

Commercial and Private Boat Use on the Salmon River in the Frank Church-River of No Return Wilderness, United States

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Abstract: Historically, float permits on the Middle and Main Forks of the Salmon River in Idaho, United States, have been approximately split evenly between private and commercial float groups. A study of these two dominant user groups was conducted to understand likely response of the two groups to potential changes in management. Findings from this research emphasize many differences between private and commercial users. Though these groups are using similar equipment and traveling on the same river at the same time, they differ in most aspects of their expectations for the trip, problems they encounter, and what they think managers should do to protect the resource.

When the Middle Fork of the Salmon River in Idaho was designated "wild" under the Wild and Scenic Rivers Act of 1968, its values as a free-flowing wilderness river were protected by federal law. A "wild" river is defined as the river and its adjacent land that is "generally inaccessible except by trail, with watersheds or shorelines essentially primitive." The U.S. Forest Service (USFS) was given the authority to administer the river in a manner that protects or enhances its wilderness characteristics, including limiting nonconforming uses and developing a protective management plan. The "wild" section of the Middle Fork extends nearly 90 miles within the Frank Church-River of No Return Wilderness (FC-RONRW).

Also within the FC-RONRW, the Main Stem of the Salmon River travels for approximately 79 miles. This portion of the Salmon River was designated "wild" with passage of the Central Idaho Wilderness Act (CIWA) in 1980. The Main Stem is managed under the Wild and Scenic Rivers Act, with additional direction in the CIWA to allow certain uses that conflict with The Wilderness Act, such as allowing motorized vehicles, motorized boats, air strips, commercial lodges, and substantial recreational use.



Article authors Don Hunger (left) and Kurt Becker (center) receive award from U.S. Forest Service Chief Mike Dombeck for research on the Salmon River. Photo by U.S. Forest Service.

On both rivers, the number of private and commercial groups allowed to float each day of the controlled use season

(PEER REVIEWED)



A "wild" river is generally inaccessible except by trail, with watersheds or shorelines essentially primitive. Leopold Institute photo.

is approximately split in half. Private use is limited through a lottery system with chances to receive a permit upon application estimated at one in 23. Commercial clients do not apply for a limited number of permits. Outfitters receive an allocation of launches, constrained only by limits on group sizes, equipment, and adequate camping locations.

Stratifying Wilderness Visitors into Meaningful Consumer Groups

Watson and Cronn (1994) reported that wilderness visitors with a more extensive history of visiting a particular wilderness will more likely notice

that where there is a high percentage of first-time visitors, any type of survey or experienced quality monitoring activities may lead to the conclusion that everything is fine when, in fact, conditions are actually deteriorating. On the other hand, places that receive high percentages of repeat use should find general visitor surveys more useful to track perceptions of condition changes. Watson and Cronn (1994) concluded that managers need a more complete understanding of the relationship between variables such as amount of past experience, visitor expectations for the trip, and evaluations of resource and social conditions in order to consider visitor input in making decisions

about how to care for the wilderness.

On the Salmon River, as at many other places in the western United States, there are commercially outfitted and guided groups and there are private parties who provide their own equipment, supplies, and the skills needed to travel the river. Previous research, such as Watson and Cronn (1994)

above, suggests against simply lumping river users of such different orientation toward the resource into a single group and making decisions on the basis of this information. Average responses would suggest the existence of an average visitor. In fact, if identifiable subpopulations exist we must understand these subpopulations better in order to make management decisions.

Commercial versus Private Boater Sampling

Commercial and private boaters were contacted on both rivers (Hunger 1996). During the primary use season of 1995, 10 pairs of days were randomly selected from all possible days between July 15 and September 16. This included eight sampling pairs during the summer permit season and two sampling pairs in September, outside the summer permit season. There was no differentiation made between weekdays or weekends because parties launch in equal numbers every day of the week. On the main fork of the river the maximum number of permits per day is for eight groups, while only seven groups are allowed to launch each day on the middle fork of the river.

