camp is Tate Creek, followed by Marial, Gleason Bar, and Little Windy. Table 8 also shows the number of encounters at each camp; more than 25% of those observed during the study occurred at Tate Creek. Camping right next to another party occurs most often at Kelsey Creek, Marial, Tate Creek, and Floradell.

Camp encounters appear to be a function of geographical factors rather than of river use levels. Encounters occur at camps which are attractive and popular (e.g. Tate Creek, where many visitors take an extended hike) and in areas where designated camps are within sight of one another (e.g. Whiskey and Rum Creek camps, which are within sight across the river). Table 8 can be used by managers to determine the camps which are most heavily used and those where contacts most often occur. If it is desirable to decrease contacts, problem areas should be considered on an individual basis. The most promising solution appears to be scheduling, combined with closing one camp when two are in close proximity.

Summary: Use Levels and Encounters

The number of trips launching at Grave Creek has a major effect on the number of river encounters, but little effect on encounters at attraction sites, rapids, or camps. The average number of parties seen each day on the river ranged from 8 at low use to 21 at high use, and time in sight of other parties ranged from $1\frac{1}{4}$ to 3 hours. The chances of meeting another group at the most popular attraction sites ranged from .31 to .62, depending on the site. The number of people encountered at these sites ranged from 2-22. At the two major rapids, the probability of encounter was high (.77-.78), but the average number of people met was less than 15 and time spent waiting to run was 2-6 minutes. Commercial parties camped within sight or hearing of other trips about 1 out of 3 nights.

ENCOUNTER NORMS

The previous section shows how use levels (which can be "managed") affect encounters (the experience users have on the river). The next problem is to determine the appropriate number of encounters for the "Rogue River Experience." To do this, the follow-up questionnaire asked floaters to indicate the highest number of encounters with other float parties that they would tolerate before the experience became unpleasant.

Encounter norms are shown in Table 9. The left-hand column shows medians, which can be read as "fifty percent of respondents preferred ___ or fewer encounters." The right hand column shows the "tolerable range of contacts" for approximately two thirds (57%) of respondents. The two-thirds majority felt that river encounters should be 5 or less per day, and time in sight of others should be less than 2 hours. Attraction site encounters were acceptable at approximately 2 out of 5 stops, with a 50% chance of meeting 5-20 other people. Most users want no more than 1 night out of 5 with camp encounters.

These encounter norms can be compared with the actual encounter levels discussed earlier. Average river contact levels during the 1977 season (7-15 per day) exceeded the tolerable range (0-5 per day) of most river users. The average use level during this time was 82 people per day, and contact levels can be expected to increase as average use levels approach the 120 person per day limit. The average time in sight of other parties (1-2 hours per day) is reasonably close to the norm of most users (0-2 hours per day). The probabilities of meeting other parties at attraction sites such as Howard Creek range from 31% to 62%, which is slightly higher than the norm (0-50%). River parties camp within sight or hearing of one another an average of 1 in 3 nights, which also exceeds the preference of most users (1 or less nights out of 5).

Users were asked what they would be willing to do in order to get their preferred encounter levels. Responses are summarized in Table 10 (the reader should keep in mind that these are hypothetical answers to hypothetical questions).

Table 9

ENCOUNTER NORMS FOR THE ROGUE^a

What are appropriate encounter levels in terms of:	Median ^b	Tolerable Range ^c
- encounters per day	2.7	0-5
- hours in sight of others while on the river	0.9	0-2
- number of stops (out of 5) with encounters	1.0	0-2
- chances of meeting 5-20 people at places like Tate Creek	23%	0-50%
- number of nights (out of 5) camped near others	0.5	0-1

^a Commercial passengers and private users, weighted to accurately reflect the proportions of each.

^b Medians can be read as: "Fifty percent of respondents preferred ___ or fewer encounters."

^c Ranges can be read as: "The highest acceptable encounter level for approximately two thirds of the respondents was between ___ and ___."

Table 10

WILLINGNESS TO "PAY" FOR PREFERRED ENCOUNTER LEVELS

	No	Yes
Would you be willing to do any of the following to get your "preferred" encounter levels?		
Pay \$50 more	72% (259)	28% (103)
Wait a month longer to go on the trip	40% (144)	60% (221)
Take the trip in May or September.	45% (166)	55% (203)
Follow a schedule while on the river.	60% (220)	40% (147)
Would you be willing to do any of the following in order to be assured of camping alone?		
Travel further during the day	31% (113)	69% (253)
Have a less desirable campsite.	39% (142)	61% (226)
Have a rigid schedule of campsites	60% (219)	40% (148)

A majority (55-60%) said they were willing to wait a month longer or take the trip in May or September. Only 28% expressed a willingness to pay \$50 more, and 40% said they would be willing to follow a schedule while on the river. In order to be assured of camping alone, about two-thirds were willing to travel further or have a less desirable campsite, while 40% said they were willing to have a rigid schedule of campsites. Most users, then, are willing to tolerate some form of inconvenience in order to avoid encounters which exceed their norm.

Norms for Alternative Experiences

The preceding defines encounter norms for the Rogue as it is now. In order to learn about norms for alternative experiences, we asked respondents to think of the Rogue in three different ways: a place generally unaffected by man, the kind of place where complete solitude is not expected, and the kind of place where a natural setting is provided but meeting other people is part of the experience. These three alternatives were labeled wilderness, semi-wilderness, and undeveloped recreation, respectively. Respondents were asked to indicate appropriate encounter levels by specifying the highest number they would tolerate before each experience was lost.

Norms for alternative experiences are shown in Table 11. In thinking of the Rogue as a wilderness, users specified lower contact norms (e.g. 7 or less river encounters per day and camping away from other parties all of the time.) Semi-wilderness norms allow higher contact levels; they are quite close to the way people define the present situation on the Rogue. Still higher encounter levels are acceptable when users think of the Rogue as an undeveloped recreation area.

We asked users which of these experiences a river trip provides now. The majority (63%) said they felt the Rogue now offers a semi-wilderness experience. This makes sense because (a) the encounter levels which users consider appropriate for the Rogue closely approximate their norms for a semi-wilderness

Table 11

ALTERNATIVE RIVER EXPERIENCES ON THE ROGUE^a

	Wilderness	Semi- Wilderness	Undeveloped Recreation
^b What are appropriate encounter levels in terms of:			
- encounters per day	1.5	2.9	4.4
- hours in sight of others while on the river	0.5	1.0	1.9
- number of stops (out of 5) with encounters	.6	1.6	2.3
- chances of meeting 5-20 people at places like Tate Creek	12%	28%	44%
- number of nights (out of 5) camped near others	0	1.1	2.1
What experiences does a river trip provide <u>now</u> ?	26% (97)	63% (235)	11% (42)
What <u>should</u> a river trip provide?	48% (182)	46% (176)	6% (21)

^aCommercial passengers and private users only, weighted.

