Montana Fish, Wildlife & Parks

2015 Missouri River Creel Survey

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Summary

The section of river from Holter Dam to the town of Cascade, MT is an important recreational fishery due to its popularity, quality of angling experience it provides, and the benefit it provides to the local economy. In 2013, it was estimated there were 170,850 angler days for this stretch of water, which was the most ever observed on the Missouri River or any other water body since surveys were initiated in 1982. It is estimated this generated an economic benefit of over 54.1 million dollars in 2013. Given the quality of the fishery, the economic importance of the fishery, and the increase in the angling pressure in recent years, a yearlong creel survey was conducted from March 2015 through February 2016. The objective of the creel study was to evaluate angler demographics, angler effort, catch and harvest rates of fish, and angler satisfaction during the 2015-2016 survey and compare these results to past creel surveys on the Missouri River when fishing pressure was lower. The methods used for the 2015 creel survey were the same as past yearlong surveys in 1993 and 2002. Four sections (Holter, Craig, Prewett Creek, and Pelican Point) were surveyed over a 28-mile stretch of river from Holter Dam to approximately two miles downstream from Pelican Point fishing access site.

A total of 1,986 anglers were interviewed and 14,811 anglers were counted over the course of the creel survey. Approximately half of the interviews were boat anglers and half were shore anglers. Of the boat anglers, 95% operated a non-motorized boat. Compared to past surveys, the percentage of boat angler interviews more than doubled since 1993. Angling effort, as measured by a statewide mail survey, has increased since 1982 to a maximum level in 2015. Angling effort, as calculated from the creel survey, was similar in 2015 to 2002, and nearly double the amount observed in 1993. While angling effort in 2015 was similar to 2002, boat angling effort increased 26% from 2002. Angling effort was greatest during June and July; however, angling effort decreased from June through September from 2002 to 2015, due to a decrease in shore anglers. Boat angling effort increased or was similar between 2002 and 2015 for this period. Angling effort increased from 2002 to 2015 from late fall through early spring. Combined, these results suggest some anglers may have been displaced from angling during the busy summer period, and fished more during the less busy periods of the year.

Yearlong catch rates for rainbow trout varied from 0.46 fish per hour in the Holter section to 0.73 fish per hour in the Pelican Point section, representing the highest or second highest catch rates observed from all creel surveys. Brown trout catch rates varied from 0.03 fish per hour in the Holter section to 0.27 fish per hour in the Pelican Point section. Changes in rainbow trout and brown trout catch rates reflected changes in density over time. The estimated harvest represented 20% of the rainbow trout population and 14% of the brown trout population in the Holter section. Harvest was low in the remaining sections representing less than 10% of the respective populations for each section. Walleye were only caught in the Holter section, and an estimated 1,757 walleye were harvested, which is up from 260 walleye in 2002.

Non-resident angler use on the Missouri River has been increasing overall since the early 1980s. In 2015, 42% of the anglers interviewed were non-residents, which is similar to the amount observed in 2002 and much greater than 1993 (28%). Overall, 70% of interviewed anglers used flies, which is similar to 2002, and much greater than early surveys when 10% and 38% of anglers used flies in 1980 and 1993, respectively. Overall, 21% of the anglers interviewed were

guided, which is an increase from the 6.5% and 11% observed in 1993 and 2002, respectively. Percent guided was highest in the Pelican Point section in July with 68% guided. The perception of the percent guiding was consistently greater than the actual amount of guiding. However, if the perception of guiding is compared to the actual percentage of boat anglers that were guided, they are similar.

Most anglers were satisfied or very satisfied with the number of fish caught and the size of the fish caught during the survey. Crowding scores increased as angler counts increased, but the highest mean monthly crowding score of 4.6 in the Craig section in July, was still relatively low on the scale of 1 to 9. Crowding scores were similar among angler demographic groups and guiding versus non-guided status. Seventy-eight percent of anglers surveyed reported there were no resource management problems on the Missouri River. Of the 22% of anglers that reported problems, the most commonly listed problems were the need for motorized boat restrictions, angling pressure too high/overcrowded, too many outfitters, and trash. The majority of respondents were strongly opposed or opposed to limiting use by non-residents and guides and outfitters on the Missouri River. Anglers were more opposed to limiting use by these groups in the 2015 survey than the 1994 survey.

Overall, creel survey results indicate that despite increases in fishing pressure over time, surveyed anglers report feeling no more crowded than during previous surveys, and were more opposed to restrictions that would limit use. These results are likely a combination of factors including the perception of crowding may have changed over time, anglers who felt crowded have been displaced or fish during periods of less pressure, anglers may be more willing to endure crowding or feel less crowded when quality angling opportunities exist, and anglers recognize the economic importance of the fishery.

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Introduction

The section of Missouri River from Holter Dam to the town of Cascade, MT is an important recreational fishery due to its popularity, quality of angling experience it provides, and the benefit it provides to the local economy. In 2013, Montana Fish, Wildlife and Parks (MFWP) estimated there were 170,850 angler days for this stretch of water (Selby et al. 2015), which was the most ever observed on the Missouri River or any other water body since surveys were initiated in 1982. Based on the estimated fishing expenditures for resident and non-resident anglers (Lewis and King 2014), the 170,850 angler days resulted in an estimated economic benefit of over 54.1 million dollars in 2013. Given the quality of the fishery, the economic importance of the fishery, and the increase in the angling pressure in recent years, a yearlong creel survey was conducted from March 2015 through February 2016. The objective of the creel study was to evaluate angler demographics, angler effort, catch and harvest rates of fish, and angler satisfaction during the 2015-2016 survey and compare these results to past creel surveys on the Missouri River to see if there have been changes over time.

Methods

The creel survey was conducted in four sections of the Missouri River from March 2015 through February 2016 using the same methods as previous creel surveys (Horton and Liknes 2003; Horton and Clark 2004). The sections were Holter (river mile (rm) 0.0 to 2.5), Craig (rm 2.5 to 8.1), Prewett Creek (rm 21.2 to 24.2), and Pelican Point (rm 24.2 to 28.3) (Figures 1 and 2). The same sections and methodologies were used to allow for comparisons with previous creel surveys conducted on this section of the Missouri River. Other yearlong creel surveys include the surveys conducted in 1993-94 and 2002-2003. The Craig and Pelican Point sections correspond with sections where annual population estimates were conducted for rainbow trout (*Oncorhynchus mykiss*) and brown trout (*Salmo trutta*) from 1982 through 2016, allowing for an estimate of the percent of each population harvested. One creel clerk conducted the survey over the entire year with the help of an additional creel clerk during the busier summer months (May – August).

Angler interviews

Most angler interviews were conducted on angler count days. The timing of angler interviews during a count day was based on time constraints and need. For example, on days with sunrise counts, angler interviews would be conducted between and after the counts. To represent temporal and spatial differences, creel clerks attempted to interview anglers in all sections and during all daylight hours. Some interviews were conducted on non-count days when personnel were available and interviews were needed during specific times of the day or sections. All anglers were interviewed from the shore in each section.

Data from angler interviews were recorded for individual anglers, not angler groups. All anglers were interviewed with a standard set of interview questions to provide information on angler demographics, catch and harvest rates, fishing tackle, and angler satisfaction (Appendix 2). All anglers were asked whether their trip was guided or not, and to provide the percent of anglers they thought were guided on the day of the interview. This question was asked to evaluate the

perception of the percent guiding versus the actual percentage of guiding. Interviewed anglers were asked to rate their satisfaction with the number of fish they had caught during the day of the interview, even if they had not caught any fish. Only anglers that had caught fish during the day of the interview were asked to rate their satisfaction with the size of fish they had caught. The species, length, time, date, and location were recorded for all harvested fish encountered.

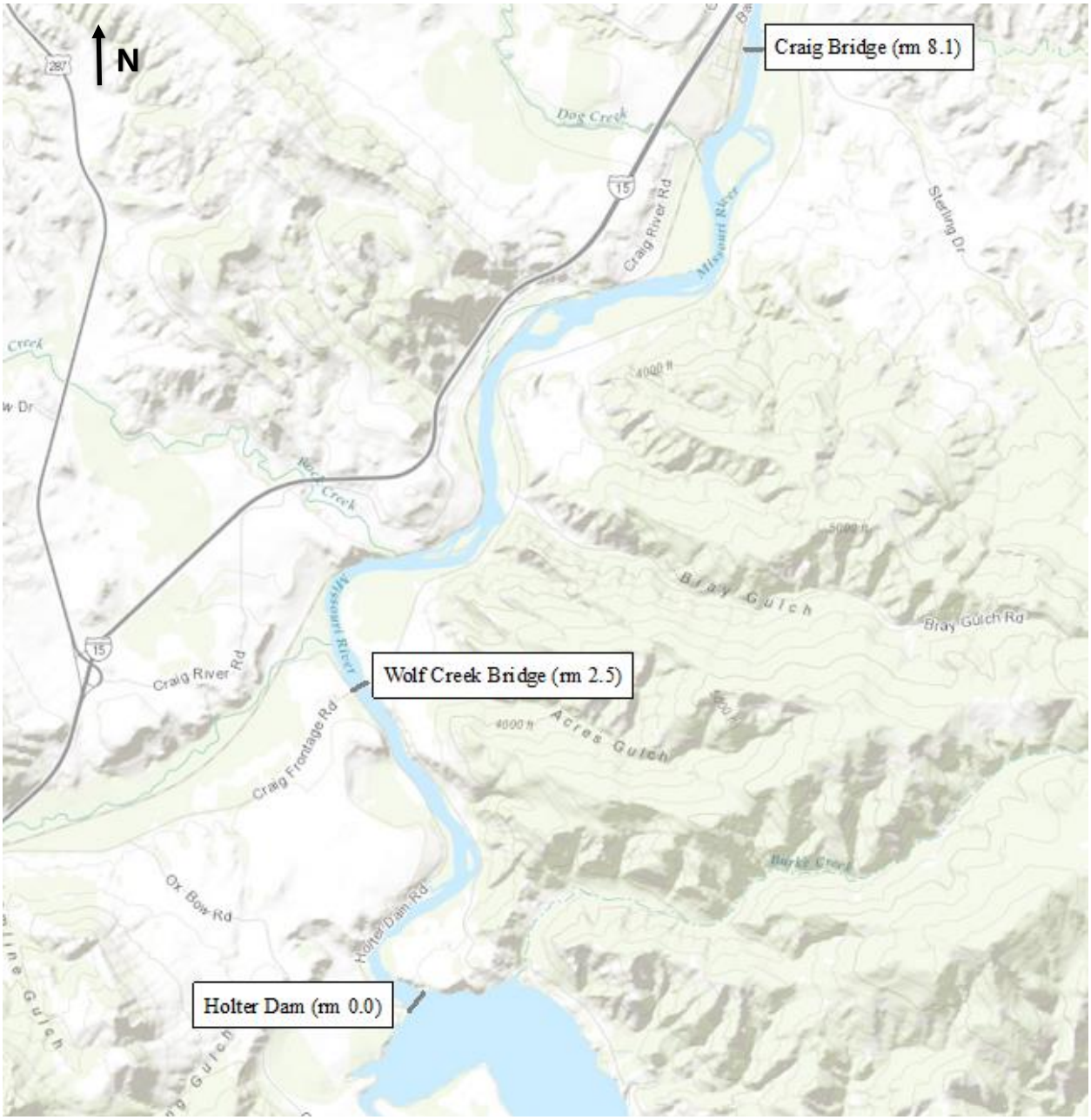

Figure 1. Topographical map delineating the boundaries of the Holter and Craig sections, on the Missouri River near Craig, Montana.

