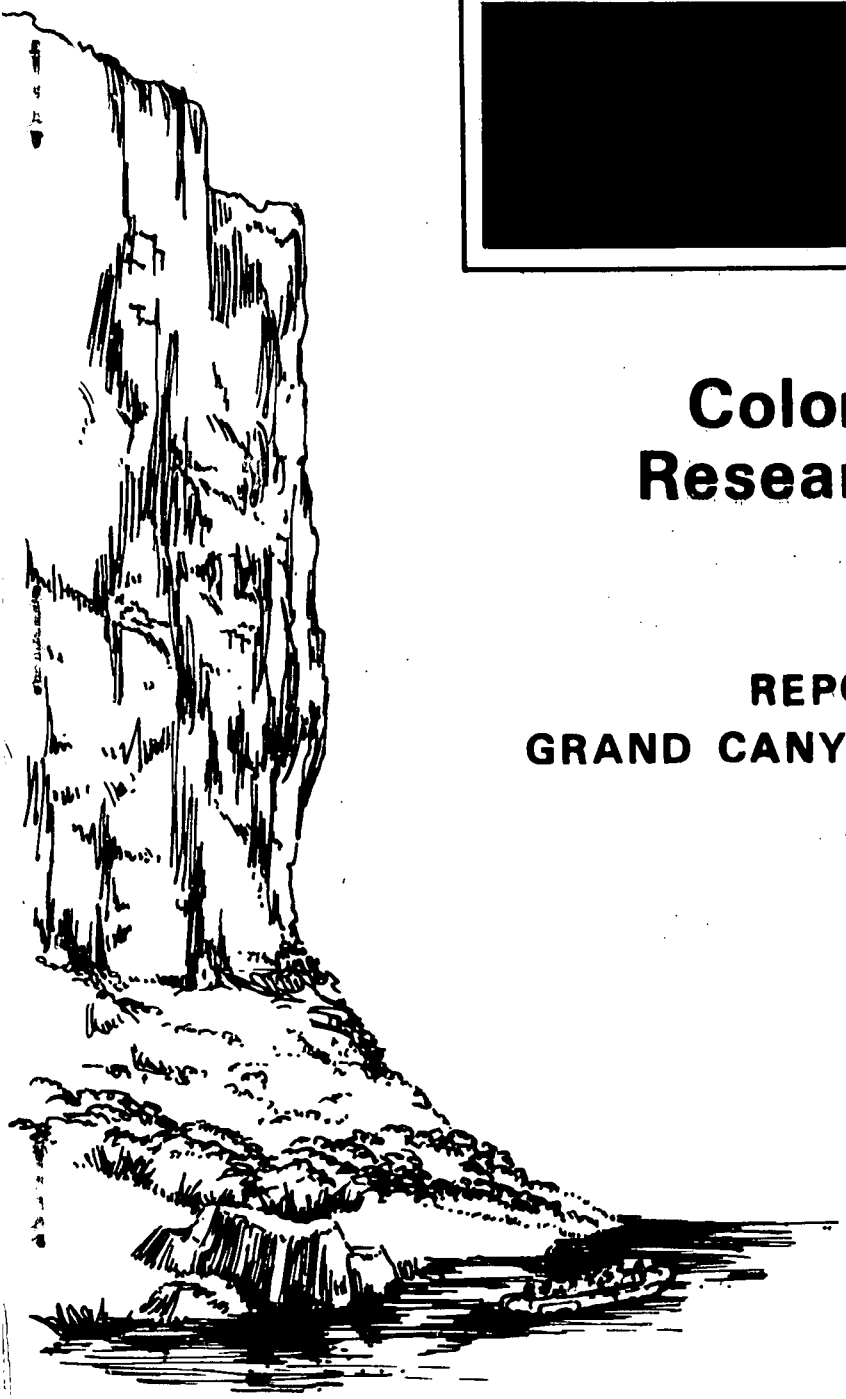

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Colorado River Research Program

REPORT SERIES
GRAND CANYON NATIONAL PARK

United States
Department of the Interior
National Park Service

C-14

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COLORADO RIVER RESEARCH PROGRAM
Grand Canyon National Park
Grand Canyon, Arizona 86023

The Colorado River Research Program was initiated by the National Park Service in 1974 to secure scientific data to provide a factual basis for the development and the implementation of a plan for appropriate visitor-use of the Colorado River from Lee's Ferry to Grand Wash Cliffs and for the effective management of the natural and cultural resources within the Inner Canyons. The intensified research program consists of a series of interdisciplinary investigations that deal with the resources of the riparian and the aquatic zones and with the visitor-uses including river-running, camping, hiking, and sight-seeing of these resources, as well as the impact of use and upstream development upon canyon resources and visitor enjoyment.

Final reports that result from these studies will be reproduced in a series of Program Bulletins that will be supplemented by technical articles published as Program Contributions in scientific journals.

Merle E. Stitt, Superintendent
R. Roy Johnson, Program Director

Cover Drawing by J.G. Carswell, University of Virginia

DESIGN AND METHOD OF THE SOCIOLOGICAL RESEARCH IN THE GRAND CANYON

Bo Shelby and Joyce M. Nielsen

Colorado River Research Program Report

Technical Report No. 1

Grand Canyon National Park
Colorado River Research Series
Contribution Number 30

DESIGN AND METHOD OF THE SOCIOLOGICAL RESEARCH IN THE GRAND CANYON

RIVER CONTACT STUDY

FINAL REPORT

PART I

Prepared by:

Bo Shelby
Joyce M. Nielsen

Human Ecology Research Services, Inc.
J. Eugene Haas, President

Submitted to:

Superintendent
Grand Canyon National Park
Grand Canyon, Arizona 86023

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PREFACE TO PART I

The River Contact Study was contracted in April, 1974, to assess the sociological effects of different management alternatives on the nature and quality of the river experience in the Grand Canyon. Initially, the project was focused on the effects of motorized travel and different use levels. In the spring of 1975, concern over differences in private and commercial use prompted the Park Service to include this issue within the scope of the study.

The final report is organized into four major sections. The first is a description of the study design and implementation, including measurement techniques, sampling, and data collection. Parts II, III, and IV consider in turn the motor-oar, use levels, and private-commercial issues. The sections are bound separately to make them more easily available to those with specific interests.

ABSTRACT

The study began April 1, 1974, and ended June 30, 1976. A pilot study was conducted during the 1974 river running season with a purposive sample of 11 trips. Final data collection took place during the 1975 season, with a stratified random sample of 46 commercial trips (39 motor and 7 oar) and 7 private trips. Four self-selected motor-oar combination trips provided additional data. Information sources included Park Service records of use, trip reports by observers, and questionnaires and interviews from passengers and boatmen. Units of analysis and response rates are discussed.

ACKNOWLEDGEMENTS

Our ability to conduct the River Contact Study was based primarily on the cooperation of the people who run the Colorado River. Outfitters accommodated the project by allowing observers to accompany trips, boatmen were helpful on a day-to-day basis on the river, and passengers filled out questionnaires with only minor grumbling. Special thanks are due to Bob and Jessica Elliott of ARTA Southwest, who made possible the motor-oar combination trips. Private river runners were especially gracious in allowing observers to become a part of their trips.

Our observers turned in reliable trip reports under sometimes trying circumstances. Mary Strand, Mike Delaney, Susan Shoulders, and Randy Fout did the bulk of the data collecting, while Bill Fowkes, Dan Spray, David Schoen, Dick Skeene, Barb Farhar, David Lillie, Bev Shafer, Peter Marshall, Sig Krane, and Kim Rea rounded out the trip schedule, sometimes on short notice.

The staff of Grand Canyon National Park made many contributions to the project. Bob Yearout and his people in the Inner Canyon Office provided invaluable information from their files. Roy Johnson's commitment to the integrity of the project was crucial at several points, and he proved to be a resourceful research strategist as well as an able liason with the Park Service.

The members of our research advisory board, Drs. William Catton, John Krutilla, George Stankey, and Karl Taeuber, provided professional advice, suggestions, and criticism. Tom Heberlein at the University of Wisconsin contributed his expertise and enthusiasm on an informal basis. Thanks also go to Jeff Ingram, who provided assistance on historical aspects of the motor-oar controversy.

First rate support was provided by Charlotte Purvis and Susan Leavy, who without extensive complaining turned semi-legible scrawl into finished manuscripts. They created a competent and congenial office atmosphere on which the project relied heavily. Barbara Douglas provided editorial assistance, and we made extensive use of her ability to insure that written material actually conveyed what we meant to say.

Finally, some sociological issues seem to be of interest to almost everyone. When it was discovered that we were doing research in the Canyon, many people had ideas and opinions which they shared with us. Some of these thoughts were clever and insightful and others weren't, but they were fun to talk about and the project benefitted from our exposure to all of them.

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DESIGN

PART I

The sociological study was conducted over a period of 25 months. Funding began on April 1, 1974, and a pilot study was conducted from May through September of that year. The period from October, 1974, through March of 1975 allowed time for analysis and evaluation of pilot study results and the improvement of data-gathering and measurement techniques. Data were then collected from a larger, more representative sample during the 1975 season (April through September). Data processing and analysis took place during the winter months, with the final report submitted in June of 1976.

The overall aim of the study was to assess the effects of different management alternatives on the river experience. The general perspective by which this phenomenon is understood contains four elements:

management alternatives	→	character of the experience	→	perceived differences in character of experience	→	evaluation of the experience

The first step in researching these issues is to specify different management options. In exploring the use levels issue, for example, high use is one option, while a lower level is another. Information on different use levels is found in Park Service schedules for trip departures and records of use.

The second step is to assess the effects of management policies on the character of the experience. How, for example, do different use levels affect trips when they get on the river? Do they meet other trips more often? Does this contact occur on the river or at side stops? How many people are seen? Collecting this kind of information requires observation and recording of events taking place on the river.

Next, it is necessary to find out how river runners perceive these differences in the character of the experience. Here, one needs to know such things as whether seeing more other trips makes people feel more "crowded" or leads them to believe that the Canyon is more seriously affected by use. This kind of information must be obtained directly from river runners.

Finally, do perceived differences lead to different evaluations of the experience? Is a more crowded trip less "satisfactory?" Do people have a "better time" when they don't feel crowded: This information, like that on perceived differences, must come from river runners themselves.

The study was designed to provide information on all these issues. Data on differing levels of use and motor-oar and private-commercial trip departures were obtained from Park Service schedules. A sample of trips was selected and participant observers went along to record information on the character of the experience. The last night on the river, passengers and boatmen completed a questionnaire which assessed their perceptions and evaluations as well as certain background characteristics. Observers collected the questionnaires before the trip ended. The final report uses information from three sources: Park Service records, observers' trip reports, and questionnaires filled out by passengers and boatmen. The following sections describe in more detail the process by which trips were selected and variables were measured.

SAMPLING

In this study, certain variables (such as trip type, use level, etc.) were measureable only at the trip level. In addition, lists of trips were readily available, while passenger lists were not. For these reasons, trips were the sampling units used. Different procedures were used to draw samples for the 1974 pilot study and the 1975 final sample; both procedures are explained below.

PILOT STUDY SAMPLE

The pilot study was undertaken to provide the pretest data necessary to refine measurement procedures. The sample was a purposive one, with trips deliberately selected to represent the wide range of trip types which travel in the Canyon. Variation was maximized on four criterion variables: use level, mode of propulsion (motor-oar), trip size, and trip length. Eleven trips made up the sample; they are listed in Table 1 of Progress Report II. This sample provided 117 river days of observation and questionnaires from 213 passengers (a 97% response rate). Because the sample was not random, the particular results cannot be used to represent all trips.

FINAL SAMPLE

The final sample was selected to insure representation as well as variation on three crucial variables: use level, mode of propulsion, and trip type (private or commercial). The sampling procedures were different for each of these variables, and will be discussed separately. A list of all trips sampled can be found in Table 1.

Use Levels

Use levels vary by month during the season. For our purposes, the season extended from April through September, since very little use occurs from October to March. The lowest densities occurred during the first and last months, with 5% of total use in April and 11% in September (see lower section, Table 2). May was a moderate use period, with 18% of all trips, while June, July, and

August provided higher densities (about 22% each). The greatest trip density occurred from June 1 to June 10, a period during which the Park Service allowed "natural scheduling" to occur by suspending daily launch limits.

Representation of different use levels was assured by stratifying on use. Data from the 1974 season provided information on the percent of use which could be expected each month in 1975. Working with a sample size of 35, commercial trips were randomly selected within strata so that the proportion of trips in the sample each month equalled the proportion for that month in the population. Since the high use period (June 1 - 10) was of particular interest, four additional trips were randomly selected from this time period. The distribution of trips by month in the sample approximates that for the population, as the upper part of Table 2 shows.

The selection procedure was as follows. First, the number of trips to be selected from each month's schedule was determined. Days within each month were then selected randomly, with days having more departures weighted proportionately to have a greater chance of selection. Once dates were determined, all commercial trips leaving that day were numbered and a random selection was made. This step made it possible to determine well in advance the dates on which we would need observers, while still allowing us to make use of recently updated departure schedules. Finally, the outfitter was contacted with the request that a researcher accompany the trip. If the trip selected was unavailable because of cancellation, full booking, or for some other reason, the next randomly selected trip for that date was chosen. If there were no more trips on that date, or if all trips were unavailable, the next consecutive day was chosen and the same procedure was repeated. The four extra trips from the "high density" period were sampled in a similar manner. There were ten occasions when we were unable to accompany "first choice" trips because of booking or outfitter preference.

Motor and Oar Trips

It was felt that random selection within use strata would give a proportionate representation of motor and oar trips. As a result, no stratification was done on this variable. Table 3 compares the proportion of motor and oar trips in the population and in the sample. Commercial motor trips made up 78% of the population and 70% of the sample, while commercial oar trips formed 14% of the population and 15% of the sample.

Private Trips

Additional funds were received in June of 1975 so that a sample of private trips could be included in the study. Of the 45 private permits issued for the 1975 season, 15 occurred prior to June 1, the time at which we began sampling private trips. The remaining 30 included two which were ruled out because of their composition. A sample of eight trips was selected from the remaining 28, again stratified by use level with random selection within strata.

Actual selection was similar to that outlined earlier. Private river runners were difficult to contact, but proved very cooperative. We were unable to replace one July trip which was cancelled, but were able to accompany all other "first choice" trips. The distribution of private trips by month is given in the middle rows of Table 2.

The representation of private trips in the population and the sample can be seen in the "totals" column of Table 2. It will be noted that private trips are over-represented in the sample. Private trips were believed to be more diverse than commercial trips, and were over-sampled in order to capture this greater variation.

