THE SOCIAL IMPACTS AND MANAGEMENT OF LLAMAS AS RECREATIONAL PACKSTOCK

FINAL REPORT

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THE SOCIAL IMPACTS AND MANAGEMENT OF LLAMAS AS RECREATIONAL PACKSTOCK

INTRODUCTION

The last two decades have seen the introduction and growth of the use of llamas as recreational packstock in North American backcountry areas. Visitor surveys conducted in the John Muir Wilderness and Sequoia-Kings Canyon Wilderness revealed 21 to 24 percent of the hikers surveyed had encountered groups with llamas and 29 to 34 percent of the stock users had met visitors using llamas as packstock (Watson and Niccolucci, 1992). Such findings indicate the use of llamas has advanced beyond the unique and exotic stage and is becoming an issue for backcountry managers.

Management actions concerning this new use have been mostly reactive and site specific. A 1989 Forest Supervisor decision on the Lewis and Clark National Forest reversed the recommendation horse packers made that llamas should be banned from certain trails (USDA Forest Service, 1989). The Supervisor's decision came only after heated debate and input from both sides of the issue. A 1994 amendment to regulations concerning pack animals in Arches and Canyonlands National Parks removed llamas as authorized pack animals due to the possibility of disease transmission to the big horn sheep population. Despite contradictory evidence, the amendment will stand until definitive scientific data demonstrates the disease cannot be transmitted to big horn sheep. It is even being used by the BLM biologists who are considering "severe limits" on llama packing in big horn habitat throughout the Four Corners region (NPS, 1994; Woolf, 1995). From a recreation management viewpoint, the introduction of non-traditional uses of the

backcountry also creates the need for social research concerning the potential impacts of these new uses (White and Schreyer, 1981; Blahna, Smith and Anderson, 1995). Such research will allow each activity to be judged according to empirical evidence rather than individual speculation.

The purpose of this research was to study wilderness llama packing from the perspective of llama users and other people who encounter llamas in Forest Service and National Park Service backcountry areas. Surveys of visitors in backcountry areas that receive use by llama packers were conducted in order to make recommendations for managing the use of llamas on public lands. The primary objectives of the study were to compare the characteristics of llama packers with horse packers and hikers and to identify and describe potential sources of social conflict between llama packers and other users of the backcountry. Such information will provide a foundation for making decisions concerning llama use management. It will help protect the resource, enhance the llama packing experience, and manage potential conflicts between the different users.

To date, there have been no studies of the basic characteristics and preferences of backcountry visitors who use llamas. Characteristics such as age, gender, race, place of residence, past experience, and trip preferences were looked at in order to help identify the extent to which llama packers are a new backcountry user group and how they might differ from traditional backcountry visitors. Llama packing advocates claim that llama packing appeals to families with young children, senior citizens, women and moderately disabled individuals. If so, the increase of this use will bring about a more diverse backcountry user population.

While the Forest Service and other federal agencies are actively striving to diversify its recreational clientele (President's Commission on Americans Outdoors, 1987; USDA Forest Service, 1988) an increased level of use and a more diverse backcountry user population can be a source of

conflict, physical impacts, and other management challenges. Understanding how llama packers may differ from traditional backcountry visitors is critical for designing appropriate management and communication strategies for dealing with llama packers and outfitters. An understanding of the social impacts of llama packing must be used in conjunction with physical impact studies in order to manage llama packing in an equitable and responsible manner.

Past research on conflict and crowding in the backcountry indicates some users are very sensitive to the presence or behavior of others, while other users are more tolerant (Graefe et al., 1984). One's method of travel plays an important role in these asymmetrical types of conflict. For example, non-motorized canoeists tend to be more sensitive to the presence of motorized canoeists (Adelman et al., 1982), and hikers are more sensitive to horse packers (Stankey, 1973) and mountain bikers (Watson et al., 1991). While there is a fairly well developed literature on backcountry crowding and conflict (e.g., Graefe et al., 1984; Stankey and Schreyer, 1987), this is the first study that will provide information on the role of llamas and llama packers in this equation.

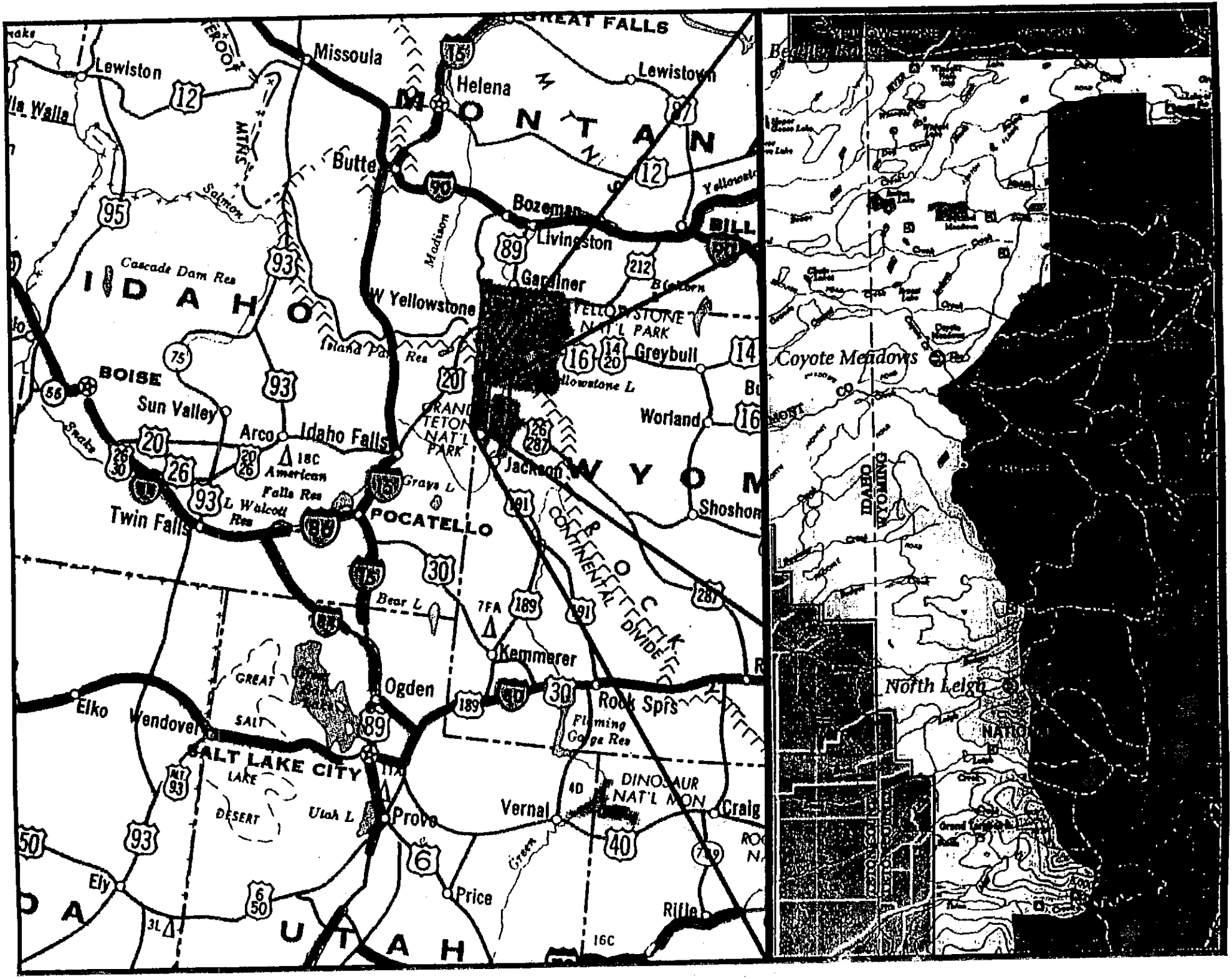
RESEARCH METHODS

The purpose of this study was to better understand wildland visitors' characteristics and behaviors that may lead to conflict between llama use and other recreational users. Two samples were necessary to understand any differences or similarities between llama users and traditional wildland users. First, a trailhead contact study was conducted to sample "traditional wildland visitors." Contacts were made at three study trailheads, two in the Jedediah Smith Wilderness on the Targhee National Forest and one in Yellowstone National Park. The number of llama users contacted at the study trailheads, however, were too few for statistical comparison with traditional users contacted at the trailheads. Therefore, a sample of llama users was obtained by sending a mail survey to clients of commercial llama outfitters in the western United States. The traditional backcountry visitors contacted at the trailheads and the commercial llama outfitter clients were sent the same mail survey.