^bFigures are medians, which can be read as "Fifty percent of respondents preferred ___ or fewer encounters."

experience, and (b) actual encounter levels approximate or somewhat exceed these norms.

Users also indicated which kind of experience they think a Rogue trip should provide. Here the findings were not so clear-cut; 48% felt that a wilderness experience should be provided, while 46% favored semi-wilderness. Very few (6%) favored undeveloped recreation. Although there is no clear mandate for choosing between wilderness (which would probably require a decrease in use) and semi-wilderness (which probably means staying at or below current use), it is clear that users do not favor a higher-density experience.

Norms of Different User Groups

There has been some question as to whether different groups, particularly private and commercial users, have different ideas about what is appropriate for the Rogue. Results presented in Table 12 suggest that there is general agreement among groups about what kind of experience the Rogue provides now; 58-68% say semi-wilderness. There is some disagreement about what the Rogue should provide (see Table 13). A majority (57%) of commercial users favor a wilderness experience, while the other three groups lean towards semi-wilderness (49-52% favor this experience). As with the aggregate data, however, there is little support for a higher density undeveloped recreation experience.

There are some differences in the encounter norms of these groups. Commercial passengers, private boaters, and day users are in general agreement that the appropriate number of river encounters per day is about 3-6 (see Table 14). In contrast, the average jet boater feels that 16 encounters per day is acceptable. The standard deviations (in parentheses) suggest that there is also less agreement about the norm among jet boaters. The norms for time in sight of other parties are similar for all four groups (1-1.6 hours per day).

These differences and similarities can be explained by the general nature of each experience. Commercial passengers, private boaters, and day users are

Table 12

What Different Groups Think the Rogue Provides Now^a

Experiences provided:	Commercial passengers (n=238)	Private boaters (n=134)	Jet boaters (n=50)	Day users (n=71)
Wilderness	32	20	22	23
Semi-wilderness	60	66	68	58
Undeveloped recreation	8	14	10	20

^aFigures are percentages.

Table 13

What Different Groups Think the Rogue Should Provide^a

Experiences which should be provided:	Commercial passengers (n=242)	Private boaters (n=135)	Jet boaters (n=53)	Day users (n=74)
Wilderness	57	39	42	42
Semi-Wilderness	41	52	51	49
Undeveloped recreation	2	10	8	10

^a Figures are percentages.

Table 14

How Different Groups Define the Present Situation^a

	Commercial passengers	Private boaters	Jet boaters	Day users
What are appropriate encounter levels in terms of:				
River encounters per day	3.5(2.9)	5.8(6.1)	15.9(26.7)	6.2(6.9)
Hours in sight of others while on river each day	1.0(0.8)	1.6(1.5)	1.6(1.7)	1.3(1.6)

^aFigures are means. Numbers in parentheses are standard deviations.

all floaters; they use similar craft, and they all travel downstream at comparable speeds. By contrast, jet boats travel both upstream and downstream at much greater speed. Because of the higher speeds, jet boats actually encounter more other parties, but see each party for a shorter period of time. The norms of jet boaters reflect these aspects of their experience; it is all right to see more other parties, but total time in sight of those parties should not be greater. The situational nature of the experience apparently influences contact norms.

There has been some discussion of possible differences between the norms of local users (from Jackson, Josephine, and Curry Counties) and other users. Although our sample was not designed to explore such differences, local users were included among private boaters and commercial passengers. The limited information available to us shows no substantial differences in (1) the way that locals define appropriate contact norms for the Rogue, or (2) local sentiment that the Rogue should provide either a wilderness or semi-wilderness experience.

Summary: Encounter Norms

Most users think of the Rogue as a place where they expect to see some other parties. Encounter norms allow for 5 or less river contacts per day and less than 1 out of 5 nights with camp encounters. Average encounter levels during 1977 approximated or somewhat exceeded user norms. We asked users about alternative experiences on the Rogue, including wilderness, semi-wilderness, and undeveloped recreation. Most think the Rogue now provides a semi-wilderness. Users are split in their sentiments about what the Rogue should provide (wilderness or semi-wilderness), but very few favor a higher-density undeveloped recreation experience. There are some differences in norms among user groups which appear to be related to the nature of different activities (e.g. jet boating vs. floating). The limited information available suggests that locals do not differ greatly from other users in their ideas about what is appropriate for the Rogue.

USER PERCEPTIONS

How do use levels and encounters affect user perceptions? The interview measured perceived contacts, perceived crowding, and overall satisfaction. Comparisons of these variables with actual encounter levels is only possible for the commercial passengers.

Perceived Encounters

Commercial trips averaged 11 actual encounters per day while on the river. At the end of the trip, passengers were asked to report the number of encounters they recalled for each day. The average number of encounters reported was about 5. It appears, then, that passengers either do not notice or fail to recall about half of their contacts with other parties.

The relationship between actual and perceived contacts is shown in more detail in Table 15. In the lowest actual use category, most people (68%) were accurate in reporting 4-6 contacts. As actual contacts increase, however, reporting becomes less accurate. At 7-9 actual contacts, only 10% reported accurately, with 90% reporting fewer contacts. At 10-15 actual contacts, 6% report accurately, and at 16-20 contacts, only 3% are reporting accurately.

This same relationship is shown somewhat differently in Table 16. When actual contacts are low (4-6 per day), reports of contacts are fairly accurate. But when actual contacts increase to 7-9 and 10-15, users still report 4-6 encounters. When actual encounters reach 16-20, users report 7-9, and at 21-30 they report 10-15. At all but the lowest use levels, then, most users recall about half as many contacts as actually occurred. The correlation between actual and perceived encounters is .43 ($p < .001$).

Perceived Crowding

During the interview, commercial passengers were asked whether they felt the river was crowded. Responses are shown in Table 17. About one-third (32%) said the river wasn't crowded at all. Almost 40% felt it was slightly crowded, and 25% said the river was moderately crowded. Only 4% felt that it was

Table 15

ACCURACY OF REPORTED CONTACTS^a

		Actual contacts per day					
		4-6	7-9	10-15	16-20	21-30	
Reported contacts per day	1-3	21 (4)	51 (73)	39 (52)	3 (1)	0 (0)	38 (130)
	4-6	68 (13)	39 (56)	43 (57)	35 (13)	0 (0)	41 (139)
	7-9	11 (2)	10 (14)	12 (16)	35 (13)	25 (1)	14 (46)
	10-15	0 (0)	1 (1)	6 (7)	24 (9)	25 (1)	5 (18)
	16-20	0 (0)	1 (1)	1 (1)	3 (1)	50 (2)	2 (5)
		6 (19)	43 (145)	39 (133)	11 (37)	1 (4)	100 (338) Totals

^aActual contacts were reported by observers, while reported contacts came from interviews. Numbers are column percentages; n-s for each cell are in parentheses. Chi squared = 161, $p < .001$.