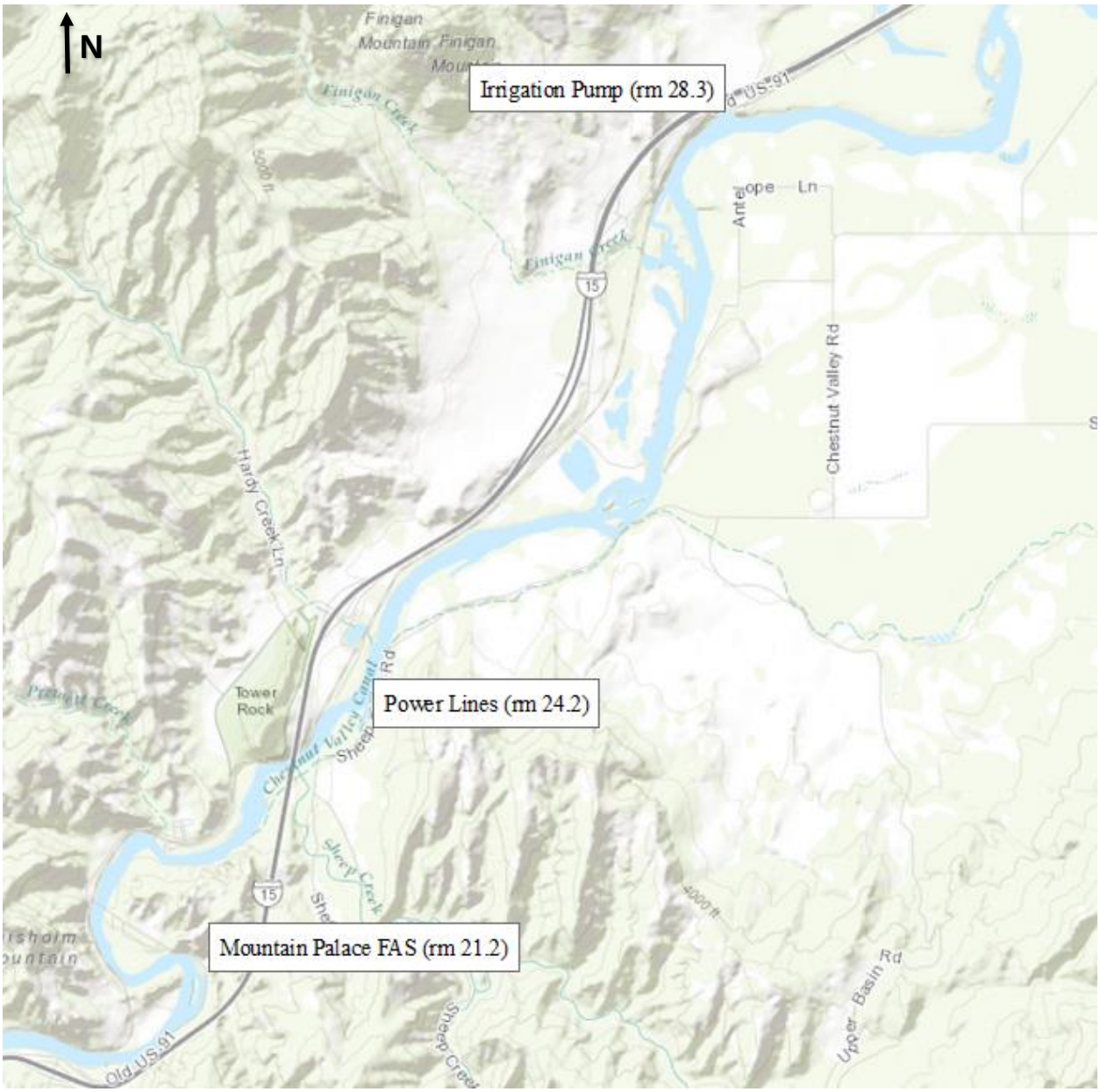

Figure 2. Topographical map delineating the boundaries of the Prewett Creek and the Pelican Point sections, on the Missouri River near Hardy, Montana.

Angler counts

Count days and times were determined using the same methodologies as described in Horton and Clark (2004). Count days and times were randomly selected using a random number generator (Appendix 1). Three weekdays and one weekend day were counted each week. Holidays were considered weekend days. All holidays were considered when selecting count days except Thanksgiving and Christmas (Appendix 1). During weeks with holidays, two weekdays and two weekend days were counted. Two count times were randomly selected for each count day. Due to logistical constraints, available count times were every hour starting at sunrise and continuing until three hours before dark to ensure counts were completed before anglers left the area at dark.

In addition, count times were no less than three hours apart and no more than seven hours apart. During each count day all four sections of the river were counted, and the starting point of each count was randomly selected (e.g., start at upstream two sections or downstream two sections). Anglers in all four sections were counted from shore by driving roads that parallel the sections and using various lookout points to observe the river with binoculars.

All river-based recreational users were classified and counted. River users were classified as shore anglers, float-tube anglers, anglers or non-anglers in motorized boats, anglers or non-anglers in non-motorized boats, and other recreational users (floaters, swimmers, etc.). To be classified as an angler, the individual had to be actively fishing. For example, if a group of anglers were sitting on shore eating lunch with their rod lying on shore next to them, they were classified as other recreational users. However, if an angler was taking time to change flies or gear, they were classified and counted as anglers. If anglers accessed an area by boat, but were fishing from shore they were classified and counted as boat anglers. Any small one-person boat (float-tube, kayak, etc.) was classified as a float-tube angler.

During each count from June through September, creel technicians conducted a timed guided boat count. Specifically, creel technicians tallied all boats as non-guided or guided (as determined by a guiding sticker displayed on the port side) for five minutes from a standardized vantage point for each of the four sections. This was conducted to compare the percent guided boat interview data against the guided boat count data. Similar results between the two methods would provide confirmation that the results are representative of the overall amount of guiding on the river during this time.

Results and Discussion

General summary

Overall, 1,986 interviews were conducted in the four sections from March 2015 through February 2016 (Table 1). The most interviews were conducted in the Holter section (793), followed by Craig (531), Pelican Point (339) and Prewett Creek (323) sections. July had the most interviews (318) and December had the least (67). A similar number of interviews were conducted in 2015 compared to the most recent yearlong survey in 2002-2003 (1,992 interviews) (Horton and Clark 2004). However, more interviews were conducted in winter months (December – February) in the current survey (305) compared to the 2002-2003 survey (111), despite using the same methodology. This could be related to more favorable weather conditions in 2015 that allowed for more winter angling opportunities than in 2002, a shift in angling behavior, or some combination of the two.

Table 1. Number of angler interviews by year, month, and section on the Missouri River from March 2015 through February 2016.

		Section				Interview
Year	Month	Holter	Craig	Prewett Creek	Pelican Point	totals
2015	March	71	22	26	12	131
	April	102	41	45	19	207
	May	50	59	45	50	204
	June	49	70	47	44	210
	July	89	125	38	66	318
	August	99	40	38	54	231
	September	92	39	31	41	203
	October	37	32	10	25	104
	November	36	26	5	6	73
	December	53	8	4	2	67
2016	January	61	34	6	4	105
	February	54	35	28	16	133
Total interviews		**793**	**531**	**323**	**339**	**1,986**

Of the 1,986 interviews conducted, 967 (49%) of the interviews were boat anglers (motorized and non-motorized), 961 (48%) were shore anglers, and 58 (3%) were float tube anglers. Of the 967 boat anglers interviewed 95.4% operated a non-motorized boat, 2.1% operated a small motorized boat (<15 horsepower), and 2.5% operated a large motorized boat (>15 horsepower). Large motorized boat interviews were only conducted in the Holter section in February, the Prewett Creek section in February and may, and the Pelican Point section in January, May, July, and August.

The percent of shore anglers interviewed was greatest in the Holter section (73%) and during the winter months (Table 2). Boat anglers comprised a greater percentage of the interviews than shore anglers in the Craig, Prewett Creek, and Pelican Point sections, and was as high as 73% in the Pelican Point section (Table 2). Float tube anglers comprised less than 5% of the interviews in each section (Table 2). The percentage of boat angler interviews increased from 22% in 1993 (Horton and Liknes 2003) to 31% in 2002 (Horton and Clark 2004), to 49% in 2015.

Table 2. Percent of anglers interviewed by angler type, year, month, and section on the Missouri River from March 2015 through February 2016.

Angler type	Year	Month	Section			
			Holter	Craig	Prewett Creek	Pelican Point
Boat	2015	March	43.7	31.8	26.9	33.3
		April	17.6	36.6	55.6	63.2
		May	8.0	54.2	62.2	74.0
		June	36.7	64.3	76.6	77.3
		July	32.6	72.8	89.5	83.3
		August	40.4	72.5	65.8	83.3
		September	35.9	64.1	71.0	90.2
		October	13.5	75.0	90.0	64.0
		November	5.6	73.1	40.0	50.0
		December	3.8	50.0	0.0	0.0
	2016	January	23.0	47.1	0.0	75.0
		February	16.7	51.4	10.7	0.0
		Total	**25.9**	**61.2**	**59.1**	**72.6**
Shore	2015	March	56.3	68.2	73.1	66.7
		April	78.4	61.0	44.4	36.8
		May	92.0	45.8	33.3	26.0
		June	63.3	34.3	17.0	20.5
		July	65.2	13.6	5.3	4.5
		August	59.6	27.5	34.2	7.4
		September	64.1	30.8	19.4	9.8
		October	86.5	21.9	10.0	32.0
		November	86.1	19.2	60.0	50.0
		December	96.2	50.0	100.0	100.0
	2016	January	77.0	52.9	100.0	25.0
		February	83.3	48.6	89.3	100.0
		Total	**73.0**	**34.3**	**37.8**	**23.0**
Float tube	2015	March	0.0	0.0	0.0	0.0
		April	3.9	2.4	0.0	0.0
		May	0.0	0.0	4.4	0.0
		June	0.0	1.4	6.4	2.3
		July	2.2	13.6	5.3	12.1
		August	0.0	0.0	0.0	9.3
		September	0.0	5.1	9.7	0.0
		October	0.0	3.1	0.0	4.0
		November	8.3	7.7	0.0	0.0
		December	0.0	0.0	0.0	0.0
	2016	January	0.0	0.0	0.0	0.0
		February	0.0	0.0	0.0	0.0
		Total	**1.1**	**4.5**	**3.1**	**4.4**

Over the course of the survey, 414 counts were completed over 208 days. The total number of anglers counted was 14,811, with non-motorized boat anglers most abundant, accounting for 59% of the anglers counted. Shore anglers accounted for 35% of the anglers counted, while motorized boat anglers and float tube anglers accounted for only 1 and 4% of anglers counted, respectively. Similar to the increase in interviewed boat anglers from 2002 to 2015, the percentage of non-motorized boats counted increased from 43% in 2002 (Horton and Clark 2004) to 59% in 2015.

Angler effort

Total angler effort (angler hours [h]) in 2015 for all four sections was 189,638 h, which represents a slight decrease from the estimate in 2002 of 191,858 h (Horton and Clark 2004). However, the number of boat angling hours increased 26% from 99,641 h in 2002 to 125,103 h in 2015, thus the similar overall angler effort between years was a result of an increase in boat angling effort and decrease in shore angling effort. Angling effort in 2015 increased 5% from the 2002 survey in the Holter section, decreased 10% in the Craig section, increased 18% in the Prewett Creek section, and increased 1% in the Pelican Point section. Compared to the 1993 yearlong creel survey, angling effort was overall nearly double in 2015, with a 138% increase in the Holter section, 63% increase in the Craig section, 120% increase in the Prewett Creek section, and 85% increase in the Pelican Point section.

Angling effort varied by section from a high in the Craig section of 80,899 h to a low of 17,402 h in the Pelican Point section (Appendix 3). Angling effort peaked in July in the Holter and Craig sections and peaked in June in the Prewett Creek and Pelican Point sections (Table 3, Figure 3, Appendix 3). The seasonal trend in angling effort was similar in 2015 and 2002 with angling effort rising in the spring to a peak in summer, moderate amounts in fall, and the least amount in winter (Figure 3). Angling effort increased over time in the 1993, 2002, and 2015 surveys in the January through March and October through December time periods for the Holter and Craig sections, indicating more use during late fall, winter, and early spring seasons (Table 3). In the Prewett Creek and Pelican Point sections, increases for these time periods were also observed in 2015 compared to 1993 (Table 3).

Total angling hours for June through September decreased from 2002 to 2015 by 9,216 h, 19,798 h, 1,699 h, and 2,944 h for the Holter, Craig, Prewett Creek, and Pelican Point sections, respectively. However, boat angling hours increased in the Holter section by 3,265 h, decreased in the Craig section by 4,924 h, increased by 337 h in the Prewett section, and decreased by 371 h in the Pelican Point section, compared to large decreases in the number of shore anglers of 12,484 h, 9,781 h, 2,479 h, and 1,611 h in these four sections, respectively. These results of large decreases in shore anglers compared to increases or only small decreases in boat anglers, suggest some shore anglers may have been displaced by heavy boat use during busy months of June through September.

Angler effort was estimated for the Holter and Craig sections in 1986, 1992, 1993, and 1994 (Table 3; Tews et al. 1994; Horton and Liknes 2003). However, these creel surveys were not all conducted for the entire fishing season, thus, only monthly or seasonal comparisons can be made (Horton and Clark 2004). Angler effort increased in all sections and time periods from 1986

through 2002, with the exception of the Holter section (Table 3). In the Holter section, angling effort was higher in 1986 than in 1992, then increased through 2002 (Table 3). Angling effort in 2015 represents an increase over most years for each season and section, with the exception of 2002 (Table 3).

Table 3. Comparison of angler effort (angler hours) on the Missouri River, Montana from 1986 through 2015, by month and section (Tews et al. 1994; Horton and Liknes 2003; Horton and Clark 2004).