TRADITIONAL WILDLAND VISITORS

Study Trailheads

The sample for the traditional wildland users was obtained by trailhead contacts between July 30th and September 27th 1993. A Forest Service survey of wilderness managers (Watson, 1992, pers. comm.) identified the Jedediah Smith Wilderness as one of fourteen wildernesses that received more than 50 uses by llama packing groups in 1991. The Jedediah Smith Wilderness is located within the Targhee National Forest directly west of Teton National Park and south of Yellowstone National Park. The area is somewhat remote and less well known than the surrounding National Parks. Three commercial llama packers use trailheads in this wilderness. The North Leigh and


Lewiston
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YELLOWSTONE NAT'L PARK
Greybull
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Idaho Falls
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Worland
Shoshoni
American Falls Res
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Twin Falls
POCATELLO
Grays L
Bear L
Kemmerer
CONTINENTAL DIVIDE
Ogden
Rock Spfs
Flaming Gorge Res
Elko
Wendover
GREAT SALT LAKE
SALT LAKE CITY
DESERT
Utah L
Provo
Vernal
DINOSAUR NAT'L MON
Craig
Ely
Price
Rifle
UTAH
COLORADO
IDAHO
WYOMING
North Leigh

Coyote Meadows trailheads were sampled in order to maximize the possibility of contacting horse users and hikers who were encountering llamas in the backcountry. These trailheads lead to popular high alpine lake basins, over fairly steep and rugged terrain.

The Bechler Ranger Station, in the remote southwest corner of Yellowstone National Park, was selected as a third contact trailhead. The Bechler trailhead is located within an hour's drive of the two Forest Service trailheads, it is used by the three commercial llama packers who use the Forest Service trailheads, and it has a higher number of visitors than the Forest Service trailheads. Trails in the Bechler Region cover easy to moderate terrain through large meadows and up canyons with popular waterfall and thermal feature destinations.

A random sampling process was used for contacting visitors in July and August 1993. Unfortunately, trailhead contacts during this part of the summer were very limited. The winter of 1992-93 had seen the deepest snowpack the area had experienced in several years. This left some backcountry areas virtually inaccessible for travel until August, and heavy rains and cold temperatures kept overall visitation low until the end of July. Grizzly bear activity near the North Leigh trailhead during July and August also contributed to reduced visitation.

In September the original trailhead contact schedule was revised in order to contact the maximum number of visitors in the last few weeks in the season. Interviewers were stationed at each trailhead during each weekend day and holiday in September. On weekdays interviewers visited several sites per day. Trailhead conditions were evaluated and if there was evidence of few or no visitors (e.g., no cars or trailers in a parking lot), interviewers moved to the next trailhead. Afternoon and evening hours produced the most contacts as parties were returning from their trips. Therefore, interviewers were more likely to be stationed at the busy trailheads at the end of sampling

weekdays. While it is not possible to test for exact sampling bias, it is likely the data over represent September visitors and may slightly over represent weekend visitors and busier trailheads. These factors do not impact the research questions for this project. They may limit the value of the data for other uses, such as overall perceptions of crowding or conflict.

Trailhead Survey

Each member of every exiting party on sampling days was asked to fill out a short trailhead survey. (See appendix A). The contact survey solicited basic trip information (number of horse, hiker or llama parties encountered, length of stay, and mode of travel) and general comments regarding trip satisfaction. At the end of the survey, visitors were asked to give their name and address if they were willing to complete a longer questionnaire that would be mailed to them. To provide results comparable with past research, the survey's focus on llama packing was not discussed with respondents at the trailhead.

A final sample size of 454 backcountry visitors was obtained: 233 (51.3%) from the Bechler trailhead in Yellowstone National Park, and 221 (48.7%) from the Jedediah Smith trailheads on the Targhee National Forest. Trip information obtained from the trailhead surveys is summarized in Table 1.

Table 1. Responses To Questions On Trailhead Contact Survey

	Total Sample (N=454)	Bechler Trailhead (N=233)	Jedediah Smith Trailheads (N=221)
Method of Travel			
Hiking	256 (57.4)	173 (76.9)	83 (37.6)
Horseback Riding	159 (35.7)	44 (19.6)	115 (52.0)
Hike with Stock	21 (4.7)	3 (1.3)	18 (8.1)
Other	10 (2.2)	5 (2.2)	5 (2.3)
Length of Stay			
A Few Hours	115 (26.0)	41 (17.8)	74 (34.7)
A Full Day	108 (24.4)	58 (25.2)	50 (23.5)
1 or 2 Days	144 (32.5)	75 (32.6)	69 (32.4)
More than 2 Days	76 (17.2)	56 (24.3)	20 (9.4)
Types of Trip Encounters*			
Hikers	1,712 (56.1)	1,251 (59.6)	461 (48.5)
Horseback Riders	1,111 (36.4)	682 (32.5)	429 (45.2)
Hikers With Stock	202 (6.6)	148 (7.0)	54 (5.7)
Other	25 (0.8)	19 (0.9)	6 (0.6)

*Numbers represent total number of encounters reported by respondents

COMMERCIAL LLAMA OUTFITTER CLIENT SAMPLE

In order to compare behavioral and attitudinal characteristics of traditional backcountry visitors and llama users, it was necessary to obtain a separate sample of visitors who used llamas in the backcountry. Scott Woodruff of the packing committee of the International Llama Association supplied a list of commercial llama outfitters in North America. Fifty-three outfitters in thirteen western states were contacted and asked to give a card to their guests at the end of their 1993 trips. The card contained a brief explanation of the study and a request for their response to a mail survey. Four outfitters forgot to give their clients the cards after each trip and sent their client list with names and addresses in lieu of the cards.

These client lists and cards were used to obtain the llama user list of 354. This sample is limited, however, since client lists were received from only four of the outfitters. Additionally it is not possible to determine if differences between llama users and traditional visitors are a result of mode of travel or the fact that they were with a commercial outfitter. The few llama users contacted at the trailheads were used to help suggest how reliable the llama user information is generalized to all llama users. Due to the sampling problems, however, the llama packers' data must be considered suggestive of the characteristics and attitudes of commercial llama outfitter clients in the western United States. More research is needed across a broader range of wilderness areas and visitor use seasons.

MAIL SURVEY

Trailhead contacts and commercial outfitted llama users were sent the same eleven-page mail back survey in December, 1993 (See Appendix B). A three-wave sampling design was used. First, a cover letter and mail survey were sent out. Second, a reminder post card was sent three weeks later

to non-respondents. Finally, a second request letter and survey were sent three weeks after the post card. A total of 337 useable surveys were returned for a seventy-four percent response rate from the total 454 trailhead contacts. Of the 354 outfitted llama clients 326 surveys were returned for a ninety-two percent response rate.

Survey questions dealt with general background characteristics, activity participation, and encounters with groups using different modes of travel. Visitors were asked to respond to questions concerning possible problems on their trip as well as the degree their trip was impacted by meeting groups of differing travel modes.

Visitors were also asked to respond to 15 statements about the use of llamas in the backcountry. These statements were designed to measure visitor's perceptions of the acceptability of llamas in regards to social conflict, physical impacts, managerial equity, philosophical appropriateness, and safety. Open-ended questions solicited general responses about motivations for different modes of travel, as well as, attitudes toward the use of llamas in the backcountry.

Results are reported comparing the trailhead visitors to commercial llama outfitter clients. Since the two samples are not directly comparable, and the llama client list was not developed using a random or a census sampling process, only descriptive statistics are presented. To facilitate comparison of the results with past research, the trailhead sample was divided into two subgroups: hikers and horseback riders. Four categories of data are reported: background characteristics, experience level, preferences, and perceptions of conflict. Possible sources of conflict and management implications resulting from these comparisons are discussed.

RESULTS

BACKGROUND CHARACTERISTICS

To facilitate comparison of these results with past research, the data were tabulated by three travel mode subgroups: trailhead hikers, trailhead horseback riders, and commercial llama packers. In the data tables, the commercial llama users are separated by a double line to indicate that the data represent a different sample from the trailhead subsample. A summary of the background characteristics of the three travel mode groups identified can be found in Table 2.

Hikers

More than 60 percent of the hikers in this study indicated they grew up in a non-rural community with a majority (72.5%) now living in a non-rural area. They were also fairly well educated; 43 percent having completed college, and one fourth (25.1%) having graduate degrees. Professional-managerial occupational categories were reported by 68.1 percent of the hikers and the highest number of full time students (9.7%) was found within the hiking subgroup. Household incomes for this group were moderate to low with 58.4 percent earning less than $50,000.00. Most (71.4%) were employed. Sixty-two percent were married with over half of the respondents (60.2%) indicating that they had children living at home. Hikers were predominantly (66.5%) male with the youngest mean age of 37.4 the three travel mode groups studied. A small percentage indicated that they had a minor disability (12.8) and only one person (0.5) described a major disability that limited their participation in outdoor activities. Hikers were 98 percent white.

Horseback Riders

As found in other hiker/horseback rider studies, a majority (72.4%) of those using horses presently live in a rural area and more than 70 percent grew up on ranches, farms, or in rural communities (73.9). Education levels were lower than the hikers with nearly 31 percent indicating they had completed college, and 15 percent with graduate degrees. Fifty eight percent of the horseback riders were in the professional- managerial (57.9) occupational category. Horse users had the highest percentage (15.0 %) of the three travel groups in the craftsman-foreman occupational category. Incomes in this group were similar to the hiking group with 58.6 percent earning less than $50,000. Like the other groups, most (64.6%) were employed.