Table 16

COMPARING RANGES FOR ACTUAL AND REPORTED CONTACTS

Actual contacts per day	4-6	7-9	10-15	16-20	21-30
Reported contacts per day	4-6	4-6	4-6	7-9	10-15

Table 17

CROWDING PERCEPTIONS

Did you feel the river was crowded?

Not at all	32% (106)
Slightly crowded	39% (127)
Moderately crowded	25% (83)
Extremely crowded	4% (13)

Table 18

TRIP RATINGS

Overall, how would you rate your trip?

Poor	0% (0)
Fair; it just didn't work out very well	0% (1)
Good, but I wish a number of things could have been different	2% (8)
Very good, but could have been better	7% (24)
Excellent, only minor problems	51% (74)
Perfect	39% (132)

extremely crowded.

Figuring out exactly what makes people feel crowded is a difficult and complex task, and we will only scratch the surface here. Reported contact level has a positive effect ($r = .30, p < .001$), which means that passengers who recalled greater numbers of encounters were more likely to feel crowded. Actual encounter level also has a significant positive effect ($r = .12, p < .05$), but this relationship is quite weak.

Of the variables measured in the interview, user expectation is the most helpful in explaining crowding perceptions. About 20% of commercial passengers say they expected to see more river parties than they actually saw, 43% expected to see the same number, and 37% expected fewer encounters. The correlation of expectation with perceived crowding is $-.45 (p < .001)$; those who expected to see fewer people than they did see were significantly more likely to feel crowded. People reporting less human impact (e.g. litter or trampling of vegetation) were also less likely to feel crowded ($r = .35, p < .001$).

Satisfaction

Passengers were asked to rate the overall quality of their trip. Responses are shown in Table 18. Almost no one rated their trip as poor, fair, or good, and only 7% said it was "very good, but could have been better." Most people (51%) said the trip was "excellent with only minor problems" and 39% rated it "perfect." In other words, people are having a good time on the Rogue. The problem here is that satisfaction tells us little about use levels or encounter rates. As in previous studies, trip rating has a small negative correlation with perceived crowding ($r = -.15, p < .01$) but no correlation with perceived contacts, actual contacts, or use level.

Study results show high levels of satisfaction among those who float the Rogue. One might reasonably ask, "As long as people are satisfied, why limit use at all?" The following discussion relates what we know about the problems of using satisfaction as a basis for management decisions. It is based on a

number of studies in a variety of areas.

Recreational pursuits are largely voluntary and self-selected. We expect people to choose activities which fit with their own ideas of a "good time," so users should show high levels of satisfaction. Those who are dissatisfied with higher numbers of encounters may move on to other areas or other activities, and their opinions will not be reflected on user surveys. If other alternatives are unavailable, it is likely that users will change their expectations for the experience at hand. Rather than being upset because a "zero contact wilderness" is no longer available, the area in question might be redefined as a "moderate contact semi-wilderness," and the higher encounter rate becomes acceptable. The point is that satisfaction is a poor criterion for establishing use levels.

It often appears that nothing changes at higher use levels as long as people are "satisfied." But encounter levels on the Rogue (as well as other rivers) change dramatically as use increases. The problem is to decide what kind of experience should be provided and then to determine the contact level which is appropriate for that experience. To do otherwise will probably lead to the elimination of experiences which require low densities of people.

Summary: User Perceptions

We can make the following conclusions about the perceptions of commercial passengers: (1) As actual contacts increase, people report higher contact levels, but the numbers reported are lower than the actual. (2) Most users say they feel either slightly or moderately crowded; very few feel extremely crowded. (3) People who report more contacts feel more crowded, but actual contacts and use levels have little effect. Those who expected to see fewer parties than they saw felt more crowded. (4) Overall satisfaction is slightly related to perceived crowding but unrelated to reported contacts, actual contacts, or density. These data on perceptions are not much help in determining a use level.

These findings were anticipated by our introductory discussion. The process outlined there for determining a use level is further discussed in the "Implications for Management" section. There are two additional considerations suggested by finding that expectations and perceptions of human impact affect feelings of crowdedness. Clearly defining the experience to be provided, both generally and in terms of specific encounter levels, can help people have more accurate expectations. It appears that people are less likely to feel crowded when they are prepared for the conditions they encounter, and those desiring different experiences can choose other alternatives. Maintaining the resource to minimize the evidence of human use (e.g. litter and trampling of vegetation) is also likely to decrease feelings of crowdedness.

CHARACTERISTICS OF ROGUE RIVER USERS

The follow-up questionnaire asked respondents a number of questions about their backgrounds. The average age of floaters on the Wild Section of the Rogue is 31; 60% are male and 40% female. Most have had at least some college education, average income is \$24,000 - \$28,000, and occupational status is generally high. Almost half (49%) of the floaters are married, and most come from urban areas.

For most floaters (67%), this was their first trip down the Rogue, and about half (52%) had been on one or fewer prior river trips. Only a few floaters (9%) have taken a jet boat trip on the Rogue. The average floater had about 4 years of river running experience. Other outdoor activities are also popular with river runners. About one-third (37%) said they go backpacking several times a year, and two-thirds said they go hiking or camping several times a year.

The differences between private and commercial users are explored in Table 19, which shows correlations of background variables with trip type (private or commercial). For variables with significant private-commercial differences, percentage tables are presented in Appendix B. Private trips are more predominately male (see Table B1), and private boaters tend to have lower incomes (see Table B3). Private users also have shorter planning horizons, a difference which has particular relevance for permit systems.

Table 19

BACKGROUND CHARACTERISTICS
OF PRIVATE AND COMMERCIAL
RIVER RUNNERS

Variable	Correlation with Trip Type (private/commercial) ¹
Demographic:	
Age ²	.02
Sex	-.22
Education	.15
Occupational Status	-.12
Income	-.34
Marital Status	.11
No. of children	.01
Present Residence (rural-urban)	-.13
Planning Time	-.21*
Outdoor Experience:	
Membership in Outdoor Club	.03
Time of First River Trip	.34*
Experience on Other Rivers	.35*
Experience on the Rogue	.26*
Participation in Outdoor Activities	.40*

¹ Coded commercial = 1, private = 2

² Coded male = 1, female = 2

*p .001

Most (67%) of the commercial users plan their trips 7 or more weeks in advance, while the majority (51%) of private floaters plan their trips 3 or less weeks in advance, and 30% planned their trips a week or less in advance. Current permit procedures, which require applications several months in advance, are essentially "forcing" most private users to restructure their planning horizons, which may explain the relatively high incidence of cancellations and no-shows.

There are also private-commercial differences in outdoor experience. For a higher percentage of commercial passengers, this was their first river trip; most (62%) had been on no other rivers, while a majority (70%) of private users had some other whitewater experience (see Tables B4 and B5). Private boaters were also much more likely to have run the Rogue; 52% of privates, compared to 12% of commercials, had made at least one previous trip (see Table B6). The characteristics of day users and jet boat passengers, which are not a primary focus of this report, are presented in Table B7.