			Months							Total
Section	Year	Jan-Mar	Apr	May	Jun	Jul	Aug	Sep	Oct-Dec	Jun-Sep
Holter										
	1986			3,796	6,182	8,691	5,320	2,722	*1,055	22,915
	1992				*2,848	6,221	3,294	1,781		14,144
	1993	3,315	2.295	2,465	3,474	6,246	4,324	3,082	2,773	17,126
	1994			*1,870	5,229	9,576	5,838	3,133		23,777
	2002	3,338	3,050	5,081	12,115	14,872	10,983	8,406	5,739	46,376
	2015	8,478	6,531	7,202	9,595	12,658	7,188	7,718	7,344	37,160
Craig										
	1986			2,232	2,492	5,252	5,994	2,780	*1,264	16,518
	1992				*4,523	12,115	7,143	4,107		27,888
	1993	3,510	1,974	4,617	3,837	15,157	11,780	5,118	3,549	35,891
	1994			*2,695	6,253	15,402	9,063	5,229		35,947
	2002	3,435	3,623	7,460	14,452	25,700	15,532	11,771	7,813	67,456
	2015	4,763	6,116	12,214	17,495	17,824	4,847	7,492	10,147	47,658
Prewett Creek										
	1993	1,053	270	1,790	1,224	2,179	1,635	2,147	895	7,184
	2002	929	1,013	2,673	2,605	5,577	3,177	3,048	1,883	14,406
	2015	1,876	2,552	4,880	5,266	3,392	1,800	2,249	2,609	12,707
Pelican Point										
	1993	1,092	990	907	1,032	2,167	997	1,930	268	6,127
	2002	495	708	1,513	1,727	4,498	3,386	2,870	2,104	12,481
	2015	1,239	1,807	2,646	3,288	2,086	1,620	2,543	2,174	9,537

*Data were not collected for the entire time period.

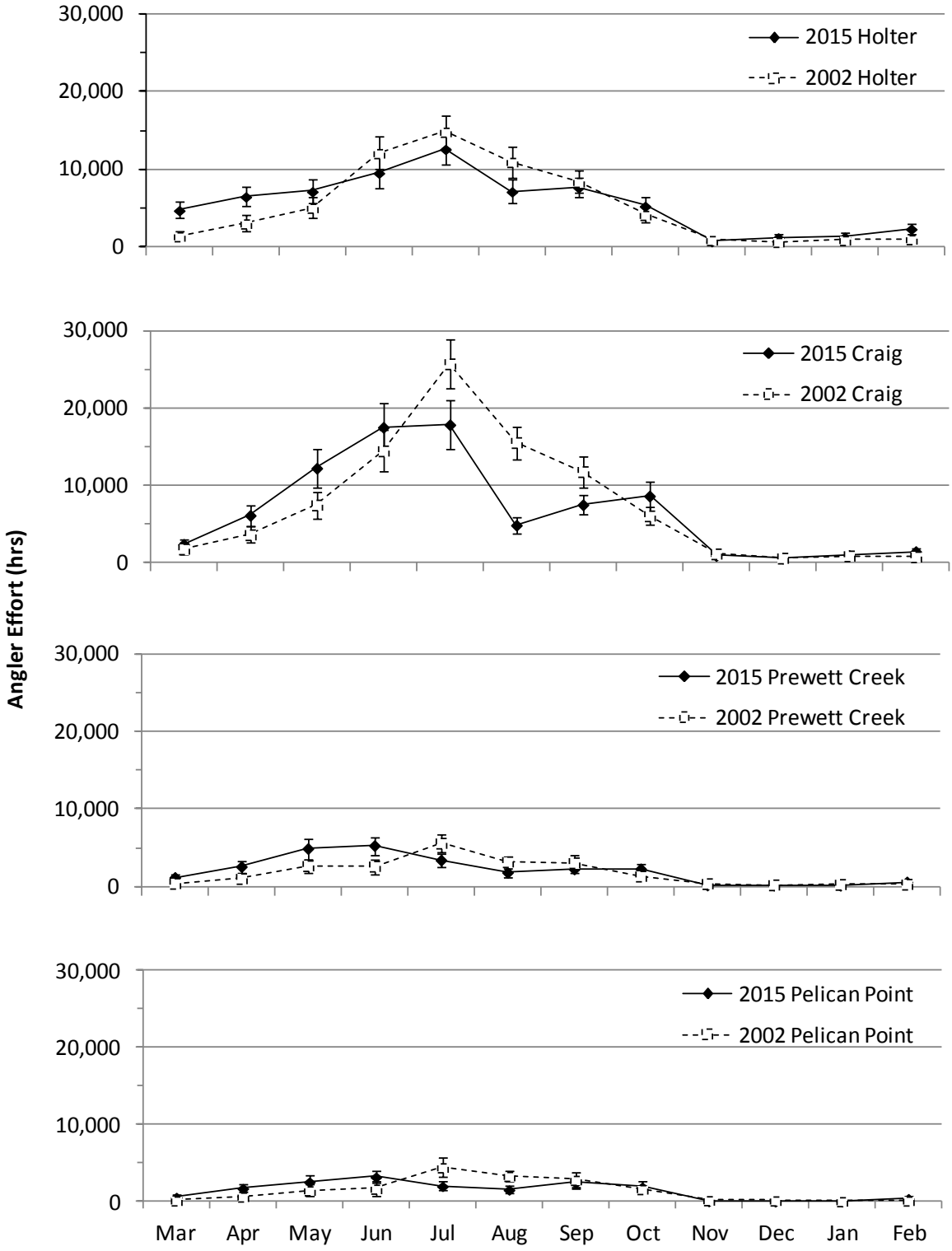

Figure 3. Angler effort (hours) on the Holter, Craig, Prewett Creek, and Pelican Point sections of the Missouri River by month, from March through February 2015-2016 and 2002-2003.

The number of angler days was estimated from the creel survey data by dividing the angling pressure (in hours) by the mean length of completed trips. The number of angler days in 2015 varied from 16,854 in the Craig section to 3,625 in the Pelican Point section (Table 4). The total number of angling days for the four creel survey sections was 39,508.

Every year from 1982 through 1985, and every other year since 1989, FWP has conducted a statewide mail survey to estimate angler effort on Montana waters (Table 5; McFarland 1983-2008; Selby et al. 2015, Selby et al. *In prep.*). For each survey, the number of angler days was estimated from Holter Dam to Cascade. As was conducted during the 2002 creel survey (Horton and Clark 2004), we extrapolated the number of angling days for the four sections to the entire reach from Holter Dam to Cascade Bridge to compare on the ground estimates during creel surveys to the statewide estimate. This was completed by multiplying the mean number of angler days per mile by the length of the 34.4-mile reach from Holter Dam to Cascade Bridge. These methods resulted in a similar number of angler days (129,011) for the 2002 creel survey as those estimated in 2001 and 2003 from the statewide survey (Horton and Clark 2004; Table 5).

The estimated number of angler days for the 34.4-mile reach from the 2015 creel survey was 97,644 angler days, which is substantially lower than the statewide estimate of 183,479 angler days (Selby et al. *In prep.*, Table 5) and the estimate calculated from the 2002 creel survey (Horton and Clark 2004). The relatively low number of angler days calculated based on the 2015 creel survey is a result of a relatively high mean length of completed trip (mean = 4.8 hours, range of 0.25 to 11.25 hours) and this calculation being highly influenced by this metric. For example, recalculating the 2002 survey with the 2015 mean completed trip length results in a similar number of angler days as in 2015, as expected given a similar number of angler hours. Similarly, recalculating the 2015 survey with the 2002 mean completed trip length of 3.8 hours results in 123,324 angler days for 2015. This value is less than the statewide estimate for 2015, but similar to the 2002 estimate, as expected given the similar number of angler hours. Overall, evaluating the statewide mail survey angler effort estimates, which have used consistent methodologies over time, an overall increasing trend in angler effort has occurred since 1982, with the greatest amount of effort occurring in 2015 (Table 5). The percent of angling effort by non-residents has increased consistently from 7% in 1984 to 49% in 2015 (Table 5).

Boat anglers represented the most effort in all sections in 2015 ranging from 76% in the Craig section to 51% in the Holter section (Table 6) in contrast to 2002 when shore anglers represented the greatest fishing effort in each section (Horton and Clark 2004). The percentage of shore angler effort in 2015 generally only exceeded boat angler effort in late fall through early spring (Table 6). While motorized versus non-motorized boat angler effort was not calculated, based on interviews, 95% of boat anglers utilized non-motorized boats while 5% utilized motorized boats. Thus, overall effort by motorized boat anglers was low compared to non-motorized boat anglers.

Table 4. Number of angler days [fishing pressure (in hours) divided by the mean length of completed fishing trips], section length (miles), and number of angler days per mile (Effort / Mile) by section on the Missouri River from March 2015 through February 2016.

Section	Angler Days	Section length	Effort / Mile
Holter	13,899	2.5	5,560
Craig	16,854	5.6	3,010
Prewett Creek	5,130	2.7	1,900
Pelican Point	3,625	4.1	884

Table 5. Statewide angler survey estimates for number of angler days, the estimated percent of angler days by resident anglers (% resident) and the estimated percent of angler days by non-resident anglers (% Non-resident), in the 35-mile section of the Missouri River from Holter Dam to Cascade, MT (McFarland et al. 1983-2008; Selby et al. 2015; Selby et al. *In prep.*).

Year	Estimated Angler Days	% Resident	% Non-resident
1982	30,052	.	.
1983	37,220	.	.
1984	73,847	93	7
1985	72,788	92	8
1989	63,456	83	17
1991	65,526	85	15
1993	62,179	81	19
1995	75,201	75	25
1997	88,576	75	25
1999	111,203	79	21
2001	123,472	69	31
2003	106,447	61	39
2005	93,229	64	36
2007	78,468	68	32
2009	106,746	63	37
2011	105,986	55	45
2013	170,850	58	42
2015	183,479	51	49

Table 6. Percent of angling effort (angler hours) represented by boat anglers and shore anglers, by section, year, and month, on the Missouri River from March 2015 through February 2016.

Section	Year	Month	Boat	Shore
Holter section				
	2015	March	35.6	64.4
		April	46.7	53.3
		May	47.6	52.4
		June	58.8	41.2
		July	59.1	40.9
		August	54.9	45.1
		September	59.3	40.7
		October	55.9	44.1
		November	22.6	77.4
		December	6.9	93.1
	2016	January	23.7	76.3
		February	25.3	74.7
		Total	**50.9**	**49.1**
Craig section				
	2015	March	57.9	42.1
		April	68.9	31.1
		May	79.7	20.3
		June	79.6	20.4
		July	78.7	21.3
		August	80.3	19.7
		September	77.8	22.2
		October	79.7	20.3
		November	41.2	58.8
		December	13.0	87.0
	2016	January	30.2	69.8
		February	53.5	46.5
		Total	**75.9**	**24.1**
Prewett Creek section				
	2015	March	36.7	63.3
		April	61.2	38.8
		May	74.7	25.3
		June	83.1	16.9
		July	81.6	18.4
		August	77.7	22.3
		September	77.4	22.6
		October	73.9	26.1
		November	55.0	45.0
		December	10.5	89.5
	2016	January	11.8	88.2
		February	14.3	85.7
		Total	**72.3**	**27.7**

Section	Year	Month	Boat	Shore
Pelican Point Section				
	2015	March	35.7	64.3
		April	60.1	39.9
		May	73.3	26.7
		June	80.5	19.5
		July	73.5	26.5
		August	73.5	26.5
		September	75.1	24.9
		October	65.1	34.9
		November	33.3	66.7
		December	0.0	100.0
	2016	January	11.1	88.9
		February	16.3	83.7
		Total	**68.8**	**31.2**

Catch rates and harvest

Catch rates were calculated for rainbow trout, brown trout, mountain whitefish (*Prosopium williamsoni*), and walleye (*Sander vitreus*) (Table 7 and Appendix 4). Rainbow trout catch rates were highest followed by brown trout, mountain whitefish, and walleye. Rainbow trout catch rates were highest at the Pelican Point section (0.73 fish/h), similar at the Craig (0.62 fish/h) and Prewett Creek (0.60 fish/h) sections, and lowest at the Holter (0.46 fish/h) section. Mean length of rainbow trout measured during the creel survey were slightly larger at the two upstream sections than the two downstream sections (Table 8). This follows the trend observed from population estimate surveys, which show more large rainbow trout in the upstream section than the downstream section (FWP, unpublished data). Catch rates of rainbow trout in the 2015 survey were similar to those observed in the 2002 survey, and often more than double that observed in the 1993 survey (Table 9).

Table 7. Mean yearlong catch rates (fish/h) by section and species on the Missouri River, MT, from March 2015 through February 2016.