Weighting

In computing statistics intended to generalize to the entire population of river runners, the weight factors found in the bottom row of Table 3 were used. Motor-oar comparisons among commercial river runners as well as comparisons of different use levels require no weights because the appropriate sample represents the population. Where private-commercial comparisons are made, no weights are used, since parameters within the private group are more accurate as a result of the over-sampling.

MOTOR-OAR EXPERIMENT -- A SEPARATE SAMPLE

Passengers on the motor and oar trips discussed above were usually traveling the Canyon for the first time. As a result, they had experience with only one kind of trip (motor or oar). In order to create a group who could make more informed comparisons of the two travel modes, an "experiment" was devised whereby passengers traveled half of the Canyon by motor and half by oar.

Two trips, one motor and one oar, were scheduled to leave Lee's Ferry so that they would meet halfway through the Canyon. At this point, passengers left one set of boats and boatmen and switched to the other. The trip then continued to the debarkation point, Diamond Creek. This sequence occurred twice, once in July and once in August, for a total of four combination trips.

Passengers self-selected into the combination trip by choosing it from the listing in an outfitter's brochure. A total of 56 signed up for the combination trip. Data from these trips were not included in the rest of the sample, but were anlayzed separately. Further information on the nature of the trips and limitations of this sample can be found in Part II of this report, "Motors and Oars in the Grand Canyon."

INSTRUMENTATION AND MEASUREMENT

The data for the study came from three sources: Park Service records, observers' trip reports, and questionnaires and interviews completed by trip participants. River boatmen filled out an abbreviated form of the passenger questionnaire. Each of these sources is considered below, with detailed information about measurement and recording procedures.

PARK SERVICE RECORDS

The ranger at Lee's Ferry completes a check-out form for each trip departure. Forms are then sent to the Inner Canyon Office at Grand Canyon, where they are kept on record. Information on use levels was obtained from these forms. The data were organized on a calendar so that the number of trips and people leaving Lee's Ferry could be determined for each day of the season (see Table 4).

Use levels refer to the number of people on the river at any given time. The problem in establishing a measure of use is to find one which best approximates the actual situation on the river. Commercial trips leaving Lee's Ferry travel at quite different speeds, taking between 5 and 18 days to traverse the Canyon. Fast trips, then, may encounter trips which left several days before them, while slower trips are passed by those leaving later. For this reason, the measure of use employed was the total number of people or trips leaving Lee's Ferry during the week a given trip left. This seven-day period included the departure date and the three days before and after it. The density measure (people or trips) employed in any particular analysis depends on the other variables under investigation. The two density measures are highly correlated ($r = .94$).

A shorter use period (two days) was also coded to see if it had a different effect. For motor trips, this was the number leaving on the departure date plus the day before, since such trips tend to overtake others. For oar trips the departure date and the day after were used.

TRIP REPORTS BY OBSERVERS

Observers kept extensive records during their trips. Their reports described contacts with other trips, social aspects of the trip, the complete trip itinerary, and certain aspects of the trip as a whole (e.g., length, size, etc.).

Every effort was made to assure comparability in data collected by observers. Information to be recorded was specified on observer forms, and methods for collecting and coding these data were detailed in a handbook. Observers were trained before going to the Canyon, and had the handbook for reference while on the river.

Readers interested in detailed information about participant observer data should consult the observer forms (Appendix 1) and handbook (Appendix 2). The forms specify the variables to be measured, and the handbook defines each one operationally. The handbook contains a general introduction and is organized into sections corresponding to the forms.

QUESTIONNAIRES AND INTERVIEWS

Information was obtained from passengers through the self-administered questionnaire and an informal interview conducted by observers. Boatmen also filled out a questionnaire. The questionnaire was administered during the evening of the last night on the river; interview information was extracted by observers in the course of conversation during the trip.

Passenger Questionnaire

The passenger questionnaire was nine pages long and took about a half hour to complete (see Appendix 3a). Past outdoor experience was assessed both generally (camping, hiking, etc.) and specifically in relation to river running. Attitudes toward developments in wild areas were also measured, both generally (with a version of Hendee's 1968 wildernism scale) and with respect to the Grand Canyon. The trip experience was explored in terms of expectations, perceptions of the Canyon and man's impact upon it, social aspects of the trip, and benefits derived from the experience. Knowledge of the Canyon was also measured. Preferences regarding encounters with other parties were determined along with information about willingness to undergo inconveniences which might be necessary in order to obtain those preferences. Finally, passengers gave demographic information (income, marital status, place of residence, etc.) about themselves.

A number of items were written to form scales. A discussion of the items, scale-building procedure, and scale characteristics are found in Appendix 4.

Passenger Interview

Observers conducted informal interviews during the trip to find out how passengers had learned of and chosen the particular trip they were on. Information was later recorded on an interview form (Appendix 3b). One form was completed for each passenger.

These interviews were added to the study late in June, so the information represents only a portion (about half) of the sample. Second, the forms were not keyed to passenger questionnaires, and therefore, cannot be analyzed in relation to other individual variables. Finally, when groups of passengers (e.g., families, friends) were on a trip together, often one person had done most of the planning and decision-making. When this occurred, all members of the group had essentially the same reason for selection and were classified accordingly.

Boatman Questionnaire

Boatmen provide a different perspective on the Canyon as a result of their greater experience and knowledge as well as their special duties. They are believed by some outfitters and park officials to have an inordinately large influence on passenger perceptions and opinions. For these reasons, boatmen on trips sampled were asked to fill out a questionnaire. Much of the passenger questionnaire would have been irrelevant for boatmen, so they were given a shortened version (see Appendix 3c). It included items on past experience, attitudes towards developments, crowding, and human impact in the Canyon, and encounter preferences and strategies for achieving them.

Data from boatmen also have some methodological limitations. The questionnaire was added to the study late in May, so not all trips are represented. In addition, a boatman in the sample sometimes turned up on a later sampled trip. Since the boatman's data were to be analyzed in relation to the trip he was on, he was asked to fill our another questionnaire. Questionnaires were not keyed so that duplicates could be found, and findings utilizing all boatman questionnaires are not based on independent observations.

Combination Trip Questionnaires

All data described above were collected on the combination trips. However, passengers were given two different questionnaires. The first was given on the evening before the groups changed boats. It consisted of those items from the standard questionnaire which, based on analysis of pilot study data, one would expect to be answered differently by those on motor and oar trips. The second questionnaire was given the night before the trip ended. It contained the items in the first questionnaire, the rest of the items from the standard questionnaire, and a set of items designed specifically to compare and evaluate the two different experiences. The questionnaires are contained in Appendices 3d and 3e.

UNITS OF ANALYSIS AND RESPONSE RATES

In this study, then, there are different kinds of data which describe three distinct analytic entities (units of analysis). The first is the individual. A total of 1,054 passengers went on the trips sampled (123 private, 931 commercial). Completed questionnaires were obtained from 1,024 of these people, 15 of which could not be used for various reasons. The result was 1,009 usable observations, a 96% response rate. Interview data were obtained for all passengers on trips departing after June 27 (n = 563).

Boatmen form another group of individuals. There were 154 boatmen on trips which left after May 21. Of these, 133 completed questionnaires, a response rate of 86%.

The second unit of analysis is the trip. Aggregate information (such as number of contacts per day) or data which characterize an entire trip (such as mode of propulsion) are descriptive of each trip as a whole. In comparing one trip with another, then, the sample size is 46, the number of trips accompanied by observers (this total does not include combination trips). However, when one wants to compare a trip characteristic (such as contacts per day) with an individual characteristic (such as perceived crowding), trip information is shifted to the individual unit of analysis. Each person on a given trip experiences the same number of contacts per day, so this information is added to each individual's record. Comparisons between trip and individual characteristics can thus be made.

The third unit of analysis is the contact. Each encounter was described in terms of where it occurred, its duration, the kind and size of trip(s) involved, and so on. For river and attraction site contacts, the sample size is 1,560, the total number of contacts observed during the 1975 season.

Contacts at campsites were also recorded. Observers spent 444 nights on the river (combination trips included). Of these, 40 were spent camped within sight or hearing of another party.

TABLE 1

SAMPLE OF TRIPS, 1975[1]

Density: People per Week	Density: Trips per Week	Depart-ure date	Length (Days)	Outfitter	Trip Size Passengers and Crew	Trip Type
80	6	4/12	9	Colorado	21	motor
152	8	4/26	19	O.A.R.S.	15	oar
232	11	4/30	4	Cross	37	motor
427	21	5/13	12	Sanderson	33	motor
686	32	5/20	12	ARTA	21	oar
603	28	5/21	12	Wilderness World	33	oar
535	23	4/23	8	Fort Lee	15	motor
628	27	5/26	4	Cross	19	motor
825	36	6/1	13	O.A.R.S.	24	oar
767	35	6/2	9	Harris	14	motor
767	35	6/2	6	Georgis	77	motor
767	35	6/2	7	Hatch	25	motor
799	36	6/3	9	Harris	9	motor
795	31	6/6	9	Colorado	22	motor
737	28	6/7	8	ARTA	24	motor
694	25	6/9	5	Tour West	47	motor
675	26	6/10	19	Private #1-Munroe	19	oar
704	28	6/13	8	Harris	13	motor
722	30	6/16	5	Tour West	44	motor
939	34	6/23	5	Tour West	51	motor
658	24	6/28	8	ARTA	32	motor
625	22	6/29	14	Private #2-Fretwell	28	oar
651	23	6/30	12	Gr. Can. Youth	19	oar
695	27	7/5	8	ARTA	32	motor
774	31	7/10	9	ARTA	21	combination
746	30	7/12	9	ARTA	19	combination
773	29	7/14	9	Sanderson	35	motor
773	29	7/14	7	Hatch	16	motor
773	29	7/14	6	Tour West	46	motor

[1]This table has been corrected on the basis of more accurate information. It replaces Table 1 of Progress Report III.

Table 1 Continued:

Density (People Per Week)	Trips per Week	Depart-ure date	Length (Days)	Outfitters	Trip Size Passengers and Crew	Trip Type
831	32	7/15	11	Sanderson	30	motor
777	30	7/17	18	G.C. Dories	30	oar
666	27	7/21	15	Private #2-Gunter	16	oar
578	21	7/27	8	White Water	23	motor
684	25	7/28	7	Hatch	41	motor
886	33	8/5	8	Arizona	31	motor
838	29	8/7	9	ARTA	19	combination*
897	34	8/6	22	Private #4-Montapert	16	oar
733	27	8/9	9	ARTA	17	combination*
781	36	8/10	7	Western	27	motor
701	32	8/11	18	Private #5-Saunders	11	oar
701	32	8/11	5	Tour West	35	motor
806	28	8/16	9	Cross	39	motor
823	29	8/17	13	Private #6-Feil	16	oar
579	21	8/25	8	Sanderson	34	motor
346	17	8/31	7	Western	28	motor
415	17	9/7	15	O.A.R.S.	27	oar
387	19	9/14	20	Private #7-Calloway	15	oar
378	18	9/15	8	Sanderson	26	motor
378	18	9/16	5	Western	17	motor
199	10	9/21	7	Canyoneers	12	motor

*These were specially arranged motor-oar combination trips, used only for the Motor-Oar Experiment (see text).

TABLE 2

PROPORTION OF TRIPS EACH MONTH:
POPULATION - SAMPLE COMPARISONS

		April	May	June	July	Aug.	Sept.	Total
COMMERCIAL								
Population	Number of Trips	20	93	123	112	112	57	517
	Percent	4	18	24	22	22	11	92
Sample	Number of Trips	3	5	13	8	6	4	39
	Percent	8	13	33	21	15	10	85
PRIVATE								
Population	Number of Trips	7	8	10	7	9	4	45
	Percent	16	18	22	16	20	9	8
Sample	Number of Trips	Not		2	1	3	1	7
	Percent	Sampled		29	14	43	14	15
TOTAL								
Population	Number of Trips	27	101	133	119	121	61	562
	Percent	5	18	24	21	22	11	100
Sample	Number of Trips	3	5	15	9	9	5	46
	Percent	7	11	33	20	20	11	100

TABLE 3

PROPORTION OF MOTOR, OAR, AND PRIVATE TRIPS:
POPULATION - SAMPLE COMPARISONS

		Commercial		Private	Total
		Motor	Oar		
Population	Number of Trips	437	80	45	562
	Percent	78	14	8	100
Sample	Number of Trips	32	7	7	46
	Percent	70	15	15	100
Weights for generalizing to river-running population		1.12	.92	.53	

TABLE 4

RIVER TRAFFIC LEAVING LEE'S FERRY:
TRIPS - PEOPLE (PASSENGERS AND CREW)

APRIL 1975

		1	2 2-18	3 1-14	4	5 1-28
6	7 1-11	8	9	10	11	12 1-21
13 1-15	14 1-14	15 3-30	16	17	18	19 1-7
20	21 3-72	22 3-67	23	24 1-22	25	26 4-84
27 2-20	28	29 1-26	30 1-38			

TOTAL PEOPLE	3-35	5-97	7-123	3-56	2-36	7-140 = 27-487

Table 4 Continued:

MAY 1975

				1 4-71	2	3 3-77
4 3-59	5 5-72	6 3-68	7 1-10	8 1-31	9 1-13	10 3-73
11 3-45	12 3-86	13 5-101	14 1-19	15 2-27	16 4-76	17 9-207
18 5-101	19 8-165	20 5-135	21 2-35	22 1-31	23 3-44	24 4-92
25 2-57	26 6-141	27 7-144	28 3-79	29 2-71	30 2-28	31 2-67

TOTAL PEOPLE	13-262	22-464	20-448	6-111	10-231	10-161	21-516 = 102-2193

TABLE 4 (continued)

RIVER TRAFFIC LEAVING LEE'S FERRY:
TRIPS - PEOPLE (PASSENGERS AND CREW)

JUNE 1975

1 8-130	2 11-276	3 8-193	4 3-60	5 1-13	6 3-60	7 4-90
8 4-126	9 8-253	10 5-135	11 1-30	12	13 4-41	14 5-135
15 6-137	16 7-226	17 3-87	18 3-62	19 2-34	20 4-91	21 5-147
22 6-157	23 6-217	24 9-220	25 3-76	26 1-31	27 1-13	28 4-112
29 4-104	30 4-142					

TOTAL PEOPLE	28-654	36-1114	25-635	10-228	4-78	12-205	18-484 = 133-3398

Table 4 Continued:

JULY 1975

		1 7-180	2 1-43	3 2-57	4 5-65	5 4-112
6 3-103	7 7-202	8 5-113	9 3-53	10 2-53	11 2-38	12 6-126
13 5-137	14 6-213	15 6-170	16 1-23	17 3-66	18 5-96	19 4-113
20 5-96	21 6-182	22 5-142	23 1-28	24 1-9	25 2-42	26 5-131
27 3-86	28 4-139	29 4-125	30 2-46	31 5-115		