IMPLICATIONS FOR MANAGEMENT

Management implications have generally been discussed in the text. This section is a summary answer to the question, "What have we learned, and how can the information best be used?"

This study documents the way that different use levels affect the Rogue. It shows how use is distributed in both time and space, and indicates the number of encounters which users can expect at different locations. River encounters increase as use increases; they "respond" to changes in the number of people launching each day at Grave Creek. Attraction site and camp encounters are more affected by geographical factors; they are likely to respond to policies such as scheduling or closure of particular areas.

Once we understand how use levels affect the system, we need to develop criteria for choosing the right use level. As indicated in the introduction,

the "right" use level depends on the kind of experience to be provided. The appropriate number of encounters for a developed campground experience, for example, is obviously higher than the appropriate number for a remote back country experience. Similarly, managers will have to decide what should be provided on the Rogue.

One of the first places to look for guidance on this question is legislation, in this case the Wild and Scenic Rivers Act. But the Act does not specify the type of experience which should be available on a Wild River. Rather, it suggests that each river should "be administered in such a manner as to protect and enhance the values which caused it to be included in said system.... Management plans for any component may establish varying degrees of intensity for its protection and development, based on the special attributes of the area." Like most legislation, the Act gives general guidelines which must be interpreted specifically for each case.

Other possible sources of management goals are agency guidelines, public involvement, and managerial expertise. Agency guidelines, like legislative mandates, are usually too general to be of much help; besides, several agencies have a hand in the management of the Rogue. Public involvement is a second possibility. The data on user norms presented in this report provide information about the views of four segments of the public (commercial passengers, private boaters, day users, and jet boat passengers). There may be other "publics" which need to be considered. Possibilities include commercial outfitters, jet boat operators, outdoor or conservation groups, other user groups such as hikers, or non-user groups such as local businessmen. If information is to be gathered from these groups, it is important that it be separated so that managers know how each group feels. Managerial expertise will also have an effect on management goals. Some management guidelines for the Rogue already exist, and managers will have to weigh the available information in deciding what kind of experience(s) to provide.

SHOULD USE LEVELS BE CHANGED?

This is a difficult question. As noted in the previous section, the answer may depend on a number of factors other than research results. Given these limitations, however, it may be helpful here to explore some of the available alternatives.

One alternative is to lower the 120 person per day limit. Data indicate this would decrease river encounter levels, but the new use limit would probably have to be substantially lower (60-90 per day) in order to sufficiently reduce encounter levels, even assuming that users are unaware of some contacts. This kind of reduction appears to be a high price to pay, and it is probably not feasible politically.

A second alternative is to retain the 120 person limit, essentially maintaining the status quo on regulation. The major drawback here is that average encounters during 1977 met or exceeded most floaters' definitions of what was appropriate, and average use during this time was only 82 people per day. As average use approaches the 120 person limit, as it did during 1978, encounter levels can be expected to increase and will further exceed user norms. We can only make an educated estimate, but river encounter levels would probably average about 15 per day if 120 people launched each day.

This would produce some changes in the kind of experience which is available on the Rogue. The Rogue at one time was a little-used area where river runners encountered few other parties. That kind of experience is no longer available except during the off-season. River runners usually encounter a number of other parties, and most agree that the Rogue is presently "the kind of place where complete solitude is not expected." Continued increases in encounter levels will probably create another shift in the "Rogue River Experience." Higher encounter levels will probably change the Rogue to "the kind of place where a natural setting is provided but meeting other people is part of the experience."

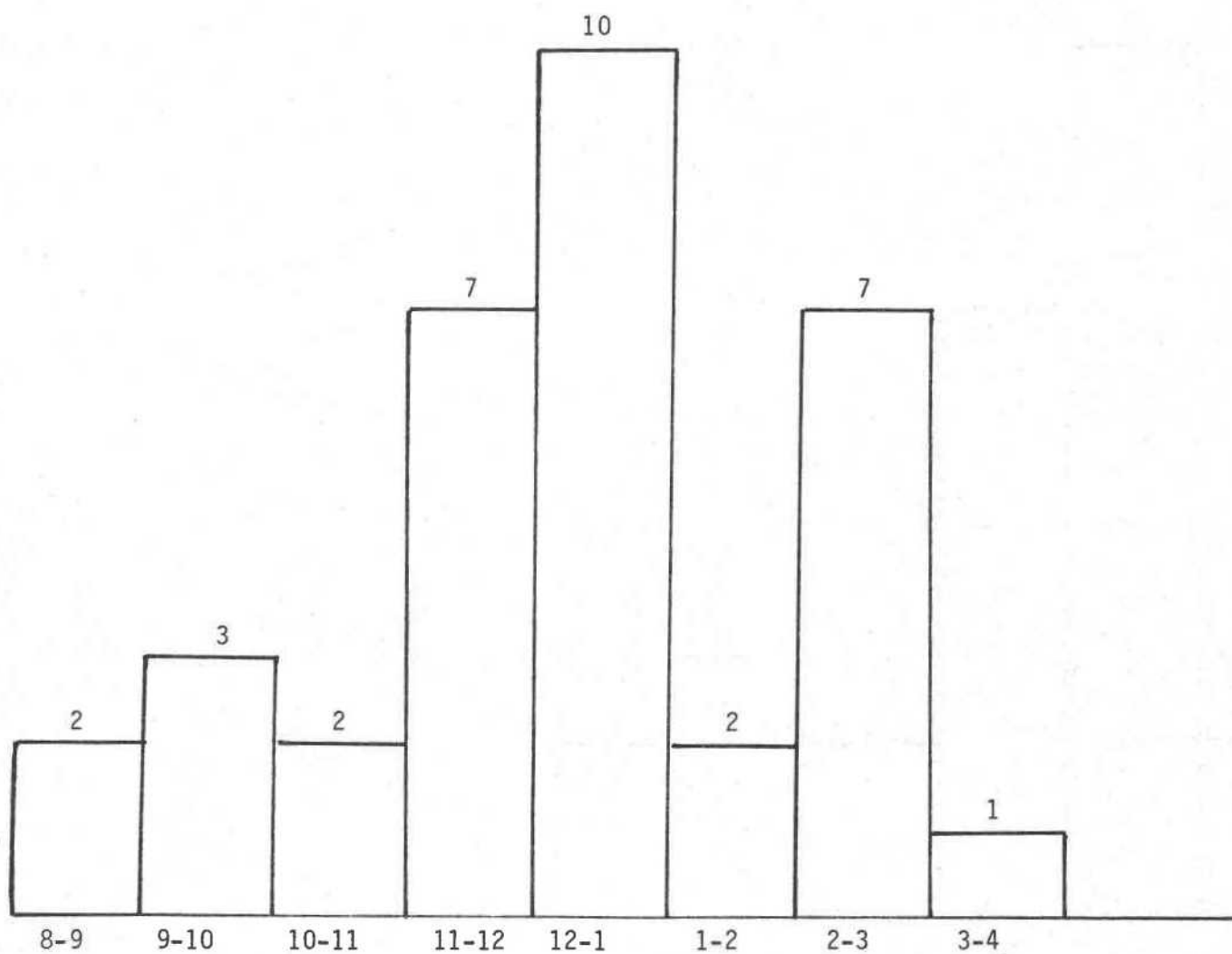
This kind of change is neither good nor bad, in and of itself; the experience would simply be different. A value judgment is necessary to determine whether the change is desirable or undesirable. Data presented here show clearly that floaters do not support a higher density experience on the Wild Section. Managers will have to decide what, if any, other inputs should be considered in making the final decision about the kind of experience which should be provided.