Section	Catch rates			
	Rainbow trout	Brown trout	Mountain whitefish	Walleye
Holter	0.46	0.03	0.03	0.05
Craig	0.62	0.06	0.04	0.00
Prewett Creek	0.60	0.22	0.03	0.00
Pelican Point	0.73	0.27	0.04	0.00

Catch rates in 1993 were likely lower than in 2002 and 2015 due to lower fish densities (Horton et al. 2004; Mullen et al. 2016), and higher flows in 1993 (USGS, unpublished data). The 1993 estimate of rainbow trout 10 inches and longer in the Craig area was 2,215 per mile, compared to 3,385 per mile in 2002 and 4,073 per mile in 2015 (Tews et al. 1994; Horton et al. 2004; Mullen et al. 2016). Similarly, in the Pelican Point section, the 1993 estimate of rainbow trout 10 inches

and longer was 866 per mile, compared to 1,393 per mile in 2002 and 1,862 per mile in 2015 (Tews et al. 1994; Horton et al. 2004; Mullen et al. 2016). Mean daily flows in the Missouri River during 1993 were twice that in 2002 and 1.5 times greater than in 2015 (USGS, unpublished data), which may have resulted in relatively poor fishing conditions in 1993. Since 1980, the overall creel survey catch rates for rainbow trout, in the Holter section, have varied from 0.33 fish per hour in 1993 to 0.50 fish per hour in 2002 (Table 9). In the Craig section, rainbow trout catch rates have varied from 0.26 fish per hour in 1993 to 0.62 fish per hour in 2015. The rainbow trout catch rates in 2015 at the Craig, Prewett Creek, and Pelican Point sections represent the highest catch rates observed over the period of record, and the Holter rainbow trout catch rate in 2015 is the second highest catch rate observed (Table 9). Rainbow trout catch rates during the 2015 creel survey varied by section and month, but were often highest in December through March (Figure 4).

Table 8. The number of fish measured (n) and mean, minimum, and maximum length of fish that were harvested and measured from the Missouri River from March 2015 through February 2016, by section and species.

			Length		
Section	Species	N	Mean	Min.	Max.
Holter	Rainbow trout	46	17.6	14	21.2
	Brown trout	4	19.3	15.2	24.5
	Walleye	28	13.7	6.0	25.0
	Yellow perch	11	9.8	8.6	10.9
	Ling (burbot)	1	17.5	17.5	17.5
Craig	Rainbow trout	12	17.8	15.1	21.0
Prewett Creek	Rainbow trout	16	17.2	15.0	19.2
	Brown trout	2	19.1	15.0	23.1
	Yellow perch	1	13.5	13.5	13.5
Pelican Point	Rainbow trout	26	16.5	13.8	20.6
	Brown trout	1	18.2	18.2	18.2

Harvest of rainbow trout was relatively low in all sections and varied from 1,762 in the Holter section to 217 in the Prewett Creek section (Appendix 4). The estimated harvest as a percent of the estimated number of rainbow trout 10 inches and longer was 20%, 4%, 4%, and 9% for the Holter, Craig, Prewett Creek, and Pelican Point sections, respectively (Table 9). These percentages of the population harvested in 2015 are greater than those observed in 2002 at three of the four sites (4%, 2%, 9%, and 7% in 2002 for each site, respectively), but are substantially less than percentages observed in 1993 (52%, 15%, 38%, and 53% for each site, respectively) (Table 9). These changes likely reflect an overall social change with an increase in catch-and-release fishing, and may also be influenced by changes in fishing regulations. Rainbow trout harvest regulations have changed from 5 fish, 1 over 18 inches in 1993, to 1 fish in 2002, to 3 fish, 1 over 18 inches in 2015. The estimated changes in harvest from 8,967 total fish (all four sections) to 2,471 fish to 3,340 fish reflect the changes from the least restrictive regulations, to more restrictive, to in between for the harvest regulations in 1993, 2002, and 2015, respectively.

Overall, the percentage of rainbow trout caught that were also harvested has declined since 1980 in all sections of the river (Table 9).

In the 2015 survey, of the 1,171 people interviewed that caught a trout, 91 percent of them practiced catch-and-release compared to 83 percent in 1993. Based on the statewide angling estimates and the percent of anglers that harvested fish, the number of harvest anglers can be estimated at 10,570 in 1993 and 16,513 in 2015. This suggests that despite a large increase in catch-and-release fishing in recent years, harvest angling also increased. Despite this increase in harvest angling, total harvest decreased because of the more restrictive harvest regulations in 2015 than in 1993.

Brown trout catch rates varied from 0.03 fish per hour in the Holter section to 0.27 fish per hour in the Pelican Point section in 2015 (Table 7 and Appendix 4). The Craig section had a similar catch rate to the Holter section, while the Prewett Creek section had a similar catch rate to the Pelican Point section (Table 7). The substantially greater catch rates in the lower sections compared to the upper sections is not surprising given that the brown trout population makes up approximately 10% of the population in the upper river compared to 20% of the population in the lower river. Brown trout densities were also lower in the upper sections than the lower sections (e.g., 2015-2016 mean of 351 in the Craig section compared to 455 in the Pelican Point section), which along with the high densities of rainbow trout in the upper reach may explain the reduced brown trout catch rates. Brown trout catch rates were relatively consistent throughout the year, in all sections, except for higher catch rates in the Pelican Point section in December and January (Figure 4).

Compared to previous years, brown trout catch rates in 2015 were near the low end of the range of catch rates observed at the Holter and Craig sections and were the highest catch rates observed at the Prewett Creek and Pelican Points sections (Table 9). Similar to rainbow trout, catch rates were related to changes in density. In the Craig section, the brown trout catch rate was greatest at 0.17 per hour in 2002 when brown trout density was 1,104 fish per mile 10 inches and greater, compared to catch rates of 0.09 and 0.06 fish per hour in 1993 and 2015 when brown trout density was 404 and 433 fish per mile, respectively. Similarly, in the Pelican Point section, brown trout catch rates were substantially higher in 2002 and 2015 than in 1993 (Table 9), which corresponds with higher brown trout densities in 2002 and 2015 (447 and 476 fish per mile, respectively) than in 1993 (281 fish per mile). Overall, catch rates of brown trout increased since 1993 in the two downstream sections and increased from 1980 through 2002 for the two upstream sections, before declining in 2015 (Table 9).

Estimated harvest of brown trout was greatest in the Holter and Prewett Creek sections, but low overall (Appendix 4). The percentage of the estimated brown trout population that was 10 inches and longer that was harvested remained low and similar to recent years in the Craig and Pelican Point sections with an estimated 1% harvested in 2015 (Table 9). Higher percentages of brown trout harvest were observed in 2015 in the Holter and Prewett Creek sections (14 and 7% of the population 10 inches and longer, respectively) than those observed in recent years (Table 9). Creel technicians measured only seven harvested brown trout during the survey ranging in size from 15.0 to 24.5 inches (Table 8). Allowable harvest of brown trout was reduced to one fish with a minimum length of 22 inches in 1991. That regulation was in place until 2012 when the

regulations were changed to 3 trout daily, only one can be a brown trout and only 1 can be over 18 inches.

Table 9. Comparison of catch rates and percent of fish harvested for rainbow trout (Rb) and brown trout (LL) by section and year, on the Missouri River from 1980 through 2015 (Berg 1981, 1982; Tews et al. 1994; Horton and Liknes 2003; Horton and Clark 2004).

Section	Year	Survey Dates	Number of Interviews	Rb catch Rate (#/h)	% Rb harvested	LL catch Rate (#/h)	% LL harvested
Holter							
	1980	Apr–Oct	273	0.46	83	0.01	0
	1981	Apr–Nov	1,374	0.41	88	0.01	.
	1986	5/1–10/15	731	0.44	91	0.02	50
	1987	4/5–9/20	570	0.38	50	0.02	50
	1992	6/15–9/30	297	0.45	12	0.06	0
	1993	Mar–Feb	948	0.33	52	0.05	4
	1994	4/22–9/30	533	0.38	32	0.06	6
	2002	Mar–Feb	926	0.50	4	0.11	1
	2015	Mar–Feb	793	0.46	20	0.03	14
Craig							
	1980*	Apr–Oct	239	0.32	66	0.02	100
	1981*	Apr–Nov	581	0.39	62	0.03	33
	1986*	5/1–10/15	549	0.55	27	0.10	23
	1987*	4/5–9/20	683	0.48	27	0.05	20
	1992	6/15–9/30	464	0.55	6	0.13	1
	1993	Mar–Feb	1,045	0.26	15	0.09	0
	1994	4/22–9/30	752	0.45	5	0.08	0
	2002	Mar–Feb	593	0.50	2	0.17	1
	2015	Mar–Feb	531	0.62	4	0.06	1
Prewett Creek							
	1993	Mar–Feb	258	0.28	38	0.05	2
	2002	Mar–Feb	222	0.58	9	0.18	2
	2015	Mar–Feb	323	0.60	4	0.22	7
Pelican Point							
	1993	Mar–Feb	234	0.21	53	0.02	14
	2002	Mar–Feb	251	0.71	7	0.19	1
	2015	Mar–Feb	339	0.73	9	0.27	1

*Section was from the Wolf Creek Bridge to the mouth of the Dearborn River.

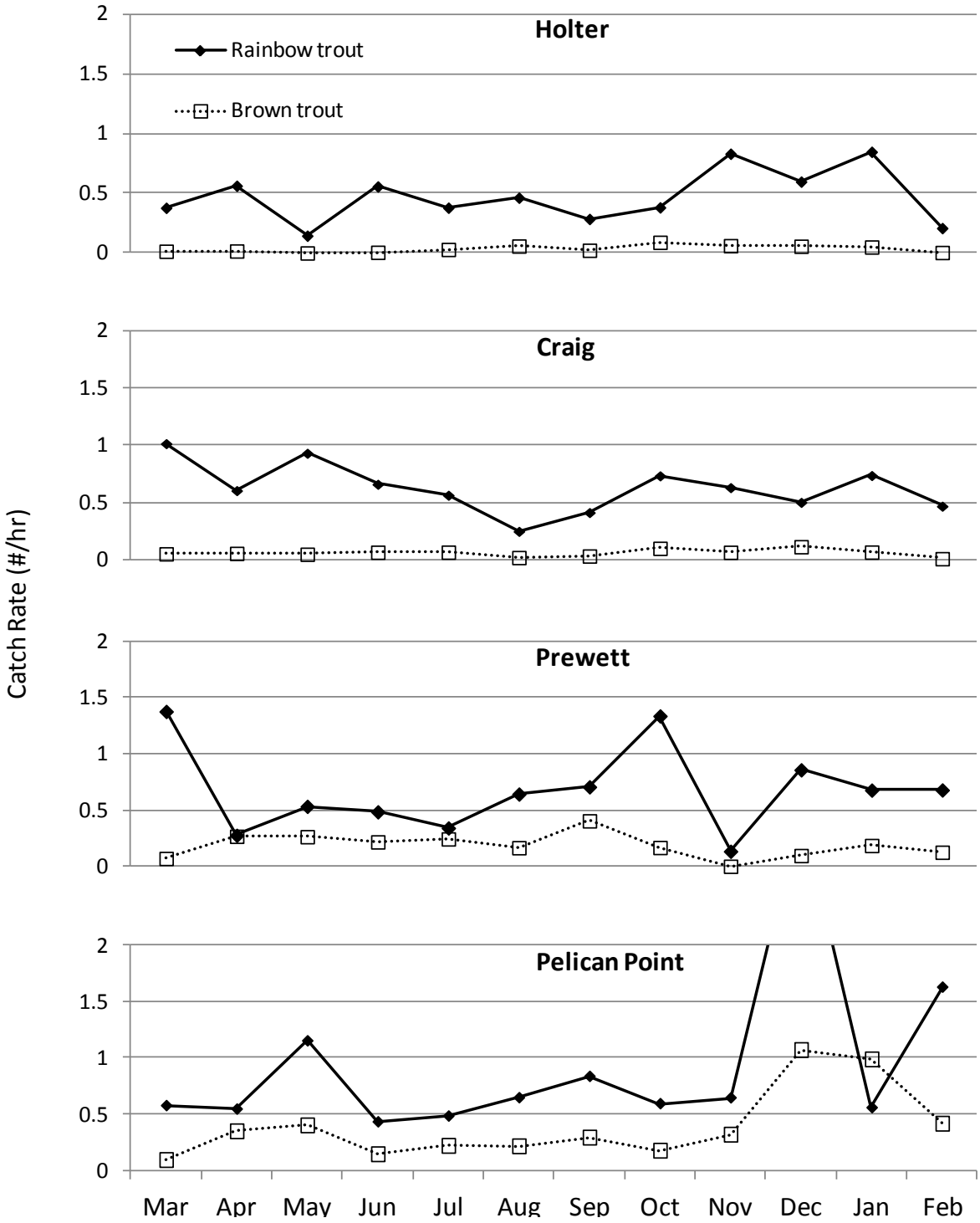

Figure 4. Catch rates (#/hour) of rainbow trout and brown trout by section and month, from March 2015 through February 2016. The catch rate for rainbow trout in the Pelican Point section in December was 3.2.

