

**Carrying Capacity for
the Illinois River**

by

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FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

The Illinois River is a relatively little known tributary to the more famous Rogue River. A total of 51 river miles have been proposed for inclusion in the Wild and Scenic Rivers system. This study focuses on the 29-mile wild section between Briggs Creek and Nancy Creek. In order to insure high quality opportunities, managers need to explicitly define the kind of recreation experience to be offered here. This requires descriptive and evaluative information (pp. 1-2).

The Illinois is in a relatively remote part of southwestern Oregon, although it is near the cities of Medford and Grants Pass and a half-day's drive from the Willamette Valley. Land along the river is managed by the Forest Service, which is the lead agency at this time (pp. 2-3).

FINDING: Most trips on the wild section begin at Miami Bar and end at Oak Flat, although there are other put-in and take-out points. Trips last from 2-5 days, and average trip size is 7 persons for private and 11 persons for commercial groups. The floating season extends from early March to mid-June (pp. 3-4).

FINDING: Physical capacity of the river is limited by available campsites, while facility capacity is a function of developments at the launch and take-out areas. Ecological capacity concerns human impacts on the ecosystem, particularly at camps. Social capacity focuses on experience parameters such as the number of encounters among groups. It appears that social capacity will be the limiting factor on the Illinois (pp. 4-6).

FINDING: The field phase of the study measured use levels, encounters among parties, and selected user perceptions. A more extensive follow-up questionnaire was mailed to users at a later time (pp. 6-7).

FINDING: During the study period (April 17 - June 3, 1979), 50% of the days had no launches. Of those with launches, 59% were weekend days (Fridays or Saturdays). There were only three days with three or more launches (pp. 7).

FINDING: The average trip on the Illinois encounters between 0 and 2 other parties each day while floating on the river. With 1 or 2 trips launching per day, encounters stay at 0-2 per day. With 3-5 launches, encounters increase to 1-3 per day. The correlation between use levels and encounters is .47 (pp. 7-10).

FINDING: There are few attraction sites that are visited by large numbers of trips. The most popular stops are Pine Flat, Klondike Creek, and Green Wall (pp. 10-13).

FINDING: On the average, trips spent about 1 out of 7 nights (16%) within sight or sound of another party. Trips passed a preferred campsite because others were using it about 1 night in 5 (18%). The two most heavily used camps are Pine Flat and Klondike Creek (pp. 13).

CONCLUSION: Camp encounters are not correlated with use level; they appear to be a function of site location and site characteristics. Competition for sites occurs in certain sections of the river. The location of these sections depends on the length of the trips (pp. 13-17).

FINDING: User standards provide evaluative information about the appropriate number of encounters for the Illinois River experience. For the existing situation, 50% of the users will tolerate 0-2 river encounters per day. For camp encounters, 50% said the experience becomes unpleasant if there are any camp encounters (pp. 17-18).

FINDING: User standards were developed for three alternative experiences. Over two-thirds (69%) of the users said the Illinois currently provides a wilderness-type experience that is generally unaffected by the presence of man. About the same proportion (68%) felt that the Illinois should provide this kind of experience rather than a higher-contact semi-wilderness or undeveloped recreation experience (pp. 19-22).

FINDING: In order to get their preferred experience, most users would be willing to take a mid-week rather than a weekend trip (88%), go earlier in the season (75%), or schedule departure times for morning or afternoon (92%). In addition, 72% would be willing to have less chance to get a permit for a weekend day, knowing that when they did get a permit there would be fewer people on the river (pp. 23-24).

CONCLUSION: Users agree that the Illinois should provide a wilderness-type experience, and there is overwhelming support for several regulatory options which would help assure low encounter levels (pp. 24).

FINDING: User characteristics are similar to those found in previous river studies. Differences between private and commercial users should be recognized if a permit allocation system becomes necessary (pp. 24-26).

FINDING: The study shows that the Illinois River situation satisfies the three conditions necessary to establish a social carrying capacity (pp. 26).

CONCLUSION: Based on users' evaluative standards regarding appropriate river encounter levels, social carrying capacity for the wild section of the Illinois is 2 launches per day (pp. 26-27).

CONCLUSION: Actual use exceeded capacity on three days during the 1979 study period, but use has probably increased since then (pp. 27).

RECOMMENDATION: The Forest Service should set up some mechanism for collecting reliable use information in terms of launches per day. Such data will show when use begins to exceed capacity. It is extremely difficult to decrease use once it has been allowed to regularly exceed capacity (pp. 27).

CONCLUSION: Camp contacts are not likely to be affected by changes in use level, but would respond to strategies such as scheduling trip departures or having floaters sign up for campsites (pp. 27).

INTRODUCTION

The Illinois River is a little known whitewater river in Southern Oregon. It is a tributary to the more famous Rogue River, and as such has been generally overlooked as offering a premier whitewater experience. When the National Wild and Scenic Rivers Act became law in 1968, the Illinois was listed as one of 27 "study rivers" which might become a part of the National Wild and Scenic Rivers system.

A formal proposal for the Illinois to be a Wild and Scenic River was distributed by the U. S. Forest Service, Siskiyou National Forest. The 4-mile segment between the mouth and Nancy Creek was proposed for "Recreational" status. This area is characterized by easy access to the river and has evidence of development such as past logging activity and agriculture. A concrete bridge crosses the river near its mouth and utility lines are visible, but the overall effect is one of pastoral calm.

The recommended "Scenic" portion of the Illinois lies between Briggs Creek and the Siskiyou National Forest boundary, 18 miles upstream. This segment is generally in its natural condition and man-made features are not readily visible. Although the Illinois River access road parallels the river, it is not easily noticed from the river. Access to the river from the road is limited due to steep slopes and large differences in elevation.

The river segment between Nancy Creek and Briggs Creek (29 miles) has virtually no man-made features. Access is limited to floatboaters, although the Illinois River trail comes near the river in a few places. The lands adjacent to the river are natural in appearance with no management activities apparent. Because of these qualities, this river segment has been proposed as "wild."

While the National Wild and Scenic Rivers Act is fairly specific in defining the level of development allowable on a river in the system, it is less specific about the type of recreation experience to be provided. The Act simply states that "...management plans ... may establish varying degrees of intensity for [a river's] protection and development, based on the special attributes of the area."

Looking at it in terms of a recreational opportunity spectrum, the "Wild" section of the Illinois now provides a primitive experience. This is based, in part, on the amount of social interaction which takes place in the area; the Illinois offers the opportunity for solitude. However, as more and more people float the Illinois, the amount of social interaction will increase and the chance to experience solitude will lessen. This might change the Illinois from a primitive experience to a semi-primitive non-motorized experience. To keep the opportunity for solitude available, it may be necessary to limit use. If some less primitive experience is to be provided, then a higher level of social interaction, and a higher level of use, may be appropriate.

The experience to be provided on the Illinois needs explicit definition. Managers need to know two things. First, how many people use the area? This means knowing the numbers of users and how they are distributed over a specified time period. This is called the descriptive component of carrying capacity; it shows how the experience varies at different levels of use. Secondly, managers must be able to answer the question, "How many is too many?" This is the

evaluative component of carrying capacity. Once it is known how different numbers of users affect the system, managers must have some basis for deciding which number is most desirable or appropriate.

An excellent source for this kind of evaluative information is users themselves. Legislative mandates and management policies are often used to determine the evaluative component, but these are nearly always too vague to viably support a particular decision. However, users can be asked directly, and while answers will show some variation, a group norm or "standard" will usually emerge.

This report focuses on both the descriptive and evaluative components of carrying capacity for the Illinois River. It will describe the Illinois River experience at various levels of use, and it will report users' evaluations of those experiences.

BACKGROUND INFORMATION

Geographical Context

The Illinois has its headwaters in the Siskiyou Mountains near the Oregon-California border. The East and West Forks of the river join near the community of Cave Junction, Oregon. The main stem flows northwesterly about 57 miles and meets the Rogue River 27 miles from the Pacific Ocean.

The nearest population centers are Grants Pass, Oregon (pop. 15,000) and Medford, Oregon (pop. 39,500). The river is also within a half-day's drive of the Willamette Valley, which contains Oregon's major cities. There are numerous small communities in the Illinois River basin. The 1970 census lists the total population for the entire basin at 4,000. Access to the Wild Section of the river is limited to the Illinois River Road which begins at Selma, Oregon and runs about 20 miles to the Illinois River trailhead. For the most part, it is a rough, single-lane dirt road. The river segment above Deer Creek is accessed from the Eight Dollar Mountain Road.

Agencies Involved

The U. S. Forest Service, Oregon State Scenic Waterways System, and Oregon State Marine Board are involved to differing degrees in management of the Illinois. The river flows through the Siskiyou National Forest between the Forest boundary on Eight Dollar Mountain Road and Nancy Creek, which includes the entire Wild Section. The section from Labrador Creek to Silver Creek is within the boundary of the Kalmiopsis Wilderness Area (also a part of the Siskiyou National Forest).

Nearly all the land adjacent to the Illinois River between Briggs and Nancy Creek lies in the Siskiyou National Forest. Of the 8,978 acres of land in the one-half mile river corridor, the Forest Service manages 8,688 (97%). The remaining 290 acres (3%) are in private holdings.

It seems likely that the Illinois will soon be added to the National Wild and Scenic Rivers System so the legislation establishing that system is relevant here. The Wild Rivers Act (Sec. 10) states that "Each component of the ... system shall 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 such component may establish varying degrees of intensity for its protection and development, based on the special attributes of the area." The Act further urges that the federal agency charged with administration of a river (in this case the Forest Service) seek cooperative agreements among state and local government agencies for management of the river, and presumably the Forest Service will do so with the State Marine Board and Scenic Waterways Program.

The Oregon State Scenic Waterways System was designed to protect and enhance selected rivers' natural, esthetic, scenic, fish and wildlife, scientific, and recreational values. These goals are similar to those of the Federal system. Both the Forest Service and the State Marine Board have the authority to limit or restrict boating use on Oregon rivers in order to carry out the provisions of both the National Wild and Scenic Rivers Act and the Oregon State Waterways Act. The Marine Board can also regulate commercial and non-commercial boat use and establish use limits to "...protect the riverine environment and assure to the users a quality recreation experience." (Marine Board Administrative Rule 250-30-030). The gist of the preceding paragraphs is that all three agencies have the potential for influencing management decisions on the Illinois. However, neither of the state agencies is actively involved in management at this time, so the Forest Service is the lead agency.