This group had the highest percentage of the three travel mode groups that indicated they were married (79.4%), but exactly the same percentage of horse users (60.2%) as hikers indicated that they had children living at home. Since 68 percent of the horse users were male, the gender breakdown of the two trailhead groups was similar. Horseback riders had a lower mean age (44.6) than those hiking with llamas, but a higher mean age than hikers. The oldest respondent in the sample was a seventy- eight year old horseback rider. Horseback riders reported a higher percentage of disabilities than hikers; 15.7% described a minor disability, but only 1.8 percent described a major disability that limited their participation in outdoor activities. As with both other travel mode groups, horseback riders were almost exclusively white (99.1%).

Table 2. Background Characteristics (page 1 of 2)

	Trailhead Hikers	Trailhead Horseback Riders	Commercial Llama Users
Place of Residence			
Grew up in Rural Area (community of less than 5,000)	80 (38.8)	82 (73.9)	89 (29.3))
Grew up in Non-Rural Area (community of more than 5,000)	126 (61.1)	29 (26.1)	215 (70.8)
Now Living in Rural Area (community of less than 5,000)	57 (27.5)	81 (72.4)	78 (25.5)
Now Living in Non-Rural Area (community of more than 5,000)	150 (72.5)	31 (27.7)	228 (74.5)
Education			
High School or less	14 (6.7)	23 (20.3)	16 (5.3)
Vocational/Technical School	7 (3.4)	6 (5.3)	6 (2.0)
Some College	45 (21.7)	32 (28.3)	35 (11.5)
Completed College	89 (43.0)	35 (30.9)	125 (41.1)
Graduate Degree	52 (25.1)	17 (15.0)	122 (40.1)
Occupation			
Professional-Managerial	130 (68.1)	62 (57.9)	230 (84.0)
Craftsmen-Foremen	14 (7.3)	16 (15.0)	7 (2.6)
Clerical-Sales	14 (7.3)	6 (5.6)	17 (6.2)
Service Workers	11 (5.8)	6 (5.6)	5 (1.8)
Other	22 (11.5)	16 (15.0)	14 (4.0)
Household Income			
Less than $24,999	53 (27.7)	29 (27.8)	34 (12.1)
$25,000 to $49,999	59 (30.7)	32 (30.8)	78 (27.7)
$50,000 to $99,999	48 (25.0)	33 (31.8)	98 (34.9)
Over $100,000	32 (16.7)	10 (9.6)	71 (25.3)
Employment*			
Full Time Employed	147 (71.4)	73 (64.6)	197 (64.6)
Retired	8 (3.9)	15 (13.3)	37 (12.1)
Full Time Student	20 (9.7)	6 (5.3)	15 (4.9)

(continued on next page)

Table 2. Background Characteristics (page 2 of 2)

	Trailhead Hikers	Trailhead Horseback Riders	Commercial Llama Users
Age			
Mean	37.4	44.6	47.1
Under 25	32 (15.7)	9 (8.1)	10 (3.2)
25 to 34	56 (27.3)	21 (18.9)	28 (9.1)
35 to 50	81 (39.7)	45 (40.5)	148 (48.7)
Over 50	36 (17.7)	37 (33.3)	118 (38.8)
Gender			
Male	137 (66.5)	76 (67.9)	116 (38.2)
Female	69 (33.5)	36 (32.1)	118 (61.8)
Marital Status			
Married	128 (62.4)	85 (79.4)	205 (68.1)
Single	80 (37.6)	22 (20.5)	96 (31.9)
Family*			
Have Children or Stepchildren Living at Home	56 (60.2)	50 (60.2)	93 (50.5)
Disability*			
A Minor Disability (e.g., back, knee injury, asthma)	26 (12.8)	17 (15.7)	53 (17.9)
A Major Disability (e.g., heart condition, back surgery)	1 (0.5)	2 (1.8)	5 (1.6)
Race/Ethnic Background			
White/Anglo/Caucasian	201 (98.0)	109 (99.1)	291 (97.3)
Hispanic	1 (0.5)	0 (0.0)	2 (0.7)
Asian	2 (1.0)	0 (0.0)	3 (1.0)
American Indian	1 (0.5)	1 (0.9)	1 (0.3)
Other	0 (0.0)	0 (0.0)	2 (0.7)

*Only selected categories of interest represented.

Commercial Llama Outfitter Clients

Commercial llama users had the highest percentage of the three travel mode groups having grown up (70.8%) or presently living (74.5%) in towns or urban areas. This group was higher educated than hikers or horse users with 41.1 percent having completed college and over 40 percent with graduate degrees. Eighty four percent of the outfitted llama users were in the professional-managerial occupational category. This sample of llama users also had the highest incomes of the travel mode groups with well over half (60.2%) with yearly incomes greater than $50,000.00. The second highest percentage of retirees (12.1%) among the travel mode groups was within the llama user group. Hikers with llamas had a higher percentage of married respondents (68.1%) than the hikers, but lower percentage than the horseback riders. Clients of llama outfitters responded that only half (50.5%) still had children at home. Hikers and horse users had a higher percentage of respondents with children at home.

Unlike the other travel mode groups and unlike other backcountry user studies, the llama users had a higher percentage of females (61.8%). The mean age for this group (47.1) was older than the hikers or horseback riders, yet the youngest respondent, age nine, was on a llama packing trip. The commercial llama packers, had the highest percentage of reported disabilities (19.5%), but this was only slightly higher than the disabilities reported by horseback riders. Again, as with the other two groups, llama users were predominantly Caucasian (97.3%).

Nine llama packers were contacted at the trailheads. An exploratory comparison of these nine with clients of llama outfitters, shows that trailhead llama packers are very similar to commercial llama outfitter clients in the areas of education (33 percent had graduate degrees),

occupation (77.8 percent categorized themselves in the professional-managerial occupational category), and household income (55.5 percent earned more than $50,000 per year).

Trailhead llama users had the same mean age (47.1) as the clients of llama outfitters. They reported, however, a higher percentage of disabilities than all other groups (44.4%). Trailhead llama users were similar to other trailhead users and dissimilar to clients of llama outfitters in the areas of gender (66.7 percent were male) and place of residence; over half (55.6%) of trailhead llama users grew up in a rural area and the same percentage still live in a rural area.

Summary

Numerous studies have documented differences between hikers and horseback riders similar to those found in this study. Of interest is the new data which allow us to compare these background differences with clients of commercial llama outfitters.

The llama packers in this study were similar to wilderness visitors in general, in that they were uniformly Caucasian and tended to be from middle- and upper-class backgrounds. In most socioeconomic characteristics, the llama clients were more similar to hikers than horseback riders. In fact, the llama packers were even more likely than hikers to be highly educated, have white-collar occupations, make more than $50,000 per year, and come from urban areas. However, the llama group also had some characteristics in common with horseback riders. They were older than the hikers we sampled, and were more likely to have some disabilities that may hinder their use of the backcountry. The largest difference between the outfitted llama packers and more traditional backcountry visitors (both hikers and horseback riders) is that most (nearly two-thirds) of the commercial llama packers were women.

These results indicate, in general, commercial llama packing appeals to the same relatively elite social class of visitors (or slightly higher social class) as other wilderness travel modes. There is also evidence that women, older visitors, and possibly less able-bodied visitors may also be attracted to visit backcountry areas to go llama packing compared to more traditional wilderness travel modes. Due to differences in the sample populations, however, it is difficult to say to what extent these findings are the result of being a commercial activity rather than strictly travel mode differences. A comparison of the llama packers surveyed at the trailheads in Yellowstone and the Tetons tended to verify these findings, but the sample size (n=9) was simply too small to draw firm conclusions.

EXPERIENCE LEVEL

Respondents were asked to indicate the number of trips for each travel method that they had taken within the last five years and to estimate for four trip length categories, the number of trips taken each year. This information, summarized in Tables 3 and 4, is important to understand if llama packers represent a new visitor group, or simply traditional visitors that may be curious about llama packing or investigating a slightly different wilderness experience.

Hikers were especially active in trips on foot with 85.6 percent having taken more than four hiking trips during the last five years, and 44 percent having taken more than 20 trips in that same time period. Hikers also took longer trips than horseback riders and llama packers. On average hikers took nearly four (3.9) trips of one or two nights and 2.5 trips of more than two nights.

Horseback riders were as active as hikers in their particular activity. Over 85 percent of those on horseback had taken more than four trips on horses within the last five years and well over half (56.3%) had taken more than twenty trips. They were more likely to participate in full day trips

compared to hikers or llama clients, but slightly less likely than hikers to take overnight trips. Only 6 of the trailhead contacts who were hiking or horseback riding had ever gone llama packing.