A third alternative is to retain the 120 person limit, but introduce changes which would distribute use more evenly, thereby decreasing encounters. If it is desirable to have encounter levels which approximate user norms, and it is not possible to decrease overall use, this option warrants consideration. The idea would be to schedule starts so that they were more evenly distributed throughout the day. Half of the trips in our sample launched between 11:00 am and 1:00 pm, and 76% launched between 11:00 and 3:00 (see Table 20). If this could be spread out somewhat, it seems likely that average encounter levels would decrease, particularly if longer (and therefore slower) trips left later in the day. This might be accomplished on a voluntary basis by asking parties to indicate whether they plan to launch before or after noon, and informing users of average departure times and other users' intentions. Since people are apparently motivated to avoid encounters, most would probably take advantage of such information. A similar voluntary scheduling system is already used for campsites. If it is desirable to explore this option, we have done some work on a computer simulation model which could provide helpful information.

Increasing use beyond the 120 person limit is a fourth possible alternative. This would have effects similar to those of alternative two, but encounter levels would be even higher. If managers find this option desirable, data from the present study and/or a computer simulation could be used to estimate the encounter levels which would be associated with higher levels of use.

Table 20

DEPARTURE TIMES FROM GRAVE CREEK FOR SAMPLED TRIPS^a



^aThere were 34 trips in the sample. Numbers are the number of trips launching during each time period.

APPENDIX A
Follow-up Questionnaire

ROGUE RIVER USER SURVEY

Everyone wants the Rogue River to remain a high quality recreation area. But this requires careful planning. To help protect the unique aspects of the "Rogue River experience," we need to learn more about you--what you do and what you prefer. This questionnaire is designed to help provide that information.

Please try to answer every question, since a single missing answer decreases the value of all your answers. Try to answer what you believe to be true for you. There are no right or wrong answers; the best response is the one which most closely reflects your own personal feelings and beliefs, or what you actually saw and did.

Some questions may seem similar. But some of the concepts we are trying to measure are quite complex, and we need to approach them from several different angles. Although some questions seem the same, they really are different.

We realize that you may have run the Rogue more than once during the 1977 season. We are interested in the particular trip when you filled out a one-page questionnaire for an Oregon State University researcher. The details are important, so please do the best you can to describe the trip when you were interviewed.

The questionnaire is divided into sections to make it easier for you to answer.

In this first section, we would like to ask some questions about the trip when you were interviewed.

When you made plans to run the Rogue, how far in advance did you decide to go? Please fill in the appropriate numbers.

_____ months _____ weeks _____ days

The way people plan a trip depends partially on how far they live from the river.

Where do you live most of the year?

City _____ State _____ Zip _____

About how many miles is the Rogue from your permanent address?

$\bar{x} = 433$ miles $n = 330$

In planning this trip, did you attempt to avoid crowds by choosing a time when you thought there would be fewer people on the river?

34% no 23% yes 43% it really didn't matter $n = 375$

Overall, was this trip less enjoyable because you met:

floaters 83% no 13% yes 4% didn't meet any $n = 351$
jet boaters 36% no 61% yes 3% didn't meet any $n = 378$

In this next section are a number of statements about the Rogue River and your trip down it. For each one, just circle the response which is closest to the way you feel. "Probably agree" means you agree more than you disagree with the item. "Probably disagree" means you disagree more than you agree.

	Strongly Disagree	Probably Disagree	Neutral	Probably Agree	Strongly Agree	n
Our trip travelled at a leisurely pace.	1%	6%	7%	37%	49%	390
Our trip would have been better if we had met fewer people along the way.	14%	27%	30%	20%	10%	391
The places we stopped (like Howard Creek) were often too crowded.	26%	33%	24%	13%	5%	391
On our trip we mostly sat on the boat rather than taking side trips.	10%	27%	12%	33%	17%	391
I didn't think we met too many people during our trip down the river.	4%	18%	13%	42%	23%	392
I would have preferred to have more of the "conveniences of home."	73%	19%	3%	3%	3%	400
I would have enjoyed the trip more if we had seen less people while floating on the river.	17%	23%	24%	26%	10%	392
I would have enjoyed the trip more if we had seen less people at side stops.	18%	27%	27%	21%	7%	391
On our trip we had plenty of time for hiking and exploring.	6%	25%	14%	35%	20%	391

	Strongly Disagree	Probably Disagree	Neutral	Probably Agree	Strongly Agree	n
The character of a river trip on the Rogue is not changed by meeting other parties.	16%	33%	14%	25%	13%	391
It bothered me to meet so many people while floating on the river.	20%	31%	25%	18%	6%	389
More developments (like the commercial lodges) should be built along the river.	78%	13%	6%	1%	2%	390
Our trip travelled too fast.	26%	39%	20%	11%	4%	393
I would have enjoyed the trip more with better camping facilities.	51%	30%	10%	6%	3%	388
The Rogue seems relatively unaffected by the presence of man.	12%	29%	14%	33%	12%	390
The Rogue would be more of a wilderness if use were more restricted.	13%	18%	23%	33%	14%	390
The Rogue River environment is not being damaged by overuse.	9%	30%	19%	33%	9%	388
The Rogue River is too crowded to be considered wilderness.	12%	37%	18%	24%	9%	389
I think float trips should be banned from the wild section of the river.	72%	21%	6%	1%	1%	388
I think jet boat trips should be banned from the wild section of the river.	10%	6%	6%	14%	65%	392

Indicate the degree to which you agree that each of the following environmental damage conditions exists on the Rogue River.

Excessive litter	25%	34%	22%	16%	4%	388
Trampling of natural vegetation	23%	33%	27%	15%	2%	388
Overuse of campsites	19%	34%	24%	17%	6%	385
Overuse of attraction sites	19%	32%	28%	18%	5%	385

Overall, how would you rate this particular Rogue River trip?