On sampling days, each launch party was contacted after they had received a required prelaunch orientation by a USFS river manager and before they boarded their boats. Up to 10 people, ages 16 and older, from each group were randomly selected for the survey. In groups of 10 or less, all were surveyed. Commercial guides were not included in the pool of potential respondents. This sampling process resulted in 238 commercial clients and 301 private party members.

Implementation of the survey methodology led to information being obtained at various times during the trip. Respondents received a survey



In this study, visitors completed a survey in stages as they floated down the rivers. Leopold Institute photo.

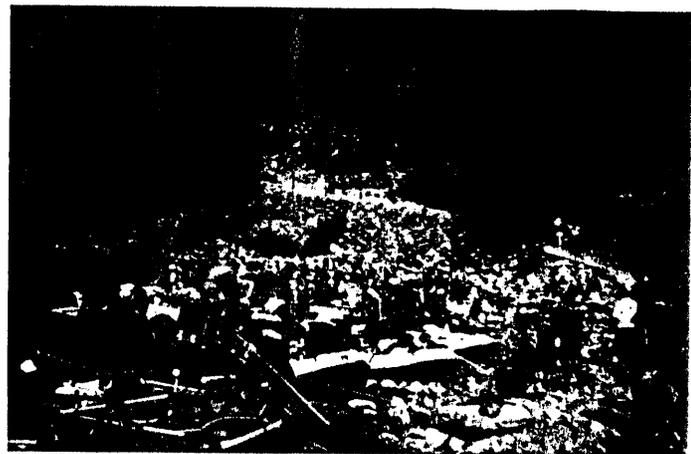
composed of five sections at the launch point. The launch-point section was completed in the presence of a survey administrator. In this pretrip survey, the floaters were queried about their expectations for the trip, their past river use history, and some basic demographics such as age, education, income, and residence. Four other sections were completed in stages during the trip and deposited in specially marked repository boxes at easily identified locations.

Besides the launch-point survey, visitors were asked to answer questions on their first, third, and last nights on the river, and at the take-out point. Of interest to this article, on the third night floaters were asked about their support or opposition to several potential management actions for minimizing recreational floater use impacts on the resource or the experiences of others (about 58% of the launch-point sample completed this section). At the take-out point they were asked about problems they encountered on the trip (just under 50% of the launch-point sample responded).

All users were asked about their past experience level on the Salmon River and about their past experience on other overnight river trips. Every floater was also asked to indicate his or her personal level of skill in river travel on a scale of "beginner, novice, intermediate, advanced, or expert." Information was collected on expectations (using categorical responses) for the number of people and parties they would see daily, level of impacts they would find, and other things (such as wildlife, modern structures, and low-flying aircraft) they might see on the trip.

Visitor support for potential management actions that were being considered by an interdisciplinary planning team, or had been mentioned in recent public involvement meetings, were

measured on a five-point scale ranging from "strongly support" to "strongly oppose" with both a neutral point on the scale for respondents who could not decide their support and a column labeled "no opinion" for those who either did not care or had insufficient knowledge to judge how much they supported proposed actions. Visitors were asked to report how much certain things influenced their river trip by rating them as being "no problem at all," "a small problem," "a moderate problem," or "a big problem." The items evaluated included potential congestion/crowding problems and human-caused resource impact problems.



Commercial clients were more opposed to reducing the allowable number of people per float party. Leopold Institute photo.

User Characteristics of Boaters

Commercial clients and private boaters differed in many ways (see Table 1). Though commercial floaters tended to be older, both groups' average age was

Table 1—Launch-point survey results comparing characteristics of private and commercial floaters on the Salmon River, Frank Church-River of No Return Wilderness.