TOTAL PEOPLE 16-422 23-736 27-730 8-193 13-300 14-241 19-482 = 120-3104

TABLE 4 (continued)

RIVER TRAFFIC LEAVING LEE'S FERRY:
TRIPS - PEOPLE (PASSENGERS AND CREW)

AUGUST 1975

					1 5-87	2 4-116
3 2-55	4 8-267	5 8-233	6 2-41	7 5-113	8 4-61	9 5-127
10 7-135	11 6-119	12 7-187	13 2-39	14 1-33	15 2-28	16 6-208
17 5-106	18 6-221	19 6-171	20 3-56	21 1-21	22 4-69	23 4-108
24 4-121	25 4-146	26 5-135	27	28	29 1-15	30 3-81
31 1-28						
TOTAL PEOPLE	19-445	24-753	26-726	7-136	7-167	16-260	22-640 = 121-3127

Table 4 Continued:

SEPTEMBER 1975

	1 2-44	2 6-118	3 4-60	4 1-25	5 1-14	6 4-95
7 3-69	8 4-127	9 4-85	10	11 1-9	12	13 5-96
14 3-67	15 2-64	16 6-117	17 2-34	18	19	20 3-83
21 2-31	22 2-34	23 3-51	24	25	26	27
28 2-37	29	30 1-17				
TOTAL PEOPLE 10-204	10-269	20-388	6-94	2-34	1-14	12-274 = 61-1277

TABLE 5

SCALES BASED ON PRETEST DATA

A. Outdoor activities

Of the following activites, which do you commonly engage in?

item	item to total correlation
Back Packing	.68
Hiking	.68
Camping	.61
Mountain climbing	.57
River tripping	.54

Reliability (Cronbach's Alpha) = .82, Mean = 12.0, Standard Deviation = .38

B. Artifactualism

item	item to total correlation
Campsites with plumbing	.58
Campsites with outhouses	.60
Equipped bathing beaches	.65
Gravel roads	.49
Camping with car	.61
Automobile touring	.42

Reliability = .80, Mean = 12.3, S.D. = 4.4

C. Perception of Human Impact on the Grand Canyon

item	item to total correlation
The Canyon seems relatively unaffected by the presence of man	.52

Continued Table 5:

item	item to total correlation
The Canyon would be more of a wilderness if use were more restricted	.52
The Grand Canyon environment is not being damaged by over-use	.62
Too often we had to camp near other parties	.31
The Canyon is too crowded to be considered wilderness	.57

Indicate the degree to which you agree that each of the following environmental damage conditions exists in the Grand Canyon:

Excessive litter	.56
Trampling of natural vegetation	.64
Over-use of campsites	.71
Over-use of visitor attraction sites (like Deer Creek Falls, Havasu Canyon)	.65

Reliability = .85, Mean = 16.7, S.D. = 5.3

D. Quality of Group Experience

item	item to total correlation
The trip provided me an opportunity to get to know people better than I usually do	.57

Continued Table 5:

item	item to total correlation
The people in our party were very important to me	.55
After we get off the river, I expect to write to new friends made on this trip	.49
The trip provided me an opportunity to share my experience with others more than I usually do	.54
I particularly enjoyed this trip because the people were friendly and interesting	.56
After we get off the river, I expect to meet with new friends made on this trip	.56

Reliability = .79, Mean = 17.6, S.D. = 3.7

E. Subjective Learning

I learned a great deal about:

item	item to total correlation
Geology	.71
Rivers	.76
Ecology	.76
Nature in general	.79

Reliability = .89, Mean = 12.8, S.D. = 3.0

Continued Table 5:

F. Objective Knowledge

item	item to total correlation
List the names of as many rapids as you can recall.	.53
List the names of the various places you visited along the way (Deer Creek Falls, for example).	.72
List the names of any geologic features or processes you learned about on this trip.	.39

Reliability = .71, Mean = 6.0, S.D. = 3.4
For this scale, item values were combined and divided by 3.

G. Personal Growth

item	item to total correlation
I experienced new feelings	.53
I learned things about myself	.62
The experience was personally challenging	.60
I acquired new skills	.64
My physical condition improved	.57

Reliability - .81, Mean = 15.3, S.D. = 3.2

Continued Table 5:

H. Outdoor Experience

item	item to total correlation
I feel the trip was a really valuable experience.	.51
I felt closer to nature	.60
I gained some degree of communion with nature	.63
I benefited from exposure to the elements	.58

Reliability = .77, Mean = 14.5, S.D. = 1.9

TABLE 6

SCALES DEVELOPED FROM FINAL DATA

A. Evaluation of Crowding

Perceived Crowding in the Canyon

item	item to total correlation
Our trip would have been better if we had met fewer people along the way.	.66
The places we stopped (like Redwall Cavern) were often too crowded.	.60
It bothered me to see so many people at side stops.	.75
I don't think we met too many people during our trip down the river.	.56
Too often we had to share a place like Deer Creek Falls with other groups.	.60
I would have enjoyed the trip more if we had seen less people at side stops.	.79
It bothered me to meet so many people while floating on the river.	.74
I would have enjoyed the trip more if there hadn't been so many boats going by.	.77

Table 6 Continued:

item	item to total correlation
I would have enjoyed the trip more if we had seen less people while floating on the river.	.80

Reliability = .91, Mean = 18.6, S.D. = 6.6

Perceived Crowding at Lee's Ferry

item	item to total correlation
It bothered me to see so many people at Lee's Ferry.	.62
I didn't think there were too many people at Lee's Ferry.	.62

Reliability = .76, Mean = 4.1, S.D. = 1.8

Preference for Seeing More People

item	item to total correlation
I would have enjoyed meeting more other parties during the trip.	.51
I wish we had seen more people at side stops.	.66
I wish we had seen more people while floating on the river.	.65

Reliability = .77, Mean = 1.4, S.D. = .63
For this scale, item values were combined and divided by 3.

Table 6 Continued:

B. Attitude Toward Developments and Conveniences

Developments

items	item to total correlation
More developments like Phantom Ranch should be built along the river.	.41
They should build an aerial tramway into the Canyon so more people could enjoy it.	.41

Reliability = .57, Mean = 2.7, S.D. = 1.2

Conveniences

items	item to total correlation
I would have preferred to have more of the "conveniences of home."	.55
I would have enjoyed the trip more if we had had better camping facilities.	.55
I didn't expect to have sand in everything.	.39

Reliability - .67, Mean = 4.9, S.D. = 1.9

C. Pace of Trip

items	item to total correlation
On our trip we had plenty of time for hiking and exploring	.56

Table 6 Continued:

items	items to total correlation
Our trip traveled at a leisurely pace.	.55
On our trip we mostly sat on the boat rather than taking side trips.	.37
We often had relaxed conversations while we were on the river.	.41
On our trip we floated quietly on the river.	.38
We were encouraged to get off the boat to see the Canyon.	.41
Our trip traveled too fast.	.43

Reliability = .73, Mean = 22.9, S.D. = 3.6

D. Expectations

item	item to total correlation
I didn't expect the rapids to be so powerful.	.36
I really didn't have a very clear idea of what a trip through the canyon would be like.	.42
I didn't expect the Canyon itself to be so overwhelming.	.41

Reliability = .68, Mean = 6.5, S.D. = 2.3

Table 6 Continued:

E. Fear

item	item to total correlation
I was scared a lot of the time.	.56
The hiking and climbing were frightening.	.39
The power of the water frightened me.	.48
I didn't expect to be scared so much of the time.	.42

Reliability = .68, Mean = 6.3, S.D. = 2.2

F. Weather

item	item to total correlation
The weather was often too hot or too cold.	.45
It rained a lot during our trip.	.42
The weather made me uncomfortable much of the time.	.50
It was cloudy a great deal of the time.	.49

Reliability = .68, Mean = 7.4, S.D. = 2.5

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APPENDIX I

PARTICIPANT OBSERVER FORMS

DAILY RIVER CONTACTS

Day ___ of ___. Trip: _____

	CONTACT	1	2	3	4	5	6	7	8	9
	Group name									
	Time in sight (min.)									
	Duration of contact (min.)									
Trip type	(1) oar (2) motor									
	(1) private (2) commercial									
Size of Contact	Total # people									
	Total # boats									
	People per boat									
PASSENGERS: Nature	(1) ignored (2) wave only (3) verbal greeting (4) chat (5) conversation									
PASSENGERS: Reaction	(1) negative (2) neutral (3) positive									
BOATMAN:	Nature as above									
	Reaction as above									

Interpretive comments — Total:

Time spent talking (hours) — Total:

Adjustments for crowding — Total:

ATTRACTION SITE STOPS

Trip: _____

	Site Number	1	2	3	4	5	6	7	8	9
Site Name										
	Day of trip									
	Time stopped									
	Length of stop (hours)									
Trip type	(1) oar (2) motor (3) both									
	(1) private (2) commercial (3) both									
Size of Contact	Total # groups									
	Total # boats									
	Total # people									
PASSENGERS: Nature	(1) ignored (2) wave only (3) verbal greeting (4) chat (5) conversation									
PASSENGERS: Reaction	(1) negative (2) neutral (3) positive									
BOATMAN:	Nature as above									
	Reaction as above									

TRIP SCHEDULE

Outfitter:_____ Propulsion:_____ Trip:_____

LOCATION Name	Mile	ARRIVE Time	Day	LEAVE Time	Day	STOP FOR
Lee's Ferry	0					

EVENING LOG

Trip: _____

	Day	1	2	3	4	5	6	7	8	9
INTERACTION On river	Amount									
	Quality									
Off river	Amount									
	Quality									
	"We" expressions (approx. number)									
	Group experience references (#)									
Group Complaints	(1) very little (2) moderate (3) a lot									

CAMPSITE CONTACTS

Trip: _____

	Contact	1	2	3	4	5	6	7	8	9
Location										
Proximity	(1) see or hear (2) see and hear (3) right next to other									
OWN PARTY Nature	(1) ignored (2) wave only (3) verbal greeting (4) chat (5) conversation									
Reaction	(1) negative (2) neutral (3) positive									
OTHER PARTY Reaction	As above									

SUMMARY SHEET

Observer:

Trip leaving date:

Outfitter

Length of trip _____days (first and last included).

Trip type (motor,oar):

Trip size:

People in party (include boatpersons):

Number of boats:

People per boat:

Number of questionnaires: _____ of _____ possible.

Debarkation point:

Any additional comments or unique aspects of this trip:

SUMMARY SHEET - Page 2

1. Orientation session '1) no 2) yes

2. Degree of information about how to behave on trip:
_____# of instructions.

3. Behavior patterns:

4. Sociogram:

APPENDIX 2

PARTICIPANT OBSERVER HANDBOOK

PARTICIPANT OBSERVER HANDBOOK

GRAND CANYON STUDY
SUMMER 1975

PARTICIPANT OBSERVER HANDBOOK

GRAND CANYON STUDY
SUMMER 1975

This document is not intended to be a substitute for your own guile, ingenuity and powers of observation, which you will undoubtedly need. It simply explains the various forms you will be completing and is organized into sections corresponding to the forms.

It is extremely important that all the information we gather is comparable; that is, similar observations recorded by different observers should be classified the same way. If data quality is poor at this point, no amount of sophisticated analysis will make it any better. This handbook, then, provides the common definitions necessary for uniform data collection. Please read it carefully and ask questions before you go to the Canyon. Be sure you have a copy to refer to while you are on the river.

You will undoubtedly encounter some situations which aren't covered by this book or earlier discussions. When this happens, you may want to make some notes on the form in question, but try to keep this to a minimum. If you think it's hard to categorize something in the field, you should try doing it three months later in an office when you weren't even there. The point is that you're in the best position to decide the issue, so put it in a category and then make an additional note if necessary.

This brings up a related point, neatness and legibility. At the risk of sounding pedantic, I urge you to be neat in filling out these forms. If you can't read it easily, a coder won't have a chance.

Doing this observing isn't difficult; it just requires that you pay attention and conscientiously record information. Have a good time, but be sure you see the things you're supposed to see and write them down accurately.

As a rule, stick with your group. If they go hiking, you go too. Don't sit around being chummy with the boatman. Remember, you're a tourist, and you want to get this experience from that point of view, although you will often know more about the river than other passengers or even boatmen. You'll have to be low-key about this --don't start being a source of information by "interpreting" the Canyon. You'll sometimes have to bite your tongue, and you may find yourself in "no man's land," not a boatman, not a passenger. This can be an uncomfortable position, but that's the way it goes. You'll work out your own way of dealing with it.

Try to be unobtrusive. You have to make notes, so you will be somewhat conspicuous, but you can minimize this. As much as possible, make your own decisions about your information--don't start eliciting reactions that aren't there or affecting ones that are. If people want to know who you are or what you're doing, tell them you're working on a study for Human Ecology Research about the Grand Canyon. A general statement about getting information that will help the Park Service decide

among various management alternatives seems to satisfy most people. Saying that you're keeping track of who you meet and where you stop explains your notebook. You can also tell people that they'll learn more about the study when they fill out the questionnaire. Don't talk about the specific items of information you're recording.

Keep your notes closed when you're not writing and don't leave them lying around. You can tell people whatever you want about your personal life.

These forms are important--the information on them is why you're running the river. Protect them--against water in rapids, wind gusts anytime, loss when you change them. In your daytime notebook, carry only information and forms for that day. If a form is damaged (e.g., gets wet, torn), repair or recopy it. If one is irreparably damaged or lost, get another form immediately and recollect as much information as possible onto the new form. Get some kind of a sturdy, waterproof container to keep the questionnaires and pencils in until you need them. You need only take as many as you'll need on that trip. We'll work out a storage arrangement at Lee's Ferry for the rest.

If you have problems or suggestions regarding items, people, getting information, etc., make notes about them so we can work out solutions. Don't hesitate to call HERS (303-444-3501) or Joyce at home (333-4050).

If your trip has more than one boat, you must change boats every day. Set up a rotation (e.g., for 3 boats, boat 1 day 1, then boat 2, then 3, then back to 1) so you ride all boats equally. If the trip assigns people to boats, explain your need to whomever does the assigning. Work it out as best you can.

Finally, remember that the outfitters are letting us accompany trips for cost of food only. We are their guests, so make an effort to be helpful around camp in whatever way you can.

DAILY RIVER CONTACTS, ATTRACTION SITE STOPS, TRIP SCHEDULE

You will need each of these sheets out during the day. If daily contacts on river exceed 8, you will need another form, so have 2 with you. The Off-River Contacts get one column per site (to be explained), so one sheet should last several days.

You'll get out early on the last day, so the evening log will be superfluous. You can also forget about contacts (both kinds) for that day.

DAILY RIVER CONTACTS - One sheet for each day you are on the river.