0	poor
0	fair, it just didn't work out very well
4%	good, but I wish a number of things could have been different
16%	very good, but could have been better
60%	excellent, only minor problems
20%	perfect

$$n = 387$$

In general, what was the weather like during the trip on which you were interviewed?

0.4% terrible
 0 generally bad
 5% some bad, some good
 32% generally good
 63% great
 n = 389

The statements in this section refer to personal aspects of the trip which attract some people to the Rogue. For each item, circle the response which best reflects your own personal feelings.

	Strongly Disagree	Probably Disagree	Neutral	Probably Agree	Strongly Agree	n
I didn't expect the rapids to be so powerful.	33%	38%	16%	12%	1%	390
I really didn't have a very clear idea of what a trip down the Rogue would be like.	29%	27%	13%	26%	6%	390
I learned a great deal about:						
geology	12%	21%	34%	26%	7%	
rivers	3%	9%	21%	45%	22%	
ecology	5%	13%	36%	33%	13%	
history	10%	16%	33%	31%	10%	
nature in general	3%	10%	25%	45%	17%	
I wasn't very well prepared for the trip.	55%	37%	5%	3%	1%	
I learned things about myself.	6%	9%	26%	39%	20%	
The experience was personally challenging.	5%	7%	15%	40%	33%	
I acquired new skills.	4%	8%	17%	43%	28%	
The trip provided me an opportunity to get to know people better than I usually do.	3%	12%	23%	35%	27%	
I particularly enjoyed this trip because the people were friendly and interesting.	1%	2%	14%	43%	40%	
Since this trip, I have met with or written to new friends made on the trip.	33%	20%	20%	16%	13%	
The people on our trip got along particularly well.	2%	4%	12%	32%	50%	

Try to think over your river running experiences--the good ones along with the bad. What makes a good river trip, the kind you remember with pleasure for a long time? For each item below, please indicate how that aspect of a trip affects your overall satisfaction.

	Greatly Decreases Satis- faction	Slightly Decreases Satis- faction	No Effect on Satis- faction	Slightly Increases Satis- faction	Greatly Increases Satis- faction	<u>n</u>
Being in a beautiful area.	0	0	1%	4%	95%	388
Seeing wildlife.	0	0.4%	1%	13%	86%	388
Being with the people in your own group.	0	2%	16%	30%	52%	387
Seeing people outside your own group.	7%	29%	38%	19%	8%	386
Using your river-running skills.	0	0.2%	12%	25%	63%	388
Running rapids.	0	0	1%	8%	91%	388
Being in a backcountry area.	0	0	2%	15%	83%	387
Seeing people in hiking parties.	3%	18%	50%	21%	8%	386
Seeing people in jet boat parties.	61%	22%	13%	3%	2%	388

Some people feel that our questions don't really capture the essence of their river trip down the Rogue. Therefore, we would like to give you a chance to express in your own words the most meaningful aspects of your trip.

Everyone answers the above question somewhat differently. To help us better understand the most meaningful aspects of your experiences, we would like you to list five single words which best describe your trip on the Rogue. Please list all five words.

1. _____
2. _____
3. _____
4. _____
5. _____

We are interested in how you feel about encounters with other groups during the trip. For each question, indicate the highest number of encounters you would tolerate before the experience became unpleasant. Please assume that all encounters are with float parties.

Number of encounters with other parties while floating on the river each day.
OK to have as many as _____ encounters per day.
_____ makes no difference to me.

Amount of time in sight of other parties while floating on the river each day.
OK to spend as much as _____ hours and _____ minutes in sight of others.
_____ makes no difference to me.

Number of stops (to hike, swim, etc.) at which you meet another group.
OK to meet others at as many as _____ out of 5 stops.
_____ makes no difference to me.

Chances of meeting 5-20 people (outside your own group) at places like Howard Creek, Tate Creek, or Zane Grey's cabin.
OK to have _____ % chance of meeting others.
_____ makes no difference to me.

Number of nights spent camping within sight or sound of another party.
OK to be near as many as _____ out of 5 nights.
_____ makes no difference to me.

Would you be willing to do any of the following to get your "preferred" encounter levels? (Circle one answer for each item.)

Pay \$50 more.	no	yes
Wait a month longer to go on the trip.	no	yes
Take the trip in May or September.	no	yes
Follow a schedule while on the river.	no	yes

Would you be willing to do any of the following in order to be assured of camping alone?

Travel further during the day.	no	yes
Have a less desirable campsite.	no	yes
Have a rigid schedule of campsites.	no	yes

In this section we'd like to know about what you expected before going on the trip. Do the best you can to answer each question in relation to the trip on which you were interviewed.

Before you went on this particular Rogue River trip, about how many parties did you expect to see each day while floating the river?

I expected to see $\bar{X} = 4.2$ other parties per day.
50% didn't know what to expect. $n = 378$

How does the number of parties you actually encountered on your trip compare with the number that you expected to encounter?

12% quite a few less than I expected
11% a few less
22% about the same
15% a few more
9% quite a few more
31% I didn't know what to expect

$n = 380$

% responding:

If you saw more people than you expected, did you:	no	yes	n
- become unhappy or dissatisfied with the trip?	89%	11%	287
- change the way you thought about the Rogue, deciding it was less remote than you had believed?	66%	34%	288
- decide to go somewhere more remote next time?	81%	19%	282
- attempt to avoid others by:			
- speeding up or slowing down?	56%	44%	278
- getting off the river to allow people to pass?	72%	28%	274
- passing up places at which you'd planned to stop?	66%	34%	277
- changing your campsite?	59%	41%	277

Which size of float trip would you rather meet while travelling down the river?

n = 370

45% small (5 people or less)	1% large (16-25 people)
42% medium (6-15 people)	13% makes no difference

With which size trip would you rather run the river?

n = 371

34% small (5 people or less)	3% large (16-25 people)
57% medium (6-15 people)	6% makes no difference

What about encounters with jet boats? Indicate the highest number you would tolerate before the experience became unpleasant.

OK to have as many as $\bar{x} = 1.3$ encounters per day with jet boats.
5% makes no difference to me.

Which of the following activities or facilities do you think are appropriate on the "wild" section of the Rogue? (Check those which are appropriate.)

3% motorized boating	4% roads (paved or gravel)
89% non-motorized boating	25% campsites w/tables & fireplaces
99% hiking and backpacking	69% campsites with outhouses
1% motorcycle riding	10% campsites with plumbing

n = 386

In this section we'd like to know about your outdoor activities and river running experience.

Do you participate in any of the following activities?

	Never	Once a Year Or Less	Several Times A Year	Once a Month Or More
Backpacking	1	2	3	4
Hiking	1	2	3	4
Camping	1	2	3	4
Mountain climbing	1	2	3	4
River tripping	1	2	3	4

Before this trip on the Rogue, what was your river-running experience?

_____ Total number of float trips on the Rogue.
_____ Total number of jet boat trips on the Rogue.
_____ Total number of other whitewater river trips.