Characteristics	Private Floaters	Commercial Clients
A. Age (average years)*	41.9	42.9
B. Grew up in major metropolitan center of over 1 million people (%)**	12.0	21.7
C. Now live in major metropolitan center of over 1 million people (%)**	11.5	26.5
D. Educational achievement equiv. to Ph.D. (%)*	13.8	20.6
E. Household income above \$100,000/year (%)**	14.0	43.4
F. Previous overnight float trips on any segment of the Salmon River (average)*	5.1	.5
G. Previous overnight float trips on any river (average)*	27.4	3.9
H. Previous trips with a commercial guide (avg)*	5.8	2.4
I. Previous trips where you guided your own boat (average)*	33.5	4.0
J. Years since first overnight float trip (average)*	12.2	5.8
K. Self-evaluation of river-running skills**		
Beginner or Novice (%)	33.6	71.0
Intermediate or Advanced (%)	53.7	28.1
Expert (%)	12.8	.8
L. Float party size (average)*	12.0	16.0
M. Length of trip in days (average)*	6.5	5.6

Logistic Regression: $Z=3.5778 - 0.0475 (G) - 0.1690 (F) + 0.0632 (H) - 0.2343 (K) - 0.4149 (M) + 0.0399 (L) - 1.1792 (E)$ (78% correct prediction for private floaters, 82% correct prediction for commercial clients) ($R^2(\text{Nagelkerke})=.435$).

*Means were significantly different for the two groups at $p \leq .05$ (Student t-test)

**Distributions of responses were significantly different for the two groups at $p \leq .05$ (Chi-square analysis)

early 40s. About twice as many commercial clients grew up and now live in major metropolitan areas. This more urban group of users reported that 21% have completed the equivalent of doctoral degrees while only 14% of private floaters have completed doctoral level degrees. Reflective partially of high education attainment levels and highly urban residence, we suspect, those who pay someone else to take them down the Salmon River are better able to pay for these services, with over 43% reporting household incomes of over \$100,000 per year, compared to only 14% of private floaters in this income bracket.

On past river use characteristics, these two groups also appear to be very different. Private users averaged more

previous trips on the Salmon River, had taken more previous overnight float trips on rivers, had guided their own watercraft on a greater number of previous river trips, and had taken their first overnight float trip more years ago than commercial clients reported. Private users even exceeded commercial clients on the average number of previous river trips taken with a commercial guide. Also, private floaters evaluate their river running skills higher than commercial clients. About 48% of commercial clients rate themselves as "beginner"; 54% of private floaters rate themselves as "intermediate" to "advanced." Private floaters tended to be in smaller groups and stayed longer.

Using a stepwise logistic regression routine, the pool of 13 demographic

and past use history variables was reduced to seven significant predictor variables. The significance value for inserting a variable was specified at 0.05, while that for removing a variable was set at 0.10. The final solution produced an overall prediction ability of 78% (a 28% improvement over chance alone). Using the resultant model to predict classification for new subjects, private users would be correctly classified 73% of the time, while commercial users would be correctly identified 82% of the time.

The variable in the final model included the number of previous trips on any river, the number of previous overnight trips on any segment of the Salmon River, the number of previous guided trips, a self-evaluation of river-running skill level, the length of this trip, the number of people in the group, and household income (Table 1). The multiple categories of income used in the survey (nine) were entered as contrasting variables, contrasting with the highest category (>\$100,000), which contained 43% of the commercial floaters and only 14% of the private visitors. For the final model, however, the income variable was broken into only two categories. From examination of the univariate analysis of this variable, it was noted that in all seven categories of income below \$75,000 the percentage of private floaters exceeded that of commercial clients. On the other hand, from \$75,000 up, the percentage of commercial clients dominated. The highest category was chosen as the contrast variable. Overall prediction success was not increased drastically with this change, but interpretation of coefficients seemed clearer. The variable with the largest partial correlation coefficient (R), and therefore with the greatest relative strength in the relationship, was income category.

Table 2—Launch-point survey results comparing expectations of private and commercial floaters on the Salmon River, Frank Church-River of No Return Wilderness.