Although no specific questions were asked in the survey about mountain whitefish, the past several years anglers have expressed concern about an apparent decrease in mountain whitefish catch rates. While population data for mountain whitefish are not available for comparison, comparison of catch rate data were examined to provide insight into mountain whitefish populations. Mountain whitefish catch rates were low compared to trout and similar among sections ranging from 0.03 fish per hour in the Holter and Prewett Creek sections to 0.04 fish per hour in the Craig and Pelican Point sections in 2015 (Appendix 4). The catch rates for mountain whitefish in 2015 were less than those reported in 2002 when they varied from 0.05 to 0.23 fish per hour (Horton and Clark 2004), but were similar to those reported in 1993 when they varied from 0.01 to 0.06 fish per hour (Horton and Liknes 2003). Catch rates reported by Leathe et al. (1988) for four similar sections in 1987 ranged from 0.05 to 0.29 fish per hour. Overall, mountain whitefish catch rates in 2015 were similar to catch rates in 1993, while catch rates in 2002 were similar to those observed in 1988. Thus, while catch rates were low in 2015, low catch rates have also been observed in the past. River conditions, such as the amount of aquatic vegetation, which may influence gear type and efficiency, may play a role in mountain whitefish catch rates, along with variable densities. Estimated harvest of mountain whitefish in 2015 was low, and varied from 0 in the Prewett Creek and Pelican Point sections to 8 and 12 fish in the Holter and Craig sections, respectively (Appendix 4).

Creel survey technicians observed walleye being caught and harvested only in the Holter section. In the Holter section, yearlong catch rates were 0.05 fish per hour, and the yearlong harvest rate was 0.04 fish per hour (Appendix 4). An estimated 1,757 walleye were harvested from the Holter section, which is up from 260 walleye in 2002 (Horton and Clark 2004). Walleye harvest was not estimated in the 1993 creel survey, but an estimated 27 walleye were harvested during the creel survey in 1994 from May 22 through September 30 (Horton and Liknes 2003). Walleye were first observed during electrofishing surveys in 1983, but were not observed consistently during surveys until the mid-1990s.

Walleye regulations changed from the standard 5 fish daily, 10 in possession to no limit from Holter Dam to Cascade Bridge on the Missouri River in March 2012. Creel technicians documented 75 walleye that were harvested by anglers from 25 interviews during the 2015 creel survey. This represents a range of one walleye harvested by eight different anglers to a max of eight walleye harvested by one angler. Of the total 75 walleye that were documented as harvested, 28 fish were in excess (6 to 8 fish harvested) of what the prior standard regulation (5 daily) had allowed. Only 4 of the 25 anglers (16%) that reported harvesting walleye harvested numbers in exceedance of the old standard regulation. Also, in 2010 and 2011 high spring and early summer flows caused entrainment of rainbow trout and walleye through Holter Dam into the Missouri River. Walleye catch rates during the annual fall electrofishing surveys showed a ten-fold increase in walleye (16 to 169 handled) from 2009 to 2011, which was sustained above the long-term mean through 2014. As such, the increase in walleye harvest was influenced to some degree by the change in regulations in March 2012, but also by the increase in walleye numbers in the river due to flushing in 2010 and 2011.

For all sections combined, most anglers interviewed (82%) were targeting trout of any variety, 10% of anglers interviewed were targeting any fish, and 4% of interviewed anglers targeted walleye in 2015. In the Holter section, 9% of the interviewed anglers were targeting walleye,

while no anglers reported targeting walleye in the other three sections. These results are similar to in 2002 when 71% of anglers targeted trout of any variety and 19% of anglers targeted any fish. The percentage of anglers targeting walleye was lower in 2002 with 1% of anglers targeting walleye for all sections combined and 2% targeted walleye in the Holter section.

Angler demographics

Angler origin

The percent of non-resident anglers fishing the Missouri River has been increasing since 1984 based on the statewide mail survey results (Table 5; McFarland et al. 1983-2008; Selby et al. 2015). In the 2015 creel survey, 42% of the anglers interviewed (n=1,986) were non-residents. Compared to the other yearlong creel surveys, the 42% non-resident anglers in 2015 is similar to the 44% non-residents observed in 2002 (Horton and Clark 2004), and much greater than the 28% in 1993 (Horton and Liknes 2003). These results along with the statewide mail survey results, demonstrate an increase in the percent of non-resident anglers fishing the Missouri River in recent years.

By section, non-residents comprised 33%, 52%, 33%, and 55% of all interviewed anglers in 2015 in the Holter, Craig, Prewett Creek, and Pelican Point sections, respectively. These results are different than those observed in 2002 when non-resident anglers comprised 44%, 49%, 44%, and 33% of the interviewed anglers for the same four sections. Most notably, the changes are a lower percentage of non-residents in the Holter and Prewett Creek sections and an increase in the percentage of non-residents in the Pelican Point section. The increase in use in the Pelican Point section from 33% to 55% from 2002 to 2015 follows an increase from 20% observed in 1993 (Horton and Liknes 2003). The lower percentage of non-residents observed in the Holter section in 2015 compared to 2002 is likely related to a greater number of interviews conducted during the winter months of 2015 than 2002 (305 interviews versus 111 interviews), when mostly resident anglers are fishing. This increase in resident winter anglers may be related to a possible shift in behavior with more resident anglers fishing during winter, possibly to avoid crowding. More favorable weather conditions could also play a role. However, mean monthly temperatures were similar between winters (winter 2002 = 27.3°F, winter 2015 = 29.0°F). Furthermore, while February 2015 was substantially warmer than the other two months, the consistent increase in interviews from 2002 to 2015 for each month (81% to 250% increase), suggests factors other than weather played a role in the increase in the number of winter anglers interviewed. Angler effort increased in each section from 2002 to 2015 for the October through December and January through March time periods (Table 3), providing further evidence that a shift in angling behavior with more angling during late fall, winter, and early spring time periods.

Overall, most (72%) non-resident anglers were interviewed during June, July, August, and September (Figure 5), compared to 32% of the resident anglers during these same four months. This trend of increased use by non-resident anglers during summer months was consistent for each section (Figure 6) and follows the trend observed during the 2002 survey (Horton and Clark 2004).

Cascade County anglers represented 25% of all anglers interviewed, Lewis and Clark County anglers represented 13%, and other Montana counties represented 20% of anglers interviewed. The percentage of anglers interviewed by county was geographically associated with the county boundaries and the population centers of Helena in Lewis and Clark County and Great Falls in Cascade County. Cascade County anglers were more highly represented in the downstream two sections, representing 48% and 50% of anglers interviewed in the Prewett Creek and Pelican Point sections, than the upstream sections where they represented 33% and 12% of anglers interviewed in the Holter and Craig sections, respectively (Appendix 5). Conversely, Lewis and Clark County anglers were more highly represented in the two upstream sections, representing 16%, 17%, 10%, and 4% of the interviewed anglers in the Holter, Craig, Prewett Creek, and Pelican Point sections, respectively. Other Montana residents were also more represented in the upstream two sections, representing 22%, 29%, 19%, and 12% of the interviewed anglers in the four sections from upstream to downstream (Appendix 5).

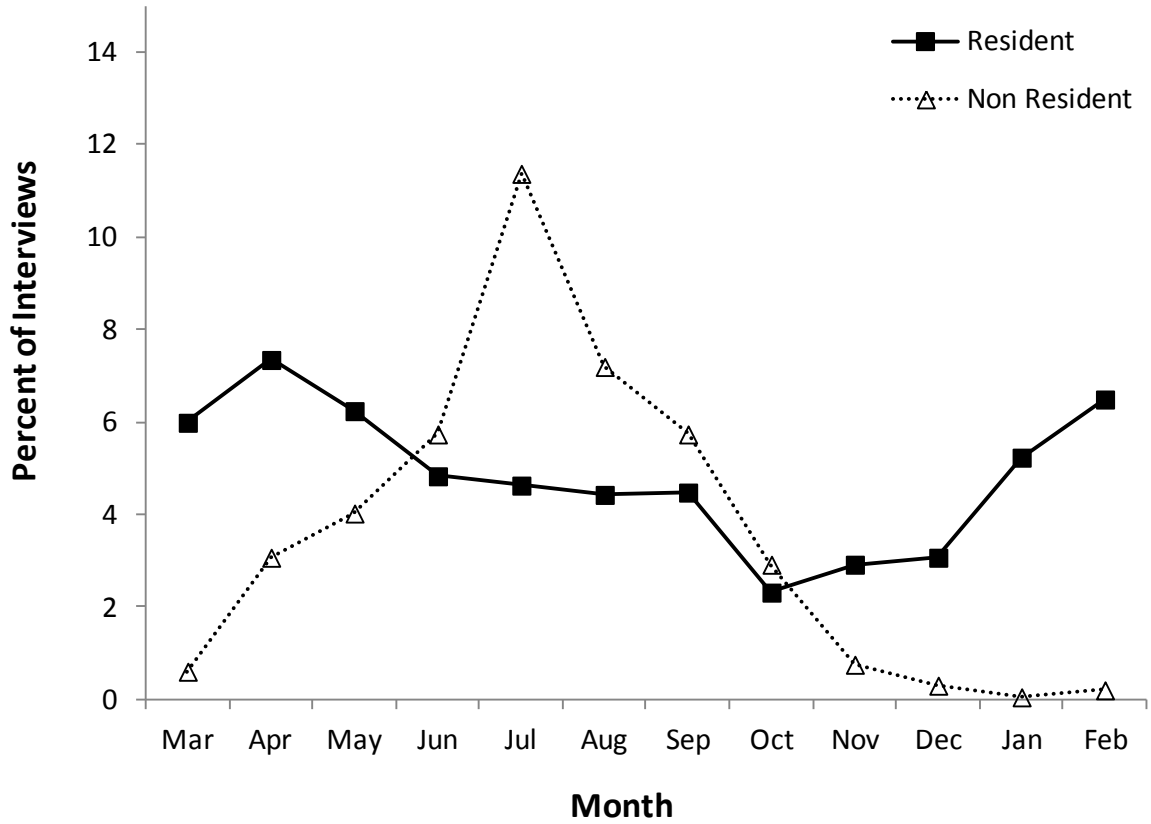

Figure 5. Percent of interviews (all sections combined) by month for resident (solid line) and non-resident (dotted line) anglers on the Missouri River from March 2015 through February 2016.

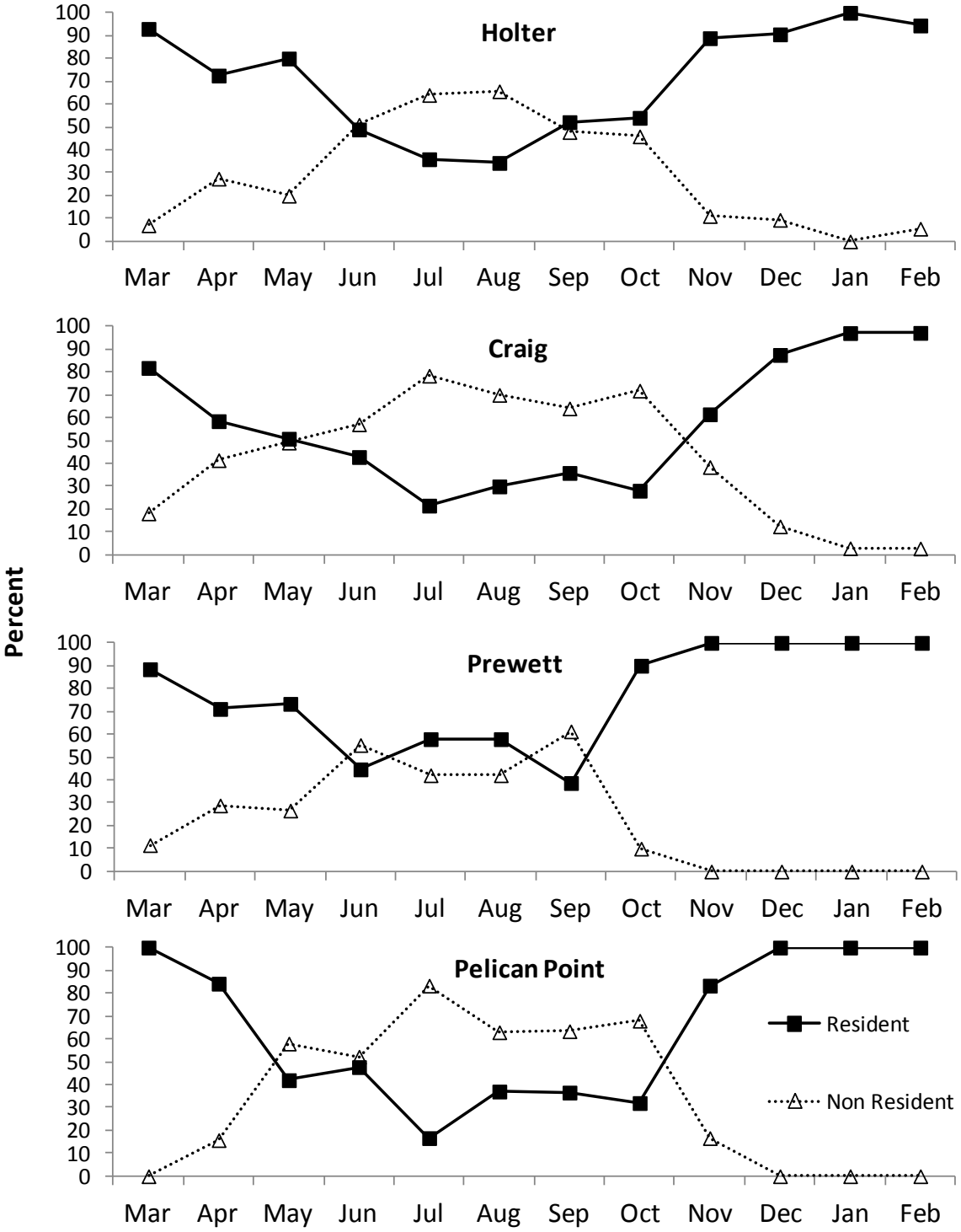

Figure 6. Percent of all interviews (by month and section) represented by resident (solid line) and non-resident (dotted line) anglers from March 2015 through February 2016.

