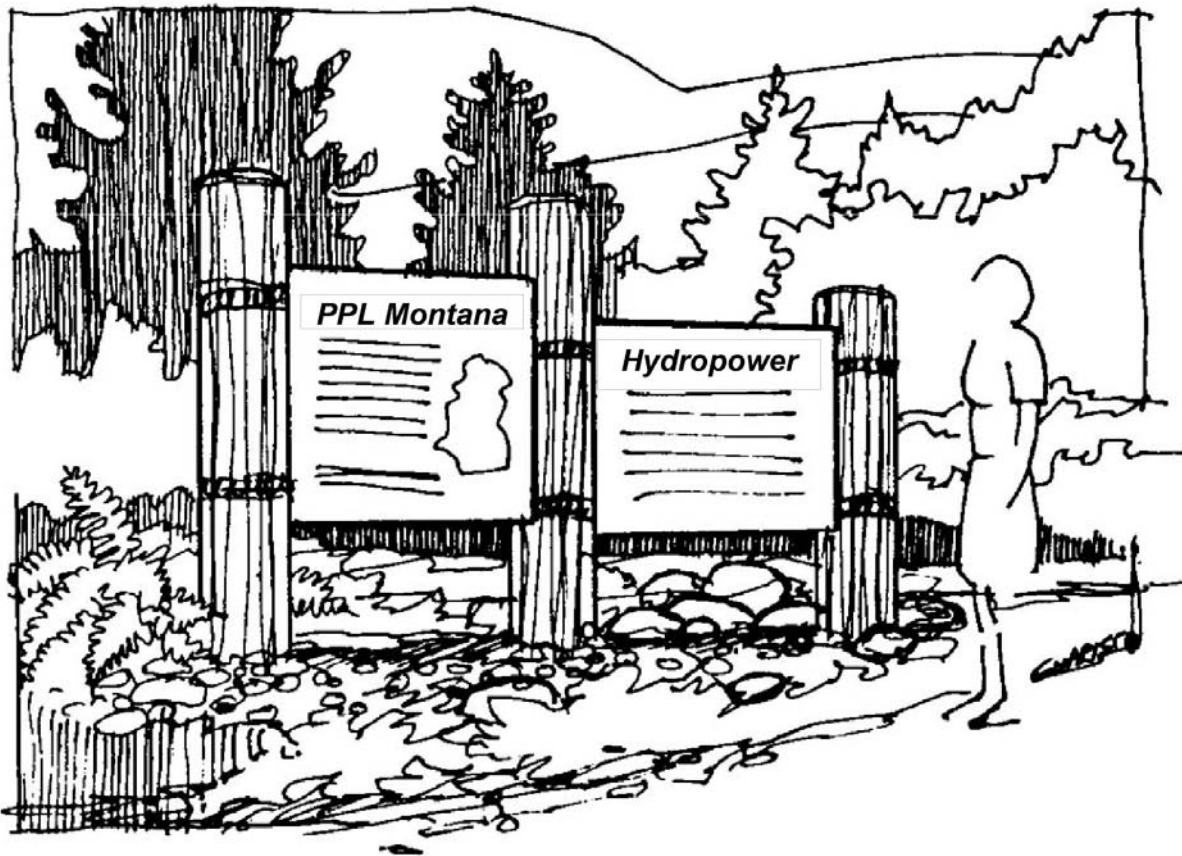


2001 Recreation Use Study Report

Mystic Hydroelectric Project



March 11, 2002

Prepared for:
PPL Montana

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Summary

A survey of recreational use in the Mystic Hydroelectric Project area was conducted by PPL Montana from May 26 to September 30, 2001. The study was designed and administered by the American Public Land Exchange and REC Resources.

Over the course of the study, 935 recreationists (age 16 or over) were interviewed about their past and present visits, recreation activities, opinions about recreation resources, trip satisfaction and other factors. Additional information about anglers' experiences and fishing success was collected because of special interest in area fisheries management.

Results Overview

- ❑ Eighty-eight percent of visitors live in Montana and the vast majority come from the local region. Visitors were three-quarters male and had an average age of 39.
- ❑ Nearly two-thirds of visitors had visited the area before. These visitors had used the area an average of a dozen years and three times in the last year.
- ❑ On their current visit, 42 percent of visitors used the area for the day and 58 percent spent the night.
- ❑ The average group size was 3.3, with about half the groups composed of one or two people.
- ❑ Seventeen percent of visitors camped using RVs and 30 percent car camped in tents in developed areas. Eleven percent of visitors camped in the backcountry at Mystic Lake or beyond.
- ❑ Forty-seven percent of visitors fished from shore. Nearly half of these anglers fished the creek from Pine Grove to West Rosebud Lake and West Rosebud Lake (48 percent and 42 percent respectively), while 23 percent fished Mystic Lake and nine percent fished beyond Mystic.
- ❑ Forty percent of visitors reported day hiking or walking. Eighteen percent of hikers used the area around the developed campgrounds, while nearly three-quarters of hikers used the trail from the powerhouse to Mystic Lake or trails at Mystic Lake.
- ❑ Anglers were more likely to be male than non-anglers, but their age and origin closely followed non-anglers. Seventy-one percent of anglers had used the area before.
- ❑ Two-thirds of anglers (66 percent) caught fish and nearly half of these (47 percent) released all their catch. On average, anglers that caught fish kept 1.5 fish. Of the fish kept, 51 percent were Rainbow Trout, 24 percent Brown Trout, 12 percent Cutthroat Trout, and eight percent Brook Trout.