Day -- Second day of an 8-day trip would read "day 2 of 8."

Trip -- Your initials and the trip leaving date (e.g., B.F. 6/16)

Contacts -- Each column is for one contact, so for any given day the first contact goes in column 1, the second in column 2, etc. Boats together in one trip frequently travel apart, so you will have to decide when 2 boats are one big party and therefore one contact, or when they are 2 separate parties. If more than 5 minutes

separate the boats, consider them separate contacts. You'll find you can memorize these contacts and write them down when it's convenient.

A specific problem arises when you see the same trip more than once. If another trip is traveling at about the same speed you are, you may be in and out of their sight several times (perhaps for an extended period of time). When this happens, count it as one contact and record just the time when you are actually in sight.

However, if (for example) you pass a trip, get out of sight, then slow or stop and they pass you, this counts as two separate contacts. You may find you'll contact the same trip numerous times when you are on similar schedules.

Group Name -- First four letters of outfitter name or "Priv." for a private trip. This will help you keep track when you meet the same trip more than once.

Time in Sight -- The number of minutes during which you are in sight of the party contacted. This will be different from the duration of the contact itself. You'll have to pay attention and sometimes do some estimating for this.

Duration -- The number of minutes during which you were in close proximity with the other party. Start timing when they get within 20-30 yards (talking distance) of your boat, stop when they get more than 20-30 yards away. There may be times when you don't get this close--then the duration is zero. Round off this and time in sight to the nearest minute. Be as accurate as possible.

Trip Type -- Type of trip contacted. Fill in one box to indicate oar or motor, one to indicate private or commercial. Commercial boats generally have company names printed on them, and private trips look generally smaller (less than 15 people) and less "professional."

Size -- For the trip contacted, count as accurately as possible, 1) the total number of people (all boats), 2) the number of boats. Then divide number of people by number of boats, rounding off to nearest whole number. (This can be done later if necessary.)

Nature of Contact -- You have to decide about this and categorize as best you can. For the encounter as a whole, indicate whether the action of those in your group was marked by:

1) no recognition--the encounter was ignored, no one even waved.
2) physical recognition--waved greetings but no speaking.
3) verbal recognition--spoken greetings but no conversation
4) stopping or adjusting speed to chat.
5) a prolonged conversation (longer than 5 minutes).

Reaction -- The reaction of your own party within 5 minutes after the contact. You have to decide on one category. If no one says anything, it's neutral. If one or several people make negative comments, it's negative, and the same for positive. If there are equal numbers of negative and positive comments, you're back to neutral, but if one or the other sentiment is stronger or a majority, mark it accordingly. In other words, try to stay out of the neutral category when there is justification for doing so.

Boatman -- Nature of and reaction to encounter. Same categories and strategy as for passengers. The point is that boatmen and passengers often react differently, so you will have to differentiate their responses.

A common exchange among boatmen is to ask, "Where are you camping?" This is more than just a verbal greeting but not a conversation, so it goes in the "chat" category.

Empty Boats -- If you pass an empty boat (e.g., the people are all off on a hike), record the number and type of boats with no people. A boat with boatmen and no passengers is similar--just record what you see. When passing a camped party, try to estimate the number as best you can, remembering people are scattered all over.

Interpretive Comments -- These are things the boatman says which are intended for all the people on the boat--so private conversations not audible to all don't count. They are explanatory statements about history, geology, biology, rapids, anecdotes, etc. You want a total number for each day. You'll have to find a way to count these without diving for your notebook every time the boatman opens his mouth. You can just remember the number (sometimes difficult), or you could have a dozen or so small pebbles in one pocket and transfer one to another pocket for each comment. You can then count the appropriate pocket at your convenience and write it down, then get a total for the day.

Defining this variable has been a major problem, since on some trips conversations regarding the Canyon may go on for hours. Anyway, here's what one is. An interpretive comment is any new piece of information about the Canyon given by the boatman. It can be voluntary or a response to a question, as long as everyone on the boat can hear it. In a conversation, each distinct new piece of information counts as one, so (for example) information about the same rock formation is only one comment until a new formation or process comes up or the subject changes to something else. Distinctly different identifications (animals, plants, rocks, etc.) also count as one comment each. The boatman's personal life doesn't count, except when the story conveys what would otherwise be interpretive information.

You count these only during the day; i.e., from the time you're ready to board the boats in the morning until you get to camp at night. Comments made while off the boats (as at an attraction site stop) count as described above, but only if they are addressed to most of the people on the trip. This allows for one or a few who stayed behind, but it's got to be a group lecture type thing.

Time Spent Talking -- Is similar to above, but is just an estimate of the total number of hours during the day that the boatman spent with his mouth open, regardless of what was said. You may want to estimate this for morning and afternoon and then combine. Include group lectures during stops, adding them to your boatman's time.

Adjustments for Crowding -- What you want to know here is how many times the boatman modified his plans as a result of crowding. For example, did he go further than planned because campsites were taken? Or was a stop passed because others were there? We're interested in instances which are apparent to the passengers, so you don't need any inside information. You should have a total number for each day.

ATTRACTION SITE STOPS - Each stop along the river gets one column, whether you see anyone there or not (does not include lunch stops unless they are at an attraction site, or rapids except as described below). Such sites are side canyons, waterfalls, etc. A stop means the boats were landed and people got out. Record stops in order of your trip. When you get to the end of one sheet, start another.

So, for stop #1 (and each succeeding one), you fill out the corresponding column as follows: Site name--the boatman should tell you this. If he doesn't or you miss the big announcement, ask him. Just write it in there. Also record the day of your trip (1, 2, etc.), the time you stopped there (3:45 p.m.), and the length of your stop (1.5 hours). The rest of the column refers to encounters with other trips at the site in question. If you see no one there, write "NC" (no contact) in the next box and leave the rest of the column blank. If you see anyone (hikers don't count if they didn't come on the river), fill out the column as per explanation in River Contact section, except that there may be several trips stopped at the site. You can tell this by looking at company names on boats and boat types. If, for example, you stop and find 2 Western Rivers motor boats and 2 ARTA oar boats, plus 3 scroungy-looking little oar boats, you fill in choice (3) for both oar and motor, (3) for commercial and private (the scroungy ones), 3 for groups, 7 for boats and try to count the total number of people. The people may be all strung out from the boat on up to some neat place, so you may do better asking boatmen or passengers how many people are in their party. They may also be helpful in sorting out the other variables, but try not to run up with your clipboard waving.

For the other items (nature of contact, etc.), characterize the people on your trip (or boat) as a whole. Don't ask people their reaction, just pay attention and listen. Again, passengers and boatmen are recorded separately; whatever your boatman does goes in his section; what the passengers (on your trip) do goes in their section. Do the best you can.

Any time (except at campsites) you contact another party and both your group and the one contacted are off the river, it goes on this sheet. This includes meeting someone while stopped to look at rapids. Unless boatmen make an effort to include all the passengers in looking at a rapid, it is not generally considered an attraction site (i.e., doesn't get a column with "NC"). However, if boatmen make the rapid a group project or if you meet another party, attraction sites is where it goes. Don't forget that all stops for rapids go on the "Trip Schedule."

TRIP SCHEDULE - This is a detailed itinerary of your trip down the river. Any time your trip stops for more than 15 minutes, for whatever reason, fill out a line on this sheet. Boatmen (or a guide book) can help you with mileages. "Day" is day 1, 2, etc. of your trip. "Stop for" is the purpose of the stop, "A" for attraction site, "C" for camp, "L" for lunch.

EVENING/LOG, CAMPSITE CONTACT

These get filled out when you're off the river for the day, so you don't need to carry them.

EVENING LOG - Fill this out each evening, or perhaps the following morning--sometime when you can get a few minutes to yourself. When you are changing forms for

the day is a good time. Please do this each day. I know it's a bother, but do it anyway. Each day gets one column. So, for day #1, column one gets the following:

Interaction -- This is the socializing which took place within your group (not with other parties). Taking the day as a whole (but not forgetting any outstanding events), rate interaction on the river (while you were traveling and perhaps in separate boats), and off the river (while you were stopped or camped and potentially all together). Use the rating scale below. Use the same scale for interaction on and off the river. Try to characterize group as a whole. Record responses on "Evening Log."

Amount of Interaction

1) requests and responses, questions and answers, but nothing sustained.
2) minimal conversation among a few.
3) sustained conversation among a few.
4) sustained conversations among more than just a few.
5) everyone was talking almost all the time.

Quality of Interaction

1) indifferent or negative exchanges.
2) neutral--interaction took place but had no substance.
3) friendly and interested but superficial.
4) friendly, warm, beyond superficial or idle, "polite" conversations--i.e., interaction seemed meaningful and rewarding for people.
5) everyone was just having the best time possible.

"We-ness" Question -- We're trying to get a sense of group unity--the extent to which members of the group feel they are a whole rather than disparate parts. One good indicator of this is to estimate the number of times people use the expression "we" to refer to the group as a whole as distinct from other groups or as distinct from their immediate primary group (i.e., the wife, husband, kids, best friend, etc.). Just keep track of the number of times (this can be approximate) that "we" is used to refer to all the people on the trip, and record it each day.

Group Experience -- One common facilitator of group cohesion is the extent to which people experience things together--the things may in this case range from jokes to crises. These experiences become meaningful to group members in a way that distinguishes them from people who are not in the group. Please keep a record of verbal references to these happenings and record it daily.

Group Complaints -- Make a daily estimate of the amount of complaining about features of the trip in general. Include complaints about things that affect everyone, but don't include personal complaints like losing glasses, constipation, or breaking a leg.

CAMPSITE CONTACT - Complete one of these forms each time you camp within sight or hearing of another party which is also camped. This means that if (for example) your group camps at an attraction site and the next morning another party stops there, it's an attraction site contact, not a campsite one. Just fill in the appropriate numbers. If your trip has no contacts, write "no contacts" on one of these sheets and include it with your other forms.

QUESTIONNAIRE

Ideally, these get distributed the last night you're on the river. Check with the boatman so you get this right. Everybody (except commercial boatmen and their employees) gets one. Boatmen's helpers who are along for the first time and one trip only can also fill out one. Find out and note the number of eligible people.

Pass questionnaires out when people will have an hour of daylight free to fill them out. Get the boatman to help you schedule this so people aren't running off to eat or play volleyball instead of doing your questionnaire. These contingencies may necessitate moving to the next to the last night; the idea is to do it when people will be at ease and won't be missing something else. Head boatmen have been very helpful--just give them enough warning. Try to get a questionnaire back from everyone--don't be obnoxious, but be persistent. Get them back as soon as you can.

A good plan here is to get the boatman to let you make an announcement right when the boats are unloaded on last night. Tell everyone what you're doing, and tell them you have a questionnaire for them. Tell them you'll bring it around while they're setting up for the night, and you'd appreciate it if they could fill them out before supper. This gives them a deadline and a time to fill them out, which seems to help. Then have your box handy, so they can bring them back. If someone objects to some item (e.g., their income), ask them to complete the others and leave that one blank.

If you get questions or complaints about specific items, make a note of the item and the problem. Don't get into interpretations--you can help with instructions if necessary, but they should be self-explanatory. Stress that information is confidential.

If boatmen ask to see a questionnaire, it's o.k. to let them. However, be sure to get them back. We'll send them one at the end of the summer if they want.

People who leave the trip at Phantom Ranch don't get a questionnaire. People who come in at Phantom can do a questionnaire, but make a note on the cover sheet of their questionnaire to that effect. This is important as it alters some of the information.

Sometime after the trip and before your next one, look through the questionnaires. You may be able to fill in missing information (initial if you do) and/or spot problems and learn for next time. You may also find people's comments interesting.

SUMMARY SHEET

Each trip gets one of these. Fill out all the information, put your contact and evening log sheets in order, put the completed summary sheet on top and put something (e.g., a rubber band, string) around the whole thing. This is very important, as we need to associate these trip characteristics with both your P.O. forms and the questionnaires. If you screw this up, we'll have a real mess, so do it right after each trip is over. This is where you'll need to know how many questionnaires you should have gotten, the number of people in your party, and so on. If the number in your party changed during the trip, make it clear where and how this happened.

Page 2 of summary sheet also gets filled out at the end of the trip as follows:

Information about Behavior on Trip -- Try to attend the orientation session for each trip. Although this may be boring (particularly if you've been on the river several times), we want to find out how much information regarding "appropriate" behavior on the river is given to the passengers beforehand. Most outfitters give a lot of basics about safety, but some get down to details like "We don't want you pushing each other off the boat," or "You must be ready for breakfast by 7:00 a.m. each morning." Make a list of all the instructions (either during or after the orientation session), count them up, and put a number in the blank. If you are unable to attend the session, ask several of the passengers how much and what kind of information was given during the orientation session.

Behavior Patterns -- Usually after the first few days, social behavior falls into predictable patterns. For example, there may be group singing every night after dinner; or two people may share a water cup because one has lost his; or the same person may make the salad or coffee every night. What we'd like you to do is list these behavior routines as briefly as possible. You will probably want to keep a running list rather than wait until the end of the trip. You should not include the routine of the group as a whole--like the fact that you were on the river by 7:00 a.m. every morning. Rather, we're interested in the number of regular behavior sequences performed by members in the group. In this item, note that we're interested in overt behavior (like when the same person always leads a hiking trip) rather than verbal expression or the fact that John talked to Sue all day. Patterns of the latter type will be measured in the next question.

Sociogram -- By the end of the trip you should be able to identify all the passengers. Please do this now (using names or symbols), but organize them spatially to indicate cliques--i.e., subgroups of people who interact more frequently or more intensely with each other than with others. So, for example, a group of 5 people who talk to each other about equally and do things together most of the time would be pictured as follows:

Example 1: Jay, Barbara, Mike, Betty, Susan

If Barbara and Jay went off together alone a lot, but still did some things with the other three, the sociogram would look like this:

Example 2: Mike, Betty, Susan
Barbara, Jay

If there was little or no communication between Barbara and Jay on the one hand and Mike, Betty and Susan on the other, your picture would be as follows:

Example 3: Mike, Betty, Susan Barbara, Jay

What we're trying to get here is an idea of the degree of overall linkage between members of the trip. For example, if there are two boats and the people in each tend to stick together, you would list them by boat and in separate columns (as above) to indicate a lot of linkage among members of each boat but very little between boats.

If any people were truly gregarious--i.e., talked with everyone about equally, sat next to different people rather than the same person or group each time--this can be indicated by a star (*) by their name.

A person who tends to stay alone, avoids others, or who is particularly disliked by a lot of others can be identified by a minus (-) sign. (We don't care whether they are the rejecter or the rejected, we're interested in the fact that they are loners.)