<u>Expectations</u>	<u>Private Floaters (%)</u>	<u>Commercial Clients (%)</u>
Number of other floating parties seen per day*		
Less than 3	26.4	43.4
Above 4	32.0	18.1
Time within sight of other float parties each day*		
Greater than one hour	41.3	50.8
Time delayed at major rapids by other float parties		
None	32.2	41.5
Camping within sight or sound of other parties		
None	76.5	79.7
Number of modern structures seen per day*		
None	22.5	44.3
3 or more	31.3	17.2
Number of low-flying aircraft see per day*		
None	25.2	33.3
3 or more	27.1	15.4
Human-caused vegetation loss and bare ground at campsites*		
None	9.8	17.7
//Substantial amount	10.5	3.2
Human-damaged trees at campsites*		
None	46.1	60.3
Moderate to Substantial amount	17.1	9.0
Pieces of litter*		
None	46.1	60.3
Human waste		
None	78.8	81.7
Wildlife		
Moderate amount	56.3	54.9
Substantial amount	31.9	31.4
Historical sites		
Moderate amount	49.6	50.2

*Distribution of responses are significantly different for the two groups at $p < .05$ (Chi-square analysis)

River Trip Expectations

Private floaters expected to see significantly more floating parties, to be within sight of other float parties more of the time, to be delayed by other parties at major rapids a greater amount of time, to see more modern human structures, to see more human-caused vegetation loss and bare ground at campsites, to see more human-damaged trees at campsites, and to see more litter during their river trip (see Table 2). Both groups had high expectations for seeing no one near their campsites each night, high expectations for seeing wildlife, and very little expectation of encountering human waste during the trip.

Perceptions of Problems

There is a mandatory human waste packout procedure on both rivers, and 81% of commercial clients and 69% of private users reported no problems encountering human waste on the trip, suggesting high compliance with this regulation (see Table 3). Only a few from each group reported this as a "small problem." For commercial clients, 24% said litter was a problem along the river, while more than half of private boaters felt it was a problem. But, of those private boaters feeling it was a problem, most thought it was only a small problem.

There were some parameters that were not scored universally high. Private boaters indicated a higher problem score than commercial floaters on the following things: the number of people seen on the river, the amount of time spent in sight of other parties, the number of parties passing their campsites, having other campsites within sight or sound of their own, seeing human-caused vegetation damage around campsites, seeing damaged trees around campsites, the number of modern structures encountered along the river, and low-flying aircraft.

Table 3—Take-out survey results indicating problems for private and commercial floaters on the Salmon River, Frank Church-River of No Return Wilderness.

<u>Potential Problem</u>	Private Floater	Commercial Client
	No Problem (%)	No Problem (%)
Number of people seen each day*	46.0	65.3
Amount of time within sight of other float parties	41.9	54.2
Number of times delayed at rapids by other float parties	78.4	79.2
Number of float parties that pass campsite	61.6	75.8
Camping within sight or sound of another party*	75.6	89.0
The amount of human-caused vegetative loss and bare ground at camps*	39.5	59.7
The amount of trees around a campsite damaged by people	54.8	68.6
The number of modern structures seen*	44.4	58.5
The amount of litter seen daily*	46.8	75.8
The number of low-flying aircraft seen*	46.8	56.7
Encountering human waste	68.5	80.7

* Distributions are different for the two groups.

Table 4—Third night survey results comparing support/opposition for management actions for private and commercial floaters for the Salmon River, Frank Church-River of No Return Wilderness.