Llama users were the least experienced of the three groups in their particular activity. Only 20.6 percent had taken four or more llama trips within a five year period and 3.6 percent had taken over 20 trips. Several factors probably contribute to these results. The first factor is the relatively new nature of the activity itself, but the lower participation rates could also be a result of an outfitted sample group. Llama users had much more hiking experience than horseback riding experience; 72.8 percent went on at least four hiking trips in the last five years compared to only 4.3 percent for horseback riding trips. Trip lengths for llama packers were shorter than hikers or horse users, however, with the highest mean for llama clients (6.7) being for trips of a few hours. Llama packers were more similar to horse users in their participation in mountain biking and canoeing/rafting, however. Hikers were the most likely to have participated in both mountain biking (46.5%) and canoeing/rafting (67.2%) followed by llama users (16.0% and 46.3% respectively) and then horseback riders (13.2% and 41.7%).

The nine llama packers contacted at the trailhead were a very experienced group. (Data not shown in table). Unlike the clients of commercial llama outfitters, over half (55.6%) of this group reported taking over 20 hiking trips and 55.6 percent reported taking 4-20 llama trips within the last five years. This group was also moderately active in horseback riding (66.6 percent had taken 1-20 trips in the last five years), mountain biking (33.3 percent had taken 4-20 trips in the last five years), and canoeing/rafting (44.4 percent had taken 4-20 trips in the last five years).

These findings indicate that those who visit the backcountry with llamas have characteristics in common with both hikers and horse users, but tend to be more similar to hikers in general. They

are not a totally new wilderness user group, but have reported less overall experience in the last five years compared to our sample of hikers and horseback riders. Thus, llama packing does not seem to be infusing an entirely new visitor group into the backcountry, but may provide an easier travel mode for women, older visitors, and others to experience the wilderness.

Table 3. Trip Length

Trip Length*	Trailhead Hikers	Trailhead Horseback Riders	Commercial Llama Users
Few Hours	9.7 (N=200)	6.4 (N=111)	6.7 (N=303)
Full Day	9.7 (N=207)	10.3 (N=111)	5.3 (N=303)
One or Two Nights	3.9 (N=207)	2.9 (N=111)	1.8 (N=302)
Two Nights or More	2.5 (N=207)	2.1 (N=109)	1.7 (N=305)

*Mean number of trips taken per year for each trip length category.

Table 4. Experience Level

	Trailhead Hikers	Trailhead Horseback Riders	Commercial Llama Users
Number of Hiking Trips in the last five years			
0	2 (1.0)	50 (48.5)	18 (6.0)
1-3	28 (13.5)	23 (22.3)	63 (21.1)
4-20	86 (41.6)	21 (20.4)	146 (49.0)
Over 20	91 (44.0)	9 (8.7)	71 (23.8)
Number of Horseback Riding Trips in the last five years			
0	145 (72.5)	0 (0.0)	230 (81.3)
1-3	359 (17.5)	16 (14.3)	41 (14.5)
4-20	15 (7.5)	33 (29.5)	11 (3.9)
Over 20	5 (2.5)	63 (56.3)	1 (0.4)
Number of Llama Packing Trips in the last five years			
0	189 (97.9)	90 (97.8)	18 (5.9)
1-3	3 (1.6)	1 (1.1)	225 (73.5)
4-20	0 (0.0)	0 (0.0)	52 (17.0)
Over 20	1 (0.5)	1 (1.1)	11 (3.6)
Number of Mountain Biking Trips in the last five years			
0	106 (53.5)	85 (86.7)	236 (84.0)
1-3	26 (13.1)	10 (10.2)	27 (9.6)
4-20	46 (23.3)	2 (2.0)	14 (5.0)
Over 20	20 (10.1)	1 (1.0)	4 (1.4)
Number of Canoeing/Rafting Trips in the last five years			
0	65 (32.8)	69 (68.3)	151 (53.7)
1-3	52 (26.3)	17 (16.8)	85 (30.2)
4-20	64 (32.3)	14 (13.9)	40 (14.3)
Over 20	17 (8.6)	1 (1.0)	5 (1.8)

PREFERENCES

To compare general backcountry trip preferences for the three travel mode groups, three different measures were used: 1) the importance of 14 different recreational activities during their backcountry trip, 2) their general level of satisfaction with five different backcountry travel modes (hiking, horseback riding, llama packing, mountain biking, and canoeing/rafting), and 3) their perceptions of problems encountered on their current trip.

Activities

Table 5 summarizes the importance of 14 different recreational activities sample subjects may have participated in during their backcountry trip. While there is a high degree of similarity in the lists of all three travel mode groups, the importance rankings of hikers and commercial llama packers were especially similar.

Viewing scenery was the only activity that all three groups rated a "major reason for going on this trip." Hikers (mean=2.75 on a three-point scale) and llama packers (2.88) both ranked hiking on trails as the second most important activity while it was rated much lower by horseback riders (1.52). Llama packers also rated camping (2.65) higher than both hikers (2.17) and horseback riders (2.02). In general, both hikers and llama packers rated nature study and hiking off trails higher than horseback riders, while photography, spending time in camp, picnicking, and checking out places to hunt were rated higher by horseback riders.

Trailhead llama users mirrored the preferences of clients of llama outfitters. The top three rated activities for this group were viewing scenery (3.00), camping (3.00), and hiking on trails (2.89).

Table 5. Activity Importance

ACTIVITY*	N	TRAILHEAD HIKER	TRAILHEAD HORSEBACK RIDER	COMMERCIAL LLAMA USERS
Viewing Scenery	620	2.85	2.82	2.91
Hiking on Trails	615	2.75	1.52	2.88
Camping	621	2.17	2.02	2.65
Nature Study	615	2.02	1.72	2.17
Photography	617	1.96	1.76	2.07
Spending Time in Camp	611	1.82	1.86	2.22
Picnicking	606	1.67	1.75	1.90
Hiking off Trails	610	1.71	1.14	1.86
Fishing	612	1.58	1.24	1.25
Hunting	612	1.56	1.24	1.24
Swimming	610	1.47	1.17	1.23
Collecting Edible Plants	607	1.12	1.07	1.08
Check Out Places to Hunt	602	1.03	1.19	1.03
Mountain Climbing	607	1.02	1.04	1.10

*Respondents were asked to indicate the importance of each activity for their trip > 1=Did not do this activity, 2= Did it, but not a major reason for going and 3= This activity was a major reason for going on this trip. Items are ranked in order of highest to lowest mean using all 3 subsamples.

Trip Satisfaction

When asked their level of satisfaction, with five different backcountry travel modes with which they had experience, hikers and horseback riders rated the travel mode they participated in during the current trip the highest. Hikers had the highest mean for their activity 4.80 (on a 5 point scale) with horseback riders responding with a mean of 4.78 (Table 6). Llama packers also rated their travel mode very high (4.64), but they actually rated hiking (4.70) slightly higher. It is difficult however for llama clients to separate hiking from hiking with llamas since hiking is a part of both

activities. Canoeing and rafting were the second favorite mode of travel for hikers (4.57) and the third favorite for llama clients (4.39). The least satisfying activity for the hikers was hiking with llamas (3.43), for horseback riders, mountain biking (3.08) and for llama clients, horseback riding (3.19).

Table 6. Level of Satisfaction for Travel Method

Travel Mode*	N	Trailhead Hiker	Trailhead Horseback Rider	Commercial Llama Users
Hiking	539	4.80	3.69	4.70
Horseback Riding	228	3.78	4.78	3.19
Hiking with Llamas	308	3.43	3.75	4.64
Mt. Biking	148	4.07	3.08	3.81
Canoeing/Rafting	296	4.57	4.16	4.39

*Scale= 1(very low satisfaction) to 5 (very high satisfaction)
Items are ranked in order of highest to lowest mean using all 3 subsamples.

It is clear that the individuals who hiked with llamas in this study are not simply an extension of the hiking population nor a variation on the packstock user. While they have many characteristics in common with hikers, they have distinct travel mode preferences. There may also be a subgroup of llama clients who were once more active in wilderness hiking that are older and may be trying backcountry travel with llamas to retain the ability to participate in wilderness recreation.

Trailhead llama users responded with high levels of satisfaction for all travel methods. Hiking with llamas was rated highest with a mean of 4.67, slightly higher than the mean for clients of llama outfitters.

Perceptions of Back country Problems

Respondents were given a list of eighteen possible backcountry problems, and asked to indicate the extent to which these items were a problem on their trip. Table 7 summarizes the mean responses, on a five-point scale, toward each item by each travel mode group. Many of the problem items were site specific, which makes it difficult to compare the llama group with the trailhead sample. However some interesting general trends in the data appear that are similar to results presented above.

Most items were ranked in the "no problem" to "slight problem" range by all three travel mode groups (Table 7). Once again, the commercial llama packers' perceptions were more similar to the attitudes of hikers than horseback riders. The three problems with the highest means for hikers were horse manure (2.53), trails impacted by horses (2.49), and meeting horses on the trail (1.97). Llama outfitted clients felt these same three problems were the most troublesome but with lower means than the hiking group: 2.30 for horse manure, 2.26 for trails impacted by horses, and 1.93 for meeting horses on the trail.

Horseback riders' responses were opposite the hiker and llama packers' responses when it came to items associated with horse use in the backcountry. Horseback riders considered the horse problem items as the least troublesome for them, and were more concerned with human caused problems. Horseback riders were more bothered by seeing too many people at certain locations (1.78), litter (1.65), and human waste (1.62).