Here is another sociogram example:

Example 4:

Bob & Nancy Margaret & Bill Martha & Henry John & Jill	(4 couples that stayed together most of the time)	Jay and Barbara (lone couple)
Ralph & Sue Henry & Harriet Gertrude and Mike	(3 older couples who spent some time together)	Ronald - (isolate)
Don and his 3 kids Alice & May	(talked a lot with Gertrude & Mike) (helped Don with his kids)	Dan & daughter Susan* (mixed with everybody)

Specifically, 1) names that are strung together indicate the closest connections; 2) names that are vertically placed and connected with a line indicate moderate to heavy contact; and 3) names that are horizontal but with large spaces between them (example 3 above) indicate little or no contact.

APPENDIX 3

PASSENGER QUESTIONNAIRE AND INTERVIEW, BOATMAN QUESTIONNAIRE, AND COMBINATION TRIP QUESTIONNAIRES

Appendix 3a

GRAND CANYON USER SURVEY

Summer 1975

Information gathered in this questionnaire will be used for research purposes only. Don't put your name on the questionnaire.

We're interested in outdoor experiences in general and in your Grand Canyon trip in particular. This questionnaire has several sections in which we ask about these things. We'd like to know your response to each item. Please don't discuss items with others!

There are no "right" or "wrong" answers. Answer what you believe to be true for you. If you are not sure, pick the answer that comes closest to how you feel. So, relax as you're answering these questions -- no need to ponder or worry -- your most natural response is the best. Just circle the number next to each item to indicate your answer.

Please feel free to respond to this questionnaire, either generally or in relation to specific items, by making a note in the margin or writing on the last page.

OMB #42-S75014
Expires December, 1975

Of the following activities, which do you commonly engage in?

	Never	Seldom	Occasionally	Frequently
Back packing	1	2	3	4
Hiking	1	2	3	4
Camping	1	2	3	4
Mountain climbing	1	2	3	4
River tripping	1	2	3	4

Here is a list of possible features or activities associated with wilderness-type recreation. For each one, circle the number that best expresses your attitude. We want to know how positive or negative you feel about having that feature or participating in that activity in a wilderness recreation setting.

	Strongly Dislike	Mostly Dislike	Mostly Favor	Strongly Favor
Campsites with plumbing	-2	-1	+1	+2
Equipped bathing beaches	-2	-1	+1	+2
Camping with car	-2	-1	+1	+2
Gravel roads	-2	-1	+1	+2
Automobile touring	-2	-1	+1	+2
Campsites with outhouses	-2	-1	+1	+2

Please indicate the degree to which you agree that each of the following environmental damage conditions exists in the Grand Canyon.

	Strongly Disagree	Probably Disagree	Probably Agree	Strongly Agree
Excessive litter	-2	-1	+1	+2
Trampling of natural vegetation	-2	-1	+1	+2
Over-use of campsites	-2	-1	+1	+2
Over-use of visitor attraction sites (like Deer Creek Falls)	-2	-1	+1	+2

During the trip did you ever feel you weren't sure what was expected of you as a passenger?

1) No 2) Yes, at first 3) Yes, occasionally 4) Yes, most of the time

In the next section are a number of statements about the Grand Canyon and your trip through it. For each one, just circle the response which is closest to the way you feel. "Probably agree" means you agree more than you disagree with the item. "Probably disagree" means you disagree more than you agree. Some items may seem similar. Actually, all items are different.

	Strongly Disagree	Probably Disagree	Probably Agree	Strongly Agree
The Canyon seems relatively unaffected by the presence of man.	-2	-1	+1	+2
On our trip we had plenty of time for hiking and exploring.	-2	-1	+1	+2
I would have enjoyed meeting more other parties during the trip.	-2	-1	+1	+2
The Canyon would be more of a wilderness if use were more restricted.	-2	-1	+1	+2
It was always easy to ask the boatman questions about the Canyon.	-2	-1	+1	+2
Our trip traveled at a leisurely pace.	-2	-1	+1	+2
Our trip would have been better if we had met fewer people along the way.	-2	-1	+1	+2
On our trip it often smelled like engine exhaust.	-2	-1	+1	+2
I particularly enjoyed this trip because the boatmen were friendly and interesting.	-2	-1	+1	+2
The places we stopped (like Redwall Cavern) were often too crowded.	-2	-1	+1	+2
The trip provided me an opportunity to get to know people better than I usually do.	-2	-1	+1	+2
The weather was often too hot or too cold.	-2	-1	+1	+2
The Grand Canyon environment is not being damaged by overuse.	-2	-1	+1	+2
On our trip we mostly sat on the boat rather than taking side trips.	-2	-1	+1	+2
More developments like Phantom Ranch should be built along the river	-2	-1	+1	+2
We often had relaxed conversations while we were on the river.	-2	-1	+1	+2
I don't think we went far enough each day.	-2	-1	+1	+2
Too often we had to camp near other parties.	-2	-1	+1	+2
I felt safe and secure in the boats we traveled in.	-2	-1	+1	+2

	Strongly Disagree	Probably Disagree	Probably Agree	Strongly Agree
The people in our party were very important to me.	-2	-1	+1	+2
On our trip we floated quietly on the river.	-2	-1	+1	+2
I would consider the Grand Canyon area of the Colorado River a "wilderness."	-2	-1	+1	+2
They should build an aerial tramway into the canyon so more people could enjoy it.	-2	-1	+1	+2
We were encouraged to get off the boat to see the Canyon.	-2	-1	+1	+2
It bothered me to see so many people at side stops.	-2	-1	+1	+2
It rained a lot during our trip.	-2	-1	+1	+2
The trip provided me an opportunity to share my experiences with others more than I usually do.	-2	-1	+1	+2
The Canyon would be more of a wilderness if motor travel were banned.	-2	-1	+1	+2
I don't think we met too many people during our trip down the river.	-2	-1	+1	+2
Our trip traveled too fast.	-2	-1	+1	+2
I particularly enjoyed this trip because the people were friendly and interesting.	-2	-1	+1	+2
After we get off the river, I expect to meet with new friends made on this trip.	-2	-1	+1	+2
The Canyon is too crowded to be considered wilderness.	-2	-1	+1	+2
The weather made me uncomfortable much of the time.	-2	-1	+1	+2
Our trip was awfully noisy.	-2	-1	+1	+2
Too often we had to share a place like Deer Creek Falls with other groups.	-2	-1	+1	+2
After we get off the river, I expect to write to new friends made on this trip.	-2	-1	+1	+2
It was cloudy a great deal of the time.	-2	-1	+1	+2

Following are some statements relating to personal aspects of your trip. Please indicate your response for each item by circling the appropriate number. Remember, there are no "right" or "wrong" answers.

	Strongly Disagree	Probably Disagree	Probably Agree	Strongly Agree
The trip was demanding for me.	-2	-1	+1	+2
I would have enjoyed the trip more if we had seen less people at side stops.	-2	-1	+1	+2
I didn't expect to have sand in everything.	-2	-1	+1	+2
I feel the trip was a really valuable experience.	-2	-1	+1	+2
I felt closer to nature.	-2	-1	+1	+2
I was scared a lot of the time.	-2	-1	+1	+2
It bothered me to meet so many people while floating on the river.	-2	-1	+1	+2
I didn't expect the rapids to be so powerful.	-2	-1	+1	+2
I didn't like being so controlled by the natural environment.	-2	-1	+1	+2
I would have enjoyed the trip more if there hadn't been so many boats going by.	-2	-1	+1	+2
I expected to see more people at Lee's Ferry.	-2	-1	+1	+2
I would have enjoyed the trip more if we had had better camping facilities.	-2	-1	+1	+2
I gained some degree of communion with nature.	-2	-1	+1	+2
I benefited from exposure to the elements.	-2	-1	+1	+2
The hiking and climbing were frightening.	-2	-1	+1	+2
I really didn't have a very clear idea of what a trip through the canyon would be like.	-2	-1	+1	+2
I didn't expect to have to sleep out.	-2	-1	+1	+2
I learned a great deal of new information about				
geology	-2	-1	+1	+2
rivers	-2	-1	+1	+2
ecology	-2	-1	+1	+2
nature in general	-2	-1	+1	+2
The power of the water frightened me.	-2	-1	+1	+2
It bothered me to see so many people at Lee's Ferry.	-2	-1	+1	+2

	Strongly Disagree	Probably Disagree	Probably Agree	Strongly Agree
I would have enjoyed the trip more if we had seen less people while floating on the river.	-2	-1	+1	+2
I didn't expect the extremes of heat and cold.	-2	-1	+1	+2
I experienced new feelings.	-2	-1	+1	+2
I wish we had seen more people at side stops.	-2	-1	+1	+2
I would have preferred to have more of the "conveniences of home."	-2	-1	+1	+2
I didn't expect the Canyon itself to be so overwhelming.	-2	-1	+1	+2
I learned things about myself.	-2	-1	+1	+2
The experience was personally challenging.	-2	-1	+1	+2
I didn't think there were too many people at Lee's Ferry.	-2	-1	+1	+2
I acquired new skills.	-2	-1	+1	+2
My physical condition improved.	-2	-1	+1	+2
I didn't expect to be scared so much of the time.	-2	-1	+1	+2
I wish we had seen more people while floating on the river.	-2	-1	+1	+2

In the following sections, we are interested in some recollections you may have regarding your trip. In each case, list as many responses as you can. Please give only responses you recall on your own (that is, don't consult your guidebook or trip journal). This isn't a test; we just want to know your response. Whatever you come up with will be fine.

List the names of as many rapids as you can recall.

1 _____	6 _____	11 _____	16 _____
2 _____	7 _____	12 _____	17 _____
3 _____	8 _____	13 _____	18 _____
4 _____	9 _____	14 _____	19 _____
5 _____	10 _____	15 _____	20 _____

List the names of the various places you visited along the way (Deer Creek Falls, for example).

1 _____	6 _____	11 _____	16 _____
2 _____	7 _____	12 _____	17 _____
3 _____	8 _____	13 _____	18 _____
4 _____	9 _____	14 _____	19 _____
5 _____	10 _____	15 _____	20 _____

List the names of any geologic features or processes you learned about on the trip.

1 _____	6 _____	11 _____	16 _____
2 _____	7 _____	12 _____	17 _____
3 _____	8 _____	13 _____	18 _____
4 _____	9 _____	14 _____	19 _____
5 _____	10 _____	15 _____	20 _____

About how many books or articles have you read about the Grand Canyon or the Colorado River?
1) None 2) One 3) 2 or 3 4) 4 or 5 5) 5 or more

Did you carry a guidebook and consult it at least several times each day?
1) No 2) Yes

How many time have you run the Grand Canyon before this trip?
1) None 2) Once 3) Twice 4) 3 or more times

How many other whitewater river trips have you been on?
1) None 2) One 3) 2 or 3 4) 4 or more

What type of river trips have you been on (before this trip)?
1) Not applicable 2) Oar 3) Motor 4) Have been on both

When you were deciding to go on a trip through the Grand Canyon, how important was each of the factors listed below?

	Not Important	Somewhat Important	Very Important
Getting to see the Grand Canyon from the river.	1	2	3
Being with family or friends.	1	2	3
The excitement and adventure of the river running itself.	1	2	3
Meeting new and interesting people.	1	2	3
Being in the wilderness.	1	2	3

In deciding to go on this trip, what was the relative importance of these factors? Please rank them from the most important (1) to least important (5).

_____ Getting to see the Grand Canyon from the river.

_____ Being with family or friends.

_____ The excitement and adventure of the river running itself.

_____ Meeting new and interesting people.

_____ Being in the wilderness.

In this section we'd like to know how you feel about encounters with other trips. In each case, just circle the number which best expresses the way you feel.

While floating on the River, how many other parties would you prefer to see each day? (circle one)

None 1 2 3 4 5 6 to 10 11 to 20

Would you be willing to do any of the following things to get this preference? (circle one answer for each item)

Pay $100 more.	No	Yes
Wait a year longer to go on the trip.	No	Yes
Follow a more strict schedule (of campsites, stops, etc.) during the trip.	No	Yes
Take the trip in April or October.	No	Yes
Have less flexible schedules of trip departure dates.	No	Yes

How many parties per day did you expect to see while floating on the river?

None 1 2 3 4 5 6 to 10 11 to 20

didn't know what to expect

Your trip probably stopped at the Little Colorado River and Havasu Creek, and you probably saw other parties at both places.

Would you be willing to miss stopping at one of these places if you were assured of seeing no one at the other?	No	Yes
Would you be willing to miss stopping at one of these places if you saw only half as many people at the other?	No	Yes
Would you be willing to hike further at these places to avoid seeing other people?	No	Yes

Overall, how many people did you expect to see during your trip?

1) Less than you actually saw
2) About as many as you saw
3) More than you saw
4) Didn't know what to expect

If you had to choose, which would you rather see in a day?
1) 3 large parties (20-40 persons each) and no one else OR 2) 6 small parties (10-20 persons each) and no one else

Which size of trip would you rather meet while floating on the river?
1) Small (20 persons or less 2) Medium (20-30 persons) 3) Large (30-40 persons) 4) Makes no difference

With which size of trip would you rather run the river?
1) Small (20 persons or less 2) Medium (20-30 persons) 3) Large (30-40 persons) 4) Makes no difference

Which would you rather meet while floating on the river?
1) Oar trips 2) Motorized trips 3) Makes no difference

Would you rather run the river with
1) An oar trip 2) A motorized trip 3) Makes no difference

Which would you rather meet while floating on the river?
1) Private trips run by those taking the trip 2) Commercial trips run by outfitters 3) Makes no difference

Assuming you could do either, would you rather run the river with
1) A private trip 2) A commercial trip 3) Makes no difference

At various stops along the river, such as Deer Creek Falls, which size of party would you rather meet?
1) Small (10-20 persons) 2) Medium (20-30 persons) 3) Large (30-40 persons) 4) Makes no difference

At these places would you rather
1) Stop at half of them and be assured of solitude OR 2) Stop at all of them and meet other parties

If you had a choice, would you prefer a campsite
1) On the same beach as another party 2) Where you might be able to see or hear another party 3) Out of sight and hearing of others

Does outboard motor noise bother you?
1) No 2) Yes

Overall, how would you rate your trip?

1) Fair, it just didn't work out very well
2) Good, but I wish a number of things could have been different
3) Very good, but could have been better
4) Excellent, only minor problems
5) Perfect

Specifically, what would have made your trip a more enjoyable one?

_____

_____

_____

_____

What aspects of the total trip contributed most to your enjoyment?

_____

_____

_____

_____

_____

In this final section we would like to ask some questions about your background which will help us compare your answers to those of other people. Again, we should stress that all of your answers are strictly confidential.

