

**Survey Methods**  
**For the**  
**McKenzie and Flathead Wild and Scenic River and McKenzie Trail**  
**Visitor Survey**

## **Introduction**

The Willamette National Forest (Oregon) and Flathead National Forest (Montana) are proposing to conduct an information collection, in 2012, from forest visitors using the McKenzie and Flathead Wild and Scenic Rivers and McKenzie National Recreational Trail. The McKenzie visitor survey will (1) support implementation of the existing Willamette National Forest Land and Resource Management Plan (USFS 1990) and Upper McKenzie River Management Plan (“UMRMP,” USFS 1992), (2) assess changes in visitor experience that have occurred since a previous river study in 1996, and (3) inform management practices to protect and enhance the outstandingly remarkable values identified for the McKenzie River, as required by the Wild and Scenic Rivers Act. The Flathead visitor survey will (1) support the development of a Comprehensive River Management Plan (CRMP) and, in particular, will assist managers in determining a user capacity for the river, both of which are statutory requirements of the Wild and Scenic River Act and (2) help determine the allocation of service days for outfitters and guides and develop thresholds and standards for important, measurable attributes of recreational experiences.

## **Background**

The Upper McKenzie River (12.7 miles from Clear Lake to Scott Creek) was designated by Congress in 1988 (Omnibus Oregon Wild and Scenic River Act) as a “Recreational River” in accordance with the 1968 Wild and Scenic Rivers Act (P.L. 90-542). Part of the upper McKenzie River is also designated as an Oregon State Scenic Waterway under the State Scenic Waterways program. The 26-mile McKenzie River Trail is designated as a National Recreation Trail under the National Trails System Act of 1968 (P.L. 90-543).

The McKenzie River emerges at Clear Lake, on the west slopes of the Cascades Mountains in central Oregon. Highway 126, the West Cascades Scenic Byway, closely follows the McKenzie River along its entire length. From its headwaters to its confluence with the Willamette River, the McKenzie offers a diverse range of recreational opportunities in old growth Douglas-fir forests. The Willamette National Forest, which manages nearly all of the land surrounding the Upper McKenzie River, maintains several developed campgrounds along the river, along with primitive and developed boat access points. The McKenzie River Trail offers hiking and mountain biking trips of varying length, generally with easy to moderate grades through highly scenic forests, and passing through interesting geological features.

The relatively low elevations along the McKenzie River mean that recreational activities can take place from spring through fall. The growing urban areas of Eugene and Springfield are only an hour’s drive from the upper McKenzie River, and recreational use has been increasing rapidly. Mountain biking was almost non-existent when the McKenzie River Trail was designated, but today mountain biking is common along the trail, and it is advertised in many outlets as a “premiere” opportunity for

relatively easy, scenic biking. Recreational use of the McKenzie River for floating, whitewater activities, and fishing has also increased dramatically since the UMRMP was approved in 1992. For instance, in 1995, the number of outfitter/guide clients was 2,500, but by 2010, this number had risen to 8,200. Use of the three campgrounds along the Upper McKenzie River increased from 73,860 visitors in 2002 to 103,393 in 2009. Although no accurate data are available for trends in private (unguided) boating use, managers believe this use has increased as well.

The increase in use, and well as the diversity of user type who may have incompatible recreational goals, creates a need to understand whether practices, policies and infrastructure that have been in place for two decades continue to maintain and enhance recreational values, as required by law. A visitor survey was conducted in 1996 with boaters and anglers, but the data from that study are considered outdated, given the increases in recreational use and the diversification of types of activities. Moreover, the 1996 study did not include campers, hikers, and mountain bikers, all of whom are important constituencies. Therefore, a comprehensive visitor study is needed.

The McKenzie RMP identified several issues associated with recreation (USFS 1992, p. I-6 to I-7). Specifically, it noted that, if recreation use increased, there could arise problems of overcrowding, trash, and visitor conflict. Increasing mountain biking use, which was rare in 1992, was singled out as a potential contributor to visitor conflict along the McKenzie River Trail. Visitor safety for whitewater boaters was identified as another concern. Because of the diversity of recreational users (p. I-7), information is needed on whether there are differences in conflict, crowding, and other issues among different segments of the public. Also, per the Forest and Rangeland Renewable Resources Planning Act of 1974 (P.L. 93-378), the Forest Service is directed to incorporate economic values into management decisions. No data are currently available about the economic contributions of private or guided recreation along the McKenzie River. Management decisions about the appropriate allocation of use require such information.

