

AN ASSESSMENT OF THE FLOAT-TRIP CARRYING CAPACITY
OF THE
NEW RIVER GORGE NATIONAL RIVER

FINAL REPORT PREPARED FOR THE
NEW RIVER GORGE NATIONAL RIVER
NATIONAL PARK SERVICE

BY

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INTRODUCTION

The New River Gorge National River, an approximately 50 mile segment of river between Hinton and Fayetteville, West Virginia, was established as a unit of the National Park System by an Act of Congress (Public Law 95-625) in 1978. The law called for conserving the outstanding natural, scenic, and historic values and objects in and around the New River Gorge, interpreting the resources for the visiting public, and preserving the free-flowing river for the benefit and enjoyment of present and future generations. In addition, the law called upon the National Park Service to develop a general management plan which specified (1) measures to be taken to preserve the area resources, (2) the types and amount of proposed development to foster public use and enjoyment, (3) the visitor carrying capacity of the area and a strategy for its implementation, and (4) recommendations for potential modifications of the external boundaries of the unit.

Because most recreational use of the New River Gorge is concentrated on the river, the National Park Service considers the establishment of a river recreation carrying capacity the highest priority. Recreational use of the New River for float trip use and for fishing has apparently increased dramatically in recent years. The first commercial Whitewater river outfitter was established on the New River in 1969. The number has now reached 21. The National Park Service estimates that use of the lower 15 mile stretch of the river, a stretch that contains about 20 major rapids and some of the best Whitewater in the East, exceeded 83,000 people in 1982. One day use occasionally exceeded 1200 persons. The stretch of river upstream from the lower gorge receives much lighter boating use, but fishing is concentrated there. Over 17,000 anglers fished the upper 12.5 mile river stretch between Hinton Bridge and Meadow Creek in 1980 (Pierce et al. 1981). River recreation use is projected to increase in the future.

Recreational use of the New River is also characterized by much diversity in type and time of use. The major user groups are commercial whitewater rafters, private boaters (kayakers, rafters, and canoeists), and fishermen (boat and shore). About 92% of all boating use is commercial (NPS New River Gorge Use Study, 1982). Most commercial use occurs on 6 to 10 man rafts, but some smaller boats and some 11 and 12 person boats can be found. Trip size also varies. Four to six boats per trip are most common, but some commercial trips have as few as one or two boats, while others have seven or more. Rafts account for only about 18% of all private boats in the Lower Gorge. One-man kayaks comprise another 76%, and canoes make up the remaining 6%. Canoes are much more common among private boaters upstream from the Lower Gorge. There 40% of all boats are canoes, 46% are kayaks, and 12% are rafts. Fishing data are available for only the Hinton Bridge to Meadow Creek zone. There 29% of all anglers fished from a boat; 71% were shore fishermen.

Virtually all river use occurs in the months of April through September, and about 72% of the boating use takes place in the Memorial Day to Labor Day summer season. Of the remaining use, about 20% occurs before Memorial Day and 8% after Labor Day (NPS New River Gorge Use Study, 1982). Average weekend and holiday boating use in the Gorge is 101.5 persons per day; weekday use is 193 persons per day. Average weekend use upstream from the Gorge was 45 persons per day; weekday use averaged 18 people. Virtually all river trips are day use only; preliminary data from a U.S. Forest Service study indicate that only 2.5% of all trips were multi-day ventures (USFS National River Recreation Study, 1980). Finally most trips are concentrated during the middle of the day, with most boats launching during mid-morning and leaving the river mid to late afternoon.

The land along the New River is virtually all in private ownership with no National Park Service public use facilities on the river. Access to the river is by numerous privately owned sites, and egress from the river is by a few private sites. As use levels have increased, competition for river access has become a major issue. There have also been some complaints about crowding, waiting in line to pass through river rapids, and a lack of visitor facilities and services. Finally, there is some evidence of conflict between user groups (USDA Forest Service, 1980). For example, fewer private than commercial boaters perceive the river to be in good condition, and far more private boaters feel more controls are necessary to prevent river conflicts.

In the past the National Park Service has not played a major role in managing the New River for recreational use. However, the agency has become increasingly concerned that continued growth in river use along with an absence of river management may result in a significant loss in the quality of national park experiences on the river. Given this, the agency has recently completed a General Management Plan for the park, and plans to eventually develop a more detailed River Management Plan. The River Management Plan would among other things address the appropriate amount and type of use on the New River, and identify means to guide overall use or distribution of use toward or within some optimal or acceptable level.

PROBLEM STATEMENT

The problem is that the National Park Service currently lacks information on what is an acceptable or optimal amount, type and distribution of river use. Stated another way, the National Park Service lacks information on what is the carrying capacity of the New River for float trip use. Secondly, more information is needed on how best to manage use, if that is deemed necessary. It may be

that some limits on use will have to be implemented. However, since direct regulations violate the intrinsic nature of recreational experiences and should be avoided if at all possible (Lucas 1982), it may be that management goals can be attained through such more light-handed techniques as providing new and improved facilities or services, gaining increased cooperation from river outfitters, dispersing use through time or space, lowering impacts of each river user group, or providing prospective users with better information of the nature the river experiences offered.

The carrying capacity of an area for recreational use is the amount, type, and distribution of use that, can occur without unacceptable change in the nature or quality of the resource or the recreational experience. Four types of recreational capacity are typically recognized: physical, ecological, facilities, and social, The physical capacity of the New River for recreational boating is the number of boats that could, safely float the river at any one time. It would be determined largely by the size, depth, configuration, and flow patterns of the river. Ecological capacity refers to ecosystem parameters. For example, too much boater use might result in an unacceptable drop in water quality, destruction of vegetation at popular river bank attractions or lunch stops, or erosion at put-in or take-out points. Facilities capacity refers to structures or developments that control access to and use of the river. The number and quality of roads, size of parking lots and size and number of put-in and take-out areas are examples of facility parameters. Social carrying capacity refers to the nature of the experiences that boaters receive from the river trip, Social capacity is exceeded when the amount or nature of interactions among visitors is such that the nature of the experience is changed in an unacceptable manner. In most analysis of social carrying capacity, the key variables are contacts and conflicts among recreationists. Sometimes, however, resource or facility damage from heavy use can cause an unacceptable change in

the recreation experience.

Social carrying capacity is generally considered to be the most limiting type in scenic, wild, and wilderness river settings, and the National Park Service believes it is on the New River. The problem is that the National Park Service lacks information on river recreationists' preferred experiences, their perceptions of crowding, conflicts, and impacts, and their preferences for facilities, services, and management strategies.

STUDY OBJECTIVES

The overall goal of this study is to provide an assessment of the social carrying capacity of the New River Gorge National River for national park experiences. Specific task objectives are as follows:

- 1) to describe and evaluate river user experience preferences and trip expectations;
- 2) to identify the existence and sources of conflicts among recreationists and to evaluate methods for reducing or eliminating them;
- 3) to describe river user perceptions of resource damage on the river;
- 4) to describe and evaluate river user satisfaction;
- 5) to describe river user preferences for potential management actions and facilities; and
- 6) to evaluate and recommend a strategy for identifying acceptable amounts and types of river use, and to suggest guidelines for managing use within capacity.

CARRYING CAPACITY THEORY

Background

Carrying capacity is a fundamental and long standing concept in resource management. At its most fundamental level it refers to limits on use of an area set by various natural resistance factors. Beyond this natural limit, no increase in the dependent population can be sustained over time (Odum 1959).

Recreation managers, particularly those with legal and policy mandates to use but at the same time preserve parklands, have both endorsed and extended the concept. Considerable efforts have been made to not only identify the impact of recreation use on the physical-biological environment but also on the quality of recreational experiences (see Stankey and Lime 1973 for an annotated bibliography of recreation and wilderness carrying capacity research). Much of the initial work on recreation carrying capacity sought to identify a number, an amount of use, which would be a unit of land's recreation capacity. If that number could be determined then the management task would be made much easier (Wagar 1968).

The carrying capacity concept is however exceedingly complex, and several problems have surfaced in its application to recreation resource management (Hendee et al, 1978). For example, relationships between amount of recreation use and physical or biological impacts are often weak. Type, time or location of recreation use may be more important than total use (Lucas, 1964, LaPage 1967, Stankey 1973, and Lime 1975). Studies with significant correlations between use and impacts tend to show high impacts at very low use levels (Merriam et al. 1973, Cole 1982). Thus if a manager were to permit little or no resource change, he would have to restrict use at extremely low levels (Wagar 1968). Finally, the manager must decide on how much change is acceptable, and ultimately this is a judgment that the manager must make (Hendee et al. 1978).

Social carrying capacity potentially has similar problems in application. What is a quality recreation experience for one river user may not be for another. For example, one boater may seek solitude, but another may seek companionship with a group of friends. The social carrying capacity of the river to provide these two experiences likely differs. Also, many variables

likely affect whether or not an individual receives his preferred experience. For example, pretrip expectations, number of people/boat, number of boats per trip, and number, type and location, of contacts with other trips on the river all may influence whether or not a boater finds solitude on the river. If the variables that most influence solitude are identified, then managers must be able to manipulate those variables if they are to manage for this experience. For example, if number of contacts between boaters is the key variable, then managers must be able to manipulate such parameters as number of boats launched per unit of time, time of launch, or travel patterns down the river. Finally, for the carrying capacity concept to be useful, managers must somehow decide what experience or experiences are to be provided on the river, and how much change from the ideal situation is acceptable.

Because of these complexities, the carrying capacity concept has been considered non-operational by some (e.g. see Wagar 1974 and Bury 1976). Others, most notably Hendee et al (1978) and Shelby and Heberlein (in press) believe that the concept within certain limits can be a useful framework for balancing use with its associated impacts. Hendee et al (1978) list four caveats that must be kept in mind when applying the carrying capacity concept: 1) carrying capacity is ultimately a judgmental concept; 2) carrying capacity needs clear management objectives; 3) when making carrying capacity decisions, the range of viable alternative opportunities must be taken into account; and 4) carrying capacity is a probabilistic concept, not an absolute measure. Shelby and Heberlein recognize these limitations, but believe that the visitor carrying capacity concept can be made operational, so long as the proper theoretical approach is taken and that the right questions are asked.

The Shelby-Heberlein Model

The Shelby-Heberlein (in press) conceptual approach to carrying capacity assessment was selected for application in this study. It extends previous

river carrying capacity research based on expectations and satisfactions. This framework was chosen because it has a solid foundation in sociological theory, i.e. Jackson's (1965) analysis of the structural characteristics of social norms. The model rests on and incorporates the important elements of early theoretical discussion and empirical work on recreation carrying capacity (e.g. Lime and Stankey 1971, 1974; Frissel and Stankey 1972; Stankey 1973; Lucas 1964; Wagar 1974; Lucas and Stankey 1974) and deals primarily with the social component of carrying capacity. It was developed, extensively tested, and found to provide useful managerial direction in river recreation settings (e.g. Shelby 1976, 1981; Heberlein and Vaske 1977), and represents an analysis and integration of the most recent thought and research regarding recreation carrying capacity (e.g. Heberlein 1977, Roggenbuck and Schreyer 1977, Schreyer and Roggenbuck 1978, Hendee et al. 1978).

Shelby and Heberlein (in press) define carrying capacity as the level of use beyond which impacts exceed acceptable levels specified by evaluative standards, Social carrying capacity is the level, of use beyond which experience parameters exceed acceptable levels specified by evaluative standards. This definition suggests that social carrying capacity has two major components: a descriptive component and an evaluative component. The descriptive component is objective, can be measured, and includes both management and impact parameters. Management parameters are factors which can be directly manipulated by managers. These include variables such as amount, time, type, and location of river use. Impact parameters are what happens to the experiences of the visitors or the environment as a result of use level or other management parameters. The first step in setting social carrying capacity is to establish the relationship between management and impact parameters to see if and how use level and other management parameters affect the quality or character of the recreation experience.

The evaluative component goes beyond the description of resource or experience impacts, and addresses the question of how much impact is too much. Two decisions must be made in answering this question. The first is a value judgment on what kind of experience is to be provided. Such a value judgement lies at the heart of all carrying capacity decisions, must be made by the resource manager, and is made easier when legislation or policy clearly states values to be gained from the resource or when there is a consensus among managers and users about appropriate experiences. The values to be gained from use of the resource should be stated in the management objectives for the area, and might be described in terms of the experiences to be provided (e.g. wilderness, scenic, social recreation). Public input can help the manager to make this value judgment.

The second evaluative judgement which must be made is to select an evaluative standard for the resource or the experience to be provided. The evaluative standard determines the level of the impact parameter that is tolerable (the maximum) or most desirable (the optimum). For example, a river management objective may state that solitude is to be provided on the river, but an evaluative standard is needed to identify the appropriate number of encounters to attain that experience. Again the manager must make this value judgment, but user opinions can help make the decision, particularly when a consensus exists among the user population.

Shelby and Heberlein (in press) summarize the theoretical discussion of their model by stating the following three conditions necessary for the establishment of social carrying capacity:

Rule 1: There must be a known relationship between use level or other management parameter and the experience parameter.

Rule 2: There must be agreement among relevant groups about the type of recreation experience to be provided.

Rule 3: There must be agreement among the relevant groups about the appropriate levels of the experience parameter.

Operationalizing the Shelby-Heberlein Model

Management and Impact Parameters

Shelby and Heberlein have commonly measured the following management parameters when determining social carrying capacity: amount, time, type, and location of river use.

Both experience and resource impact variables are included in assessments of social carrying capacity. The primary measure of experience impacts is respondent reports of encounters with another group. Depending on the situation, number, type, location, and duration of encounters have been measured. Measures of user perception, of the amount, kind, and extent of resource impacts are also commonly included in social carrying capacity studies. Resource impacts frequently considered are litter, vegetation destruction, soil compaction and erosion, and human wastes at river access points, river lunch stops or campsites, or along the river.

Evaluative Component

Preferred Experiences

Because the "right" number of encounters or impacts depends upon people's ideas of the kinds of experiences to be provided, Shelby and Heberlein (in press) have asked river users to think of their river as providing a variety of different experiences. In doing this they have attempted to offer possibilities which were both realistic (managers could manage for that experience) and different (different amounts and kinds of encounters or impacts would be acceptable). In the case of the Colorado River in the Grand Canyon, they asked river users to

imagine the river as a wilderness experience, then a semi-wilderness experience, and finally an undeveloped recreation experience. For each experience, respondents indicated appropriate encounter levels. They then indicated what experience they felt the river was currently providing, and which they thought it should be providing.

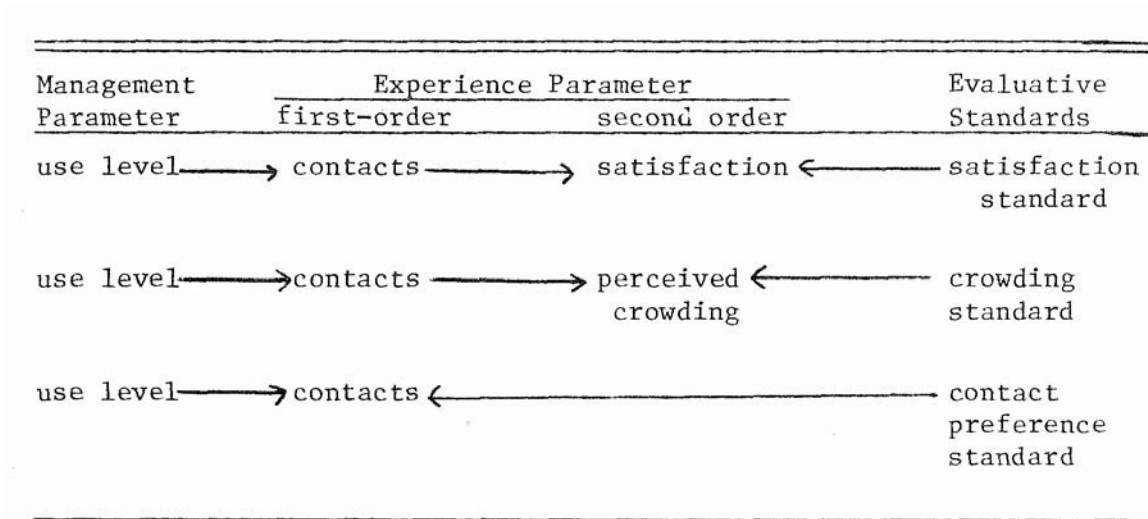
Evaluative Standards

Three different approaches have been used to develop evaluative standards, i.e. to determine how much use or impact is acceptable for a given river recreation experience. The three approaches, satisfaction, perceived crowding, and contact preference standards, vary in their theoretical underpinings, how directly they tap norms about impacts, the richness of information provided, and their apparent managerial utility.

Satisfaction is based upon an economic model, and looks for second-order effects of contact on satisfaction (See Figure 1).

Figure 1

Comparing the Directness of Evaluative Approaches*



*Taken from Shelby and Heberlein (in press),

When using this approach to carrying capacity judgments, the researcher or manager must know use levels, contact levels, and satisfaction levels, and there must be a relationship among all three. Evaluative standards are then applied to satisfaction. But considerable research shows that use levels and contacts don't have much effect on satisfaction (e.g. see Shelby and Heberlein, in press). This is likely due to self selection (recreationists select river settings and experiences they will enjoy), product shifts (if users don't find solitude on the river, they can value some other facet of the experience more highly), displacement (dissatisfied users leave the river), multiple sources of satisfaction (the river experience is varied, and one component of the experience may make up for deficiencies of another), and rationalizing (it is difficult to admit to a bad time, especially when leisure time and dollars have been expended).

Perceived crowding as a psychological concept appears more promising than satisfaction, but also requires a second-order effect of contacts on perception of crowding (Figure 1). There is some evidence for a relationship between contact level and perceived crowding, but most people on rivers have said they felt "not at all crowded," even when the river was selected for study because of its high use. Expectations and the personal psychological standards that people bring with them to the river seem more important than the actual number of groups *net* on the river in explaining perception of crowding.

The final approach, the contact preference standard, is a more sociological and direct approach to developing evaluative standards about use, and appears more useful (Figure. 1). Basically, this approach is to simply ask river users how many is too many. It rests on the assumption that river recreationists have shared beliefs - or norms - about the appropriate number and type of encounters for a particular setting or experience. They likely also have norms about

appropriate levels of other impacts. Social norms are used to regulate and evaluate behavior. Some norms are formalized as rules, but most in wildland recreation settings are informal and must be determined through research. Shelby and Heberlein (in press) have found that by simply asking the right questions, river recreationists are willing and able to tell how many and what kind of contacts are appropriate. In addition, they have found considerable consensus in user opinions.

Application of the Shelby-Heberlein Model to the
New River Gorge National River

Shelby and Heberlein developed their carrying capacity framework through research on western rivers and have additionally tested its applicability to fishing-canoeing-tubing rivers in the upper Midwest. The New River differs somewhat from these rivers in that it has extremely high rafting day use, a diversity of user groups, and relatively high levels of development and impact. Given this, there may be no relationship between amount of use and experience impact parameters. Other possibilities are that the river users may disagree on river experiences to be provided or hold broad ranges of tolerable contact and impact levels. Also, implementing a carrying capacity strategy will be different on the New River than on western rivers, because of a lack of managerial control over river access.

Care was taken in the study design to extend the Shelby-Heberlein model when necessary to reflect eastern conditions. Three such extensions, which dealt more with the operationalization of the model than with its structural components, included measures of different impact parameters and possible river experiences, identification of the norms of various subgroups among river users, and an examination of the sources of identified norms and their susceptibility to change through management influence. The last issue seemed especially

important, given managerial preference and need for lighthanded or indirect control over river use and impacts. In all cases decisions on extension of the model were made in consultation with river managers.

In their work Shelby and Heberlein (in press) have placed considerable emphasis on the number of trip contacts as a measure of experience impacts. Contacts between user groups were reportedly almost constant: on the lower section of the New River Gorge on summer weekends, and there may thus be little relationship between reported number of total contacts and contact preferences. More relevant contact measures may be number of contacts at various locations (e.g. at access points, lunch-stop points, or river attractions), type of contact (commercial or private trip, or boater or fisherman), behavior of group encountered, or litter or resource degradation along the stream.

Shelby and Heberlein have also typically asked their study participants to imagine their river trip as a wilderness, semi-wilderness, or undeveloped recreation trip when responding to experience impact questions. This combination of three river trip designations seemed inappropriate for the New River -- both from the standpoint of managerial feasibility and the image of the area among river users. Instead, the following trip designations seemed more appropriate and were included in the study questionnaire: wilderness whitewater, scenic Whitewater, and social recreation trip.

If New River Gorge users share little agreement about experiences to be provided, have a broad range of tolerable impacts, or exhibit low crystallization and intensity of norms, then the integrity of the user population as a single social group must be questioned. Different user groups may be identified who hold well crystallized, high intensity norms with narrow ranges of tolerable behavior. For example, private parties may hold one well-crystallized norm while commercial parties hold another. Similarly, fishermen may hold one norm while boaters have another, or novices may differ from experienced river users.

River recreationists on the Lower Gorge and upriver might also have different views. Splitting the study sample into subgroups on the basis of these and similar criteria identified through previous river research (Roggenbuck 1975, Cockrell 1981) should identify possible crystallized subgroup norms which may be concealed in the overall river user group structure. The identification of such subgroups would be useful to managers as they determine which types of use should be managed for and how various user groups would respond to various management actions.

How norms and beliefs are developed, shared, and communicated are important if managers are to influence when, where, and how visitors use the river, and how they respond to river use conditions. Identification of the principal referents of New River recreationists is important in isolating the sources of information and established norms, and designing and targeting interpretive messages to alter norms and behavior. Some river researchers (e.g. Cockrell and McLaughlin 1981) have viewed the individual river runner as influenced by a number of social groups simultaneously (e.g. family, working companions, other river runners he knows). The question of which groups influence river recreationists most is currently unresolved. Cheek (1971) and Lee (1972) view wildland recreation participation norms as largely determined by the stable reference group influences of the home environment. If this is the case, then contact or impact preference standards may be stable and to some extent established prior to participation. They may thus not be easily changed through efforts by river managers or boatmen. Aveni (1976), on the other hand, found group stratification (status norms) for leisure participants to differ from stratification based on broader social status criteria. This model suggests that norms might be more specific to river running groups, and crystallization might be a function of experience with the group. The difference between these models reflects a long

standing debate in social psychology about the specificity of reference group influence, Fishbein and Ajzin (1975), for example, view the influence of referents as constant across various situations. Haller and Woelfel (1972), however, have proposed that the influence of other individuals in a pluralistic society does not produce a general "internalized other" in a person, but rather is specific to the situation in which the person finds himself.

People or groups most influential in communicating information and norms among New River users were identified in this study. This effort was guided by communication theory and recent findings in wildland recreation settings. For example, Applbaum and Antol (1974) and Mettlin and Hsu (1975) have found individual agents to be more influential when they communicate through several modes or channels. In line with this, Roggenbuck and Berrier (1982) and Roggenbuck et al (1982) found that a brochure plus personal contact was more effective in dispersing wilderness users and reducing depreciative behavior in campgrounds than was a brochure alone. Thus, a river outfitter who communicates norms about the pleasures of adventure, solitude, and shared group experiences through brochures, radio ads, and speaking engagements might be most influential. Influence agents who address a configuration of attitudes and norms have also been found more influential than those who address a more limited norm (Mettlin and Hsu 1975). Canoeing clubs, outing clubs, and outdoor recreation teachers who communicate norms about river recreation from a more holistic perspective and from a broader context of recreation opportunities might be more influential for this reason. Lime and Lucas (1977) and Roggenbuck and Berrier (1981) believed they were more effective in altering wilderness travel route or campsite selection because their brochures provided information on resource attractions and not just use levels. Also, "significant others" who function as "models" tend to be more influential than those who simply express verbal expectations (Woelfel and Haller

1971). Thus, river boatmen and expert river runners encountered on the river might be expected to be influential. Finally, French and Raven's (1959) analysis of the bases of social power suggests that those who have powers of coercion or reward become significant normative influences. National Park Service river managers themselves may be perceived to fall into this category.

Many variables also likely act to determine the extent to which river users comply with messages from such potential significant others as river managers, outfitters, boatmen, or user clubs. Users with little experience in the area are much more likely to respond to information and change their behavior than experienced users (Krumpe 1979, Lucas 1981, Cockrell and McLaughlin 1981). Providing more information than just use levels (Lime and Lucas 1977; Canon et al. 1979; Roggenbuck and Berrier 1981) and getting it to the visitors as early as possible also increase its effectiveness (Lime and Lucas 1977; Lucas 1981; Roggenbuck and Berrier 1982).

Groups respond differently to persuasive messages than do individuals (Bettinghaus 1968). As group size increases, so does the difficulty of persuasion. Also, as group organization becomes more formal and structured, persuasion may become increasingly difficult (Sherif and Sherif 1969). Finally, if a message is intended to influence the recipient to behave in a certain way and this behavior is physically or emotionally uncomfortable, it will be more difficult to persuade the recipient to perform the behavior (Anderson 1971). The recipient's perception of the degree of risk in carrying out the desired behavior is a major factor in determining the influence of the message, and under these conditions credibility of the source becomes very important (McEwen 1975). These variables appear important if river managers are to use information and education to influence the time, location, and type of river use or behavior on the river.

DATA COLLECTION PROCEDURES

Sample Size

The population of interest in this study were private and commercial boaters on the New River Gorge National River during summer and fall, 1982 and spring 1983. Study goals, financial constraints, and logistical considerations common to contacting recreationists in wildland settings determined our target sample size. We wanted to have a large enough sample of both private and commercial boaters to permit valid statements of the views of these two groups. We also wanted enough commercial and private boaters to permit further breakdown by such managerially relevant variables as experience level, season of year, weekend-weekday, and location and size of the river trip. Our theoretical model suggested that more consensus of opinion about appropriate kinds and amounts of use, river services and facilities, and management strategies might exist within these sub-groups than across the entire sample. If this were the case, then river managers could potentially develop different management alternatives to satisfy the needs of distinct user groups.

Financial constraints permitted us to put only one research technician in the field to contact boaters to seek their participation in the study. Also, because commercial boaters put on and take off the river at many different privately owned locations and spend relatively short periods of time there, we decided to contact commercial floaters at outfitter base camps. Because of the locations of the outfitters and their schedules for trip departures, it was only possible to contact the guests of one outfitter per sampling day. On sampling days for private boaters, the research technician waited at popular put-in points in the morning and traveled to heavily used take-out points in the afternoon in an effort to contact as many private boaters as possible.

Given these considerations we selected a target sample size of approximately 300 private and 300 commercial boaters. We believed this number was ample for the various analyses anticipated and was possible logistically. If we achieved a

70 percent response rate on the study questionnaire (as we expected given our previous experience with mailback questionnaire studies in wildland recreation settings), we would need to contact about 850 boaters in the field. Since far more commercial than private boaters floated the river, we needed a much larger sampling fraction among the privates.

Sampling Procedures

Field work for the boater study began on June 19, 1982 and continued through the end of September, a date when most New River boating ceases. We then began sampling again in April, 1983 and continued through the end of June. We thus covered a one-year period. The number of sampling days for each month of the 1982 field season was: June - 9, July - 19, Aug. - 20, and Sept.- 20. For the 1983 season, the number was April - 14, May - 14, and June - 20. Within each month, sampling was stratified by commercial and private boaters, upriver (above the gorge) and downriver (in the gorge), and weekend and weekday. This gave eight sampling strata (Table 1).

Table 1

Number of sampling days by study stratum

<u>Study stratum</u>	<u>Number of sampling days</u>
Commercial weekend downriver	13
Commercial weekend upriver	13
Commercial weekday downriver	24
Commercial weekday upriver	22
Private weekend downriver	7
Private weekend upriver	6
Private weekday downriver	15
Private weekday upriver	<u>16</u>
<u>Total</u>	<u>116</u>

The initial sampling plan called for 14 days of sampling each month. They were distributed evenly across commercial and private strata and upriver and downriver

strata. They were assigned to weekend and weekday strata in a manner proportional to the ratio of weekend days and weekday days per week, i.e. about twice as many sampling days were assigned to weekdays as weekends. Actual selection of days for sampling within stratum was done randomly. Since there were 19 outfitters cooperating in the study, and since we hoped to contact as many outfitters as many times as possible, we added approximately 6 days of commercial trip sampling per month for all months except April and May, 1983. This was as many additions as our financial constraints would permit. We did not add additional sampling days during April and May because boating use then was light. Assignment of the six extra days/month to the four commercial strata was done in the same fashion as were the original sampling days. Table 1 lists the breakdown of the study's 116 sampling days by strata.

Selection of an outfitter for any given commercial sampling day was done in the following manner. For the downriver stratum, all 19 outfitters were randomly assigned a number between 1 and 19 prior to the sampling season. A random numbers table was then used to select a first choice outfitter for sample day 1, sample day 2, etc. This procedure was followed until all sampling dates were filled. It sometimes occurred that the sampling list included some outfitters more than once while others not at all. When this happened, enough of the duplicate outfitter appearances were randomly removed to permit the random assignment of outfitters not originally selected to the sample list. This was done to assure that any variation in study variables by river outfitter would be adequately covered. Since an outfitter might not have a trip on the day sampled, an alternative - or second choice - sample list was developed. This list was generated in the same fashion as the primary or first choice list with one exception. When it happened that the first and second choice outfitters for a given sampling day were the same, the duplicate was removed from the alternate list, and one of the outfitters that had not originally appeared on that list

was randomly selected to take its place.

A few days before each sampling day, the research technician would call up the first choice outfitter to see if he had a trip scheduled. If he did have a trip, the research technician would contact the boaters of high school age or above at the outfitters base camp just prior to the trip and ask their cooperation in the study. (See Appendix A for the technician's contact statement). If the outfitter had no trip that day, the research technician would then contact the alternate outfitter. If he had a trip, the same procedure was followed in contacting trip members. If neither the primary nor the alternate outfitter had a trip, the research technician then contacted outfitters who had not been selected on the original sampling lists in a random fashion until a trip was found.

A similar procedure was used to select outfitters for upriver sampling days. However, only seven outfitters who typically float the upper river were included in the sample list. The seven outfitters were selected through discussion with National Park Service managers and river outfitters. A first and second choice was randomly selected for each sampling day. If neither of these outfitters had a scheduled trip, remaining outfitters on the entire sampling list were then called in a random order until a trip was found. If a few instances no trip was found, and sampling was cancelled that day.

On downriver private-boater sampling days, the research technician would contact private boaters at the Stone Cliff Bridge put-in area from 6:30 a.m. to 11:30 a.m. He would then drive to the Fayette Station take-out point and wait there from 1 p.m. to 8 p.m. to contact any boaters he had not met at the put-in point. On upriver, private sampling days, the research technician contacted boaters at the Stone Cliff take-out area from 11 a.m. to 8 p.m. Because of the large number of upriver launching points, no pre-trip contacts with upriver private boaters were made.

Data Collection Instruments

Two different data collection instruments were used in the study: a pretrip contact sheet (Appendix B) and a post-trip mailback questionnaire (Appendix C). Content of both the contact sheet and the study questionnaire was determined by the National Park Service's Statement for Work for the study, the study's conceptual model, and through discussions with National Park Service managers and river outfitters. The contact sheet was a two-page questionnaire filled out by boaters immediately upon agreeing to participate in the study. It contained, items on type of group the boater was with, river experience level, trip planning, trip motives, and experience expectations. It also asked for participants' name and address to permit the mailing of the post-trip questionnaire. The research technician then collected the completed contact sheet and recorded type of trip (private or commercial), type of boat, name of outfitter (for commercial trips), date of trip, estimated river departure time, and river water level.

The post-trip questionnaire was a 10-page photo reduced instrument which address 10 major topics of research interest. The trip planning section included items on sources of information about the trip and reasons for taking the trip. The respondent then described the trip in terms of satisfaction levels, boat size, trip size, size of other trips seen, safety matters, and weather conditions. The third section dealt with encounters with other river user groups: the number, kind, and location of such encounters; how the respondent felt about those encounters and what he or she might do to avoid or seek out encounters in the future (if unsatisfied with actual encounter levels), Parts 4 and 5 addressed perceptions of river resource problems and preferences for facilities and services, respectively. Section 6 asked respondents what type of experience they received on the river, what experience they thought the river should provide, and their norms about appropriate contact levels for various kinds of experiences. The seventh section

sought boaters' opinions on alternative river management strategies. Finally Sections 8, 9, and 10 addressed boaters' sources of beliefs about the river trip, their feelings about their commercially guided trip, and demographic information.

QUESTIONNAIRE RESPONSE RATES

During the 1982 season, the research technician contacted 636 private and commercial boaters in the field and asked their cooperation in the study. Of these only seven refused. The remaining 629 individuals were sent the survey packet that included a cover letter (Appendix D), the questionnaire, and a self-addressed, stamped, return envelope. This was done within two weeks of their trip. Thirteen of the mailout packets were returned because of bad or untraceable addresses. One week after the initial mailing, all participants were mailed a postcard reminder. If the respondent had not returned the questionnaire within two weeks of the postcard mailing, a second packet was mailed to the participant. The second packet differed from the first only in that it had a slightly stronger cover letter urging return of the completed questionnaire (Appendix E). If the participants had not responded by three weeks after the second mailing of the survey packet, a third packet was mailed. An even stronger cover letter was included with the third packet (Appendix F). The follow-up procedures used to increase the questionnaire response rate were recommended by Dillman (1978).

After removal of the 13 individuals that could not be located, the final 1982 sample size was 616 boaters. Of these, 432 returned completed questionnaires for a response rate of 70.1% (Table 2). This response rate met our sample size target, and was judged high enough to make any follow-up study of nonrespondents unnecessary.

During the 1983 season, 318 boaters were contacted in the field. Of these, only five refused to participate in the study. The same procedures were used to mail out and increase response to the study questionnaire. Thirteen questionnaires were returned because of bad addresses. Of the remaining 300 individuals, 184

returned a completed survey form. This represents a response rate of 61.3% (Table 2) and gives a total 1982 and 1983 response by 616 boaters. This met our study sample size target of 600 cases, but because the 1983 response rate dropped below 70%, we felt it wise to perform a test for non-response bias.

Table 2 Boater
response rate by season

Year		N	% response
1982	Boaters contacted	636	
	Refusals In field	7	
	Bad addresses	13	
	Questionnaires returned	432	70.1%
1983	Boaters contacted	318	
	Refusals in field	5	
	Bad addresses	13	
	Questionnaires returned	184	61.3%

Nonresponse Bias Check

As previously indicated, all individuals who agreed to participate in the study completed a pretrip contact sheet. This permitted an inexpensive and timely comparison of post-trip questionnaire respondents and nonrespondents for the 1983 season on the following items central to study objectives: type of group respondent traveled with, amount of New River trip experience, trip planning procedures used, 12 possible reasons for taking a river trip, kind of river experience expected, number of boats respondent, expected to see on the river, number of boats respondent would accept seeing on the river, type of trip (commercial or private), and type of boat, (raft, canoe or kayak). The 116 nonrespondents for the 1983 season were placed in order by date of field contact. A 20% systematic sample after a random start was drawn, and the characteristics, opinions, and preferences of this sample were compared to the respondents.

The results of the comparison of the two groups on the 29 items tested are contained in Appendix G. Significant differences were found at the $p < .05$ level on only one of the variables: nonrespondents decided to go on the river trip more days in advance of the trip than did respondents. Four additional differences were found at the $p < .10$ level: a greater percentage of private boaters responded than did commercials and a greater percentage of kayakers/canoeists responded than did rafters. Nonrespondents rated viewing nature as more important and expected to see fewer boats on the river than did respondents. With 29 individual tests at a .05 alpha level, one would expect to find between one and two significant differences by chance alone. At the .10 alpha level, about three differences would have been expected by chance. This suggests that there was little difference between respondents and nonrespondents. In addition, any difference in findings that might have occurred due to differential response rate by privates and commercials is controlled for by our data analysis procedures. Because we sampled private and commercial boaters at different sampling fractions, we will perform checks for differences between these groups on all tests run, and will be reporting results by private and commercial groups. Also, since only two kayakers and canoeists in the study were commercial boaters, the private-commercial breakdown will indirectly control for any differences due to differential response rates by boat type. We therefore decided that nonresponse likely did not significantly affect results, and data adjustments were not necessary.

RESULTS

Major Classification Variables

The National Park Service requested separate reporting of private and commercial boater characteristics and opinions in its Statement for Work for the research. In addition, our theoretical model called for a search for greater

consensus of opinion on key study variables by managerially relevant subgroups of the boater population. If such more homogeneous subgroups held distinct perceptions and preferences, then the National Park Service could perhaps develop different management strategies for each, reduce conflicts, and increase trip satisfaction. In consultation with National Park Service managers, we decided to include season of the year, weekend-weekday, river segment, river experience level, and trip size (number of boats per trip) as classification variables in addition to trip type (private or commercial) variable. In tests of some task objectives, we also included experience sought (wilderness, scenic, or social) as a controlling variable.

Trip type

Our sampling design called, for a target, sample size of about 300 commercial and 300 private boaters. As Table 3 indicates, 341 or 55% of the study's 616 boaters were commercial users. Two hundred seventy-five or 45% were private boaters.

Table 3

Breakdown of boaters by trip type

Trip type	N	%
Commercial	341	55.4
Private	275	44.6
Total	616	100.0

Season

Since environmental and use conditions on the river differ by season of the year, our sampling plan called for spring (April 1 to Memorial Day weekend), summer (Memorial Day weekend through Labor Day weekend) and fall (post Labor Day to Sept. 30) sampling. Table 4 provides a breakdown of study participants by

season for all boaters and for commercial and private boaters. The great majority of boaters floated during the summer season: 89% of commercial boaters and 94% of private users. Just over 4% and 3.6% of commercial and private boaters, respectively, floated in the spring, and 6.7% and 1.5% of the two groups made river trips in the fall.

Table 4 Breakdown of all,
commercial, and private boaters by season

Season	All		Commercial		Private	
	N	%	N	%	N	%
Spring	24	3.9	14	4.1	10	3.6
Summer	564	91.6	304	89.2	260	94.5
Fall	27	4.4	23	6.7	4	1.5
Missing	1	.1	0	0	1	.4
Total	616	100.0	341	100.0	275	100.0

Weekend-weekday

Much higher river use occurs on weekend days than on weekday days. Thus boaters who select the weekdays for their trip might differ in their desired experience, resource perceptions, and preferences about use and management. Weekends include Saturday, Sunday, and holidays; weekdays the remainder of the week. Table 5 indicates that private and commercial differed considerably in time of week for their trip. Almost 85% of all private boaters in our sample floated on weekends; 45% of the commercial users did so.