Four of the problems listed dealt with llamas in the backcountry. None of the items were viewed as troublesome by hikers or llama packers, but horseback riders were more concerned than hikers with meeting llamas on the trail (1.53) and seeing too many llamas (1.45). While the low

overall ratings for llama problems probably reflect the low numbers of llamas found in wilderness areas, they suggest traditional wilderness users do not see a need for restricting llamas in the backcountry at current use levels.

Table 7. Perception of Backcountry Problems

Problem	N	Trailhead Hiker	Trailhead Horseback Rider	Commercial Llama Users
Horse manure on trails	632	2.53	1.07	2.30
Trails impacted by horses	632	2.49	1.13	2.26
Meeting horses on trail	632	1.97	1.05	1.93
Too many people at certain locations	632	1.74	1.78	1.65
Too many horses on trail	632	1.88	1.08	1.63
Human vegetation damage	632	1.74	1.42	1.54
Cattle grazing damage	632	1.62	1.53	1.52
Litter	625	1.66	1.65	1.36
Human waste	632	1.52	1.62	1.42
Too many large groups	632	1.54	1.46	1.36
Too many hikers	632	1.44	1.53	1.37
Grazing sheep	632	1.51	1.50	1.27
Llama manure	632	1.36	1.36	1.42
Not enough fire wood	609	1.38	1.42	1.35
Aircraft	632	1.31	1.36	1.26
Meeting llamas on trail	632	1.33	1.53	1.13
Trails impacted by llamas	632	1.38	1.25	1.14
Too many llamas	632	1.24	1.45	1.07

*Perceptions of problems measured on 5 point scale where 1 = "No problem at all" to 5 = "Big problem."
Items are ranked in order of highest to lowest mean using all 3 subsamples.

Conflict

Several questions were used to identify the level and sources of conflict that may result from the use of llamas in the backcountry. First, respondents were asked two sets of questions about the desirability of meeting different types of user groups in the backcountry. While the response formats were designed to be comparable with past wilderness research, the list of user groups encountered included "hikers with llamas." The results of these two sets of questions only include respondents who actually encountered the types of groups they were asked to evaluate. About one-quarter of all the travel mode subgroups had actually encountered llamas during the trip (Table 8). A third set of conflict-related questions contained 15 items designed specifically to tap visitors' attitudes toward llamas and llama packing. These questions were asked last on the survey so that they did not influence responses to previous questions.

Table 8. Encountered llamas on this trip

Trailhead Hiker	Trailhead Horseback Rider	Commercial Llama Users
36 (17.3)	25 (22.3)	82 (27.3)

Tables 9 and 10 summarize the responses of each travel mode group to questions asking about their encounters with different types of groups. Table 9 gives the mean for responses given on a three point (1=interfered a little to 3=interfered a lot) scale for the extent that the different groups interfered with the enjoyment of their trip. In general, Horseback riders felt the most interference from other groups, especially from hikers leading llamas (2.05) and hikers with dogs

Table 9. Perceptions of Group Interference

Problem*	N	Trailhead Hiker	Trailhead Horseback Rider	Commercial Llama Users
Horseback riders	210	1.78	1.45	1.65
Hikers with dogs	101	1.67	1.90	1.63
Hikers leading llamas	64	1.79	2.05	1.26
Hikers with backpacks (overnight campers)	104	1.33	1.76	1.30
Hikers with day packs	73	1.26	1.61	1.29

***Scale = 1 (interfered a little) to 3 (interfered a lot)**
Items are ranked in order of highest to lowest mean using all 3 subsamples.

(1.90). Hikers felt the most interference from hikers with llamas (1.79) and horseback riders (1.78). Llama clients were the least likely to feel other groups interfered with their visit. They felt the most interference from horseback riders (1.65) and hikers with dogs (1.63).

Respondents were also asked to indicate their level of enjoyment when meeting other groups. Table 9 gives the percentage for each travel mode group that indicated enjoying, not minding, or disliking each of the other groups. Nearly two thirds of the horseback riders (66.1) indicated that they enjoyed meeting other groups on horseback. Hikers were not so pleased with their encounters with other hikers (only 45.0 percent indicated that they enjoyed encounters with other hikers with backpacks), and llama clients were the least likely of the three travel mode groups to enjoy meeting a group using the same travel mode (only 35.6 percent saying they enjoyed encounters with other hikers with llamas). Llama clients did enjoy meeting other hikers, however, half (50.3) of the llama clients said they enjoyed meeting hikers with backpacks. Some interesting dynamics probably exist

Table 10. Group Encounter Evaluation

	Trailhead Hiker			Trailhead Horseback Rider			Commercial Llama Users		
Type of Group	Enjoyed Meeting Them	Did Not Mind Meeting Them	Disliked Meeting Them	Enjoyed Meeting Them	Did not Mind Meeting Them	Disliked Meeting Them	Enjoyed Meeting Them	Did not mind Meeting them	Disliked Meeting Them
Hikers with Day Packs	89 (43.0)	81 (39.1)	5 (2.4)	47 (42.3)	42 (37.8)	4 (3.6)	136 (44.7)	108 (35.5)	1 (.3)
Hikers with Backpacks (Overnight Campers)	94 (45.0)	74 (35.4)	4 (1.9)	45 (40.5)	40 (36.0)	5 (4.5)	153 (50.3)	106 (34.9)	1 (.3)
Horseback Riders	31 (14.8)	86 (41.1)	36 (17.2)	74 (66.1)	25 (22.3)	1 (.9)	34 (11.1)	122 (40.0)	47 (15.4)
Hikers Leading Llamas	14 (6.8)	23 (11.2)	9 (4.4)	14 (12.7)	19 (17.3)	13 (11.8)	106 (35.6)	37 (12.4)	4 (1.3)
Hikers with Dogs	21 (10.4)	25 (12.4)	10 (5.0)	24 (22.2)	30 (27.8)	11 (10.2)	40 (13.6)	61 (20.7)	38 (12.9)

*Cell percents do not tally to 100% because only respondents who saw each travel mode group were included in analyses.

in that relationship because llama users probably enjoy the novelty of their activity and derive pleasure telling hikers about packing with llamas.

Fewer respondents disliked encounters with other groups. The strongest feelings came from hikers who disliked meeting horseback riders (17.2), horseback riders who disliked meeting groups with llamas (11.8) and dogs (10.2), and llama clients who disliked meeting horseback riders (15.4) and hikers with dogs (12.9). While the trailhead results indicate that a typical pattern of asymmetrical antipathy exists for hikers and horseback riders, there was no apparent conflict between hikers and llama packers. Furthermore, symmetrical antipathy exists for horseback riders and llama packers. These results are consistent with llama packer's similarity with hikers, but with some added antagonism of horseback riders toward llama users.

Llama Use Attitudes

Finally, respondents were asked to indicate the extent that they agreed or disagreed with 15 statements specifically tapping attitudes toward the use of llamas in the backcountry. Table 11 gives the mean responses on a five-point scale (1=strongly disagree to 5=strongly agree) for each travel mode group. The attitude items were designed to tap five general content domains: 1) social conflict (items A,E,L), 2) physical impacts (C,K,M,O), 3) managerial equity (F,G), 4) philosophical appropriateness (B,J,N), and 5) safety (D,H,I).

Horseback riders felt strongest that regulations (4.12) and use limits (4.13) should be the same for llamas and horses. They also tended to agree with statements indicating that safety problems exist when llamas and horses meet on the trail. Horseback riders had mixed feelings about the philosophical appropriateness of llamas in the backcountry; they supported one of the pro-llama items (meeting llamas makes a trip more interesting), but also supported two items questioning the

Table 11. Backcountry Llama use Attitude

Item	N	Trailhead Hiker		Trailhead Horseback Rider		Commercial Llama Users	
		mean *	did not know◊	mean *	did not know◊	mean *	did not know◊
A) Llama packers are experienced	455	3.33	105 (51.5)	3.14	26 (23.0)	4.19	37 (12.1)
B) Meeting llamas makes trip more interesting	570	3.36	29 (14.1)	3.08	12 (10.7)	4.29	11 (3.6)
C) Llamas cause little impact	430	3.40	118 (57.6)	3.12	48 (42.5)	4.07	29 (9.4)
D) Llamas should be led off trail when meeting horses	476	2.93	87 (42.6)	3.72	10 (9.0)	3.85	47 (15.4)
E) Hikers don't mind camping in sites used by llamas	417	2.55	82 (40.0)	2.83	49 (43.4)	4.07	77 (25.1)
F) Use regulations same for llamas and horses	510	3.86	50 (24.3)	4.12	10 (8.9)	2.58	48 (16.0)
G) Limits for llamas same as for horses	491	3.67	51 (25.0)	4.13	14 (12.6)	2.61	62 (20.5)
H) Safety problems when llamas meet horses	417	3.14	124 (60.5)	3.75	13 (11.6)	2.81	69 (22.5)
I) Llamas safety problems worse for mules than horses	247	2.65	152 (74.5)	2.75	42 (37.2)	1.98	180 (59.2)
J) Seeing llamas seems out-of-place	596	2.80	21 (10.3)	3.04	7 (6.2)	1.57	0 (0.0)
K) Llamas threat introduction of exotic plants	401	2.57	104 (50.7)	3.01	46 (40.7)	1.52	73 (23.9)
L) Hikers don't mind camping in horse/mule sites	514	1.90	33 (16.1)	3.09	38 (33.6)	1.80	38 (12.5)
M) Llamas threat intro. disease	368	2.84	113 (55.1)	2.77	41 (36.9)	1.37	98 (32.2)
N) Horses more appropriate than llamas in backcountry	545	1.97	58 (28.2)	3.30	16 (14.2)	1.26	7 (2.3)
O) Llamas may escape and compete with wildlife	442	2.26	88 (42.9)	2.06	31 (27.7)	1.39	62 (20.3)

*Scale = 1 (strongly disagree) to 5 (strongly agree)

◊Number and percents are listed for the "do not know" responses

Items are ranked in order of highest to lowest mean using all 3 subsamples.

appropriateness of llamas (seeing llamas seems out of place and horses are more appropriate than llamas).