The Flathead Wild and Scenic River was established in 1976 (Public Law 94-486 – An Act to Amend the Wild and Scenic Rivers Act). It is located within the area known as the Crown of the Continent in Northwest Montana in Flathead and Powell Counties. The headwaters are located just west of the Continental Divide and the river is a major tributary to the Columbia River system. It is also the major river drainage for Glacier National Park, the Great Bear Wilderness, and the Bob Marshall Wilderness. The River has three forks: North, South, and Middle. Each fork provides a different experience for visitors until they merge to form the main stem of the Flathead. In addition, segments of the river are classified, pursuant to the Wild and Scenic Rivers Act, as wild (accessed only by trail or backcountry wilderness airstrips), scenic (have limited development along the shores) and recreational (access by roads and have development).

The North Fork originates in Canada and is primarily classified as scenic. It is flat and wide, which causes the river to meander between main channels and many braids and has a fewer and less challenging rapids. It is easily accessible via road in many places. The lower Middle Fork is classified as Recreational and borders a major scenic highway (US Highway 2) and Glacier National Park. Many visitors experience the Main Fork on commercial whitewater trips that are typically a few hours long.

The South Fork and the Upper Middle Fork are classified as wild river segments and are within the Bob Marshall and Great Bear Wilderness areas. These river portions are only accessible by trail or backcountry airstrip. Most trips to these portions are several days or even weeks long due to the primitive nature and distance of travel in these areas.

The three forks of the Flathead River are managed by the USDA Forest Service, Flathead National Forest, in cooperation with Glacier National Park (which borders the North Fork and Middle Fork portions). The Flathead River Management Plan was developed in 1980. In the management plan, the Flathead National Forest (FNF) committed to a river study to better inform recreation management decisions. The forest took findings from the study conducted by researchers from the University of Idaho (McLaughlin et al. 1984) and developed the Flathead Wild and Scenic River Recreation Management Direction (USFS 1984).

However, the plan is no longer sufficient for current river management due to changing types and amounts of river use. In addition, a 1986 amendment to the Wild and Scenic Rivers Act (Public Law 99-590, An Act to amend the Wild and Scenic Rivers Act, and other purposes) requires a Comprehensive River Management Plan (CRMP) that “shall address resource protection, development of lands and facilities, user capacities, and other management practices...to achieve the purposes of this Act” (Section 3 (d)(1)). It also requires, that river managers must develop plans that address “user capacities” and consider management practices to maintain use within established capacities (Section 3 (d)(1)). Further, a 9<sup>th</sup> Circuit court of appeals ruling (in Friends of Yosemite Valley, MERG v. Kempthorne) has strengthened the requirements for addressing user capacities, stating that the agency must identify an “actual level of visitor use that will not adversely impact the [River’s] outstandingly remarkable values (ORVs)” and that user capacities are a “specific measurable limit on use.” Establishing carrying capacity is in large part based on a determination of the impact of recreation on the natural resource base, which is outside the scope of this information collection. However, it is generally recognized that “social carrying capacity” should be based on visitors’ reports of their experience quality and how conditions such as crowding or conflict affect experience quality (Manning 2007; Shelby & Heberlein 1986). Reaching such a determination requires information from visitors themselves. This high level of standard requires Forests to gather sufficient information to identify a numeric user capacity for the river and to develop a management plan that will help protect the River’s ORVs.

Visitor surveys are an important element of the information necessary to develop a CRMP and support a user capacity finding. Visitor surveys are the only way for the Forest Service to collect information about visitor experiences and attitudes. In addition, since there is no permit system in place on these rivers, surveys are the only thorough way to study how individuals and groups are traveling on the river and what activities they are participating in. Observational visitor counts cannot efficiently provide this kind of specific information. In addition, the surveys proposed (1 version for McKenzie River users, 1 version for McKenzie River Trail users, and 1 version for Flathead River corridor users) will help managers to identify the most important indicators to monitor over the life of the management plans to determine if any thresholds may be being approached and if management action may need to occur. Without this information collection, managers would not have the optimal information for determining how to best

manage the McKenzie and Flathead Wild and Scenic Rivers to protect outstandingly remarkable values for which these rivers were designated, as required by law.