Table 5
Breakdown of all, commercial, and private boaters by
weekend and weekday trip

Time of week	All		Commercial		Private	
	N	%	N	%	N	%
Weekend	386	62.7	153	44.9	233	84.7
Weekday	229	37.2	188	55.1	41	14.9
Missing	1	.1	0	0	1	.4
Total	616	100.0	341	100.0	275	100.0

River Segment

The lower 15-mile stretch of the New River in the park flows through a narrow gorge and has some of the finest Whitewater in the East. Most boating use is concentrated there. The river upstream from the gorge has a much less steep gradient and flows through a more pastoral setting. The National Park Service could potentially manage the two stretches for two experience types and user clientele. Therefore, boaters were categorized as floating the gorge, the upper river, or both (Table 6). Almost 80% of the commercial boaters in the sample floated the gorge; 69% of the private users floated this stretch. Far more of the private users (24%) floated the upper river than did commercial users (3.2%). Finally, the percentage of commercial boaters who traveled through at least parts of both sections more than tripled that of the private boaters (16.7% to 5.8%).

Table 6

Breakdown of all, commercial, and private boaters
by river segment floated

River Segment	All		Commercial		Private	
	N	%	N	%	N	%
Upriver	77	12.5	11	3.2	66	24.0
Downriver (gorge)	459	74.5	270	79.2	189	68.7
Both	73	11.9	57	16.7	16	5.8
Missing	7	1.1	3	.9	4	1.5
Total	616	100.0	341	100.0	275	100.0

River experience level

Amount of previous trip experience on the New River might be a powerful variable in explaining variation in preferences for river use and management. More experienced users might have more realistic expectations about the trip, and they likely can provide invaluable public input on whether the river resource and experience is improving or deteriorating through time. The expectations, perceptions, and satisfaction levels of first time users are useful indicators

of the quality of current marketing and information dissemination strategies about the river.

Table 7 indicates that private boaters had far more previous experience than commercial boaters. About 70% of all commercial boaters were first-time users; this percentage was only 6% for private boaters. About 26% of the commercial users had made 1 to 3 previous trips; 43% of the private boaters had this amount of experience. Another 24% of the private users had made 4-10 trips; this percentage was only 3 percent for the commercial group. Finally, 25% of private group have floated the New River 11 or more times, only one individual (.3%) on commercial trips had done so.

Table 7

Breakdown of all, commercial, and private boaters by amount of previous trip experience on the New River

Number of previous New River trips	All ¹		Commercial ²		Private ³	
	N	%	N	%	N	%
0	255	41.4	238	69.8	17	6.2
1	112	18.2	56	16.4	56	20.4
2 or 3	93	15.1	32	9.4	61	22.2
4-10	74	12.0	9	2.6	65	23.6
11-50	44	7.1	1	.3	43	15.6
>50	25	4.1	0	0	25	9.1
Missing	13	2.1	5	1.5	8	2.9
Total	616	100.0	341	100.0	275	100.0

¹Mean =3.0; Median = 1

²Mean = .54; Median = 0

³Mean = 28.6; Median = 3

Trip Size

Number of boats/trip

There is some variation among both commercial and private trips in the number of boats on any given trip. We felt that the number of boats that floated together down the river might have a significant effect on the experience that users received and on the perceptions of crowding on the river. Also, if boaters

were aware of the different trip sizes available, they may have purposefully selected a trip size that met their needs. If so, individuals on trips of different sizes might have different experience expectations.

The number of boats for private and commercial trips was quite similar (Table 8). The median number of boats per trip for both was four. The mean size of private trips was somewhat larger (5.6 boats to the commercials 4.7). However, size of private trips varied much more. There were more large trips and more small trips among the privates. For example, 18% of all private trips had just one boat; about 7% of commercial trips were that size - almost 14% of the' private trips had 10 or more boats, but only 6% of the commercial trips were this large.

Table 8

Breakdown of all, commercial and private boaters
by number of boats/trip

Number of boats per trip	All ¹		Commercial ²		Private ³	
	N	%	N	%	N	%
1	72	11.7	22	6.5	50	18.2
2-3	135	21.9	87	25.5	48	17.4
4-5	193	31.3	125	36.6	68	24.7
6-9	141	22.9	74	21.7	67	24.4
10 or more	57	9.3	20	5.9	37	13.5
Missing	18	2.9	13	3.8	5	1.8
Total	616	100.0	341	100.0	275	100.0

¹Mean = 5.1; Median = 4

²Mean = 4.7; Median = 4

³Mean = 5.6; Median = 4

Number of people/trip

In contrast to the number of boats per trip, the commercial trips averaged about three times as many people as did the privates (36,0 people for the commercial trips; 13.2 for the private groups). This is a reflection of the large number of kayak groups among the private users. The largest percentage of private trips (34.5%) had 1-5 people; the next largest (31.6%) had 6-10 people.

On the other hand, almost half of all commercial groups (47.8%) had 26-50 people, The 11-25 person category was the next largest at 22%, followed by the greater than 50 person category. That group contained 16% of all commercial trips.

Table 9

Breakdown of all, commercial, and private boaters
by number of people/trip

Number of people per trip	All ¹		Commercial ²		Private ³	
	N	%	N	%	N	%
1-5	100	16.2	5	1.5	95	34.5
6-10	116	18.8	29	8.5	87	31.6
11-25	134	21.8	75	22.0	59	21.5
26-50	178	28.9	163	47.8	15	5.5
>50	68	11.0	56	16.4	12	4.4
Missing	20	3.3	13	3.8	7	2.5
	616	100.0	341	100.0	275	100.0

¹Mean = 25.7; Median = 17 ²Mean = 36.0; Median = 35 ³Mean = 13.2; Median = 8

Task 1: Describe and evaluate river user experience preferences
and trip expectations

Experiences and expectations of the boater sample

Five variables were included in the study to address this task objective: reasons for taking the river trip, type of river experience expected, expectations about seeing boats from other trips on the river, type of experience received, and type of experience that should be provided on the river.

Reasons for taking a river trip (trip motives)

Twelve potential reasons for taking the river trip were included on the field contact sheet. This list was developed on the basis of trip motive items included in a U.S. Forest Service national survey of river recreationists and in consultation with National Park Service river managers and river outfitters, Study boaters responded to the items prior to their trip¹ and indicated whether

¹Some private boaters were contacted in the field after their trip. These individuals were asked to think back to their trip motives for taking the trip, and to respond to the items as they would have before the trip.

each reason was "not at all important", "somewhat important", "moderately important", "very important", or "extremely important" in their decision to take a river trip,

Table 10 indicates that; commercial and private boaters differed little in their trip motives. The same five motives were most important for each: to have fun, to run rapids, to view scenery, to be with friends, and to develop skills and abilities. Of these, the greatest difference was in developing skills and abilities. Private boaters rated this motive as third most important; commercial users placed it: fifth. Getting away from crowds was 7th most important for both commercial and private boaters. Such traditional National Park Service values as learning more about nature and seeing and learning about historical sites were 6th and 10th most important: for commercial users, and 8th and 10th most important for private boaters.

Type of experience expected

At the field contact boaters were asked which of the following three trip experiences they expected: (1) a wilderness Whitewater trip -- a trip through a scenic gorge with little evidence of man, many opportunities for solitude, and a chance for challenge and for you to battle the waves; (2) a scenic whitewater trip -- a trip through a scenic gorge with some evidence of man, fewer opportunities for solitude, and guidance when running wild rapids; or (3) a social recreation trip -- a trip on a scenic river with much evidence of man, exciting rapids, and seeing other people on the river makes the trip more fun. These three experience types were developed in consultation with river managers and outfitters, and appeared to be both meaningful and feasible river trip alternatives. More specifically, we believed that river boaters would view these trip experiences as distinct and as feasible alternatives for the river. If these experiences were not being provided now, then through proper management they might be offered in the future.

Table 10

Mean and standard deviation of trip motive scores¹
for all, commercial, and private boaters

Trip motive	All			Commercial			Private		
	N	Mean	Standard deviation	N	Mean	Standard deviation	N	Mean	Standard deviation
To do some camping	583	2.24	1.23	325	2.15	1.19	258	2.36	1.27
To do some fishing	569	1.39	.90	313	1.31	.78	256	1.50	1.01
To view the scenery	595	3.92	.97	332	3.96	.97	263	3.89	.97
To run rapids	599	4.63	.80	332	4.50	.91	267	4.79	.61
To do something with my family	554	2.61	1.55	312	2.69	1.53	242	2.50	1.56
To get away from crowds	590	3.11	1.35	322	2.87	1.33	268	3.40	1.30
To keep physically fit	587	2.96	1.26	323	2.59	1.23	264	3.41	1.13
To see and learn about historical sites	582	2.42	1.21	321	2.44	1.20	261	2.40	1.22
To have fun	598	4.75	.58	331	4.73	.58	267	4.78	.56
To develop my skills and abilities	596	3.61	1.29	328	3.07	1.22	268	4.28	1.03
To learn more about nature	588	3.03	1.20	328	2.95	1.19	260	3.13	1.20
To be with friends	601	3.99	1.09	334	3.87	1.19	267	4.16	.93

¹Scoring of motive items was as follows:

- 1 = not at all important
- 2 = somewhat important
- 3 = moderately important
- 4 = very important
- 5 = extremely important

Table 11 Indicates that about half of all boaters in the survey expected a wilderness Whitewater trip (48% for commercial users and 52% for private boaters). More commercial users than privates expected a scenic trip (39% to 30%), and more private boaters than commercial users expected a social trip (17% to 11%).

Table 11						
Breakdown of all, commercial, and private boaters by type of river trip experience expected						
Trip experience	All		Commercial		Private	
	N	%	N	%	N	%
Wilderness white-water	306	49.7	162	47.5	144	52.4
Scenic whitewater	215	34.9	133	39.0	82	29.8
Social recreation	86	14.0	39	11.4	47	17.1
Missing	9	1.4	7	2.1	2	.7
Total	616	100.0	341	100.0	275	100.0

Expectations about seeing boats on the river

We asked boaters before their trip how many other boats they expected to see that day on the river. They could indicate on the contact sheet that they had no expectations, or they could record the number of boats they expected to see.

Commercial and private boaters differed considerably in the number of boats they expected to see on the river (Table 12). Just over 40% of all commercial respondents had no expectations about the number of boats they would see. Only about 20% of the private boaters fell into this category. This likely reflects the greater experience levels of the private users. Of those who had expectations, the commercials expected to see far fewer. Their average expected number was 9 boats; the privates' mean expected number was 28.6. One-fourth of all commercial users expected to see 0-5 boats; only 9% of the privates expected so few sightings. On the other hand, 13.5% of the private boaters expected to see a 100 or more, only 1 commercial user (.3%) expected such a high number.

Table 12

Breakdown of all, commercial, and private boaters by expectations for seeing various numbers of boats on the river

Number of boats expected to see	All ¹		Commercial ²		Private ³	
	N	%	N	%	N	%
0-5	114	18.5	90	26.4	24	8.7
6-10	78	12.7	51	15.0	27	9.8
11-25	66	10.7	24	7.0	42	15.3
26-99	70	11.4	10	2.9	60	21.8
100 or more	38	6.2	1	.3	37	13.5
Had no expecta- tions	193	31.3	140	41.1	53	19.3
Missing	57	9.2	25	7.3	32	11.6
Total	616	100.0	341	100.0	275	100.0

¹Mean = 28.6, Median = 10

²Mean = 9.0, Median = 5

³Mean = 46.8, Median = 30

Type of experience received

Study boaters indicated on their post-trip questionnaire the kind of trip that they received. Private and commercial boaters were similar in the kind of experience they said they received (Table 13). About half of both groups said they received a scenic Whitewater trip, about 25% felt they had a wilderness trip, and about 20% felt their trip was a social recreation experience.

When trip experience expectations (Table 11) are compared to experiences received (Table 13) it is evident that only about half as many boaters received a wilderness trip as expected one. The number of private boaters that received a scenic whitewater trip and the number of commercial boaters who received a social recreation trip increased by about 50%. Increases in the number of private users that felt they had a social recreation trip and the number of commercials who said they received a scenic trip were also substantial.

Table 13

Breakdown of all, commercial, and private boaters
by type of river trip experience received

	All		Commercial		Private	
Trip experience	N	%	N	%	N	%
Wilderness Whitewater	164	26.6	93	27.3	71	25.8
Scenic Whitewater	307	49.8	174	51.0	133	48.4
Social recreation	119	19.3	59	17.3	60	21.8
Missing	26	4.2	15	4.4	11	4.0
Total	616	100.0	341	100.0	275	100.0

Type of river trip experience that should be provided

Table 14 indicates the kind of trip that boaters think should be provided on the river segment they floated. Again, commercial and private boaters are similar. Almost half of all boaters in both categories felt that a scenic Whitewater trip was most appropriate. This percentage is similar to the number of boaters who actually received a scenic Whitewater trip (see Table 13). Almost 40% of both private and commercial floaters felt a wilderness whitewater trip should be provided. This percentage is somewhat lower than the percentage of those who expected a wilderness trip (see Table 11), but it is much higher than the number of those who actually received such a trip. Finally, only about 8% of both the commercial and private users felt a social recreation trip should be provided on the river. This number is substantially lower than both the percentage of boaters who expected and who received a social recreation trip (see Tables 11 and 13).

Table 14

Breakdown of all, commercial, and private boaters by type of trip
experience that should be provided on the river

	All		Commercial		Private	
Trip experience	N	%	N	%	N	%
Wilderness Whitewater	236	38.3	134	39.3	102	37.1
Scenic Whitewater	294	47.7	159	46.6	135	49.1
Social recreation	48	7.8	26	7.6	22	8.0
Missing	33	6.2	22	6.5	16	5.8
Total	616	100.0	341	100.0	275	100.0

Experiences and expectations of boater clientele groups

As previously stated, we performed data analyses to determine whether identifiable and managerially relevant subgroups of the boater population held distinct and more homogeneous views about river management and use. This was done to provide the National Park Service managers with information about the perceptions and preferences of important clientele groups, to identify potential conflicts on the river, and to identify potential sources of visitor dissatisfaction. We looked for differences by private-commercial trips, season of the year, weekend-weekday, river segment floated, amount of previous river experience, and trip size (number of boats/trip).

Because of the large number of experience, expectation, and clientele group classification variables in the study, the first step in the data analyses procedure was to reduce the number of relationships that needed to be given detailed consideration. Pearson's product moment correlations were run among all variables considered under the Task 1 objective in order to eliminate those breakdown variables that were not related to the experience and expectation variables of interest at the $p < .05$ level of significance.²

Once significant correlations between the classification variables and experiences and expectation variables had been identified, the next step was to search for significant correlations among the classification variables themselves. For example, the weekend-weekday trip variable might be highly correlated with the trip motive "to escape crowds of people", but the private-commercial variable might also be highly correlated with both the weekend-weekday

²Dummy variables were created for those variables whose values were categorical or nominal in nature, and these were included in the correlation matrix.

variable and the "escape crowds" variable. If this were the case, then the relationship between time of week of the trip and strength of the. "escape crowds" motive might be spurious. The variance in the trip motive might be instead explained by the type of trip (private or commercial). Partial correlational analyses were performed to "parcel out" the effect of two or more related breakdown variables on the experience or expectation variables of interest.

The final data analysis procedure was to develop crosstabulation tables between experience and expectation variables and those classification variables that retained their significance after the partial correlation analyses were performed. This was done for ease of interpretation and to identify river clientele groups that differed on the key study variables.

River segment floated

After the effect of other confounding variables were removed, boaters who floated different segments of the river differed on nine of the study's experience and expectation variables. This number was more than for any of the other breakdown variables.

Boaters who floated only the upper river (above the gorge) rated the desire to camp, to fish, to view scenery, to be with their family, to get away from the crowds, and to learn more about nature as more important than did boaters who only traveled through the gorge (Tables 15-20). Boaters who took two day trips and who typically floated through upper river stretches and the gorge generally had trip motives more closely resembling those who floated the gorge only. Exceptions to this were the desire to camp and, to a lesser degree, the desire to get away from crowds, where the multi-day boaters more closely resembled the upper river boaters,

Gorge boaters expected to see more boats on the river than did either the upper river users or the multi-day floaters (Table 21). More of the multi-day

boaters didn't know what to expect, but of those with expectations, most expected to see fewer boats than did the other two groups.

Similar percentages of boaters on upriver, gorge and both river segment trips expected a wilderness whitewater trip, but fewer upriver boaters expected a scenic Whitewater trip and fewer multi-day users (floated both river segments) expected a social recreation trip (Table 22). Gorge boaters differed from the other two groups in the kind of trip they received. Fewer received a wilderness whitewater trip, and more received a social recreation trip (Table 23).

Table 15

Breakdown of the importance of "to do some camping"
by river segment floated

Importance of motive	Upper River		Gorge		Both river stretches	
	N	%	N	%	N	%
Not at all	23	31.1	189	43.6	15	21.7
Somewhat	10	13.5	86	19.9	15	21.7
Moderately	16	21.6	100	23.1	22	31.9
Very or extremely	25	33.8	58	13.4	17	24.6
Total	74	100.0	433	100.0	69	100.0

Chi-square = 29.9; Significant at $p < .01$

Table 16

Breakdown of the importance of "to do some fishing"
by river segment floated

Importance of motive	Upper River		Gorge		Both river stretches	
	N	%	N	%	N	%
Not at all	45	60.8	349	82.7	56	83.6
Somewhat	12	16.2	30	7.1	6	9.0
Moderately, very or extremely	17	23.0	43	10.2	5	7.5
Total	74	100.0	422	100.0	67	100.0

Chi-square = 20.1; Significant at $p < .01$,

Table 17

Breakdown of the importance of "to view the scenery"
by river segment floated

Importance of motive	Upper River		Gorge		Both river stretches	
	N	%	N	%	N	%
Not at all or somewhat	3	4.0	29	6.6	8	11.3
Moderately	14	18.7	116	26.2	14	19.7
Very	20	26.7	169	38.2	25	35.2
Extremely	38	50.7	128	29.0	24	33.8
Total	75	100.0	442	100.0	71	100.0

Chi-square = 17.0; Significant at $p < .01$

Table 18

Breakdown of the importance of "to do something with my family"
by river segment floated

Importance of motive	Upper River		Gorge		Both river stretches	
	N	%	N	%	N	%
Not at all	19	26.4	175	42.5	26	41.3
Somewhat	4	5.6	44	10.7	5	7.9
Moderately	10	13.9	67	16.3	9	14.3
Very	16	22.2	70	17.0	13	20.6
Extremely	23	31.9	56	13.6	10	15.9
Total	72	100.0	412	100.0	63	100.0

Table 19

Breakdown of the Importance of "to get away from crowds of people"
by river segment floated

Importance of motive	Upper River		Gorge		Both river stretches	
	N	%	N	%	N	%
Not at all	7	9.2	82	18.7	5	7.2
Somewhat	8	10.5	79	18.0	11	15.9
Moderately	20	26.3	114	26.0	22	31.9
Very	19	25.0	80	18.3	19	27.5
Extremely	22	28.9	83	18.9	12	17.4
Total	76	100.0	438	100.0	69	100.0

Chi square = 17.5; Significant at $p < .05$.

Table 20

Breakdown of the importance of "to learn about nature" by river segment floated

Importance of motive	Upper River		Gorge		Both river stretches	
	N	%	N	%	N	%
Not at all	5	6.7	60	13.7	6	8.7
Somewhat	9	12.0	94	21.5	12	17.4
Moderately	24	32.0	153	35.0	26	37.7
Very	17	22.7	79	18.1	15	21.7
Extremely	20	26.7	51	11.7	10	14.5
Total	75	100.0	437	100.0	69	100.0

Chi-square = 18.2; significant at $p < .01$

Table 21

Breakdown of expectations about seeing other boats on the river by river segment floated

Number of other boats expected to see	Upper River		Gorge		Both river stretches	
	N	%	N	%	N	%
0-5	15	20.8	78	18.9	20	29.4
6-25	27	37.5	99	24.0	17	25.0
26-500	11	15.3	95	23.0	1	1.5
Had no expectations	19	26.4	141	34.1	30	44.1
Total	72	100.0	413	100.0	68	100.0

Chi-square = 25.5; Significant at $p < .01$

Table 22

Breakdown of type of river experience expected by river segment: floated

Type of experience	Upper River		Gorge		Both River segments	
	N	%	N	%	N	%
Wilderness	43	55.8	221	48.9	38	53.5
Scenic	19	24.7	165	36.5	29	40.8
Social recreation	15	19.5	66	14.6	4	5.6
Total	77	100.0	452	100.0	71	100.0

Chi-square = 9.3; Significant at $p < .05$

Table 23

Breakdown of type of river experience received by river segment floated

Type of experience	Upper River		Gorge		Both river segments	
	N	%	N	%	N	%
Wilderness	30	39.5	108	24.7	24	34.8
Scenic	36	47.4	232	53.0	35	50.7
Social recreation	10	13.2	98	22.4	10	14.5
Total	76	100.0	438	100.0	69	100.0

Chi-square = 10.9; Significant at $p < .05$.

Type of trip (private or commercial)

The next most powerful distinguishing variable was private or commercial trip. These two groups differed on eight of the experience expectation variables. Private groups rated the motives to fish, to run rapids, to get away from the crowds, to keep physically fit, to develop skills and abilities, and to be with friends as more important than did commercial users (Tables 24-29).

Fewer of the private boaters had no expectations about the number of other boats they would see on the river. Of those with expectations, far more private boaters expected to see large numbers of other boats than did commercial users (Table 30). Finally, the two groups differed somewhat in type of river experience expected. More private boaters expected a social recreation trip; fewer expected a scenic whitewater trip (Table 31).

Table 24

Breakdown of the importance of "to do some fishing
by private or commercial trip

Importance of motive	Commercial		Private	
	N	%	N	%
Not at all				
Somewhat	261	83.4	192	75.0
Moderately, very, or extremely	22	7.0	26	10.2
Total	30	9.6	38	14.8
Chi-square = 6.1;	313	100.0	256	100.0
Significant at $p < .05$				

Table 25

Breakdown of the importance of "to run rapids"
by private or commercial trip

Importance of motive	Commercial		Private	
	N	%	N	%
Not at all or somewhat	18	5.4	4	1.5
Moderately	16	4.8	7	2.6
Very	73	22.0	27	10.1
Extremely	225	67.8	229	85.8
Total	332	100.0	267	100.0
Chi-square = 26.9; Significant at $p < .01$				

Table 26

Breakdown of the importance of "to get away from crowds"
by private or commercial trip

Importance of motive	Commercial		Private	
	N	%	N	%
Not at all	67	20.8	29	10.8
Somewhat	63	19.6	37	13.8
Moderately	84	26.1	13	27.2
Very	62	19.3	57	21.3
Extremely	46	14.3	72	26.9
Total	322	100.0	268	100.0

Chi-square = 23.8; Significant at $p < .01$.

Table 27

Breakdown of importance of "to keep physically fit"
by private or commercial trip

Importance of motive	Commercial		Private	
	N	%	N	%
Not at all	80	24.8	15	5.7
Somewhat	72	22.3	41	15.5
Moderately	100	31.0	81	30.7
Very	43	13.3	76	28.8
Extremely	28	8.7	51	19.3
Total	323	100.0	264	100.0

Significant at $p < .01$

Table 28

Breakdown of importance of "to develop my skills and abilities" by
private or commercial trip

Importance of motive	Commercial		Private	
	N	%	N	%
Not at all	43	13.1	6	2.2
Somewhat	58	17.7	16	6.0
Moderately	106	32.3	32	11.9
Very	75	22.9	58	21.6
Extremely	46	14.0	156	58.2
Total	328	100.0	268	100.0

Chi-square = 149.0; Significant at $p < .01$

Table 29

Breakdown of importance of "to be with my friends" by private or commercial trip

Importance of Motive	Commercial		Private	
	N	%	N	%
Not at all or somewhat	42	12.6	14	5.2
Moderately	61	18.3	44	16.5
Very	105	31.4	91	34.1
Extremely	126	37.7	118	44.2
Total	334	100.0	267	100.0

Chi-square = 10.7; Significant: at $p < .01$

Table 30

Breakdown of expectations about seeing other boats on the river by private or commercial trip

Number of other boats expected to see	Commercial		Private	
	N	%	N	%
0-5	90	28.5	24	9.9
6-25	75	23.7	69	28.4
26-500	11	3.5	97	39.9
Had no expectations	140	44.3	53	21.8
Total	316	100.0	243	100.0

Chi-square = 139.0; Significant at $p < .01$

Table 31

Breakdown of type of river experience expected by private or commercial trip

Type of experience	Commercial		Private	
	N	%	N	%
Wilderness	162	48.5	144	52.7
Scenic	133	39.8	82	30.0
Social recreation	39	11.7	47	17.2
Total	334	100.0	273	100.0

Chi-square = 7.8; Significant at $p < .01$

Season of the year

Boaters who floated during the spring, summer, or fall differed on three of the experience expectation variables. About the same percentage across all three groups had no expectations about the number of boats they expected to see on the river. However, of those with expectations, spring and fall users expected to see far fewer boats (Table 32). Far more of the spring and fall users received a wilderness whitewater trip, while many more of the summer boaters received a scenic whitewater or a social recreation trip (Table 33). Finally, far more of the spring and fall users than summer boaters thought the river should be managed for a wilderness whitewater experience. Few boaters in any of the groups thought that the river should provide a social recreation experience, but of those who did, most floated in the summer (Table 34).

Table 32

Breakdown of expectations about seeing other boats on the river
by season of the year

Number of other boats expected to	Spring		Summer		Fall	
	N	%	N	%	N	%
0-5	10	43.5	95	18.7	9	33.3
6-25	2	8.7	135	26.6	7	25.9
26-500	1	4.3	106	20.9	0	0
Had no expectations	10	43.5	172	33.9	11	40.7
Total	23	100.0	508	100.0	27	100.0

Chi-square = 21.1; Significant at $p < .01$

Table 33

Breakdown of type of river experience received
by season of the year

Type of Experience	Spring		Summer		Fall	
	N	%	N	%	N	%
Wilderness	15	65.2	133	24.6	16	61.5
Scenic	8	34.8	289	53.5	9	34.6
Social recreation	0	0	118	21.9	1	3.8
Total	23	100.0	540	100.0	26	100.0

Chi-square = 36.0; Significant at $p < .01$

Table 34

Breakdown of type of river experience that should be provided
by season of the year

Type of experience	Spring		Summer		Fall	
	N	%	N	%	N	%
Wilderness	12	52.2	205	38.9	18	66.7
Scenic	11	47.8	275	52.2	8	29.6
Social recreation	0	0	47	8.9	1	3.7
Total	23	100.0	527	100.0	27	100.0

Chi-square = 11.1; Significant at $p < .05$

Number of boats/trip

River users who floated on trips of various sizes differed on only two of the experience and expectation variables. Contrary to study hypotheses, more floaters on trips with few boats (1-5) expected a social recreation trip than did boaters on large trips. Also, fewer boaters on small trips expected a scenic trip (Table 35). As expected, far more of the floaters with few boats on their trip received a wilderness trip than did those floating with large groups (Table 36). More of the large groups classified their trip as a scenic white-water trip.

Breakdown of type of river experience expected by
number of boats/trip

	Boats per trip							
	1-3		4-5		6-9		10-40	
	N	%	N	%	N	%	N	%
Wilderness	106	51.7	86	45.3	73	52.5	30	52.6
Scenic	61	29.8	75	39.5	55	39.6	23	40.4
Social recreation	38	18.5	29	15.3	11	7.9	4	7.0
Total	205	100.0	190	100.0	139	100.0	57	100.0

Chi-square = 13.8; Significant at $p < .05$

Table 36

Breakdown of type of river experience received
by number of boats/trip

	Boats per trip							
	1-3		4-5		6-9		10-40	
	N	%	N	%	N	%	N	%
Wilderness	70	35.4	51	27.4	31	22.8	8	14.5
Scenic	91	46.0	100	53.8	75	55.1	35	63.6
Social recreation	37	18.7	35	18.8	30	22.1	12	21.8
Total	198	100.0	186	100.0	136	100.0	55	100.0

Chi-square = 12.6; Significant at $p < .05$.

Weekend/weekday

When other classification variables were controlled for, time of week of trip (weekend or weekday) only explained a significant amount of variation in boater expectations about seeing other boats on the river. More of the weekday users had no expectations. Of those with expectations, weekend users expected to see far more boats than did the weekday boaters (Table 37).

Table 37

Breakdown of expectations about seeing other boats on the river
by time of week of trip

Number of other boats expected to	Weekend		Weekday	
	N	%	N	%
0-5	43	12.7	71	32.3
6-25	96	28.4	48	21.8
26-500	97	28.7	10	4.5
Had no expectations	102	30.2	91	41.4
Total	338	100.0	220	100.0

Chi-square = 72.5; Significant at $p < .01$.

Amount of previous river experience

When river location floated, private or commercial trip, season, boats per trip, and weekend-weekday trip were controlled for, number of previous New River trips did not correlate significantly with any of the study's experience or expectation variables.

variation in kind of river experience expected; and river stretch, season, and trip size influenced type of trip experience received. Only season of the year influenced type of experience boaters said should be provided on the river.

Task 2: Identify the existence and sources of conflict among river recreationists and evaluate methods for reducing or eliminating them

Three classes of variables were included in the study questionnaire to address this task objective: conflict experienced on the river trip, trip planning or behavior changes to avoid conflict, and preferred actions to avoid conflicts in the future. Both intra-group and inter-group conflicts were considered.

Intra-group conflicts

In an effort to identify the existence and sources of any conflict within groups floating the river, we asked boaters (1) the number of people on their boat, whether or not that number was acceptable, and if not, how many would be acceptable; (2) the number of boats on their trip, whether or not that number was acceptable, and if not, how many would be acceptable; (3) how well people got along on their trip, and (4) whether or not they observed any unsafe actions on their trip.

Summary

The five most important reasons for taking a river trip for both commercial and private boaters were to have fun, run rapids, view scenery, be with friends, and develop skills and abilities. Private boaters rated the desire to fish, run rapids, get away from crowds, keep physically fit, develop skills and abilities, and to be with friends as more important trip motives than did commercial boaters. Boaters on different river stretches also differed in many of their trip motives.

About 40% and 20% of the commercial and private boaters, respectively, had no expectations about the number of boats from other trips they would see on the river. Of those with expectations, the commercial users anticipated seeing an average of 9 boats, the private users expected to see about 29 boats. River segment floated, season, and time of week of trip also influenced expectations.

About 48% of responding commercial boaters expected a wilderness Whitewater trip; 40% a scenic Whitewater trip, and 12% a social recreation trip. About 29% said they received a wilderness experience; 53%, a scenic experience, and 18% a social recreation experience. About 42% of the commercial boaters said the river should provide a wilderness trip, 50% a scenic trip, and 8% a social trip. About 53% of the responding private boaters expected a wilderness trip, 30% a scenic trip, and 17% a social recreation trip. Only 27% received a wilderness experience, 50% a scenic trip, and 23% a social recreation trip. When asked what experience the river should provide, 39% of the private boaters said a wilderness trip, 52% a scenic trip, and 8% a social recreation trip. In addition, river stretch floated and trip size explained significant

Acceptable people/boat

The great majority of boaters said the number of people on their boat made a difference to them. Only 6 commercial boaters (1.8%) and 6 private boaters (2.2%) said it didn't matter (Table 38). Of those who said the number did matter, most felt the number that was actually on their boat was acceptable. Only 20 commercial boaters (6%) and 6 private boaters (2.2%) felt the number of people on their boat was unacceptable (Table 39).

Table 40 lists the number of people per boat for those respondents who considered the number acceptable. Private and commercial types differed considerably. Commercial trips averaged 7.6 persons per craft; privates 3.1. Median people per boat was 7 for commercials, and only one for privates. Fifty-two percent of all private boaters were alone in their craft; this percentage for commercials was 1.0. Only about 11% of the privates had 8 or more in their craft; 61% of the commercial respondents had this number.

For those 26 boaters who found the number of people on their boat unacceptable, some wanted more people and some fewer. The boats of the 14 commercial boaters who wanted fewer people carried an average of 8.8 people; for the 4 privates, this number was 10.3. Only seven commercial boaters thought the number of people on their boat was too small; their boats carried an average of 8.2 people. Only one private boater said his boat had too few people, and it had 8 people.

The commercial and private boaters who had too many people on their boat preferred an average of 6.3 persons/boats (Table 41). For those who felt they had too few, commercial and private boaters preferred 16.2 and 12.0 people, respectively.

Finally, we computed an intensity of conflict index for those few boaters who felt there were too many people on their boat and who also suggested an acceptable number. This was done by subtracting the number of people they

said would be acceptable from the actual number that was on their boats.

Table 42 indicates that the mean conflict intensity score for the 14 commercial boaters was 2.9; the score for the four private boaters was 4.0.

Table 38

Breakdown of all, commercial, and private boaters by whether number of people on their boat makes a difference

Makes a difference	All		Commercial		Private	
	N	%	N	%	N	%
Yes	565	91.7	322	94.5	243	88.4
No	12	1.9	6	1.8	6	2.2
Missing	39	6.3	13	3.8	26	9.5
Total	616	100.0	341	100.0	275	100.0

Table 39

Breakdown of all, commercial, and private boaters by whether the number of people on their boat was acceptable

Was acceptable	All		Commercial		Private	
	N	%	N	%	N	%
Yes	539	89.2	302	90.1	237	88.1
No	26	4.3	20	6.0	6	2.2
Missing	39	6.5	13	3.9	26	9.7
Total	604	100.0	335	100.0	269	100.0

Table 40

Breakdown of all, commercial, and private boaters by number of people/boat for boaters who felt the number of people on their boat was acceptable

Number of people per boat	All ¹		Commercial ²		Private ³	
	N	%	N	%	N	%
1	126	23.4	3	1.0	123	51.9
2-5	73	13.5	16	5.3	57	24.1
6-7	135	25.0	105	34.8	30	12.7
8	112	20.8	97	32.1	15	6.3
9-12	91	16.9	81	28.8	10	4.2
Missing	2	.4	0	0	2	.8
Total	539	100.0	302	100.0	237	100.0

¹Mean = 5.6; Median = 7

²Mean = 7.6; Median = 8

³Mean = 3.1; Median = 1

Table 41

Breakdown of suggested acceptable number of people per boat
by all, commercial, and private boaters

Acceptable number of people/boat	For boaters who had too many people on their boat					
	All ¹		Commercial ²		Private ³	
	N	%	N	%	N	%
3	1	5.6	0	0	1	25.0
4	2	11.1	2	14.3	0	0
6	7	38.9	6	42.9	1	25.0
7	2	11.1	2	14.3	0	0
8	3	16.7	1	7.1	2	50.0
9	1	5.6	1	7.1	0	0
Can't suggest a number	2	11.1	2	14.3	0	0
Total	18	100.0	14	100.0	4	100.0

	For boaters who had too few people on their boat					
	All ⁴		Commercial ⁵		Private ⁶	
	N	%	N	%	N	%
6	2	20.0	2	28.6	0	0
8	2	20.0	2	28.6	0	0
9	1	10.0	1	14.3	0	0
12	1	10.0	0	0	1	33.3
60	1	10.0	1	14.3	0	0
Can't suggest a number	3	30.0	1	14.3	2	67.7
Total	10	100.0	7	100.0	3	100.0

¹ Mean = 6.3; Median = 6.0

² Mean = 6.3; Median = 6.0

³ Mean = 6.3; Median = 7.0

⁴ Mean = 15.9; Median = 8.5

⁵ Mean = 16.2; Median = 8.0

⁶ Mean = 12.0; Median = 12.0

Table 42

Breakdown of all, commercial, and private boaters by intensity of conflict for those boaters who felt there

Number of people/boat greater than accept- able level	All ¹		Commercial ²		Private ³	
	N	%	N	%	N	%
1	2	11.1	2	14.3	0	0
2	6	33.3	5	35.7	1	25.0
3	3	16.7	2	14.3	1	25.0
4	3	16.7	2	14.3	1	25.0
5	1	5.5	1	7.1	0	0
7	1	5.5	0	0	1	25.0
Missing	2	11.1	2	14.3	0	0
Total	18	100.0	14	100.0	4	100.0

¹Mean = 2.9

²Mean = 2.5

³Mean = 4.0

Acceptable boats/trip

As was the case for number of people per boat, most boaters said that the number of boats per trip did make a difference to them. Only 18 (5.3%) of the commercials and 10 (3.6%) of the privates said the number didn't matter (Table 43). Of those who said the number did matter, again most felt that the number of boats that was actually on their trip was acceptable. Only 23 commercial boaters (7.1%) and 12 private boaters (4.5%) found the number unacceptable (Table 44).

Table 45 describes the number of boats per trip for those study participants who felt the number was acceptable. Average sizes of acceptable trips was about equal for commercial and private trips (4.5 and 4.8 boats per trip, respectively). However, there was much greater variation among the private boaters. For example, about 20% of all private boaters found their one boat/trip acceptable, but another 11% found their trip of ten or more boats satisfactory. Average number of boats per trip of the 23 commercial boaters who found their trip size unacceptable was 7.0. Their median trip size was 6.5. For the 12 private

boaters who were dissatisfied, their trips averaged 13.2 boats. Their median number was 13.

The commercial boaters who felt there were too many boats on their trip preferred a mean trip size of 3.8 boats. This number for the dissatisfied private boaters was 5.9 boats (Table 46).

Since several of the boaters who disliked the number of boats on their trip were unable to suggest an acceptable number, we were only able to compute an intensity of conflict index score for 24 boaters. The 15 commercial boaters traveled on trips that averaged 3.4 too many boats. For the 9 private boaters this number was 7.4 (Table 47).