Physical Description

The river segment involved in this study is characterized by deep, V-shaped canyons, still-water pools, and rapids. The canyon walls rise over 1,000 feet above the river bed in many areas along this portion of the river. The river drops about 24 feet per mile between Briggs Creek and Nancy Creek.

Waters of the Illinois and its tributaries originate primarily from rainfall. Mean annual precipitation for the study area is about 100 inches, over 80% of which occurs between November and June. During this period, the river experiences quick runoff, resulting in dramatic fluctuations in river level on a day-to-day basis. After June, there is little precipitation and stream flow reaches its seasonal minimum.

There are two put-in points for float trips on the Wild section of the Illinois. The upper one is just below Illinois River Falls at McCaleb's Bridge, about 8 miles upstream from Briggs Creek. A single-lane dirt road turns off from the main access and leads to a "low-water" bridge with concrete approaches which allows access to the McCaleb ranch on the west side of the river. The river is essentially undisturbed in the 8 miles to Briggs Creek, although some houses are visible and mining activity is evident. This is not a popular put-in point because of its small size, and congestion of vehicles, boat trailers, and rafts occurs when there is more than one party there at the same time.

The second and more popular put-in is about one mile upstream from Briggs Creek. This is locally known as Miami Bar or Oak Flat (not to be confused with the Oak Flat take-out located four miles up from the mouth of the river). Miami Bar is a wide expanse of pebble and sand river bank. This large, gently sloping area allows many groups to prepare for departure at the same time.

There are virtually no facilities at the put-in points. Parking consists of wide "turn-outs" along the road. There are no outhouses or developed campsites

at the put-ins, and only three designated campgrounds exist along the Illinois River road. Six Mile Campground and Store Gulch Campground are both about 5 miles upstream from McCaleb's Bridge. A third campground is at Briggs Creek, about 2 miles by road beyond Miami Bar. This campground is away from the river and the access road is passable only to four-wheel drive and other rough terrain vehicles. These campgrounds have minimal facilities - outhouses, picnic tables, and firepits. There are other undeveloped places along the river at which people camp.

There are two take-out points for Illinois float trips. The first is located at Oak Flat, just below Nancy Creek about 4 miles from the river mouth. This is a large river bar with a dirt access road. During heavy or extended rainfall portions of this road become extremely muddy and virtually impassable. For this reason, some trips continue downstream to the river mouth and cross the Rogue River to the Agness boat landing. This area is a flat expanse of sand with a gravel access road.

Recreation Activities

Floater on the Illinois generally travel in inflatable rafts or inflatable or hard-shell kayaks. Trip length usually varies from 2 to 5 days, with the average trip taking 3 days. Three commercial outfitters offer trips down the Illinois; commercial trips average 11 people, while private trips average 7.

The floating season is short and occurs before the traditional summer vacation period. It runs from early March to mid-June, when flows range from 300-1,800 c.f.s. (higher flows and bad weather often occur during this time). There is some threat of flooding if sudden rainfall occurs because with rapid runoff the river may rise to an unsafe level in a single day. Once begun, there is no point on the river where a floater can decide that he/she has "had enough" and easily pull out early. The Illinois River trail is generally inaccessible from the river, but it is possible to hike out from a few locations (most notably Pine Flat and Silver Creek).

During the day, boaters float downstream running the rapids. They may stop to view waterfalls or explore side creeks and old mining claims, although use of off-river attractions appears minimal at this time. At night they camp on natural sand beaches located along the river. There seem to be few recognized "visitor-attraction sites" or campsites along the "wild" section of the Illinois. There are no outhouses, firepits, or picnic tables along this segment of the river.

The stretch of river above Illinois Falls is also used for day trips. Floaters put in at the Eight Dollar Mountain road or at Six Mile Creek and take out just above the Falls.

Estimation of Capacities

There are four kinds of carrying capacities involved in recreational settings. These are: 1) physical capacity; 2) facilities capacity; 3) ecological capacity; and 4) social capacity. All four involve the effects of use levels, and each has a descriptive component consisting of management parameters and impact parameters. Management parameters are those things which can be directly

manipulated by managers, such as level of development, location of facilities, and amount of use. Impact parameters are those conditions or states that result from management parameters.

Physical capacity is the amount of undeveloped space available to people. On the Illinois, this is the surface area of the river and its banks. Impacts are called "space parameters." One factor here is the availability of space for campsites. The Forest Service has identified 24 potential campsites on the Illinois; smaller sites accommodate up to six people, while larger sites accommodate 20-30. Most sites will accommodate only small parties of 10 or less, and over half are below the high water line. Consistently usable campsites, then, may be at a premium, and physical capacity (in terms of campsites) would be reached when all sites are occupied.

Although there are 24 possible campsites identified by the Forest Service, not all may be known by users. Better known campsites will fill up first, and one party may be forced to share their campsite with another. If camping near another party becomes a problem on the Illinois, and some sites are under utilized, an information program concerning locations of campsites might be helpful. This would be a management parameter designed to make more space available for camping rather than simply limiting use.

Facility capacity concerns the man-made developments needed for recreational activities. On the Illinois, this would include put-in and take-out sites and parking areas. Facility capacity would be reached when the parking lots were full and/or when launch sites were congested. At present, there are few facilities at the launch sites. There are no outhouses, and parking areas are wide spots in the road where 1 or 2 cars may park. Boat launching areas are also undeveloped. At McCaleb's bridge, only one group at a time can comfortably put on the river. At Miami Bar, perhaps 5 or 6 groups can put on the river at a single time, although vehicle congestion may be a problem.

Facility capacity can almost always be increased with more development. Parking lots can be constructed and boat launching sites can be hardened and expanded to accommodate more use. However, further development would require money and time and would probably lead to a less primitive recreation experience. It appears at this time that facilities are seldom a limiting factor (only during peak use periods).

Ecological capacity refers to the amount of human use an area can withstand without unacceptable changes in the ecosystem. Littering, trampling of vegetation, water pollution, and over-use of campsites are all examples of conditions which might lead to establishing an ecological capacity. It is also dependent upon a specified level of technology. For example, over-use of campsites can be negated by hardening of the sites to withstand more intense use. While hardening sites may be a possible management tool, it may not be desirable for certain kinds of recreational experiences. It appears that at present the ecological capacity has not been reached. The Illinois is not controlled by dams, and it flushes beaches and replenishes firewood supplies each winter. But other management parameters, particularly changes in technology, can affect this capacity. If outhouses were installed near campsites, for example, the ecological capacity would increase; conversely, if users started burying their trash, capacity might be reduced.

Social capacity is harder to determine. Impacts here are termed "experience parameters," which are social factors affecting users (e.g., encounters with others). Changes in use levels (management parameter) will affect the number of encounters experienced by a group (experience parameter). The problem is determining the relationship between management parameters and experience parameters. In the context of the Illinois River, these parameters describe how many groups are on the river and how many other groups they see. After this relationship is known, it is necessary to decide which combination of use level and encounter rate is more acceptable or appropriate. This involves a social judgment about which is better, and is called the "evaluative component."

RESEARCH METHODS

This study was designed to measure use levels (number of river parties launching per day) and interaction rates (contacts between parties). In addition, user data were collected concerning individuals' perceptions and evaluations of different contact levels. This is essentially a base-line study which occurred before use increases became a problem.

The field phase of the study measured use levels, contacts among parties, reported contacts, perceived crowding, expectations, and satisfaction. An OSU researcher was stationed near the two put-ins on the river and monitored the number of parties launching each day. Data on contacts among parties were collected by users who kept diaries. Information regarding reported contacts, perceived crowding, expectations, and satisfaction was obtained from all users at the completion of their trip.

Data were collected from April 7 to June 3, 1979. Of the 44 river parties which ran the Illinois during this period, 41 (93%) were contacted prior to departure by the OSU researcher. The researcher solicited one volunteer from each group to act as a "diary keeper." The researcher spent about 15-20 minutes explaining procedures for collecting and recording information. Each volunteer was given the same oral instructions, and written instructions were included in the diary; as a result, data collected by any particular diary keeper should be comparable to those of other diary keepers. The diaries included records of all contacts with other parties on the river, at attraction sites, and at camps. Diary keepers also recorded a detailed trip itinerary. At the end of the trip, another OSU researcher contacted the river parties, collected the diaries from each group, and paid the diary keeper \$5.00. Diary forms are shown in Appendix A.

Forty-four groups ran the Illinois during the study period. Because of the distance between put-in points, 3 trips could not be contacted. Of the 41 groups contacted at the put-in points, only 1 refused to take a diary along. Four more groups took the diaries, but did not fill them out once they were on the river. Another three groups took diaries but, because of the distance between take-out points, were not contacted by the OSU researcher as they left the river. This resulted in completed diaries from 33 groups, an 80% response rate.

All trip participants were asked to complete a short, two-page interview form (see Appendix B). These were self-administered, and took less than 5 minutes to complete. Respondents recorded perceived contacts, expectations, perceived crowding, and overall satisfaction with their trip. Of the 341 total people (259 private and 77 commercial) who floated the Illinois during the study period, 284 were contacted by the OSU researcher at the take-out points. Completed interviews were received from 263 of these, a response rate of 92%.

A more extensive questionnaire was later sent to all interview respondents during the summer of 1979. The questionnaire measured various perceptions and opinions, including users' ideas about the kind of experience which should be available on the Illinois and appropriate contact levels for that experience. Data were also collected to assess whether or not Illinois River users were being displaced from the Rogue River. The response rate for the mailed questionnaire was 90%. Findings from the interview form and follow-up questionnaire give an extensive description of the evaluative component. The follow-up questionnaire can be found in Appendix C.

DESCRIPTIVE COMPONENT

Distribution of Use

The use season on the Illinois has no clear beginning or end. Good weather and proper water levels sometimes entice floaters to run the river as early as March. According to U. S. Forest Service estimates, however, most people run the Illinois during April, May, and early June. A diagram of daily use levels for the study period (April 17 - June 3, 1979) is shown in Table 1.