How old are you? ___ years old

Are you ___ male ___ female

How many years of school have you completed?
___ 1 ___ 2 ___ 3 ___ 4 ___ 5 ___ 6 ___ 7 ___ 8 ___ 9 ___ 10 ___ 11 ___ 12

___ Some college ___B.A. or equivalent ___ M.A. or equivalent

___ Advanced degree (M.D., Ph.D., etc.)

What is your primary occupation? _____

_____

Please be as specific as possible. If you are a homemaker or student, please indicate. If retired, give former occupation.

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

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

Are you
1) single 2) separated, divorced, or widowed 3) married 4) other

How many children do you have? ___

Where do you presently live?
1) Rural area 2) Small town 3) Small city 4) Suburban area 5) Large city

Where did you live (mostly) when you were growing up?
1) Rural area 2) Small town 3) Small city 4) Suburban area 5) Large city

Are you now a member of an outdoor or conservation organization such as a mountain club or Sierra Club?
1) No 2) Yes

How many years ago did you go on your first wilderness-type trip?
1) This is the first 2) One year 3) 2-3 years 4) 4-5 years 5) 6 or more years

Appendix 3b

Trip type: 1) Private 2) Commercial Trip _____
Trip type: 1) Motor 2) Oar
This person member of a charter group (more than 6 people)
1) Yes 2) No
This person a trip leader or organizer
1) Yes 2) No

1. Initial information source for taking a river trip
   1) Husband or wife did this, I just went along
   2) Found out through people at work
   3) Through members of club or outdoor organization
   4) Through institution like a university
   5) Through non-work friends
   6) Saw an advertisement
   7) Received unsolicited brochure(s)
   8) Information from travel agent
   9) Run other rivers, wanted to do this one
      Then, what led you to your first trip?
      1 2 3 4 5 6 7 8 (from above)
   10) Had run Colorado River before, wanted to come again
      Then, what led to your first trip?
      1 2 3 4 5 6 7 8 (from above)

   11) Other (specify) _____

2. Why this kind of trip?

   Private/commercial
   1) Unaware of difference
   2) Purposely chose private/commercial trip because it is consistent with beliefs, principles, philosophy; expertise; or for safety reasons.
   3) Other (specify) _____

   Motor/oar
   1) Unaware of difference
   2) Purposely chose motor/oar trip because of beliefs, philosophy, expertise or safety.
   3) Other (specify) _____

3. Why this particular trip?

   Commercial

   1) Didn't actually choose; it was organized by someone else
   2) No choice; husband, wife or friends chose it
   3) Actually, unaware that there were other outfitters
   4) Friend recommended this outfitter
   5) Chose this one from a number of others based on brochure [time]
      a) Trip fit the time frame available
      b) Trip fit budget constraints
   6) Wanted an oar trip; knew this outfit ran oar trips
   7) Wanted a motor trip; knew this outfit ran motor trips
   8) Went with this company before, wanted to go again. Then, how did first trip come about?
      1 2 3 4 5 6 7 (above)
   9) Other _____

   Private

   1) Not relevant, the only choice
   2) Because I liked the people; knew social climate would be good
   3) Because of expertise of people
   4) The group was running this particular river
   5) Other _____

GRAND CANYON SURVEY

Summer 1975

Boatman Questionnaire

Information gathered in this questionnaire will be used for research purposes only. Don't put your name on the questionnaire.

Boatmen frequently have opinions about the Canyon. This questionnaire has several sections in which we ask about your views. It is a shortened version of the passenger questionnaire, much of which would be irrelevant for you. We'd like to know your response to each item. Please don't discuss items with others.

There are no "right" or "wrong" answers. Answer what you believe to be true for you. If you are not sure, pick the answer that comes closest to how you feel--your most natural response is the best. Just circle the number next to each item to indicate your answer.

Please feel free to respond to this questionnaire, either generally or in relation to specific items, by making a note in the margin or writing on the last page.

OMB #42-S75014
Expires December, 1975

In this section are a number of statements about the Grand Canyon and your trips through it. For each one, just circle the response which is closest to the way you feel. "Probably agree" means you agree more than you disagree with the item. "Probably disagree" means you disagree more than you agree. Some items may seem similar. Actually, all items are different.

	Strongly Disagree	Probably Disagree	Probably Agree	Strongly Agree
The Canyon seems relatively unaffected by the presence of man.	-2	-1	+1	+2
The Canyon would be more of a wilderness if motor travel were banned.	-2	-1	+1	+2
I don't think we meet too many people during our trips down the river.	-2	-1	+1	+2
Too often we have to camp near other parties.	-2	-1	+1	+2
I would prefer to have more conveniences in the Canyon.	-2	-1	+1	+2
I would enjoy meeting more other parties during the trip.	-2	-1	+1	+2
The Canyon would be more of a wilderness if use were more restricted.	-2	-1	+1	+2
The places we stop (like Redwall Cavern) are often too crowded.	-2	-1	+1	+2
Our trips would be better if we met fewer people along the way.	-2	-1	+1	+2
The Grand Canyon environment is not being damaged by overuse.	-2	-1	+1	+2
More developments like Phantom Ranch should be built along the river.	-2	-1	+1	+2
Too often we have to share a place like Deer Creek Falls with other groups.	-2	-1	+1	+2
I don't like being controlled by the natural environment.	-2	-1	+1	+2
The Canyon is too crowded to be considered wilderness.	-2	-1	+1	+2

	Strongly Disagree	Probably Disagree	Probably Agree	Strongly Agree
I would consider the Grand Canyon area of the Colorado River a "wilderness."	-2	-1	+1	+2
They should build an aerial tramway into the Canyon so more people could enjoy it.	-2	-1	+1	+2
It bothers me to see so many people at side stops.	-2	-1	+1	+2

Please indicate the degree to which you agree that each of the following environmental damage conditions exists in the Grand Canyon.

	Strongly Disagree	Probably Disagree	Probably Agree	Strongly Agree
Excessive litter	-2	-1	+1	+2
Trampling of natural vegetation	-2	-1	+1	+2
Over-use of campsites	-2	-1	+1	+2
Over-use of visitor attraction sites (like Deer Creek Falls)	-2	-1	+1	+2

In this section we'd like to know how you feel about encounters with other trips. In each case, just circle the number which best expresses the way you feel.

While floating on the River, how many other parties would you prefer to see each day? (circle one)

None 1 2 3 4 5 6 to 10 11 to 20

Would you be willing to do any of the following things to get this preference? (circle one answer for each item)

Follow a more strict schedule (of campsites, stops, etc.) during the trip.	No	Yes
Take more trips in April or October.	No	Yes
Have less flexible schedules of trip departure dates.	No	Yes

Your trip probably stopped at the Little Colorado River and Havasu Creek, and you probably saw other parties at both places.

Would you be willing to miss stopping at one of these places if you were assured of seeing no one at the other? No Yes

Would you be willing to miss stopping at one of these places if you saw only half as many people at the other? No Yes

Would you be willing to hike further at these places to avoid seeing other people? No Yes

If you had to choose, which would you rather see in a day?
1) 3 large parties (20-40 persons each) and no one else OR 2) 6 small parties (10-20 persons each) and no one else

Which size of trip would you rather meet while floating on the river?
1) Small (20 persons or less) 2) Medium (20-30 persons) 3) Large (30-40 persons) 4) Makes no difference

With which size of trip would you rather run the river?
1) Small (20 persons or less) 2) Medium (20-30 persons) 3) Large (30-40 persons) 4) Makes no difference

Which would you rather meet while floating on the river?
1) Oar trips 2) Motorized trips 3) Makes no difference

Would you rather run the river with
1) An oar trip 2) A motorized trip 3) Makes no difference

Which would you rather meet while floating on the river?
1) Private trips run by those taking the trip 2) Commercial trips run by outfitters 3) Makes no difference

Assuming you could do either, would you rather run the river with
1) A private trip 2) A commercial trip 3) Makes no difference

At various stops along the river, such as Deer Creek Falls, which size of party would you rather meet?
1) Small (10-20 persons) 2) Medium (20-30 persons) 3) Makes no difference

At these places would you rather
1) Stop at half of them and be assured of solitude OR 2) Stop at all of them and meet other parties

If you had a choice, would you prefer a campsite
1) On the same beach as another party 2) Where you might be able to see or hear another party 3) Out of sight and hearing of others

How many years ago did you first run the Grand Canyon? _____ years
How many years ago did you first run other rivers? _____ years
How many years ago did you go on your first wilderness-type trip? _____ years

Appendix 3d

GRAND CANYON USER SURVEY

Summer 1975

Combination Trip - Part I

You are one of a special group of people; by the end of this trip, you will have experienced both motor and oar power in the Grand Canyon. For this reason, we're interested in your feelings about certain aspects of your trip so far. This questionnaire has several sections in which we ask about these things. We'd like to know your response to each item. Please don't discuss items with others!

There are no "right" or "wrong" answers. Answer what you believe to be true for you. If you are not sure, pick the answer that comes closest to how you feel -- your most natural response is the best. Just circle the number next to each item to indicate your answer.

The information gathered here is confidential, and will be used for research purposes only. However, we would like to match this questionnaire with the one you will complete at the end of the trip. So we can do this, please write your birth date below. Don't put your name on the questionnaire.

Date of Birth

Mo.	Day	Yr.

In the next section are a number of statements about the Grand Canyon and your trip through it. For each one, just circle the response which is closest to the way you feel. "Probably agree" means you agree more than you disagree with the item. "Probably disagree" means you disagree more than you agree. Some items may seem similar. Actually, all items are different.

	Strongly Disagree	Probably Disagree	Probably Agree	Strongly Agree
The Canyon seems relatively unaffected by the presence of man.	-2	-1	+1	+2
On our trip we had plenty of time for hiking and exploring.	-2	-1	+1	+2
I would have enjoyed meeting more other parties during the trip.	-2	-1	+1	+2
The Canyon would be more of a wilderness if use were more restricted.	-2	-1	+1	+2
It was always easy to ask the boatman questions about the Canyon.	-2	-1	+1	+2
Our trip traveled at a leisurely pace.	-2	-1	+1	+2
Our trip would have been better if we had met fewer people along the way.	-2	-1	+1	+2
On our trip it often smelled like engine exhaust.	-2	-1	+1	+2
I particularly enjoyed this trip because the boatmen were friendly and interesting.	-2	-1	+1	+2
The places we stopped (like Redwall Cavern) were often too crowded.	-2	-1	+1	+2
The trip provided me an opportunity to get to know people better than I usually do.	-2	-1	+1	+2
The Grand Canyon environment is not being damaged by overuse.	-2	-1	+1	+2
On our trip we mostly sat on the boat rather than taking side trips.	-2	-1	+1	+2
More developments like Phantom Ranch should be built along the river.	-2	-1	+1	+2
We often had relaxed conversations while we were on the river.	-2	-1	+1	+2
I don't think we went far enough each day.	-2	-1	+1	+2
Too often we had to camp near other parties.	-2	-1	+1	+2
I felt safe and secure in the boats we traveled in.	-2	-1	+1	+2

	Strongly Disagree	Probably Disagree	Probably Agree	Strongly Agree
The people in our party were very important to me.	-2	-1	+1	+2
On our trip we floated quietly on the river.	-2	-1	+1	+2
I would consider the Grand Canyon area of the Colorado River a "wilderness."	-2	-1	+1	+2
They should build an aerial tramway into the canyon so more people could enjoy it.	-2	-1	+1	+2
We were encouraged to get off the boat to see the Canyon.	-2	-1	+1	+2
It bothered me to see so many people at side stops.	-2	-1	+1	+2
The trip provided me an opportunity to share my experiences with others more than I usually do.	-2	-1	+1	+2
The Canyon would be more of a wilderness if motor travel were banned.	-2	-1	+1	+2
I don't think we met too many people during our trip down the river.	-2	-1	+1	+2
Our trip traveled too fast.	-2	-1	+1	+2
I particularly enjoyed this trip because the people were friendly and interesting.	-2	-1	+1	+2
After we get off the river, I expect to meet with new friends made on this trip.	-2	-1	+1	+2
The Canyon is too crowded to be considered wilderness.	-2	-1	+1	+2
Our trip was awfully noisy.	-2	-1	+1	+2
Too often we had to share a place like Deer Creek Falls with other groups.	-2	-1	+1	+2
After we get off the river, I expect to write to new friends made on this trip.	-2	-1	+1	+2

Following are some statements relating to personal aspects of your trip. Please indicate your response for each item by circling the appropriate number. Remember, there are no "right" or "wrong" answers.

	Strongly Disagree	Probably Disagree	Probably Agree	Strongly Agree
The trip was demanding for me.	-2	-1	+1	+2
I would have enjoyed the trip more if we had seen less people at side stops.	-2	-1	+1	+2
I didn't expect to have sand in everything.	-2	-1	+1	+2
I feel the trip was a really valuable experience.	-2	-1	+1	+2
I felt closer to nature.	-2	-1	+1	+2
I was scared a lot of the time.	-2	-1	+1	+2
It bothered me to meet so many people while floating on the river.	-2	-1	+1	+2
I didn't expect the rapids to be so powerful.	-2	-1	+1	+2
I didn't like being so controlled by the natural environment.	-2	-1	+1	+2
I would have enjoyed the trip more if there hadn't been so many boats going by.	-2	-1	+1	+2
I would have enjoyed the trip more if we had had better camping facilities.	-2	-1	+1	+2
I gained some degree of communion with nature.	-2	-1	+1	+2
I benefited from exposure to the elements.	-2	-1	+1	+2
The hiking and climbing were frightening.	-2	-1	+1	+2
I really didn't have a very clear idea of what a trip through the canyon would be like.	-2	-1	+1	+2
I didn't expect to have to sleep out.	-2	-1	+1	+2
I learned a great deal of new information about				
geology	-2	-1	+1	+2
rivers	-2	-1	+1	+2
ecology	-2	-1	+1	+2
nature in general	-2	-1	+1	+2
The power of the water frightened me.	-2	-1	+1	+2

	Strongly Disagree	Probably Disagree	Probably Agree	Strongly Agree
I would have enjoyed the trip more if we had seen less people while floating on the river.	-2	-1	+1	+2
I didn't expect the extremes of heat and cold.	-2	-1	+1	+2
I experienced new feelings.	-2	-1	+1	+2
I wish we had seen more people at side stops.	-2	-1	+1	+2
I would have preferred to have more of the "conveniences of home."	-2	-1	+1	+2
I didn't expect the Canyon itself to be so overwhelming.	-2	-1	+1	+2
I learned things about myself.	-2	-1	+1	+2
The experience was personally challenging.	-2	-1	+1	+2
I acquired new skills.	-2	-1	+1	+2
My physical condition improved.	-2	-1	+1	+2
I didn't expect to be scared so much of the time.	-2	-1	+1	+2
I wish we had seen more people while floating on the river.	-2	-1	+1	+2

What aspects of the trip contributed most to your enjoyment?