As with horseback riders, hikers also supported statements implying that use limits should be the same for horses and llamas, but hikers were more consistently supportive of the items implying llamas were appropriate in the backcountry. There was no evidence that hikers perceived social conflict resulting from llama use, even though evidence of the hiker-horse conflict is evident in the responses. For example, hikers were relatively neutral about the statement "hikers don't mind camping in sites used by llamas" (2.55), but disagreed with a similar statement about camping in sites used by horses or mules (1.90). Hikers also disagreed that horses were more appropriate than llamas in the backcountry (1.97).

The commercial llama clients also tended to agree with the managerial equity items, but they felt much less strongly about this issue than did the hikers and horseback riders. The llama packers felt strongest about the statements concerning how interesting llamas made a backcountry trip (4.29) and statements about llama packers being experienced (4.19), llamas causing little impact (4.07), and hikers not minding camping in sites used by llamas (4.07). In general, when compared to hikers and horseback riders, they were much more likely to agree with the philosophical appropriateness of llamas and to disagree with the physical impact items. Differences were especially pronounced when comparing llama packers and horseback riders. Trailhead llama user's attitudes were similar to commercial llama clients but with slightly stronger responses.

These results suggest that all three travel mode groups felt that llama use should be managed the same as other packstock. The major source of conflict appears to be safety concerns of horseback riders. Horseback riders were more likely than hikers to question the appropriateness of

llamas in the backcountry. This may be the result of safety concerns or from perceived competition for packstock-related access and facilities. Unfortunately, this latter issue was not included on the survey.

It is interesting to note the degree that respondents felt that they had no opinion or did not know how they felt about the statements. In addition to item means, Table 11 also gives the percentage of respondents for each travel mode who said that they did not know how they felt about the backcountry llama use statements. Hikers consistently had a higher percentage of "don't know" responses than horseback riders or llama clients to all of the statements except the two statements asking if hikers minded camping in sites used by llamas or horses. Nearly half of the horseback riders responded that they didn't know about the impact of llamas (42.5%) or about hikers' campsite preferences (40.0%). Llama clients expressed that they did not know about safety problems being worse for mules than horses when encountering a group with llamas (59.2%). These percentages suggest that backcountry user awareness, interest, and experience dealing with backcountry llama use is still limited.

CONCLUSIONS

Summary

Due to the nature of the two sample groups, statistical analyses between llama users and other backcountry visitors were not possible. Descriptive comparisons of the two sample groups, however, indicate that the llama outfitter client group is generally highly educated, affluent, professionals who live in an urban environment. While most were female, the data does not indicate that families with small children are more attracted to llama packing than other backcountry travel modes.

These findings should, however, be used cautiously for this user group and subsequent studies can help determine if the outfitted llama group is representative of llama users in general. This study was able to contact a small number of llama users at trailheads, but the numbers were too small for analysis. Exploratory analysis of these trailhead contacts, however, indicated similar trends in background information. As llama use increases and llama user trailhead contacts become more available, further research will be necessary to determine if these differences are attributed to the respondents because they were using llamas or because they were an outfitted sample group. Trailhead llama users were similar to clients of llama outfitters in education, occupation, income, and age. They also had similar preferences and attitudes. Important differences between the outfitted and trailhead contact llama groups included gender and experience level. Llama users contacted at the trailhead tended to be male and to have higher levels of experience.

Llama packers were the least experienced of the three travel mode groups studied. They, however, were moderately experienced hikers who resembled the horseback riders in the lower level

of experience in other modes of travel like mountain biking, canoeing, and rafting. They also resembled horseback riders in that they were older and had more disabilities than hikers.

Hikers and llama packers had much in common when asked about their activity preferences. Non-consumptive recreational activities that emphasized aesthetic enjoyment were most preferred by llama packers, but they seemed to have a stronger preference than hikers for relaxation- related activities. Hikers and llama packers also had very similar travel mode preferences and perceptions of backcountry problems, but llama packers' attitudes were more moderate than either hikers or horseback riders.

The preference and conflict measures indicated that horseback riders were more concerned about backcountry llama packing than hikers. The concerns stemmed primarily from safety considerations (some horses rear up or bolt at the sight of llamas), but those concerns were not strong enough for horseback riders to feel llama packing should be banned or restricted more than other packstock. Both hikers and horse users indicated that regulations and use limits should be the same for horses and llamas. Llama users were less concerned about safety or regulation equity issues, but felt very strongly that llamas were low impact and "interesting" pack animals. Many hikers and horseback riders indicated that they knew little about llama use in the backcountry.

Management Implications

Commercial llama packing clients appear to be an extension of wilderness hikers, possibly including some people who have difficulty gaining access to the backcountry. There is little opposition to llama packing from traditional backcountry visitors, except a concern among horseback riders that safety may be a problem. Thus managers should not use visitor attitudes or social conflict with traditional wilderness visitors to justify banning or restricting llama packing unless site specific

data warrant it. As past research has shown repeatedly, there is still much greater potential for conflict between horseback riders and hikers than between traditional wilderness visitors and llama packers.

This is not to say, however, that there will not be social conflict in the future if llama numbers increase dramatically. An increase in llama activity is possible since it is a relatively new activity and current participation is by individuals from relatively high social and economic classes, which are often the social strata that lead to the diffusion of recreational fads. It is unlikely there will be a great increase in llama packing, however, since this is not actually a new user group, but an extension or supplemental travel mode for visitors who have a moderate amount of wilderness hiking experience. Thus, while llama packing may lead to a small increase in visitation, it is unlikely that it will cause a large increase.

The down side of this is that llama packing will probably not lead to a diversification of wilderness participants, as some officials would like. There was no evidence of greater participation by ethnic minorities, poor people, families, or even older or disabled visitors compared to existing traditional visitors. While it may help extend or provide additional opportunities for women and middle-aged to late middle-aged wilderness hikers, we cannot say to what extent this observation is a result of llama packing per se as compared to other commercially outfitted backcountry activities. In general, since only 6 percent of the commercial llama packer participants had no other wilderness experience in the last five years, it is likely that any general increase in wilderness visitation from llama packing will be small.

Equity in management and use regulations of all packstock was a concern for all users surveyed. Yet, due to the conflict dynamics between horse users and llama packers, it would be a

mistake to zone the backcountry to restrict all packstock to certain areas. This would actually exacerbate the potential for conflict, as horseback riders and llama packers are forced into closer proximity. In fact, if zoning is necessary it would be more effective to zone one area for horse use and another for hiking and llama packing. With or without zoning, however, some combination of information and education is needed to help reduce the potential for conflict between llama and horse users, especially while llama use is still relatively localized. Horseback riders need to be informed if there is a potential for contacts with llamas, and llama packers need to be made aware of potential safety problems in encounters with horses. Llama packers should be responsible for leading llamas off the trail and keeping them still when meeting horses on the trail.

Finally, the moderate attitudes of llama packers toward wilderness problems and other visitors indicate that commercial llama packing clients are not likely to add to existing wilderness visitor or policy conflicts. This could be the result of having less backcountry experience overall, being a newer and therefore more marginal user group, or other factors. On the other hand, their satisfaction with llama packing in general, and their opinions that llamas pose little environmental impact and are an appropriate backcountry use, suggests that banning or restricting llamas could be met with stiff opposition from visitors with llama packing experience.

Research Implications

Five specific issues need to be addressed by future social research. These topics include 1) future demand and wilderness use level change resulting from llama packing, 2) the potential for increasing the diversification of wilderness visitation, 3) manager's perceptions of llama packing, 4) the motivations and benefits resulting from the activity, and 5) more site specific data to help understand the representativeness of these results. In addition, research on the physical impacts of

llama packing are needed to provide a complete picture for developing policy related to wilderness llama packing.