How many years ago did you start going on whitewater river trips?

_____ years ago _____ this was my first trip

If it was not possible to go on a Rogue River trip, what would you do instead?

Would you take a river trip on a different river? no yes

What other river(s) would be reasonable substitutes for the Rogue?

_____ for me there is no substitute

If it was not possible to run the Rogue, would you become involved in some other activity? no yes

What other activities would be reasonable substitutes for river running on the Rogue?

_____ for me there is no substitute

For some people, running rivers is one of the most important things in their lives. To others, it may be just one of a number of interests--something they enjoy but to which they are not strongly committed. Check one statement below that best describes your own position.

25% If I couldn't go river-running, I would soon find something else I enjoyed just as much.

38% If I had to give up running rivers, I would miss it, but not as much as a lot of other things I now enjoy.

24% If I couldn't go river-running, I would miss it more than almost any other interest I have.

13% Running rivers is one of the biggest things in my life; if I had to give it up, a great deal of the total enjoyment I now get out of life would be gone.

$n = 372$

In this section we would like to ask some questions about your background which will help us compare your answers to those of other people. All of your answers are strictly confidential.

How old are you? _____ years old

Are you _____ male; _____ female?

How many years of school have you completed?

1 2 3 4 5 6 7 8 9 10 11 12

Some college? _____ B.A. or equivalent? _____ M.A. or equivalent? _____
Advanced degree (M.D., Ph.D., etc.)? _____

What is your primary occupation? Please be as specific as possible; if you are a homemaker or student, please indicate the occupation of your spouse or parent. If retired, give former occupation.

Please check the space that comes closest to your total family income before taxes:

<input type="checkbox"/> \$0 - 3,999	<input type="checkbox"/> \$28,000 - 31,999
<input type="checkbox"/> \$4,000 - 7,999	<input type="checkbox"/> \$32,000 - 35,999
<input type="checkbox"/> \$8,000 - 11,999	<input type="checkbox"/> \$36,000 - 39,999
<input type="checkbox"/> \$12,000 - 15,999	<input type="checkbox"/> \$40,000 - 43,999
<input type="checkbox"/> \$16,000 - 19,999	<input type="checkbox"/> \$44,000 - 47,999
<input type="checkbox"/> \$20,000 - 23,999	<input type="checkbox"/> More than \$48,000
<input type="checkbox"/> \$24,000 - 27,999	

Are you:

single
 married
 separated, divorced, or widowed

How many children do you have? _____

Where do you presently live?

rural area
 small city
 large city
 small town
 suburban area

Are you now a member of an outdoor or conservation organization such as a mountain club or a sportsman's club? _____ no _____ yes

The following section asks some questions which you have already answered. We are asking you to think of the "Regue River experience" in three different ways, and your answers may vary from one to another. At the end you can indicate which kind of place you think the Regue should be. We hate to ask you these questions so many times, but the information is important.

I. *Imagine the Regue as a "wilderness," a place generally unaffected by the presence of man. If the Regue were this kind of area, which of the following encounter levels would be appropriate? Indicate the highest level you would tolerate before the trip would no longer be a "wilderness experience."*

Number of encounters with other parties while floating on the river each day.

OK to have as many as _____ encounters per day.
_____ makes no difference to me.

Amount of time in sight of other parties while floating on the river each day.

OK to spend as much as _____ hours and _____ minutes in sight of others.
_____ makes no difference to me.

Number of stops (to hike, swim, etc.) at which you meet another group.

OK to meet others at as many as _____ out of 5 stops.
_____ makes no difference to me.

Chances of meeting 5-20 people (outside your own group) at places like Howard Creek, Tate Creek, or Zane Grey's cabin.

OK to have _____ % chance of meeting others.
_____ makes no difference to me.

Number of nights spent camping within sight of another party.
 OK to be near others as many as _____ out of 5 nights.
 _____ makes no difference to me.

In this situation, which of the following activities or facilities would be appropriate? (Check as many as are appropriate.)

<u>1%</u> motorized boating	<u>3%</u> roads (paved or gravel)
<u>87%</u> non-motorized boating	<u>17%</u> campsites w/tables & fireplaces
<u>96%</u> backpacking	<u>59%</u> campsites with outhouses
<u>1%</u> motorcycle riding	<u>7%</u> campsites with plumbing

$n=377$

II. Now imagine the Rogue as a "semi-wilderness," the kind of place where complete solitude is not expected. In this case, which encounter levels would be appropriate? Indicate the highest level you would tolerate before the trip would no longer be a "semi-wilderness experience."

Number of encounters with other parties while floating on the river each day.

OK to have as many as _____ encounters per day.
 _____ makes no difference to me.

Amount of time in sight of other parties while floating on the river each day.

OK to spend as much as _____ hours and _____ minutes in sight of others.
 _____ makes no difference to me.

Number of stops (to hike, swim, etc.) at which you meet another group.

OK to meet others at as many as _____ out of 5 stops.
 _____ makes no difference to me.

Chances of meeting 5-20 people (outside your own group) at places like Howard Creek, Tate Creek or Lane Grey's cabin.

OK to have _____ chance of meeting others.
 _____ makes no difference to me.

Number of nights spent camping within sight of another party.

OK to be near others as many as _____ out of 5 nights.
 _____ makes no difference to me.

In this situation, which activities or facilities would be appropriate?

<u>10%</u> motorized boating	<u>14%</u> roads (paved or gravel)
<u>92%</u> non-motorized boating	<u>43%</u> campsites w/tables & fireplaces
<u>97%</u> backpacking	<u>72%</u> campsites with outhouses
<u>2%</u> motorcycle riding	<u>19%</u> campsites with plumbing

$n=371$

III. Now imagine the Rogue as an "undeveloped recreation area," the kind of place where a natural setting is provided but meeting other people is part of the experience. In this case, which encounter levels would be appropriate? Indicate the point at which there would be too many people for even this kind of "undeveloped recreation experience."

Number of encounters with other parties while floating on the river each day.

OK to have as many as _____ encounters per day.
 _____ makes no difference to me.

Amount of time in sight of other parties while floating on the river each day.

OK to spend as much as _____ hours and _____ minutes in sight of others.
 _____ makes no difference to me.

Number of stops (to hike, swim, etc.) at which you meet another group.
 OK to meet others at as many as _____ out of 5 stops.
 _____ makes no difference to me.

Chances of meeting 5-20 people (outside your own group) at places like
 Howard Creek, Tate Creek, or Zane Grey's cabin.
 OK to have _____% chance of meeting others.
 _____ makes no difference to me.

Number of nights spent camping within sight of another party.
 OK to be near others as many as _____ out of 5 nights.
 _____ makes no difference to me.

In this situation, which activities or facilities would be appropriate?