There were 58 days in the study period; of these 29 (50%) had no trips starting. Of the 29 days with starts, most (59%) were weekend days (Fridays or Saturdays). Of the 10 days which had two or more starts, eight were weekend days. Only 3 Fridays or Saturdays had no trips launching. For 2 of these (May 4 and 5), there had been heavy rains in the basin and the river was too high to run.

There were 41 weekdays (Sunday through Thursday) in the study period, with trips launching on only 15 (37%) of these. Only 2 weekdays had 2 launches per day, and none had more.

There is little commercial use on the Illinois, and commercial trips usually start on weekdays. Of the 44 trips in the study period, 7 (16%) were commercial trips and 37 (84%) were private trips. Commercial trips usually launched on Sundays or Wednesdays and all took 4 days to float the river, while private trips usually launched on Fridays or Saturdays and took 2-3 days.

Use Levels and Encounters

Past studies of social carrying capacity have found a relationship between use levels and encounters, and a similar relationship was found on the Illinois. Encounter measures were recorded by voluntary diary keepers on the river, at attraction sites, and at campsites.

River Encounters. The effect of use levels on river encounters is shown in Table 2. On the average, trips on the Illinois encountered about one other trip per day. This figure represents a range, however, the size of which is shown by the standard deviation (in parentheses). Thus, we can say that an average trip on the Illinois encounters between 0 and 2 (1.1 ± 1.2) other parties each day while on the river.

The right-hand columns in Table 2 show the effect of daily use levels on river encounters. When there are 1 or 2 trips launching per day, trips encounter 0-2

Table 1

DAILY RIVER TRAFFIC LAUNCHING ON ILLINOIS RIVER

APRIL 7 - JUNE 3, 1979

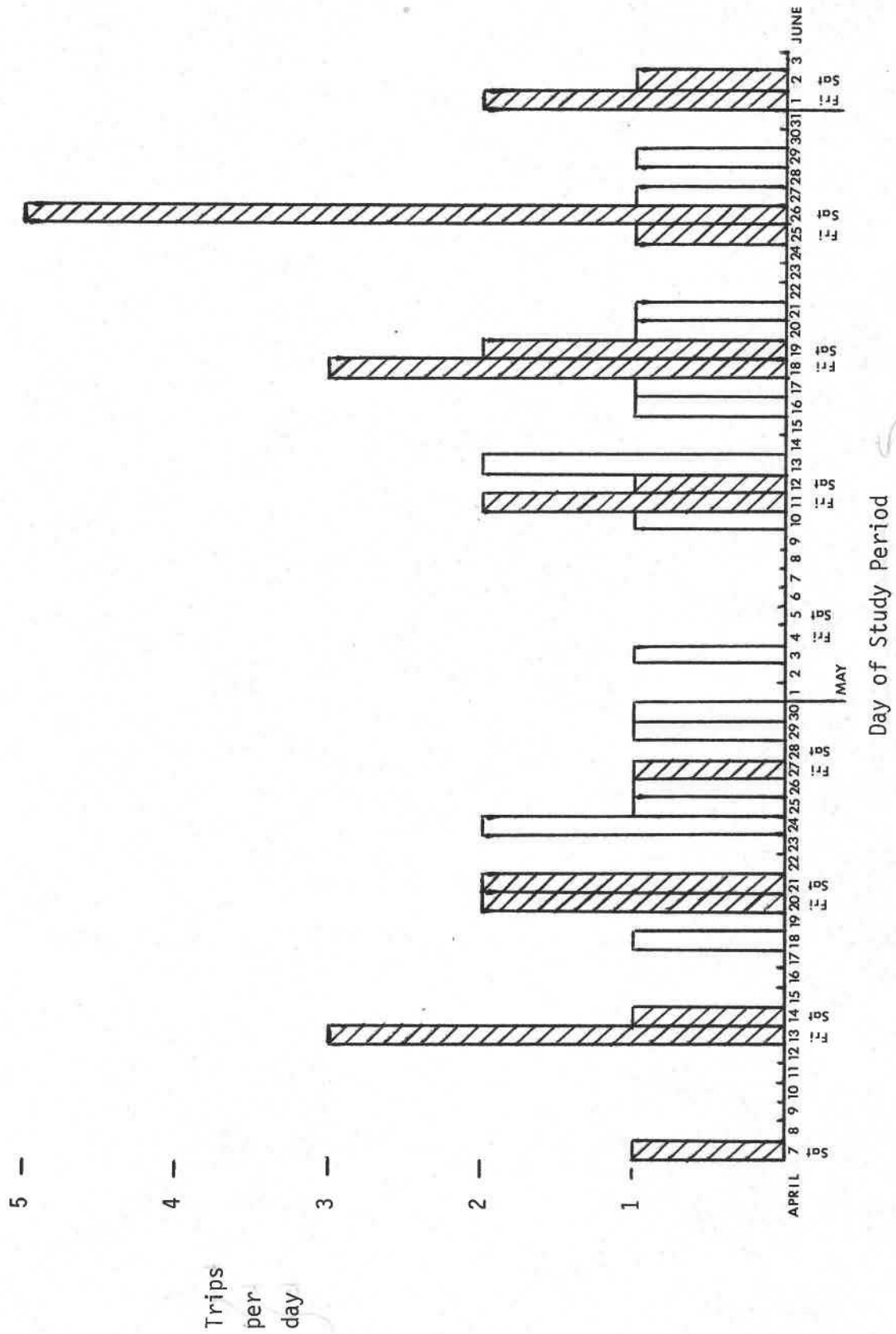


TABLE 2
USE LEVELS AND RIVER CONTACTS¹

	Trips/Day ²					Correlation with use level (trips) per day)
	Overall	1 trip	2 trips	3 trips	5 trips	
Average Contacts Per Day	1.1 (±1.2)	0.7 (±1.2)	0.8 (±0.7)	2.3 (±1.0)	2.5 (±0.7)	.47*
n	33	15	12	4	2	

*p<.005

¹These are mean values which represent ranges; standard deviations are given in parentheses.

²During the study period, there were no days in which 4 trips launched, hence the jump from 3 to 5 trips per day.

other parties each day on the river. When there are between 3 and 5 trips launching per day, river encounters increase to 1-3 per day. There appears to be an inflection point between 2 and 3 trips launching per day, causing marked increases in river encounters. We can say, then, that river encounters tend to increase as use levels increase, as the positive correlation between these two variables indicates ($r = .47, p < .005$). This means that regulating use levels will have an effect on river encounters.

Some discussion of the accuracy of diary recorded contacts is appropriate here. A recent study on the wild section of the Rogue River showed that, when asked at the end of their trips, floaters under-reported contacts by about half (when compared with reports by trained participant observers), except at the lowest contact level. Because it was impractical to place participant observers on Illinois River float trips, we decided that diaries might be a next-best method for recording contacts and getting information about attraction sites and camps.

A general check of the method can be done by comparing bivariate correlations between the two studies. The correlation between use levels and actual contacts on the Rogue was .71, and the correlation between use levels and reported contacts was .42. On the Illinois River, the use level-diary contact correlation was .47, and the use level-reported contact correlation was .43. This suggests that diary contacts are more similar to reported contacts than to "actual" contacts.

To explore the relative agreement of diary and reported contacts, we can compare the two as shown in Table 3. Looking at the far left column, we see that 88% of the floaters who had no contact with others reported no contact; 10% said they had one contact, and 3% reported two or more contacts. The next column shows reported contacts for those who had one diary contact per day. Of these, 75% of the reports agreed with the diaries, five percent reported no contact, and 20% reported 2 or more contacts. Agreement tends to drop off for those with 2 or more diary contacts. For those who had 2 diary contacts per day, only 29% of the reports agreed with the diaries; 39% reported less than 2, and 32% reported more than 2. All the floaters experiencing 3 diary contacts over-reported, but data in this column should be interpreted with caution because there were only 5 cases in this category. Finally, for those with 4 diary contacts, 33% reported a similar number of contacts, while 53% under-reported and 14% over-reported.

These data imply that diary contacts are basically another measure of reported contacts. However, because reported contacts seem to be accurate at low contact levels, our conclusion is that diary contacts are a fair estimation of actual contacts on the Illinois at this time.

Attraction Site Encounters. The attraction sites that floaters visited are shown in Table 4. These are waterfalls, old mine sites, and side creeks where people stop to look around and explore. From the small percentage of trips stopping at any one site, it would appear that there are few well known attraction sites on the Illinois at this time. Only 3 sites had more than 20% of the trips stop. These were Pine Flat (39%, 13 trips), Klondike Creek (21%, 7 trips), and Green Wall (81%, 17 trips).

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Table 3
COMPARING DIARY CONTACTS AND REPORTED CONTACTS¹

Reported Contacts Per Day	Diary Contacts Per Day					Totals
	0	0.1-1.4	1.5-2.4	2.5-3.4	3.5-4.5	
0	87.8% (65)	5.3% (4)	0	0	0	31.8% (69)
0.1-1.4	9.5% (7)	75% (57)	39.0% (16)	0	0	36.9% (80)
1.5-2.4	1.4% (1)	17.1% (13)	29.3% (12)	0	23.8% (5)	14.3% (31)
2.5-3.4	1.4% (1)	1.3% (1)	19.5% (8)	0	28.6% (6)	7.4% (16)
3.5-4.5	0	0	2.4% (1)	20.0% (1)	33.3% (7)	4.1% (9)
More than 4.5	0	1.3% (1)	9.8% (4)	80.0% (4)	14.3% (3)	5.5% (12)
Totals	34.1% (74)	35.0% (76)	18.9% (41)	2.3% (5)	9.7% (21)	100% (217)

¹Diary contacts were reported by volunteer diary keepers, and reported contacts came from floater interviews; n's for each cell are in parenthesis. Chi squared = 326, p < .001.