Table 43

Breakdown of all, commercial, and private boaters by whether number of boats on their trip makes a difference

Makes a difference	All		Commercial		Private	
	N	%	N	%	N	%
Yes	553	89.8	310	90.9	243	88.4
No	28	4.5	18	5.3	10	3.6
Missing	35	5.7	13	3.8	22	8.0
Total	616	100.0	341	100.0	275	100.0

Table 44

Breakdown of all, commercial, and private boaters by

Was acceptable	All		Commercial		Private	
	N	%	N	%	N	%
Yes	518	88.0	287	88.9	231	87.2
No	35	6.0	23	7.1	12	4.5
Missing	35	6.0	13	4.0	22	8.3
Total	588	100.0	323	100.0	265	100.0

Table 45

Breakdown of all, commercial, and private boaters
by number of boats/trip for all boaters who felt
the number of boats on their trip was acceptable

Number of boats per trip	All ¹		Commercial ²		Private ³	
	N	%	N	%	N	%
1	66	12.7	20	7.0	46	19.9
2-3	119	23.0	77	26.8	42	18.2
4-5	174	33.6	115	40.1	59	25.5
6-9	109	21.0	53	18.5	56	24.2
10 or more	39	7.5	13	4.5	26	11.3
Missing	11	2.1	9	3.1	2	.9
Total	518	100.0	287	100.0	231	100.0

¹Mean = 4.8; Median = 4.0

²Mean = 4.5; Median = 4.0

³Mean = 5.2; Median = 4.0

Table 46

Breakdown of suggested acceptable number of boats per trip
by all, commercial, and private boaters who

Suggested acceptable number of boats/trip	All ¹		Commercial ²		Private ³	
	N	%	N	%	N	%
1	2	5.7	2	8.7	0	0
2	1	2.9	1	4.3	0	0
3	3	8.6	3	13.0	0	0
4	9	25.7	5	21.7	4	33.3
5	5	14.3	4	17.4	1	8.3
6	1	2.9	0	0	1	8.3
7	3	8.6	1	4.3	2	16.7
8	1	2.9	0	0	1	8.3
10	1	2.9	0	0	1	8.3
Couldn't suggest an acceptable number	8	22.9	7	30.4	1	8.3
Missing	1	2.9	0	0	1	8.3
Total	35	100.0	23	100.0	12	100.0

¹Mean = 4.6; Median = 4.0

²Mean = 3.8; Median = 4.0

³Mean = 5.9; Median = 5.5

Table 47

Breakdown of all, commercial, and private boaters
by intensity of conflict for those boaters
who felt there were too many boats on their trip

Number of boats/trip greater than accept- able level	All ¹		Commercial ²		Private ³	
	N	%	N	%	N	%
1	0	0	0	0	0	0
2	9	25.7	8	34.8	1	8.3
3	1	2.9	1	4.3	0	0
4	3	8.6	2	8.7	1	8.3
5	1	2.9	1	4.3	0	0
6	3	8.6	2	8.7	1	8.3
7	2	5.7	1	4.3	1	8.3
8	2	5.7	0	0	2	16.7
9	2	5.7	0	0	2	16.7
10 or more	1	2.9	0	0	1	8.3
Missing	11	31.4	8	34.8	3	25.0
Total	35	100.0	23	100.0	12	100.0

¹Mean = 4.9

²Mean = 3.4

³Mean = 7.4

How well people got along on the trip

Since private boaters often had only one boat on their river trip, many did not respond to the questionnaire item on how well group members got along on the river trip (Table 48). However, of all boaters in the study, only 5.6% - or 19 -of the commercial floaters and 4.7% - or 13 - of the privates said there were some real problems among group members. Most said the group got along extremely well.

Unsafe actions or conditions on the trip

About 90% of both the commercial and the private boaters said they observed no unsafe actions or conditions on their river trip (Table 49). Just over 6% of both groups reported unsafe conditions or unsafe actions by the guide or group members.

Table 48

Breakdown of all, commercials and private boaters on how well people got along with each other on the trip

How well people got along	All		Commercial		Private	
	N	%	N	%	N	%
Extremely well	409	66.4	247	72.4	162	58.8
Pretty well	81	13.1	61	17.9	20	7.3
Indifferent, neither good nor bad	17	2.8	11	3.2	6	2.2
Some real problems	32	5.2	19	5.6	13	4.7
Missing	77	12.5	3	.9	74	26.9
Total	616	100.0	341	100.0	275	100.0

Table 49

Breakdown of all, commercial, and private boaters on whether unsafe actions or conditions were observed on the river trip

Unsafe actions or conditions	All		Commercial		Private	
	N	%	N	%	N	%
Yes	38	6.2	21	6.2	17	6.2
No	561	91.1	315	92.4	246	89.5
Missing	17	2.8	5	1.5	12	4.4
Total	616	100.0	341	100.0	275	100.0

Intra-group conflicts of boater clientele groups

The high degree of agreement among all boaters in the study on the lack of intra-group conflicts on river trips made the search for greater consensus of opinion among subgroups of the boater population largely unnecessary. For example, about 90% of all boaters felt that (1) the number of people per boat and the number of boats per trip made a difference to the quality of their experience; (2) the number of people actually on their boat and the number of boats on their trip were acceptable; and (3) there were no unsafe actions or conditions on their trip. Only about 5% felt that there were some real problems in how well people got along on their trip. Thus the number of individuals sampled who actually experienced any kind of intra-group conflict on each of the trip features measured numbered only about 20 or 30. Our attempts to more

carefully describe times, conditions, locations, or trip characteristics where conflicts did or didn't occur were therefore limited by small numbers. Findings must therefore be considered to suggest tendencies and not as hard evidence of any concentration of conflict.

Number of boats/trip

There was a significant tendency for an increase in the number of boats per trip to be associated with a greater percentage of boaters who found that number unacceptable (Table 50). For example, the acceptance rate for trips of 1-5 boats was 98.9%. This dropped to 87.9% for trips of 6-9 boats, and to 73.6% for trips of 10-40 boats. Correlated with this, there was a tendency for boaters on larger trips to experience greater intensity of conflict due to trip size (Table 51). For boaters who said their trip of 10-40 boats was unacceptable, all but one preferred at least five fewer boats on their trip. Over 90% of the boaters who experienced conflict on trips of 1-9 boats preferred 1 to 4 fewer boats,

Table 50

Breakdown of whether the number of boats per trip was acceptable
by number of boats per trip

Number of boats/trip	Acceptable		Not acceptable	
	N	%	N	%
1-3	185	36.5	2	6.1
4-5	174	34.3	2	6.1
6-9	109	21.5	15	45.5
10-40	39	7.7	14	42.4
Total	507	100.0	33	100.0

Chi-square = 61.7; Significant at $p < .01$.

Table 51

Breakdown of Intensity of trip size
conflict by number of boats per trip

Number of boats/ trip	N	Intensity of conflict (Number of boats greater than acceptable level)	
		1-4 boats	5 or more boats
		N	%
1-3	1	7.7	0
4-5	2	15.4	0
6-9	9	69.2	1
10-40	1	7.7	10
Total	13	100.0	11

¹Only those boaters who experienced a trip size conflict and who could suggest an acceptable number are included in this table.
Chi-square = 16.7; Significant at $p < .01$.

Type of trip (private or commercial)

Commercial boaters generally accept larger numbers of people per boat (Table 52). For example, about one-fourth of all commercial boaters would accept 9 or more people/boat; only 4% of the privates would accept number. About 33% of the commercial floaters accept 8 persons/boat; only 8.3% of the privates accept this number.

Of those few boaters who experienced conflict due to trip size, private boaters tended to experience greater conflict (Table 53). About 64% of the private boaters who experienced this conflict preferred to be with at least 5 fewer boats on their trip; only 37% of the commercial boaters who experienced conflict preferred this many fewer boats on their trip.

Table 52

Breakdown of acceptable number of people/boat
by private and commercial trip

Acceptable number people/boat	Commercial		Private of	
	N	%	N	%
1	3	.9	122	50.8
2-5	18	5.7	58	24.2
6-7	112	35.2	30	12.5
8	104	32.7	20	8.3
9-60	81	25.5	10	4.2
Total	318	100.0	240	100.0

Chi-square=288.7; Significant or $p < .01$

Table 53

Breakdown of intensity of trip size conflict
by private and commercial trip¹

Type of trip	Intensity of conflict (number of boats greater than acceptable level)			
	1-4 boats		5 or more boats	
	N	%	N	%
Commercial	11	84.6	4	36.4
Private	2	15.4	7	63.6
Total	13	100.0	11	100.0

Chi-square = 4.0; Significant at $p < .05$

¹Only those boaters who experienced a trip size conflict and who could suggest an acceptable number are included in this table.

River stretch floated

A significantly greater percentage of boaters who took multi-day trips on at least part of the upriver and the gorge found the number of people on their boats and the number of boats on their trips unacceptable (Tables 54 and 55). For example, 13.6% and 15.2% of the multi-river stretch floaters were dissatisfied with the number of people on their boat and the number of boats on their trip, respectively. These percentages were only 3.7 and 5.8 for gorge floaters, and 1.6 and 1.5 for upriver trips.

Table 54

Breakdown of whether number of people per boat was acceptable by river stretch floated

Acceptable number of people/boat	Gorge		Upper river		Both upriver and gorge	
	N	%	N	%	N	%
Yes	412	96.3	63	98*4	57	86.4
No	16	3.7	1	1.6	9	13.6
Total	428	100.0	64	100.0	66	100.0

Chi-square = 14.2; Significant at p<.01.

Table 55.

Breakdown of whether number of boats per trip
was acceptable by river stretch floated

Acceptable number of boats/trip	Gorge		Upper river		Both upriver and gorge	
	N	%	N	%	N	%
Yes	389	94.2	66	98.5	56	84.8
No	24	5.8	1	1.5	10	15.2
Total	413	100.0	67	100.0	66	100.0

Chi-square = 11.4; Significant at $p < .01$

Weekend/weekday trip

There was a significant tendency for more weekend than weekday boaters to state that there were problems in how well group members got along on their trip. About 13% of all weekend boaters said there were real problems in their groups or that the group was indifferent; only 4% of the weekday boaters felt this way about their group (Table 56). Also, about 9% of weekend floaters noted unsafe actions taken by their guide or group members, or unsafe conditions on their trip; this number was only 3% for weekday floaters (Table 57).

Table 56

Breakdown on how well group got along by time of week of trip

How well group got along	Weekday		Weekend	
	N	%	N	%
Extremely well	175	78.5	233	74.0
Pretty well	39	17.5	42	13.3
Indifferent; neither	3	1.3	14	4.4
good nor bad Some	6	2.7	26	8.3
real problems				
Total	223	100.0	315	100.0

Chi-square = 12.6; Significant at $p < .01$.

Table 57

Breakdown on boater perception of unsafe actions or conditions on the river trip by time of week of trip

Unsafe actions or conditions	Weekday		Weekend	
	N	%	N	%
Yes	6	2.6	32	8.6
No	221	97.4	339	91.4
Total	227	100.0	371	100.0
Chi-square = 7.5; Significant at $p < .01$.				

Season of the year, amount of previous river experience, and type of river experience expected

When the above variables used to identify managerially relevant subgroups of the boater population were controlled for, season of the year, amount of previous river experience, and type of river experience expected did not relate significantly to presence and intensity of intra-group conflicts. In some instances, failure to achieve significance appeared to be due to small sample sizes. For example, of those boaters who experienced conflict due to trip size, more who expected a wilderness trip than a scenic or a social recreation trip had high levels of conflict (Table 58),

Table 58

Breakdown of intensity of trip size conflict by type of trip experience expected¹

Type of trip experience expected	Intensity of conflict (number of boats greater than acceptable level)			
	1-4 boats		5 or more boats	
	N	%	N	%
Wilderness	4	30.8	7	63.6
Scenic	8	61.5	4	36.4
Social recreation	1	7.7	0	0
Total	13	100.0	11	100.0

Chi-square = 3.0; Significant at $p = .22$.

¹Only those boaters who experienced a trip size conflict and who could suggest an acceptable number are included in this table.

Inter-group conflicts

We explored potential inter-group conflicts on the river by asking boaters (1) the number of boats seen at various locations on the river, whether this

number was acceptable, and if not, what number would be acceptable; (2) the average size of other river trips seen, whether this size was acceptable, and if not, what size would be acceptable; (3) the percent of time in sight of boats from other trips, whether this amount of time was acceptable, and if not, what amount of time would be acceptable; (4) the number of rapids waited at, whether this number was acceptable, and if not, what number would be acceptable; (5) the number of bank and boat fishermen seen, whether this number was acceptable; and if not, what number would be acceptable; (6) how the number of boats seen compared to expectations; (7) whether number versus behavior of other people on the river was bothersome; and finally (8) whether the total number of people seen on the river trip as a whole was too few, about right, or too many.

Boats floating on the river

The average number of boats from other trips seen each day on the river was about 17 for commercial boaters and 44 for private boaters (Table 59). The median number for the two groups was 13 and 30. About 4% of the commercial and 22% of the private boaters saw more than 50 boats from other trips on the river each day. The large difference between the two groups is surprising. It might be explained by the fact that a greater percentage of private boaters floated during the summer and on weekends when use was highest. On the other hand, a larger proportion of privates floated on the upriver section, where use was low. Private trips did often have a large number of boats (often kayaks or canoes), so seeing a few other private trips on the upriver segment could account for a large number of boats.

When boaters were asked whether the number of boats seen each day made a difference to the quality of their experiences, about a third of both the private and the commercial boaters said the number didn't matter (Table 60). The remaining individuals suggested an acceptable number. The average acceptable number for the commercial boaters was about 14; the number for the privates

was about 38 (Table 61). These numbers are somewhat smaller than the numbers actually seen on the river (See Table 59). The greatest number of commercial boaters (23.5%) called seeing 11-20 boats acceptable; the largest number of private boaters (33.2%) accepted 21-50 boats.

Table 62 describes the intensity of conflict for those boaters who said they saw too many boats on the river. Seventy-seven, or 22.6% of the commercial boaters fell into this category and they averaged seeing 27 boats on their river trip. On the average they said this was about 17 too many boats. Seventy-two, or 26.2% of the private boaters reported seeing too many boats from other trips on the river. These individuals averaged seeing about 68 boats on their trip, and said that this was about 40 too many boats.

Table 59

Breakdown of all, commercial, and private boaters by number of boats seen floating the river each day

Number of boats seen	All ¹		Commercial ²		Private ³	
	N	%	N	%	N	%
0	27	4.4	17	5.0	10	3.6
1-5	70	11.4	56	16.4	14	5.1
6-10	72	11.7	51	15.0	21	7.6
11-20	143	23.2	103	30.2	40	14.5
21-50	130	21.1	43	12.6	87	31.6
51-100	65	10.6	12	3.5	53	19.3
MOO	8	1.3	1	.3	7	2.5
Missing	101	16.4	58	17.0	43	15.6
Total	616	100.0	341	100.0	275	100.0

¹Mean = 29.1; Median = 20

²Mean = 16.9; Median=13

³Mean=44.1; Median=30

Table 60

Breakdown of all, commercial, and private boaters by whether number of boats seen floating the river makes a difference

Makes a difference	All		Commercial		Private	
	Yes	%	Yes	%	Yes	%
Yes	320	51.9	172	50.4	148	53.8
No	211	34.3	120	35.2	91	33.1
Missing	85	13.8	49	14.4	36	13.1
Total	616	100.0	341	100.0	275	100.0

Table 61

Breakdown of all, commercial, and private boaters
by acceptable number of boats to see
floating on the river each day

Acceptable number of boats	All ¹		Commercial ²		Private ³	
	N	%	N	%	N	%
0	11	2.7	6	2.7	5	2.7
1-5	50	12.3	41	18.6	9	4.9
6-10	70	17.3	49	22.2	21	11.4
11-20	82	20.2	52	23.5	30	16.3
21-50	82	20.2	21	9.5	61	33.2
51-100	19	4.7	3	1.4	16	8.7
>100	6	1.5	0	0	6	3.3
Missing	85	21.0	49	22.2	36	19.6
Total	405	100.0	221	100.0	184	100.0

¹Mean = 25.1; Median =15.0

²Mean = 14.2; Median =10.0

³Mean = 37.7; Median = 25.0

Table 62

Breakdown of all, commercial, and private boaters
by intensity of conflict for those boaters who
felt they saw too many boats on the river each day

Number of boats greater than acceptable	All ¹		Commercial ²		Private ³	
	N	%	N	%	N	%
1-5	28	18.8	19	24.7	9	12.5
6-10	29	19.5	22	28.6	7	9.7
11-25	40	26.8	24	31.2	16	22.2
26-50	36	24.2	8	10.4	28	38.9
>50	16	10.7	4	5.2	12	16.7
Total	149	100.0	77	100.0	72	100.0

¹Mean = 28.3; Median = 15.0;

²Mean = 17.0; Median =10

³Mean = 40.4; Median=30.0

Boats floating past lunch stop

Boaters saw fewer boats floating past their lunch stop than they saw while on the river (Table 63). Again the private boaters reported seeing many more boats. Their average was about 22 boats; commercial users reported seeing 10 boats. The median number for the two groups was 15 for the privates and

6 for the commercial users. About 8% of the commercial boaters saw more than 20 boats float past their lunch stop; 22% of the privates saw this many.

Boaters were less concerned about the number of boats floating past their lunch stop than they were about the number they saw while floating the river (Table 64). About 40% of the commercial users said the number didn't matter; 35% of the privates felt this way. Also, the high nonresponse rate to this item (19% for commercials and 27% for privates) suggests that the boaters were not very sensitive to this issue.

When we asked study participants how many boats they would accept floating past their lunch stop, the commercial users' average response was 14; the privates' average was about 28 (Table 65). Thus, on the average, boaters would accept more boats floating past their lunch stop than they actually saw there (See Table 63). However, 41 (12.0%) of the commercial boaters and 36 (13.1%) of the private boaters said they did see too many. These dissatisfied commercial users saw on average of 18 boats, and said on the average that this was 12 boats too many. Private boaters in this category saw an average of 50 boats float past their lunch stop, and they said this was about 27 boats too many (Table 66).

Table 63

Breakdown of all, commercial, and private boaters by number of boats seen floating by lunch stop each day

Number of boats seen	All ¹		Commercial ²		3 Private	
	N	%	N	%	N	%
0	75	12.2	44	12.9	31	11.3
1-5	101	16.4	72	21.1	29	10.5
6-10	110	17.9	82	24.0	28	10.2
11-20	104	16.9	48	14.1	56	20.4
21-50	69	11.2	23	6.7	46	16.7
51-100	12	1.9	3	.9	9	3.3
>100	5	.8	1	.3	4	1.5
Missing	140	22.7	68	19.9	72	26.2
Total	616	100.0	341	100.0	275	100.0

¹Mean = 15.1; Median=10.0

²Mean =9.9; Median=6.0

³Mean=22.0; Median=15.0

Table 64

Breakdown of all, commercial, and private boaters by whether number of boats seen floating past their lunch stop makes a difference

Makes a Difference	All		Commercial		Private	
	N	%	N	%	N	%
Yes	243	39.4	139	40.8	104	37.8
No	235	38.1	138	40.5	97	35.3
Missing	138	22.4	64	18.8	74	26.9
Total	616	100.0	341	100.0	275	100.0

Table 65

Breakdown of all, commercial and private boaters by acceptable number of boats to see floating past their lunch stop

Acceptable No. of boats	All ¹		Commercial ²		Private ³	
	N	%	N	%	N	%
0	14	3.7	7	3.4	7	3.9
1-5	57	15.0	44	21.7	13	7.3
6-10	72	18.9	45	22.2	27	15.2
11-20	54	14.2	26	12.8	28	15.7
21-50	33	8.7	15	7.4	18	10.1
51-100	8	2.1	1	.5	7	3.9
>100	5	1.3	1	.5	4	2.2
Missing	138	36.2	64	31.5	74	41.6
Total	381	100.0	203	100.0	178	100.0

¹Mean=19.5; Median=10.0

²Mean=14.1; Median=9.0

³Mean=26.7; Median=15.0

Table 66

Breakdown of all, commercial, and private boaters by intensity of conflict of those boaters who felt they saw too many boats float past their lunch stop each day.

Number of boats greater than acceptable	All ¹		Commercial ²		Private ³	
	N	%	N	%	N	%
1-5	18	23.4	15	36.6	3	8.3
6-10	23	29.9	14	34.1	9	25.0
11-25	20	26.0	9	22.0	11	30.6
26-50	11	14.3	2	4.9	9	25.0
>50	5	6.5	1	2.4	4	11.1
Total	77	100.0	41	100.0	36	100.0

¹Mean = 19.0; Median =10.0

²Mean = 12.0; Median =8.0

³Mean = 26.9; Median =20.0

Boats floating past the campsite

Very few boaters (17% of the commercials and 6% of the privates) took multi-day trips, so the question on how many boats floated past their campsite was irrelevant for most users. Of those who did respond, the commercial boaters saw an average of 3 boats; the privates reported about 14 (Table 67). There were apparently few boats on the river during the evening and early morning hours. For example, only 5 commercial boaters and 8 private boaters said they saw 6 or more boats.

Of those boaters who did indicate whether the number of boats floating past their campsite made a difference; more said the number didn't matter than said it did (Table 68). This contrasts with feelings about seeing boats while on the river or seeing boats float past their lunch stop – where somewhat more said it did matter.

When asked how many boats they would accept floating past their campsite, the mean response of the 21 commercial boaters and 17 private boaters who answered this question was about 5 and 10 boats, respectively (Table 69). Thus, commercial boaters would accept more than they actually saw (on the average); private boaters would accept fewer. Only one commercial boater and five private boaters said they saw too many. They saw 75 boats and 60 boats float past their campsite, and Table 70 reports how many more this was than acceptable.

Table 67

Breakdown of all, commercial, and private boaters by number of boats seen floating by campsite each night

Number of boats seen	All ¹		Commercial ²		Private ³	
	N	%	N	%	N	%
0	51	8.3	37	10.8	14	5.1
1-5	15	2.4	7	2.1	8	2.9
6-10	6	1.0	3	.9	3	1.1
11-50	4	.6	1	.3	3	1.1
>50	3	.5	1	.3	2	.7
Missing	537	87.2	292	85.6	245	89.1
Total	616	100.0	341	100.0	275	100.0

¹Mean=7.0; Median=0

²Mean=2.9; Median =0

³Mean=13.6;Median=1.5

Table 68

Breakdown of all, commercial, and private boaters by whether number of boats seen floating by campsite makes a difference

Makes a Difference	All		Commercial		Private	
	N	%	N	%	N	%
Yes	38	6.2	21	6.2	17	6.2
No	63	10.2	39	11.4	24	8.7
Missing	515	83.6	281	82.4	234	85.1
Total	616	100.0	341	100.0	275	100.0

Table 69

Breakdown of all, commercial and private boaters by acceptable number of boats to see floating past their campsite

Acceptable number of boats	All ¹		Commercial ²		Private ³	
	N	%	N	%	N	%
0	13	2.4	8	2.6	5	2.0
1-5	11	2.0	7	2.3	4	1.7
6-10	6	1.1	3	1.0	3	1.2
11-50	8	1.4	3	1.0	5	2.0
>50	0	0	0	0	0	0
Missing	515	93.1	281	93.1	234	93.2
Total	553	100.0	302	100.0	251	100.0

¹Mean=7.4; Median =4.0

²Mean=5.0;Median=4.0

³Mean=10.5;Median=5.0

Table 70

Breakdown of all, commercials and private boaters by intensity of conflict of those boaters who felt they saw too many boats float past their campsite

Number of boats greater than acceptable	All		Commercial		3 Private	
	N	%	N	%	N	%
1-5	1	16.7	0	0	1	20.0
6-10	2	33.3	0	0	2	40.0
11-25	0	0	0	0	0	0
26-50	0	0	0	0	0	0
>50	3	50.0	1	100.0	2	40.0
Total	6	100.0	1	100.0	5	100.0

¹Mean = 50,3; Median =32.5

²Mean = 55.0; Median=55

³Mean=49.4; Median=10

Boats seen at take-out point

Commercial boaters reported seeing an average of about 7 boats from other trips at their take-out point. This number was about 19 for private boaters (Table 71). The median number for the two groups was 4 and 10, respectively. Twenty-four percent of the commercial boaters reported seeing no other boats at the take-out point, only 8% of the privates were in this category. About 13% and 37% of the commercials and privates, respectively, reported seeing 11 or more boats at the take-out point.

As was the case for boats floating past the campsite, slightly more boaters said the number of boats they saw at the take-out point didn't matter than said it did (Table 72). For those who said the number did matter, the commercial boaters said they would accept seeing an average of about 9 boats at their take-out point; the private boaters would accept about 19 (Table 73). The median number for the two groups was 5 and 10, respectively. Thus, on the average, boaters in both groups would accept more boats at the take-out point than they actually saw there. Some respondents (2.5 or 7.3% for commercial users and 37 or 13.5% for privates did, however, report seeing too many boats. These individuals saw an average of 19 and 38 boats, respectively, at the take-out point, and this represented an average of 13 and 20 boats too many (Table 74).

Table 71

Breakdown of all, commercial, and private boaters
by number of boats seen at their take-out point

Number of boats seen	All ¹		Commercial ²		Private ³	
	N	%	N	%	N	%
0	105	17.0	83	24.3	22	8.0
1-5	122	19.8	74	21.7	48	17.5
6-10	123	20.0	65	19.1	58	21.1
11-20	83	13.5	33	9.7	50	18.2
21-50	50	8.1	9	2.6	41	14.9
51-100	7	1.1	0	0	7	2.5
>100	6	1.0	1	.3	5	1.8
Missing	120	19.5	76	22.3	44	16.0
Total	616	100.0	341	100.0	275	100.0

¹Mean = 12.4; Median = 6.0

²Mean = 6.7; Median = 4.0

³Mean = 18.9; Median = 10.0

Table 72

Breakdown of all, commercial, and private boaters by whether number of boats seen at their take-out point makes a difference

Makes a difference	All		Commercial		Private	
	N	%	N	%	N	%
Yes No	236	38.3	132	38.7	104	37.8
Missing	255	41.4	138	40.5	117	42.5
Total	125	20.3	71	20.8	54	19.6
	616	100.0	341	100.0	275	100.0

Table 73

Breakdown of all, commercial, and private boaters by acceptable number of boats to see at their take-out point

Acceptable number of boats	All ¹		Commercial ²		Private ³	
	N	%	N	%	N	%
0	16	4.4	12	5.9	4	2.5
1-5	77	21.3	57	28.1	20	12.7
6-10	70	19.4	39	19.2	31	19.6
11-20	40	11.1	15	7.4	25	15.8
21-50	28	7.8	9	4.4	19	12.0
>50	5	1.4	0	0	5	3.2
Missing	125	34.6	71	35.0	54	34.2
Total	361	100.0	203	100.0	158	100.0

Table 74

Breakdown of all, commercial, and private boaters by intensity of conflict of those boaters who felt they saw too many boats at their take-out point

Number of boats greater than acceptable	All ¹		Commercial ²		Private ³	
	N	%	N	%	N	%
1-5	21	39.9	9	36.0	12	32.4
6-10	16	25.8	8	32.0	8	21.6
11-25	19	30.6	7	28.0	12	32.4
26-50	2	3.2	0	0	2	5.4
>50	4	6.5	1	4.0	3	8.1
Total	62	100.0	25	100.0	37	100.0

¹Mean = 17.6; Median = 10.0

²Mean = 13.3; Median = 8.0

³Mean = 20.5; Median = 10.0

Average size of trips seen

Only about 11% of the commercial users and 14% of the privates said that the size of other trips seen on the river made no difference to them (Table 75). The numbers are, however, larger than the boater opinions about number of people on their own boats or on the number of boats on their trip (See Tables 38 and 43). For those who said the size of other trips seen did matter, most said the size of trips they actually saw was acceptable. About 16 percent of the commercial boaters and 23% of the privates said it wasn't (Table 76).

Table 77 describes the average size of other trips seen for boaters who felt that size was acceptable. The mean size for commercial boaters was 4.3; the median was 4.0. For private boaters these numbers were 5.9 and 5.0 respectively. About 3% of the commercial boaters saw trips that averaged 10 or more boats and found this size acceptable. Almost 15% of the private boaters fell into this category.

Fifty of the commercial boaters and 55 of the privates found the average size of other trips unacceptable. About 30% of these commercial floaters and 22% of the privates could not, however, suggest an acceptable number (Table 78). Of those who could, the commercial boaters reported an average acceptable size of 7.1 boats; for privates this number was 4.7 boats. A few commercial boaters who would accept large trips caused their group mean to be high; in this case the median is therefore more representative of the group's opinions. That number is 3.5 for commercials and 4.0 for privates. Looking at the data another way, the largest group of commercial users (26%) would accept trips of 2 or 3 boats; for privates the largest group (38%) would accept seeing trips of 4 or 5 boats.

Table 79 reports the intensity of conflict of boaters who felt they saw groups that were too large and who could suggest acceptable group sizes.

The 27 commercial boaters involved saw trips which averaged 7.7 boats, and they felt this averaged 3.1 boats too many; the 38 private boaters saw trips which averaged 9.0 boats, and they felt this averaged 5 boats too many.

Table 75

Breakdown of all, commercial, and private boaters by whether average size of other trips seen on the river makes a difference

Makes a difference	All		Commercial		Private	
	N	%	N	%	N	%
Yes	476	77.3	264	77.4		77.1
No	73	11.9	36	10.6	37	13.5
Missing	67	10.9	41	12.0	26	9.5
Total	616	100.0	341	100.0	275	100.0

Table 76

Breakdown of all, commercial, and private boaters by whether the average size of other trips seen on the river was acceptable

Was Acceptable	All		Commercial		Private	
	N	%	N	%	N	%
Yes	371	68.3	214	70.2	157	66.
No	105	19.3	50	16.4	55	0
Missing	67	12.3	41	13.4	26	23.
Total	543	100	305	100	238	100

Table 77

Breakdown of all, commercial, and private boaters by average size of other trips seen for boaters who felt sizes of other trips seen were acceptable

Average number						
of boats on other trips seen	ALL ¹		Commercial ²		Private ³	
	N	%	N	%	N	%
1	9	2.4	6	2.8	3	1.9
2-3	71	19.1	52	24.3	19	12.1
4-5	146	39.4	87	40.7	59	37.6
6-9	82	22.1	45	21.0	37	23.6
10 or more	29	7.8	6	2.8	23	14.6
Missing	34	9.2	18	8.4	16	10.2
Total	371	100.0	214	100.0	157	100.0

¹Mean = 5.0;

Median=5.0

²Mean = 4.3;

Median =4.0

³Mean = 5.9;

Median =5.0

Table 78

Breakdown of suggested acceptable average size of other trips on the river for all, commercial, and private boaters who reported average size actually seen was unacceptable

Suggested acceptable number of boats/trip	All ¹		Commercial ²		Private ³	
	N	%	N	%	N	%
1	3	2.9	1	2.0	2	3.6
2-3	22	21.0	13	26.0	9	16.4
4-5	28	26.7	7	14.0	21	38.2
6-9	7	6.7	5	10.0	2	3.6
10 or more	8	7.6	3	6.0	5	9.1
Can't suggest an acceptable number	27	25.7	15	30.0	12	21.8
Missing	10	9.5	6	12.0	4	7.3
Total	105	100.0	50	100.0	55	100.0

¹Mean = 5.7; Median = 4.0

²Mean = 7.1; Median = 3.5

³Mean = 4.7; Median = 4.0

Table 79

Breakdown of all, commercial and private boaters by intensity of conflict for those boaters who felt the average size of other trips seen was too large

Number of boats/ trip greater than acceptable level	All ¹		Commercial ²		Private ³	
	N	%	N	%	N	%
1	7	6.7	4	8.0	3	5.5
2	22	21.0	16	32.0	6	10.9
3	4	3.8	1	2.0	3	5.5
4	9	8.6	3	6.0	6	10.9
5	7	6.7	1	2.0	6	10.9
6	5	4.8	0	0	5	9.1
7	4	3.8	0	0	4	7.3
8	2	1.9	1	2.0	1	1.8
9	0	0	0	0	0	0
10 or more	5	4.8	1	2.0	4	7.3
Missing	0	38.1	23	46.0	17	30.9
Total	105	100.0	50	100.0	55	100.0

¹Mean = 4.2; median = 3.0

²Mean = 3.1; Median = 2.0

³Mean = 5.0; Median = 5.0

Percent of time in sight of other trips

More boaters (85%) said the percent of time in sight of other trips mattered to them than said (77%) the same about the size of other trips seen (Tables 75 and 80). For those boaters who said the percent of time in sight of other trips did matter, about 28% of the commercial users and 32% of the private boaters said the time they actually saw other boats was unacceptable. These numbers too were higher than for the dissatisfaction level for average size of other trips seen (Tables 76 and 81).

Those commercial boaters who said their percent of time in sight of other types was acceptable averaged 30%; for privates their average acceptable percentage was 45% (Table 82). The median numbers for the two groups was 20% for commercials and 50% for privates. About 17% and 39% of the commercial and private boaters, respectively, spent more than 50% of their trip in sight of other boats and said it was acceptable.

Eighty-eight (or 25.8%) of the commercial users and 81 (29.5%) of the private boaters said the percent of time they spent in sight of other boats was unacceptable. Of these, about 17% for both groups couldn't suggest an acceptable number. For those who could, the commercial boaters averaged 28% of their trip as an acceptable amount of time to be in sight of other trips. For the private users, this number was 34%. The medians for the two groups were 25% and 30% respectively (Table 83).

Table 84 reports the intensity of conflict due to spending too much time in sight of boats from other trips for those individuals who suggested an acceptable percentage of time. The 68 commercial boaters in this category spent an average of 69.3% of their time in sight of boats from other trips, and this percentage exceeded their acceptable level by an average of 42.7%. The dissatisfied

private boaters spent an average of 82.8% of their time In sight of other trips, and this exceeded acceptable levels by an average of 49.7%.

Table 80

Breakdown of all, commercial, and private boaters by whether percent of time in sight of boats from other trips makes a difference

Makes a difference	All		Commercial		Private	
	N	%	N	%	N	%
Yes	522	84.7	289	84.8	233	84.7
No	55	8.9	31	9.1	24	8.7
Missing	39	6.3	21	6.2	18	6.5
Total	616	100.0	341	100.0	275	100.0

Table 81

Breakdown of all, commercial, and private boaters by whether percent of time in sight of beats from other trips was acceptable

Was Acceptable	All		Commercial		Private	
	N	%	N	%	N	%
Yes No	353	62.9	201	64.8	152	60.6
Missing	169	30.1	88	28.4	81	32.3
Total	39	7.0	21	6.8	18	7.2
	561	100.0	310	100.0	251	100.0

Table 82

Breakdown of all, commercial, and private boaters by percent of time in sight of boats from other trips for boaters who felt this amount of time was acceptable

Percent of time in sight of boats from All ¹ other trips	Commercial ²		Private ³	
	N	%	N	%
0-5	73	20.7	52	25.9
6-10	45	12.7	27	13.4
11-25	65	18.4	38	18.9
26-50	69	19.5	42	20.9
51-75	29	8.2	13	6.5
76-100	65	18.4	22	10.9
Missing	7	2.0	7	3.5
Total	353	100.0	201	100.0

¹Mean = 36.9; Median =25.0

²Mean = 30.2; Median =20.0

³Mean = 45.5; Median = 50.0

Table 83

Breakdown of suggested acceptable percent of time in sight of boats from other trips for boaters who felt their amount of time was unacceptable

Suggested acceptable percent of time in sight of other trips	All ¹		Commercial ²		Private ³	
	N	%	N	%	N	%
0-5	7	4.1	4	4.5	3	3.7
6-10	20	11.8	15	17.0	5	6.2
11-25	39	23.1	21	23.9	18	22.2
26-50	61	36.1	27	30.7	34	42.0
51-75	6	3.6	3	3.4	3	3.7
76-100	0	0	0	0	0	0
Couldn't suggest an acceptable no.	29	17.2	15	17.1	14	17.3
Missing	7	4.1	3	3.4	4	4.9
Total	169	100.0	88	100.0	81	100.0

¹Mean = 31.0;
Median = 30.0

²Mean = 28.2;
Median = 25.0

³Mean = 34.2;
Median = 30.0

Table 84

Breakdown of all, commercial and private boaters by intensity of conflict for those boaters who spent too much time in sight of boats from other trips

Percent of time in sight of other trips greater than acceptable	All ¹		Commercial ²		Private ³	
	N	%	N	%	N	%
0-5	1	.6	1	1.1	0	0
6-10	3	1.8	2	2.3	1	1.2
11-25	21	12.4	14	15.9	7	8.6
26-50	68	40.2	33	37.5	35	43.2
51-75	25	14.8	13	14.8	12	14.8
76-100	13	7.7	5	5.7	8	9.9
Missing	38	22.5	20	22.7	18	22.2
Total	169	100.0	88	100.0	81	100.0

¹Mean = 46.1; Median = 40.0

²Mean = 42.7; Median = 40.0

³Mean = 49.7; Median = 50.0

Number of rapids waited at

Only about 8% of both the commercial and private boaters felt that the number of rapids they waited at made no difference to the quality of their trip (Table 85). For those who said the number of rapids waited at did make a difference, most said their number was acceptable (Table 86). However, 21% of the commercial and 28% of the private boaters were dissatisfied.

Table 87 describes the number of rapids waited at for those boaters who found their number acceptable. For commercial users the average was 1.0; for privates it was 1.8. Most (55% for commercials and 42% for privates) waited at no rapids and found their number acceptable. About 13% of the commercial boaters waited at 3 or more rapids and found this number acceptable; 28% of the private users fell into this category.

Sixty-seven (21%) of the commercial boaters and 71 (28%) of the privates found the number of rapids they actually waited at unacceptable. Of these, about 18% of the commercials and 21% of the privates couldn't suggest an acceptable number (Table 88). Most of the dissatisfied boaters, however, would not accept waiting at any rapids (45% for commercials and 30% for privates). Another 12% of the commercials and 18% of the privates said they would accept waiting at 1 rapids.

Table 89 describes the intensity of conflict due to waiting at too many rapids for those boaters who were able to suggest an acceptable number. The dissatisfied commercial boaters averaged a wait at 3.8 rapids, and this was an average of three too many. The greatest number of commercial boaters (28.4%) waited at two too many rapids. Dissatisfied private boaters waited at an average of 4.7 rapids, and this was 3.6 too many. The largest category (23.9%) of dissatisfied private boaters waited at three too many rapids.