- ❑ Eighty-two percent of anglers said it was very or extremely important to go fishing; 80 percent said it was very or extremely important to catch at least one fish, twenty percent said it was very or extremely important to catch large fish, and ten percent said it was very or extremely important to catch their limit.
- ❑ Fifty-six percent of anglers reported being very or extremely satisfied with their fishing experience; 70 percent of successful anglers were very or extremely satisfied with their fishing experience, versus 29 percent of non-successful anglers.
- ❑ Eight percent of visitors preferred change to recreation facilities or management. Of those wanting change, 27 percent wanted cleaner or better-maintained toilets, 19 percent wanted improved roads, 10 percent wanted additional campsites, six percent wanted improved campsite maintenance, and six percent wanted better litter control.
- ❑ Sixteen percent of visitors reported encountering a problem on their visit. Of those reporting a problem, 23 percent complained about the road condition, 14 percent about the toilets, 10 percent about the fire-related Mystic Lake Trail closure (which lasted four days), and six percent about litter.
- ❑ Ninety percent of visitors reported being very or extremely satisfied with their recreation experience.
- ❑ When given a chance to report anything else about their visit, six percent of visitors used the opportunity to report that the road needed repair.

Report Organization

Section 1 of the report outlines the **study's purpose and guidelines**.

Section 2 summarizes study results on **general recreation use** in the project area. It describes the typical visitor, reports their activities within the areas they visited, and provides their opinions on area facilities and their level of trip satisfaction.

Section 3 focuses on **fishing activity**. It describes fishing success along several reaches of West Rosebud Creek, examines differences between anglers and non-anglers, and reports the importance of fishing outcomes and the level of satisfaction with area fishing.

Section 4 outlines the **study's methods**.

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1. Introduction

PPL Montana conducted a survey of recreational use in the Mystic Hydroelectric Project area from May 26 to September 30, 2001. The study was performed to provide PPL Montana with baseline information on recreational use, which will be shared with Montana Fish, Wildlife and Parks and the Forest Service.

The American Public Land Exchange and REC Resources developed the survey methodology and exit interview questionnaire in cooperation with staff from PPL Montana, Forest Service, and Montana Fish, Wildlife and Parks. The American Public Land Exchange and REC Resources administered the survey, analyzed the data and prepared this summary report.

1.1 Study Goal

The goal of conducting the study was to better understand recreation use in the project area, which will assist in visitor and recreation resource management. Special emphasis was placed on fishing because of the interest in fisheries management in the project area.

1.2 Study Objectives

The objectives of the study were to understand the visitor's:

- Previous use of area (number of years, visits in past year, typical trip duration)
- Length of current visit and group size
- Recreation activities within six geographic areas: (1) Pine Grove Campground to West Rosebud Lake, (2) West Rosebud Lake, (3) West Rosebud Lake to powerhouse, (4) powerhouse to Mystic Lake, (5) Mystic Lake, and (6) backcountry above Mystic Lake
- Opinions on the adequacy of recreation facilities and need for change
- Satisfaction with overall recreation experience
- Importance of fishing outcomes (catching fish, catching big fish, etc.)
- Number of fish caught and number kept (and their species, size, and area caught)
- Satisfaction with fishing experience
- Geographic origin and socio-demographic characteristics

1.3 Study Area

The study area is located in the vicinity of the Mystic Hydroelectric Project within the Custer National Forest in south-central Montana. Specifically, it is the generally linear area: beginning just north of the USFS Pine Grove Campground (9 miles down West Rosebud Road #72) and continuing south along the road corridor to the Mystic powerhouse (road end), and to those backcountry areas accessed along the Mystic Lake Trail.

West Rosebud Road provides the only vehicular access to the study area. Several recreation facilities have been developed along the road (campgrounds, day use areas, creek and lake access areas, and Mystic Lake trailhead). The Mystic Lake Trail (#19) provides access to Mystic Lake and other backcountry areas within the Absaroka-Beartooth Wilderness.

(Note: During the study period, a wildfire caused the closure of the Mystic Lake Trail from August 20th to August 24th.)

1.4 Population of Interest

The population of interest consisted of all recreationists aged 16 years or older who visited the project area between the dates of May 26 to September 30, 2001.

1.5 Methods Overview

Vehicles containing recreationists were stopped as they exited the study area during 43 randomly selected days during the study period (sampling occurred eight hours each day). One vehicle occupant (aged 16 or over) was randomly selected to answer questions regarding their visit. A structured interview was conducted using the survey questionnaire in Appendix A.

In total, 935 recreationists participated in the survey. Survey refusals (defined as the vehicular group declining to participate or not stopping when no wait to be interviewed existed) totaled 184, resulting in a survey response rate of 84 percent.

Section 4 provides details about the study methodology.

2. Recreation Use

2.1 Typical Visitor

Gender

Three out of four visitors were male.

Gender	Frequency	Percent
Male	691	74.7
Female	234	25.3
Total	925	100.0

Age

The average (mean) age of visitors (age 16 or over) was 39; the median and mode were 38.

	N	Min.	Max.	Mean	Std. Dev.	Median	Mode
Age	920	16	80	39.01	12.74	38	38

The bulk of visitation (75 percent) was from visitors between the ages of 20 and 49. Visitors 50 or older accounted for 21 percent of recreationists.

Age by Category	Frequency	Percent	Cumulative Percent
16 to 19	40	4.3	4.3
20 to 29	205	22.3	26.6
30 to 39	247	26.8	53.5
40 to 49	234	25.4	78.9
50 to 59	133	14.5	93.4
60 to 69	44	4.8	98.2
70 or more	17	1.8	100.0
Total	920	100.0	

Origin

Eighty-eight percent of visitors originated from Montana. All other locations contributed only one percent or less to visitation each.

Residence	Frequency	Percent	Cumulative Percent
Montana	819	87.6	87.6
Minnesota	12	1.3	88.9
California	9	1.0	89.8
Colorado	9	1.0	90.8
Wyoming	8	.9	91.7
New York	7	.7	92.4
Wisconsin	7	.7	93.2
Idaho	5	.5	93.7
North Dakota	5	.5	94.2
Ohio	5	.5	94.8
Utah	5	.5	95.3
Iowa	4	.4	95.7
Other states (three or fewer occurrences)	36	3.9	99.6
Other Countries	4	.4	100.0
Total	935	100.0	

The vast majority of use from Montanans came from the immediate region, with Billings accounting for 63 percent.