	Oppose (%)	Private Floater		Commercial Client		
		Neut (%)	Supp. (%)	Oppose (%)	Neut (%)	Supp. (%)
<u>River Accessibility</u>						
Increase parking spaces at launch sites	52.0	35.5	12.5	48.8	43.1	8.1
Provide separate outfitter and private launch sites to reduce congestion	41.2	32.0	26.8	31.7	40.8	27.5
Increase daily launch permits*	76.1	17.6	6.3	80.6	14.2	5.2
Decrease daily launch permits	38.4	34.0	27.7	35.4	38.6	25.0
Extend summer lottery reservation system to spring and fall*	45.0	28.6	26.4	16.2	48.6	35.1
Maintain current level of low-flying aircraft traffic*	35.1	37.7	27.3	11.8	42.2	46.1
<u>Social Issues</u>						
Close selected campsites within sight or sound of each other	32.1	30.8	37.2	27.2	35.3	37.5
Reduce the allowable number of people per party*	27.2	27.2	45.6	42.8	32.3	24.8
Reduce the number of boats per party*	44.6	27.0	28.3	43.2	37.1	19.7
Reduce the size of float parties, but allow more launches per day	69.4	19.4	11.3	73.9	20.8	5.4
Establish launch schedules to avoid congestion*	37.6	22.9	39.5	16.3	20.7	62.9
Require firepans	5.0	4.5	90.5	2.1	10.1	87.7
Require visitors to carry out human waste*	6.3	6.3	87.4	18.5	8.9	72.6
Offer more pre-trip information on historical sites	6.5	29.2	64.3	2.3	27.1	70.6

*Distribution of responses are significantly different for the two groups at $p < .05$ (Chi-square analysis)

Evaluations of Management Options and Considerations

Private floaters demonstrated greater opposition to the current level of low-flying aircraft, though about 40% of both groups are neutral on this issue (see Table 4). Commercial clients tended more toward support for the current level of flights. For other river accessibility issues, private floaters scored higher in opposition (50% strongly oppose) to increasing daily launch limits (though commercial clients opposed [31% strongly oppose] this action, too) and for extending the summer lottery system to spring and fall seasons (a high percentage of commercial clients were neutral on this item, as it would have little effect on their ability to take trips on the river). About half of both groups opposed increasing parking spaces at launch sites (another 40% of each group were neutral). On social issues, commercial clients were more opposed to reducing the allowable number of people per float party, less supportive of reducing the number of boats per party, more supportive of establishing launch schedules to avoid down-river congestion, and less supportive of requirements for carrying out human waste.

Commercial clients appear to have a more pure image of what a river trip is going to be like through this wilderness. They expected to see fewer people and fewer impacts than the private parties expected. This difference in expectations can easily be explained by the significant differences between the two groups in past river experience on these river segments and elsewhere. Possibly they were swayed to believe wilder conditions existed than they would actually find. Their expectations may also have been

correlated with the amount of money they paid for the trip.

But, exposed to the same river, during the same use season, the private users who were expecting less pristine conditions were more bothered by the conditions they did find. This is contrary to some previous work that suggests evaluations of quality are a function of the relationship between expectations and actual conditions encountered. These more urban, higher educated, wealthier users of the river seem to rationalize the higher impacts and social conditions they encountered much better than the private users.

Of all the demographic differences between the two groups, the uncommonly high income of the commercial users dominates when analyzed in a multivariate fashion. It must be uncommon to find such clear distinction between two groups of users of the same resource, using similar equipment (unlike canoeists and motor boaters on a lake, or snowmobilers and cross-country skiers) on a similar trip. This income difference clarifies for the manager and the policy maker the economic segment of society represented by the commercial clients. Since party size of commercial groups is one-fourth larger on the average than for private parties (16 versus 12)—though number of permits is nearly the same—this commercial client group is the dominant user of these rivers during the high use season. Is the implication, therefore, that they should be dominant in determining management for the river in the future? How do we take into consideration a subpopulation of visitors who appear to be fairly casual in their relationship with primitive environments? Should we weigh their responses more heavily because they are the dominant user,

or less because of this apparent casual relationship?

While preferences for management do not seem extremely different in their broadest sense across these two groups, the high proportions of floaters indicating problems with numbers of other floaters, numbers of modern structures and aircraft, and human-caused impacts around campsites suggests the need for proactive management actions. Legislative intent is clear on these two rivers, despite overlays of wilderness and wild-river legislation. Control of impacts and crowds are necessary to maintain wilderness and wildness for visitors to these important national treasures. We must focus management on maintaining opportunities to experience challenge, solitude, freedom, and primitive nature. In a country that is dedicated to both private enterprise and the democratic process, our federal land managers are faced with decisions that will greatly affect the resource and wilderness opportunities of future generations. **IJW**

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