Table 4

ILLINOIS RIVER ATTRACTION SITES

SITE NAME	PERCENTAGE OF TRIPS WHICH STOPPED
Briggs Creek	18% (6)
Above York Creek	3% (1)
Clear Creek	6% (2)
1/4 mile below Clear Creek	3% (1)
1/2 mile above Pine Flat	6% (2)
Pine Flat	39% (13)
Lower Pine Flat	3% (1)
Zone 1 unidentifiable	15% (5)
Just above Klondike Creek	3% (1)
Klondike Creek	21% (7)
Deadman Bar	3% (1)
1 mile below Deadman Bar	3% (1)
2 miles below Deadman Bar	3% (1)
Fern Falls (above Bend Creek)	3% (1)
South Bend	9% (3)
1/4 mile below South Bend	3% (1)
Zone 2 unidentifiable	24% (8)
Green Wall	81% (27)
Below Green Wall	9% (3)
1/2 mile below Green Wall	3% (1)
4 miles below Green Wall	3% (1)
Submarine Rapid	3% (1)
1/3 mile above Collier Creek	3% (1)
Collier Creek	15% (5)
Below Collier Creek	12% (4)
Zone 3 unidentifiable	9% (3)
1 mile above Silver Creek	3% (1)
Above Silver Creek	3% (1)
Silver Creek	12% (4)
Zone 4 unidentifiable	15% (5)
Indigo Creek	6% (2)
Zone 5 unidentifiable	6% (2)
Horse Sign Creek	15% (5)
Box Canyon (Zone 6)	3% (1)

n = 33

Green Wall is a special case. It is recognized as the most difficult rapid on the river, and virtually everyone stops there. Of the 27 groups who reported stopping at Green Wall, only 13 classified it in their diary as an attraction. The remaining 14 simply noted that they had stopped to scout.

Table 5 shows the probability of meeting another river party at the 3 most popular sites on the river. The chances of meeting someone at Pine Flat are about 15%, at Klondike Creek 27%, and at Green Wall 54% (this last figure is based on the 13 trips which classified Green Wall as an attraction; data do not show whether the trips which simply scouted met anyone else there).

The middle column in Table 5 shows the relationship between use levels and attraction site encounters. The non-significant correlations indicate that the chances of meeting someone at Pine Flat and Green Wall are about the same regardless of the number of trips launching each day. The high correlation for Klondike Creek suggests that here encounters increase as use increases. This finding should be interpreted with caution because it is based on just the 7 trips which listed it as an attraction site. For those who did meet other parties, the average number of people met was 7 at Pine Flat, 3 at Klondike Creek, and 9 at Green Wall.

Campsite Encounters. The 33 river trips in our sample spent a total of 69 nights on the river. Trips spend about 1 out of 7 nights (16%) in contact with another party (7% were spent within sight or sound of another party, and 9% were spent right next to another party). Diary keepers also noted whether or not they had passed a preferred campsite because it was being used. This happened 18% of the time. None of these measures are significantly correlated with use level.

The campsites used by floaters in our study are listed in Table 6. The 2 most heavily used campsites are Pine Flat and Klondike Creek. Almost half (40%) of the campsite encounters occurred at Pine Flat, and the most likely spot to have to camp right next to another party is South Bend. The 2 camp contacts which occurred at Silver Creek occurred because 2 groups were traveling together and both camped at the same spot; each reported being right next to another party.

Rather than being correlated with use level, campsite contacts appear to be a function of site location and site characteristics. For example, Pine Flat is a large, easily recognized area and it has space for more than 1 party at a time. As a result, there were more camp contacts at this site. Contrast this with Klondike Creek. There, 7 trips spent the night, and none had any campsite contacts. While it is nearly as heavily used as Pine Flat, it cannot accommodate more than 1 group at a time, so no contacts occurred. Other sites are not widely recognized as campsites, and as a result see little use.

Table 6a shows the distribution of camps for 2, 3, and 4 day trips in the study sample. For two-day trips, we can see that trips generally camp just above Green Wall. Three-day trips camp between Pine Flat and Deadman Bar on their first night, and between Collier Creek and Indigo Creek on their second night. The first night of a 4-day trip is usually spent above Pine Flat, the second night just above Green Wall, and the third at Collier Creek or below.

Table 5

USE LEVELS AND ATTRACTION SITE CONTACTS

Probability of meeting another trip at:	Overall	Correlation with use level	Average number of people seen for those with contact
Pine Flat n=13	.15 (±.38)	.10	7.0
Klondike Creek n=7	.27 (±.52)	.71*	3.0
Green Wall n=13	.54 (±.52)	.35	9.0

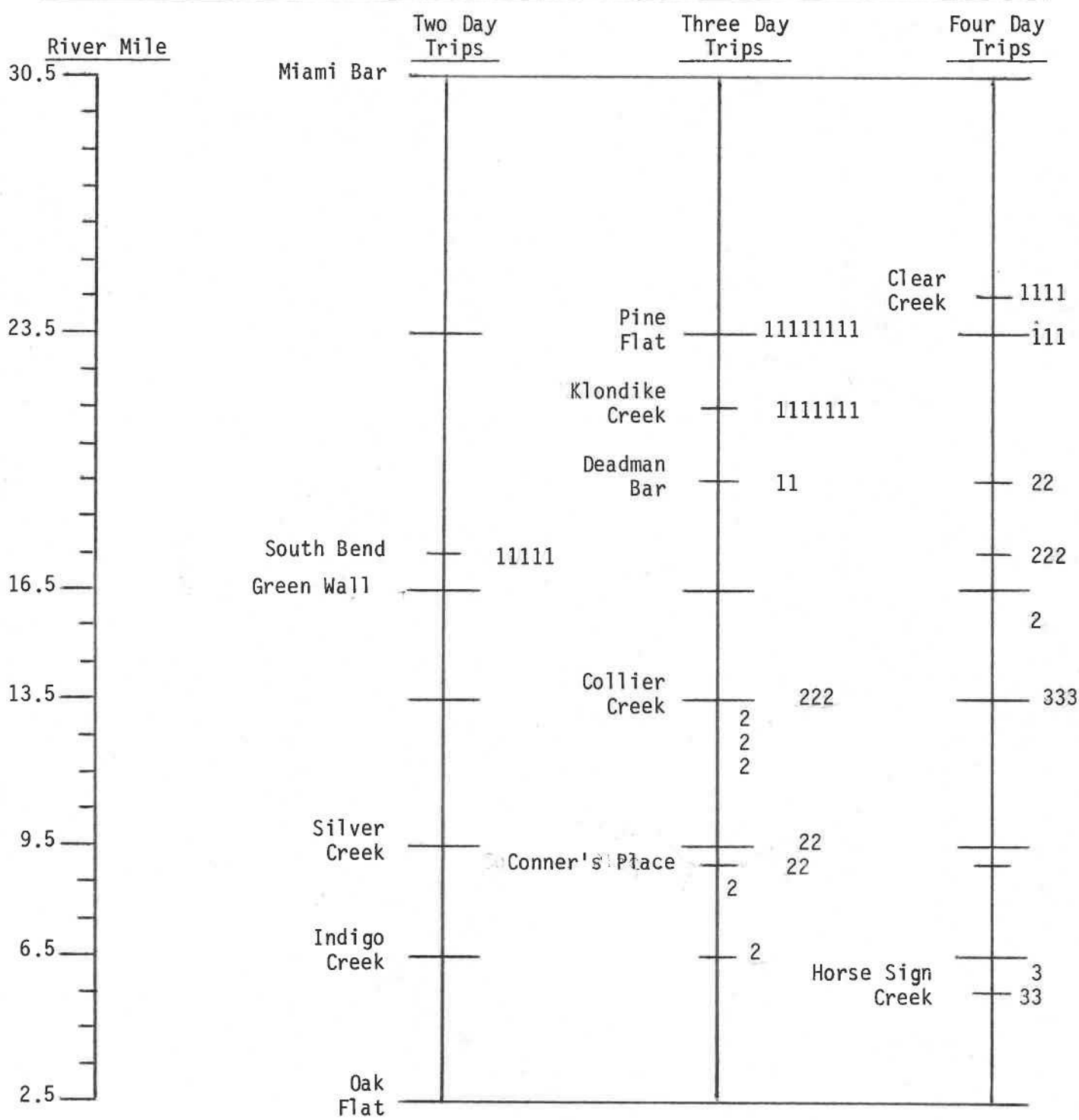
*p<.05

Table 6
ILLINOIS RIVER CAMPS AND CONTACTS

Camp Name	Number Of Nights		
	Camped Here	With Contact	Right Next To Other Party
Across from Clear Creek	3	1	1
Vicinity of Clear Creek	2		
Pine Flat	11	4	1
Zone 1 unidentifiable	1		
Beach above Klondike Creek	9		
Deadman Bar	1		
Halfway between Klondike Creek & Green Wall	2		
South Bend (Big Bend, Bend Creek)	5	2	2
Rattlesnake Creek	2		
Area above Green Wall	4		
Zone 2 unidentifiable	3		
Above Submarine Rapid	1		
Zone 3 unidentifiable	2		
Collier Creek	5		
Area below Collier Creek	3		
Zone 4 unidentifiable	3	1	
Silver Creek	2	2	2
Zone 5 unidentifiable	1		
Connors Place (left side below Silver Creek)	3		
Below Connors Place	1		
Indigo Creek	1		
Horse Sign Creek (Buzzards Roost)	4		
TOTAL	69	10	6

Table 6a

CAMPSITE DISTRIBUTION PATTERNS
FOR 2, 3, AND 4 DAY TRIPS¹



¹Not all camps could be listed because diary keepers did not always specify locations.

This table illustrates the nature of campsite congestion. For example, if a 3-day trip and a 4-day trip left Miami Bar the same day, there may be some competition for a camp the first night. However, on the second night out, a 3-day trip will usually go at least as far as Collier Creek to camp, while a 4-day trip tends to remain in the vicinity of Green Wall to camp. It can be further assumed that after some point during the second day, these two trips will not be in contact with one another again. In addition, one can compare the movements of 2-day trips to 3- and 4-day trips to see where camp congestion may occur, and on what stretch of the river trips of given lengths are located on a given day.