Origin of Montana Residents	Frequency	Percent	Cumulative Percent
Billings	513	62.6	62.6
Laurel	70	8.5	71.2
Columbus	30	3.7	74.8
Absarokee	27	3.3	78.1
Bozeman	27	3.3	81.4
Red Lodge	20	2.4	83.9
Joliet	15	1.8	85.7
Park City	10	1.2	86.9
Huntley	10	1.2	88.2
Fishtail	8	1.0	89.1

Origin of Montana Residents	Frequency	Percent	Cumulative Percent
Helena	7	0.9	90.0
Livingston	6	0.7	90.7
Missoula	6	0.7	91.5
Miles City	5	0.6	92.1
Shepherd	5	0.6	92.7
Big Timber	4	0.5	93.2
Worden	4	0.5	93.8
Butte	4	0.5	94.3
Reed Point	3	0.4	94.6
Kalispell	3	0.4	95.0
Bridger	3	0.4	95.4
Hardin	3	0.4	95.7
Colstrip	3	0.4	96.1
Forsyth	3	0.4	96.5
Fromberg	3	0.4	96.8
Great Falls	2	0.2	97.1
Nye	2	0.2	97.3
Lavina	2	0.2	97.6
Other cities or towns (one occurrence)	21	2.5	100.0
Total	819	100.0	

2.2 Previous Experience

Past Visits

Nearly two-thirds (62 percent) of visitors had visited the area before.

	Frequency	Percent
First Visit to Area	352	37.7
Not First Visit to Area	582	62.3
Total	934	100.0

Amount of Past Experience

In general, recreationists that had used the area previously had 10 to 12 years of experience and had visited about twice in the last 12 months.

	N	Min.	Max.	Mean	Std. Dev.	Median	Mode
Years Visiting	504	1	60	11.9	10.4	10	10
Times Visited in Last Year	531	0	30	2.7	3.0	2	1

Usual Past Trip Duration

For visitors with past experience in the area, 37 percent typically used the area for the day and 63 percent usually spent the night.

Visitors that usually spent less than eight hours in the area typically stayed about five hours. (Note: when recorded, hours were rounded to the nearest whole number, with one being the minimum and seven the maximum).

For visitors that typically spent at least one night, 65 percent usually stay one night (two days); 23 percent stay two nights (three days); six percent stay three nights (four days), and six percent stay four nights or more (five days or more).

	N	Percent	Min.	Max.	Mean	Median	Mode
Day Use Hours (if less than 8 hrs.)	109	20.4	1	7	4.4	5	5
Other Day Use (if 8 hrs. or more)	89	16.6	N/A	N/A	N/A	N/A	N/A
Days if Overnight	337	63.0	2	8	2.6	2	2
Total	535	100.0					

2.3 Trip Duration and Group Size

Trip Duration

During their current visit, 42 percent of recreationists used the area for the day and 58 percent spent the night. This is slightly more day use and less overnight use than past use reported by those with previous experience (see Section 2.2).

Visitors that spent less than eight hours in the area typically stayed about four hours. (Note: when recorded, hours were rounded to the nearest whole number, with one being the minimum and seven the maximum). This is about an hour less than reported for past visits for those with previous experience (see Section 2.2).

For overnight visitors, 67 percent stayed one night (two days); 21 percent stayed two nights (three days); seven percent stayed three nights (four days), and five percent stayed four nights or more (five days or more). This is very similar to past use reported by those with previous experience (see Section 2.2).

	N	Percent	Min.	Max.	Mean	Median	Mode
Day Use Hours (if less than 8 hrs.)	298	32.3	1	7	3.7	4	4
Other Day Use (if 8 hrs. or more)	91	9.8	N/A	N/A	N/A	N/A	N/A
Days if Overnight	535	57.9	2	11	2.6	2	2
Total	924	100.0					

Group Size

The average (mean) group size was 3.3 people, with about half the groups (49 percent) composed of two people or less.

	N	Min.	Max.	Mean	Std. Dev.	Median	Mode
Group Size	871	1	32	3.3	2.4	3	2

Group Size	Frequency	Percent	Cumulative Percent
1	92	10.6	10.6
2	332	38.1	48.7
3	159	18.3	66.9
4	115	13.2	80.1
5	76	8.7	88.9
6	35	4.0	92.9
7	32	3.7	96.6
8	8	.9	97.5
9	5	.6	98.0
10	6	.7	98.7
11	3	.3	99.1
12 or more	8	.8	100.0
Total	871	100.0	

2.4 Activities Pursued

Of the recreation activities surveyed, camping, fishing and hiking were the most popular.

Seventeen percent of visitors camped using RVs and 30 percent car camped in tents in developed areas. Eleven percent of visitors camped in the backcountry at Mystic Lake or beyond.

Fishing from shore was pursued by 47 percent of visitors. Nearly half of the anglers fished Pine Grove to West Rosebud Lake and West Rosebud Lake (48 percent and 42 percent respectively), while 23 percent fished Mystic Lake and nine percent fished beyond Mystic. Two percent of visitors fished from a boat. More information regarding anglers is presented in Section 3.

Forty percent of visitors reported day hiking or walking. Eighteen percent of hikers used the area around the developed campgrounds, while nearly three-quarters of hikers used the trail from the powerhouse to Mystic Lake or trails at Mystic Lake (73 percent and 72 percent respectively; many backpackers reported day hiking only at Mystic Lake).