Table 85

Breakdown of all, commercial, and private boaters by whether waiting at rapids for other river-trips to pass through makes a difference

Makes a difference	All		Commercial		Private	
	N	%	N	%	N	%
Yes No	486	78.9	264	77.4	222	80.7
Missing	49	8.0	28	8.2	21	7.6
Total	81	13.1	49	14.4	32	11.6
	616	100.0	341	100.0	275	100.0

Table 86

Breakdown of all, commercial, and private boaters by whether number of rapids waited at was acceptable

Was Acceptable	All		Commercial		Private	
	N	%	N	%	N	%
Yes No	348	61.4	197	62.9	151	59.4
Missing	138	24.3	67	21.4	71	28.0
Total	81	14.3	49	15.7	32	12.6
	567	100.0	313	100.0	254	100.0

Table 87

Breakdown of all, commercial, and private boaters by number of rapids waited at for boaters who felt this number was acceptable

Number or rapids waited at	All ¹		Commercial ²		Private ³	
	N	%	N	%	N	%
0	172	49.4	109	55.3	63	41.7
1	43	12.4	28	14.2	15	9.9
2	54	15.5	29	14.7	25	16.6
3	35	10.1	13	6.6	22	14.6
4	13	3.7	5	2.5	8	5.3
5	9	2.6	6	3.0	3	2.0
More than 5	11	3.2	2	1.0	9	6.0
Missing	11	3.2	5	2.5	6	4.0
Total	348	100.0	197	100.0	151	100.0

¹Mean = 1.4; Median = 0.0

²Mean = 1.0; Median = 0.0

³Mean = 1.8; Median = 1.0

Table 88

Breakdown of suggested acceptable number of rapids to wait at for boaters who felt the number they actually waited, at was unacceptable

Suggested acceptable number of rapids to wait at	All ¹		Commercial ²		Private ³	
	N	%	N	%	N	%
0	51	37.0	30	44.8	21	29.6
1	21	15.2	8	11.9	13	18.3
2	12	8.7	5	7.5	7	9.9
3	5	3.6	0	0	5	7.0
4	2	1.4	1	1.5	1	1.4
5	1	.7	0	0	1	1.4
More than 5	1	.7	1	1.5	0	0
Can't suggest a number	27	19.6	12	17.9	15	21.1
Missing	18	13.0	10	14.9	8	11.3
Total	138	100.0	67	100.0	71	100.0

¹Mean = .9; Median = 0.0
²Mean = .7; Median = 0.0
³Mean = 1.1; Median = 1.0

Table 89

Breakdown of all, commercial, and private boaters by intensity of conflict for those boaters who waited at too many rapids on the river

Number of rapids waited at greater than acceptable	All ¹		Commercial ²		Private ³	
	N	%	N	%	N	%
1	6	4.3	4	6.0	2	2.8
2	29	21.0	19	28.4	10	14.1
3	26	18.8	9	13.4	17	23.9
4	13	9.4	3	4.4	10	14.1
5	10	7.2	4	6.0	6	8.5
More than 5	4	2.9	2	3.0	2	2.8
Missing	50	36.2	26	38.8	24	33.8
Total	138	100.0	67	100.0	71	100.0

¹Mean = 3.3; Median = 3 .0

²Mean = 3.0; Median = 2 .0

³Mean = 3.6; Median = 3 .0

How number of boats seen each day on the river compared to expectations

Table 90 reports how the number of boats seen each day on the river compared to expectations. About 36% of the commercial users didn't know what to expect. Fourteen percent saw about what they expected; 16% saw fewer, and 32% saw more. Among the private boaters, 20% didn't know what to expect. About 24% saw the number of boats they expected; 27% saw fewer, and 28% saw more.

Table 90

Breakdown of all, commercial, and private boaters
by how number of boats seen each day on the river
compared to number expected

How number seen compared to expectations	All		Commercial		Private	
	N	%	N	%	N	%
Didn't know what						
to expect	179	29.1	124	36.4	55	20.0
Quite a few less	67	10.9	34	10.0	33	12.0
A few less	61	9.9	20	5.9	41	14.9
About the same	113	18.3	48	14.1	65	23.6
A few more	71	11.5	40	11.7	31	11.3
Quite a few more	115	18.7	70	20.5	45	16.4
Missing	10	1.6	5	1.5	5	1.8
Total	616	100.0	341	100.0	275	100.0

Number of bank fishermen parties seen

Boater indifference to seeking bank fishermen parties was higher than to previous inter-group conflict variables. Eighteen percent of the commercial users and 19% of the privates said the number of bank fishermen parties they saw didn't matter (Table 91). For those who said the number they saw did matter, 87% of the commercials and the privates said the number they saw was acceptable (Table 92). The average number of bank fishermen parties seen by those commercial boaters who said the number was acceptable was 4.7. This number for the private boaters was 6.1 (Table 93). About 65% of the commercial boaters in the acceptable category saw between 1 and 5 bank fishermen parties; 59% of the satisfied private users saw this number.

Only ten commercial boaters and seven private boaters said they saw an acceptable number of bank fishermen parties (Table 94). These commercial users saw an average of 11 bank fishermen parties; the privates averaged seeing 23.7 fishermen parties. When asked to suggest an acceptable number, about 40% of these dissatisfied boaters couldn't suggest a number (Table 94). Among those reporting a number, most said 1-5 bank fishermen groups would be acceptable. Table 95 reports the intensity of conflict due to seeing too many bank fishermen parties. Only two commercial and two private boaters reported the unacceptable number of bank fishermen parties they saw and also suggested an acceptable number.

Table 91

Breakdown of all, commercial, and private boaters by whether seeing bank fishermen makes a difference

Makes a difference	All		Commercial		Private	
	N	%	N	%	N	%
Yes	454	73.7	253	74.2	201	73.1
No	113	18.3	61	17.9	52	18.9
Missing	49	8.0	27	7.9	22	8.0
Total	616	100.0	341	100.0	275	100.0

Table 92

Breakdown of all, commercial and private boaters by whether number of bank fishermen parties seen was acceptable

Was Acceptable	All		Commercial		Private	
	N	%	N	%	N	%
Yes	437	86.9	243	86.8	194	87.0
No	17	3.4	1.0	3.6	7	3.1
Missing	49	9.7	27	9.6	22	9.9
Total	503	100.0	280	100.0	223	100.0

Table 93

Breakdown of all, commercial, and private boaters by number of bank fisherman parties seen for boaters who felt this number was acceptable

Number of fishing groups seen	All ¹		Commercial ²		Private ³	
	N	%	N	%	N	%
	29	6.6	25	10.3	4	2.1
1-5	274	62.7	159	65.4	115	59.3
6-10	80	18.3	35	14.4	45	23.2
11-20	30	6.9	10	4.1	20	10.3
21-50	11	2.5	8	3.3	3	1.5
Missing	13	3.0	6	2.5	7	3.6
Total	437	100.0	243	100.0	194	100.0

¹Mean = 5.3; Median = 3.0

²Mean = 4.7; Median = 3.0

³Mean = 6.1; Median = 4.0

Table 94

Breakdown of suggested acceptable number of bank fishermen parties to see for boaters who felt the number they actually saw was unacceptable

Suggested acceptable number of fishermen parties	All ¹		Commercial ²		Private ³	
	N	%	N	%	N	%
0	2	11.8	1	10.0	1	14.3
1-5	5	29.4	3	30.0	2	28.6
6-10	0	0	0	0	0	0
11-20	0	0	0	0	0	0
21-50	0	0	0	0	0	0
Can't suggest an acceptable no.	7	41.2	4	40.0	3	42.9
Missing	3	17.6	2	20.0	1	14.3
Total	17	100.0	10	100.0	7	100.0

¹Mean = 2.7; Median = 2.0

²Mean = 3.0; Median = 3.5

³Mean = 2.3; Median = 2.0

Table 95

Breakdown of all, commercial and private boaters
by intensity of conflict of those boaters who felt
they saw too many bank fishermen groups

Number of fisher- man parties more than acceptable	All ¹		Commercial ²		Private ³	
	N	%	N	%	N	%
1-5	1	5.9	1	10.0	0	0
6-10	0	0	0	0	0	0
11-20	2	11.8	1	10.0	1	14.3
21-50	0	0	0	0	0	0
>50	1	5.9	0	0	1	14.3
Missing	13	76.4	8	80.0	5	71.4
Total	17	100.0	10	100.0	7	100.0
¹ Mean = 25.3; Median = 15.0						
² Mean =9.0; Median =9.0						
³ Mean = 41.5; Median = 41.5						

Number of fishing boats seen

As was the case for bank fishermen, boater indifference to seeing fishing boats was high. About 19% of commercial users and 21% of private boaters said the number of fishing boats they saw on the river made no difference (Table 96). Of those who said the number mattered, the vast majority (87% for both private and commercial boaters) said the number they saw was acceptable. Only six commercial users (2.2%) and five private boaters (2.3%) were dissatisfied with the number of fishing boats seen (Table 97).

The mean number of fishing boats seen by boaters who said their number was acceptable was 1.0 for commercial boaters and 2.2 for private boaters (Table 98). About 36% of the commercial users and 24% of the private boaters reported seeing no boats at all. Actually, the number of respondents who saw no fishing boats was likely much greater. Many of the 36% of the commercial and the private users who failed to answer this item likely did so because they didn't see any fishermen in boats.

The six commercial boaters who reported that the number of fishing boats seen was unacceptable actually saw an average of 4.4 boats. However, not one of these boaters suggested a number that would be acceptable (Table 99). The five private boaters in this category saw an average of 5.8 boats. Only 2 of these individuals suggested an acceptable number, and they both preferred to see no fishing boats (Table 99). The intensity of conflict due to seeing too many fishing boats could only be calculated if respondents said they saw too many boats, listed the actual number of boats seen, and listed the number of boats that would be acceptable. Since no commercial boaters suggested an acceptable number, a conflict intensity score could not be calculated for them. The 2 dissatisfied private boaters who suggested an acceptable number saw an average of 12 too many fishing boats (Table 100).

Table 96

Breakdown of all, commercial, and private boaters by whether seeing fishing boats makes a difference

Makes a difference	All		Commercial		Private	
	N	%	N	%	N	%
Yes	439	71.3	245	71.8	194	70.5
No	122	19.8	65	19.1	57	20.7
Missing	55	8.9	31	9.1	24	8.7
Total	616	100.0	341	100.0	275	100.0

Table 97

Breakdown of all, commercial and private boaters by whether number of fishing boats seen was acceptable

Was Acceptable	All		Commercial		Private	
	N	%	N	%	N	%
Yes	428	86.7	239	86.6	189	86.7
No	11	2.2	6	2.2	5	2.3
Missing	55	11.1	31	11.2	24	11.0
Total	494	100.0	276	100.0	218	100.0

Table 98

Breakdown of all, commercial, and private boaters by number of fishing boats seen for boaters who felt this number was acceptable						
Number of fishing boats seen	All ¹		Commercial ²		Private ³	
	N	%	N	%	N	%
0	190	30.8	123	36.1	67	24.4
1-5	192	31.2	88	25.8	104	37.8
6-10	10	1.6	4	1.2	6	2.2
11-20	2	.3	2	.6	0	0
Missing	222	36.0	124	36.4	98	35.6
Total	616	100.0	341	100.0	275	100.0

¹Mean = 1.6; Median = 1.0

²Mean = 1.0; Median = 0.0

³Mean = 2.2; Median = 1.0

Table 99

Breakdown of suggested acceptable number
of fishing boats to see for boaters who felt the
number they actually saw was unacceptable

Suggested accept- able no. of fishing boats seen	All ¹		Commercial ²		Private ³	
	N	%	N	%	N	%
0	2	18.2	0	0	2	40.0
Cant suggest a number	5	45.5	4	66.7	1	20.0
Missing	4	36.4	2	33.3	2	40.0
Total	11	100.0	6	100.0	5	100.0

¹Mean = 0; Median = 0

²Mean = missing; Median = missing

³Mean = 0; Median = 0

Table 100

Breakdown of all, commercial, and private boaters by
intensity of conflict for those boaters who felt they
saw too many fishing boats

Number of fishing boats seen than acceptable	All ¹		Commercial ²		Private ³	
	N	%	N	%	N	%
1-5	1	9.1	0	0	1	20.0
6-10	0	0	0	0	0	0
11-20	1	9.1	0	0	1	20.0
Missing	9	81.8	6	100.0	3	60.0
Total	11	100.0	6	100.0	5	100.0

¹Mean = 12.0; Median = 12.0

²Mean = Missing; Median = Missing

³Mean = 12.0; Median = 12.0

Number versus behavior of people disturbing to boaters

About 72% of the commercial boaters and 64% of the private boaters said that neither the number nor the behavior of people seen on the river trip was disturbing to them. About 21% and 26% of the commercial and private users, respectively, said that the numbers of people were more disturbing than their behavior. Only 1.8% of the commercials and 3.3% of the privates said that the behavior of people seen was more disturbing than their numbers. Finally, 2.1% of commercials and 3.6% of privates said that both numbers and behavior of people were disturbing (Table 101).

Feelings about total number of people seen on the river trip

To get an overall measure of degree of inter-group conflict on the river trip, we asked boaters for their feelings about the total number of people seen. Most (56.3% for commercial and 50.9% for private boaters) felt the number of people seen was about right (Table 102). About 6% of the commercials and 5% of the privates felt they saw too few people. Just over 34% of the commercial boaters and 39.3% of the private users said they saw too many people. The percent of commercial and private boaters who said they saw far too many people was 5.3 and 10.2, respectively.

Table 101

Breakdown of all, commercial, and private boaters
by whether number versus behavior of people seen
on the river trip were disturbing to them

Reaction to people seen	All		Commercial		Private	
	N	%	N	%	N	%
Neither number nor behavior was dis- turbing	421	68.3	245	71.8	176	64.0
Behavior was disturbing	15	2.4	6	1.8	9	3.3
Number was dis- turbing	145	23.5	73	21.4	72	26.2
Both number and behavior were dis- turbing	17	2.8	7	2.1	10	3.6
Missing	18	2.9	10	2.9	8	2.9
Total	616	100.0	341	100.0	275	100.0

Table 102

Breakdown of all, commercials and private boaters
by how they felt about the number of people
they saw on the river trip as a whole

Reaction to number seen	All		Commercial		Private	
	N	%	N	%	N	%
Far too few	7	1.1	5	1.5	2	.7
Moderately too few	11	1.8	6	1.8	5	1.8
Somewhat too few	16	2.6	8	2.3	8	2.9
About right	332	53.9	192	56.3	140	50.9
Somewhat too many	121	19.6	68	19.9	53	19.3
Moderately too many	59	9.6	32	9.4	27	9.8
Far too many	46	7.5	18	5.3	28	10.2
Missing	24	3.9	12	3.5	12	4.4
Total	516	100.0	341	100.0	275	100.0

Inter-group conflicts of boater clientele groups

Boaters in our study generally perceived greater inter-group than intra-group conflicts on the river. For example, more than 25% of the private boaters felt that their percent of time in sight of boats from other trips, the number of rapids they had to wait at, and the number of boats seen while floating on the river were unacceptable. Over 20% felt that the average size of other trips seen was unacceptable. Among commercial boaters, over 25% felt that their percent of time in sight of other trips was unacceptable; and more than 20% were similarly dissatisfied with the number of other boats seen on the river and the number of rapids they had to wait at. About 28% of the private boaters and 32% of the commercial boaters saw more boats than expected. About 39% of the privates and 34% of the commercial users felt they saw too many people on the river. Of the variables studied, only the number of boats floating past the campsite, the number of bank fishing parties and fishing boats seen, and the behavior of other people were seldom sources of conflict for boaters. Given that considerable inter-group conflicts exist among the boaters, we performed additional analyses to determine where, when and among what trip types that conflict was most common.

Type of trip

Among boaters who experienced conflict from seeing too many other boats while floating on the river, the private boaters tended to see more boats too many than did the commercial users (Table 103). For example, about 42% of the private boaters who experienced conflict saw more than 30 boats too many each day of the trip; only 13% of the commercial boaters experienced this intensity of conflict. A similar pattern of conflict emerged for private and commercial boaters in response to number of boats seen floating past the lunch stop each day. In this instance, about 53% of the dissatisfied private boaters saw 20 or more boats too many; only 17% of the dissatisfied commercial boaters experienced this intensity of conflict (Table 104). Among boaters who experienced conflict due to the average size of other trips seen, the private boaters experienced greater intensity of conflict. Sixty-eight percent of the privates felt they saw four or more boats/trip greater than acceptable; this number for commercial boaters was only 22% (Table 105).

Table 103

Breakdown of intensity of conflict due to number of boats seen floating the river each day by private and commercial boaters

Number of boats greater than acceptable	Commercial		Private	
	N	%	N	%
1-10	41	53.2	16	22.2
11-30	26	33.8	26	36.1
31 or more	10	13.0	30	41.7
Total	77	100.0	72	100.0
Chi-square = 20.8; Significant at $p < .01$.				

Table 104

Breakdown of intensity of conflict due to number of boats seen floating past their lunch stop each day by private and commercial boaters

Number of boats greater than acceptable	Commercial		Private	
	N	%	N	%
1-9 10-19	22	53.7	7	19.4
20 or more	12	29.3	10	27.8
Total	7	17.1	19	52.8
	41	100.0	36	100.0

Chi-square = 13.2; Significant at $p < .01$.

Table 105

Breakdown of intensity of conflict due to average size of other trips seen by private or commercial boaters

Number of boats/trip greater than acceptable	Commercial		Private	
	N	%	N	%
1-3	21	77.8	12	31.6
4 or more	6	22.2	26	68.4
Total	27	100.0	38	100.0

Chi-square = 11.7; Significant at $p < .01$

The private boaters had more definite expectations than did the commercials about the number of other boats they expected to see on the river trip. About 80% of privates compared to 63% of the commercials said they knew what to expect (Table 106). Among those with expectations, the commercial users more frequently saw more boats than expected than did the private users (Table 107). For example, about 52% of the commercial users saw more than expected; 35% of the private boaters fell into this category.

Table 106

Breakdown of expectations about number of boats that would be seen on the river by private and commercial boaters

	Commercial		Private	
	N	%	N	%
Had expectations				
Yes	212	63.1	215	79.6
No	12.4	36.9	55	20.4
Total	336	100.0	270	100.0

Chi-square = 18.9; Significant at $p < .01$

Breakdown of how number of boats seen on the river trip compared to expectations by private and commercial boaters

How numbers compared to expectations	Commercial		Private	
	N	%	N	%
Quite a few less	34	16.0	33	15.3
A few less	20	9.4	41	19.1
About the same	48	22.6	65	30.2
A few more	40	18.9	31	14.4
Quite a few more	70	33.0	45	20.9
Total	212	100.0	215	100.0

Chi-square = 16.4; Significant at $p < .01$

Private boaters waited at significantly more rapids than did the commercial users (Table 108). Just over half of all commercial boaters said they didn't wait at any rapids; this number for private boaters was 39%. In contrast, 41% of the private boaters reported waiting at three or more rapids, 22% of the commercial boaters waited at this number. Among those boaters who felt they waited at too many rapids, the private boaters were willing to accept a wait at more rapids than were the commercial users. About 59% of the commercial users said they would not accept waiting at any rapids; 44% of the privates felt this way (Table 109). Twenty-five percent of the privates would accept waiting at 3 or more rapids; only 12% of the commercial users would accept this number.

Table 108

Breakdown of number of rapids waited at by private and commercial boaters

Number of rapids waited at	Commercial		Private	
	N	%	N	%
0	166	51.1	99	38.8
1	38	11.7	17	6.7
2	50	15.4	34	13.3
3	26	8.0	38	14.9
4 or more	45	13.8	67	26.3
Total	325	100.0	255	100.0

Chi-square = 26.5; Significant at $p < .01$.

Table 109

Breakdown of number of rapids that private and commercial boaters would accept waiting at among those boaters who felt the number of rapids they waited at was unacceptable

Number of rapids	Commercial		Private	
	N	%	N	%
0	139	58.6	84	43.5
1	36	15.2	28	14.5
2	34	14.3	32	16.6
3	13	5.5	27	14.0
4 or more	15	6.3	22	11.4
Total	237	100.0	193	100.0

Chi-square = 16.5; Significant at $p < .01$

River segment floated

Boaters who spent more than one day on the river and who floated at least portions of both the upper river and the gorge tended to prefer to see fewer boats on the river and to experience greater conflicts than did the boaters who floated only the gorge or only the upper river. For example, about 43% of all boaters who floated both stretches stated that they would accept seeing only about 0-5 or 6-10 boats per day. The percentages of upper river only and gorge only boaters who required boat numbers at these levels were 25% and 22%, respectively. Only 6% of the multi-river segment floaters would accept seeing 21 or more boats/day. About 10% of the upper river floaters and 24% of the gorge boaters would accept this number (Table 110).

Table 110

Breakdown of acceptable number of boats to see on the river each day by river segment floated

Acceptable number of boats	Upper River		Gorge		Both river stretches	
	N	%	N	%	N	%
0-5	7	9.9	42	10.7	11	17.5
6-10	11	15.5	43	11.0	16	25.4
11-20	9	12.7	64	16.4	8	12.7
21-49	5	7.0	47	12.0	2	3.2
50 or more	2	2.8	48	12.3	2	3.2
No opinion	37	52.1	147	37.6	24	38.1
Total	71	100.0	391	100.0	63	100.0

Chi-square = 28.9; Significant at $p < .01$

Multi-river segment floaters tended to dislike the use conditions they actually experienced on the river. For example, 32% of them found the average size of other trips seen unacceptable, in contrast to the 23% for the Gorge and 12% for the upper river floaters (Table 111). Forty-two percent of the multi-river segment boaters said that the time they spent in view of other trips was unacceptable. These numbers were 32.3% and 18.6% for gorge and upper river users (Table 112). Among boaters who found their percent of time in sight of other trips unacceptable, the boaters who floated both river segments tended to favor lower total contact times with other groups. Forty-five percent of these boaters said they would accept being in sight of other trips for only 0~10% of their trip time (Table 113). When number of boats seen were compared to expectations, the multi-day boaters again experienced the greatest conflict. Among boaters with expectations, seventy percent of the multi-day boaters saw more than they expected; this percentage was about 43% for gorge floaters and only 28% for the upper river users (Table 114).

Table 111

Breakdown of whether average size of other trips
seen was acceptable by river segment floated

Was acceptable	Upper River		Gorge		Both river stretches	
	N	%	N	%	N	%
Yes	52	88.1	277	77.4	36	67.9
No	7	11.9	81	22.6	17	32.1
Total	59	100.0	358	100.0	53	100.0

Chi-square = 6.6; Significant at $p < 0.05$

Table 112

Breakdown of whether percent of time in sight of boats from other trips was acceptable by river segment floated

Was acceptable	Upper River		Gorge		Both river stretches	
	N	%	N	%	N	%
Yes	48	81.4	266	66.8	34	57.6
No	11	18.6	132	33.2	25	42.4
Total	59	100.0	398	100.0	59	100.0

Chi-square = 7.9; Significant at $p < .01$.

Table 113

Breakdown of acceptable percent of time in sight of boats from other trips by river segment floated for boaters who felt the percent of time they saw boats on their trip was unacceptable

Acceptable percent of time Upper River			Gorge		Both river stretches	
	N	%	N	%	N	%
0-10	2	20.0	16	15.5	9	45.0
11-24	3	30.0	16	15.5	5	25.0
25-49	3	30.0	29	28.2	3	15.0
50-75	2	20.0	42	40.8	3	15.0
Total	10	100.0	103	100.0	20	100.0

Chi-square = 13.9; Significant at $p < .01$

Table 114

Breakdown of number of boats seen compared to expectations by river segment floated

Number of boats seen compared to expectations	Upper River		Gorge		Both river stretches	
	N	%	N	%	N	%
Quite a few less	13	24.5	47	14.6	4	8.5
A few less	9	17.0	48	15.0	3	6.4
About the same	16	30.2	89	27.7	7	14.9
A few more	10	18.9	49	15.3	12	25.5
Quite a few more	5	9.4	88	27.4	21	44.7
Total	53	100.0	321	100.0	47	100.0

Chi-square = 23.9; Significant at $p < .01$

Boaters In the gorge only and on both river stretches waited at more rapids than did those who floated the upper river only. About 33% of the gorge users and the boaters on both stretches waited at three or more rapids. Only 17 percent of the upper river users waited at this number of rapids (Table 115) Almost 36 percent of the multi-river segment boaters found the number of rapids they waited at unacceptable. These percentages were 30 and 17 for the gorge and upper river users, respectively. (Table 116)

Table 115
Breakdown of number of rapids waited at
by river segment floated

Number of rapids waited at	Upper River		Gorge		stretches	
	N	%	N	%	N	%
0	53	68.8	174	40.7	33	47.8
1	5	6.5	47	11.0	3	4.3
2	6	7.8	67	15.7	10	14.5
3	7	9.1	51	11.9	6	8.7
4 or more	6	7.8	89	20.8	17	24.6
Total	77	100.0	428	100.0	69	100.0
Chi-square = 25.6; Significant at $p < .01$						

Table 116
Breakdown of whether number of rapids waited at
was acceptable by river segment floated

Acceptable	Upper River		Gorge		Both river stretches	
	N	%	N	%	N	%
Yes	50	83.3	258	70.5	34	64.2
No	10	16.7	108	29.5	19	35.8
Total	60	100.0	366	100.0	53	100.0
Chi-square = 5.7; significant at $p < .05$.						

Finally, the boaters on different stretches of the river differed in their reactions to the number of people they saw on the trip. About 41% of both the Gorge only and the multi-segment boaters felt they saw too many people (Table 117). Only 22.7% of those who floated only the upper river stretch felt this way.

Table 117

Breakdown of reactions to number of people seen on the trip as a whole by river segment floated

Feelings about number of people seen	Upper River		Gorge		Both river stretches	
	N	%	N	%	N	%
Too few	8	10.7	22	5.0	4	5.8
About right	50	66.7	240	54.3	37	53.6
Somewhat too many	12	16.0	91	20.6	18	26.1
Moderately or far too many	5	6.7	89	20.1	10	14.5
Total	75	100.0	442	100.0	69	100.0

Chi-square = 14.2; Significant at $p < .05$.

Season of the year

A significantly greater number of summer boaters than spring boaters found their percent of time in sight of boats from other trips unacceptable. Almost 34% of all summer boaters were dissatisfied with this facet of their trip; only one spring boater (5.6%) felt this way. The opinions of the fall boaters were intermediary, about 21% of these boaters were dissatisfied (Table 118).

Even though summer users expected to see more boats (see Table 33 on page 45), more of them reported seeing more boats than expected (Table 119). About 45% of the summer boaters said they saw more boats than expected. This percentage was 36.9 and 5.9 for fall and spring boaters, respectively.

A much larger percentage (32.9%) of the summer boaters had to wait at three or more rapids on their trip than did boaters in spring (0%) or fall (7.4%) (Table 120). As might be expected, a larger percentage of the summer boaters (29.7%) found the number of rapids they waited at unacceptable (Table 121). Fifteen percent and 5.9% of the fall and spring boaters, respectively, were dissatisfied with their waiting at rapids.

Finally, far more summer boaters than spring boaters felt they saw too many people on their trip as a whole. About 40% of all summer boaters felt this way, not a single spring boater reported seeing too many people. Somewhat surprisingly, about 33% of the fall users felt they saw too many people (Table 122).

Table 118

Breakdown of whether percent of time in sight of boats from other trips was acceptable by season of the year

Was acceptable	Spring		Summer		Fall	
	N	%	N	%	N	%
Yes	17	94.4	317	66.2	19	79.2
No	1	5.6	162	33.8	5	20.8
Total	18	100.0	479	100.0	24	100.0

Chi-square = 7.8; Significant at $p < .01$.

Table 119

Breakdown of how number of boats seen compared to expectations by season of the year

How numbers compared to expectations	Spring		Summer		Fall	
	N	%	N	%	N	%
Quite a few less	9	52.9	52	13.3	6	31.6
A few less	4	23.5	54	13.8	3	15.8
About same	3	17.6	107	27.4	3	15.8
A few more	1	5.9	66	16.9	4	21.1
Quite a few more	0	0	111	28.5	3	15.8
Total	17	100.0	390	100.0	19	100.0

Chi-square = 29.2; Significant at $p < .01$.

Table 120

Breakdown of number of rapids waited at by season of the year

Number of rapids waited at	Spring		Summer		Fall	
	N	%	N	%	N	%
0	22	91.7	228	43.1	15	55.6
1	1	4.2	50	9.5	4	14.8
2	1	4.2	77	14.6	6	22.2
3	0	0	63	11.9	1	3.7
4 or more	0	0	111	21.0	1	3.7
Total	24	100.0	529	100.0	27	100.0

Chi-square = 30.0; Significant at $p < .01$.

Table 121

Breakdown of whether number of rapids waited at
was acceptable by season of the year

Was acceptable	Spring		Summer		Fall	
	N	%	N	%	N	%
Yes	16	94.1	315	70.3	17	85.0
No	1	5.9	133	29.7	3	15.0
Total	17	100.0	448	100.0	20	100.0

Chi-square = 6.4; Significant at $p < .05$.

Table 122

Breakdown of reactions to number of people seen
on the trip as a whole by season of the year

Feelings about number of people seen	Spring		Summer		Fall	
	N	%	N	%	N	%
Too few	5	22.7	27	5.0	2	7.4
About right	17	77.3	299	55.2	16	59.3
Somewhat too many	0	0	115	21.2	6	22.2
Moderately or far too many	0	0	101	18.6	3	11.1
Total	22	100.0	542	100.0	27	100.0

Chi-square = 23.1; Significant at $p < .01$.

Weekend/Weekday

More weekend than weekday boaters experienced inter-group conflicts. Among those who experienced conflict, the intensity of conflict was also greater for weekend users. For example, about 45% of all weekend boaters felt that their percent of time in sight of boats from other trips was unacceptable. This percentage was 22.6% for weekday users (Table 123). Among those who felt they spent too much time in sight of boats from other trips, 34% of the weekend boaters said their percent of time in view of other parties was 51-100 too great. Only about 15 percent of the dissatisfied weekday users felt conflict at this intensity (Table 124).

Weekend boaters expected to see more boats than weekday users (See Table 37 on page 36). The actual number that weekenders saw more frequently exceeded expectations than did the number for weekday boaters. About 45% of the weekend users saw more than expected; this number was about 40% for weekday users (Table 125). Twenty-seven percent of the weekend users saw fewer than expected; this percentage was 36.2 for weekday users.

Weekend users waited at many more rapids. Table 126 indicates that 40.8% of those who floated on Saturday, Sunday or a holiday waited at three or more rapids. Only 14.1% of the weekday boaters waited at this many. In contrast 66.1% of the weekday boaters didn't have to wait at any rapids. The percentage in the "no-wait" category was 32.6% for the weekend users. About 34% of the weekend boaters said their wait at rapids was unacceptable. Only 18% of those floating during the week held a similar opinion (Table 127).

When asked for their feelings about the number of people they saw on their trip as a whole, about twice as many weekend users (22.2%) as weekday users (10%) said they saw moderately on far too many. When the number of boaters who saw somewhat too many was added to these percentages, dissatisfaction reached 45.4% for weekend boaters and 25.8% for weekday users (Table 128).

Table 123

Breakdown of whether percent of time in sight of
boats from other trips was acceptable by
time of week of trip

	Weekend		Weekday	
	N	%	N	%
Was Acceptable				
Yes	196	55.5	130	77.4
No	157	44.5	38	22.6
Total	353	100.0	168	100.0

Chi-square = 22.3; Significant at $p < .01$

Table 124

Breakdown of intensity of conflict
due to percent of time in sight of boats
from other trips for weekend and weekday boaters
who reported spending too much time in sight of other trips

Percent of time greater than acceptable	Weekend		Weekday	
	N	%	N	%
0-30	24	24.7	16	48.5
31-50	40	41.2	12	36.4
51-100	33	34.0	5	15.2
Total	97	100.0	33	100.0

Chi-square = 7.7; Significant at $p < .05$.

Table 125

Breakdown of how number of boats seen compared
to expectations by time of week of the trip

How numbers compared expectations	Weekend		Weekday to	
	N	%	N	%
Quite a few less	34	11.9	33	23.4
A few less	43	15.1	18	12.8
About same	79	27.7	34	24.1
A few more	48	16.8	23	16.3
Quite a few more	81	28.4	33	23.4
Total	285	100.0	141	100.0

Chi-square = 9.6; Significant at $p < .05$.

Table 126

Breakdown of number of rapids waited at
by time of week of trip

Number of rapids waited at	Weekend		Weekday	
	N	%	N	%
0	115	32.6	150	66.1
1	34	9.6	21	9.3
2	60	17.0	24	10.6
3	52	14.7	12	5.3
4 or more	92	26.1	20	8.8
Total	353	100.0	227	100.0

Chi-square = 70.4; Significant at $p < .01$.

Table 127

Breakdown of whether number of rapids waited at
was acceptable by time of week of trip

	Weekend		Weekday	
	N	%	N	%
Yes	207	66.1	141	82.0
No	106	33.9	31	18.0
Total	313	100.0	172	100.0

Chi-square=13.0; Significant at $p < .01$.

Table 128

Breakdown of reactions to number of people seen
on the trip as a whole by time of week of the trip

Feelings about number of people seen	Weekend		Weekday	
	N	%	N	%
Too few	15	4.1	19	8.6
About right	187	50.5	145	65.6
Somewhat too many	86	23.2	35	15.8
Moderately or far too many	82	22.2	22	10.0
Total	370	100.0	221	100.0

Chi-square = 26.0; significant at $p < .01$.

Amount of previous river experience

When the study's six other classification variables were controlled for, amount of previous river experience had a significant relationship with only two of the inter-group conflict variables considered. Highly experienced boaters

(i.e. those who had made 11 or more trips on the New River) tended to be more dissatisfied with the percent of time they spent in sight of boats from other trips (Table 129). Almost 50% of these highly experienced boaters felt their percent of time in sight of other boats was unacceptable. Interestingly, first time or novice users tended to be slightly more dissatisfied than boaters who had made an intermediate number of trips.

More of the highly experienced boaters also felt the total number of people they saw on their trip was moderately or far too many. Forty percent of these experienced users felt this way (Table 130); 18 or fewer percent of the boaters in other experience categories responded so negatively to people contacts. About 54% of the most experienced boaters felt they saw too many people on the river.

Number of boats/trip and type of river experience expected

When type of river trip (private or commercial), river segment floated, season of the year, weekend-weekday trip, and amount of previous river experience were controlled for, number of boats per trip and type of river experience expected (wilderness, scenic, or social recreation) did not correlate significantly with any of the inter-group conflict variables studied.

Table 129

Breakdown of whether percent of time in sight of boats from other trips was acceptable by amount of previous river experience

	Number of previous trips on the New River									
	0		1		2-3		4-10		11 or more	
	N	%	N	%	N	%	N	%	N	%
Was acceptable										
Yes	150	69.1	61	64.2	59	76.6	43	70.5	31	50.8
No	67	30.9	34	35.8	18	23.4	18	29.5	30	49.2
Total	217	100.0	95	100.0	77	100.0	61	100.0	61	100.0

Chi-square = 11.6; Significant at p<.05

Chi-square = 11.6; Significant at $p < .05$

Table 130

Breakdown of reactions to number of people seen on the trip as a whole by amount of previous river experience

Feelings about number of people seen	Number of previous trips on the New River									
	0		1		2-3		4-10		11 or more	
	N	%	N	%	N	%	N	%	N	%
Too few	15	6.1	8	7.5	3	3.3	3	4.3	5	7.5
About right	146	59.3	53	50.0	56	62.2	41	58.6	26	38.8
Somewhat too many	52	21.1	26	24.5	15	16.7	17	24.3	9	13.4
Moderately or far too many	33	13.4	19	17.9	16	17.8	9	12.9	27	40.3
Total	246	100.0	106	100.0	90	100.0	70	100.0	67	100.0

Chi-square = 33.6; significant at $p < .01$

Chi-square = 33.6; significant at $p < .01$

Actions taken to avoid conflicts

If New River beaters perceive conflicts to exist on the river, they might take actions to avoid those conflicts. Presumably the more numerous or more intense the conflicts, the more likely the boaters would be to take some action to avoid the problems. To obtain a measure of any such displacement behavior, we asked boaters if they specifically planned their trip to avoid some problems, and if they changed their behavior on the river to reduce conflicts.

Planning to avoid conflict

Table 131 indicates that while only about 14% of the commercial boaters picked a time or river section to avoid problems, about 35% of the private boaters did so. However, when we analyzed what problems the boaters tried to avoid, most mentioned water levels, water conditions, or their own ability to cope with the water conditions (Table 132). Only 14.9% of the commercial users and 11.3% of the private boaters who said they planned their trip to avoid certain problems specifically mentioned crowding as the conflict they were concerned about.

Behavior changes on the river to avoid conflict

We asked boaters whether they or their guide took any of the following four actions to avoid encounters with other river trips: speeded up more than they would have liked, slowed down more than they would have liked, passed up an attraction along the river, or passed up a preferred lunch stop. Almost 29% of the private boaters said they speeded up their trip more than they would have liked; only about 8% of the commercials took this action (Table 133). More boaters slowed down their trip to avoid encounters; 30.5% of the privates and 21.7% of the commercials did so (Table 134). Fewer boaters passed up favorite attractions or preferred lunch stops to avoid crowds. Just over 15% of the

private boaters and 8.5% of the commercial users said they floated past attractions where they wanted to stop (Table 135). These percentages for passing a preferred lunch stop was 8.0% and 8.8% for privates and commercials, respectively (Table 136).

Table 131

Breakdown of all, commercial, and private boaters by whether they planned their trip to avoid problems on the river

Made plans to avoid problems;	All		Commercial		Private	
	N	%	N	%	N	%
Yes	144	23.4	47	13.8	97	35.3
No	454	73.7	285	83.6	169	61.5
Missing	18	2.9	9	2.6	9	3.3
Total	616	100.0	341	100.0	275	100.0

Table 132

Breakdown of all, commercial, and private boaters by what river trip problems the boaters tried to avoid

Problem	All		Commercial		Private	
	N	%	N	%	N	%
High water	31m	21.5	7	14.9	24	24.7
Low water	16	11.1	8	17.0	8	8.2
Difficult water	25	17.4	7	14.9	18	18.6
Flat water	13	9.0	1	2.1	12	12.4
Being too inexperienced	15	10.4	8	17.0	7	7.2
Crowding	18	12.5	7	14.9	11	11.3
Other	21	14.6	9	19.1	12	12.4
Missing	5	3.5	0	0	5	5.2
Total	144	100.0	47	100.0	97	100.0

Table 133

Breakdown of all, commercial and private boaters by whether their trip was speeded up more than they would have liked in order to avoid encounters with other trips

Speeded up	All		Commercial		Private	
	N	%	N	%	N	%
Yes	105	17.0	26	7.6	79	28.7
No	441	71.6	283	83.0	158	57.5
Missing	70	11.4	32	9.4	38	13.8
Total	616	100.0	341	100.0	275	100.0

Table 134

Breakdown of all, commercial, and private boaters by whether their trip was slowed down more than they would have liked in order to avoid encounters with other trips

Slowed down	All		Commercial		Private	
	N	%	N	%	N	%
Yes	158	25.6	74	21.7	84	30.5
No	395	64.1	244	71.6	151	54.9
Missing	63	10.2	23	6.7	40	14.5
Total	616	100.0	341	100.0	275	100.0

Table 135

Breakdown of all, commercial, and private boaters by whether their trip passed by an attraction without stopping in order to avoid encounters with other, trips

Passed an attraction	All		Commercial		Private	
	N	%	N	%	N	%
Yes	71	11.5	29	8.5	42	15.3
No	464	75.3	280	82.1	184	66.9
Missing	81	13.1	32	9.4	49	17.8
Total	616	100.0	341	100.0	275	100.0

Table 136

Breakdown of all, commercial, and private boaters by whether their trip passed a preferred lunch stop in order to avoid encounters with other trips

Passed a lunch stop	All		Commercial		Private	
	N	%	N	%	N	%
Yes	52	8.4	30	8.8	22	8.0
No	477	77.4	279	81.8	198	72.0
Missing	87	14.1	32	9.4	55	20.0
Total	616	100.0	341	100.0	275	100.0

Actions taken to avoid conflicts by boater clientele groups

Type of trip (private or commercial)

Tables 131-136 report planning done or actions taken on the river by private and commercial boaters to avoid conflicts. When controlling for the study's other classification, variables, the two groups differed in a statistical sense in that more private boaters than commercial boaters (1) specifically selected a time or river location to avoid problems (chi-square value=39.0; significant at

at $p < .01$), speeded up their river trip to avoid encounters with other groups (chi-square value = 52.0; significant at $p < .01$), and (3) passed up a preferred attraction to avoid crowds (chi-square value = 8.8; significant at $p < .01$).