The percent of anglers represented by Cascade (25%) and Lewis and Clark (13%) counties in 2015 was similar to that observed in the 2002 survey (Horton and Clark 2004). These values represent a decrease compared to the percentage of Cascade and Lewis and Clark anglers in 1993. For example, 80% of interviewed anglers in the Prewett Creek section were from Cascade County in 1993, compared to 34% in 2002, and 48% in 2015 (Appendix 5, Horton and Liknes 2003; Horton and Clark 2004).

Overall 2.4 percent of the anglers interviewed were classified as foreign non-resident anglers (i.e., not United States citizens). The percentage of interviewed anglers that were foreign non-residents varied by section from 0.5% in the Prewett Creek section to 5.0% in the Craig section (Appendix 5). Most (83%) foreign non-resident anglers were interviewed from April through August.

Fishing tackle

Overall, 70% of all anglers interviewed used flies for tackle, 15% used bait (other than fish eggs), 8% used any combination, 5% used lures, and 2% used fish eggs. Flies were the most used tackle in each section varying from 54% in the Holter section to 93% in the Craig section (Table 10). The relatively low percentage of flies in the Holter section compared to the other sections is at least partly related to this section receiving the greatest pressure during the winter months, when techniques typically associated with an attempt to harvest fish are popular. The next highest tackle type was bait (other than fish eggs) for the Holter, Prewett, and Pelican Point sections. All tackle types other than flies were rare in the Craig section. Fish eggs were the least used tackle type in each section.

Table 10. Percent of anglers interviewed by tackle type and section on the Missouri River from March 2015 through February 2016.

	Section			
Tackle type	Holter	Craig	Prewett Cr.	Pelican Pt.
Lures	4.9	2.3	8.7	8.5
Flies	54.0	92.6	67.8	73.5
Fish eggs	1.6	0.9	2.8	3.2
Other bait	25.5	1.7	13.3	11.8
Any combination	14.0	2.5	7.4	3.0

The use of flies has generally increased over time. In 1980, only 10% of anglers fished with flies (Berg 1981). In the 1993 survey, 38% of anglers used flies (Horton and Liknes 2003). The use of flies peaked in the 2002 survey at 74% (Horton and Clark 2004), followed by the similar 70% in 2015. The percent of anglers using flies has also increased in each section. For example, in the Craig section, which has consistently had the greatest use of flies, the percentage of anglers using flies increased from 54% to 87% to 93% in 1993, 2002, and 2015, respectively.

Domestic non-resident anglers used flies more than any other angling group, followed by Montana residents (Table 11). Cascade County anglers used lures, fish eggs, and other bait more than any other group.

Table 11. Percent of tackle type used by anglers interviewed, by angler origin on the Missouri River from March 2015 through February 2016.

	Tackle Type				
Angler origin	Lures	Flies	Fish eggs	Other bait	Any combination
Cascade County	57.4	10.1	86.8	59.9	55.7
Lewis and Clark County	8.3	13.8	2.6	9.2	13.9
Other Montana resident	18.5	22.1	7.9	17.0	13.9
Domestic non-resident	15.7	50.7	2.6	13.3	16.5
Foreign non-resident	0.0	3.3	0.0	0.7	0.0

Guiding status

Over the course of the study, 21% of the interviewed anglers were guided and 79% non-guided. The percentage of interviewed anglers that were guided has increased since 1986 with 6.8%, 12.7%, 6.5%, 10.6%, 11%, and 21% guided in the 1986, 1992, 1993, 1994, 2002, and 2015 creel surveys, respectively (Tews et al. 1994; Horton and Liknes 2003; Horton and Clark 2004). Similar to non-resident use, most guided trips occur during summer and early fall, thus creel surveys that include only these months would have higher percent guided estimates than yearlong surveys. The percent guided in the yearlong surveys in 1993, 2002, and 2015 increased from 6.5% to 11% to 21%. Summer and fall months (June through October) in 2015 represented the highest percent guided estimates in each section (Table 12, Figure 7). The highest percentage of interviewed anglers that were guided was 68% in the Pelican Point section in July. Overall, the percent guided was 11%, 22%, 23%, and 40% in the Holter, Craig, Prewett Creek, and Pelican Point sections. All guided anglers interviewed were fishing from boats. Of the 967 total boat anglers interviewed, 43% of them were guided. Of the 586 boat anglers interviewed in June through September, 53% of them were guided. This measure is in agreement with results from a timed daily boat count in each section by creel technicians during this period, where 55% of boats observed had a guiding sticker.

During the interview process, all anglers were asked to provide the percent of anglers they thought were guided on the day of the interview. This question was asked to evaluate the perception of the percent guiding versus what was measured. Over the course of the entire creel survey, the mean perception of the percent guided was 44%, more than double the actual mean value of 21%. For the four months where angling pressure was the greatest of June through September, the mean perception of the percent guided was 59%, compared to the measured mean value of 33%. In July, the month with the greatest fishing pressure and guided use, the mean perception of percent guided was 63%, compared to the measured mean value of 42% (Figure 7). Overall, the perception of the percent guiding was consistently greater than the measured amount of guiding (Figure 7). However, if the perception of the percent guided is compared to the measured percentage of boat anglers that are guided, the perception was similar to what was measured. For example, the mean percentage of boat anglers in July that were guided was 65%, which is nearly equal to the mean perception of 63%.

Table 12. Percent of anglers interviewed by guiding status (guided or non-guided), year, month, and section on the Missouri River from March 2015 through February 2016.

			Section			
Angler type	Year	Month	Holter	Craig	Prewett Cr.	Pelican Pt.
Guided	2015	March	7.0	0.0	19.2	0.0
		April	2.9	4.9	13.3	21.1
		May	4.0	27.1	20.0	36.0
		June	24.5	25.7	34.0	15.9
		July	22.5	41.6	47.4	68.2
		August	28.3	17.5	13.2	46.3
		September	16.3	23.1	35.5	65.9
		October	8.1	46.9	40.0	36.0
		November	0.0	0.0	0.0	0.0
		December	0.0	0.0	0.0	0.0
	2016	January	0.0	0.0	0.0	0.0
		February	0.0	0.0	0.0	0.0
		Mean	**11.1**	**22.4**	**22.9**	**39.8**
Non-guided	2015	March	93.0	100.0	80.8	100.0
		April	97.1	95.1	86.7	78.9
		May	96.0	72.9	80.0	64.0
		June	75.5	74.3	66.0	84.1
		July	77.5	58.4	52.6	31.8
		August	71.7	82.5	86.8	53.7
		September	83.7	76.9	64.5	34.1
		October	91.9	53.1	60.0	64.0
		November	100.0	100.0	100.0	100.0
		December	100.0	100.0	100.0	100.0
	2016	January	100.0	100.0	100.0	100.0
		February	100.0	100.0	100.0	100.0
		Mean	**88.9**	**77.6**	**77.1**	**60.2**

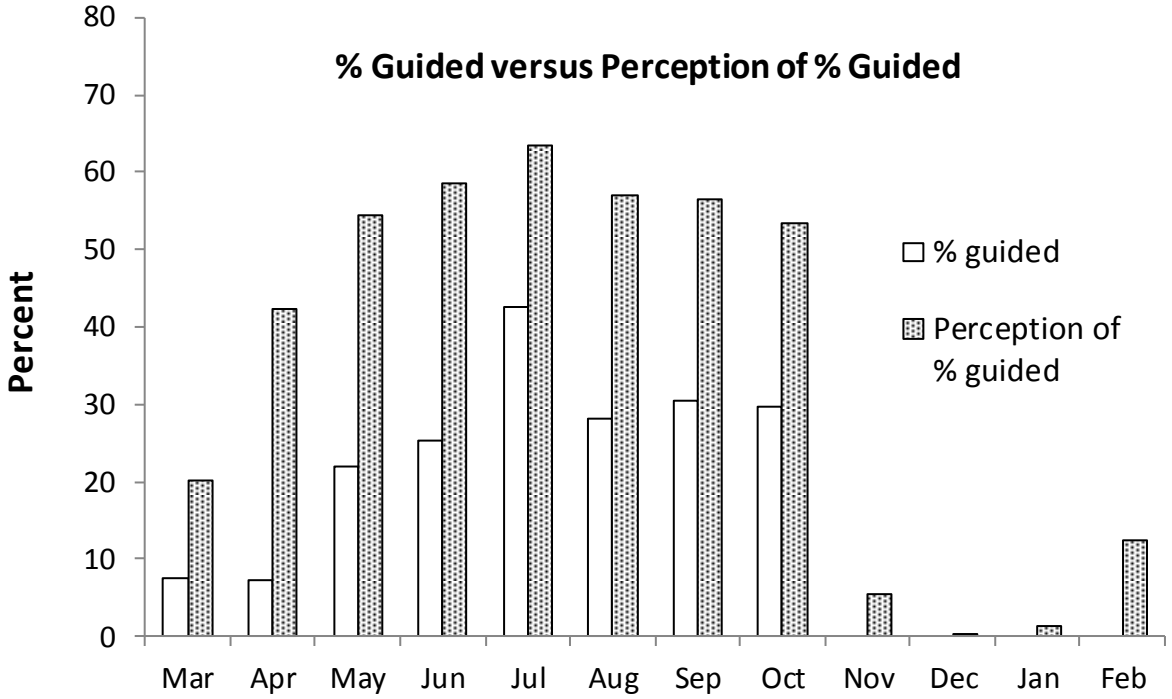

Figure 7. Mean % guided compared to mean perception of % guided, by month, on the Missouri River from March 2015 through February 2016.

Resource management questions

Satisfaction

All anglers (including those who had not caught a fish) were asked to rate their satisfaction with the number of fish they caught on the day of the interview on a scale of 1 to 5, with one being very satisfied and five very unsatisfied. Most anglers were very satisfied (rank of 1) with the number of fish caught, ranging from a mean of 35% very satisfied in the Craig section to 44% very satisfied in the Pelican Point section (Table 13). Approximately half the anglers rated their satisfaction with the number of fish caught as very satisfied or satisfied (rank of 2) for each section (Table 13). In the Craig section, the percent of anglers that were very satisfied or satisfied with the number of fish caught declined in 2015, with 54%, 58%, and 49% very satisfied or satisfied in 1993, 2002, and 2015, respectively (Table 13; Horton and Liknes 2003; Horton and Clark 2004).

Table 13. Percent of anglers rating the number of fish caught (on a scale from 1 to 5, 1 is very satisfied and 5 is very unsatisfied) by section, year, and month, for anglers interviewed on the Missouri River from March 2015 through February 2016.

			Rank				
Section	Year	Month	1	2	3	4	5
Holter							
	2015	March	33.8	26.8	16.9	9.9	12.7
		April	24.5	23.5	13.7	11.8	26.5
		May	36.7	26.5	20.4	6.1	10.2
		June	61.2	18.4	8.2	12.2	0.0
		July	47.2	10.1	15.7	16.9	10.1
		August	28.3	18.2	24.2	8.1	21.2
		September	21.7	7.6	33.7	4.4	32.6
		October	29.7	2.7	27.0	5.4	35.1
		November	47.2	13.9	11.1	8.3	19.4
		December	52.8	15.1	11.3	11.3	9.4
	2016	January	39.3	18.0	16.4	9.8	16.4
		February	25.9	13.0	22.2	3.7	35.2
		Mean	**37.4**	**16.1**	**18.4**	**9.0**	**19.1**
Craig							
	2015	March	36.4	27.3	18.2	4.6	13.6
		April	29.3	19.5	29.3	2.4	19.5
		May	45.8	25.4	23.7	5.1	0.0
		June	52.9	12.9	18.6	8.6	7.1
		July	37.6	21.6	21.6	10.4	8.8
		August	35.0	5.0	17.5	10.0	32.5
		September	35.9	18.0	12.8	0.0	33.3
		October	28.1	9.4	25.0	3.1	34.4
		November	23.1	3.9	23.1	3.9	46.2
		December	0.0	12.5	37.5	37.5	12.5
	2016	January	58.8	11.8	14.7	8.8	5.9
		February	37.1	2.9	31.4	5.7	22.9
		Mean	**35.0**	**14.2**	**22.8**	**8.3**	**19.7**
Prewett Creek							
	2015	March	65.4	7.7	11.5	0.0	15.4
		April	24.4	24.4	15.6	20.0	15.6
		May	35.6	33.3	20.0	2.2	8.9
		June	61.7	2.1	25.5	4.3	6.4
		July	39.5	10.5	29.0	13.2	7.9
		August	44.7	2.6	21.1	18.4	13.2
		September	12.9	6.5	38.7	9.7	32.3

Table 13. Cont.