Summary: Use Levels and Encounters

The number of trips launching each day on the Illinois has a substantial effect on the number of river encounters but little effect on attraction site encounters or campsite encounters. The average number of river encounters each day ranged from 1 at low use to 3 at higher use. There is a "jump" in the number of encounters per day as use increases from 2 to 3 trips launching per day. The chances of meeting another party at the most popular attraction sites ranged from .15 to .54, and the number of people met at these sites ranged from 3 to 9. There appear to be few, if any, recognized attraction sites on the river. Even though most trips stopped at Green Wall, only 13 characterized it as an attraction site. Campsite contacts appear to be a function of site characteristics, with contacts occurring only 16% of the time, and generally only at the larger sites. Managing use levels is likely to have a direct effect on river encounters but less impact on encounters at attraction sites or camps.

EVALUATIVE COMPONENT

The previous section describes changes in experience parameters (encounters) that result from changes in a management parameter (use level). The next step is to determine which level of experience is most appropriate for the Illinois. This is called the evaluative component and consists of "encounter standards."

Encounter Standards

Floaters were asked to indicate the highest number of encounters with other river parties they would tolerate before the experience, as it currently exists, became unpleasant. Encounter standards for the current experience are shown in Table 7. The figures presented are median tolerable contacts for each type of encounter. This means that the columns can be read as "fifty percent of the respondents would tolerate ___ or fewer contacts with others per day." It can be seen from Table 7 that less than 2 contacts each day are acceptable to 50% of the respondents. Similarly, 50% of the respondents said they would tolerate being in sight of others less than 1/2 hour each day before the experience became unpleasant. Fifty percent of the respondents also indicated that contacts with others at side stops are tolerable only if contacts occur at less than one stop out of five. In terms of campsite contacts, 50% would not tolerate any campsite contacts with others.

Table 7

ENCOUNTER STANDARDS FOR THE ILLINOIS

What are appropriate
encounter levels in
terms of:

Median¹

- encounters per day
- hours in sight of
others while on the
river
- number of stops
(out of 5) with
encounters
- number of nights
(out of 3) camped
within sight or
sound of others

1.6

0.4

0.5

0

¹Medians can be read as: "fifty per cent of the respondents preferred ___ or fewer encounters."

In order to learn about different experiences, Illinois River users were asked to think of the river in three ways: 1) a place generally unaffected by the presence of man, 2) the kind of place where complete solitude is not expected, and 3) the kind of place where a natural setting is provided but meeting other people is part of the experience. Respondents were asked to indicate appropriate encounter levels by specifying the highest number they would tolerate before each experience was lost.

Encounter standards for alternative experiences are shown in Table 8. In thinking of the Illinois as a place generally unaffected by the presence of man, 50% of respondents would tolerate only about 1 contact per day while on the river, and less than 1/2 hour in sight of others each day. In addition, 50% of the respondents would tolerate contact at less than 1 side stop out of 5, and no nights camped within sight or sound of others.

In terms of a place where complete solitude is not expected, 50% of the respondents would tolerate 2 contacts while on the river and about an hour in sight of others each day. They would tolerate contact with others at one side stop each day but less than 1 night in 3 within sight or sound of another party.

In the third scenario, where meeting others is part of the experience, 50% of the respondents would tolerate about 3 contacts on the river and an hour and a half in sight of others each day. Two stops with contact (out of 5) were considered tolerable by 50% of the respondents and it was tolerable to spend 1 night out of 3 within sight or sound of another group.

The relationship between river contacts and the 3 types of experiences is shown somewhat differently in Table 9. Here the 50 percentile mark is depicted graphically. However, managers may feel that there should be a greater majority of opinion in determining evaluative criteria for each experience. Therefore, the 90 percentile mark has been added to Table 9 to illustrate the differences between the two. It can be seen that in each scenario, the appropriate number of contacts about doubles as one increases from a 50 percentile evaluative standard to a 90 percentile evaluative standard. The 90 percent standards represent an absolute maximum, while the 50 percent standards represent optimal encounter levels.

In addition to encounter standards, users were asked to indicate what type of experience the Illinois River currently provides, and what type of experience it should provide. These results are shown in Table 10. Most users (69%) feel the Illinois currently provides an experience generally unaffected by the presence of man; 24% felt the Illinois was the kind of place where complete solitude was not expected, and only a minor proportion of the users (7%) thought that seeing other people was part of the experience.

A similar pattern emerges when users indicated the type of experience the river should provide. Here, 68% of the users felt the Illinois should be a place unaffected by the presence of man, 24% said it should be a place where complete solitude is not expected, and 8% said it should be a place where meeting others is part of the experience.

Users were also asked what they would be willing to do to be assured of getting the kind of experience they felt the Illinois should provide. Results are shown in Table 11. Most respondents said they would take a mid-week trip rather than a weekend trip (88%), take a trip earlier in the season (76%),

Table 8

ENCOUNTER STANDARDS FOR ALTERNATIVE
EXPERIENCES ON THE ILLINOIS: MEDIANS

<u>What are appropriate encounter levels in terms of:²</u>	<u>Scenario I¹</u>	<u>Scenario II¹</u>	<u>Scenario III¹</u>
- encounters per day	0.7	2.0	2.7
- hours in sight of others while on the river	0.4	0.9	1.6
- number of stops (out of 5) with encounters	0.2	1.3	1.8
- number of nights (out of 3) camped within sight or sound of others	0	0.2	0.7

¹Scenario I - "A place generally unaffected by the presence of man."
 Scenario II - "A place where complete solitude is not expected."
 Scenario III- "A place where a natural setting is provided but meeting
 other people is part of the experience."

²Figures are medians, which can be read as "fifty per cent of the
 respondents preferred ___ or fewer encounters."

Table 9

ENCOUNTER STANDARDS FOR ALTERNATIVE EXPERIENCES ON THE ILLINOIS: CUMULATIVE FREQUENCIES²

Encounters per Day	Scenario I ¹	Scenario II ¹	Scenario III ¹
0	24	1	2
1	62	22	16
2	87	51	34
3	94	71	57
4	94	80	67
5	97	89	81
6	97	93	90
7	97	93	91
8	97	93	92
9	97	94	92
10	99	97	99
12	99	97	99
20	100	100	100

¹Scenario I = "A place generally unaffected by the presence of man."
 Scenario II = "A place where complete solitude is not expected."
 Scenario III = "A place where a natural setting is provided but meeting other people is part of the experience."

²Figures are cumulative frequency percentages.

Table 10

EXPERIENCE PREFERENCES FOR THE ILLINOIS

	<u>Scenario I¹</u>	<u>Scenario II¹</u>	<u>Scenario III¹</u>
What experience does a river trip provide <u>now</u> ?	69% (128)	24% (45)	7% (12)
What experience <u>should</u> a river trip provide?	68% (125)	24% (44)	8% (16)

¹Scenario I = "A place generally unaffected by the presence of man."
 Scenario II = "A place where complete solitude is not expected."
 Scenario III = "A place where a natural setting is provided but meeting other people is part of the experience."

Table 11

WILLINGNESS TO "PAY" FOR PREFERRED EXPERIENCES

<u>Would you be willing to do any of the following to get your "preferred" experience?</u>	<u>No</u>	<u>Yes</u>
Take the trip during mid-week rather than on a weekend	12% (23)	88% (161)
Take the trip earlier in the season when the weather is less likely to be good	24%(44)	76%(140)
Schedule your departure time for morning or afternoon	8%(14)	92%(169)
Have less chance to get a permit for a weekend day, knowing that when you get a permit there would be fewer people on the river	22%(39)	79%(142)
Combine your group with another group, agreeing to travel and camp together	73%(129)	27%(49)

<u>Would you be willing to do any of the following in order to be assured of camping alone?</u>	<u>No</u>	<u>Yes</u>
Travel further during the day	28%(62)	72%(161)
Have a less desirable campsite	38%(80)	62%(130)
Have a rigid schedule of campsites	59%(126)	41%(89)

and schedule departure times for morning or afternoon (92%). In addition, 79% said they would be willing to have less chance to get a permit for a weekend day, knowing that when they did get a permit there would be fewer people on the river. When asked if they would combine their group with another group, agreeing to travel and camp together, most respondents (73%) said they would not be willing to do this. When asked what they would be willing to do to be assured of camping alone, respondents said they would travel further during the day (72%) and have a less desirable campsite (62%). However, a slight majority (59%) did not want a rigid schedule of campsites.

The reader should keep in mind that these are hypothetical answers to hypothetical questions, but they strongly suggest that Illinois River floaters are willing to put up with some inconvenience in order to get their preferred experience.

Summary: Encounter Standards

Respondents were asked to think of the Illinois in 4 ways: as it exists currently, as a place generally unaffected by the presence of man, as a place where complete solitude is not expected, and as a place where meeting other people is part of the experience. Respondent's definition of the current situation closely parallels their definition of a place generally unaffected by the presence of man, although under current conditions they would tolerate about twice as many river contacts. Most users felt the river is currently unaffected by the presence of man, and most felt this is the type of experience the river should provide. In addition, most users appear to be willing to put up with some inconvenience to be assured of this type of experience.

USER CHARACTERISTICS

What about the users themselves--who are they and what are they like? The follow-up questionnaire asked users a number of questions about their backgrounds. The average age of floaters on the Illinois is 32, and most users (75%) are male. Most floaters have had at least some college education, average income is between \$20,000 and \$24,000, and occupational status is generally high.

For most users (59%) this was their first trip on the Illinois; however, 95% had been on previous river trips, and the average floater has about 7 years of river running experience. Other outdoor activities are also popular with Illinois floaters. Over 50% of the respondents said they go backpacking, hiking, or camping at least several times a year.

The differences between private and commercial users are illustrated in Table 12; this table shows the correlations between trip type (private or commercial) and the background variables. Commercial users tend to be older and have a larger income than private users; they also tend to be married and have more children. In addition, commercial users have longer planning horizons than private users. This is especially relevant if managers are considering establishing a permit allocation system. Commercial users plan their trips an average of 18 weeks in advance, while private users usually plan their trips only 6 weeks ahead. An allocation system which would require months of advance planning would force private users to restructure their planning horizons, something they may be unwilling or unable to do.