<u>20%</u> motorized boating	<u>36%</u> roads (paved or gravel)
<u>93%</u> non-motorized boating	<u>61%</u> campsites w/tables & fireplaces
<u>96%</u> backpacking	<u>75%</u> campsites with outhouses
<u>8%</u> motorcycle riding	<u>37%</u> campsites with plumbing

n = 366

The following questions ask you to evaluate these three alternatives.

Of the three kinds of experiences described above, which do you think the
 Rogue River trip currently provides (circle one)?

wilderness semi-wilderness undeveloped recreation

Of the three kinds of experiences described above, which do you think the
 Rogue River trip should provide (circle one)?

wilderness semi-wilderness undeveloped recreation

If you prefer "wilderness," would you be willing to do any of the following
 things in order to accomplish this? (Circle one answer for each item.)

Pay \$50 more for the trip.	<u>55%</u>	<u>45%</u>	<u>272</u>
Wait a month longer to go on the trip.	<u>28%</u>	<u>72%</u>	<u>276</u>
Take the trip in May or September.	<u>38%</u>	<u>62%</u>	<u>276</u>

If you had to choose, would you rather

<u>40%</u> pay \$50 more	OR	<u>60%</u> have a semi-wilderness experience.	n = 329
<u>53%</u> wait a month longer	OR	<u>47%</u> have a semi-wilderness experience.	n = 318
<u>48%</u> take the trip in May or September	OR	<u>52%</u> have a semi-wilderness experience.	n = 325

This last question is the same as one you answered at the beginning of the
 questionnaire. Please answer it without looking back to your earlier
 answer, and don't worry about being consistent. Just answer in relation to
 the trip on which you were interviewed.

Overall, how would you rate this particular Rogue River trip?

<u>0</u>	poor
<u>0</u>	fair, it just didn't work out very well
<u>6%</u>	good, but I wish a number of things could have been different
<u>17%</u>	very good, but could have been better
<u>60%</u>	excellent, only minor problems
<u>17%</u>	perfect

n = 382

Future years may bring changes in the way the Rogue River is used and managed. Because we are interested in your opinions of these changes, we would like to contact you again in five years. You may move in the meantime, so we would like to have the addresses of a relative and a close friend who would be likely to know your correct address at that time.

Relative: Name _____
Street _____
City, State, Zip _____

Close friend: Name _____
Street _____
City, State, Zip _____

We hope you have found this questionnaire interesting. Please return it as soon as possible in the enclosed envelope. Thank you for your help and cooperation.

APPENDIX B

Private-Commercial Differences

TABLE B1
SEX COMPOSITION OF PRIVATE
AND COMMERCIAL GROUPS

	<u>Commercial</u>	<u>Private</u>
Male	48% (120)	71% (98)
Female	52% (129)	29% (40)

Chi Square = 17.8, $p < .001$
Number of Missing Observations = 3

TABLE B2
 INCOME DISTRIBUTIONS FOR
 PRIVATE AND COMMERCIAL USERS

	<u>Commercial</u>	<u>Private</u>
\$0 - 4,000	2%(4)	2%(3)
\$4,000 - 8,000	1%(3)	12%(17)
\$8,000 - 12,000	6%(13)	10%(13)
\$12,000 - 16,000	8%(17)	12%(17)
\$16,000 - 20,000	8%(19)	18%(24)
\$20,000 - 24,000	9%(21)	11%(15)
\$24,000 - 28,000	12%(27)	12%(16)
\$28,000 - 32,000	10%(22)	6%(8)
\$32,000 - 36,000	7%(16)	4%(6)
\$36,000 - 40,000	4%(10)	2%(3)
\$40,000 - 44,000	4%(10)	4%(5)
\$44,000 - 48,000	5%(11)	1%(1)
More than \$48,000	24%(53)	7%(9)

Chi Square = 51.7, $p < .001$
 Number of Missing Observations = 27
 n's for each cell are in parentheses.

TABLE B3
 PLANNING TIMES OF PRIVATE
 AND COMMERCIAL USERS

	<u>Commercial</u>	<u>Private</u>
Two days or less	14% (36)	11% (15)
3 - 7 days	1% (2)	19% (26)
1.1 - 2.0 weeks	4% (9)	14% (20)
2.1 - 3.0 weeks	1% (1)	7% (10)
3.1 - 4.0 weeks	8% (21)	14% (20)
4.1 - 7.0 weeks	5% (13)	4% (6)
7.1 - 12.0 weeks	38% (96)	17% (24)
Greater than 12 weeks	29% (72)	13% (18)

Chi Square = 92.4, $p < .001$
 Number of Missing Observations = 0
 n's for each cell are in parentheses.

TABLE B4
YEARS SINCE FIRST RIVER TRIP

	<u>Commercial</u>	<u>Private</u>
0 (first trip)	58%(145)	17%(24)
1 year	3%(7)	8%(11)
2 - 3 years	18%(46)	21%(29)
4 - 5 years	8%(19)	23%(32)
6 or more years	14%(34)	31%(43)

Chi Square = 69.3, $p < .001$
Number of Missing Observations = 0

TABLE B5

NUMBER OF OTHER WHITEWATER TRIPS

	<u>Commercial</u>	<u>Private</u>
0 trips	62% (156)	30% (42)
1 or 2 trips	21% (52)	9% (13)
3 to 5 trips	9% (23)	14% (20)
6 or more trips	8% (20)	46% (64)

Chi Square = 87.3, $p < .001$
Number of Missing Observations = 0

TABLE B6
PREVIOUS ROGUE RIVER TRIPS

	<u>Commercial</u>	<u>Private</u>
0 trips	88%(220)	48%(67)
1 or 2 trips	8%(20)	17%(24)
3 to 5 trips	2%(5)	14%(20)
6 or more trips	2%(6)	20%(28)

Chi Square = 79.6, $p < .001$
Number of Missing Observations = 0

TABLE B7
 DEMOGRAPHIC CHARACTERISTICS
 ROGUE RIVER USERS

	Commerical Float Passengers	Private River Runners	Commercial Jet Boat Passengers	Day Use Floaters
Age	31	31	42	31
Sex	48% M 52% F	71% M 29% F	43% M 57% F	53% M 47% F
Education Level	Some College	BA or Equivalent	H.S. Diploma	Some College
Occupation Level	5.5	5.0	4.8	4.7
Income	\$28,000-32,000	\$20,000-24,000	\$28,000-32,000	\$24,000-28,000
Marital Status	47% Single 45% Married 8% Separated Divorced Widowed	36% Single 54% Married 10% Separated Divorced Widowed	30% Single 64% Married 6% Separated Divorced Widowed	40% Single 49% Married 11% Separated Divorced Widowed
Number of Children	1.0	1.1	2	1.1
Residence	Small City/ Large City	Large City	Large City/ Small Town	Large City
Club Mem- bership	74% no 26% yes	72% no 28% yes	85% no 15% yes	86% no 14% yes