A key consideration in this information collection is that no other data are available from previous, on-going, or planned data collections that can adequately address the needs of McKenzie or Flathead River managers. Although other studies have explored many of the same issues as this information collection, those studies do not provide the needed information about the quality of experiences and factors influencing experience quality for visitors to the Flathead River and McKenzie River and Trail. Moreover, on the McKenzie River and Trail, this information collection seeks to assess trends in visitor experiences over the time since the previous (1996) study, and to do so, it is necessary to replicate survey questions exactly from the earlier study.

## **Key Questions**

The surveys used will focus on the following categories of questions.

- Basic socio-demographic information, which will permit comparison among groups of managerially relevant groups;
- Characteristics of visitor groups (group size and composition) and trips (trip length and activities), which will permit comparison among groups of managerially relevant groups;
- Perception of social conditions such as crowding and conflict, and the effect of such conditions on visitor experiences, which will aid in determination of whether ORVs are being protected;
- Perception of ecological conditions such as litter and vegetation loss, and the effect of such conditions on visitor experiences, which will aid in determination of whether ORVs are being protected;
- Visitor knowledge of recreational etiquette and safe behavior, which will help managers determine whether additional education or law enforcement efforts are needed;
- Visitors' evaluations of existing and potential management actions and policies; which will help managers select appropriate and acceptable management options, should other data in the survey suggest that such actions are needed;
- Visitor expenditures associated with their recreational visit, which will provide information about the economic value of recreation along the McKenzie River.

These questions are all designed to help the agency comply with its statutory requirements and serve the public more effectively. If visitors report that the conditions they experience detract from their experience quality, managers may consider taking action to address those impacts. Input from visitors about the acceptability of alternative management actions can help managers choose among different approaches to address problems. An understanding of visitor knowledge about appropriate and safe behaviors will enable the agency to determine whether additional educational or enforcement actions are needed. Visitor expenditure data will enable the agency to determine the economic value of recreation, as well as the potential economic impacts of alternative management actions. Basic socio-demographic and trip information will enable the agency to determine whether there are important differences among different user sub-groups that need to be taken into consideration. The public will benefit from this information collection by the inclusion of locally-relevant, current public values and attitudes in future management decisions.

## **Methods**

The visitor surveys will take place in 2012, during the primary and secondary use seasons for the McKenzie River and throughout the use season for the Flathead River. Specific dates (April 15 to September 30) for the McKenzie survey were chosen because those were the dates of the 1996 study, and replicating the methods of the 1996 study will permit confident conclusions about changes in visitor experiences and opinions. The Flathead River survey will be conducted throughout the 2012 use season, May-September. Specific dates will be determined a later date.

For both sites, surveyors will be present during six hours on each sample day. All visitor groups completing their recreational activities will be approached, and adults (16 years of age and older) will be asked to participate in the survey. The invitation will follow approved protocols of Institutional Review Boards, assuring visitors that participation is voluntary. No identifying information will be collected at any time, so participation will be fully anonymous. To minimize burden, the questions for the McKenzie River and Trail survey will be split between two instruments, and these will be distributed in an alternating manner, to ensure a random sample for each version. For the McKenzie, river users (anglers and boaters) will complete the “river user” questionnaire and hikers and mountain bikers will complete the “trail user” questionnaire. The two questionnaires contain many of the same questions, but activity- and experience-specific items are different, to appropriately assess the different experiences of river and trail users. For the Flathead River survey, all questions will be contained in one instrument, and visitors will be instructed to skip questions that do not pertain to their type of trip.

We will record information about all parties approached (see Survey Log), so that we can address any potential non-response bias. At each site, on each sample day, surveyors will record the number of people who agree and decline to complete surveys. They will also document information about potential participants' group size and composition, activities, type (guided vs. private), and activity. This information will be statistically contrasted between respondents and non-respondents, which will reveal the presence of any systematic non-response patterns (such as groups with children being less likely to complete the survey). Additionally, any verbal reasons for not completing the survey (e.g., lack of time) will be recorded.

### **McKenzie Survey Methods**

Forest Service staff, volunteers, and contractors will contact visitors at 11 recreation access points. Some of these sites provide access to both the trail and river; while others provide access just to the river or trail (see Table 1). Surveying will occur in the three developed campgrounds located along Highway 126 (all of which provide both trail and river access). Sampling intensity was based on an estimate of the likely number of surveys obtainable. In the 1996 study, on average, 7 surveys per site per day were obtained (with an 81% response rate). We estimate that the same number of surveys, on average, will be obtained in 2012. (Although use has increased, compliance with surveys has declined, so we conservatively estimate that we can obtain 7 surveys per site per day). In our calculations we used an estimate of 70% compliance, which is on the low end of what we obtained during a 2011 survey at developed and dispersed recreation sites at Lake Roosevelt in Washington.