Season of the year

Floaters during different seasons of the year also differed in their planning to avoid river problems. Almost 42% of the spring boaters said they specifically selected their river segment or time of trip to avoid problems. This percentage was only 23.8% for summer boaters and 11.1% for fall boaters (Table 137)

Also, not a single boater in the spring slowed his trip down to avoid encounters; 29.4% of the combined summer and fall boater groups did so (Table 138).

Weekend/weekday

Weekend boaters both speeded up and slowed down their trip to avoid conflicts more than did weekday users. About 27% of all weekend users said they speeded up their trip more than they would have liked; only 5.9% of the weekday users did so (Table 139). About 35% of the weekend users reported slowing down their trip too much; 17.6% of the weekday boaters did so (Table 140). Finally, 16.9% of the boaters on Saturday, Sunday, and holidays passed up preferred attractions to avoid encounters; this percentage for weekday users was 7.4% (Table 141).

Amount of previous river experience

Significantly more of the boaters with high experience on the New River purposely slowed down their trip to avoid encounters with other trips. About 47% of all boaters with 11 or more previous trips on the river slowed down their trip to avoid conflict; 20.9% of the first-time boaters did so (Table 142).

River segment floated, type of experience sought, and trip size

When other study classification variables were controlled for, river segment floated, type of experience sought, and trip size did not relate significantly to whether specific plans were made or actions taken to avoid conflicts on the river.

Table 137

Breakdown of trip planning to avoid
river problems by season of year of trip

Selected a river segment or use time to avoid problems	Spring		Summer		Fall	
	N	%	N	%	N	%
No	14	58.3	416	76.2	24	88.9
Yes	10	41.7	130	23.8	3	11.1
Total	24	100.0	546	100.0	27	100.0

Chi-square = 6.6; Significant at $p < .05$.

Table 138

Breakdown of whether boaters slowed down their trip
to avoid encounters by season of the year

Slowed down trip	Spring		Summer & Fall	
	N	%	N	%
No	18	100.0	377	70.6
Yes	0	0	157	29.4
Total	18	100.0	552	100.0

Chi-square = 6.0; Significant at $p < .01$.

Table 139

Breakdown of whether boaters speeded up their trip
to avoid encounters by time of week of trip

Speeded up trip	Weekend		Weekday	
	N	%	N	%
No	249	72.8	191	94.1
Yes	93	27.2	12	5.9
Total	342	100.0	203	100.0

Chi-square = 35.7; Significant at $p < .01$

Table 140

Breakdown of whether boaters slowed down their trip to avoid encounters by time of week of trip

Slowed down trip	Weekend		Weekday	
	N	%	N	%
No	222	64.9	173	82.4
Yes	120	35.1	37	17.6
Total	342	100.0	210	100.0

Chi-square = 35.7; Significant at $p < .01$

Table 141

Breakdown of whether boaters passed up preferred attractions to avoid encounters by time of week of trip

Passed preferred attractions	Weekend		Weekday	
	N	%	N	%
No	276	83.1	187	92.6
Yes	56	16.9	15	7.4
Total	332	100.0	202	100.0

Chi-square = 8.9; Significant at $p < .01$.

Table 142

Breakdown of whether boaters slowed down their trip to avoid encounters by amount of previous river experience

Slowed down trip	Number of previous trips on the New River									
	0		1		2-3		4-10		11 or more	
	N	%	N	%	N	%	N	%	N	%
No	185	79.1	68	67.3	58	71.6	45	69.2	32	53.3
Yes	49	20.9	33	32.7	23	28.4	20	30.8	28	46.7
Total	234	100.0	101	100.0	81	100.0	65	100.0	60	100.0

Chi-square = 17.4; Significant at $p < .01$.

Preferred actions to avoid conflicts in the future

In our summary item addressing the conflict issue, we asked boaters whether they saw too few, about the right number, or too many boaters on the river (See Table 102 on page 87). We then requested boaters who saw too few people or too many people to tell us what one action they would likely take in the future to increase their chances of seeing the right number of people.

Table 143 indicates that only 19 commercial boaters and 15 private boaters said they saw too few people. Six (31.6%) of these commercial boaters said they would float on a weekend rather than a weekday. Three each (15.8%) said they would float during a heavier use month or come back at the same time and place and accept the number of boats they saw. Most of the private boaters (six or 40%) said they would simply come back at the same time and place and accept the current number of boats. Three private boaters said they would choose a different time of day for their river trip departure in order to increase their chances of seeing more people.

Table 144 indicates that far more boaters felt they saw too many people on their trip: 118 for the commercials and 108 for the privates. Of these, the most preferred action to reduce encounters for the commercial users was to float on a weekday rather than a weekend. Just over 33% preferred this action. Another 19.5% said they would come back at the same time and place and accept the number of boats they saw, and 18.6% said they would float the river during a lighter use month. Surprisingly, only 8.5% said they would choose a different time of day for the river trip departure. Perhaps these boaters felt they had no control over when their outfitters might launch their trip on the river. Only six commercial boaters said they would stop floating the New River.

The most preferred action for the private boaters who felt crowded was to simply come back to the New River at the same time and place and accept the number of boats there. Just over 30% selected this action. Another 25% said they would choose a different time of day for their trip departure; and 13% said they would float on a weekday rather than a weekend. Not a single private boater opted for not continuing to float the New River as his preferred response to the crowded conditions.

Table 143

Breakdown of what action boaters who saw too few people on their river trip would likely take to encounter more people

Action	All		Commercial		Private	
	N	%	N	%	N	%
Choose a different time of day for river trip departure	5	14.7	2	10.5	3	20.0
Float on a weekend rather than a weekday	6	17.6	6	31.6	0	0
Float during a heavier use month	5	14.7	3	15.8	2	13.3
Float a different section of the river	3	8.8	2	10.5	1	6.7
Come back at same time and place and accept the number of boats	9	26.5	3	15.8	6	40.0
Stop floating the New River						
Missing	6	17.6	3	15.8	3	20.0
Total	34	100.0	19	100.0	15	100.0

Table 144

Breakdown of what action boaters who saw too many people on their river trip would likely take to encounter fewer people

Action	All		Commercial		Private	
	N	%	N	%	N	%
Choose a different time of day for river trip departure	37	16.4	10	8.5	27	25.0
Float on a weekday rather than a weekend	53	23.5	39	33.1	14	13.0
Float during a lighter use month	33	14.6	22	18.6	11	10.2
Float a different section of the river	3	1.3	2	1.7	1	.9
Come back at same time & place & accept the number of boats	56	24.8	23	19.5	33	30.6
Stop floating the New River	6	2.7	6	5.1	0	0
Other action	17	7.5	5	4.2	12	11.1
Missing	21	9.3	11	9.3	10	9.3
Total	226	100.0	118	100.0	108	100.0

Preferred actions to avoid conflicts by boater clientele groups

Type of trip (private or commercial)

Even though private and commercial users who saw too few people appeared to differ in their preferred action to see more people on the river (see Table 143), sample sizes were so small that these differences could have been due to chance alone.

The two groups did differ in a statistical sense in their preferences for five of the six actions that might be taken to reduce contacts between groups (see Table 144). Private boaters more frequently opted to come back at the same time and place and accept the number of boats (chi-square value=4.0; $p<.05$) or to choose a different time of day for the river trip departure (chi-square value=11.2; $p<.01$). More commercial users preferred to float on a weekday rather than a weekend (chi-square value=13.0; $p<.01$), to float during a lighter use month (chi-square value=4.1; $p<.05$), or to stop floating the New River (chi-square value=4.2; $p<.05$).

Weekend/weekday trip

Over 30% of all weekend boaters who said they saw too many other people on their trip named taking a weekday trip as the most likely action they would take in the future to avoid crowds (Table 145). Only 7 (13.2%) of the weekday floaters said they would select a weekday as the best action to avoid crowds in the future.

Many more of the weekday (28.3%) than the weekend (11.2%) floaters said their most likely action to avoid, crowds would be to float during a lighter use month (Table 146).

Season of year, river segment floated, amount of previous river experience, type of experience sought, and trip size

When other classification variables were controlled for, boaters who differed in season of the year of their trip, river segment floated, amount of previous river experience, type of experience sought, and trip size did not differ in their preferences for alternative actions to avoid crowds on the river.

Table 145

Breakdown of preferences for deciding to float on a weekday rather than a weekend by time of week of trip

Most preferred choice= float on a weekday	Weekend		Weekday	
	N	%	N	%
Yes	52	30.6	7	13.2
No	118	69.4	46	86.8
Total	170	100.0	53	100.0
Chi-square = 5.4; Significant at $p < .05$				

Table 146

Breakdown of preference for deciding to float during a lighter use month by time of week of trip

Most preferred choice= float during a light use month	Weekend		Weekday	
	N	%	N	%
Yes	19	11.2	15	28.2
No	151	88.8	38	71.7
Total	170	100.0	53	100.0
Chi-square value=7.9; Significant at $p < .01$.				

Summary

Few intra-group conflicts currently exist on New River trips. Only about 5% of all boaters rated the number of people on their boat and the number of boats on their trip as unacceptable. About the same number reported unsafe actions or conditions on the river, and about 6% stated that there were some real problems in how well their group got along.

People on multi-day trips that included both the upper river and gorge did tend to perceive more within-group problems. About 15% of these individuals rated the number of people per boat and boats per trip as unacceptable. There also tended to be more within-group conflicts on weekends. About 13% of the weekend users said their group was indifferent or had real problems getting along, 9% observed actions they believed to be unsafe.

Inter-group conflicts were much more numerous and more serious. For example, almost 40% of private boaters and 34% of commercial boaters felt they

saw too many people on their trip. More than 30% of the private boaters felt their percent of time in sight of other river trips was unacceptable, and over 25% felt the large number of other boats they saw, the average size of other trips seen, and the number of rapids they waited at were unacceptable. Twenty-eight percent said they saw more boats than expected. Even more of the commercial users (32%) saw more boats than expected, but somewhat fewer experienced conflict. Over 25% of the commercial users said, their percent of time in sight of other trips was unacceptable, and over 20% said the same about the number of boats they saw on the river and the number of rapids they waited at.

Gorge and multi-river segment boaters, summer and fall boaters, weekend boaters, and to a lesser extent, highly experienced boaters also experienced considerable conflict. For example, for those boaters with expectations, about 70% and 43% of the multi-day and the gorge floaters, respectively, saw more boats than expected. Over 40% of both of these user types said they saw too many people on their trip. Forty-two percent of the multi-day, multi-river segment floaters said their percent of time in sight of other boats was unacceptable, and 32% of the gorge boaters felt the same. Over 30% of both groups felt the number of rapids they waited at was unacceptable. Finally, 32% and 23% of the multi-river segment and the gorge boaters, respectively, were dissatisfied with the average size of other groups seen.

Many summer and fall boaters were also dissatisfied with certain facets of their trip. For example over 30% of the summer boaters saw more boats than expected, and felt they saw too many people. Percentages for these two conflict variables for fall boaters were 37 and 33, respectively. About 30% of the summer boaters said their time in sight of other groups and the number of rapids they had to wait were too great. For fall boaters, these numbers dropped to 21% and 15%.

Conflicts from encounters with other groups also tended to be concentrated on weekends. About 45% of all weekend users said they saw more boats than expected, said their percent of time in sight of other boats was unacceptable, and felt they saw too many people on their trip. Over 30% said they waited at too many rapids.

About 50% of the most experienced New River users (those who had made 11 or more previous trips) felt their percent of time in sight of other groups was unacceptable, and felt they saw too many people on the river trip.

A fairly large number of private boaters (35%) said they planned their time and location for their trip to avoid problems on the river. Only 14% of the commercial users did so. Problems that boaters sought to avoid tended to be related to water levels, and not to crowds of people. Spring boaters most commonly said they specifically planned their trip to avoid river problems.

Changing behavior to avoid encounters was also fairly common on the river. For example, 27% of the private boaters said they speeded up and 35% reported slowing down to avoid encounters. About 20% of the commercial passengers noticed their guides slowing up to avoid encounters; only 8% said their guides speeded up.

Changing trip speed to avoid crowds was also common in summer and fall, and on weekends. About 35% and 27% of the weekend users said their trips slowed down or speeded up to avoid other trips. About 30% of the summer and fall users said their trips were slowed down because of other trips. Finally, 47% of the most experienced New River boaters said they slowed their trip down to avoid encounters with other groups.

When boaters who reported seeing too many people were asked what they would do in the future to avoid so many people on the river, the commercial users most commonly said they would switch to a weekday trip (33%), followed by coming back at the same time and place and accepting the use levels (19.5%), and changing their trip to a lighter use month (18.6%). Among the private boaters

who saw too many people, 30% said they would not change their time and place for their trip, but would simply accept the numbers of people. About 25% said they would select a different time of day for their trip departure, and 13% said they would select a weekday trip.

About 30% of the weekend floaters who experienced crowds said their first choice would be to switch their trip to a weekday. For weekday users who experienced overuse, the most commonly preferred action was to take the trip during a more lightly used month. About 28% of the weekday boaters voted for this alternative.

Task 3: Describe river user perceptions of resource damage on the river

Perceptions of resource problems by the boater sample

To assess the nature and severity of any resource problems on the river, a list of 20 possible problems was included in the study questionnaire. Boaters indicated whether each was not a problem or a slight, moderate, serious, or very serious problem. Table 147 reports the mean boater responses to the items.

Boaters noted few resource problems on the river. The five problems which were rated most serious by commercial boaters were litter on the river banks, inadequate disposal of human body wastes, flies and gnats, litter in the river, and trampling of vegetation at stopping points. However, the commercial boaters as a group considered even these as only slight problems.

Private boaters considered river resource problems to be somewhat more serious. Their five most, serious problems were litter on the river banks, flies and gnats, litter in the river, water pollution, and inadequate disposal of human body wastes. The group as a whole considered the first three problems to be between slight and moderate in their severity.

Table 147

Means and standard deviations of boater perceptions of river resource problems for all, commercial, and private boaters

River resource problem	All			Commercial			Private		
	N	Mean	standard deviation	N	Mean	standard deviation	N	Mean	standard deviation
Roads along river banks	603	1.56	1.04	333	1.37	.78	270	1.79	1.25
Litter in the river	601	1.86	1.16	332	1.57	.96	269	2.21	1.27
Muddy water	594	1.41	.74	328	1.38	.67	266	1.45	.82
Bridges across river	597	1.11	.43	329	1.09	.40	268	1.14	.47
Erosion of river banks	598	1.37	.70	331	1.32	.64	267	1.43	.78
Trampling of vegetation at stopping points	595	1.59	.90	328	1.52	.81	267	1.67	1.00
Inadequate disposal of human body wastes	591	1.85	1.13	326	1.77	1.09	265	1.95	1.18
Litter on the river banks	593	2.30	1.34	330	1.98	1.22	263	2.70	1.39
Water pollution	580	1.70	1.01	320	1.46	.78	260	2.00	1.17
Railroad tracks along the river bank	585	1.43	.89	322	1.40	.86	263	1.46	.92
Defaced trees at stopping points	583	1.58	.91	321	1.38	.67	262	1.82	1.09
Towns along the river	596	1.15	.53	330	1.11	.41	266	1.20	.65
Strip mines visible from river	593	1.57	1.06	326	1.46	.96	267	1.70	1.17
Buildings at the river's edge	597	1.32	.79	329	1.21	.61	268	1.47	.95
Logging of forests visible from river	594	1.40	.91	329	1.31	.82	265	1.50	1.00
Flies and gnats	591	1.95	1.16	328	1.74	1.01	263	2.22	1.28
Trains going by	592	1.54	.95	330	1.49	.87	262	1.60	1.04
Make-shift campsite facilities along bank	593	1.68	1.07	326		.89	267	1.89	1.21
Water too high	590	1.13	.51	329	1.09	.38	261	1.20	.64
Water too low	561	1.47	.97	309	1.35	.83	252	1.63	1.11

Scoring of river resource problems was as follows :

- 1 = not a problem
- 2 = slight problem
- 3 = moderate problem
- 4 = serious problem
- 5 = very serious problem

Perceptions of resource problems by boater clientele groups

Type of trip (private or commercial)

When chi-square tests were performed to assess potential differences in private and commercial boater perceptions of resource problems, the two groups were found to differ in a statistical sense on 9 of the 20 problems listed (Table 148). In all cases the private boaters rated the problem as more serious. For example, 30% of the private boaters rated litter on the river banks as a serious or very serious problem. The percentage for commercial boaters was 12.2. From 10 to 16% of the private boaters rated defaced trees at stopping points, water pollution, make-shift campsite facilities along the banks, roads along river banks, flies and gnats, and litter in the river as serious or very serious problems. The percentage of commercial boaters who felt this way about these problems ranged from 1 to 6%.

The two problems rated among the most serious by boaters but for which private and commercial users did not differ were inadequate disposal of human body wastes and trampling of vegetation at stopping points. The percentage of commercial and private users who rated the human waste problem as serious or very serious was 9.2% and 11.3%, respectively. The commercial and private percentages for the trampling of vegetation problem was 2.1 and 5.9, respectively.

River segment floated

When other classification variables were controlled for, boaters who floated different segments of the river differed in a statistical sense on five of the river resource problems. These five problems were buildings at the river's edge, litter in the river, strip mines visible from the river, makeshift campsite facilities along the bank, and trains going by. In all cases the boaters on the upper river rated these problems more serious than did boaters in the gorge or on both river segments (Table 149). More than 20%

of the upper river boaters rated litter in the river and strip mines visible from the river as serious or very serious problems. Between 12 and 20% of the upper river boaters rated the other three problems as serious or very serious. Between 5 and 10% of the boaters in the gorge and on both river segments rated the five problems that serious.

Table 148

Breakdown of commercial and private boater perceptions of river resource problems

Problems	Serious or Very serious problem				Chi-square value	Significance level
	Commercial		Private			
	N	%	N	%		
Roads along river banks	10	3.0	37	13.7	25.9	.01
Litter in the river	14	4.2	44	16.4	53.4	.01
Litter on river banks	40	12.2	79	30.0	46.3	.01
Water pollution	6	1.9	29	11.2	41.9	.01
Defaced trees at stopping points	4	1.2	28	10.7	35.4	.01
Buildings at the river's edge	6	1.8	16	6.0	15.8	.01
Flies and gnats	20	6.1	38	14.4	27.3	.01
Make-shift campsite facilities along bank	14	4.3	35	13.1	21.5	.01
Water too low	15	4.9	22	8.7	12.3	.01

Table 149

Breakdown of boater perceptions of river resource problems by river segment floated

Problem	Serious or very serious problem						Chi-square value	Significance level
	Upper River		Gorge		Both river segments			
	N	%	N	%	N	%		
Buildings at the river's edge	9	12.2	11	2.5	2	2.8	27.5	.01
Litter in the river	18	24.0	33	7.4	7	9.7	52.8	.01
Stripmines visible from river	16	21.9	29	6.6	4	5.6	25.5	.01
Makeshift campsite facilities along bank	12	16.2	31	7.0	5	6.9	14.4	.05
Trains going by	11	15.1	16	3.6	6	8.5	27.5	.01

Season of the year

Boaters in spring, summer, and fall differed in their evaluation of three resource problems: inadequate disposal of human body wastes, water too low, and flies and gnats (Table 150). More of the fall boaters (23.1% and 25.0%, respectively) rated the human waste problem and the low water problem as serious or very serious. Flies and gnats were most severe in the summer; 10.6% of the summer boaters considered these insects as a serious or very serious nuisance.

Amount of previous river experience

Boaters with more previous trips on the New River perceived stripmines visible from the river as a greater problem. For example, 16.4% and 14.9% of the boaters who had made 4-10 and 11 or more trips down the New River felt that strip mines were a serious problems. Fewer than 9% of the boaters in less experienced categories felt this way (Table 151).

Type of trip expected

More of the boaters who expected a wilderness trip than a scenic or a social trip found logging visible from the river to be a serious or very serious problem. About 9% of the wilderness boaters viewed logging as a problem; the percentages of the other two groups who felt this way were less than 3% (Table 152).

Table 150

Breakdown of boater perceptions of river resource problems by season of year of the trip

Problem	<u>Serious or very serious problem</u>						Chi-square value	Significance level
	Spring		Summer		Fall			
	N	%	N	%	N	%		
Inadequate disposal of human body wastes	1	4.2	53	9.8	6	23.1	15.2	.01
Water too low	2	8.3	29	5.7	6	25.0	35.3	.01
Flies and gnats	0	0	57	10.6	1	3.7	25.0	.01

Table 151

Breakdown of boater perceptions of river resource
problems by number of previous river trips on the New River

Problem	N	0		Serious or very serious problem				11 or more		Chi-square value	Level of Significance
		N	%	N	%	N	%	N	%		
Strip mines visible from river	8	3.3		9	8.4	7	7.8	12	16.4	38.6	.01

Table 152

Breakdown of boater perceptions of river resource problems
by type of trip expected

Problem	Wilderness		Serious or very serious problem				Chi-Square value	Level of Significance
	N	%	N	%	N	%		
Logging visible from river	27	9.1	6	2.9	1	1.2	18.0	.01

Weekend/weekday trip and trip size

When the study's other classification variables were controlled for, time of week of trip and size of trip (number of boats per trip) did not relate significantly to boater perceptions of resource problems on the river.

Summary

While litter on the river banks, flies and gnats, litter in the river, inadequate disposal of human body wastes, and water pollution were the most frequently cited river resource problems, boaters tended not to rate these problems as very serious. The number of people in various boater clientele groups who rated problems as serious or very serious seldom exceeded 20% and usually was below 10%. Private boaters did tend to rate problems as more serious than commercial users. For example, 30% of the private users rated litter on the river banks as a serious or very serious problem. The number of commercial boaters who did so was 12.2%. More than 20% of the upper river boaters rated litter in the river and visible strip mines as serious problems. Fewer than 10% of the boaters in other river segments judged these problems so severe. More than 20% of the fall boaters rated too low water and inadequate disposal of human body wastes to be serious problems.

Task 4: Describe and evaluate river user satisfaction

One item was included in the study questionnaire to measure the degree to which river users were satisfied with their trip. Each boater was asked to indicate whether his trip was unacceptable, poor, fair, good, very good, excellent or perfect. To evaluate the influences on trip satisfaction, two additional types of data analyses were performed. The first was to determine whether different boater clientele groups (i.e. boaters who differed in type of trip (private or commercial), season of trip, time of week of trip, location of trip, size of trip, amount of previous river experience, or type of trip experience expected (wilderness, scenic, or social) differed also in their overall trip satisfaction. The second step was to determine whether elements of the actual trip, such as weather, amount of river use, contacts with other boaters, and resource degradation, influenced satisfaction.

Trip satisfaction of the boater sample

Overall satisfaction with the river trip was very high (Table 153). About 90% and 93% of the commercial and private boaters, respectively, rated their trip as very good, excellent, or perfect. Not a single boater in either user group found their trip unacceptable. Among the commercial users only 1 rated the trip poor and only 4 found it fair. Two of the private boaters said they had a poor trip, and 10 rated it fair.

Trip satisfaction by boater clientele groups

When the study's seven classification variables used to identify potential clientele groups were examined, only two groups differed in their overall trip satisfaction: boaters during different seasons of the year and boaters with different experience expectations.

Season of the year

Table 154 indicates that while trip satisfaction was high during all seasons of the year, it was somewhat higher in the spring and significantly lower in the

fall. For example, all spring users rated their trip as very good, excellent or perfect. About 94% of the summer users and 78% of the fall users did so.

Type of trip experience expected

Boaters who were expecting a social recreation trip were somewhat more satisfied than those seeking a scenic or wilderness whitewater trip, but again all three boater classes had high levels of satisfaction (Table 155). About 73% of the social recreation boaters said their trip was excellent or perfect; 30.6% rated it perfect. For wilderness boaters, these percentages were 70.9% and 21.2%. These percentages for boaters expecting a scenic whitewater trip were lowest - 65.8% and 13.9%, respectively.

Table 153

Breakdown of commercial and private boaters' satisfaction with their river trip

Degree of trip satisfaction	All		Commercial		Private	
	N	%	N	%	N	%
Unacceptable	0	0	0	0	0	0
Poor	3	.5	1	.3	2	.7
Fair	14	2.3	4	1.2	10	3.6
Good	24	3.9	20	5.9	4	1.5
Very good	143	23.2	79	23.2	64	23.3
Excellent	297	48.2	164	48.1	133	48.4
Perfect	121	19.6	63	18.5	58	21.1
Missing	14	2.3	10	2.9	4	1.5
Total	616	100.0	341	100.0	275	100.0

Table 154

Breakdown of boaters' satisfaction with the river trip by season of the year

Degree of trip satisfaction	Spring		Summer		Fall	
	N	%	N	%	N	%
Unacceptable, poor, fair or good	0	0	35	6.4	6	22.2
Very good	3	12.5	130	23.6	10	37.0
Excellent	14	58.3	271	49.3	11	40.7
Perfect	7	29.2	114	20.7	0	0
Total	24	100.0	550	100.0	27	100.0

Chi-square value: 21.8; Significant at $p > .01$.

Table 155

Breakdown of boaters' satisfaction with the river trip
by type of trip experience expected

Degree of trip satisfaction	Wilderness		Scenic		Social	
	N	%	N	%	N	%
Unacceptable, poor						
fair or good	23	65	15	7.2	2	2.4
Very good	150	21.5	56	26.9	21	24.7
Excellent	64	49.7	108	51.9	36	42.4
Perfect		21.2	29	13.9	26	30.6
Total	302	100.0	20	100.0	85	100.0

Chi-square value = 14.3; Significant at $p > .05$

Trip variables that relate to satisfaction

When trip satisfaction was correlated with river use density (boats and trips on the river/day), trip size (people on boat and boats/trip), how well group members got along, reported contacts between trips (boats seen at various locations, average size of other trips seen; percent of time in sight of other groups, number of rapids waited at, how number of boats seen compared to expectations), perceived crowding, actions taken on the river to avoid contacts (speed up, slow down, or pass lunch stop or attractions), safety problems, weather, and presence of resource problems, nine statistically significant relationships ($p > .05$) were found (Table 156). While all relationships were relatively weak, the strongest were between satisfaction and weather and low water conditions. There was a significant tendency for better weather to be associated with increased trip satisfaction and for low water problems to be associated with decreased satisfaction. The next highest correlations were for perceived crowding and for the trip slowing down to avoid encounters. For these, the more the boaters felt they saw too many people or felt they slowed down to avoid people, the less was their level of satisfaction.

Table 156

Significant relationships between trip variables
and degree of boater satisfaction

Trip variable	Pearson's product - moment correlation
Trip slowed down to avoid encounters with other groups	-.14
Observed unsafe actions or conditions on the trip	-.13
Weather	.21
How well group members got along on the trip	.10
Perceived crowding	-.14
Litter in the river	-.10
Water pollution	-.08
Water too high	-.12
Water too low	-.20

¹Significance level = $p > .05$

Summary

Satisfaction with the river trip was very high. About 90% of both the private and commercial users rated their trip as very good, excellent, or perfect. Among other clientele groups that might be identified and managed for, satisfaction also was high. The only differences found were among boaters during different seasons of the year and boaters with different experience expectations for the trip, but even these differences were small. Spring boaters were most satisfied; fall boaters somewhat less so. Boaters expecting a social recreation trip were most satisfied; those expecting a scenic trip were somewhat less so.

Certain trip variables had weak but significant correlations with overall satisfaction. The most important variables were weather and low water levels, followed by perceived crowding, having to slow down the trip to avoid encounters and observing unsafe actions on the trip.

The lack of utility of the satisfaction construct in carrying capacity decision-making has been noted in previous studies and by the Shelby-Heberlein model employed in this study. We are aware of the 10 carrying capacity studies of 17 different areas or activities where density of use of an area was related to visitor satisfaction, and only three showed a significant relationship.

Two of these studies, both of deer hunters, showed a positive relationship between density of use and user satisfaction (Heberlein and Laybourne 1977, Heberlein et al. 1982). A greater number of deer hunters using an area resulted in greater satisfaction. In 14 studies of 28 activities or areas reporting the relationship between reported contacts and satisfaction, only two significant relationships were found. Heberlein and Vaske (1977) have reported a tendency for canoeists on the Brule River in Wisconsin to have decreased satisfaction with increased reported contacts, but McDonald and Hammitt (1981) reported a positive relationship between reported contacts and satisfaction among rafters on the Chattahooche River in Georgia.

As this study and others have shown, high overall trip satisfaction does not necessarily mean that all facets of the trip are ideal. As indicated in the theoretical discussion of this report, overall trip satisfaction among current visitors may remain high despite some overuse problems. The river recreation experience is varied, and one component of the trip can make up for deficiencies in another. There may be product shifts, i.e., if users don't find one value on the river, they can value some other facet of the experience more highly. Displacement may have occurred, and dissatisfied boaters no longer use the river. Finally, Heberlein and Shelby (1977) suggest that finding many people reporting high satisfaction in their leisure activities is not surprising because these activities were freely chosen to provide satisfaction.

Task 5: Describe river user preferences for facilities,
services and management actions

Two sets of items were included in the study questionnaire to tap boater preferences for facilities, services and management actions on the river. The first set listed 21 services or facilities that might be provided to protect the river environment or upgrade the quality of river trips. Boaters indicated whether they favored, opposed, or were neutral or undecided about each item. The second set contained 11 actions or tradeoffs that boaters might take to be assured of getting a wilderness or scenic whitewater experience on the New River. Only those boaters who felt that wilderness or scenic whitewater trips (in contrast to social recreation trips) should be provided responded to this item set, and they indicated whether they would not, probably would, or definitely would accept the tradeoff.

Boater preferences for facilities and services

Table 157 lists the means and standard deviations of all, commercial, and private boater preferences for facilities and services on the river. Commercial boaters as a group favored virtually all of 21 services of facilities. Strongest support was for regulating commercial motorized water craft on the river, making more information available on the different kinds of trips and experiences available on the river, providing more information on the New River Gorge National River, making information about the river environment available to prospective river users prior to the trip, regulating motorized fishing boats, and developing maps to show river facilities, features, and attractions. Seventy percent or more of the commercial boaters favored these services somewhat or very much (Table 158). Between 50% and 70% felt the same about distributing brochures on the area's natural and cultural history at the start of the trip, providing restroom facilities at access points, encouraging boatmen to spend more time describing the area's natural and cultural history, prohibiting off-road

vehicle use along the river, leading guided walks to significant natural or cultural features along the river, providing drinking water at access points, developing self-guided interpretive trails at popular attractions along the river, and providing shower facilities for use after the trip.

Private boaters also favored most listed facilities or services. Seventy or more percent of the private boaters favored somewhat or very much the development of maps to show river facilities, features and attractions, providing restroom facilities at access points, regulating commercial motorized watercraft, improving roads to access points, and providing public access to the river. Between 50 and 70% favored providing more information on the New River Gorge National River, providing drinking water at access points, providing more public put-in points, providing more public takeout points, making more information available on the different kinds of trips and experiences, mailing information about the river environment to prospective users before the trip, developing self-guided interpretive trails at popular attractions along the river, prohibiting off-road vehicle use along the river, regulating motorized fishing use, distributing brochures on the area's natural and cultural history at the start of the trip, and providing more water safety instructions (Table 158)

Preferences for facilities and services among boater clientele groups

Type of trip (private or commercial)

Private and commercial boaters differed in a statistical sense on 12 of the 21 services or facilities listed. The private boaters were much more in favor of providing public access to the river (chi-square value=127.6; $p>.01$), providing restroom facilities at access points (chi-square value = 14.5; $p>.01$), improving roads to access points (chi-square value = 85.7; $p>.01$), providing more public take-out points on the river (chi-square value = 103,0; $p>.01$),

Table 157

Means and standard deviations of boater preferences for
facilities and services for all, commercial, and private boaters ¹

Facility or service	All			Commercial			Private		
	N	Mean	standard deviation	N	Mean	standard deviation	N	Mean	standard deviation
Provide public access to the river	601	2.79	1.52	332	3.33	1.36	269	2.13	1.45
Provide restroom facilities at access points	598	2.21	1.37	329	2.35	1.38	269	2.04	1.34
Provide drinking water facilities at access points	598	2.42	1.38	329	2.57	1.35	269	2.24	1.39
Improve roads to access points	587	2.48	1.43	320	2.85	1.36	267	2.03	1.38
Provide more public take-out points	592	2.90	1.45	323	3.38	1.28	269	2.32	1.44
Provide more public put-in points	587	2.87	1.44	322	3.34	1.29	265	2.30	1.41
Provide primitive campsites on the river	585	2.85	1.30	319	2.85	1.23	266	2.86	1.39
Provide more water safety instructions	587	2.50	1.09	321	2.64	1.05	266	2.34	1.13
Prohibit off-road vehicle use along the river	594	2.33	1.39	327	2.30	1.32	267	2.36	1.48
Regulate motorized fishing boats	587	2.16	1.22	320	2.02	1.15	267	2.33	1.28
Provide more information on the New River Gorge National River	586	2.00	1.03	318	1.98	1.01	268	2.03	1.05
Encourage boatmen to spend more time describing area's natural and cultural history	583	2.35	.96	318	2.24	.97	265	2.47	.93
Provide campfire programs at river campsites	583	2.65	1.00	318	2.59	1.02	265	2.73	.98
Lead guided walks to attractions along the river	586	2.49	1.02	320	2.42	1.05	266	2.58	.97
Develop self guided interpretive trails at attractions along the river	585	2.41	1.11	317	2.45	1.13	268	2.35	1.08
Develop maps to show river facilities, features, and attractions	582	1.97	1.05	318	2.03	1.04	264	1.91	1.05
Distribute brochures of the area's natural and cultural history at the start of a trip	588	2.27	1.10	322	2.15	1.04	266	2.41	1.15

.. .cont.

Table 157

Means and standard deviations of boater preferences for
facilities and services for all, commercial, and private boaters¹
(Cont.)

Facility of service	All			Commercial			Private		
	N	Mean	standard deviation	N	Mean	standard deviation	N	Mean	standard deviation
Mail information about the river environment to prospective river users prior to the trip Make more information available on the different kinds of trips and experiences available on river	589	2.12	1.09	320	1.99	1.01	269	2.28	1.16
Provide shower facilities for use after the trip	589	2.02	1.02	322	1.83	.95	267	2.24	1.06
Regulate commercial motorized water craft on the river	577	2.66	1.31	314	2.53	1.25	263	2.81	1.38
	512	1.79	1.14	274	1.77	1.02	238	1.81	1.16

¹Scoring of facility and service preferences was as follows;

1 = very much favor

2 = somewhat favor

3 = neutral or undecided

4 = somewhat oppose

5 = very much oppose

Table 158

Breakdown of commercial and private boaters' support
for facilities or services on the river

Facility or service	Commercial				Private			
	Very much favor		Somewhat favor		Very much favor		Somewhat favor	
	N	%	N	%	N	%	N	%
Regulate commercial motorized watercraft	160	58.4	51	18.6	143	60.1	28	11.8
Make more information available on the different kinds of trips & experiences	147	45.7	106	32.9	80	30.0	75	28.1
Provide more information on the New River Gorge National River	129	40.6	94	29.6	106	39.6	77	28.7
Mail information about the river environment to prospective users before trip	120	37.5	119	37.2	86	32.0	71	26.4
Regulate motorized fishing boats	139	43.4	84	26.2	98	36.7	48	18.0
Develop maps to show river facilities, features & attrac- tions	115	36.2	121	38.1	117	44.3	84	31.8
Distribute brochures on the area's natural & cultural history at the start of the trip	102	31.7	112	34.8	74	27.8	65	24.4
Encourage boatmen to spend more time des- cribing area's natural & cultural history	82	25.8	109	34.3	53	20.0	57	21.5
Prohibit off-road vehicle use along the river	126	38.5	68	20.8	121	45.3	28	10.5
Provide restroom facilities at access points	116	35.3	98	29.8	136	50.6	60	22.3
Improve roads to access points	64	20.0	74	23.1	144	53.9	49	17.8
Provide public access to the river	43	13.0	54	16.3	141	52.4	48	17.8
Provide drinking water facilities at access points	87	26.4	91	26.7	119	44.2	51	19.0
Provide more public put-in points	34	10.6	52	16.1	114	43.0	49	18.5
Provide more public take-out points	32	9.9	48	14.9	119	44.2	45	16.7

cont.

Table 158

(Cont.)

Facility or service	Commercial				Private			
	Very much favor		Somewhat favor		Very much favor		Somewhat favor	
	N	%	N	%	N	%	N	%
Provide primitive camp- sites on the river	47	14.7	86	27.0	57	21.4	61	22.9
Provide more water safety instructions	47	14.6	89	27.7	82	30.8	54	20.3
Provide campfire programs on area' s natural & cul- tural history at river campsites	50	15.7	88	27.7	35	13.2	53	20.0
Lead guided walks to significant natural or cultural features along river	62	19.4	120	37.5	40	15.0	72	27.1
Develop self-guided interpretive trails at popular attractions along river	68	21.5	110	32.3	65	24.3	90	33.6
Provide shower facili- ties for use after trip	81	25.8	78	24.8	59	22.4	54	20.5

providing more public put-in points on the river (chi-square value = 92.7; $p > .01$), and providing more water safety instructions for river users (chi-square value = 23.1; $p > .01$). In contrast, the commercial boaters were significantly more in favor of encouraging river boatmen to spend more time describing the natural or historical environment along the river (chi-square value = 24.8; $p > .01$), distributing brochures on the area's natural and cultural history at the start of the trip (chi-square value = 14.3; $p > .01$); mailing information about the river environment to prospective river users prior to the trips (chi-square value = 18.6; $p > .01$), making more information available on the different kinds of trips and experiences available on the New River (chi-square value = 30.4; $p > .01$), regulating motorized fishing boats on the river (chi-square value = 16.7; $p > .01$), and providing shower facilities for use after the trip (chi-square value = 9.3; $p > .05$).