Recreation Activities by Area	Pine Grove to West Rosebud Lake	West Rosebud Lake	West Rosebud Lake to P-house	Power-house to Mystic Lake	Mystic Lake	Beyond Mystic Lake
RV Camping 16.6 % ¹ n = 155	98.1 % ² 98.1 % ³	1.3 % ² 1.3 % ³	0.6 % ² 0.6 % ³			
Car Camping or Tenting 29.9 % ¹ n = 280	96.4 % ² 95.7 % ³	4.3 % ² 4.3 % ³				
Backcountry Camping 11.0 % ¹ n = 103	1.0 % ² 0.9 % ³			1.9 % ² 1.8 % ³	27.2 % ² 25.2 % ³	77.7 % ² 72.1 % ³
Day Hiking or Walking 40.4 % ¹ n = 378	18.0 % ² 9.7 % ³	6.9 % ² 3.7 % ³	0.5 % ² 0.3 % ³	72.8 % ² 39.1 % ³	72.2 % ² 38.8 % ³	15.6 % ² 8.4 % ³
Horseback Riding 0.3 % ¹ n = 3				33.3 % ² 25.0 % ³	100. % ² 75.0 % ³	
Picnicking ⁴ 4.3 % ¹ n = 18	100.0 % ² 94.7 % ³	5.6 % ² 5.3 % ³				
Fishing from Shore 47.3 % ¹ n = 442	47.7 % ² 38.1 % ³	41.6 % ² 33.2 % ³	2.0 % ² 1.6 % ³	1.8 % ² 1.4 % ³	22.9 % ² 18.2 % ³	9.3 % ² 7.4 % ³
Fishing from a Boat 1.8 % ¹ n = 17	64.7 % ² 57.9 % ³	47.1 % ² 42.1 % ³				
Rafting, Kayaking or Canoeing 1.9 % ¹ n = 18	88.9 % ² 76.2 % ³	27.8 % ² 23.8 % ³				
Mountain Biking 0.3 % ¹ n = 3	100.0 % ² 75.0 % ³	33.3 % ² 25.0 % ³				
Nature Study or Photography 2.8 % ¹ n = 26	84.6 % ² 61.1 % ³	15.4 % ² 11.1 % ³	7.7 % ² 5.6 % ³	11.5 % ² 8.3 % ³	19.2 % ² 13.9 % ³	
Hunting 0.2 % ¹ n = 2	50.0 % ² 33.3 % ³	50.0 % ² 33.3 % ³				50.0 % ² 33.3 % ³

¹ Percent of respondents participating in activity

² Percent of activity participants that used area; total can exceed 100 percent

³ Percent of activity occurring in area; total equals 100 percent

⁴ Picnicking data acquired before July 25 discarded due to data collection error

2.5 Opinions on Facilities

Need for Change

Eight percent of visitors preferred to see some changes in area recreation facilities or management.

	Frequency	Percent
Prefer No Change	847	92.4
Prefer Change	70	7.6
Total	917	100.0

Improvements Desired

Of those visitors desiring change (n = 70), 70 percent wanted facility improvements. The improvements mentioned most often by visitors desiring change were cleaner or better maintained toilets (27 percent) and better-maintained roads (19 percent).

Improvements Desired	Frequency	Percent
Toilets – cleaner or better maintained	19	27.1
Roads – better maintained	13	18.9
Litter – better litter control, garbage cans	4	5.7
Campsites – cleaner or better maintained	4	5.7
Campsites – lower fees	2	2.8
Campsites – deeper	2	2.9
Campsites – move farther apart	1	1.4
Dogs – better control	1	1.4
Less people	1	1.4
Water – keep working	1	1.4
Information – on trail condition from F.S.	1	1.4
Wanting change but not improvements	21	30.0
Total	70	100.0

Additions Desired

Of those visitors desiring change (n = 70), 29 percent wanted facility additions. The additions mentioned most often by visitors desiring change were campsites (10 percent) and trails (4 percent).

Additions Desired	Frequency	Percent
Campsites	7	10.0
Trails – mountain bike or ATV or horse	3	4.3
Picnic tables – West Rosebud Lake	2	2.9
Electricity at campgrounds	1	1.4
Free camping	1	1.4
Trail mile markers	1	1.4
Trail rain shelter	1	1.4
Showers	1	1.4
Posted regulations	1	1.4
Boat dock on lakes	1	1.4
Wood for campfires	1	1.4
Wanting change but not additions	50	71.4
Total	70	100.0

Removals Desired

Of those visitors desiring change (n = 70), one percent wanted a facility removed, which was the hydroelectric facility.

Removals Desired	Frequency	Percent
Power plant in wilderness area	1	1.4
Wanting change but not removals	69	98.6
Total	70	100.0

2.6 Problems in Area

Encounter Problem

Sixteen percent of visitors reported encountering a problem on their visit.

	Frequency	Percent
Didn't Encounter Problem	767	84.5
Encountered Problem	141	15.5
Total	908	100.0

Types of Problems

For visitors reporting a problem (n = 141), the problem mentioned most often was the road condition (23 percent), followed by problems with the condition of the toilets (14 percent), and the fire-related Mystic Lake Trail closure (10 percent).

Problem	Frequency	Percent
Road – bad condition	33	23.4
Toilets – dirty	11	7.8
Toilets – no paper	4	2.8
Toilets – flies	5	3.5
Mystic Trail – closed	14	9.9
Mystic Trail – condition	2	1.4
People ignoring rules	6	4.3
Dogs off leash	5	3.5
Noise from others	4	2.8
Litter	9	6.4
Post regulations	1	0.7
Wildfire	6	4.3
Flies	12	8.5
Bear in camp	5	3.5
Bees	1	0.7
Nuisance deer	1	0.7
Cottonwood seeds in water	2	1.4

Problem	Frequency	Percent
Dust	1	0.7
Fish quality or quantity	2	1.4
Rude Forest Service staff	4	2.8
Fees too high	3	2.1
Crowded	2	1.4
Trouble finding camp site	1	0.7
Water or camps closed	5	3.5
Not enough trailhead parking	1	0.7
Should be a trail closed sign at start of road	2	1.4
No fires allowed	2	1.4
Total	144	101.7

2.7 Satisfaction with Recreation Experience

Ninety percent of visitors reported being very or extremely satisfied with their recreation experience.