Section	Year	Month	Rank 1	2	3	4	5
Prewett Creek							
	2015	October	60.0	0.0	30.0	0.0	10.0
		November	0.0	20.0	0.0	0.0	80.0
		December	50.0	25.0	0.0	0.0	25.0
	2016	January	83.3	0.0	0.0	0.0	16.7
		February	39.3	17.9	10.7	0.0	32.1
		Mean	**43.1**	**12.5**	**16.8**	**5.6**	**21.9**
Pelican Point							
	2015	March	41.7	0.0	33.3	0.0	25.0
		April	10.5	31.6	26.3	10.5	21.1
		May	56.0	6.0	14.0	4.0	20.0
		June	40.9	9.1	11.4	20.5	18.2
		July	45.5	12.1	10.6	13.6	18.2
		August	40.7	20.4	25.9	0.0	13.0
		September	39.0	9.8	26.8	9.8	14.6
		October	32.0	12.0	12.0	20.0	24.0
		November	50.0	0.0	50.0	0.0	0.0
		December	100.0	0.0	0.0	0.0	0.0
	2016	January	25.0	0.0	0.0	0.0	75.0
		February	50.0	0.0	31.3	0.0	18.8
		Mean	**44.3**	**8.4**	**20.1**	**6.5**	**20.6**

Anglers who reported catching fish were asked to rate their satisfaction with the size of fish caught on the same scale of 1 to 5, with one being very satisfied and five being very unsatisfied. Over 80% of anglers that caught fish were very satisfied with the size in the Holter and Craig sections and over 76% were very satisfied with the size in the Prewett Creek and Pelican Point sections (Table 14). Less than 3% of the anglers that caught fish were unsatisfied or very unsatisfied with the size in the upper three sections, while less than 8% were unsatisfied or very unsatisfied with the size in the Pelican Point section (Table 14). In the Craig section, the percent of anglers that were satisfied or very satisfied with the size has increased over time with 57%, 83%, and 94% satisfied or very satisfied in 1993, 2002, and 2015, respectively (Table 14; Horton and Liknes 2003; Horton and Clark 2004). The increase in satisfaction is likely related to the increased size structure of the fish population over these years. The mean length of rainbow trout sampled during electrofishing surveys in the Craig section was 13.6, 15.8, and 16.6 inches in fall of 1993, 2002, and 2015, respectively (Liknes and Hill 1993; Horton et al. 2004). The slightly lower percentage of anglers very satisfied or satisfied in the Prewett Creek and Pelican Point sections compared to the Holter and Craig sections is likely related to smaller size structure of the fish population in these downstream sections. The mean length of rainbow trout sampled during the electrofishing survey in the Pelican Point section was 13.0 inches compared to 16.6 inches in the Craig section in fall 2015.

Table 14. Percent of anglers rating the size of fish caught (on a scale from 1 to 5, 1 is very satisfied and 5 is very unsatisfied) by section, year, and month, for anglers interviewed on the Missouri River from March 2015 through February 2016.

			Rank				
Section	Year	Month	1	2	3	4	5
Holter							
	2015	March	57.5	27.5	12.5	2.5	0.0
		April	72.6	11.8	7.8	3.9	3.9
		May	76.2	14.3	9.5	0.0	0.0
		June	85.7	7.1	7.1	0.0	0.0
		July	89.1	4.4	2.2	4.4	0.0
		August	93.8	2.1	2.1	2.1	0.0
		September	87.2	2.6	10.3	0.0	0.0
		October	93.8	6.3	0.0	0.0	0.0
		November	88.9	7.4	3.7	0.0	0.0
		December	82.9	8.6	8.6	0.0	0.0
	2016	January	81.4	11.6	4.7	0.0	2.3
		February	57.1	28.6	14.3	0.0	0.0
		Mean	**80.5**	**11.0**	**6.9**	**1.1**	**0.5**
Craig							
	2015	March	62.5	25.0	6.3	6.3	0.0
		April	84.0	16.0	0.0	0.0	0.0
		May	97.9	2.1	0.0	0.0	0.0
		June	95.6	4.4	0.0	0.0	0.0
		July	92.2	5.6	1.1	0.0	1.1
		August	76.5	17.7	5.9	0.0	0.0
		September	87.5	12.5	0.0	0.0	0.0
		October	80.8	11.5	7.7	0.0	0.0
		November	86.7	0.0	13.3	0.0	0.0
		December	42.9	28.6	14.3	14.3	0.0
	2016	January	88.9	3.7	7.4	0.0	0.0
		February	88.2	11.8	0.0	0.0	0.0
		Mean	**82.0**	**11.6**	**4.7**	**1.7**	**0.1**
Prewett Creek							
	2015	March	78.6	7.1	14.3	0.0	0.0
		April	56.0	28.0	12.0	0.0	4.0
		May	74.2	22.6	3.2	0.0	0.0
		June	88.2	2.9	5.9	0.0	2.9
		July	66.7	22.2	11.1	0.0	0.0
		August	68.4	10.5	15.8	0.0	5.3
		September	64.0	12.0	20.0	0.0	4.0
		October	85.7	0.0	0.0	0.0	14.3
		November	100.0	0.0	0.0	0.0	0.0

Table 14. Cont.

Section	Year	Month	Rank 1	2	3	4	5
Prewett Creek							
	2015	December	100.0	0.0	0.0	0.0	0.0
	2016	January	60.0	0.0	40.0	0.0	0.0
		February	80.0	20.0	0.0	0.0	0.0
		Mean	**76.8**	**10.5**	**10.2**	**0.0**	**2.5**
Pelican Point							
	2015	March	87.5	0.0	12.5	0.0	0.0
		April	63.6	36.4	0.0	0.0	0.0
		May	81.6	15.8	2.6	0.0	0.0
		June	90.0	6.7	0.0	3.3	0.0
		July	79.0	5.3	5.3	5.3	5.3
		August	81.8	6.1	3.0	3.0	6.1
		September	64.1	0.0	20.5	10.3	5.1
		October	35.3	23.5	35.3	5.9	0.0
		November	100.0	0.0	0.0	0.0	0.0
		December	100.0	0.0	0.0	0.0	0.0
	2016	January	50.0	0.0	0.0	50.0	0.0
		February	83.3	16.7	0.0	0.0	0.0
		Mean	**76.4**	**9.2**	**6.6**	**6.5**	**1.4**

Anglers were asked if they thought there were any resource management problems with the Missouri River between Holter Dam and Cascade. Of the 1,897 angler respondents, 78% answered no, which was similar to the response when asked in 2002 (Horton and Clark 2004). Of the 400 anglers who answered yes, 392 listed one or more problem. The most commonly listed problems were the need for motorized boat restrictions (19.6%), angling pressure too high/overcrowded (19.4%), too many outfitters (15.8%), and trash (10.2%) (Table 15). The remaining problems listed each represented less than 10% of the responses (Table 15).

Table 15. Most common resource management problems listed by anglers interviewed (n=392) on the Missouri River from March 2015 through February 2016.

Issue	Total count	Percent
Motorized boat restrictions	77	19.6
Angling pressure too high / Overcrowding, restrictions needed	76	19.4
Too many outfitters	62	15.8
Trash	40	10.2
Catch and release or fly fishing only	34	8.7
Fish population concerns, poor fish health	32	8.2
FAS improvements/bathrooms	18	4.6
Too much aquatic vegetation	8	2.0
Dam regulations and water releases	8	2.0
Cattle grazing	7	1.8
Licenses and fees needs improvement	7	1.8
Limit too low	6	1.5
Bad river etiquette	5	1.3
Enforcement needs to be increased	4	1.0
Too many pelicans	2	0.5
Other	6	1.5

Crowding

Anglers were asked to rate how crowded they felt on the day of their interview on a scale from 1 (not crowded at all) to 9 (extremely crowded). A significant positive linear relationship existed between mean daily crowding score and mean daily angler count in each section (Figures 8 and 9), indicating as the number of anglers increased anglers felt more crowded.

Angler crowding scores were greatest in late spring to early fall when fishing pressure was the greatest (Figure 10). Monthly crowding scores were highest in the Craig section and overall similar among the other three sections (Table 16). The highest mean monthly crowding score was 4.6 in the Craig section in July. Despite this month and section corresponding with the greatest amount of angling effort (Appendix 3), the maximum mean monthly crowding score was still relatively low on the scale of 1 to 9. The mean crowding score for the yearlong survey was 2.5 in 2015 compared to 2.7 in 2002 (Horton and Clark 2004).

Crowding scores could also vary by angler demographics, such as angler origin and whether it was a guided trip, as certain user groups may have a different perception of crowding than others. The crowding scores as a function of angler origin and guided status were evaluated during the months with greatest angling pressure of June through September, to not bias the results with responses during the less busy periods when more resident anglers are fishing and angling pressure is less. The mean crowding scores for June through September were 2.6, 2.9, 2.9, 3.1, and 2.4 for Cascade County, Lewis and Clark County, other Montana residents, non-residents, and foreign anglers, respectively. The mean crowding score for June through September was 3.2 for guided anglers and 2.8 for non-guided anglers. Overall, the results were similar among the different angler origins and guided or non-guided status, suggesting there was

no difference in the perception of crowding between these groups. However, these results represent only the anglers interviewed and do not consider responses from anglers that may have been displaced by crowding or those that fish at different times of the year when fishing pressure is lower.

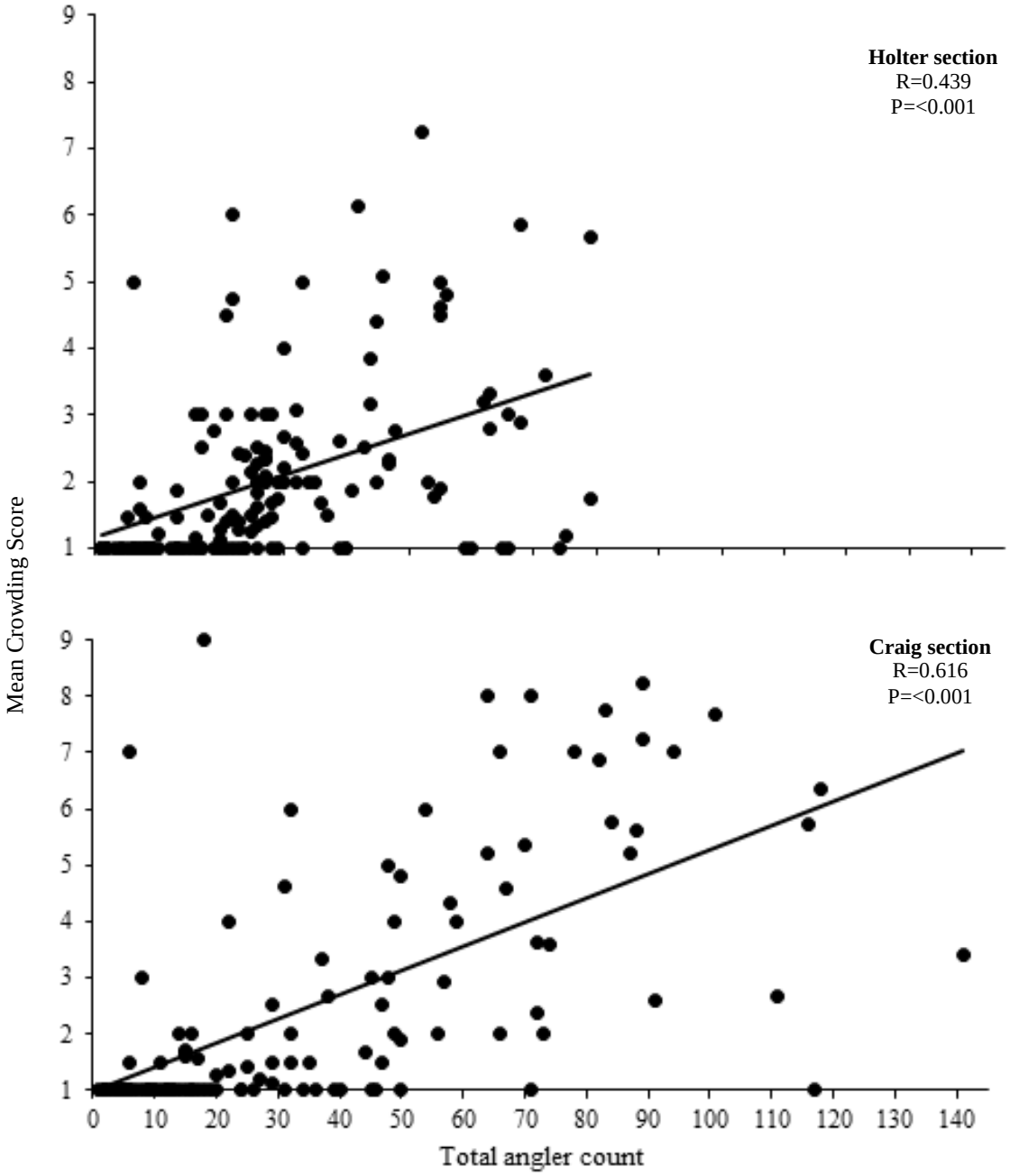

Figure 8. Relationship between mean crowding score (1 not crowded at all to 9 extremely crowded) and total angler count per day, for the Holter and Craig sections of the Missouri River, March 2015 through February 2016.