_____

_____

_____

_____

_____

If you had to choose, which would you rather see in a day?
1) 3 large parties (20-40 persons each) and no one else OR 2) 6 small parties (10-20 persons each) and no one else

Which size of trip would you rather meet while floating on the river?
1) Small (20 persons or less) 2) Medium (20-30 persons) 3) Large (30-40 persons) 4) Makes no difference

With which size of trip would you rather run the river?
1) Small (20 persons or less) 2) Medium (20-30 persons) 3) Large (30-40 persons) 4) Makes no difference

Which would you rather meet while floating on the river?
1) Oar trips 2) Motorized trips 3) Makes no difference

Would you rather run the river with
1) An oar trip 2) A motorized trip 3) Makes no difference

Which would you rather meet while floating on the river?
1) Private trips run by those taking the trip 2) Commercial trips run by outfitters 3) Makes no difference

Assuming you could do either, would you rather run the river with
1) A private trip 2) A commercial trip 3) Makes no difference

At various stops along the river, such as Deer Creek Falls, which size of party would you rather meet?
1) Small (10-20 persons) 2) Medium (20-30 persons) 3) Large (30-40 persons) 4) Makes no difference

At these places would you rather
1) Stop at half of them and be assured of solitude OR 2) Stop at all of them and meet other parties

If you had a choice, would you prefer a campsite
1) On the same beach as another party 2) Where you might be able to see or hear another party 3) Out of sight and hearing of others

Does outboard motor noise bother you?
1) No 2) Yes

Overall, how would you rate this part of your trip?
1) Fair, it just didn't work out very well
2) Good, but I wish a number of things could have been different
3) Very good, but could have been better
4) Excellent, only minor problems
5) Perfect

Specifically, what would have made your trip a more enjoyable one?

_____

_____

_____

_____

Appendix 3e

GRAND CANYON USER SURVEY

Summer 1975

Combination Trip - Part II

This is essentially the same questionnaire we've given to other river runners this summer. The first page has been added so you can give us your opinions about the motor and oar methods of travel. Please feel free to make additional comments, either in writing or to the researcher on your trip.

The second section contains the same questions you answered earlier. As best you can, respond to them in relation to the second part of your trip. Some answers, then, may be different, while others will be the same. Please respond to all items.

The last section is the remainder of the standard questionnaire. The items refer to the whole trip, so respond to them in terms of the way you feel about your entire Grand Canyon experience.

Again, so we can match up your questionnaires, please write your birth date below.

Date of Birth

Mo.	Day	Yr.

	Oar	Motor	Makes no Difference
If you were planning a trip on another river, which type of trip would you choose?	1	2	3
Which would you recommend to a friend planning a Grand Canyon trip?	1	2	3
Which type of trip better enabled you to "experience" the Grand Canyon?	1	2	3
Which do you think was safer?	1	2	3
Overall, which type of trip did you like better?	1	2	3

Why? _____

_____

_____

_____

_____

What single words would you use to describe a motor trip?

1) _____ 2) _____ 3) _____ 4) _____ 5) _____

What single words would you use to describe an oar trip?

1) _____ 2) _____ 3) _____ 4) _____ 5) _____

What are the advantages of a motor trip?

1 _____ 6 _____

2 _____ 7 _____

3 _____ 8 _____

4 _____ 9 _____

5 _____ 10 _____

What are the advantages of an oar trip?

1 _____ 6 _____

2 _____ 7 _____

3 _____ 8 _____

4 _____ 9 _____

5 _____ 10 _____

These are the same questions you answered earlier. Please answer them now in relation to the second part of your trip. Some answers will be different, while others may be the same.

In the next section are a number of statements about the Grand Canyon and your trip through it. For each one, just circle the response which is closest to the way you feel. "Probably agree" means you agree more than you disagree with the item. "Probably disagree" means you disagree more than you agree. Some items may seem similar. Actually, all items are different.

	Strongly Disagree	Probably Disagree	Probably Agree	Strongly Agree
The Canyon seems relatively unaffected by the presence of man.	-2	-1	+1	+2
On our trip we had plenty of time for hiking and exploring.	-2	-1	+1	+2
I would have enjoyed meeting more other parties during the trip.	-2	-1	+1	+2
The Canyon would be more of a wilderness if use were more restricted.	-2	-1	+1	+2
It was always easy to ask the boatman questions about the Canyon.	-2	-1	+1	+2
Our trip traveled at a leisurely pace.	-2	-1	+1	+2
Our trip would have been better if we had met fewer people along the way.	-2	-1	+1	+2
On our trip it often smelled like engine exhaust.	-2	-1	+1	+2
I particularly enjoyed this trip because the boatmen were friendly and interesting.	-2	-1	+1	+2
The places we stopped (like Redwall Cavern) were often too crowded.	-2	-1	+1	+2
The trip provided me an opportunity to get to know people better than I usually do.	-2	-1	+1	+2
The Grand Canyon environment is not being damaged by overuse.	-2	-1	+1	+2
On our trip we mostly sat on the boat rather than taking side trips.	-2	-1	+1	+2
More developments like Phantom Ranch should be built along the river.	-2	-1	+1	+2
We often had relaxed conversations while we were on the river.	-2	-1	+1	+2
I don't think we went far enough each day.	-2	-1	+1	+2
Too often we had to camp near other parties.	-2	-1	+1	+2
I felt safe and secure in the boats we traveled in.	-2	-1	+1	+2

	Strongly Disagree	Probably Disagree	Probably Agree	Strongly Agree
The people in our party were very important to me.	-2	-1	+1	+2
On our trip we floated quietly on the river.	-2	-1	+1	+2
I would consider the Grand Canyon area of the Colorado River a "wilderness."	-2	-1	+1	+2
They should build an aerial tramway into the canyon so more people could enjoy it.	-2	-1	+1	+2
We were encouraged to get off the boat to see the Canyon.	-2	-1	+1	+2
It bothered me to see so many people at side stops.	-2	-1	+1	+2
The trip provided me an opportunity to share my experiences with others more than I usually do.	-2	-1	+1	+2
The Canyon would be more of a wilderness if motor travel were banned.	-2	-1	+1	+2
I don't think we met too many people during our trip down the river.	-2	-1	+1	+2
Our trip traveled too fast.	-2	-1	+1	+2
I particularly enjoyed this trip because the people were friendly and interesting.	-2	-1	+1	+2
After we get off the river, I expect to meet with new friends made on this trip.	-2	-1	+1	+2
The Canyon is too crowded to be considered wilderness.	-2	-1	+1	+2
Our trip was awfully noisy.	-2	-1	+1	+2
Too often we had to share a place like Deer Creek Falls with other groups.	-2	-1	+1	+2
After we get off the river, I expect to write to new friends made on this trip.	-2	-1	+1	+2

Following are some statements relating to personal aspects of your trip. Please indicate your response for each item by circling the appropriate number. Remember, there are no "right" or "wrong" answers.

	Strongly Disagree	Probably Disagree	Probably Agree	Strongly Agree
The trip was demanding for me.	-2	-1	+1	+2
I would have enjoyed the trip more if we had seen less people at side stops.	-2	-1	+1	+2
I didn't expect to have sand in everything.	-2	-1	+1	+2

	Strongly Disagree	Probably Disagree	Probably Agree	Strongly Agree
I feel the trip was a really valuable experience.	-2	-1	+1	+2
I felt closer to nature.	-2	-1	+1	+2
I was scared a lot of the time.	-2	-1	+1	+2
It bothered me to meet so many people while floating on the river.	-2	-1	+1	+2
I didn't expect the rapids to be so powerful.	-2	-1	+1	+2
I didn't like being so controlled by the natural environment.	-2	-1	+1	+2
I would have enjoyed the trip more if there hadn't been so many boats going by.	-2	-1	+1	+2
I would have enjoyed the trip more if we had had better camping facilities.	-2	-1	+1	+2
I gained some degree of communion with nature.	-2	-1	+1	+2
I benefited from exposure to the elements.	-2	-1	+1	+2
The hiking and climbing were frightening.	-2	-1	+1	+2
I really didn't have a very clear idea of what a trip through the canyon would be like.	-2	-1	+1	+2
I didn't expect to have to sleep out.	-2	-1	+1	+2
I learned a great deal of new information about				
geology	-2	-1	+1	+2
rivers	-2	-1	+1	+2
ecology	-2	-1	+1	+2
nature in general	-2	-1	+1	+2
The power of the water frightened me.	-2	-1	+1	+2
I would have enjoyed the trip more if we had seen less people while floating on the river.	-2	-1	+1	+2
I didn't expect the extremes of heat and cold.	-2	-1	+1	+2
I experienced new feelings.	-2	-1	+1	+2
I wish we had seen more people at side stops.	-2	-1	+1	+2
I would have preferred to have more of the "conveniences of home."	-2	-1	+1	+2
I didn't expect the Canyon itself to be so overwhelming.	-2	-1	+1	+2

	Strongly Disagree	Probably Disagree	Probably Agree	Strongly Agree
I learned things about myself.	-2	-1	+1	+2
The experience was personally challenging.	-2	-1	+1	+2
I acquired new skills.	-2	-1	+1	+2
My physical condition improved.	-2	-1	+1	+2
I didn't expect to be scared so much of the time.	-2	-1	+1	+2
I wish we had seen more people while floating on the river.	-2	-1	+1	+2

What aspects of the trip contributed most to your enjoyment?

_____

_____

_____

_____

_____

If you had to choose, which would you rather see in a day?
1) 3 large parties (20-40 persons each) and no one else OR 2) 6 small parties (10-20 persons each) and no one else

Which size of trip would you rather meet while floating on the river?
1) Small (20 persons or less) 2) Medium (20-30 persons) 3) Large (30-40 persons) 4) Makes no difference

With which size of trip would you rather run the river?
1) Small (20 persons or less) 2) Medium (20-30 persons) 3) Large (30-40 persons) 4) Makes no difference

Which would you rather meet while floating on the river?
1) Oar trips 2) Motorized trips 3) Makes no difference

Would you rather run the river with
1) An oar trip 2) A motorized trip 3) Makes no difference

Which would you rather meet while floating on the river?
1) Private trips run by those taking the trip 2) Commercial trips run by outfitters 3) Makes no difference

Assuming you could do either, would you rather run the river with
1) A private trip 2) A commercial trip 3) Makes no difference

At various stops along the river, such as Deer Creek Falls, which size of party would you rather meet?
1) Small (10-20 persons) 2) Medium (20-30 persons) 3) Large (30-40 persons) 4) Makes no difference

At these places would you rather
1) Stop at half of them and be assured of solitude OR 2) Stop at all of them and meet other parties

If you had a choice, would you prefer a campsite
1) On the same beach as another party 2) Where you might be able to see or hear another party 3) Out of sight and hearing of others

Does outboard motor noise bother you?
1) No 2) Yes

Overall, how would you rate this part of your trip?

1) Fair, it just didn't work out very well
2) Good, but I wish a number of things could have been different
3) Very good, but could have been better
4) Excellent, only minor problems
5) Perfect

Specifically, what would have made your trip a more enjoyable one?

_____

_____

_____

_____

This is the rest of the questionnaire we've given to other river runners. These questions are more general, and refer to either your whole trip or your personal background.

In the following sections, we are interested in some recollections you may have regarding your trip. In each case, list as many responses as you can. Please give only responses you recall on your own (that is, don't consult your guidebook or trip journal). This isn't a test; we just want to know your response. Whatever you come up with will be fine.

List as many rapids as you can recall.

1_____	6_____	11_____	16_____
2_____	7_____	12_____	17_____
3_____	8_____	13_____	18_____
4_____	9_____	14_____	19_____
5_____	10_____	15_____	20_____

List the names of the various places you visited along the way (Deer Creek Falls, for example).

1_____	6_____	11_____	16_____
2_____	7_____	12_____	17_____
3_____	8_____	13_____	18_____
4_____	9_____	14_____	19_____
5_____	10_____	15_____	20_____

List the names of any geological features or processes you learned about on the trip.

1_____	6_____	11_____	16_____
2_____	7_____	12_____	17_____
3_____	8_____	13_____	18_____
4_____	9_____	14_____	19_____
5_____	10_____	15_____	20_____

Of the following activities, which do you commonly engage in?

	Never	Seldom	Occasionally	Frequently
Back packing	1	2	3	4
Hiking	1	2	3	4
Camping	1	2	3	4
Mountain climbing	1	2	3	4
River tripping	1	2	3	4

Here is a list of possible features or activities associated with wilderness-type recreation. For each one, circle the number that best expresses your attitude. We want to know how positive or negative you feel about having that feature or participating in that activity in a wilderness recreation setting.

	Strongly Dislike	Mostly Dislike	Mostly Favor	Strongly Favor
Campsites with plumbing	-2	-1	+1	+2
Equipped bathing beaches	-2	-1	+1	+2
Camping with car	-2	-1	+1	+2
Gravel roads	-2	-1	+1	+2
Automobile touring	-2	-1	+1	+2
Campsites with outhouses	-2	-1	+1	+2

Please indicate the degree to which you agree that each of the following environmental damage conditions exists in the Grand Canyon.

	Strongly Disagree	Probably Disagree	Probably Agree	Strongly Agree
Excessive litter	-2	-1	+1	+2
Trampling of natural vegetation	-2	-1	+1	+2
Over-use of campsites	-2	-1	+1	+2
Over-use of visitor attraction sites (like Deer Creek Falls)	-2	-1	+1	+2

During the trip did you ever feel you weren't sure what was expected of you as a passenger?
1) No 2) Yes, at first 3) Yes, occasionally 4) Yes, most of the time

In the next section are a number of statements about the Grand Canyon and your trip through it. For each one, just circle the response which is closest to the way you feel. "Probably agree" means you agree more than you disagree with the item. "Probably disagree" means you disagree more than you agree. Some items may seem similar. Actually, all items are different.

	Strongly Disagree	Probably Disagree	Probably Agree	Strongly Agree
It was cloudy a great deal of the time.	-2	-1	+1	+2
I expected to see more people at Lee's Ferry.	-2	-1	+1	+2
The weather was often too hot or too cold.	-2	-1	+1	+2
It bothered me to see so many people at Lee's Ferry.	-2	-1	+1	+2
It rained a lot during our trip.	-2	-1	+1	+2
The weather made me uncomfortable much of the time.	-2	-1	+1	+2
I didn't think there were too many people at Lee's Ferry.	-2	-1	+1	+2

About how many books or articles have you read about the Grand Canyon or the Colorado River?
1) None 2) One 3) 2 or 3 4) 4 or 5
5) 5 or more

Did you carry a guidebook and consult it at least several times each day?
1) No 2) Yes

How many times have you run the Grand Canyon before this trip?
1) None 2) Once 3) Twice 4) 4 or more times

How many other whitewater river trips have you been on?
1) None 2) One 3) 2 or 3 4) 4 or more

What type of river trips have you been on (before this trip)?
1) Not applicable 2) Oar 3) Motor 4) Have been on both

When you were deciding to go on a trip through the Grand Canyon, how important was each of the factors listed below?