Satisfaction with Recreation Experience	Frequency	Percent	Cumulative Percent
Extremely	382	41.4	41.4
Very	443	48.0	89.5
Somewhat	74	8.0	97.5
Not very	12	1.3	98.8
Not at all	11	1.2	100.0
Total	922	100.0	

2.8 Other Comments

When given the opportunity to report anything else about area recreation opportunities, seven percent of visitors provided feedback, which was almost exclusively related to complaints about the road condition (95 percent).

Other Comments	Frequency	Percent
Fix road	60	95.2
Lower fees	2	3.2
Need to enforce rules to reduce bear problem (dirty campsites)	1	1.6
Total	63	100.0

3. Fishing Use

3.1 Typical Angler

Gender

Anglers were 85 percent male and 15 percent female, while non-anglers were 65 percent and 35 percent respectively. Fifty-six percent of males and 29 percent of females were anglers.

	Angler N = 453 49.0 %	Non-Angler N = 472 51.0 %
Male N = 691 74.7 %	N = 385 55.7 % R 85.0 % C	N = 306 44.3 % R 64.8 % C
Female N = 234 25.3 %	N = 68 29.1 % R 15.0 % C	N = 166 70.9 % R 35.2 % C

Age

The average (mean) age of anglers was 39, which was the same as for non-anglers.

	N	Min.	Max.	Mean	Std. Dev.	Median	Mode
Age of Anglers	450	16	80	38.8	12.8	38	29
Age of Non-Anglers	470	16	76	39.2	12.7	39	38

Age Category	Angler N = 450 48.9 %	Non-Angler N = 470 51.1 %
16 to 19 N = 40 4.3 %	N = 22 55.0 % R 4.9 % C	N = 18 45.0 % R 3.8 % C
20 to 29 N = 205 22.3 %	N = 101 49.3 % R 22.4 % C	N = 104 50.7 % R 22.1 % C
30 to 39 N = 247 26.8 %	N = 126 51.0 % R 28.0 % C	N = 121 49.0 % R 25.7 % C
40 to 49 N = 234 25.4 %	N = 107 45.7 % R 23.8 % C	N = 127 54.3 % R 27.0 % C
50 to 59 N = 133 14.5 %	N = 63 47.4 % R 14.0 % C	N = 70 52.6 % R 14.9 % C
60 to 69 N = 44 4.8 %	N = 22 50.0 % R 4.9 % C	N = 22 50.0 % R 4.7 % C
70 or more N = 17 1.8 %	N = 9 52.9 % R 2.0 % C	N = 8 47.1 % R 1.7 % C

Origin

The origin of anglers closely follows the distribution of the origins of all recreationists, presented earlier in Section 2.1.

3.2 Previous Experience

Past Visits

Seventy-one percent of anglers had been to the area before, versus 54 percent of non-anglers. This suggests that the recreationists who fish are more likely to return to the area.

	Angler N = 456 48.8 %	Non-Angler N = 478 51.2 %
First Visit N = 352 37.7 %	N = 134 38.1 % R 29.4 % C	N = 218 61.9 % R 45.6 % C
Not First Visit N = 582 62.3 %	N = 322 55.3 % R 70.6 % C	N = 260 44.7 % R 54.4 % C

Amount of Past Experience

In general, anglers that had used the area previously had 10 to 12 years of experience and had visited about twice in the last 12 months; this is very similar to all recreationists with past experience.

	N	Min.	Max.	Mean	Std. Dev.	Median	Mode
Years Visiting	280	1	60	11.8	9.7	10	10
Times Visited in Last Year	300	0	20	2.9	3.0	2	1

3.3 Trip Duration and Group Size

Trip Duration

One-third (34 percent) of anglers used the area for the day and two-thirds (66 percent) spent the night. This is less day use and more overnight use than that reported for all recreationists.

Anglers that spent less than eight hours in the area typically stayed about four hours. (Note: when recorded, hours were rounded to the nearest whole number, with one being the minimum and seven the maximum).

	N	Percent	Min.	Max.	Mean	Median	Mode
Day Use Hours (if less than 8 hrs.)	102	22.6	1	7	4.2	4	4
Other Day Use (if 8 hrs. or more)	51	11.3	N/A	N/A	N/A	N/A	N/A
Days if Overnight	299	66.2	2	11	2.6	2	2
Total	452	100.0					

Group Size

The average (mean) group size of anglers was 3.4 people.

	N	Min.	Max.	Mean	Std. Dev.	Median	Mode
Group Size	426	1	25	3.4	2.4	3	2

3.4 Fishing Success

Fish Caught

Anglers reported catching between 0 and 125 fish, with the average (mean) being 4.1 and the median 2. (Section 2.4 provides details about where anglers fished.)

One-third (34 percent) of anglers caught no fish, while two-thirds (66 percent) were successful.

	N	Min.	Max.	Mean	Std. Dev.	Median	Mode
Fish Caught	452	0	125	4.1	10.2	2	0

Fish Caught	Frequency	Percent	Cumulative Percent
0	154	34.1	34.1
1	57	12.6	46.7
2	56	12.4	59.1
3	48	10.6	69.7
4	26	5.8	75.4
5	25	5.5	81.0
6	14	3.1	84.1
7	8	1.8	85.8
8	14	3.1	88.9
9	2	.4	89.4
10	17	3.8	93.1
11 or more	31	6.9	100.0
Total	452	100.0	

Fish Kept

Anglers that caught fish kept an average (mean) of 1.5 fish. About half (47 percent) of the successful anglers released all of their catch.