Table 12

BACKGROUND CHARACTERISTICS OF
PRIVATE AND COMMERCIAL RIVER RUNNERS

<u>Variable</u>	<u>Correlation with Trip Type (private/commercial)¹</u>
Demographic:	
Age	-.49***
Sex ²	.00
Education	.01
Occupational Status	-.12
Income	-.39***
Marital Status	-.22**
Number of Children	-.30***
Planning Time	-.42***
Length of Vacation	-.04
Outdoor Experience:	
Membership in Outdoor Club	-.01
Time of First River Trip	.01
Experience on other Rivers	.34***
Experience on the Illinois	-.06
Participation in Outdoor Activities	.33***

¹Coded commercial = 1, private = 2

²Coded male = 1, female = 2

** p<.01

*** p<.001

Other private-commercial differences include experience on other rivers and participation in other outdoor activities. Private users tend to have more whitewater experience than commercial users ($r = .34$, $p < .001$). Private users also tend to participate more in other outdoor activities such as backpacking, hiking, and camping ($r = .33$, $p < .001$.)

IMPLICATIONS FOR MANAGEMENT

What can a manager do with this information? In order to establish a carrying capacity based on social aspects of the recreation experience, three conditions must be satisfied. First, there must be a known relationship between management parameters and experience parameters (this refers to the descriptive component). Second, there must be agreement among relevant groups about the type of recreation experience which should be provided. Third, there must be further agreement among relevant groups as to the appropriate levels of the experience parameters for the desired experience. These latter two conditions refer to the evaluative component.

Looking at the first necessary condition, we now know how use levels affect the system. As use levels increase, so do river contacts; they "respond" to changes in the number of parties launching each day. Thus, the first condition is satisfied. Use levels are management parameters which can be directly manipulated by managers to affect the experience parameters of users, in this case contacts. Manipulating use levels is a tool which managers can use to "set up" the experience being provided on the Illinois.

Considering the second necessary condition, we know what type of experience users feel the Illinois should provide. A majority feel the river is and should be "a place generally unaffected by the presence of man." This essentially satisfies the second condition, but there may be other groups or sources which managers want to consider to help answer this question (local landowners and businessmen are possible examples). In addition, legislative mandates, agency policies, and management guidelines may help determine the experience to be provided.

For the third condition, we also know how users define their preferred experience. Again, other groups may warrant consultation, but the users themselves seem to have well crystallized encounter norms. Legislative mandates or management guidelines may not be much help in answering this question because usually they are too vague; a policy may state that an area should be managed for a wilderness-type experience, but such policies usually do little to define that experience. A possible exception to this is the Forest Service's Recreation Opportunity Spectrum concept. Each point along the spectrum can be defined in terms of a number of objective and subjective factors, one of which is the amount of social interaction. However, even this is based on user definitions of "How many is too many" and "How many is about right."

With these three conditions essentially satisfied, establishing a capacity for the Illinois is a fairly simple matter of picking numbers from a table. Let us follow this through using the data presented here. From Table 10, we know that 70% of our respondents feel the river should be generally unaffected by the presence of man. From Table 8 we see that this experience is defined by 50% of the respondents as less than one contact per day (0.7). Comparing this figure to Table 2 shows that this contact level corresponds to a use level of

1 or 2 trips launching from Miami Bar each day. Managers would have to decide between these two numbers (probably choosing the higher) and this would be the carrying capacity based on the evaluative standards used here.

We can take this one step further by considering Table 1 in light of this use limit. Of the 58 days in our study period, only 3 exceeded 2 trips launching per day, and there were only 7 days on which 2 trips launched. The remainder had one or fewer daily launches. This means that the social carrying capacity of the Illinois was exceeded on only three days during the 1979 season.

The two trips per day limit proposed here assumes the mixture of launches and trip lengths occurring in 1979 and described in Tables 1 and 6a. It is possible that contacts will increase above the evaluative standard if 2 trips launch each and every day. Insuring that users are encountering the "right" number of other groups will require some testing of the system, and there are two ways to do this. The first is a "try it and see" approach, which necessitates monitoring river use. Managers will need to know daily use levels (at the very least) to compare to Table 1 in this report. In addition, it would be helpful to know each use level's resultant contact level to see if changes are occurring. This would require limited replication of parts of the present study.

The second approach is a computer simulation model. This can be especially useful if managers wish to know how other management parameters (such as scheduling) affect the experience. However, a simulation model requires accurate arrival and departure times for points along the river. This is something we do not presently have because we could not ask users to keep an accurate time record. Obtaining such data would require a series of trips down the river to time specified travel intervals.

Attraction site contacts and camp contacts are generally not affected by changes in use levels, but they might be responsive to other management actions. This would include strategies such as scheduling trip departures or assigning campsites. Table 6a suggests how scheduling trip departures might affect contact rates. Suppose, for example, that two trips of different lengths (in terms of days on the river) wished to leave from Miami Bar on the same day. If the shorter trip launched in the morning and the longer trip in the afternoon, the chances of these two trips seeing each other would be greatly reduced.

Scheduling can also be accomplished through the coordinated use of the Miami Bar and McCaleb's Bridge put-ins. If longer trips left from McCaleb's Bridge and shorter trips from Miami Bar, they would probably never come into contact with one another (because the faster-moving short trip would continue to outdistance the longer trip). This would have to be tested, however, to check its effectiveness, and users would have to be questioned to determine the desirability of this type of scheduling. As suggested earlier, a computer simulation can help managers determine the effects of such management parameters. It is important to remember that these kinds of changes in the amount of regimentation may also affect users' subjective evaluations of the experience.

In summary, it appears that use on the Illinois was at or below capacity most of the time in 1979. Use was not monitored in 1980, however, so we do not know how much it has increased. It appears that overall use should be limited to two launches per day to provide the experience opportunity desired by users, unless managers introduce more intensive scheduling and/or regulation to minimize the impacts (in terms of encounters) of higher use. Users support regulatory procedures to insure opportunities for a primitive, wilderness-type experience.

APPENDIX A
DIARY FORMS AND INSTRUCTIONS

caps

ILLINOIS RIVER RUNNER'S DIARY

In cooperation with the U.S. Forest Service, Oregon State University is conducting research on the Illinois to find out how different use levels affect float trips. As you probably know, the Illinois has been proposed as a National Wild and Scenic River. In order to make good planning decisions, the Forest Service needs an accurate data base. We need your help in order to learn more about you and your trip.

This diary is designed to be completed as you float down the river. It is important to fill it out as you go along, because it will be hard to recollect all the information at the end. You need to write something down every time you stop and every time you see another party. We have divided the river into sections so we can keep track of the areas you use. A small map is attached delineating these sections, and you have been given a larger, more detailed recreation map. Please be as accurate as you can.

INSTRUCTIONS

TRIP SCHEDULE: Here we'd like you to record the places you stop and for what reason.

Location: Note the place name, if known. If unknown, put in zone number from map.

Arrive and Leave: Put in AM if you arrive or leave in the morning, and PM if you arrive or leave in the afternoon. Also, put in the day of the trip (e.g. enter "2" if it's the second day of your trip).

Stop For: Note the reason you stopped here. The following code should help:

R = Scout Rapids	A = Attraction Site
L = Lunch	H = Hike
C = Camp	S = Swim
W = Get Drinking Water	

DAILY CONTACT LOG: Here we'd like you to record each contact you have with another river party. If you see the same party more than once, and if there is more than 5 minutes between sightings, count each sighting as a separate contact. Any sighting counts as a contact.

Day: The day of your trip. Record as before.

Zone: Refer to the map and note the proper zone. If you're not sure, note some prominent features and make your "best guess." The researchers at the end of the trip will help you figure it out.

Time of Day: Enter AM or PM as before.

Empty Boats: Check this column only if the contact consists of empty boats with no people in sight.

Type of Contact: Enter one of the following:

- 1 = you and other party both on river
- 2 = your party on river, other party on shore
- 3 = your party on shore, other party on river
- 4 = you and other party both on shore

Adjustments: Please make a slash in this space each time you make a major change of plans because another party was (1) at your preferred campsite, (2) at an attraction site where you wished to stop, or (3) just "in your way."

ATTRACTION SITE LOG: Fill this out whenever you stop at a site, whether or not you see other people there. Sites include things like side canyons, waterfalls, etc.; a stop means your boats were landed and people got out. Contacts under this category mean that both parties (yours and the one contacted) stopped at the same place. ALL other contacts count as river contacts.

Site Name: If known; if unknown, describe the site and put in zone number.

Day of Trip: List as before (day 1, 2, etc.)

Number of People: The number of people stopped at the site other than your own party; if no one is there, enter "0."

CAMPSITE LOG: Note the pertinent information for each night you are camped on the river.

Location: Name of campsite, if known; otherwise, describe the camp and list the zone number.

Proximity to other parties: Enter one of the following:

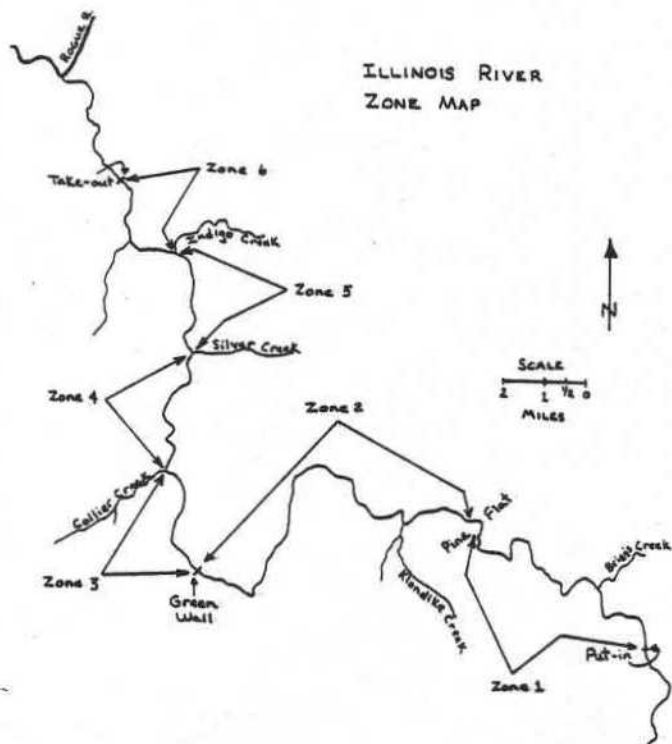
- 1 = see or hear other party
- 2 = see and hear other party
- 3 = right next to other party
- 4 = camped alone

If you can see smoke only, record as (4).