In general, the results discussed above should be considered tentative. Gauging the respresentativeness of the results is difficult because two different samples were used: traditional backcountry visitors in two wilderness areas and a nonrandom sample of commercial outfitter llama clients from throughout the western U.S. There were many consistencies in the data (e.g., similarity of hikers and llama packers on most variables), but there are still two outstanding questions concerning the results: 1) Are the differences observed primarily the result of the commercial activity rather than travel mode?, and 2) Are the hiker/horseback findings primarily site specific and not representative of most wilderness areas? For the first question, we also looked at the few trailhead respondents who were llama packing and found many similarities with the outfitter client data, but the number of trailhead llama respondents was too small to report statistical findings. The many similarities between the Yellowstone and Jedediah Smith trailhead data with past wilderness research (hiker vs. horseback rider characteristics, asymetrical conflict, etc.) suggest the backcountry areas selected for the study are not atypical western wilderness areas. To help meet this research need, data should be collected in a specific area that gets enough llama user or has a longer packing season.

The issue of enhancing wilderness access for nontraditional visitors (women, disabled, minorities, etc.) is also an important question for future research. We found little evidence that llama packing helps expand visitation or increase access to nontraditional social groups, but more analyses are needed to identify trends for specific types of visitors, and to relate the findings to specific agency goals and mandates. Related to this, is the need to conduct more detailed research

on level of experience and the extent to which llama packing is diffusing to different social or economic groups, if at all. This is also important for getting a better idea of the extent to which visitation is likely to increase in the future.

Research on the perceptions of other user groups and of resource managers toward llama packing is also needed. For example, it is possible that managers' personal opinions of the appropriateness and conflict potential of new, nontraditional recreation may influence decisions to restrict or regulate a new activity with little or no physical or social data to support those decisions. Anecdotal evidence suggests this has happened with mountain biking in many areas, and it may be the case with recent attempts to restrict llama packing in the southwestern states. The question of social acceptability of an activity should include manager's perceptions as well as the public.

Finally, more research is needed on the motivations for and benefits of llama packing. This is important for understanding the potential uniqueness of the activity and potential substitute activities or settings where those benefits may be found. Since many of the llama packing clients in this study had much lower levels of recent wilderness experience than the hikers and horseback riders, it is possible they are less dependent on pristine wilderness to obtain similar experiences and benefits being sought.

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Backcountry Visitor Study
OMB#0596-0108 exp 5/31/96

We are contacting visitors to this backcountry area as they end their trip in an effort to better understand the attitudes and opinions of backcountry users. Managers will be able to use this information in planning for the future of this wilderness.

In order for the results of this study to truly represent a questionnaire that will be sent to your home shortly after this trip. The questionnaire you receive will be identified with a number only. Complete confidentiality is assured.

Please respond to the following questions and give us your name and address so that you can receive a questionnaire in the mail.

PLEASE CIRCLE THE NUMBER FOR EACH ANSWER THAT APPLIES.

1. What method of travel did you use on this trip?

   1 HIKING
   2 HORSEBACK RIDING
   3 HIKING WITH PACKSTOCK (PLEASE SPECIFY THE ANIMAL) _____
   4 OTHER (PLEASE SPECIFY) _____ _____

2. How many of each of the following groups did you encounter on this trip?

   _____ HIKERS
   _____ HORSEBACK RIDERS
   _____ HIKERS WITH PACKSTOCK (PLEASE SPECIFY THE ANIMAL) _____
   _____ OTHER PLEASE SPECIFY _____ _____

3. During this trip I was in the backcountry for:

   1. A FEW HOURS
   2. A FULL DAY
   3. ONE OR TWO NIGHTS
   4. MORE THAN TWO NIGHTS

4. Please describe anything you experienced during this trip that detracted from your enjoyment of your stay in the backcountry.

   _____
   _____
   _____
   _____

5. If you would like to participate on this study please give your name and address below (PLEASE PRINT CLEARLY)

   NAME _____

   ADDRESS _____

   _____

_____ **TRAILHEAD**

_____ **DATE**

BACKCOUNTRY VISITOR SURVEY
OMB#0 596-0108 exp 5/31/96

Q-1. We are interested in knowing what activities you did during your recent visit to the backcountry which ended at the trailhead and date listed above. How important was each activity to your decision to make the trip? Please circle the number under the appropriate response after each activity listed.

	DID NOT DO THIS ACTIVITY	DID IT, BUT NOT A MAJOR REASON FOR GOING	THIS ACTIVITY WAS A MAJOR REASON FOR GOING ON THIS TRIP
A. Fishing	1	2	3
B. Hunting	1	2	3
C. Checking out places to hunt	1	2	3
D. Hiking on trails	1	2	3
E. Hiking off trail	1	2	3
F. Mountain climbing (Using ropes and special equipment)	1	2	3
G. Viewing scenery	1	2	3
H. Nature study (Bird watching, plant ID, rock study, etc.)	1	2	3
I. Photography	1	2	3
J. Swimming	1	2	3
K. Camping	1	2	3
L. Picnicking	1	2	3
M. Collecting edible plants	1	2	3
N. Spending time in camp (relaxing, performing camp chores etc.)	1	2	3
O. Other Activities (Please list)			
_____	1	2	3
_____	1	2	3

Q-2. The next set of questions concern problems you may have run into during this particular visit to the backcountry. Please tell us on a scale from 1 (NOT A PROBLEM AT ALL) to 5 (A BIG PROBLEM) how much of a problem you consider each item to have been on the trip you took on the date noted at the beginning of this survey.

	NO PROBLEM AT ALL				A BIG PROBLEM
A. Not enough firewood	1	2	3	4	5
B. Litter	1	2	3	4	5
C. Damage due to grazing cattle	1	2	3	4	5
D. Inadequate disposal of human body waste	1	2	3	4	5
E. Meeting llamas on the trail	1	2	3	4	5
F. Meeting horses on the trail	1	2	3	4	5
G. Too many people at certain locations	1	2	3	4	5
H. Horse manure on trail or in campsites	1	2	3	4	5
I. Low flying aircraft	1	2	3	4	5
J. Damage due to grazing sheep	1	2	3	4	5
K. Too many large groups	1	2	3	4	5
L. Human damage to vegetation (hatchet or axe marks on trees, etc.)	1	2	3	4	5
M. Too many hikers on the trails	1	2	3	4	5
N. Too many llamas on the trails	1	2	3	4	5
O. Too many horses on the trails	1	2	3	4	5
P. Trails impacted by llamas	1	2	3	4	5
Q. Trails impacted by horses or mules	1	2	3	4	5
R. Llama manure on trail or in campsite	1	2	3	4	5
S. Other (Please list)					
_____	1	2	3	4	5
_____	1	2	3	4	5

Q-3. Please evaluate your encounters with other groups during this trip into the backcountry. Check the appropriate column after each type of user group you may have encountered.

	ENJOYED MEETING THEM	DID NOT MIND MEETING THEM	DISLIKED MEETING THEM	DID NOT MEET ANY
HIKERS WITH DAYPACKS	( )	( )	( )	( )
HIKERS WITH BACKPACKS (overnight)	( )	( )	( )	( )
HORSEBACK RIDERS	( )	( )	( )	( )
HIKERS LEADING HORSES OR MULES	( )	( )	( )	( )
HIKERS LEADING LLAMAS	( )	( )	( )	( )
HIKERS WITH DOGS	( )	( )	( )	( )
OTHER (Please describe any other type of group you may have met)				
_____	( )	( )	( )	( )
_____	( )	( )	( )	( )

Q-4. Please circle the number indicating the extent to which any of the following types of groups interfered with your enjoyment of this trip to the backcountry.

	INTERFERED A LITTLE	INTERFERED SOMEWHAT	INTERFERED A LOT	DID NOT INTERFERE
HIKERS WITH DAYPACKS	1	2	3	NA
HIKERS WITH BACKPACKS (overnight campers)	1	2	3	NA
HORSEBACK RIDERS	1	2	3	NA
HIKERS LEADING HORSES OR MULES	1	2	3	NA
HIKERS LEADING LLAMAS	1	2	3	NA
HIKERS WITH DOGS	1	2	3	NA
OTHER (please describe any other type of group you may have met)				
_____	1	2	3	NA
_____	1	2	3	NA

Q-5. Please explain why the groups in question #4 interfered with your enjoyment of the backcountry.

_____

_____

_____

Q-6. Did you notice any impacts to the physical resource (trees, trails, etc.) that you believe were caused by the inappropriate behavior of others?

1 NO
2 YES

If yes, what kind of impact did you notice and what type of behavior do you believe caused it?

_____

_____

_____

Q-7. Did you encounter a group hiking with llamas on the trip noted at the beginning of the survey?

1 NO
2 YES

Q-8. Please circle your estimate of how many trips you have taken to backcountry recreation areas within the last <u>five years</u>, using each of the following methods of travel.