River segment floated

Boaters who travelled on different sections of the river differed in their preferences for two of the 21 services or facilities listed. Gorge users were most in favor of regulating commercial motorized watercraft on the river; 78% of these boaters were in favor of this service. Only 4.5% opposed the idea. In contrast, about 16% of the upper river boaters and multi-river segment boaters opposed the idea (Table 159). Upper river users were more in favor of providing drinking water at access points; 69.4% favored this service somewhat or very much.

Type of experience expected

Table 160 indicates that boaters who differed in the kind of trip expected differed in their support for restroom facilities at access points, more public take-out points, and more public put-in points. More social recreation

boaters (78.3%) than wilderness boaters (63.3%) favored the provision of restroom facilities at access points. Similarly, social recreation boaters were more in favor of more public put-in and take-out points than were boaters seeking a wilderness or a scenic Whitewater trip.

Trip Size

There was a slight but statistically significant tendency for people in small trips to be more in favor of providing more information on the New River Gorge National River and making more information available on different kinds of trips and experiences available on the river than were boaters in large trips. However, the majority of boaters in all trip sizes were in favor of these services (Table 161).

Season of year, weekend/weekday trip, and amount of previous river experience

When the study's classification variables were controlled for, there were no significant differences in preferences for river facilities and services among boaters during different seasons of the year, on weekdays versus weekends, or with different amounts of previous river experience.

Table 159

Breakdown of support for river facilities or
services by river segment floated

	Somewhat or very much in favor						Chi-	Level
Service or facility	Upper River		Gorge		Both river segments		Square Value	of Sig-nificance
	N	%	N	%	N	%		
Regulate commercial motorized water-craft on the river	44	65.7	296	78.1	36	61.0	23.6	.01
Provide drinking water at access points	52	69.4	248	65.7	41	57.7	15.4	.05

Table 160

Breakdown of support for river facilities or services by type of trip expected

Service or facility	Somewhat or very much In favor						Chi- Square value	Level of Signifi- cance
	Wilderness		Scenic		Social boats/			
	N	%	N	%	N	% trip		
Provide restroom facilities at access points	188	63.3	151	71.6	65	78.3	20.5	.01
Provide more public take-out points	121	41.0	75	36.0	45	54.9	15.1	.05
Provide more public put-in points	126	43.1	77	37.2	43	52.4	16.5	.03

Table 161

Breakdown of support for river facilities or services by trip size (number of boats/trip)

Service or facility	Somewhat or very much in favor								Chi- Square Value	Level of Signifi- cance
	<u>1-3</u>		<u>4-5</u>		<u>6-9</u>		<u>10-40</u>			
	N	%	N	%	N	%	N	%		
Provide more Information on the New River Gorge National River	149	75.2	129	69.7	87	63.0	34	64.2	17.3	.05
Make more Information available on the different kinds of experiences available on the river	138	71.5	139	73.5	92	67.6	28	50.0	17.2	.05

Tradeoffs boaters might make to assure a wilderness or scenic river experience

Of the 11 actions or tradeoffs suggested in the study questionnaire, commercial boaters said they would most likely do the following to assure a wilderness or a scenic whitewater experience: take a trip during mid-week rather than on a weekend, schedule departure time for earlier or later in the day, float a section of the river that has similar rapids but lower use, limit the size of individual trips, or support a system of limited river use permits. (Table 162). More than 50% said they definitely would schedule their departure

Table 162

Means and standard deviations of boater preferences for various strategies
for managing river use to assure a wilderness or scenic river experience

Possible management strategies	All			Commercial			Private		
	N	Mean	Standard deviation	N	Mean	Standard deviation	N	Mean	Standard deviation
Schedule departure time for earlier or later in the day	554	2.42	.62	307	2.54	.56	247	2.27	.67
Take a trip during mid-week rather than weekend	546	2.19	.80	305	2.98	.69	241	1.82	.78
Take a trip earlier or later in the river use season	544	1.98	.74	300	1.97	.75	244	1.99	.73
Float a section of the river that has similar rapids but lower use	539	2.09	.75	302	2.20	.72	237	1.95	.77
Float a section of the river that has fewer rapids and lower use	538	1.35	.64	301	1.37	.65	237	1.33	.62
Pay 1.5 times as much for the trip	525	1.48	.71	303	1.54	.71	222	1.40	.70
Pay 2 times as much for the trip	524	1.30	.63	303	1.30	.62	221	1.29	.64
Pay 3 times as much for the trip	516	1.24	.61	294	1.24	.61	222	1.25	.61
Limit the size of individual trips	539	1.93	.73	298	2.05	.69	241	1.79	.76
Float the river less often	532	1.72	.73	293	1.97	.69	239	1.41	.64
Support a system of limited river use permits	533	1.80	.75	293	2.01	.73	240	1.54	.70

Scoring of preferences for management strategies was as follows:

- 1 = would not do it
- 2 = probably would do it
- 3 = definitely would do it

time for earlier or later in the day or take a trip during mid-week rather than on a weekend (Table 163). Another 40.4% and 29.2%, respectively, said they would probably take these actions. Between 27% and 37% of the commercial boaters said they would definitely take the remaining three actions, and between 44% and 47% said they probably would do so. After these five most preferred actions, the next most popular tradeoffs were to limit the size of individual trips and float the river less often.

The five most likely actions to be taken by private boaters were to schedule the river trip departure time for earlier or later in the day, take a trip earlier or later in the river use season, float a section of the river that has similar rapids by lower use, take a trip during mid-week rather than on a weekend, and limit the size of individual trips. About 40% of the private boaters said they definitely would schedule their departure time for earlier or later in the day; another 48% said they would probably do this. Between 20% and 26% said they definitely would do the remaining four actions, and between 36% and 48% said they would probably do so. Another 42% and 33% said they definitely or probably would support a system of limited river use permits or float the river less often (Table 163).

Table 163

Breakdown of private and commercial boater support
for various strategies for managing river use to
assure a wilderness or scenic Whitewater river experience

	Would probably do it				Definitely would do it			
	Commercial		Private		Commercial		Private	
	N	%	N	%	N	%	N	%
Schedule departure time for earlier or later in the day	12	40.4	118	47.8	174	56.7	98	39.7
Take a trip during mid- week rather than weekend	89	29.2	88	36.5	181	59.3	55	22.8
Take a trip earlier or later in the river use season	13	44.0	116	47.5	80	26.7	63	25.8
Float a section of the river that has similar rapids but less use	13	44.7	98	41.4	113	37.4	63	26.6
Float a section of the river that has fewer rapids and lower use	53	17.6	40	16.9	29	9.6	19	8.0
Pay 1 1/2 times as much for the river trip	84	27.7	35	15.8	39	12.9	27	12.2
Pay 2 times as much for the trip	37	12.2	21	9.5	27	8.9	22	10.0
Pay 3 times as much for the trip	17	5.8	15	6.8	27	7.9	20	9.0
Limit the size of individual trips	15	52.3	92	38.2	78	22.9	49	20.3
Float the river less often	15	52.2	59	24.7	66	22.5	20	8.4
Support a system of limited river use permits	13	47.4	72	30.0	79	27.0	29	12.1

Preferred tradeoffs to assure a wilderness or scenic river
experience by boater clientele groups

Type of trip (private or commercial)

Commercial and private boaters differed in a statistical sense in their preferences for six actions to assure a wilderness or scenic whitewater river trip. Commercial users would more likely than private boaters schedule their departure time for earlier or later in the day (chi-square value = 27.3, $p > .01$), take a trip during midweek rather than on a weekend (chi-square value=90.9; $p > .01$), float a section of the river that has similar rapids but lower use (chi-square value-16.2, $p > .01$), pay 1.5 times as much for the river trip (chi-square value=11.3, $p > .01$), limit the size of individual trips (chi-square value=25.3, $p > .01$)

or float the river less often (chi-square value=93.4, $p>.01$).

Type of trip expected

Table 164 indicates that boaters expecting a wilderness experience on the river would more likely schedule their departure time for earlier or later in the day or take a trip earlier or later in the river use season than would social recreation boaters. Boaters seeking a scenic experience were intermediate between the two groups in their support for these tradeoffs. The majority of all three groups, however, supported both actions. Only 21.5% of the social recreation boaters said they would probably or definitely pay three times as much for their trip, but this was significantly more than would do so among the scenic Whitewater boaters.

Weekend/weekday trip

When asked what they would most likely do in the future to assure a quality wilderness or scenic experience, over 90% of weekday boaters said they would take a trip during mid-week rather than on a weekend. Among weekend boaters, about 67% said they would probably or definitely switch to a weekday trip. (Table 165)

Trip size (number of boats/trip)

There was a significant tendency for more of the trips with 1-3 boats and 4-5 boats than for trips with more boats to favor taking a trip during mid-week. Between 77% and 81% of the boaters on smaller trips favored this action; between 68% and 70% of the boaters on larger trips said they would probably or definitely take this action (Table 166).

Season of the year, river segment floated, and amount of previous river experience

When the study's other classification variables were controlled for, season of the year of the trip, river segment floated, and amount of previous experience on the New River did not relate significantly to any of the 11 actions or

tradeoffs that were suggested to assure a wilderness or scenic trip.

Table 164

Breakdown of preferred tradeoffs to assure a wilderness or scenic Whitewater trip by type of trip expected

Action or tradeoff	Probably or definitely would take action						Chi-	Level of Signifi- cance
	Wilderness		Scenic		Social		Square	
	N	%	N	%	N	%	Value	
Schedule departure time for earlier or later in the day	266	95.0	181	92.3	60	84.5	9.5	.05
Take a trip earlier or later in the river use season	214	77.5	129	66.9	42	61.8	11.9	.02
Pay 3 times as much for the trip	45	17.4	20	10.7	14	21.5	10.4	.03

Table 165

Breakdown of preferred tradeoffs to assure a wilderness or scenic Whitewater trip by time of week of the trip

Action of tradeoff	Probably or definitely would take action				Chi-Square value	Level of Significance
	weekend		weekday			
	N	%	N	%		
Take a trip during mid-week rather than on a weekend	229	66.9	184	90.6	79.2	.01

Table 166

Breakdown of preferred tradeoffs to assure a wilderness or scenic Whitewater trip by size of trip

Action of tradeoff	Probably or definitely would take action								Chi-Square Value	Level of Significance
	1-3 boats		4-5 boats		6-9 boats		10-40 boats			
	N	%	N	%	N	%	N	%		
Take a trip during mid-week rather than on a weekend	148	80.8	131	77.1	89	68.0	33	70.2	12.3	.05

Summary

Boaters on the New River were generally in favor of the provision of additional services and facilities on the river. The most preferred services were to regulate commercial motorized watercraft on the river, develop maps to show river facilities, features, and attractions, provide more information on the

New River Gorge National River, make more information available on the different kinds of trips and experiences available on the river, and to mail information to prospective river users prior to the trip. Commercial boaters were especially in favor of mailing information about the river environment to prospective river users and making more information available on different kinds of trips and experiences available on the New River. In addition, more commercial users than private boaters were in favor of encouraging river boatmen to spend more time describing the natural or historical environment along the river, distributing brochures on the river's natural and cultural history at the start of the trip, regulating motorized fishing boats on the river, and providing shower facilities after the river trip.

More private boaters favored providing public access to the river, providing restroom facilities at access points, improving roads to access points, providing more public put-in points and take-out points on the river, and increased water safety instructions on the river.

When asked what actions or tradeoffs they would make to assure receiving a wilderness or scenic Whitewater experience on the river, commercial users most preferred taking a trip during midweek rather than on a weekend, scheduling a departure time earlier or later in the day, floating a section of the river that has similar rapids but lower use, limiting the size of individual trips, and supporting a system of limited river use permits. Private boater preferences were the same except that taking a trip earlier or later in the river use season replaced supporting a system of limited river use permits in their five most favored actions.

Task 6: Evaluate and recommend a strategy for identifying acceptable amounts and types of river use, and suggest guidelines for managing use within capacity

Carrying Capacity - Some Precautions

In recent years there has been considerable dissatisfaction with the carrying capacity concept as a tool to assist resource managers (Wagar 1974, Bury 1976, Washburne 1982). Dissatisfaction appears to be due to misconceptions about the nature of the concept, its complexity, a lack of empirical evidence for some relationships assumed by the traditional carrying capacity model, and a tendency to use the model solely as a rationale for limiting use.

Carrying capacity has sometimes been viewed as an inherent amount of use that a specific site can withstand without excessive impact on the environment or on the visitor's experience. In actuality, any recreation site has a range of potential capacities, each providing different consequences. Value judgements are necessary to determine what consequences (i.e. visitor experiences or site conditions) are to be provided. Resource managers must make these value judgements, and state them in their management objectives for the area. These objectives then begin to determine what site and use conditions are acceptable on the area.

Some early applications of carrying capacity to recreation management apparently viewed the concept as a function of only physical and biological constraints (Stankey et al. 1983). If these constraints could be known, then the carrying capacity of an area could be determined. But other factors besides physical and biological constraints may be more sensitive to changes in use. For example, Wagar (1974) stated that outdoor recreation is primarily a psychological experience whose quality may depend as much (or more) on individual expectations, belief systems, and prior experiences as on the physical condition of the recreation site. Social or psychological carrying

capacity has therefore more recently been viewed as the limiting element, especially in wilderness or primitive settings. But a variety of use and resource conditions may most influence visitor experiences. For example, New River boaters may be most sensitive to number of people on their boat, number of boats per trip, kind or size of other trips seen, number or location of other trips seen, percent of time in sight of other trips, number of rapids waited at, or changes in travel patterns (e.g. slowing down or speeding up) on the river to avoid encounters with other trips. To avoid establishing a capacity limit on each of these variables, it is necessary to determine which one or which few are critical. Managers must know which river use variables most influence visitor experiences, and which of those variables are most sensitive to changes in actual river use. Such variables as time of river trip departure and water level influence the tendency for river user groups to come in contact with each other. Thus, to establish a fixed carrying capacity for an entire area for an entire season or seasons is very difficult.

The traditional view of carrying capacity in wildland recreation settings rests on the assumption that as use increases, resource impacts increase and the quality of experiences decreases. Much recent research shows that campsite and trail impacts are not highly correlated with use, at least not over a broad range of use levels. High impacts occur under light use conditions, followed by a leveling off of impacts as use increases (Cole 1983a, 1983b). Perceptions of crowding also often depend as much upon the type, location, and nature of the encounter as upon the actual number of the encounters (Stankey 1973). Finally, as discussed earlier in this report, "satisfaction" with the experience has not typically been a useful construct in identifying acceptable levels of use in wildland recreation settings.

Carrying capacity assessments have generally been viewed as efforts to identify an appropriate ceiling on use or as an effort to limit existing use.

While use ceilings and limitations may be a critical component of a carrying capacity framework, researchers who first applied the concept to wildland recreation settings took a much broader view of the concept. For example, both Lucas (1964) and Wagar (1964) identified the key elements of carrying capacity as the specification of the conditions managers might choose to achieve and consideration of a variety of strategies that might be undertaken to achieve the prescribed conditions. They also called for provision of a diverse system of recreation opportunities for the American public. In a 1974 review of the carrying capacity concept, Wagar again called for a broader or regional view when making carrying capacity assessments. He cautioned against focusing on one area at one point in time when specifying desired resource conditions and experiences, or when prescribing appropriate management strategies to achieve desired conditions. Lucas (1982) has also recently restated the values or benefits of wildland recreation experiences, the importance of freedom and lack of constraints for those experiences, and the need to consider alternatives to use limitation when prescribing management programs. Washburne (1982) has stated that the maintenance of desired conditions of the resource or the visitor experience should be the focus of managers' efforts, and only as needed should the focus be on the use of an area. He argues that only a limited number of conditions in a park are likely to become problems, that only these conditions need to be monitored, and that a numerical use capacity need not be established until critical or sensitive conditions are threatened and it is determined that use relates to unacceptable change in these sensitive conditions. By taking this approach the real cause of the unacceptable change (such as timing, distribution, or composition of use, user behavior, amount of use, or localized environmental conditions) will likely be more accurately and efficiently determined.

Carrying Capacity Assessment for the New River Gorge National River

The framework we are suggesting for assessment of the carrying capacity of the New River Gorge National River for boating use has been described by Washburne (1982). (See Figure 2). Washburne's framework with some modification appears to address and resolve the carrying capacity problems discussed in the previous section. The Shelby-Heberlein model which formed the theoretical underpinnings for the data collection phase of this study can easily be incorporated into the framework. Finally, the framework seems suitable to conditions on the New River Gorge National River and compatible with National Park Service planning and management processes.

In describing the framework, we will name its key elements, describe what is meant by each, and on the basis of study data, suggest one carrying capacity scenario for the New River. We will do this in a step-by-step fashion as called for by the framework. We caution the reader that we will only be addressing social carrying capacity. Other kinds of carrying capacity, such as ecological or facility, could possibly be more limiting, and Washburne's framework applies equally well to these. It was our hunch and that of the National Park Service that visitor experience variables were most sensitive to changes in use conditions, and we have therefore limited our study to social carrying capacity. Secondly, we emphasize that the New River has many potential social carrying capacities, depending upon the management objectives and standards selected for the river. The final authority and responsibility for establishing objectives and standards rests with the river management agencies, most notably the National Park Service. The scenario we suggest has its basis in the perceptions and opinions of the current boaters on the river. We believe that user opinion is one very important – but not the only – input into the decision process. Also, the various identifiable user groups on the river may have differing opinions about management goals, standards, and strategies, and

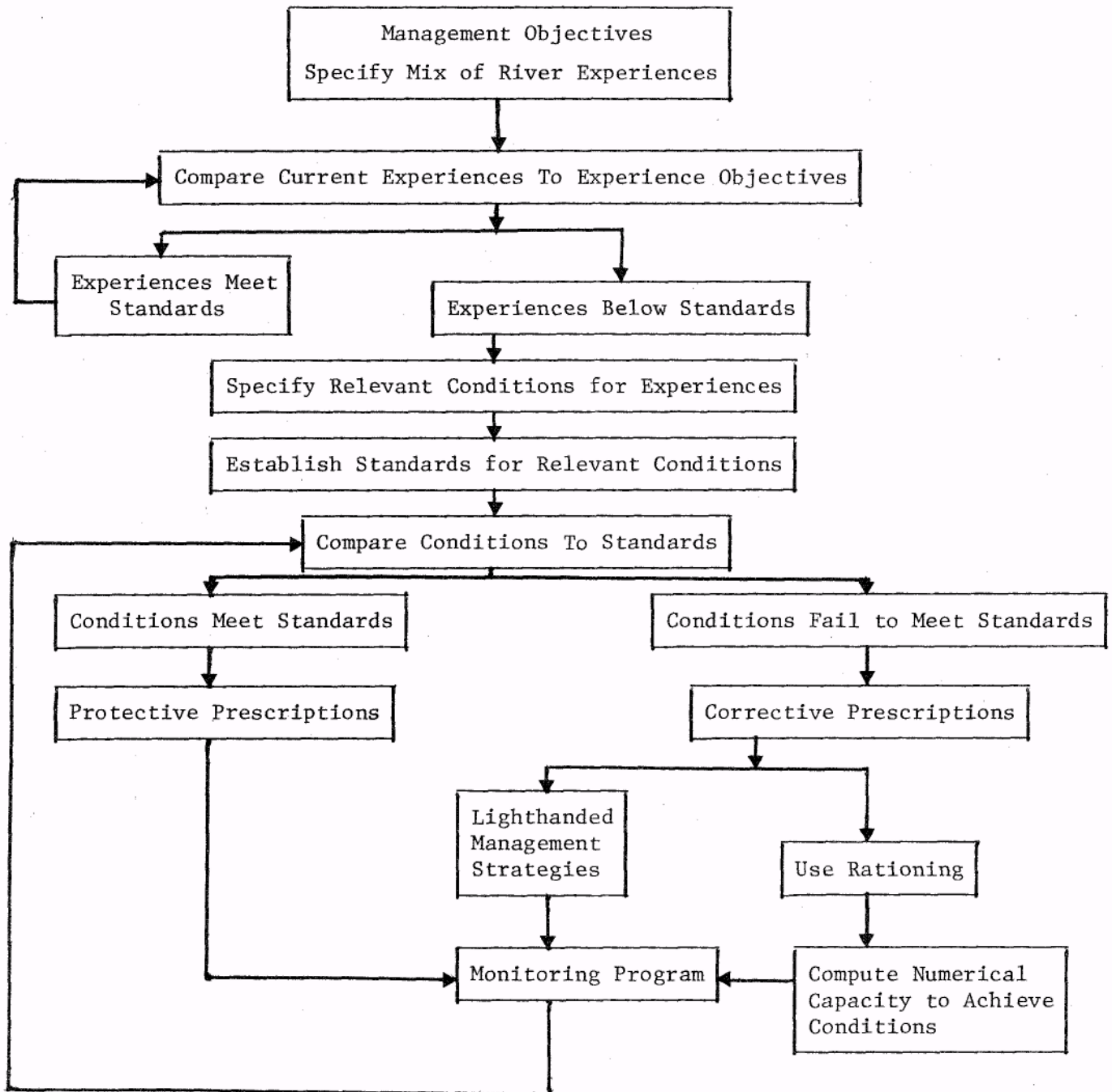


Figure 2. A Framework for Carrying Capacity Assessment (Modified from Washburne (1982)).

the National Park Service may respond to these preferences in a variety of ways. The mix of experiences finally decided upon must include input from publics and resource analyses broader than our study data. Therefore, the scenario we suggest should be viewed as only one of several reasonable interpretations of current boater opinions about river management. Finally, there may be instances in the carrying capacity framework where we lack sufficient data to make conclusive statements, or where we found only weak correlations when the framework assumed solid relationships. We will acknowledge these instances and suggest possible corrective actions.

Management Objectives

The first step in managing the New River within social carrying capacity is to establish river management objectives that specify what experiences are to be gained there. Such specification is called for by most carrying capacity theorists (e.g. Lucas 1964, Wagar 1964, Lime and Stankey, 1971, Hendee et al. 1978) and is recognized by Rule 2 of the Shelby-Heberlein model. When selecting objectives, National Park Service managers should give consideration to at least the following: their legislation and policy, a goal of providing a diversity of Whitewater river experiences in the region, resource capabilities, preferences of user publics, the current river use situation, and such constraints as land ownership patterns, financial resources, and available personnel. Planning and management for a diversity of river experiences in the region deserves special consideration, for focusing on the New River alone may result in the provision of recreation experiences which are duplicated on other Whitewater rivers in the region. Such a narrow focus can result in the loss of truly scarce experience opportunities in the system. In line with the goal of providing for diversity, managers might seek to provide different experiences on different segments or at different times on the New River Gorge National River. Finally, Shelby and Heberlein suggest that the task of selecting

appropriate management objectives is made easier when relevant groups among the river users agree on what experiences should be provided.

In this study we obtained boater preferences for three possible river trip experiences: a wilderness Whitewater trip (a trip through a scenic gorge with little evidence of man, many opportunities for solitude, and a chance for challenge and for you to battle the waves), a scenic Whitewater trip (a trip through a scenic gorge with some evidence of man, fewer opportunities for solitude, and guidance when running wild rapids), or a social recreation trip (a trip on a scenic river with much evidence of man, exciting rapids, and seeing other people on the river makes the trip more fun). Of the boaters who responded to this item, 41% said the trip should be a wilderness trip, 51% a scenic whitewater trip, and 8% a social recreation trip (Table 14 on page 36). When we examined the data to see if identifiable user groups differed in their preferences for experiences, the only difference found was for season of the year. Many more of the spring and fall boaters than the summer users said the trip should be a wilderness experience (Table 34 on page 46). But generally speaking, there was considerable agreement among possible boater clientele groups about the mix of experiences to be provided on the New River. One carrying capacity scenario would therefore be to provide a mix of wilderness, scenic, and social recreation opportunities in proportion to the preferences of current users. Somewhat more of the wilderness opportunities might be provided in the spring and fall. We will use this scenario in tracking through our carrying capacity framework, but we acknowledge that the National Park Service might opt for a different experience mix – given legislation and policy, a need for regional diversity, the current use situation, funding constraints, etc.

Are Appropriate Experiences Currently being Provided? A Preliminary Assessment

The next step in a carrying capacity judgement is to decide whether or not the mix of experiences currently being provided on the New River Gorge National River meets management objectives. If it does, then there is no need from a social carrying capacity standpoint to establish additional use ceilings or implement additional management programs. What would be needed is a monitoring program to anticipate and identify unacceptable change in the experiences gained on the river.

Assuming a management objective of providing about 41% of the New River boaters with a wilderness Whitewater experience, 51% with a scenic whitewater experience, and 8% with a social recreation experience, our study data suggest that the current river experience mix is not acceptable. Currently about 28% of the New River boaters who responded to our question felt they received a wilderness experience; 52% called their trip a scenic Whitewater experience, and 20% reported receiving a social recreation experience. (See Table 13 on page 36). Thus for boaters as a whole, there appear to be too few wilderness experiences and too many social recreation experiences. The problem is apparently even more serious in the Gorge segment of the river, where about 25% and 22% of the boaters received a wilderness and a social recreation experience, respectively (See Table 23 on page 41).

Relevant Conditions

If managers are to provide the appropriate mix of experiences on the New River and thus meet management objectives, they must know the river conditions that influence whether these experiences are gained. In our study we hypothesized that number of boats seen on the river, the percent of time in sight of boats from other trips while on the river, and the number of rapids

waited at so other trips could pass through would relate most strongly to type of river experience received. As Table 167 indicates, there was a significant tendency for more contacts with other boats, greater percentage of time in sight of other trips, and more rapids waited at to be associated with rating the trip as a social recreation experience. The fewer such contacts, the greater the likelihood that the trip was rated a wilderness experience. Of the three contact variables measured, percent of time in sight of boats from other trips was most highly correlated ($r=.30$) with type of river trip received.

As a check to see if we had identified the most important river variables, we correlated other inter-group contact measures (boats seen floating past lunch stop, boats seen at take-out point, and size of other river trips seen), intra-group variables (number of people on boat, number of boats on the trip, and how well boaters in the trip got along), actions taken on the river to avoid contacts (speed up the trip, slow down the trip, pass preferred attractions and pass preferred lunch stops), and 20 potential river resource problems (see Table 147 on page 116 for the list of problems) with type of river experience received. None of these correlations exceeded .20. We therefore concluded that of the variables we measured, type of river experience received was most sensitive to percent of time in sight of boats from other trips.

We have additional evidence that percent of time in sight of boats from other trips is a most relevant condition on the New River. There was a strong positive correlation ($r=.48$) between percent of time in sight of boats from other trips and perceived crowding while on the river. The correlation was higher than the comparable one for number of rapids waited at ($r=.44$), number of boats seen ($r=.32$), or for any other of the inter-group, intra-group, trip travel pattern, or resource variables measured. In addition, about 29% of all study boaters said their percent of time in sight of boats from other trips was unacceptable; 61% said it was acceptable, and 10% said it made no difference.

(See Tables 80 and 81 on page 75). This is a higher level of unacceptance than we found for number of boats seen, number of rapids waited at, or for other variables measured.

Table 167

Relationships between use variables and
type of river experience received

Use variable	Correlation coefficient
Number of boats from other trips seen on the river	.24
Percent of time in sight of boats from other trips	.30
Number of rapids waited at to let other trips pass through	<u>.26</u>
All correlation coefficients significant at $p < .01$.	

Standards for Relevant Conditions

We used two procedures to identify acceptable percentages of time for river user groups to be in sight of other trips. The first follows the propositions of the Shelby-Heberlein model. We determined whether boaters had norms about acceptable levels of contact for the three possible river experiences (wilderness Whitewater, scenic Whitewater, and social recreation). If they did, we asked them what percentages of contact would be acceptable, and then searched for consensus among the various river user groups. If most boaters have contact norms and if such user groups as commercial and private boaters agree on them, then Rule 3 of the Shelby-Heberlein model would be met. Managers could adopt these norms as acceptable river condition standards.

Table 168 indicates that about 60% of the study boaters suggested an acceptable percentage of time to be in sight of other trips while on a wilderness Whitewater trip. This number dropped to about 50% for scenic whitewater trips, and to about 30% for social recreation trips. Another 20%, 20%, and 13%, respectively, said the percent of time in sight of boats from other trips did matter for a wilderness, scenic, and social recreation trip, but that they

couldn't suggest an acceptable number. Finally, about 20%, 30%, and 60% said that percent of time in sight of other trips didn't matter for a wilderness, scenic, or social recreation trip. From this we can conclude that most boaters do have norms about acceptable contact levels for a wilderness experience, and managers might gain valuable input from them when making decisions. Most users also feel that the percent of time in sight of other trips does influence a scenic trip, but only about half could help managers set appropriate standards. Few boaters have norms about acceptable contact levels for a social recreation trip. Most said the percent of contact time didn't matter or that they couldn't suggest an acceptable level.

Table 169 lists acceptable percentages of time in sight of boats from other trips for wilderness, scenic, and social recreation trips for those boaters who had norms about acceptable contact levels. There were no differences in the mean acceptable contact levels for a wilderness whitewater trip across four potential boater clientele groups (trip type, season of trip, time of week of trip, and river segment floated). The mean acceptable contact time was 18-20% of total trip time for a wilderness trip. There was somewhat less consensus among the boaters on what would be acceptable contact times for a scenic trip. Most boater groups, however, suggested a mean of 30-40% of total trip time as an acceptable level. Among those with opinions about acceptable contact times for a social recreation trip, most boater groups had a mean acceptable level of 45-50% of total trip contact time.

Are these levels of consensus among boater groups high enough to meet the requirements of Rule 3 of the Shelby-Heberlein model? Do boaters possess norms about acceptable percentages of contact times that are defined clearly enough to help managers make carrying capacity judgments? The answer appears to be yes for wilderness whitewater experiences. The evidence is somewhat mixed for scenic and social recreation experiences. There appeared to be a tendency toward

consensus among those boaters with opinions, but the high numbers of boaters who said contact time didn't matter or that they couldn't suggest an acceptable level suggests inadequately defined norms.

Given the mixed evidence of the applicability of the Shelby-Heberlein model to New River trip experiences, we examine a second approach to defining standards for relevant river conditions. Instead of asking boaters what contact levels would be acceptable for various river experiences, we determined the reported percent of time in sight of other trips for boaters who said they actually received a wilderness, scenic, or social recreation experience. As expected, boaters who felt their trip was a social recreation trip spent a significantly greater proportion of their trip time in sight of boats from other trips than did those on scenic Whitewater trips, and the scenic trips had a higher level of contact than did the wilderness trips (Table 170). However, mean percentages of actual contact were higher than stated norms for all three trip experiences (38% compared to 19% for wilderness trips; 48% compared to 32% for scenic trips, and 70% compared to 48% for social recreation trips).

Which of the two sets of percentages should managers accept when establishing standards to assure quality experience on the New River? Again, managers must make a judgment, and strong arguments can be made for either case. On the one hand, managers might opt for boaters' evaluations of conditions they actually experienced on their trip. Such opinions seem more solidly grounded in reality, and implicit in this approach is the recognition that more variables than just contact levels with other parties influence the kind of experience gained on the river. On the negative side, boater response to conditions on the river are just that — reactions to conditions experienced at one particular point in time. Such reactions may not be expressions of preferred or acceptable river conditions. Also, for some boaters the percent of time in sight of other trips has nothing whatsoever to do with type of experience gained, but these

individuals are included in summary statistics of actual contact percentages for the various experiences. The high variances listed in Table 170 reflects the inclusion of these people in the data analyses.

The approach suggested by Shelby and Heberlein has the advantage of being a more direct measure of norms about acceptable contact levels. Also, individuals without norms or with ill-defined norms about acceptable contact levels for various trip experiences could and did remove themselves from inclusion in the selection of the standards. In effect, boaters provided input to the decision process when they felt qualified to do so, and removed themselves from consideration when they didn't. This had the effect of reducing the variance terms for appropriate standards for the three experiences (See Table 169).

Even after managers decide upon which conceptual approach they will take, one more judgment must be made when selecting river condition standards for river experiences. Since boaters don't all agree on what are acceptable levels of contact for the river trip experiences, managers must decide what percent of the boaters they will attempt to satisfy. One possible approach is to manage for the median level of acceptable contact. This means that on the average, half of the boaters would experience acceptable contact levels and half would experience too much contact. In reality more would likely find acceptable conditions. There would likely be enough variation within the managed system that through effective communication programs, boaters could learn of times and places where their needs could likely be met.

As in other carrying capacity judgements, when managers select standards, they must take into consideration input from relevant publics, legislation and policy, resource capabilities, the current river use condition, and availability of financial or manpower resources. One possible scenario supported by our data would be to select as standards the median acceptable percentages of time in sight of boats from other trips stated by boaters who had opinions. Thus, the management standard would be 10% of total trip contact time for wilderness

trips, 25% for scenic trips, and 50% for social recreation trips (Table 169).

Table 168

Breakdown of whether all, commercial, or private boaters have opinions about acceptable percentages of time in sight of boats from other trips for wilderness, scenic, or social recreation experiences

Type of river experience	Suggested an acceptable percentage		Didn't suggest an acceptable percentage			
			% of time in sight of other trips didn't matter		% of time in sight of other trips did matter, but couldn't suggest a number	
	N	%	N	%	N	%
Wilderness						
All	363	60.4	113	18.8	125	20.8
Commercial	197	59.2	56	16.8	80	24.0
Private	166	61.9	57	21.3	45	16.8
Scenic						
All	287	48.8	174	29.6	127	21.6
Commercial	155	47.3	92	28.0	81	24.7
Private	132	50.8	82	31.5	46	17.7
Social recreation						
All	173	29.7	334	57.3	76	13.0
Commercial	87	26.7	186	57.1	53	16.2
Private	86	33.5	148	57.6	23	8.9

Table 169

Mean Acceptable percentages of time to be in sight of boats from other trips for wilderness, scenic, and social recreation experiences for boater clientele groups

Boater clientele groups	Wilderness			Scenic			Social		
	N	X	Standard deviation	N	X	Standard deviation	N	X	Standard deviation
All boaters ¹	363	18.6	18.0	287	31.8	20.8	173	47.6	26.1
Trip type									
Commercial	197	17.5		155	29.0		87	46.0	
Private	166	19.9		132	35.2		86	49.2	
Season									
Spring	11	10.2		10	17.0		8	27.9	
Summer	333	18.9		264	31.9		156	48.3	
Fall	18	17.5		12	40.8		9	52.0	
Time of week									
Weekend	220	19.8		172	35.2		105	50.8	
Weekday	142	16.8		114	26.5		68	42.6	
River Location									
Upriver	41	19.6		33	30.7		21	45.3	
Gorge	273	18.5		218	31.7		130	48.6	

¹Median acceptable percentages for all boaters were as follows:

Wilderness = 10.0

Scenic = 25.0

Social = 50.0

Table 170

Reported percents of time in sight of boats from other trips for boaters who said they received a wilderness, scenic, or social recreation trip

Type of river experience received	Percentage of time in sight of boats from other trips			
	N	Mean	Median	Standard deviation
Wilderness Whitewater	156	38.1	25.0	33.9
Scenic Whitewater	302	48.3	50.0	33.8
Social recreation	116	69.6	80.0	32.5

Comparing Conditions and Standards?

The next step in carrying-capacity-based management is to compare existing river conditions to standards. An underlying principle here, one common to wildland recreation management, is for managers to interject themselves into the recreation service system only when and to the extent necessary to achieve predetermined objectives (Lucas 1982, Hendee et al. 1978). Managers should

therefore recognize that the New River Whitewater recreation system may have several component parts or subunits, some of which may be performing at standard and some of which may be below acceptable levels. Corrective actions are needed only for those subunits which are below par, or which are trending in that direction.

Managerially relevant subunits of the New River system might be defined by river segment, season of the year, and weekend-weekday. These three temporal and spatial variables give 12 potential management subunits (Table 171). Table 171 lists current median percentages of trip time in sight of boats from other trips for river users in each of the subunits, and this permits a comparison of trip conditions with standards. The Gorge on summer weekend with its 80% contact time fails to meet acceptable standards for even a social recreation trip. Additional evidence that this management unit is below standard is that 53% of its boaters said they saw too many people while on their trip. The Gorge on summer weekdays, on fall weekends, and the upper river (the river above the Gorge) on summer weekends and weekdays either provides or comes very close to providing a scenic recreation experience. The other seven river subunits are apparently providing wilderness experiences -- though we must qualify this statement somewhat because of small sample sizes. The small sample sizes do, however, indicate that few boaters floated these river segments on sample days, and this would suggest that wilderness experiences were being provided. We do acknowledge that spring use in 1983 may have been lower than normal because of unusually high water levels.

As our preliminary assessment of New River carrying capacity suggested, the mix of wilderness, scenic, and social recreation experiences is also currently below standard. National Park Service use estimates indicate that between 50 and 60% of all New River use occurs on summer weekends in the Gorge. Fifty percent of these users see boats from other trips 80% or more of the time

on their trip. Seventy percent spent 50% or more of their trip time in sight of other river user groups. Thus, the number receiving social recreation trips is too high. Also, while seven subunits of the river system are apparently providing wilderness experiences, only about 12% of all New River boating use is occurring there.

Finally, inter-group contact levels need to be monitored on the Gorge summer weekday, Gorge fall weekend, and upriver summer weekend subunits. These units currently provide scenic experiences, and this meets standards. However, contact levels are at or approaching the accepted bounds, and protective action may need to be taken in the future.

Table 171

Current median percentages of trip time in sight of boats
from other trips for boaters in 12 different subunits
of the New River

Management Subunit	Median contact time	
	N	% of total trip time
Gorge summer weekend	246	80
Gorge summer weekday	149	25
Gorge fall weekend	5	27.5
Gorge fall weekday	8	1
Gorge spring weekend	6	7.5
Gorge spring weekday	14	2
Upriver summer weekend	52	27.5
Upriver summer weekday	20	15
Upriver fall weekend	0	—
Upriver fall weekday	0	—
Upriver spring weekend	2	.5
Upriver spring weekday	0	—

Corrective Prescriptions for Conditions below Standards

Corrective actions need to be taken to reduce contact levels in the Gorge on summer weekends, decrease the number of social recreation experiences provided, and increase the number of wilderness recreation experiences. In our recommendations for management actions to correct these problems, we are guided first of all by our definition of recreation as a social good. We believe whitewater river experiences in pristine or near-pristine environments have personal and

societal value, and that these experiences should be provided. Secondly, we subscribe to the principle of lighthanded management in wildland recreation settings (Lucas 1982). We believe that managers should first attempt to accomplish their objectives through indirect and subtle manipulation of the recreation service system. While maintaining resource and experience conditions at or above standards, every effort should be made to permit user access to the resource and to maintain user freedom of choice. If it becomes necessary to restrict user freedom, this should be done before users enter the recreation system and not during the recreation experience. Only when these lighthanded methods fail should managers implement use limitations and direct user restrictions. Even in this case, restrictions should be implemented only when and where necessary. Finally, our recommendations are guided by the statements of boaters in our study about what trade-offs they would be willing to make to assure receiving a wilderness or scenic whitewater experience.