Was this an alternate camp? 1 = Yes, 2 = No.

Enter (1) if this camp was an alternate because the preferred camp was being used. This would also be counted as an "Adjustment."

So there it is - that's all there is to it. It may look complicated, but once you're on the river, you'll see that it is easy to record the information and still enjoy the river. At the end of your trip, another OSU researcher will get the diary from you and give you your "reward." Thanks for your cooperation.



ZONE DESCRIPTIONS

- Zone 1:** Put-in to Pine Flat (7 miles)
 Pine Flat: Wide, open area. Right shore has large grey boulders, left has a flat, grassy bench above river level. River is divided; most water goes into an obvious chute on the right with reversal at the bottom.
- Zone 2:** Pine Flat to Green Wall (7 miles)
 Green Wall: High, vertical rock wall on right, large boulder bar on left; largest and most difficult rapid on river.
- Zone 3:** Green Wall to Collier Creek (3 miles)
 Collier Creek: 1st major creek on left after the series of rapids which follows Green Wall. Flows from deep, V-shaped canyon cut to river level. River canyon opens up and rock changes from dark to light color.
- Zone 4:** Collier Creek to Silver Creek (4 miles)
 Silver Creek: Major stream on right flowing from deep, V-shaped canyon cut to river level. Foot bridge across creek is visible from river.
- Zone 5:** Silver Creek to Indigo Creek (4 miles)
 Indigo Creek: Next major stream on right after Silver Creek; also flows from deep, V-shaped canyon cut to river level, no foot bridge.
- Zone 6:** Indigo Creek to Take-out at Oak Flat road-end (3 miles)

TRIP SCHEDULE

LOCATION	Arrive		Leave		STOP FOR
	TIME	DAY	TIME	DAY	

DAILY CONTACT LOG

CONTACT	1	2	3	4	5	6	7	8	9
DAY									
ZONE									
TIME OF DAY									
EMPTY BOATS?									
TYPE OF CONTACT									

ADJUSTMENTS

ATTRACTION SITE LOG

SITE #	1	2	3	4
SITE NAME				
DAY OF TRIP				
# OF PEOPLE				

CAMPSITE LOG

SITE #	1	2	3
LOCATION			
PROXIMITY (1) See or Hear (2) See and Hear (3) Right Next To (4) Camped Alone			
ALTERNATE CAMP? (1) Yes (2) No			

APPENDIX B
INTERVIEW FORM

YOUR TRIP ON THE ILLINOIS

Overall, how would you rate your trip?

- _____ Poor
- _____ Fair, it just didn't work out very well
- _____ Good, but I wish a number of things could have been different
- _____ Very good, but could have been better
- _____ Excellent, only minor problems
- _____ Perfect

In general, what was the weather like?

- 0 Terrible
 - 2% Generally bad
 - 24% Some bad, some good
 - 31% Generally good
 - 43% Great
- N = 255

How well did the people in your group get along with each other?

- 2% We had some real problems
 - 2% The group was indifferent, neither good nor bad
 - 22% We got along pretty well
 - 74% We got along extremely well
- N = 253

Did you feel the river was crowded?

- | | | | | | | | | |
|---------------|---|---------------------|---|---|-----------------------|---|----------------------|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| not at
all | | slightly
crowded | | | moderately
crowded | | extremely
crowded | |

When you made plans for this trip on the Illinois, how far in advance did you decide to go?
Please fill in the appropriate numbers. $\bar{x} = 9.8$ weeks

_____ months _____ weeks _____ days

The way people plan a trip depends partially on how far they live from the river. About how many miles is the Illinois from your permanent address? _____ miles

$\bar{x} = 288$

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?

- 28% no
 - 12% yes
 - 13% it really didn't matter
 - 46% I didn't expect crowds on the Illinois
- N = 251

Before you went on this trip, about how many times each day did you expect to see other river parties?

- I expected to see other parties about _____ times per day $\bar{x} = 0.9$
 - 38% I didn't know what to expect
- N = 253

During your trip, about how many times each day did you actually see another river party? If you saw the same party more than once, count each occasion separately.

We actually saw other parties about _____ times per day

PLEASE COMPLETE BOTH SIDES!

How does the number of parties you actually saw compare with the number you expected to see?

- 15% We saw quite a few less than I expected
 - 12% A few less
 - 30% About the same
 - 15% A few more
 - 8% We saw quite a few more than I expected
 - 20% I didn't know what to expect
- N = 246

70 RESPONDING:

If you saw more people than you expected, did you:

	no	yes	N
- become unhappy or dissatisfied with the trip?	85	15	92
- change the way you thought about the Illinois, deciding it was less remote than you had believed?	69	31	83
- decide to go somewhere more remote next time?	95	5	75
- attempt to avoid others by:			
- speeding up or slowing down?	69	31	77
- getting off the river to allow people to pass?	79	21	71
- passing up places at which you'd planned to stop?	84	16	74
- changing your campsite?	70	30	74

___ Not applicable; didn't see more than I expected

In general, how did you feel about seeing other river parties?

- 12% Enjoyed it a great deal
 - 15% Enjoyed it somewhat
 - 44% Made no difference to me either way
 - 22% It bothered me some
 - 7% It bothered me a great deal
- N = 199

How many times each day would you prefer to see other parties? ___ times per day

$\bar{x} = 0.9$

We are interested in how you feel about encounters with other groups on the Illinois. For each question, indicate the highest number of encounters you would tolerate before the experience became unpleasant.

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 5-10 people (outside your own group) at these places.
 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 others as many as ___ out of 3 nights
 ___ Makes no difference to me

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

So that we can send you a follow-up questionnaire, we need your name and address. This information will be kept confidential.

Name: _____

Street Address: _____

City, State, Zip: _____

APPENDIX C
FOLLOW-UP QUESTIONNAIRE

ILLINOIS RIVER USER SURVEY

At present, the Illinois is a little known and little used river. But many rivers have had use increases in recent years, and some have become crowded and over-used. To help protect the unique aspects of the "Illinois River experience," we need to know 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 responses. 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 or 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.

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

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	N
Backpacking	16%	33%	45%	6%	187
Hiking	7%	9%	48%	36%	189
Camping	2%	6%	55%	37%	188
Mountain Climbing	40%	35%	20%	4%	183
River Tripping	1%	15%	32%	52%	188

What is your river-running experience?

$\bar{x} = 2.9$ total number of float trips on the Illinois (including this year)
 $\bar{x} = 3.9$ total number of other whitewater river trips

How many times did you float the Illinois during the 1979 season?
 _____ times $\bar{x} = 1.3$

How many years ago did you start going on whitewater river trips?
 _____ years ago $\bar{x} = 6.8$ $N = 187$ 5% this was my first trip

With which size trip would you rather run the river?
23% small (5 people or less) 4% large (13-20 people)
69% medium (6-12 people) 4% makes no difference
 $N = 179$

For some people, running rivers is one of the most important things in their lives. For 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.

6% If I couldn't go river-running, I would soon find something else I enjoyed just as much.

18% 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.

44% If I couldn't go river-running, I would miss it more than almost any other interest I have.

32% 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.

$N = 185$

In the next section, we're interested in your experience on other rivers and how you would compare those rivers. Listed below are three major western rivers popular among Northwest river runners. Please answer the following questions for any that you have run. If you haven't run any of these rivers, place a check here _____ and go on to the next (Rogue River) section.

60% (108) HAVE RUN ONE OF THESE RIVERS.

	Colorado in Grand Canyon	Snake in Hells Canyon	Middle Fork Salmon
Have you run any of these rivers? Check those you <u>have</u> run.	<u>54%</u> N=58	<u>44%</u> N=46	<u>80%</u> N=86
Of the rivers you have run, are there any you now run less frequently? Check those you now run <u>less</u> frequently.	<u>59%</u>	<u>60%</u>	<u>48%</u>
For the rivers you run less frequently, we would like to know why you run them less frequently. Check <u>all</u> the reasons that apply to each river.			
-- too far to go	<u>32%</u>	<u>25%</u>	<u>26%</u>
-- too costly	<u>19%</u>	<u>6%</u>	<u>12%</u>
-- difficult to reach access points	<u>9%</u>	<u>4%</u>	<u>5%</u>
-- long shuffle	<u>15%</u>	<u>15%</u>	<u>11%</u>
-- too hard to get a permit	<u>59%</u>	<u>21%</u>	<u>40%</u>
-- too many people	<u>20%</u>	<u>25%</u>	<u>13%</u>
-- use of motors on the river	<u>22%</u>	<u>31%</u>	<u>2%</u>
-- mandatory scheduling of campsites	<u>3%</u>	<u>2%</u>	<u>6%</u>
-- too much competition for campsites	<u>5%</u>	<u>6%</u>	<u>6%</u>
-- environment damaged by overuse	<u>5%</u>	<u>10%</u>	<u>6%</u>
-- poor weather during running season	<u>2%</u>	<u>0</u>	<u>2%</u>
-- below my skill level	<u>0</u>	<u>23%</u>	<u>0</u>
-- above my skill level	<u>5%</u>	<u>0</u>	<u>0</u>
-- it was a once in a lifetime trip	<u>10%</u>	<u>9%</u>	<u>7%</u>
-- other (please specify)	<u>7%</u>	<u>11%</u>	<u>8%</u>

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.

	Generally Decreases Satisfaction	Slightly Decreases Satisfaction	No Effect on Satisfaction	Slightly Increases Satisfaction	Greatly Increases Satisfaction	<u>N</u>
Being in a beautiful area.	0	0	0	5%	95%	189
Seeing wildlife.	0	0	3%	20%	77%	189
Being with the people in your own group.	1%	1%	8%	26%	65%	188
Seeing people outside your own group.	23%	43%	22%	10%	3%	185
Using your river-running skills.	0	0	2%	14%	84%	189
Running rapids.	0	0	0	10%	90%	189
Being in a backcountry area.	0	0	2%	12%	86%	188

Indicate the degree to which you agree that each of the following environmental damage conditions exist at the Illinois River.