We set a target of approximately 1,000 completed surveys (500 each of the river-user survey and the trail-user survey). This number will permit comparisons among managerially relevant subgroups of visitors, such as weekday vs. weekend visitors, hikers vs. mountain bikers, or whitewater boaters vs. anglers. The sampling schedule provides for sampling each of the 11 sites 12 times. (The sampling strategy is stratified by use season, so that each site is sampled four times in the early season, four times in the high use season, and four times in the late season.) Our estimate of 7 completed surveys per site per day will generate a final sample of 924 surveys, which is adequately close to our target of 1,000.

Table 1. Schedule of Sampling for McKenzie River and Trail Survey

Site	Access type	Early Season (4/15 to 6/9)		Mid-Season (6/10 to 8/5)		Late Season (8/6 to 9/30)	
		WD*	WE	WD	WE	WD	WE
Bruckart Landing	Boat	5/24 6/1 6/5	5/13	6/28 7/23	7/8 7/28	8/6 8/21 9/20	8/19
McKenzie Campground	Camp Boat Hike/Bike	5/8 5/17	6/2 6/9	6/12 7/19	7/14 7/29	8/14 8/29 9/18	8/18
Paradise Campground	Camp Hike/Bike Boat	5/15 5/16 6/1	6/3	7/13 7/31	6/17 7/15	8/20 9/12	8/11 9/29
Frissell	Hike/Bike Boat	5/4 5/29	5/28 6/2	6/19 7/19	6/23 7/4	8/8 8/22	8/11 9/9
Olallie Campground	Camp Hike/Bike Boat	5/14 6/5	4/28 6/9	6/22 7/25	6/17 7/22	8/8 8/24 9/26	9/1
McKenzie Trail West	Hike/Bike Boat	5/16 5/25	4/28 5/26	6/27 8/2	6/24 7/6	8/16 8/31 9/18	9/2
Sahalie Falls	Hike	4/27 5/4 5/7	5/27	7/10 7/19	6/10 7/28	8/27 9/28	8/19 9/15
Koosah Falls	Hike	5/9 5/17 6/7	4/15	6/15 6/25	6/24 7/1	8/14 9/5 9/27	9/8
Carmen Reservoir	Hike/Bike	4/17 5/9 6/4	5/26	6/18 6/25	7/14	8/27 9/17 9/25	8/5
McKenzie Trail East	Hike/Bike	4/24 5/31	5/6 5/28	6/21 7/13	6/30 7/29	8/31 9/14 9/28	8/25
Tamolitch	Hike/Bike	4/25 6/4	5/5 5/13	6/21 7/11	6/30 7/7	8/9 9/12 9/20	9/9

\* WD = weekday; WE = weekend or holiday

## **McKenzie Questionnaire Components**

The first portion of each survey questionnaire is designed to gather information about visitors and their recreational use of the McKenzie River or McKenzie River National Recreational Trail. The second portion is designed to gather information about visitors' recreation experience and what affected that experience. The third portion solicits visitors' views about how recreation use should be managed on the McKenzie River or trail. The fourth portion of the surveys includes individual and socio-demographic questions, and the final portion asks about economic valuation of visitors' visits to the McKenzie River area.

Note that, in the accompanying questionnaires, the source of each question is identified in bracketed italicized text. "1996" indicates a question replicated from the 1996 river survey. "NPS" indicates questions that have received prior approval from OMB for use in visitor surveys and are part of the National Park Service's "known pool" of survey questions. "New" indicates items developed specifically for this information collection.

## **McKenzie Data Analysis and Records Maintenance**

Data will be entered into an Excel database. Once data entry has been completed and validated, the hardcopy questionnaires will be discarded. Data will be imported into SPSS (Statistical Package for the Social Sciences) for analysis. The database will be maintained at the Willamette National Forest.