	Not Important	Somewhat Important	Very Important
Getting to see the Grand Canyon from the river.	1	2	3
Being with family or friends.	1	2	3
The excitement and adventure of the river running itself.	1	2	3
Meeting new and interesting people.	1	2	3
Being in the wilderness.	1	2	3

In deciding to go on this trip, what was the relative importance of these factors? Please rank them from the most important (1) to least important (5).

_____ Getting to see the Grand Canyon from the river.

_____ Being with family or friends.

_____ The excitement and adventure of the river running itself.

_____ Meeting new and interesting people.

_____ Being in the wilderness.

In this section we'd like to know how you feel about encounters with other trips. In each case, just circle the number which best expresses the way you feel.

While floating on the River, how many other parties would you prefer to see each day? (circle one)

None 1 2 3 4 5 6 to 10 11 to 20

Would you be willing to do any of the following things to get this preference? (circle one answer for each item)

Pay $100 more	No	Yes
Wait a year longer to go on the trip.	No	Yes
Follow a more strict schedule (of campsites, stops, etc.) during the trip.	No	Yes
Take the trip in April or October.	No	Yes
Have less flexible schedules of trip departure dates.	No	Yes

How many parties per day did you expect to see while floating on the river?

None 1 2 3 4 5 6 to 10 11 to 20

didn't know what to expect

Your trip probably stopped at the Little Colorado River and Havasu Creek, and you probably saw other parties at both places.

Would you be willing to miss stopping at one of these places if you were assured of seeing no one at the other? No Yes

Would you be willing to miss stopping at one of these places if you saw only half as many people at the other? No Yes

Would you be willing to hike further at these places to avoid seeing other people? No Yes

Overall, how many people did you expect to see during your trip?

1) Less than you actually saw
2) About as many as you saw
3) More than you saw
4) Didn't know what to expect

In this final section we would like to ask some questions about your background which will help us compare your answers to those of other people. Again, we should stress that all of your answers are strictly confidential.

How old are you? _____ years old

Are you _____ male _____ female

How many years of school have you completed?

____1 ____2 ____3 ____4 ____5 ____6 ____7 ____8 ____9 ____10 ____11 ____12

____ Some college ____ B.A. or equivalent ____ M.A. or equivalent

____ Advanced degree (M.D., Ph.D., etc.)

What is your primary occupation? _____

_____

Please be as specific as possible. If you are a homemaker or student, please indicate. If retired, give former occupation.

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

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

Are you
1) single 2) separated, divorced, or widowed 3) married 4) other

How many children do you have? _____

Where do you presently live?
1) Rural area 2) Small town 3) Small city 4) Suburban area 5) Large city

Where did you live (mostly) when you were growing up?
1) Rural area 2) Small town 3) Small city 4) Suburban area 5) Large city

Are you now a member of an outdoor or conservation organization such as a mountain club or Sierra Club?
1) No 2) Yes

How many years ago did you go on your first wilderness-type trip?
1) This is the first 2) One year 3) 2-3 years 4) 4-5 years 5) 6 or more years

APPENDIX 4

SCALE CONSTRUCTION

SCALE CONSTRUCTION

Scale construction is often the first step in the analysis of large numbers of variables. This process transforms single items into more conceptually meaningful variables. Many items for the River Contact Study questionnaire were written so they would form scales.

Likert scaling is a technique whereby several different items related to the same theoretical construct are combined into a single measure. It works something like this. Suppose a researcher wanted a measure of personal happiness. He could write a single item, "I am happy most of the time," and ask for an agree-disagree response on a four-point continuum. If he wanted a happiness scale, however, he would write several items such as "I like my spouse," "I enjoy my family," "My job is rewarding," and "I kick my cat every chance I get."

After collecting data on these items from a number of individuals, the data would be submitted to a factor analysis program. The first three items might load together on a single factor, which would be named "personal happiness." The final item might be shown to be unrelated to the others and would be discarded, since it probably just measures orneriness or dislike cats. The scores for the first three items would then be combined into a single scale score.

There are, of course, situations where single items are straightforward and quite adequate. When this is not the case, however, a multiple-item scale gets at several dimensions of a concept and is therefore more likely to be a valid measure. There is less likelihood of invalidity due to errors in response or data handling, and the reliability of the measure over time can be determined.

Scale development for this study involved two phases. In the pretest phase, data were collected from the purposive sample described in Part I (n = 213). A number of scales were developed on the basis of these data. A complete description of the process can be found in Progress Report II.

The second phase of scale development involved the use of data from the final sample. For scales already developed, this involved computation of item to total correlations and reliability coefficients. However, analysis of pretest data had revealed areas where additional information was needed, and the scales had to be developed from final sample data. In these cases, new items were written and added to the questionnaire. These items required factor analysis of data from the final sample, scale construction, and computation of item statistics and reliabilities.

SCALES DEVELOPED FROM PRETEST DATA

Scales developed on the basis of pretest data relate to past outdoor experience, wilderness values, and a number of aspects of the trip experience. In each case, variables were analyzed using principle factoring with iteration, where multiple squared correlations are used for initial communality estimates. Varimax rotation was employed to obtain more conceptually meaningful factors. Factor loadings were then inspected, variables loading .50 or greater were selected, and factors were named. When final data were in, items in these scales were combined, scale statistics computed, and total scores punched. Each scale is discussed below; items and scale statistics are found in Table 5.

Outdoor Activities

This scale is a measure of participation in several outdoor activities. Individuals scoring high on the scale indicated that they frequently engaged in backpacking, hiking, camping, mountain-climbing, and river tripping. Items forming this scale are found in Table 5A.

Wilderness Values

Concern with wilderness values is a prevalent theme in the carrying capacity literature. The reasoning behind this concern (as outlined by Stankey, 1973) goes something like this. Different user groups sometimes have conflicting ideas about the development of a certain resource. Given this conflict, it may be helpful to managers interpreting public input to be able to identify users whose values are in accord with the legal-philosophical definition of that resource. In other words, it is useful in evaluating different arguments to know where those arguments are coming from. If, for example, development of a snowmobile area is planned, it makes a difference whether opposition is coming from snowmobilers or cross-country skiers.

As was indicated in the original proposal, it was our intention to obtain a measure of "wilderness purism." This would allow us to 1) compare our research with other work, and 2) evaluate the usefulness of the wilderness values approach.

Wilderness values have been measured in several different ways. Lucas (1964) used method of travel, while the Wildland Research Center (1962) used past wilderness experience. While these are both interesting pieces of information, their use as measures of "wildernism" requires making assumptions about the values of different user groups.

Wilderness values scales developed by Hendee, et. al. (1968) and Stankey (1973) provide another alternative. The Hendee scale originally consisted of sixty items related to features, activities, and benefits associated with wilderness recreation. The Stankey scale itemized fourteen characteristics of wilderness as defined by the Wilderness Act of 1964.

Both the Hendee and Stankey scales were represented in the pretest. From the Hendee scale, twenty-two items were chosen which represented the two strongest factors in Hendee's study. The responses from our pretest sample formed the same two factors, artifactualism and personal benefits.

Artifactualism. This factor measured people's reaction to having human-made developments in wilderness-type areas. Those scoring high on the scale favored the presence of equipped campsites and bathing beaches. They also favored gravel roads, car camping, and auto touring.

Personal benefits. The second factor described personal benefits derived from wilderness experience. Those scoring high on this scale felt that wilderness gives them an opportunity to acquire knowledge and provides emotional satisfaction, relief from tension, and a chance to breathe fresh air.

All fourteen items from the Stankey scale were used in the pretest questionnaire. They were included in the factor analysis with Hendee's items. Two items regarding artifacts loaded on factor 1 above, but were redundant of Hendee items and were discarded. Two other items about stocking with non-native animals and fish formed a third factor, but its lack of conceptual appeal caused it to be dropped. Other items failed to load on any meaningful factor.

Finally, in order to check whether the Stankey items formed an independent scale, the two sets of items (Hendee's and Stankey's) were also analyzed separately. The Hendee items fell into the two factors described above. Four of the Stankey items fell into two groups of two items each, one regarding artifacts, and the other stocking of game as described above. Again, other items had no consistent response pattern.

The important question, prompted by this discussion, is how to best measure wildernism. Stankey argues that his scale is intuitively meaningful because it is derived from the Wilderness Act, even though it is not unidimensional (i.e., does not meet the criteria for scaling). This argument is not persuasive, since creating a mathematical composite from empirically unrelated items makes neither methodological or intuitive sense.

Of the two scales derived from Hendee's items, the artifactualism measure is the most appealing. It has the most explanatory power (empirically), both in our data and in Hendee's (see Heberlein's 1973 reanalysis of the Hendee data). This measure also makes sense conceptually. The central issue in management decision-making about wild areas is level of development. To what extent will the artifacts of civilization (roads, motorized vehicles, camps, buildings) be included in a wild area? The artifactualism scale gets at this aspect of user perception.

The artifactualism scale was thus the only measure of "wildernism" included in our final (1975) questionnaire. The items are found in Table 5B.

Human Impact on the Grand Canyon

This scale measures individual perceptions of the physical impact of use on the Canyon. People scoring high on the scale tended to agree that litter and trampling conditions existed in the Canyon, that camps and attraction sites were being over used, and that the Canyon would be more of a wilderness if use were more restricted. They disagreed with items stating that the Canyon seems relatively unaffected by the presence of man and that the Canyon environment is not being damaged by over-use. It should be pointed out that measuring perceptions of use impact is not intended to replace study of actual ecological effects of use. The interest here is in whether perceptions change given different actual use levels or are different for different user groups. The scale items are listed in Table 5C.

Quality of Group Experience

It is generally assumed that an important part of the outdoor or wilderness experience is the close relationship which develops within a group traveling together. The scale developed here is a measure of the quality of that intra-group experience. Those scoring high on this scale agreed that the trip provided an opportunity to get to know people better and share their experiences, felt that the people in their group were friendly and interesting, and indicated that they intended to write to and meet with friends made on the trip. The items comprising this scale are found in Table 5D.

Subjective Learning

Items in this scale measured an individual's feeling about what had been learned during the trip. Thos scoring high agreed that they had learned a great deal about geology, rivers, ecology, and nature in general (Table 5E).

Objective Knowledge

In contrast to subjective learning, this scale measured objective knowledge about places in and features of the Canyon. Subjects were asked to list as many names or terms as they could remember. Those scoring high had listed the greatest number of names of rapids, places, and geologic features. These items are found in Table 5F.

Personal Growth

Items in this factor reflect benefits which resulted from the river trip. Thos scoring high on the scale indicated that they experienced new feelings, learned things about themselves, and acquired new skills. They also felt the trip was challenging and that their physical condition improved. Items in the scale are in Table 5G.

Type of Outdoor Experience

This factor indicates the way people defined their experience in the Canyon. Those scoring high on the scale felt the trip was a valuable experience, felt some close communion with nature, and benefited from exposure to the elements. Items in this scale are in Table 5H.

SCALES DEVELOPED FROM FINAL DATA

Scales developed on the basis of data from the 1975 final sample relate to feelings about crowding and developments in the Canyon and other aspects of the trip. Factoring procedures varied, and thus will be discussed in the individual sections below. Once item groupings were established, items were combined, scale statistics computed, and total scores recorded. The scales are discussed below; items and scale statistics are contained in Table 6.

Perception of Crowding

A three item scale relating to perceived crowding in the Canyon was developed from pretest data. However, further analysis of pretest findings indicated that crowding might be a phenomenon too complex for the measure. People encounter other trips both on the river and at side stops; their perception of crowding may be different for these places. In addition, the situation at Lee's Ferry may create a "first impression" of crowding in the Canyon. Items were written in an attempt to tap these various dimensions.

The items relating to crowding were factor analyzed as a group. Principle factoring with interaction was used, where multiple squared correlations are used for initial communality estimates. Varimax rotation was employed. Factors formed the following three dimensions.

Perceived crowding in the Canyon. This scale is an indicator of people's evaluation of density levels in the Canyon. Our conceptual distinction between crowding on the river and at side stops was not borne out by the data. People scoring high on this scale felt they had met too many people on the river, that too often side stops were crowded and had to be shared with other groups, and that the trip would have been better with fewer encounters in both places (see Table 6A).

Perceived crowding at Lee's Ferry. Crowding at the launch site was distinct from crowding in the Canyon. Persons scoring high on this scale said they thought there were too many people at Lee's Ferry and that this bothered them. Items are listed in Table 6A.

Preference for seeing more people. Independent of perceptions of crowding, there was a factor which represented a preference for seeing more people. People scoring high on this scale would have enjoyed meeting more other parties, both on the river and at side stops (see Table 6A).

Attitude Toward Developments and Conveniences in the Canyon

Items related to this dimension were factored in a group which included items measuring expectations and fear (discussed below). Factoring procedures were the same as those used for crowding items. Items related to developments in the Canyon and conveniences on trips formed two distinct factors.

Persons scoring high on the "developments" scale though more developments like Phantom Ranch should be installed and that it would be a good idea to build an aerial tram into the Canyon. Those scoring high on the "conveniences" scale would have preferred more of the conveniences of home, would have enjoyed having better camping facilities, and said they didn't expect to have sand in everything. Items in these two scales are found in Table 6B.

Pace of Trip

The Park Service is interested in the idea of trips which travel at a leisurely pace, with time to enjoy and experience the Canyon. A number of items were written to get at this aspect of the river trips. These items were factored in a single group. Varimax rotation produced three separate but indistinct factors. Quartimax rotation was tried, and produced a single more meaningful factor.

People scoring high on this scale felt their trip traveled at a leisurely pace, with time for quiet floating and relaxed conversations on the river. They also felt there was plenty of time for side stops, hiking, and exploring, and that they were encouraged to get off the boat to see the Canyon. The items forming this scale are listed in Table 6C.

Expectations

Realistic expectations may affect the quality of trips, so a scale was formed to tap this dimension. Those scoring high had incorrect expectations; they hadn't expected the rapids to be so powerful or the Canyon to be so overwhelming, and generally didn't have a very clear idea of what the trip would be like (see Table 6D).

Fear

Some people find aspects of the river trip quite frightening. A four item scale measured this dimension. Those scoring high were frightened by the power of the water and the hiking and climbing (see Table 6E).

Weather Conditions

Weather conditions may also be a significant aspect of an outdoor trip. People's perception of the weather was measured with four items; those scoring high reported that during their trip the weather was rainy, cloudy, or generally uncomfortable much of the time. Items for this scale are listed in Table 6F.