	N	Min.	Max.	Mean	Std. Dev.	Median	Mode
Fish Kept	298	0	12	1.5	2.1	1	0

Fish Kept	Frequency	Percent	Cumulative Percent
0	141	47.3	47.3
1	44	14.8	62.1
2	43	14.4	76.5
3	26	8.7	85.2
4	17	5.7	90.9
5	16	5.4	96.3
6 or more	11	3.7	100.0

Areas Fish Taken From

The 446 fish reported as kept by 157 anglers were 51 percent Rainbow Trout, 24 percent Brown Trout, 12 percent Cutthroat Trout, and eight percent Brook Trout.

Fish Reported Taken		Pine Grove to West Rosebud Lake		West Rosebud Lake	West Rosebud Lake to P-house	Power-house to Mystic Lake	Mystic Lake	Beyond Mystic Lake
		Emerald Lake	Creek					
446 fish 100.0 %		123 fish 27.6 %	24 fish 5.4 %	132 fish 29.6 %	10 fish 2.2 %	0 fish 0.0 %	96 fish 21.5 %	61 fish 13.7 %
Rainbow Trout 226 fish 50.7 %	< 12" 88 fish	22 fish 25.0 % R 17.9 % C	8 fish 9.1 % R 33.3 % C	45 fish 51.1 % R 34.1 % C	0 fish 0.0 % R 0.0 % C	0 fish 0.0 % R 0.0 % C	7 fish 8.0 % R 7.3 % C	6 fish 6.8 % R 9.8 % C
	12-18" 137 fish	34 fish 24.8 % R 27.6 % C	2 fish 1.5 % R 8.3 % C	33 fish 24.1 % R 25.0 % C	1 fish 0.7 % R 10.0 % C	0 fish 0.0 % R 0.0 % C	47 fish 34.3 % R 49.0 % C	20 fish 14.6 % R 32.8 % C
	> 18" 1 fish	0 fish 0.0 % R 0.0 % C	0 fish 0.0 % R 0.0 % C	0 fish 0.0 % R 0.0 % C	0 fish 0.0 % R 0.0 % C	0 fish 0.0 % R 0.0 % C	0 fish 0.0 % R 0.0 % C	1 fish 100.0 % R 1.6 % C
Cutthroat Trout 53 fish 11.9 %	< 12" 14 fish	5 fish 35.7 % R 4.1 % C	0 fish 0.0 % R 0.0 % C	1 fish 7.1 % R 0.8 % C	0 fish 0.0 % R 0.0 % C	0 fish 0.0 % R 0.0 % C	3 fish 21.4 % R 3.1 % C	5 fish 35.7 % R 8.2 % C
	12-18" 38 fish	2 fish 5.3 % R 1.6 % C	0 fish 0.0 % R 0.0 % C	0 fish 0.0 % R 0.0 % C	0 fish 0.0 % R 0.0 % C	0 fish 0.0 % R 0.0 % C	19 fish 50.0 % R 19.8 % C	17 fish 44.7 % R 27.9 % C
	> 18" 1 fish	0 fish 0.0 % R 0.0 % C	0 fish 0.0 % R 0.0 % C	0 fish 0.0 % R 0.0 % C	0 fish 0.0 % R 0.0 % C	0 fish 0.0 % R 0.0 % C	0 fish 0.0 % R 0.0 % C	1 fish 100.0 % R 1.6 % C
Brown Trout 108 fish 24.2 %	< 12" 51 fish	16 fish 31.4 % R 13.0 % C	8 fish 15.7 % R 33.3 % C	23 fish 45.1 % R 17.4 % C	1 fish 2.0 % R 10.0 % C	0 fish 0.0 % R 0.0 % C	3 fish 5.9 % R 3.1 % C	0 fish 0.0 % R 0.0 % C
	12-18" 57 fish	30 fish 52.6 % R 24.4 % C	1 fish 1.8 % R 4.2 % C	17 fish 29.8 % R 12.9 % C	4 fish 7.0 % R 40.0 % C	0 fish 0.0 % R 0.0 % C	2 fish 3.5 % R 2.1 % C	3 fish 5.3 % R 4.9 % C
	> 18" 0 fish	0 fish 0.0 % R 0.0 % C	0 fish 0.0 % R 0.0 % C	0 fish 0.0 % R 0.0 % C	0 fish 0.0 % R 0.0 % C	0 fish 0.0 % R 0.0 % C	0 fish 0.0 % R 0.0 % C	0 fish 0.0 % R 0.0 % C
Brook Trout 35 fish 7.8 %	< 12" 33 fish	11 fish 33.3 % R 8.9 % C	3 fish 9.1 % R 12.5 % C	12 fish 36.4 % R 9.1 % C	4 fish 12.1 % R 40.0 % C	0 fish 0.0 % R 0.0 % C	1 fish 3.0 % R 1.0 % C	2 fish 6.1 % R 3.3 % C
	12-18" 2 fish	1 fish 50.0 % R 0.8 % C	1 fish 50.0 % R 4.2 % C	0 fish 0.0 % R 0.0 % C	0 fish 0.0 % R 0.0 % C	0 fish 0.0 % R 0.0 % C	0 fish 0.0 % R 0.0 % C	0 fish 0.0 % R 0.0 % C
	> 18" 0 fish	0 fish 0.0 % R 0.0 % C	0 fish 0.0 % R 0.0 % C	0 fish 0.0 % R 0.0 % C	0 fish 0.0 % R 0.0 % C	0 fish 0.0 % R 0.0 % C	0 fish 0.0 % R 0.0 % C	0 fish 0.0 % R 0.0 % C
Other Species 23 fish 5.2 %	< 12" 15 fish	2 fish 13.3 % R 1.6 % C	0 fish 0.0 % R 0.0 % C	0 fish 0.0 % R 0.0 % C	0 fish 0.0 % R 0.0 % C	0 fish 0.0 % R 0.0 % C	8 fish 53.3 % R 8.3 % C	5 fish 33.3 % R 8.2 % C
	12-18" 7 fish	0 fish 0.0 % R 0.0 % C	0 fish 0.0 % R 0.0 % C	0 fish 0.0 % R 0.0 % C	0 fish 0.0 % R 0.0 % C	0 fish 0.0 % R 0.0 % C	6 fish 85.7 % R 6.3 % C	1 fish 14.3 % R 1.6 % C
	> 18" 1 fish	0 fish 0.0 % R 0.0 % C	0 fish 0.0 % R 0.0 % C	1 fish 100.0 % R 0.8 % C	0 fish 0.0 % R 0.0 % C	0 fish 0.0 % R 0.0 % C	0 fish 0.0 % R 0.0 % C	0 fish 0.0 % R 0.0 % C