## **Flathead Survey Methods**

Forest Service River Rangers, National Park Service Rangers, National Park Service backcountry permit office, volunteers, and/or interns will contact visitors at 11 sites on each of the three forks of the Flathead River (Table 2). Survey sites include major developed sites like trail heads, river take-outs, and backcountry air strips, as well as more remote, less defined locations. We are estimating obtaining an average of 7 surveys per site per day. As with the McKenzie survey, sampling intensity was based on an estimate of the likely number of surveys obtainable. Survey dates will be a random mix of weekdays and weekend days. Surveyors will be on site for six to eight hours each day, adjusted for when they are likely to encounter visitors (e.g. if the site is a river "take-out" the survey time will be in the afternoon, 12-6 pm).

We set a target of approximately 1,200 completed surveys (400 for each of the three forks). This number will permit comparisons among managerially relevant subgroups of visitors, such as weekday vs. weekend visitors, trail users vs. river users, hikers vs. stock users, and whitewater boaters vs. anglers. The sampling schedule provides for sampling each of the 11 sites 5 times. Our estimate of 7 completed surveys per site per day will generate a final sample of 1155 surveys, which is adequately close to our target of 1,200.

Table 2. Sampling Locations for Flathead River Visitor Survey

<b>Survey Points</b>	<b>Peak season</b>	<b>Level of use</b>	<b>Method of access (hike, float, etc.)</b>
<b>NORTH FORK</b>			
Round Prairie CG	June 15-Aug 31	Low	Float in or hike in
Wurtz Airstrip/Road	June 15-Aug15	Low	Drive primary, put in/take out second
Ford RA	June 15-Aug15	Med	Drive primary, put in/take out second
Sondreson Meadows	June 15 – Aug 15	Low	Drive primary, put in/take out second
Polebridge RA	June 15 – Aug 15	Med	Drive primary, put in/take out second
Big Creek CG	July 1-Sept1	Med	Drive primary, put in/take out second
Great Northern Flats	July 1-Sept1	Med	Drive or put in
Glacier Rim RA	July 1-Sept1	Med or High	Drive primary, put in/take out second
Border RA	June 15-Aug15	Med	Drive
Camas Bridge	July 1-Sept 1	Low	Drive primary, float (put in and take out)
Coal Creek Road	July 1-Sept1	Low	Drive primary, put in/take out second
<b>MIDDLE FORK</b>			
Schafer Meadows	June 10-Aug10	Med	Hike or air
Bear Creek TH and RA	June 10-Aug15	Med for TH, High for river site	Drive primary, put in/take out second
Essex RA	June30-Aug15	Low-Med	Drive primary, put in/take out second
Paola RA	July 1-Sept1	Med	Drive primary, put in/take out second
Granite Creek	June 30-Aug30	Low	Hike in (can stay at Grantie Cabin)
Moccasin Creek RA	July 1-Sept1	High	Drive or put in
West Glacier RA	July 1-Sept1	High	Drive primary, put in/take out second



Blakenship Bridge	July 1-Sept1	High	Drive primary, put in/take out second
Rabe Creek	July 1-Sept1	Low/Med	Drive only
Castle Creek	June 30- Sept15	Med	Hike in primary
<b>SOUTH FORK</b>			
Young's Creek Ford	June 20-Aug 30	Med-high	Hike
Gordon Creek	June 20-Aug 30	Med-high	Hike, float
Big Prairie	June 20-Aug 30	Med-high	Hike, float
Mid Creek Takeout	June 20-Aug 30	Med-high	Hike, float
Cedar Flats	June 20-Aug 30	Med-high	Hike, float
South Fork	June 20-Aug 30	Med-high	Hike, Drive, Float
Spotted Bear River	June 20-Aug 30	Med-High	Hike, Drive, Float
Cement Bridge	June 20-Aug 30	Med-high	Drive, Float
Upper Twin Creek	June 20-Aug 30	Med-high	Drive, Float
Crossover	June 20-Aug 30	Med-high	Drive, Float

## Flathead Questionnaire Components

The first portion of the survey questionnaire is designed to gather information about the visitors and their recreational use of the Flathead River. The second portion of the survey is designed to help managers understand what recreational and environmental attributes are most important to visitors, perceptions of the existing social and biophysical conditions of the river resources, and how conditions on the river are affecting the visitors' experience. The next section asks visitors how they feel about different management actions that might be implemented. Lastly, visitors are offered the opportunity to provide comments on the river program and management.

## Flathead Data Analysis and Records Maintenance

A staff member or consultant will be assigned by the Flathead National Forest the task of developing a database of survey results that will be kept secure and confidential. Analysis of the data will occur during Comprehensive River Management Plan Revision when funds become available to complete that effort.

## References

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