	Strongly Disagree	Probably Disagree	Neutral	Probably Agree	Strongly Agree	<u>N</u>
Excessive litter	58%	22%	11%	5%	4%	187
Trampling of natural vegetation	57%	23%	11%	7%	2%	188
Overuse of campsites	45%	23%	19%	12%	2%	188
Overuse of attraction sites	48%	21%	21%	10%	1%	188

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

Would you take a trip on a different river?

no

yes

4%

96%

N=185

What other river(s) would provide an experience similar to the "Illinois River experience?"

_____ for me there is no substitute

If it was not possible to run the Illinois, would you become involved in some other activity?

no

yes

28%

72%

N=180

What activities besides river running would be realistic substitutes for a trip on the Illinois?

_____ for me there is no substitute

What is the most important reason the Illinois would become undesirable for you?

In the next section, we're interested in your experience on other rivers and how you would compare those rivers. Listed below are three major western rivers popular among Northwest river runners. Please answer the following questions for any that you have run. If you haven't run any of these rivers, place a check here _____ and go on to the next (Rogue River) section.

	Colorado in Grand Canyon	Snake in Hells Canyon	Middle Fork Salmon
Have you run any of these rivers? Check those you have run.	_____	_____	_____
Of the rivers you have run, are there any you now run less frequently? Check those you now run <u>less</u> frequently.	_____	_____	_____
For the rivers you run less frequently, we would like to know why you run them less frequently. Check <u>all</u> the reasons that apply to each river.			
-- too far to go	_____	_____	_____
-- too costly	_____	_____	_____
-- difficult to reach access points	_____	_____	_____
-- long shuffle	_____	_____	_____
-- too hard to get a permit	_____	_____	_____
-- too many people	_____	_____	_____
-- use of motors on the river	_____	_____	_____
-- mandatory scheduling of campsites	_____	_____	_____
-- too much competition for campsites	_____	_____	_____
-- environment damaged by overuse	_____	_____	_____
-- poor weather during running season	_____	_____	_____
-- below my skill level	_____	_____	_____
-- above my skill level	_____	_____	_____
-- it was a once in a lifetime trip	_____	_____	_____
-- other (please specify)	_____	_____	_____
_____	_____	_____	_____

If you continue to run the Rogue in spite of the problems you have checked above, how have you solved or "gotten around" those problems?

The following section asks some questions which are similar to those you answered right after your trip. We are asking you to think of the "Illinois 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 Illinois should be. We hate to ask you these questions so many times, but the information is important.

- I. Imagine the Illinois as a place offering solitude, generally unaffected by the presence of man. If the Illinois were this kind of area, which of the following encounter levels would be appropriate? Indicate the highest level tolerable for this kind of 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.

Number of nights spent camping within sight of another party.

OK to be near others as many as _____ out of 3 nights.
_____ makes no difference to me.

- II. Now imagine the Illinois as the kind of place where complete solitude is not expected. In this case, which encounter levels would be appropriate? Indicate the highest level tolerable for this kind of 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.

Number of nights spent camping within sight of another party.
OK to be near others as many as _____ out of 3 nights.
_____ makes no difference to me.

III. Now imagine the Illinois as 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 highest level tolerable for this kind of 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.

Number of nights spent camping within sight of another party.

OK to be near others as many as _____ out of 3 nights.
_____ makes no difference to me.

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

- I. Generally unaffected by the presence of man.
- II. Complete solitude is not expected.
- III. Meeting other people is part of the experience.

Of the three kinds of experiences, which do you think the Illinois River trip should provide? (Circle one.)

- I. Generally unaffected by the presence of man.
- II. Complete solitude is not expected.
- III. Meeting other people is part of the experience.

The opportunity to run a river and see very few other people sometimes involves trade-offs. Would you be willing to do any of the following in order to be assured of getting the kind of experience you think the Illinois should provide?

- | | | |
|--|----|-----|
| Take the trip during mid-week rather than on a weekend. | no | yes |
| Take the trip earlier in the season when the weather is less likely to be good. | no | yes |
| Schedule your departure time for morning or afternoon. | no | yes |
| Have less chance to get a permit for a weekend day, knowing that when you get a permit there would be fewer people on the river. | no | yes |

Combine your group with another group, agreeing to travel and camp together. no yes

Other (please specify) _____

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.) _____

What is your primary occupation? Please be as specific as possible. If retired, give former occupation; if dependent on parent, please give parent's occupation.

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

_____ \$0 - 3,999	_____ \$28,000 - 31,999
_____ \$4,000 - 7,999	_____ \$32,000 - 35,999
_____ \$8,000 - 11,999	_____ \$36,000 - 39,999
_____ \$12,000 - 15,999	_____ \$40,000 - 43,999
_____ \$16,000 - 19,999	_____ \$44,000 - 47,999
_____ \$20,000 - 23,999	_____ More than \$48,000
_____ \$24,000 - 27,999	

Are you: _____ single
_____ married
_____ separated, divorced, widowed

How many children do you have? _____

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

How many weeks of vacation do you have each year? _____ weeks

How far in advance does your job permit you to plan your vacation?
_____ months _____ weeks _____ days

Where did you first hear about running the Illinois River?

_____ from a friend or acquaintance
_____ from the U.S. Forest Service
_____ from a brochure published by a river outfitter
_____ from a book
_____ from a magazine or newspaper
_____ from the radio or television
_____ other (please specify) _____

Future years may bring changes in the way the Illinois 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. To do this we would like to have your permanent address and the address of a relative or close friend who would be likely to know your address at what time.

Your name _____

Street _____

City, State, Zip _____

Close friend or relative's name _____

Street _____

City, State, Zip _____

We hope you found this questionnaire interesting. Thank you for your help and cooperation.

APPENDIX D

SATISFACTION AND PERCEIVED CROWDING AS EVALUATION CRITERIA

Other evaluative criteria that have been used in past studies to determine social capacity are perceived crowding and satisfaction. However, Shelby and Heberlein (in preparation) have shown that the utility of using either of these as an evaluative criterion is seriously limited. Their ideas and data from this study are summarized below to show why these two variables are not good evaluative criteria.

Satisfaction

During the interview, users were asked, "Overall, how would you rate your trip?" Possible responses ranged from "poor" to "perfect" on a 6-point scale. Results are shown in Table D1. Nearly all respondents (93%) rated their trips as either "excellent" or "perfect;" 6% rated their trip as "very good," and about 1% rated their trip as "fair" or "good." No one rated their trip as "poor."

Satisfaction as an evaluative criterion comes from an economic "production function" relating use levels to satisfaction. In this model, the implicit evaluative criterion is the point of maximum benefits. However, in the studies cited by Shelby and Heberlein, there is little or no correlation between satisfaction and use levels. This is also the case with the Illinois, where the bivariate correlation between satisfaction and use levels is only $-.14$ ($p < .05$). Hence, aggregate satisfaction goes up as use increases and the optimal point of maximum net benefits cannot be specified. The satisfaction concept is too general, and as a result it is a poor indicator of user reactions to specific management decisions.

People are equally satisfied at both high and low use levels. Does this mean that managers should forget about carrying capacity? No, it does not. Managers of recreation resources are generally committed to providing opportunities for certain kinds of experiences; recreationists are then free to choose what they want. The goal of management is not to increase satisfaction per se, but rather to provide a satisfactory experience of a certain type. Increased facilities such as flush toilets and showers might increase satisfaction on the Illinois, but they would greatly change the wilderness character of river experiences, and as a result they would be out of place. Focusing on satisfaction alone blinds us to these issues, and it probably leads to a systematic elimination of opportunities for low contact experiences.

Perceived Crowding

Users were also asked during the interview whether they felt the river was crowded. Responses on a 9-point scale ranged from "not at all" to "extremely" crowded. Table D2 shows the results from this question. Nearly 75% of the respondents felt the river was "not at all" crowded, and another 19% felt the river was only "slightly" crowded. In addition, 5% said the river was "moderately"

crowded, and only 2% said it was "extremely" crowded.

One way in which perceived crowding can be developed into an evaluative criterion for establishing capacities is through determination of inflection or "break" points. This requires a non-linear function relating between use or encounter levels to perceived crowding. For the Illinois this relationship is shown in Figure D1, where the percent of the respondents who reported feeling crowded (includes slightly, moderately, and extremely) is plotted against diary contacts per day. It can be seen that there appears to be a steady, linear relationship between these two variables. What at first appears to be a dramatic break point should be interpreted with caution because there were only 5 individuals who experienced 2.5 - 3.4 diary contacts per day, and each felt crowded to some extent.

The lack of a well defined break point lessens the utility of using perceived crowding as an evaluative criterion. Shelby and Heberlein show examples of studies where there appears to be a break point and other studies where there is not. Clearly, the Illinois falls into the latter category. The lack of consistent findings, then, makes it difficult to feel confident about applying this method to determine capacity.

Shelby and Heberlein cite two other major problems that make perceived crowding undesirable as an evaluative criterion. First, there is no shared agreement about the evaluative standard. At present, there is no point where one can say "this much crowding produces optimal user benefits." Even with such a standard, low correlations of use levels with crowding and crowding with satisfaction would make this approach problematic.

Second, perceived crowding is related to a number of social psychological factors. In most cases, these factors have a greater impact than use levels or encounters, so the evaluative criterion depends primarily on factors beyond the control of management. Although perceived crowding is more germane to the issue of carrying capacity, and appears to be more helpful than satisfaction, it is less useful than the specific encounter standards discussed in the main text of this report.

Table D1
Trip Ratings

Overall, how would you rate your trip?

Poor	0
Fair, it just didn't work out very well	1% (2)
Good, but I wish a number of things could have been better	1% (3)
Very good, but could have been better	6% (15)
Excellent, only minor problems	53% (134)
Perfect	40% (101)

Table D2
Crowding Perceptions

Did you feel the river was crowded?

Not at all	74% (188)
Slightly crowded	19% (49)
Moderately crowded	5% (13)
Extremely crowded	2% (4)

Figure D1

Break Point of Perceived Crowding
as an Evaluative Criterion