Fish Reported Taken		Pine Grove to West Rosebud Lake		West Rosebud Lake	West Rosebud Lake to P-house	Powerhouse to Mystic Lake	Mystic Lake	Beyond Mystic Lake
		Emerald Lake	Creek					
446 fish 100.0 %		123 fish 27.6 %	24 fish 5.4 %	132 fish 29.6 %	10 fish 2.2 %	0 fish 0.0 %	96 fish 21.5 %	61 fish 13.7 %
Unknown Species	< 12" 1 fish	0 fish 0.0 % R 0.0 % C	1 fish 100.0 % R 4.2 % C	0 fish 0.0 % R 0.0 % C	0 fish 0.0 % R 0.0 % C	0 fish 0.0 % R 0.0 % C	0 fish 0.0 % R 0.0 % C	0 fish 0.0 % R 0.0 % C
	12-18" 0 fish	0 fish 0.0 % R 0.0 % C	0 fish 0.0 % R 0.0 % C	0 fish 0.0 % R 0.0 % C	0 fish 0.0 % R 0.0 % C	0 fish 0.0 % R 0.0 % C	0 fish 0.0 % R 0.0 % C	0 fish 0.0 % R 0.0 % C
	> 18" 0 fish	0 fish 0.0 % R 0.0 % C	0 fish 0.0 % R 0.0 % C	0 fish 0.0 % R 0.0 % C	0 fish 0.0 % R 0.0 % C	0 fish 0.0 % R 0.0 % C	0 fish 0.0 % R 0.0 % C	0 fish 0.0 % R 0.0 % C
1 fish 0.2 %								

3.5 Importance of Fishing Outcomes

Go Fishing

Eighty-two percent of anglers said it was very or extremely important to go fishing.

Importance of Going Fishing	Frequency	Percent	Cumulative Percent
Extremely	257	62.1	62.1
Very	84	20.3	82.4
Somewhat	56	13.5	95.9
Not very	15	3.6	99.5
Not at all	2	.5	100.0
Total	414	100.0	

Catch Limit

Ten percent of anglers said it was very or extremely important to catch their limit.

Importance of Catching Your Limit	Frequency	Percent	Cumulative Percent
Extremely	16	3.9	3.9
Very	26	6.3	10.2
Somewhat	85	20.6	30.8
Not very	63	15.3	46.0
Not at all	223	54.0	100.0
Total	413	100.0	

Catch Large Fish

Twenty percent of anglers said it was very or extremely important to catch large fish.

Importance of Catching Large Fish	Frequency	Percent	Cumulative Percent
Extremely	37	9.0	9.0
Very	46	11.1	20.1
Somewhat	83	20.1	40.2
Not very	69	16.7	56.9
Not at all	178	43.1	100.0
Total	413	100.0	

Catch at Least One Fish

Eighty percent of anglers said it was very or extremely important to catch at least one fish.

Importance of Catching at Least One Fish	Frequency	Percent	Cumulative Percent
Extremely	268	64.7	64.7
Very	64	15.5	80.2
Somewhat	39	9.4	89.6
Not very	15	3.6	93.2
Not at all	28	6.8	100.0
Total	414	100.0	

3.6 Satisfaction with Fishing Experience

Fifty-six percent of anglers reported being very or extremely satisfied with their fishing experience. Seventy percent of successful anglers were very or extremely satisfied with their fishing experience, versus 29 percent of non-successful anglers.

At the other end of the scale, 12 percent of anglers reported being not very or not at all satisfied with their fishing experience. Four percent of successful anglers were not very or not at all satisfied with their fishing experience, versus 27 percent of non-successful anglers.

Satisfaction with Fishing Experience	Successful Angler N = 292 68.1 %	Non-Successful Angler N = 137 31.9 %
Extremely N = 95 22.1 %	N = 88 92.6 % R 30.1 % C	N = 7 7.4 % R 5.1 % C
Very N = 147 34.3 %	N = 115 78.2 % R 39.4 % C	N = 32 21.8 % R 23.4 % C
Somewhat N = 137 31.9 %	N = 76 55.5 % R 26.0 % C	N = 61 44.5 % R 44.5 % C
Not very N = 42 9.8 %	N = 12 28.6 % R 4.1 % C	N = 30 71.4 % R 21.9 % C
Not at all N = 8 1.9 %	N = 1 12.5 % R 0.3 % C	N = 7 87.5 % R 5.1 % C

4. Study Methodology

In order to meet the established study goals and objectives, recreationists were sampled according to the following methods.

4.1 Survey Design

An onsite visitor survey questionnaire (Appendix A) was administered as visitors left the project area. The exit interview occurred along West Rosebud Road, at the northernmost entrance to the Pine Grove Campground.

Visitors leaving in vehicles were asked to stop and complete the survey. A sign placed on the road immediately before the turnoff advised motorists of the stop and sought their cooperation.