	NEVER USED THIS METHOD	NUMBER OF TRIPS LAST FIVE YEARS 1-3	4-10	11-20	OVER 20
HIKING	NA	1	2	3	4
HORSEBACK RIDING	NA	1	2	3	4
HIKING WITH PACK ANIMALS:					
LLAMAS	NA	1	2	3	4
PACK HORSES	NA	1	2	3	4
PACK MULES	NA	1	2	3	4
DONKEYS	NA	1	2	3	4
GOATS	NA	1	2	3	4
MOUNTAIN BIKING	NA	1	2	3	4
CANOEING/ RAFTING	NA	1	2	3	4
OTHER (please list)					
_____	NA	1	2	3	4
_____	NA	1	2	3	4

Q-9. Of the methods of travel you have used in the past five years, please circle the number indicating your general level of satisfaction on a scale from 1 (VERY LOW SATISFACTION) to 5 (VERY HIGH SATISFACTION).

	DID NOT USE THIS METHOD	VERY LOW SATISFACTION				VERY HIGH SATISFACTION
HIKING	NA	1	2	3	4	5
HORSEBACK RIDING	NA	1	2	3	4	5
HIKING WITH PACK ANIMALS:						
LLAMAS	NA	1	2	3	4	5
HORSES	NA	1	2	3	4	5
MULES	NA	1	2	3	4	5
DONKEYS	NA	1	2	3	4	5
GOAT	NA	1	2	3	4	5
MOUNTAIN BIKING	NA	1	2	3	4	5
CANOEING/RAFTING	NA	1	2	3	4	5
OTHER METHODS (please list)						
_____	NA	1	2	3	4	5
_____	NA	1	2	3	4	5

Q-10. For any of the travel methods listed in question 9, please describe what you like about those methods of travel that you gave a rating of (4) or (5).

_____

_____

_____

_____

_____

_____

Q-11. Have you *ever* encountered a group with llamas in the backcountry?

1 NO
2 YES

IF YES, PLEASE ESTIMATE HOW MANY GROUPS_____

Packing with llamas is a relatively new method of travel in backcountry areas in the United States. We would like to get your thoughts on some of the issues involved with using llamas as recreational packstock.

Q-12. Please indicate the extent to which you agree or disagree with the following statements about the use of llamas as packstock in the backcountry by circling a number from (1) STRONGLY DISAGREE to (5) STRONGLY AGREE.

	STRONGLY DISAGREE	SOMEWHAT DISAGREE	NEUTRAL	SOMEWHAT AGREE	STRONGLY AGREE	DON'T KNOW
A. Use regulations should be the same for llamas as they are for horses and mules	1	2	3	4	5	6
B. Horses and mules are more appropriate in the backcountry than llamas	1	2	3	4	5	6
C. Meeting a group of hikers with pack llamas makes my backcountry trip more interesting	1	2	3	4	5	6
D. Safety problems will occur when llamas meet horses or mules on the trail	1	2	3	4	5	6
E. In general, llama packers are experienced backcountry visitors	1	2	3	4	5	6
F. Hikers don't mind camping in sites previously occupied by llama packing groups	1	2	3	4	5	6
G. Llamas escaping in the backcountry might reproduce in the wild, introducing an exotic species to compete with native wildlife	1	2	3	4	5	6

	DISAGREE	DISAGREE		AGREE	AGREE	KNOW
H. Seeing llamas in the backcountry seems out of place	1	2	3	4	5	6
I. Llamas pose the threat of introduction of disease to native wildlife	1	2	3	4	5	6
J. The limit for the number of llamas per group should be the same as the limit for the number of horses or mules per group in the backcountry	1	2	3	4	5	6
K. Llamas pose more of a threat of introduction of exotic plant species into the backcountry than horses, mules or hikers, due to seeds being attached to their wool	1	2	3	4	5	6
L. Safety problems are more likely to occur when llamas meet mules on the trail than when llamas meet horses on the trail	1	2	3	4	5	6
M. Llamas cause little impact to vegetation due to their eating habits	1	2	3	4	5	6
N. When llamas meet horses or mules on the trail the llamas should be led off the trail giving the horses or mules the right of way	1	2	3	4	5	6
O. Hikers don't mind camping in sites previously occupied by horses and mules	1	2	3	4	5	6

Q-13. Please share with us any other comments you may have about the use of llamas in the backcountry.

_____

_____

_____

_____

The following questions will be used for statistical summaries of the visitors in this study. Please circle the number representing your response to each question. All answers will be kept **strictly confidential.**

Q-14. Please estimate how many times a year you take backcountry trips of each of the lengths listed below?

	NUMBER OF TRIPS PER YEAR
TRIPS LASTING ONLY A FEW HOURS	_____
TRIPS LASTING ONE FULL DAY	_____
TRIPS LASTING ONE OR TWO NIGHTS	_____
TRIPS LASTING MORE THAN TWO NIGHTS	_____

Q-15. Do you belong to any outdoor recreation, environmental, conservation or hunting and fishing organizations?

1 NO
2 YES (please list the names of the organizations)

_____

_____

_____

Q-16. In which of the following type of area did you spend most of your life up until the age of 18? (<u>please circle only one answer</u>)

1 ON A FARM OR RANCH
2 RURAL AREA OR SMALL TOWN (UNDER 1,000 POPULATION)
3 TOWN (1,000 - 5,000 POPULATION)
4 SMALL CITY (5,000 - 50,000 POPULATION)
5 MEDIUM CITY (50,000 - 250,000 POPULATION)
6 LARGE CITY (250,000 - 1 MILLION POPULATION)
7 IN A MAJOR CITY, METROPOLITAN AREA, (OVER 1 MILLION PEOPLE)

Q-17. In what type of community do you now live?

1 ON A FARM OR RANCH
2 RURAL AREA OR SMALL TOWN (UNDER 1,000 POPULATION)
3 TOWN (1,000 - 5,000 POPULATION)
4 SMALL CITY (5,000 - 50,000 POPULATION)
5 MEDIUM CITY (50,000 - 250,000 POPULATION)
6 LARGE CITY (250,000 - 1 MILLION POPULATION)
7 IN A MAJOR CITY, METROPOLITAN AREA, (OVER 1 MILLION PEOPLE)

Q-18. Which is the highest level of education you have attained? (Circle one)

1 NO FORMAL EDUCATION
2 SOME GRADE SCHOOL
3 COMPLETED GRADE SCHOOL
4 SOME HIGH SCHOOL
5 COMPLETED HIGH SCHOOL
6 VOCATIONAL OR TECHNICAL TRAINING
7 SOME COLLEGE
8 COMPLETED COLLEGE
9 SOME GRADUATE WORK
10 A GRADUATE DEGREE

Q-19. Are you presently? (Circle all that apply)

1 EMPLOYED PART TIME
2 EMPLOYED FULL TIME
3 UNEMPLOYED
4 RETIRED
5 FULL TIME HOMEMAKER
6 FULL TIME STUDENT
7 PART TIME STUDENT

Q-20. If you are employed, what is your occupation? (If retired, please describe your occupation before retirement)

JOB TITLE_____
KIND OF WORK_____
KIND OF COMPANY OR BUSINESS_____

Q-21. Which of the following categories best describes your annual household income before taxes, in 1993?

1 LESS THAN $5,000
2 $5,000 TO $9,999
3 $10,000 TO $14,999
4 $15,000 TO $19,999
5 $20,000 TO $24,999
6 $25,000 TO $34,999
7 $35,000 TO $49,999
8 $50,000 TO $74,999
9 $75,000 TO $99,999
10 $100,000 AND ABOVE

Q-22. What is your present age: _____YEARS

Q-23. What is your gender?

1 FEMALE
2 MALE

Q-24. What is your present marital status? (circle number)

1 NEVER MARRIED
2 MARRIED OR LIVING WITH A PARTNER
3 DIVORCED
4 SEPARATED
5 WIDOWED

Q-25. Do you have children or step children?

1 YES
2 NO

If yes, do some or all of your children live in your household all or part of the year?

1 YES
2 NO

Q-26. How many children do you have that are still living in your household that are in each of the age groups listed below? (If none, write "0")

NUMBER OF CHILDREN

_____ UNDER 5 YEARS OF AGE
_____ 5 TO 13
_____ 14 TO 18
_____ 19 TO 24
_____ 25 AND OVER

Q-27. Do you have a physical condition that has limited your participation in outdoor activities in any way?

1 NO
2 YES, A MINOR CONDITION (please describe the condition briefly)

_____

_____

3 YES, A MAJOR CONDITION (please describe the condition briefly)

_____

_____

Q-28. What is your ethnic background?

1 BLACK/AFRICAN AMERICAN
2 HISPANIC
3 ASIAN
4 AMERICAN INDIAN
5 WHITE/ANGLO/CAUCASIAN
6 OTHER (please specify) _____

THANK YOU for your cooperation. Please feel free to use the space below or a separate letter to tell us any additional thoughts you would like to share about backcountry areas in Yellowstone and the Tetons.

PLEASE CLOSE THIS QUESTIONNAIRE SO THAT THE RETURN ADDRESS IS SHOWING, TAPE OR STAPLE IT SHUT AND RETURN BY DROPPING INTO THE MAIL. RETURN POSTAGE IS PROVIDED ON THE COVER.