If managers are to reduce contact levels in the Gorge on summer weekends, there must be a relationship between some variable that managers can manipulate and the experience parameter (percent contact time with other river trips) of interest. This is Rule 1 of the Shelby-Heberlein model. In our case, there was a significant and strong correlation for Gorge boaters between percent of time in sight of other trips and number of boats launched that day ($r=.65$) and number of trips launched that day ($r=.60$). Thus, managers can alter percent contact time by altering number of boats or trips on the river.

Table 162 on page 136 describes extent of study boaters' support for trade-offs that could possibly be made to assure a wilderness or scenic river experience. The support for the tradeoffs by Gorge summer weekend boaters was similar, having the same rank order and very similar mean scores. Strongest support was for a departure time earlier in the morning or later in the afternoon. Only 6% of the Gorge summer weekend boaters said they would not do this; 46% said they probably

would, and 48% said they definitely would. These boaters also supported taking a trip earlier or later in the river use season when the weather was less likely to be ideal. Twenty-eight percent said they wouldn't do this, but 45% said they probably would, and 27% said they definitely would. Strong support was also indicated for taking a trip during midweek rather than on a weekend. About 35% said they wouldn't do this, but 35% indicated they probably would, and 30% said they definitely would.

There was less support for a system of limited river use permits; 50% of the Gorge summer weekend boaters would not support this management alternative; 30% and 20% probably or definitely would. Support was even lower for floating a river section (e.g. the river upstream from the Gorge) that has fewer rapids and lower use. Eighty percent of the Gorge summer weekend boaters said they wouldn't do this, 12% and 8% said they probably would or definitely would. Thus, from the boaters' perspective, shifting use through time in the Gorge is a viable management action. Shifting use out of the Gorge is not. Limiting river use has some support.

We are recommending that for a trial period of about three years that river managers adopt a program to shift use through time in the Gorge and monitor its effectiveness in correcting the below standard conditions on summer weekends there. Efforts should be made to disperse use through time of day, time of week, and season of the year, but shifting use through time of day should be given first priority. Monitoring is absolutely essential, because shifting use could potentially create more problems than it solves. Because use of the Gorge on summer weekends is currently so high, substantial shifts in use might still not achieve standards there, and at the same time would cause the loss of demanded scenic or wilderness experiences in other management units.

Additional information is needed on how current trip departure times and how changes in those times would affect levels of contact between and among trips. About 55% of the commercial boaters in our study and 43% of the private boaters said their trip launching time was between 10 and 11 a.m. This suggests that there is substantial "bunching up" of river user groups as they travel down the river. Conversely, it suggests that there are considerable daylight hours with low use and few contacts between groups. Other variables besides launch time, however, affect contact time, and these must be considered when spreading use across time. For example, water levels, boat type, trip type, and number, location, and length of stopping times all likely influence contact time. A study is urgently needed to gather information on these and other potentially relevant variables and to relate these to contact times. A computer simulation model has been developed to take such data and simulate contact levels under various scenarios of launch time and location (Shechter and Lucas 1978). This model has been tested on other Whitewater rivers (McCool et al. 1977, Carls 1978), and shows considerable promise. We strongly recommend that appropriate data be collected during the 1984 river use season. Through simulation the model could then specify the launch times and locations which would permit the natural movement of the greatest number of groups down the river while still maintaining contacts within standards. This approach has the advantage of placing no restrictions on boaters once they are on the river. It also is a strategy to delay or negate the need for actual use restrictions.

Once the ideal scenario of launch times and locations is determined, efforts can be made to shift use appropriately. A monitoring program is then necessary to determine whether contact level standards are achieved. If the system is in place for the 1985 season, managers should have a good assessment of the viability of the strategy by the 1987 season. If the use dispersal program fails to achieve standards by that time, a re-evaluation of the management program would

be necessary. At that time and under that circumstance, it may be necessary to adopt a river use ceiling and implement some sort of a rationing program. If so, then it would be necessary to calculate the exact allowable number of trip launches per location and unit of time.

Protective Prescriptions for Conditions Meeting Standards

Monitoring of contact levels in the Gorge on summer weekdays and fall weekends is also necessary because these current levels of contact are at the upper bounds of that desirable for demanded scenic experiences. With natural increases in use or shifts in use to these zones from the Gorge summer weekend period, contact levels may exceed standards. If it appears that this is happening, a program to disperse use throughout the day should be implemented. Since such a program will have already been implemented on Gorge summer weekends, it should be relatively easy to extend it as necessary. We emphasize, however, that it should only be extended when necessary.

Much of the upper river (the river above the Gorge) appears to be providing wilderness experiences, and will likely remain so in the foreseeable future without management intervention. Some increase in use of its potential for wilderness experiences might be achieved by providing and informing the public about multi-day trips which emphasize camping, fishing, solitude, family and group experiences, and learning about nature. These are clear motives of the current users of this river segment (See Tables 15-20 on pages 39-41). Periodic monitoring is also necessary to assure that these wilderness experiences are maintained.

Implementation of Proposed Program

The program we have recommended includes these management actions: (1) simulation of river travel to determine the best times and locations for trip launches;

(2) dispersal of Gorge use through time of day, time of week, and season of the year, with initial emphasis given to shifting use throughout the day on Gorge summer weekends; and (3) the monitoring of contact levels to assure that standards are being achieved.

The simulation study might be accomplished in one season by selecting a small sample of commercial and private Gorge river trips, and having the river guide or one private boater/trip record in a diary the necessary study variables (e.g. time and location of trip departure, water levels, time of arrival at appropriate points on the trip, number, location, and length of stops on the river, etc.) A sample of boaters at the end of the sampled trips could then be asked the percent of time they were in sight of other river user groups while on the trip. These data could then be inputted into the travel simulation model to predict contact levels under various river use scenarios.

Accomplishing the use dispersal program for the Gorge will be more difficult, and a multi-faceted action program will likely be necessary. The first step would be to inform the public that the New River Gorge National River has been classified into several management units or zones, that different zones are managed for different experiences, that the likelihood of attaining a given experience varies by zone, and that cooperation is needed to maintain desired experiences. For certain zones, maintaining the experience may require that the boater launch his or her trip earlier or later in the day than desired, on a weekday rather than a weekend, or during spring or fall rather than during summer. The alternative to these actions appear to be the less desirable implementation of use ceilings.

Getting this information to the public will take time and effort. Tables 172 and 173 indicate how boaters first learned of the New River float-trip resource and what sources they went to for additional information. By far the most common source of initial and additional information about the New River

was friends or acquaintances of the boater. About 72% of the commercial users and 60% of the private users first learned of the New River in this way, and about 50% went to these individuals for additional information. River outfitters were the second most frequent source of information for commercial boaters; river running clubs were second in frequency for the private boaters. Other important sources of detailed information for private users were books and river outfitters. The current use of the National Park Service as a source of information is very low. Only one of the boaters in our entire sample first learned of the New River float-trip opportunity from the National Park Service, and only 15 went to the agency for detailed information about the trip. Mass media sources such as magazines, newspapers, radio, and television were also infrequent sources of information.

Table 172

Initial source of information about floating the New River
for all, commercial, and private boaters

Source of information	All		Commercial		Private	
	N	%	N	%	N	%
Friend or acquaintance	410	66.6	246	72.1	164	59.6
River running club	51	8.3	3	.9	48	17.5
Outdoor adventure club	10	1.6	4	1.2	6	2.2
National Park Service	1	.2	1	.3	0	0
River outfitter brochure	30	4.9	22	6.5	8	2.9
Book	14	2.3	3	.9	11	4.0
Magazine or newspaper	18	2.9	10	2.9	8	2.9
Radio or television	5	.8	1	.3	4	1.5
Sports show	10	1.6	10	2.9	0	0
Other	47	7.6	28	8.2	19	6.9
Missing	20	3.2	13	3.8	7	2.5
Total	616	100.0	341	100.0	275	100.0

Table 173

Additional sources of information sought out before
deciding to float the New River for
all, commercial, and private boaters*

Source of information	All		Commercial		Private	
	N	%	N	%	N	%
Didn't seek additional information	117	19.2	69	20.7	48	17.5
Friend or acquaintance	310	51.0	163	43.8	147	53.6
River running club	86	14.2	22	6.6	64	23.4
Outdoor adventure club	14	2.3	2	.6	12	4.4
National Park Service	15	2.4	9	2.7	6	2.2
River outfitter	134	22.1	89	26.8	45	16.5
Book	64	10.6	10	3.0	54	19.8
Magazine or newspaper	24	4.0	15	4.5	9	3.3
Radio or television	6	1.0	3	.9	3	1.1
Sports show	4	.7	1	.3	3	1.1
Other	47	7.8	33	10.0	14	5.1

*Boaters could check more than one source

If the National Park Service is to implement a program of river management that attempts to provide the greatest possible use while maintaining contact levels within standards, it must become a frequent and credible source of information for potential users. It must make its presence known on the river, and work through and with the river outfitters and river running clubs in the region to inform the public about: its management programs. Once current boaters are reached, then the informal network of communication through friends and acquaintances will begin to operate,

The commercial river outfitters can and must play a key role in implementation of a program of planned trip departure times and. locations to reduce contact levels among trips. Cooperation in such a program would appear to be in their own best interest, for this management strategy is preferred by their guests, and yet would assure the highest possible amount of use. If the program is effective, it would delay or eliminate the need for more restrictive management

actions. We have no data on how individual outfitters would select or be assigned departure times and locations, but this would have to be resolved in a spirit of cooperative negotiation between outfitters and management agencies. Finally, there would need to be some policing mechanism with penalties for failure to comply with departure schedules.

The logistics of implementing the use dispersal program among the private boaters would be more difficult, because a network of communication with these boaters does not currently exist. They do however prefer such a management program to assure wilderness and scenic experiences, and their numbers on the New River are currently not large. Contact level standards might be achieved by simply better informing the private boaters of the best times and locations to launch. If such a program fails to achieve objectives, it may be necessary to move to a program of required permits which designate departure times and locations. Since about half of the private boaters do not support a system of required permits, such a program should not be used until absolutely necessary, and only then in those management zones of critical need.

The final action that should be considered in implementation of a use dispersal program is the development of additional put-in and take-out points. The construction of a few such access points at key locations on the river could seemingly do much to spread use more efficiently across time and space on the river. While the issue of access was not stated on the study questionnaire in terms of shifting current use, about 70% of the private boaters and 30% of the commercial users favored more public access to the river. (See Table 158 on page 131). If additional access points are provided, monitoring is necessary to determine whether contact levels among trips are reduced. Such access points could attract more use and increased contact levels, and thus fail to achieve management objectives.

The final management action which we are recommending is a strategy to monitor contact levels among trips, i.e. the percent of trip time boaters say they were in sight of boats from other trips. This variable was chosen because it related most highly to kind of trip received and perception of crowding. Monitoring is absolutely essential in any system of management by objective, and should be a routine management function. We suggest that it be done most frequently, perhaps annually, in those management zones where contact levels now, or may in the near future, exceed standards. In other zones, such monitoring might only be done on 5-year intervals. To permit comparisons across time, the contact level question should be asked the same way we did. (See items #19 and #20 in the study questionnaire in Appendix C). If sample boaters are selected carefully, sample size need not be large.

CONCLUSIONS

River Trip Experiences

The five most important reasons for taking the river trip for both commercial and private boaters were to have fun, run rapids, view scenery, be with friends, and develop skills and abilities.

Private boaters rated the desire to fish, run rapids, get away from crowds, keep physically fit, develop skills and abilities, and to be with friends as more important trip motives than did commercial boaters.

About 48% of commercial boaters expected a wilderness Whitewater trip; 40% a scenic Whitewater trip, and 12% a social recreation trip. About 29% said they received a wilderness experience; 53% a scenic experience, and 18% a social recreation experience. About 42% of the commercial boaters said the river should provide a wilderness trip, 50% a scenic trip, and 8% a social trip.

About 53% of the private boaters expected a wilderness trip; 30% a scenic trip, and 17% a social recreation trip. Only 27% said they received a wilderness experience, 50% a scenic trip, and 23% a social recreation trip. When asked what experience the river should provide, 39% of the private boaters' said a wilderness trip, 52% a scenic trip, and 8% a social recreation trip.

River Conflicts

Intra-group conflicts

Few intra-group conflicts currently exist on New River trips.

Only about 5% of all boaters rated number of people on their boat and number of boats on their trip as unacceptable.

About 5% of the boaters reported observing unsafe actions or conditions on the river.

About 6% stated there were some real problems in how well their group got along.

Inter-group conflicts

Inter-group conflicts were more numerous and serious.

Almost 40% of the private boaters and 34% of commercial boaters felt they saw too many people on their trip.

More than 30% of the private boaters felt their percent of time in sight of other river trips was unacceptable, and 25% felt the large number of other boats seen, the average size of other trips seen, and the number of rapids waited at were unacceptable.

Over 25% of the commercial users said their percent of time in sight of other trips was unacceptable; and over 20% said the same about the number of boats they saw on the river and the number of rapids they waited at.

Trip planning to avoid problems

About 35% of the private boaters said they planned the time and location of their trip to avoid problems on the river. Only 14% of the commercial boaters said so.

Problems that boaters sought to avoid tended to be related to water levels, and not to crowds of people.

Changes in travel behavior on the river to avoid encounters with other groups

About 27% of the private boaters said they speeded up, and 35% reported slowing down to avoid encounters. Eight percent and 20% of the commercial boaters noticed their guides speeding up and slowing down to avoid contacts with other groups.

Actions that would be taken to avoid crowds

The greatest number (33%) of the commercial users who saw too many people said they would switch to a weekday trip to avoid the crowds, followed by coming back at the same time and place and accepting the use levels, and changing their trip to a lighter use month.

About 30% of the private boaters who saw too many people on their trip said they would come back at the same time and place and simply accept the number of people, followed by selecting a different time of day for their trip departure and selecting a weekday trip.

Perceptions of River Resource Problems

Boaters noted few resource problems on the river

Commercial boaters ranked litter on the river banks as the most important problem, but only 12% rated it as a serious or very serious problem,

Inadequate disposal of human body wastes, flies and gnats, litter in the river, and trampling of vegetation at stopping points were ranked next most serious.

Private boaters considered river resource problems to be somewhat more serious. About 30% rated litter on the river banks as serious or very serious, followed in importance by flies and gnats, litter in the river, water pollution, and inadequate disposal of human body wastes.

River Trip Satisfaction

Satisfaction with the river trip as a whole was very high. About 90% of both the private and commercial users rated their trip as very good, excellent or perfect.

Weather, low water levels, perceived crowding, having to slow down the trip to avoid encounters, and observing unsafe actions on the trip had weak but significant correlations with overall trip satisfaction.

River User Preferences for Facilities, Services, and Management Actions

Facilities and Services

Boaters favor the provision of many additional services and facilities on the river.

The most preferred services were to regulate commercial motorized watercraft on the river; develop maps to show river facilities, features, and attractions; provide more information on the New River Gorge National River; make more information available on the different kinds of trips and experiences available on the river, and mail information to prospective river users prior to the trip.

More commercial than private boaters were in favor of encouraging river boatmen to spend more time describing the natural or historical environment along the river, distributing brochures on the river's natural and cultural history at the start of the trip, regulating motorized fishing boats on the river, and providing shower facilities after the river trip.

More private boaters favored providing public access to the river, providing restroom facilities at access points, improving roads to access points, providing more public put-in points and take-out points on the river, and increased water safety instruction.

Management Actions

To assure receiving a wilderness or scenic Whitewater experience on the river, commercial users most preferred taking a trip during midweek rather than on a weekend, scheduling a departure time earlier or later in the day, floating a section of the river that has similar rapids but lower use, limiting the size of individual trips, and supporting a system of limited river use permits.

Private boater preferences were the same except that taking a trip earlier or later in the river use season replaced supporting a system of limited river use permits in their five most favored actions.

A Carrying Capacity Framework

A carrying capacity framework is suggested which calls upon river managers to:

Select management objectives that specify an appropriate mix of river experiences.

Compare current experiences to experience objectives.

Specify relevant river conditions for experiences.

Establish standards for relevant conditions.

Compare existing conditions to standards

Apply protective or corrective prescriptions as necessary.

Favor lighthanded management strategies over use rationing.

Implement use rationing only when and to the extent necessary.

Monitor the effectiveness of management actions.

One Possible Carrying Capacity Scenario for the
New River Gorge National River

Appropriate mix of river experiences

- 41% of the boaters should receive a wilderness experience;
- 51% scenic, and 8% a social recreation trip.

Compare current experiences to experience objectives

- Currently too few wilderness experiences and too many social recreation experiences are provided.

Relevant river conditions for experiences

- River experiences are most sensitive to percent, of time in sight of boats from other trips.
- Percent of time in sight of boats from other trips has a strong positive correlation with perceived crowding.
- About 29% of all boaters found their percent of time in sight of boats from other trips as unacceptable.

Standards for relevant river conditions

- On the basis of boaters' expression of contact level norms, the following standards for total trip contact time, seem reasonable:
 - 10% for wilderness trips
 - 25% for scenic trips
 - 50% for social recreation trips

Compare conditions to standards

- Managerially relevant subunits of the New River system can be identified by river segment, season of the year, and weekend-weekday trips.
- The Gorge on summer weekends is well below standards. Median percent contact time for all boaters was 80%, About 53% of its boaters saw too many people
- Current mix of experiences provided does not meet standards. There are too many social recreation experiences and too few wilderness experiences,

Recommended corrective prescriptions (for Gorge summer weekends)

- Implement a trial period of managing trip departure times and locations.
 - Disperse use throughout the day. Disperse use from weekend to weekday.
 - Disperse use from summer to fall or spring.
- Monitor effectiveness of program.
- If use dispersal programs fail to achieve standards, implement a use rationing program on Gorge summer weekends.

Recommended protective prescriptions (for Gorge summer weekdays, Gorge fall weekends, and upriver summer weekends).

- Monitor contact level times among river trips.
- If necessary, manage trip departure times and locations to disperse use throughout the day.
- Monitor the effectiveness of any use dispersal program.

Implementation of the Carrying Capacity Scenario

Conduct a river travel simulation study to determine the river trip departure times and locations that would permit the greatest use while maintaining contact levels within standards.

Gain cooperation of river outfitters in use dispersal program.

Inform public of experience objectives of river zones.

Inform public of management program for Gorge summer weekends.

- Most boaters get information about New River from friends and acquaintances.
- River outfitters are the second most frequent sources of information about the New River.
- The National Park Service is almost never a source of information.

The National Park Service must become an important and credible source of information about New River trips.

Evaluate the feasibility and utility of providing a limited number of additional put-in and/or take-out points on the river.

Needed Research

Conduct a river travel simulation study to determine the river trip departure times and locations that would permit the greatest use while maintaining contact levels within standards.

Monitor the effectiveness of management programs.

If and when use rationing becomes necessary, determine the number of trips that can be launched by time and location to maintain contact levels within standards.

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Appendix A

Research Technician's Contact Statement Seeking
Boater Cooperation in the Study

Contact Speech

Hello. My name is Steve Bange and I'm working for the National Park Service this season helping them to develop their river management plan. What the Park Service is trying to do here on the New River is better maintain the quality of the environment around the river, while maintaining the quality of the trips associated with the river. To do this, we're talking to the visitors and guests like yourself(ves) and getting your opinions on things, your expectations for your trip today and how you feel the river could be better managed. What I'd like for you to do for me today is to fill out a short, one page, two-sided questionnaire for me. Thank you.

APPENDIX B

Pretrip Contact Questionnaire

New River Boater Contact Sheet

1. What type of group did you travel with when you came to the New River Gorge National River (Check all that apply)?

By yourself
Family
Friends or acquaintances
___ Club or organization

2. How many times have you floated the New River Gorge National. River? _____

3. When you made plans for this trip on the New River, how far in advance did you decide to go? Please fill in the appropriate number.

months _____ weeks _____ days

4. If commercial trip,

a. How many outfitters did you consider before making your final selection? _____

b. How long ago did you reserve your trip with this outfitter?

months _____ weeks _____ days

5. In planning this trip did you pick a time or river section to avoid any potential problems on the river?:

___ No _____ Yes. If yes, what potential problems did you attempt to avoid? _____

6. Below are some reasons why people take trips on the New River. Tell us how

I'm taking this river trip because I want...

to do some camping
to do some fishing
to view the scenery
to run rapids
to do something with my family
to get away from crowds of people
to keep physically fit
to see and learn about historical sites
to have fun
to develop my skills and abilities
to learn more about nature
to be with my friends

Not at all Important	Somewhat Important	Moderately Important	Very Important	Extremely Important
()	()	()	()	()
()	()	()	()	()
()	()	()	()	()
()	()	()	()	()
()	()	()	()	()
()	()	()	()	()
()	()	()	()	()
()	()	()	()	()
()	()	()	()	()
()	()	()	()	()
()	()	()	()	()

(OVER)

7. Different kinds of river trips could be provided on different sections of the New River. Below are three kinds of trips that might be provided. Please read the three trip descriptions carefully, and then select the one that best describes the kind of trip you expect today on the New River. (Check one).

____ "Wilderness whitewater trip" - a trip through a scenic gorge with little evidence of man, many opportunities for solitude, and a chance for challenge and for you to battle the waves.

"Scenic whitewater trip" - a trip through a scenic gorge with some evidence of man, fewer opportunities for solitude, and guidance when running wild rapids.

"Social Recreation trip" - a trip on a scenic river with much evidence of man, exciting rapids, and seeing other people on the river makes the trip more fun.

8. How many boats (other than those on your own river trip) do you expect to see today on the river?

Expect to see boats today

Have no expectations

- 9_e Given the kind of river trip you expect, what is the highest number of boats (other than those on your own river trip) you would accept seeing today on the river?

Makes no difference to me -- Go to Item 10

Does make a difference to me.

What number would be acceptable? (Mark a or b below.)

- a. Would accept seeing ____ boats
- b. Number of other boats I see does make a difference, but I don't feel I can suggest an acceptable number

10. Now 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 Code:

Thank you for your help. You have completed this sheet.

For research technician

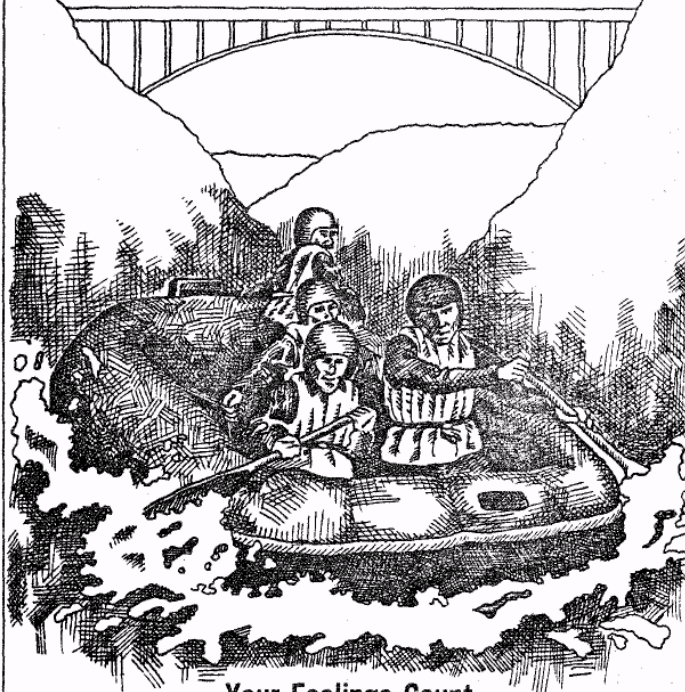
1. Type of trip: Commercial Private
2. Type of boat: raft canoe Kayak
3. Name of outfitter _____
4. Date of trip: _____
5. Estimated river departure time: _____
6. Length of trip days
7. Change in trip No _ Yes - From: put in Take out
 To: put in Take out
8. Water level: _____

APPENDIX C

Post-trip Mailback Questionnaire

A Study on the Use and Management of

THE NEW RIVER GORGE NATIONAL RIVER



Your Feelings Count.

Department of Forestry
Virginia Polytechnic Institute & State University
Blacksburg, Virginia 24061

PART 1

PLANNING YOUR RIVER TRIP

1. PEOPLE HEAR ABOUT FLOATING THE NEW RIVER IN MANY WAYS. How DIB YOU FIRST HEAR ABOUT FLOATING THE NEW RIVER? (CHECK ONE)
- FROM A FRIEND OR ACQUAINTANCE
FROM A RIVER RUNNING CLUB
FROM AN OUTDOOR ADVENTURE CLUB

FROM A BROCHU
.FROM A BOOK
FROM A MAGAZINE OR NEWSPAPER
FROM RADIO OR TE
AT A SPORTS SHOW
OTHER (PLEASE SPECIFY)
2. AFTER YOU FIRST HEARD ABOUT FLOATING THE NEW RIVER, WHERE DID YOU GO FOR ADDITIONAL INFORMATION BEFORE DECIDING TO TAKE YOUR RIVER TRIP? (CHECK AS MANY AS APPLY)
- DIDN'T SEEK ADDITIONAL INFORMATION
FRIEND OR ACQUAINTAN
RIVER RUNNING CLUB
OUTDOOR ADVENTURE CLUB
, .NATIONAL PARK SERVICE
RIVER
BOO_K
M
RADIO OR TELEVI
SPORTS SHOW
, OTHER (PLEASE SPECIFY)
3. PEOPLE HAVE MANY REASONS EACH OF THE FOLLOWING REASONS FOR TAKING THE NEW RIVER TRIP. PLEASE TELL US HOW IMPORTANT EACH OF THE FOLLOWING REASONS IS TO YOU. (CHECK ONE)
- I TOOK THE RIVER TRIP BECAUSE
TO DO SOME CAMPING
TO DO SOME FISHING
TO VIEW THE SCENERY

TO DO SOMETHING WITH MY
TO GET AWAY FROM CROWD
TO KEEP PHYSICALLY FIT
TO SEE AND LEARN ABOUT
TO HAVE FUN
TO DEVELOP MY SKILLS
TO LEARN MORE ABOUT N
TO BE WITH MY FRIENDS

NOT AT ALL IMPORTANT	SOMEWHAT IMPORTANT	MODERATELY IMPORTANT	VERY IMPORTANT	EXTREMELY IMPORTANT
()	()	()	()	()
()	()	()	()	()
()	()	()	()	()
()	()	()	()	()
()	()	()	()	()
()	()	()	()	()
()	()	()	()	()
()	()	()	()	()
()	()	()	()	()

PART 2

A DESCRIPTION OF YOUR TRIP

- NOTE: FOR THE PURPOSES OF THIS QUESTIONNAIRE, A RIVSR TRIP is A GROUP OF RIVER USERS WHO PUT IN AT THE SAME TIME AND PLACE, FLOAT AS A UNIT DOWN THE RIVER, AND TAKE OUT AT THE SAME PLACE, ONE OR MORE BOATS MAY BE INCLUDED, TOR COMMERCE TRIPS, ALL BOATS ON A RIVER TRIP ARE PROVIDED BY A SINGLE OUTFITTER,
4. OVERALL/ HOW WOULD YOU RATE YOUR TRIP?
- PERFECT
EXCELLENT
VERY GOOD
QOOD
_ FAIR
_ POOR
_ UNACCEPTABLE
5. IF YOU RATED YOUR TRIP AS GOOD, VERY GOODj EXCELLENT, OR PERFECT; PLEASE TELL US WHY YOU GAVE YOUR TRIP THIS HIGH RATING,
6. IF YOU RATED YOUR TRIP AS UNACCEPTABLE, POOR.. OR FAIR, PLEASE TELL US WHY YOU GAVE YOUR TRIP THIS LOW RATING,
7. HOW WAS YOUR BOAT POWERED? (CHECK ONE)
- PADDLES ONLY
OARS AND PADDLES
_ OARS ONLY
8. HOW MANY PEOPLE WERRE ON YOUR BOAT?

9. WAS THIS NUMBER ACCEPTABLE TO YOU? (CHECK ME OF THE THREE STATEMENTS BELOW) .
 YES, THIS NUMBER WAS ACCEPTABLE.
 NO, THIS NUMBER WAS NOT ACCEPTABLE.
 WHAT NUMBER WOULD BE ACCEPTABLE? (MARK ONE OF THE STATEMENTS BELOW)
 A. WOULD ACCEPT A SMALLER BOAT WITH .PEOPLE PER BOAT
 B. WOULD ACCEPT A SMALLER BOAT, BUT I DON T FEEL I CAN SUGGEST AN ACCEPTABLE NUMBER
 C. WOULD ACCEPT A LARGER BOAT WITH PEOPLE PER BOAT
 n, WOULD ACCEPT A LARGER BOAT, BUT I DON T FEEL I CAN SUGGEST AN ACCEPTABLE NUMBER
 THE NUMBER MAKES NO DIFFERENCE TO ME,
10. HOW WELL DID THE PEOPLE IN YOUR BOAT GET ALONG WITH EACH OTHER? (CHECK ONE) .
 THE GROUP GOT ALONG EXTREMELY WELL
 THE GROUP GOT ALONG PRETTY WELL
 THE GROUP WAS INDIFFERENT, NEITHER GOOD NOR BAD
 THERE WERE SOME REAL PROBLEMS
11. HOW MANY BOATS WERE IN YOUR RIVER TRIP? _____
12. WAS THIS NUMBER ACCEPTABLE TO YOU? (CHECK ONE OF THE THREE STATEMENTS BELOW) .
 YES, THIS NUMBER WAS ACCEPTABLE
 NO, THIS NUMBER WAS NOT ACCEPTABLE
 WHAT NUMBER WOULD BE ACCEPTABLE? (MARK ONE OF THE STATEMENTS BELOW) .
 A, WOULD ACCEPT BOATS PER TRIP
 B, _____ NUMBER OF BOATS PER TRIP DOES MAKE A DIFFERENCE BUT I DON T FEEL I CAN SUGGEST AN
 ACCEPTABLE NUMBER.
 THE NUMBER MAKES NO DIFFERENCE TO ME
13. ON THE AVERAGE, ABOUT WHAT SIZE WERE THE OTHER RIVER TRIPS THAT YOU SAW ON THE RIVER?
 BOATS PER TRIP
14. WAS THIS NUMBER ACCEPTABLE TO YOU? (CHECK ONE OF THE THREE STATEMENTS BELOW) .
 YES, THIS NUMBER WAS ACCEPTABLE
 NO, THIS NUMBER WAS NOT ACCEPTABLE
 WHAT NUMBER WOULD BE ACCEPTABLE? (MARK ONE OF THE STATEMENTS BELOW) .
 A. WOULD ACCEPT BOATS PER TRIP
 B. _____ NUMBER OF BOATS PER TRIP DOES MAKE A DIFFERENCE BUT I DON'T FEEL I CAN SUGGEST AN
 ACCEPTABLE NUMBER
 THE NUMBER MAKES NO DIFFERENCE TO ME
15. DID YOU OBSERVE ANY ACTIONS TAKEN BY YOUR GUIDE OR GROUP MEMBERS OR OTHER CONDITIONS ON YOUR
 TRIP WHICH YOU FELT WERE UNSAFE?
 NO
 YES — IF YES, DESCRIBE THOSE ACTIONS OR CONDITIONS _____
16. IN GENERAL, WHAT WAS THE WEATHER LIKE ON YOUR TRIP?
 GREAT
 GENERALLY GOOD
 SOME BAD, SOME GOOD
 GENERALLY BAD
 TERRIBLE

PART 3 YOUR ENCOUNTERS WITH OTHER RIVER USER GROUPS

17. WE WOULD NOW LIKE TO GAIN SOME INFORMATION ON THE NUMBER OF OTHER BOATS YOU SAW ON YOUR RIVER
 TRIP AND HOW YOU FELT ABOUT THAT NUMBER, FOR EACH OF THE RIVER LOCATIONS LISTED BELOW, INDIC-
 ATE THE APPROXIMATE NUMBER OF BOATS YOU SAW OTHER THAN THOSE IN YOUR OWN TRIP, (IF YOU SAW THE
 SAME BOAT MORE THAN ONCE, COUNT EACH OCCASION AS ANOTHER BOAT.) THEN TELL US THE NUMBER OF
 BOATS YOU WOULD ACCEPT SEEING BEFORE THE EXPERIENCE BECOMES UNPLEASANT, IF YOU HAVE NO PREF-
 ERENCES OR FEELINGS ABOUT AN ACCEPTABLE NUMBER OF BOATS, PLEASE TELL US THAT BY CHECKING COLUMN
 C, BE SURE TO MARK COLUMN A AND EITHER COLUMN B OR C,

	A	B	C
	APPROX, NO, OF BOATS YOU SAW THERE	No, OF BOATS YOU WOULD ACCEPT SEEING THERE	No OPINION, NO FEELINGS ONE WAY OR THE OTHER ON AN.ACCEPTABLE NUMBER OF BOATS
LOCATION ON THE RIVER			
ON THE WATER WHILE YOU WERE FLOATING THE RIVER EACH DAY	_____	_____	_____
FLOATING BY YOUR LUNCH STOP EACH DAY	_____	_____	_____
FLOATING BY YOUR CAMPSITE EACH NIGHT (LEAVE BLANK IF YOU DIDN T CAMP)	_____	_____	_____
ON LAND AT YOUR TAKE-OUT POINT	_____	_____	_____

18. HOW DOES THE NUMBER OF BOATS YOU ACTUALLY SAW EACH DAY ON YOUR TRIP COMPARE WITH THE NUMBER THAT YOU EXPECTED TO SEE? (CHECK ONE)
- I DIDN'T KNOW WHAT TO EXPECT
QUITE A FEW LESS THAN I EXPECTED
A FEW LESS
ABOUT THE SAME
A FEW MORE
___ QUITE A FEW MORE
19. WHILE YOU WERE ON THE RIVER, ABOUT WHAT PERCENT OF THE TIME WERE YOU IN SIGHT OF BOATS FROM OTHER RIVER TRIPS? _____ % OF THE TIME,
20. WAS THIS PERCENT ACCEPTABLE TO YOU? (CHECK ONE OF THE THREE STATEMENTS BELOW),
- YES, THIS PERCENT WAS ACCEPTABLE
___ NO, THIS PERCENT WAS NOT ACCEPTABLE
WHAT PERCENT WOULD BE ACCEPTABLE? (MARK ME OF THE STATEMENTS BELOW) .
- A. WOULD ACCEPT BOATS IN SIGHT _____ % OF THE TIME
B. _____ PERCENT OF TIME BOATS ARE IN SIGHT DOES MAKE A DIFFERENCE TO ME, BUT I DON'T FEEL I CAN SUGGEST AN ACCEPTABLE PERCENT
___ THE PERCENT MAKES NO DIFFERENCE TO ME
21. WHILE ON THE RIVER, DID YOU EVER HAVE TO WAIT IN LINE AT THE HEAD OF A RAPIDS TO PERMIT ANOTHER RIVER TRIP TO GO THROUGH THE RAPIDS AHEAD OF YOU?
- NO
___ YES
IF YES, AT ABOUT HOW MANY RAPIDS DID YOU HAVE TO WAIT? _____ RAPIDS,
22. WAS THIS NUMBER ACCEPTABLE TO YOU? (CHECK ONE OF THE THREE STATEMENTS BELOW),
- YES, THIS NUMBER WAS ACCEPTABLE
___ NO, THIS NUMBER WAS NOT ACCEPTABLE
WHAT NUMBER WOULD BE ACCEPTABLE? (MARK ME OF THE STATEMENTS BELOW),
- A. WOULD ACCEPT WAITING IN LINE AT _____ RAPIDS
B. _____ NUMBER OF RAPIDS I WAIT IN LINE FOR DOES MAKE A DIFFERENCE TO ME, BUT I DON'T FEEL I CAN SUGGEST AN ACCEPTABLE NUMBER
___ THE NUMBER MAKES NO DIFFERENCE TO ME
23. ON YOUR RIVER TRIP, ABOUT HOW MANY PARTIES OF SMK FISHERMEN DID YOU SEE? _____ PARTIES
24. HAS THIS NUMBER ACCEPTABLE TO YOU? (CHECK ONE OF THE THREE STATEMENTS BELOW),
- ___ YES, THIS NUMBER WAS ACCEPTABLE
___ NO, THIS NUMBER WAS NOT ACCEPTABLE
WHAT NUMBER WOULD BE ACCEPTABLE? (MARK ONE OF THE STATEMENTS BELOW),
- A. WOULD ACCEPT SEEING _____ PARTIES OF BANK FISHERMEN
B. _____ NUMBER OF PARTIES OF BANK FISHERMEN DOES MAKE A DIFFERENCE TO ME, BUT I DON'T FEEL I CAN SUGGEST AN ACCEPTABLE NUMBER
___ THE NUMBER MAKES NO DIFFERENCE TO ME
25. ON YOUR RIVER TRIP, ABOUT HOW MANY BOATS OF FISHERMEN DID YOU SEE? _____ BOATS
26. WAS THIS NUMBER ACCEPTABLE TO YOU? (CHECK ONE OF THE THREE STATEMENTS BELOW.)
- YES, THIS NUMBER WAS ACCEPTABLE
___ NO, THIS NUMBER WAS NOT ACCEPTABLE
WHAT NUMBER WOULD BE ACCEPTABLE? (MARK ONE OF THE STATEMENTS BELOW,)
- A. WOULD ACCEPT SEEING _____ BOATS OF FISHERMEN
B. _____ .NUMBER OF BOATS OF FISHERMEN DOES MAKE A DIFFERENCE TO ME BUT I DON'T FEEL I CAN SUGGEST AN ACCEPTABLE NUMBER
___ THE NUMBER MAKES NO DIFFERENCE TO ME
27. WHICH STATEMENT BELOW MOST CLOSELY REFLECTS YOUR POINT OF VIEW CONCERNING THE OTHER GROUPS YOU SAW ON THE RIVER? (CHECK ONE.)
- A. _____ ON THIS RIVER TRIP, NEITHER THE NUMBER OF PEOPLE NOR THEIR BEHAVIOR WERE DISTURBING TO ME
B. THE BEHAVIOR OF PEOPLE WAS MORE DISTURBING TO ME THAN THE NUMBER OF PEOPLE
C. THE NUMBERS OF PEOPLE WERE MORE DISTURBING TO ME THAN THEIR BEHAVIOR
D. BOTH THE NUMBERS AND BEHAVIOR OF PEOPLE WERE DISTURBING TO ME
IF YOU CHECKED B OR D, PLEASE DESCRIBE THE BEHAVIORS WHICH BOTHERED YOU,

28. DID YOU OR YOUR GUIDE EVER ATTEMPT TO AVOID ENCOUNTERS WITH OTHER TRIPS ON THE RIVER BY:
- | | | |
|--|-----|----|
| SPEEDING UP MORE THAN YOU WOULD HAVE LIKED? | YES | NO |
| SLOWING DOWN MORE THAN YOU WOULD HAVE LIKED? | YES | NO |
| PASSING UP ATTRACTIONS AT WHICH YOU | YES | NO |
29. FOR THE TRIP AS A WHOLE, HOW DO YOU FEEL ABOUT THE NUMBER OF PEOPLE YOU SAW ON THE RIVER?