4.2 Sampling Rules

Reasonable attempts were made to include in the sample all recreationists leaving along the road during sampling times. Non-recreationists (PPL Montana or agency employees, etc.) were excluded. Recreationists planning to return to the project area (leaving for provisions, etc.) were excluded.

One member of each vehicle was randomly chosen to be interviewed by selecting the occupant (aged 16 or over) with the most recent past birthday. If the selected person chose not to participate, the interviewer repeated the process excluding that person.

In order to acquire a diverse sample and limit the amount of participation of any one person or group in the study, the same person could be interviewed only once during the study period, and the same group could be interviewed only once per trip. In other words, once a person had been interviewed at any time, they were eliminated from future sampling, but other members of their group could be sampled on another trip at another time. For purposes of this study, a trip was defined as any number of consecutive hours or days recreating within the study area.

4.3 Sampling Schedule

Forty-three, eight-hour periods were sampled between May 26 and September 30, 2001. Objectives of the sampling schedule were to arrive at a sample that was representative of typical recreation use during the sampling period. A secondary objective was to cluster days to increase administration efficiency.

The final sample included 17 weekend days and 26 weekdays (including Memorial Day, July 4th, and Labor Day). Sampling was canceled on a few additional scheduled dates due to severe weather conditions (snow or thunderstorms).

Sampling occurred between 8:00 am and 8:00 pm because it was assumed that most visitors exited the area during daylight hours. Three, four-hour sampling time frames were established (8:00 am to noon; noon to 4:00 pm; 4:00 pm to 8:00 pm) and two were randomly selected for each date to limit interviewing to eight hours per day. Sampling on some dates was concluded earlier than scheduled due to severe weather conditions.

Month	Date	Day	Daily Time Frames	#
May	26	Saturday	8:00 am to noon, noon to 4:00 pm	1
	27	Sunday	8:00 am to noon, 4:00 to 8:00 pm	2
	28	Holiday Monday	8:00 am to noon, 4:00 to 8:00 pm	3
June	9	Saturday	Noon to 4:00 pm, 4:00 to 8:00 pm	4
	10	Sunday	8:00 am to noon, 4:00 to 8:00 pm	5
	14	Thursday	Noon to 4:00 pm, 4:00 to 8:00 pm	6
	15	Friday	8:00 am to noon, 4:00 to 8:00 pm	7
	23	Saturday	Noon to 4:00 pm, 4:00 to 8:00 pm	8
	24	Sunday	8:00 am to noon, noon to 4:00 pm	9
	25	Monday	8:00 am to noon, 4:00 to 8:00 pm	10
	26	Tuesday	Noon to 4:00 pm, 4:00 to 8:00 pm	11
	27	Wednesday	8:00 am to noon, noon to 4:00 pm	12
July	30	Saturday	8:00 am to noon, 4:00 to 8:00 pm	13
	1	Sunday	8:00 am to noon, noon to 4:00 pm	14
	3	Tuesday	8:00 am to noon, noon to 4:00 pm	15
	4	Holiday Wednesday	Noon to 4:00 pm, 4:00 to 8:00 pm	16
	9	Monday	8:00 am to noon, 4:00 to 8:00 pm	17
	13	Friday	Noon to 4:00 pm, 4:00 to 8:00 pm	18
	14	Saturday	8:00 am to noon, noon to 4:00 pm	19
	15	Sunday	Noon to 4:00 pm, 4:00 to 8:00 pm	20
August	25	Wednesday	8:00 am to noon, 4:00 to 8:00 pm	21
	26	Thursday	8:00 am to noon, noon to 4:00 pm	22
	4	Saturday	Noon to 4:00 pm, 4:00 to 8:00 pm	23
	7	Tuesday	8:00 am to noon, noon to 4:00 pm	24
	8	Wednesday	8:00 am to noon, 4:00 to 8:00 pm	25
	16	Thursday	Noon to 4:00 pm, 4:00 to 8:00 pm	26
	17	Friday	Noon to 4:00 pm, 4:00 to 8:00 pm	27
	19	Sunday	Noon to 4:00 pm, 4:00 to 8:00 pm	28
	20	Monday	8:00 am to noon, noon to 4:00 pm	29
21	Tuesday	Noon to 4:00 pm, 4:00 to 8:00 pm	30	
22	Wednesday	8:00 am to noon, 4:00 to 8:00 pm	31	
26	Sunday	8:00 am to noon, noon to 4:00 pm	32	

Month	Date	Day	Daily Time Frames	#
September	1	Saturday	8:00 am to noon, noon to 4:00 pm	33
	2	Sunday	Noon to 4:00 pm, 4:00 to 8:00 pm	34
	3	Holiday Monday	Noon to 4:00 pm, 4:00 to 8:00 pm	35
	8	Saturday	Noon to 4:00 pm, 4:00 to 8:00 pm	36
	9	Sunday	8:00 am to noon, noon to 4:00 pm	37
	13	Thursday	8:00 am to noon, 4:00 to 8:00 pm	38
	14	Friday	8:00 am to noon, noon to 4:00 pm	39
	19	Wednesday	Noon to 4:00 pm, 4:00 to 8:00 pm	40
	20	Thursday	Noon to 4:00 pm, 4:00 to 8:00 pm	41
	21	Friday	8:00 am to noon, noon to 4:00 pm	42
25	Tuesday	Noon to 4:00 pm, 4:00 to 8:00 pm	43	

4.4 Pretest

The interview methods and questionnaire were pre-tested prior to Memorial Day and it was determined that no modifications were necessary.

4.5 Study Response Rate

The numbers of vehicles that apparently met the “recreationists” criteria but refused to stop when no wait to be interviewed existed, or had occupants that refused to be interviewed after stopping, were noted. In total, there were 184 refusals of this type over the study period. The interviewer noted that most of these occurred late in the day and appeared to be motivated by a desire to return home quickly.

The survey response rate was 84 percent.