☐ FAR TOO FEW	}	Go to Item 30
☐ MODERATELY TOO FEW		
☐ SOMEWHAT TOO FEW		
☐ ABOUT RIGHT	}	Go to Item 32
☐ SOMEWHAT TOO MANY		
☐ MODERATELY TOO MANY		
☐ FAR TOO MANY	}	Go to Item 31

30. IF YOU SAW TOO FEW PEOPLE ON THE RIVER, WHAT ACTION WOULD YOU MOST LIKELY TAKE TO ENCOUNTER MORE PEOPLE IN THE FUTURE? (CHECK THE ONE ANSWER THAT BEST DESCRIBES WHAT YOU WOULD PROBABLY DO.)

CHOOSE A DIFFERENT TIME OF DAY FOR YOUR NEXT RIVER TRIP DEPARTURE
DECIDE TO FLOAT ON A WEEKEND RATHER THAN A WEEKDAY
DECIDE TO FLOAT DURING A HEAVIER USE MONTH
DECIDE TO FLOAT A DIFFERENT SECTION OF THE NEW RIVER
COME BACK AT THE SAME TIME AND PLACE AND ACCEPT THE NUMBERS OF BOATS
STOP FLOATING THE NEW RIVER
ANOTHER ACTION YOU WOULD TAKE _____

SKIP TO Item 32

31. IF YOU SAW TOO MANY PEOPLE ON THE _____ RIVER, WHAT ACTION WOULD YOU MOST LIKELY TAKE TO AVOID SO MANY ENCOUNTERS IN THE FUTURE (CHECK THE ONE ANSWER THAT BEST DESCRIBES WHAT YOU WOULD PROBABLY DO).

CHOOSE A DIFFERENT TIME OF DAY FOR YOUR NEXT RIVER TRIP DEPARTURE
DECIDE TO FLOAT ON A WEEKDAY RATHER THAN A WEEKEND
DECIDE TO FLOAT DURING A LIGHTER USE MONTH (E.G. SPRING OR FALL)
DECIDE TO FLOAT A DIFFERENT SECTION OF THE NEW RIVER
COME BACK AT THE SAME TIME AND PLACE AND ACCEPT THE NUMBERS OF BOATS
STOP FLOATING THE NEW RIVER
ANOTHER ACTION YOU WOULD TAKE _____ / _____ / _____

PART 4 YOUR PERCEPTIONS OF RESOURCE PROBLEMS ON THE RIVER

32. INFORMATION ABOUT RESOURCE IMPACTS YOU NOTICED WHILE ON YOUR RIVER TRIP WOULD BE HELPFUL TO RIVER MANAGERS. TO WHAT EXTENT DID YOU FIND EACH OF THE FOLLOWING TO BE A PROBLEM DURING YOUR RIVER TRIP, (CHECK THE BOX THAT BEST DESCRIBES HOW SERIOUS YOU FOUND EACH TO BE.)

() () ()

NOT A PROBLEM

() () ()

SLIGHT PROBLEM

() () ()

Moderate Problem

() () ()

SERIOUS PROBLEM

() () ()

VERY SERIOUS PROBLEM

PART 5

YOUR PREFERENCES FOR FACILITIES AND SERVICES

33, BELOW ARE EXAMPLES OF ACTIONS OR SERVICES THAT MIGHT BE PROVIDED TO PROTECT THE RIVER ENVIRONMENT OR UPGRADE THE QUALITY OF RIVER TRIPS. PLEASE INDICATE WHETHER YOU FAVOR OR OPPOSE EACH ACTION,

PROTECT THE RIVER ENVIRONMENT OR UPGRADE THE QUALITY OF RIVER TRIPS. PLEASE INDICATE WHETHER YOU FAVOR OR OPPOSE EACH ACTION,

	VERY MUCH IN FAVOR	SOMEWHAT IN FAVOR	NEUTRAL OR UNDECIDED	SOMEWHAT OPPOSE	VERY MUCH OPPOSE
PROVIDE PUBLIC ACCESS POINTS TO THE RIVER	()	()	()	()	()
PROVIDE RESTROOM FACILITIES AT ACCESS POINTS	()	()	()	()	()
PROVIDE DRINKING WATER FACILITIES AT ACCESS POINTS	()	()	()	()	()
IMPROVE ROADS TO ACCESS POINTS ON THE RIVER	()	()	()	()	()
PROVIDE MORE PUBLIC TAKE-OUT POINTS ON THE RIVER	()	()	()	()	()
PROVIDE MORE PUBLIC PUT-IN POINTS ON THE RIVER	()	()	()	()	()
PROVIDE PRIMITIVE CAMPSITES ON THE RIVER	()	()	()	()	()
PROVIDE MORE WATER SAFETY INSTRUCTIONS FOR RIVER	()	()	()	()	()
OFF-ROAD VEHICLE USE ALONG THE RIVER	()	()	()	()	()
REGULATE MOTORIZED FISHING BOATS ON THE RIVER	()	()	()	()	()
PROVIDE MORE INFORMATION ON THE NEW RIVER GORGE NATIONAL RIVER	()	()	()	()	()
ENCOURAGE RIVER BOATMEN TO SPEND MORE TIME DESCRIBING THE NATURAL OR	()	()	()	()	()
HISTORICAL ENVIRONMENT ALONG THE RIVER PROVIDE CAMPFIRE PROGRAMS ON	()	()	()	()	()
AREA. 'S NATURAL AND CULTURAL HISTORY AT	()	()	()	()	()
RIVER CAMPSITES LEAD GUIDED WALKS TO SIGNIFICANT NATURAL OR CULTURAL	()	()	()	()	()
FEATURES ALONG THE	()	()	()	()	()
RIVER DEVELOP SELF-GUIDED INTERPRETIVE TRAILS AT POPULAR ATTRACTIONS	()	()	()	()	()
ALONG THE	()	()	()	()	()
RIVER	()	()	()	()	()
DEVELOP MAPS OF THE RIVER WHICH SHOW FACILITIES, FEATURES & ATTRACTIONS	()	()	()	()	()
DISTRIBUTE BROCHURES ON THE AREA S NATURAL & CULTURAL HISTORY AT THE	()	()	()	()	()
START OF A TRIP MAIL INFORMATION ABOUT THE RIVER ENVIRONMENT TO	()	()	()	()	()
PROSPECTIVE RIVER USERS	()	()	()	()	()
PRIOR TO THE TRIP MAKE MORE INFORMATION AVAILABLE ON THE DIFFERENT	()	()	()	()	()
KINDS OF TRIPS &	()	()	()	()	()
EXPERIENCES AVAILABLE ON THE NEW RIVER PROVIDE SHOWER FACILITIES FOR USE	()	()	()	()	()
AFTER THE TRIP OTHER ACTIONS OR SERVICES THAT YOU FEEL MIGHT BE PROVIDED	()	()	()	()	()
(LIST BELOW);	()	()	()	()	()
	()	()	()	()	()
	()	()	()	()	()
	()	()	()	()	()
REGULATE COMMERCIAL MOTORIZED WATERCRAFT ON THE WATER	()	()	()	()	()

PART 6

YOUR PREFERENCES FOR ALTERNATIVE EXPERIENCES

34. THE NEW RIVER GORGE NATIONAL RIVER IS 52 MILES LONG AND VARIOUS SECTIONS OF THE RIVER COULD BE MANAGED FOR DIFFERENT EXPERIENCES. WE WOULD LIKE YOUR HELP IN MAKING THIS IMPORTANT DECISION. WE ARE ASKING YOU TO THINK OF THE NEW RIVER TRIP EXPERIENCE IN THREE DIFFERENT WAYS, AND THEN TO TELL US WHAT WOULD BE AN APPROPRIATE AMOUNT OF USE FOR EACH KIND OF EXPERIENCE. THESE QUESTIONS ARE SIMILAR TO SOME YOU'VE ALREADY ANSWERED, BUT THE INFORMATION IS IMPORTANT.

A. IMAGINE THE NEW RIVER TRIP AS A "WILDERNESS WHITEWATER TRIP", A TRIP THROUGH A SCENIC GORGE WITH LITTLE EVIDENCE OF MAN, MANY OPPORTUNITIES FOR SOLITUDE, AND A CHANCE FOR CHALLENGE AND FOR YOU TO BATTLE THE WAVES. IF THE NEW RIVER WERE THIS KIND OF AREA, WHICH OF THE FOLLOWING ENCOUNTER LEVELS WOULD BE ACCEPTABLE? INDICATE THE HIGHEST LEVEL YOU WOULD ACCEPT BEFORE THE TRIP WOULD NO LONGER BE A WILDERNESS EXPERIENCE.

1. CONTACTS WITH BOATS (CHECK A OR B BELOW)

- A. _____ DOES MAKE A DIFFERENCE TO ME HOW MANY BOATS I SEE ON A WILDERNESS TRIP.
 B. _____ WHAT NUMBER WOULD BE ACCEPTABLE? (MARK I OR II BELOW)
 I. WOULD ACCEPT _____ BOATS PER DAY ON MY WILDERNESS TRIP.
 II. _____ NUMBER OF BOATS I SEE ON A WILDERNESS TRIP DOES MAKE A DIFFERENCE, BUT I DON'T FEEL I CAN SUGGEST AN ACCEPTABLE NUMBER.

2. PERCENT OF TIME IN SIGHT OF OTHER BOATS (CHECK A OR B BELOW)

- A. _____ MAKES NO DIFFERENCE TO ME WHAT PERCENT OF TIME OTHER BOATS ARE IN SIGHT ON A WILDERNESS TRIP.
 B. _____ DOES MAKE A DIFFERENCE TO ME WHAT PERCENT OF TIME OTHER BOATS ARE IN SIGHT ON A WILDERNESS TRIP.
 WHAT PERCENT WOULD BE ACCEPTABLE? (MARK I OR II BELOW.)
 I. WOULD ACCEPT BOATS IN SIGHT _____% OF THE TIME FOR A WILDERNESS TRIP.
 II. _____ PERCENT OF TIME BOATS ARE IN SIGHT ON A WILDERNESS TRIP DOES MAKE A DIFFERENCE TO ME, BUT I DON'T FEEL I CAN SUGGEST AN ACCEPTABLE PERCENT.

3, WAITING AT RAPIDS (CHECK A OR B BELOW)

- A, _____ MAKES NO DIFFERENCE TO ME HOW MANY RAPIDS I WAIT IN LINE TO RUN ON A
 B, _____ DOES MAKE A DIFFERENCE TO ME HOW MANY RAPIDS I WAIT IN LINE TO RUN ON A
 HJUDEFITLESa TRIP,
 WHAT NUMBER WOULD BE ACCEPTABLE? (HARK i OR ii BELOW)
 i. WOULD ACCEPT WAITING IN LINE AT _____ RAPIDS ON A WILDERNESS TRIP
 ii. _____, NUMBER OF RAPIDS I WAIT IN LINE FOR ON A WILDERNESS TRIP DOES MAKE A
 DIFFERENCE TO ME BUT I DON'T FEEL I CAN SUGGEST AN ACCEPTABLE NUMBER.

NOW IMAGINE THE NEW RIVER AS A "SCENIC WHITEWATER. TBLP", A TRIP THROUGH A SCENIC GORGE
 WITH SOME EVIDENCE OF MAN, FEWER OPPORTUNITIES FOR SOLITUDE, AND GUIDANCE WHEN RUNNING WILD
 RAPIDS, IF THE NEW RIVER WERE THIS KIND OF AREA, WHICH OF THE FOLLOWING ENCOUNTER LEVELS
 WOULD BE ACCEPTABLE? INDICATE THE HIGHEST LEVEL YOU WOULD ACCEPT BEFORE THE TRIP WOULD NO
 LONGER BE A SCENIC TRIP,

1, CONTACTS WITH BOATS (CHECK A OR B BELOW)

- A, _____ MAKES NO DIFFERENCE TO ME HOW MANY BOATS I SEE ON A
 B, _____ DOES MAKE A DIFFERENCE TO ME HOW MANY BOATS I SEE ON A
 WHAT NUMBER WOULD BE ACCEPTABLE? (MARK i OR ii BELOW)
 i. WOULD ACCEPT _____ BOATS PER DAY ON MY SCENIC TRIP
 ii. _____
 T FEEL I CAN SUGGEST AN ACCEPTABLE NUMBER.

2, PERCENT OF TIME IN SIGHT OF OTHER BOATS (CHECK A OR B BELOW),

- A, _____ MAKES NO DIFFERENCE TO ME WHAT PERCENT OF TIME OTHER BOATS ARE IN SIGHT ON
 A SCENIC TRIP,
 B, _____ DOES MAKE A DIFFERENCE TO ME WHAT PERCENT OF TIME OTHER BOATS ARE IN SIGHT
 ON A SCENIC TRIP.
 WHAT PERCENT WOULD BE ACCEPTABLE? (HARK i OR ii BELOW),
 i. WOULD ACCEPT _____ PERCENT OF TIME OTHER BOATS ARE IN SIGHT ON A SCENIC TRIP,
 ii. _____ PERCENT OF TIME OTHER BOATS ARE IN SIGHT ON A SCENIC TRIP DOES MAKE A
 DIFFERENCE TO ME, BUT I DON'T FEEL I CAN SUGGEST AN ACCEPTABLE
 PERCENT,

3, WAITING AT RAPIDS (CHECK A OR B BELOW)

- A. _____ MAKES NO DIFFERENCE TO ME HOW MANY RAPIDS I WAIT IN LINE TO RUN ON A SCENIC
 TRIP,
 B, _____ DOES MAKE A DIFFERENCE TO ME HOW MANY RAPIDS I WAIT IN LINE TO RUN ON A
 SCENIC TRIP,
 WHAT NUMBER WOULD BE ACCEPTABLE? (HARK i OR ii BELOW),
 i. WOULD ACCEPT _____ RAPIDS IN LINE AT WAIT IN LINE FOR ON A SCENIC TRIP DOES
 MAKE A DIFFERENCE TO ME BUT I DON'T FEEL I CAN SUGGEST AN ACCEPTABLE
 NUMBER,

NOW IMAGINE THE NEW RIVER AS A
 "SOCIAL RECREATION TRIP", A TRIP ON A SCENIC RIVER WITH MUCH EVIDENCE OF MAN, EXCITING
 RAPIDS, AND SEEING OTHER PEOPLE ON THE RIVER MAKING THE TRIP MORE FUN. IF THE NEW RIVER
 WERE THIS KIND OF AREA, WHICH OF THE FOLLOWING ENCOUNTER LEVELS WOULD BE ACCEPTABLE?
 INDICATE THE HIGHEST LEVEL YOU WOULD ACCEPT BEFORE THERE WOULD BE TOO MANY PEOPLE FOR
 EVEN THIS KIND OF A SOCIAL RECREATION TRIP,

1. CONTACTS WITH BOATS (CHECK A OR B BELOW)

- A, _____ MAKES NO DIFFERENCE TO ME HOW MANY BOATS I SEE ON A SOCIAL RECREATION TRIP,
 B, _____ DOES MAKE A DIFFERENCE TO ME HOW MANY BOATS I SEE ON A SOCIAL RECREATION TRIP,
 WHAT NUMBER WOULD BE ACCEPTABLE? (HARK i OR ii BELOW),
 i. WOULD ACCEPT _____ BOATS PER DAY ON MY SOCIAL RECREATION TRIP,
 ii. _____
 DIFFERENCE, BUT I DON'T FEEL I CAN SUGGEST AN ACCEPTABLE NUMBER,

2. PERCENT OF TIME IN SIGHT OF OTHER BOATS (CHECK A OR B BELOW),

- A. _____ MAKES NO DIFFERENCE TO ME WHAT PERCENT OF TIME OTHER BOATS ARE IN SIGHT ON
 A SOCIAL RECREATION TRIP,
 B, _____ DOES MAKE A DIFFERENCE TO ME WHAT PERCENT OF TIME OTHER BOATS ARE IN SIGHT ON
 A SOCIAL RECREATION TRIP,
 WHAT PERCENT WOULD BE ACCEPTABLE? (HARK i OR ii BELOW).
 i. WOULD ACCEPT _____ PERCENT OF TIME OTHER BOATS ARE IN SIGHT ON A SOCIAL RECREATION TRIP,
 ii. _____ PERCENT OF TIME OTHER BOATS ARE IN SIGHT ON A SOCIAL RECREATION TRIP DOES
 MAKE A DIFFERENCE TO ME, BUT I DON'T FEEL I CAN SUGGEST AN ACCEPTABLE
 PERCENT,

3, WAITING AT RAPIDS (CHECK A OR B BELOW)

- A. _____ MAKES NO DIFFERENCE TO ME HOW MANY RAPIDS I WAIT IN LINE TO RUN ON A SOCIAL
 RECREATION TRIP,
 B, _____ DOES MAKE A DIFFERENCE TO ME HOW MANY RAPIDS I WAIT IN LINE TO RUN ON A SOCIAL
 RECREATION TRIP,
 WHAT NUMBER WOULD BE ACCEPTABLE? (MARK i OR ii BELOW),
 i. WOULD ACCEPT WAITING IN LINE AT _____ RAPIDS ON A SOCIAL RECREATION TRIP,
 ii. _____, NUMBER OF RAPIDS I WAIT IN LINE FOR ON A SOCIAL RECREATION TRIP DOES
 MAKE A DIFFERENCE TO ME BUT I DON'T FEEL I CAN SUGGEST AN ACCEPTABLE
 NUMBER,

- 35, OF THE THREE KINDS OF RIVER EXPERIENCES DESCRIBED ABOVE, CHECK THE ONE WHICH BEST DESCRIBES THE KIND OF TRIP YOU RECEIVED ON THE NEW RIVER, (CHECK ONE)

☐ WILDERNESS WHITewater TRIP
☐ SCENIC WHITewater TRIP
☐ SOCIAL RECREATION TRIP

- 36, OF THE THREE KINDS OF RIVER EXPERIENCES DESCRIBED ABOVE, CHECK THE ONE WHICH BEST DESCRIBES

☐ WILDERNESS WHITewater TRIP
☐ SCENIC WHITewater TRIP ☐ Go To Question 37
☐ SOCIAL RECREATION TRIP -- SKIP TO QUESTION 38

PART 7 YOUR PREFERENCES FOR MANAGING USE

37. THE OPPORTUNITY TO RUN THE NEW RIVER AND STILL RECEIVE A WILDERNESS OR SCENIC WHITewater EXPERIENCE SOMETIMES INVOLVES TRADEOFFS. WOULD YOU BE WILLING TO DO ANY OF THE FOLLOWING IN ORDER TO BE ASSURED OF GETTING THE EXPERIENCE THAT YOU THINK THE NEW RIVER SHOULD PROVIDE? (BE SURE TO RESPOND TO EACH STATEMENT BELOW)

A. TO ASSURE SEEING AN ACCEPTABLE NUMBER OF BOATS ON THE RIVER, I WOULD BE WILLING TO:

	WOULD NOT DO IT	PROBABLY WOULD DO IT	DEFINITELY WOULD DO IT
SCHEDULE MY DEPARTURE TIME FOR EARLIER IN THE MORNING OR LATE IN THE AFTERNOON	()	()	()
TAKE A TRIP DURING MID-WEEK RATHER THAN ON A WEEKEND	()	()	()
TAKE A TRIP EARLIER OR LATER IN THE RIVER USE SEASON WHEN THE WEATHER IS LESS LIKELY TO BE IDEAL	()	()	()
FLOAT A SECTION OF THE RIVER THAT HAS SIMILAR RAPIDS BUT LOWER USE	()	()	()
FLOAT A SECTION OF THE RIVER THAT HAS FEWER RAPIDS AND LOWER USE	()	()	()
PAY ONE AND ONE HALF TIMES AS MUCH FOR THE RIVER TRIP	()	()	()
PAY TWICE AS MUCH FOR THE RIVER TRIP	()	()	()
PAY THREE TIMES AS MUCH FOR THE RIVER TRIP	()	()	()
SUPPORT LIMITING THE SIZE OF INDIVIDUAL TRIPS (FEWER PEOPLE PER TRIP) KNOWING THAT IT MIGHT DECREASE MY CHANCES OF RUNNING THE RIVER.	()	()	()
FLOAT THE RIVER LESS OFTEN (E.G. GO EVERY OTHER YEAR RATHER THAN ONCE A YEAR)	()	()	()
SUPPORT A SYSTEM OF LIMITED RIVER USE PERMITS, KNOWING THAT MY CHANCES FOR OB- TAINING A PERMIT ON SUMMER WEEKENDS WOULD BE LOWERED	()	()	()
ANOTHER SYSTEM FOR MANAGING USE (PLEASE SPECIFY)	()	()	()
	()	()	()
	()	()	()

PART 8 SOURCES OF YOUR BELIEFS ABOUT THE RIVER TRIP

38. HOW INFLUENTIAL HAVE EACH OF THE FOLLOWING SOURCES BEEN ON YOUR BELIEFS ABOUT ACCEPTABLE AMOUNTS OF USE AND ENVIRONMENTAL IMPACTS ON THE NEW RIVER? (CHECK ONE BOX FOR EACH SOURCE LISTED.)

	NOT INFLUENTIAL	NOT VERY INFLUENTIAL	SOMEWHAT INFLUENTIAL	VERY INFLUENTIAL	EXTREMELY INFLUENTIAL	DOES NOT APPLY
PREVIOUS EXPERIENCE (PERSONAL EXPERIENCE IN RIVER RUNNING AND OTHER WILDLAND RECREATION)	()	()	()	()	()	()
MEDIA (BROCHURES, MAGAZINES, TV, RADIO, ETC.)	()	()	()	()	()	()
OTHER PEOPLE (GUIDES, FRIENDS, WORKING COMPANIONS, ETC.)	()	()	()	()	()	()

39. OF THE PERSONAL EXPERIENCES THAT HAVE INFLUENCED YOU, WHICH OF THE FOLLOWING HAVE BEEN MOST INFLUENTIAL ON YOUR BELIEFS ABOUT ACCEPTABLE AMOUNTS OF USE AND ENVIRONMENTAL IMPACTS ON THE NEW RIVER? (CHECK ONE BOX FOR EACH EXPERIENCE LISTED.)

	NOT INFLUENTIAL	NOT VERY INFLUENTIAL	SOMEWHAT INFLUENTIAL	VERY INFLUENTIAL	EXTREMELY INFLUENTIAL	DOES NOT APPLY
PREVIOUS TRIPS ON THE SAME SECTION OF THE NEW RIVER	()	()	()	()	()	()
PREVIOUS TRIPS ON DIFFERENT SECTIONS OF THE NEW RIVER	()	()	()	()	()	()
PREVIOUS TRIPS ON OTHER RIVERS	()	()	()	()	()	()
OTHER RECREATION ACTIVITIES IN THE SAME AREA AS YOUR RIVER TRIP	()	()	()	()	()	()
OTHER RECREATION ACTIVITIES IN OTHER AREAS	()	()	()	()	()	()

40. OF THE MEDIA THAT HAVE INFLUENCED YOU, WHICH OF THE FOLLOWING HAVE BEEN MOST INFLUENTIAL ON YOUR BELIEFS ABOUT APPROPRIATE AMOUNTS OF USE AND ENVIRONMENTAL IMPACTS ON THE NEW RIVER? (CHECK ONE BOX FOR EACH OF THE MEDIA LISTED.)

	NOT INFLUENTIAL	NOT VERY INFLUENTIAL	SOMEWHAT INFLUENTIAL	VERY INFLUENTIAL	EXTREMELY INFLUENTIAL	DOES NOT APPLY
MAGAZINES AND NEWSPAPERS	()	()	()	()	()	()
EQUIPMENT SUPPLIERS' CATALOGUES	()	()	()	()	()	()
TELEVISION AND RADIO	()	()	()	()	()	()
OUTFITTERS' BROCHURES	()	()	()	()	()	()
PARK SERVICE WRITTEN INFORMATION	()	()	()	()	()	()
RIVER RUNNING BOOKS	()	()	()	()	()	()
MAPS	()	()	()	()	()	()

41. HOW INFLUENTIAL HAVE EACH OF THE FOLLOWING PEOPLE BEEN ON YOUR BELIEFS ABOUT APPROPRIATE AMOUNTS OF USE AND ENVIRONMENTAL IMPACTS ON THE NEW RIVER? (CHECK ONE BOX FOR EACH PERSON LISTED.)

	NOT INFLUENTIAL	NOT VERY INFLUENTIAL	SOMEWHAT INFLUENTIAL	VERY INFLUENTIAL	EXTREMELY INFLUENTIAL	DOES NOT APPLY
PEOPLE YOU ADMIRE AT WORK	()	()	()	()	()	()
YOUR FAMILY	()	()	()	()	()	()
OTHER MEMBERS OF THE PARTY YOU WERE WITH WHEN WE MET YOU	()	()	()	()	()	()
OTHER RIVER RUNNERS YOU KNOW WHO WERE NOT WITH YOU THAT DAY	()	()	()	()	()	()
EXPERT RIVER RUNNERS YOU KNOW	()	()	()	()	()	()
THE GUIDE OF YOUR RAFT ON THE DAY WE MET YOU	()	()	()	()	()	()
OTHER PROFESSIONAL RIVER GUIDES YOU KNOW	()	()	()	()	()	()
FRIENDS WHO WOULD LIKE TO RUN RIVERS BUT HAVEN'T TRIED IT YET	()	()	()	()	()	()
THE PARK SERVICE MANAGER OF THE NEW RIVER	()	()	()	()	()	()

42. ABOUT HOW MANY PEOPLE DO YOU PERSONALLY KNOW WHO GO ON RIVER TRIPS? (CANOE, KAYAK, AND RAFT TRIPS).

APPROXIMATE NUMBER OF PEOPLE _____

43. HOW MUCH DID YOUR BELIEFS ABOUT APPROPRIATE AMOUNTS OF USE AND ENVIRONMENTAL IMPACTS ON THE NEW RIVER CHANGE BECAUSE OF YOUR RIVER TRIP? (CHECK ONE)

☐ NOT AT ALL
☐ SLIGHTLY
☐ SOMEWHAT
☐ QUITE A BIT
☐ A GREAT DEAL

44, DO YOU PLAN TO RUN A SECTION OF THE NEW RIVER AGAIN IN THE NEAR FUTURE? (CHECK ONE)

☐ YES IF YES: HOW DO YOU EXPECT TO TRAVEL? (CHECK ONE)

☐ ON YOUR OWN

☐ WITH THE SAME GUIDE YOU HAD ON THIS TRIP

☐ WITH THE SAME OUTFITTER YOU USED ON THIS TRIP BUT WITH A DIFFERENT GUIDE

☐ ULTH A DIFFERENT OUTFITTER

☐ No IF NO, WHY NOT? (CHECK THE MOST IMPORTANT REASON,)

☐ THIS SECTION WAS TOO CROWDED,

☐ THIS SECTION WAS NOT EXCITING ENOUGH,

☐ THERE WAS TOO MUCH DEVELOPMENT ON THE BANK

☐ NOT INTERESTED IN FURTHER RIVER TRIPS

☐ OTHER: _____

45, DID THE MEMBERS OF YOUR PARTY ON YOUR RECENT NEW RIVER TRIP DISCUSS THE ISSUE OF ACCEPTABLE NUMBERS OF PEOPLE ON THE NEW RIVER? (CHECK ONE,)

☐ YES, AND WE AGREED ABOUT IT,

☐ YES, BUT WE DID NOT ALL AGREE,

☐ No, WE DIDN'T DISCUSS IT,

46, DID THE MEMBERS OF YOUR PARTY ON YOUR RECENT NEW RIVER TRIP DISCUSS THE ISSUE OF ENVIRONMENTAL IMPACTS ON THE NEW RIVER? (CHECK ONE,)

☐ YES, AND WE AGREED ABOUT IT,

☐ YES, BUT WE DID NOT ALL, AGREE,

☐ No, WE DIDN'T DISCUSS IT,

IF YOU FLOATED THE RIVER ON A COMMERCIALLY GUIDED TRIP 60 TO ITEM 47, IF YOU FLOATED THE RIVER IN A PRIVATE PARTY, SKIP TO ITEM b3.

PART 9

YOUR FEELINGS ABOUT YOUR COMMERCIALLY GUIDED TRIP

47, HOW WOULD YOU DESCRIBE YOUR RAFT GUIDE ON YOUR RIVER TRIP, (CHECK OUTL BLANK BETWEEN EACH PALS OF WORDS THAT BEST EXPRESSES YOUR FEELINGS,)

	EXTREMELY		QUITE		SLIGHTLY		NEITHER		SLIGHTLY		QUITE		EXTREMELY	
GOOD	_____	:	_____	:	_____	:	_____	:	_____	:	_____	:	_____	BAD
PLEASANT	_____	:	_____	:	_____	:	_____	:	_____	:	_____	:	_____	UNPLEASANT
COLD	_____	:	_____	:	_____	:	_____	:	_____	:	_____	:	_____	WARM
LIKE	_____	:	_____	:	_____	:	_____	:	_____	:	_____	:	_____	DISLIKE

48. INCLUDING THIS TRIP, HOW MANY TIMES HAVE YOU FLOATED WITH THIS OUTFITTER?

NUMBER OF TRIPS WITH THE SAME OUTFITTER? _____

49. ABOUT HOW MANY TIMES DID YOUR GUIDE PERSONALLY ASK YOU TO DO SOMETHING ON YOUR TRIP OTHER THAN PADDLING?

NUMBER OF TIMES? _____

50. DID YOUR GUIDE DISCUSS ENVIRONMENTAL IMPACTS ON THE RIVER WITH YOU DURING YOUR TRIP? (CHECK ONE)

☐ NOT AT ALL

- SKIP TO Item 52

☐ BRIEFLY

☐ SOMEWHAT

☐ OFTEN

☐ EXTENSIVELY

Go to Item 51

☐ DON'T REMEMBER - SKIP TO Item 52

51, WHO INITIATED THE CONVERSATION? (CHECK ONE)

☐ THE GUIDE?

☐ ONE OF THE GUESTS ON THE RAFT?

52, PLEASE INDICATE THE WAYS YOUR GUIDE COMMUNICATED WITH YOU ABOUT ENVIRONMENTAL IMPACTS,
(CHECK EACH WAY USED,)

☐ DLD NOT DISCUSS THE ISSUE

☐ DISCUSSED BEFORE YOUR TRIP

☐ DISCUSSED ON THE RIVER

☐ DISCUSSED AFTER THE TRIP

☐ SUGGESTED MATERIALS YOU MIGHT READ

☐ OTHER: _____ , _____

PART 10

INFORMATION ABOUT YOUR BACKGROUND

NOTE; THIS INFORMATION WILL HELP US COMPARE YOUR ANSWERS TO THOSE OF OTHER PEOPLE, Au, OF YOUR
ANSWERS ARE STRICTLY CONFIDENTIAL,

53, AGE; _____

54, SEX: ☐ MALE ☐ FEMALE

55, HOW MANY YEARS OF SCHOOL HAVE YOU COMPLETED SO FAR?

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

SOME COLLEGE .

B.A. OR EQUIVALENT

M.A., OR EQUIVALENT

PH.D. OR EQUIVALENT _____

56, WHAT TYPE OF WORK DO YOU DO? _____

WHAT TYPE OF ORGANIZATION ARE YOU EMPLOYED BY? _____

57, WHICH OF THE FOLLOWING BEST DESCRIBES YOUR FAMILY'S TOTAL INCOME LAST YEAR, OR YOUR INCOME
LAST YEAR IF YOU ARE INDEPENDENT FROM YOUR FAMILY?

☐ \$0-3,999

☐ \$28,000-31,999

☐ \$4,000-7,999

☐ \$32,000-35,999

☐ \$11,000-15,999

☐ \$40,000-43,999

☐ \$16,000-19,999

☐ \$44,000-47,999

☐ \$20,000-23,999

☐ \$48,000 OR MORE

☐ \$24,000-27,999

YOU HAVE COMPLETED THIS SURVEY, THANK YOU FOR YOUR HELP AND COOPERATION, YOUR IDEAS WILL BE USEFUL
FOR RIVER MANAGEMENT. IF YOU WOULD LIKE A SUMMARY OF STUDY RESULTS, PLEASE WRITE:

PARK SUPERINTENDENT
NEW RIVER GORGE NATIONAL RIVER
P. O. DRAWER V
OAK HILL, WEST VIRGINIA 25901

APPENDIX D

Cover Letter for Initial Questionnaire Packet



VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY

Blacksburg, Virginia 24061 USA

SCHOOL OF FORESTRY AND WILDLIFE RESOURCES (703) 961-5481

Dear New River Gorge User:

Recently we contacted you at the New River Gorge in West Virginia, and asked you to participate in a study of boater use of the river. As you know, Congress has recently recognized the unique resources of the New River by declaring it the New River Gorge National River. At the same time it gave the National Park Service responsibility for managing the New River to provide safe and enjoyable floating experiences and to protect the values and resources of the Gorge. To accomplish these tasks, resource planners and managers need a better understanding of the nature of the float-trip experience, the amount of river use, and any problems or conflicts on the river.

You can help by telling us about your trip on the New River. We would greatly appreciate it if you would take the half-hour or so necessary to carefully complete the enclosed questionnaire. The questions deal with your trip on the New River and your opinions on river management and use. Please answer the questions in terms of the river trip on which our research assistant contacted you. Please send the questionnaire back to us in the self-addressed, stamped envelope as soon as possible. We want the opinions of a truly representative group of people and so have scientifically chosen a sample of visitors to the New River. But, the sample will be good only if those people we have contacted are responsive.

The questionnaire has an identification number for mailing purposes only. Your response will be held in strictest confidence. All results will be analyzed in such a way that your answers on any single question cannot be identified with you.

This is a good opportunity for you to express your views on a significant regional and national issue. If you would like a copy of the results, please indicate that on your questionnaire.

Your help in this study is greatly appreciated.

Handwritten signature of Joseph W. Roggenbuck in cursive.

Joseph W. Roggenbuck

Associate Professor, Forestry
Assistant

Handwritten signature of Steven P. Bange in cursive.

Steven P. Bange
Graduate Research

APPENDIX E

Cover Letter for First Follow-up Questionnaire Packet



VIRGINIA POLYTECHNIC INSTITUTE AND STATE
UNIVERSITY

Blacksburg, Virginia 24061 USA

SCHOOL OF FORESTRY AND WILDLIFE RESOURCES (703) 961-5481

Department of Forestry
304 Cheatham Hall

Dear River User:

You should recently have received a survey sent to a sample of the many river users of the New River Gorge National River in West Virginia. You were randomly selected for this study. Your participation in it is essential if the results are to be useful in guiding future decisions about the use of the river.

As a user of the New River Gorge, you may be affected by increasing recreational use and by management actions taken by public agencies. The resource agencies should know the preferences and feelings of the people who will be most directly influenced by their actions. This study is an opportunity for you to express your personal experiences and feelings about this unique Whitewater river.

As of today, we have not received your completed questionnaire. We hope that it is in the mail or that you will take the time to complete the enclosed copy. If you would like to see the results of this study, please let the National Park Service know by writing to the address provided on the questionnaire.

Your help in this study is greatly appreciated.

A handwritten signature in cursive script that reads "Joseph W. Roggenbuck".

Joseph W.
Roggenbuck
Associate Professor

A handwritten signature in cursive script that reads "Steve Bange".

Steve Bange
Graduate Research
Assistant

ct

Enclosure

APPENDIX F

Cover Letter for Second Follow-up Questionnaire Packet



VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY

Blacksburg, Virginia 24061 USA

SCHOOL OF FORESTRY AND WILDLIFE RESOURCES (703) 961-5481

Dear New River User:

We would like to be of help to you. The goal of our New River Gorge National River Study is to document the experiences, problems, and preferences of the users of this unique river. This information is sought by the National Park Service to aid in its decision-making regarding river management.

We have already heard from about 62 percent of our sample, but we have not heard from you. The remaining questionnaires are critical to the scientific validity of our findings. In case you have misplaced the earlier questionnaire, another copy is enclosed.

Your participation in this survey is vital. Please complete the questionnaire and send it to us in the enclosed postage-paid envelope.

Sincerely,

A handwritten signature in cursive script that reads "Joseph W. Roggenbuck".

Joseph W. Roggenbuck
Associate Professor
Forestry

A handwritten signature in cursive script that reads "Steve Bange".

Steve Bange
Graduate Research Assistant

JWR/kzk

APPENDIX G

A Comparison of Opinions of Respondents and Nonrespondents
for Spring 1983 Boaters

Appendix G

Check for differences between respondents and
nonrespondents on 28 items

Type of Item performed	test	Significance level
Travelled to New River alone	chi-square	NS
Travelled to New River with family	chi-square	NS
Travelled to New River with friends	chi-square	NS
Travelled to New River with club or organization	chi-square	NS
Amount of previous New River experience	t-test	NS
Number of days before trip decided to go	t-test	.008
Respondents: Mean days = 154		
Nonrespondents: mean days =81		
Number of commercial outfitters considered	t-test	NS
Number of days before trip outfitter was selected	t-test	NS
Any planning to avoid river problems	chi-square	NS
Trip motives :		
to camp	t-test	NS
to fish	t-test	NS
to view scenery	t-test	NS
to run rapids	t-test	NS
to be with family	t-test	NS
to get away from crowds	t-test	NS
to keep physically fit	t-test	NS
to learn about historical sites	t-test	NS
to have fun	t-test	NS
to develop skills	t-test	NS
to learn about nature	t-test	.08
Respondents: mean importance = 3.0		
Nonrespondents: mean importance =3.5		
to be with friends	t-test	NS
Type of river experience expected	chi-square	NS
Have expectations about number of boats will see on river	chi-square	NS
Number of boats expected to see	t-test	.06
Respondents = mean boats = 28		
Nonrespondents = mean boats = 10		
Number of boats seen makes a difference	chi-square	NS
Acceptable number of boats to see	t-test	NS
Number of boats seen makes a difference, but can't suggest a number	chi-square	NS
Type of trip (private or commercial)	chi-square	.09
Private: Respondents 44% Nonrespondents 24%		
Commercial: Respondents 56% Nonrespondents 76%		
Type of boat (raft or kayak/canoe)	chi-square	.09
Raft: Respondents 75% Nonrespondents 92%		
Canoe/kayak: espondents 25% Nonrespondents 8%		

¹Only significant levels at $p < .10$ are reported.