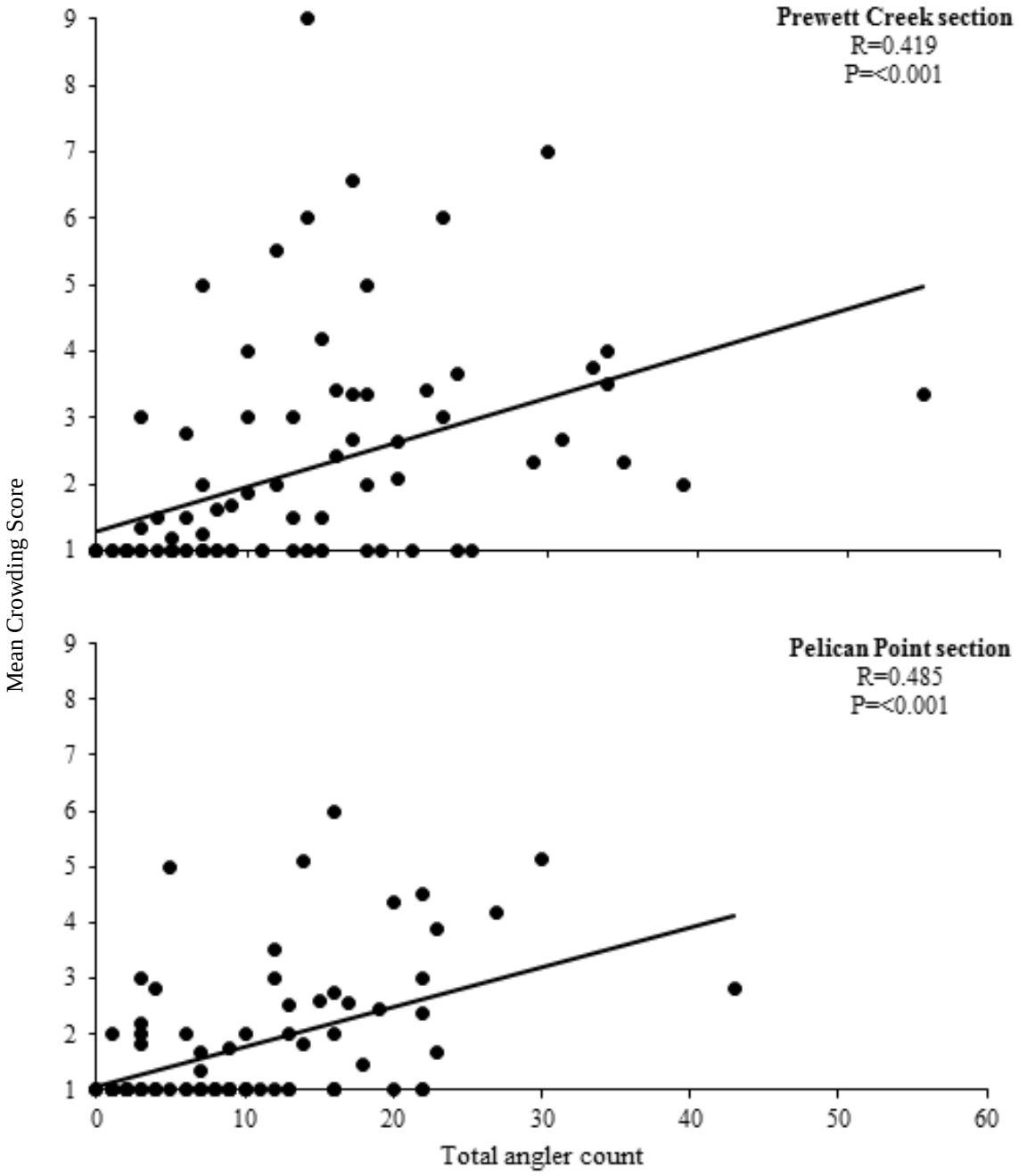

Figure 9. Relationship between mean crowding score (1 not crowded at all to 9 extremely crowded) and total angler count per day, for the Prewett Creek and Pelican Point sections of the Missouri River, March 2015 through February 2016.

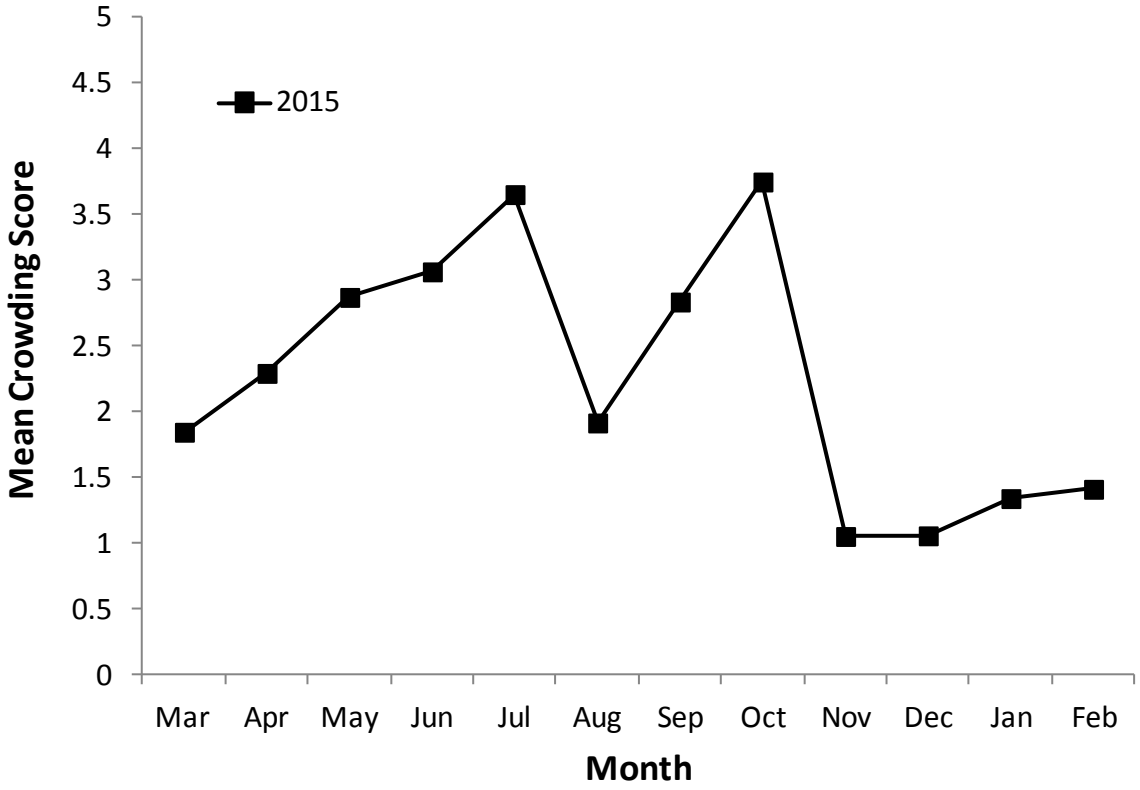

Figure 10. Mean crowding score (1 not crowded at all to 9 extremely crowded; all sections pooled) by month on the Missouri River from March 2015 through February 2016.

Table 16. Mean crowding score (scale of 1 to 9, 1 not at all crowded, 9 extremely crowded) of interviewed anglers by year, month, and section.

		Section			
Year	Month	1	2	5	6
2015	March	2.04	1.64	1.65	1.50
	April	2.32	2.41	2.64	1.05
	May	2.22	2.88	2.80	3.58
	June	2.31	3.90	3.38	2.25
	July	3.63	4.62	2.42	2.58
	August	2.32	1.58	1.55	1.69
	September	2.90	3.97	1.77	2.41
	October	2.68	5.50	4.60	2.76
	November	1.11	1.00	1.00	1.00
	December	1.08	1.00	1.00	1.00
2016	January	1.41	1.32	1.00	1.00
	February	1.72	1.34	1.00	1.25
	Mean	**2.27**	**3.15**	**2.30**	**2.29**

Potential restrictions

Anglers were asked their preference on options for reducing the level of angler use on the Missouri River, including if they were strongly opposed, opposed, neutral, supported, or strongly supported limiting use by non-resident anglers (Figure 11) and by guides and outfitters (Figure 12). This question was asked to see if there was a change in angler opinion since the question was last asked in 1994 (Horton and Liknes 2003). The majority of resident (61%) and non-resident (79%) responses were strongly opposed to limiting use by non-resident anglers during the 2015 creel survey (Figure 11). These percentages of residents and non-residents strongly opposed to limiting use by non-resident anglers in 2015 were a substantial increase over the levels of 27% and 34% for resident and non-resident responses in 1994 (Horton and Liknes 2003). Similarly, 53% of residents and 65% of non-residents were strongly opposed to limiting use by guides and outfitters in 2015 (Figure 12), compared to only 18% of resident and 17% of non-residents anglers strongly opposed in 1994 (Horton and Liknes 2003). These results indicate that the anglers surveyed during the 2015 creel survey were more opposed to limiting use by non-residents and guides and outfitters on the Missouri River than the anglers in the 1994 survey were.

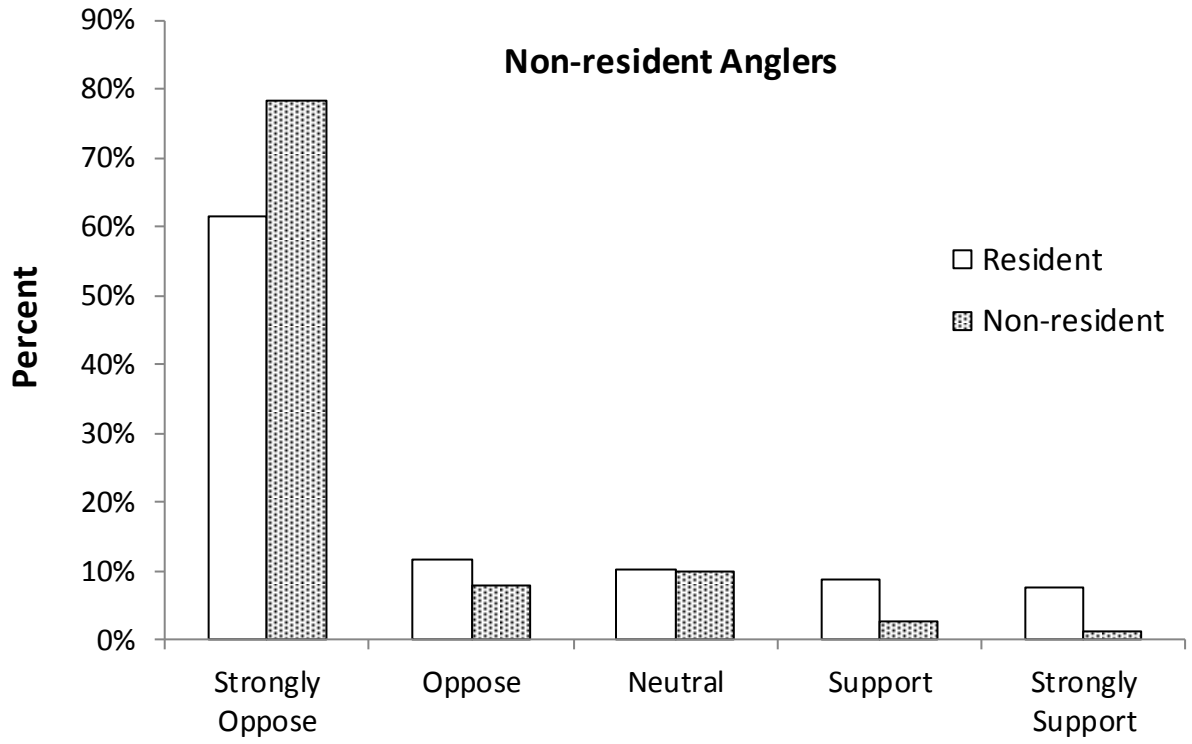

Figure 11. Percent of anglers that strongly oppose, oppose, are neutral, support, and strongly support limiting use by non-resident anglers on the Missouri River by resident and non-resident responses during the creel survey from March 2015 through February 2016.

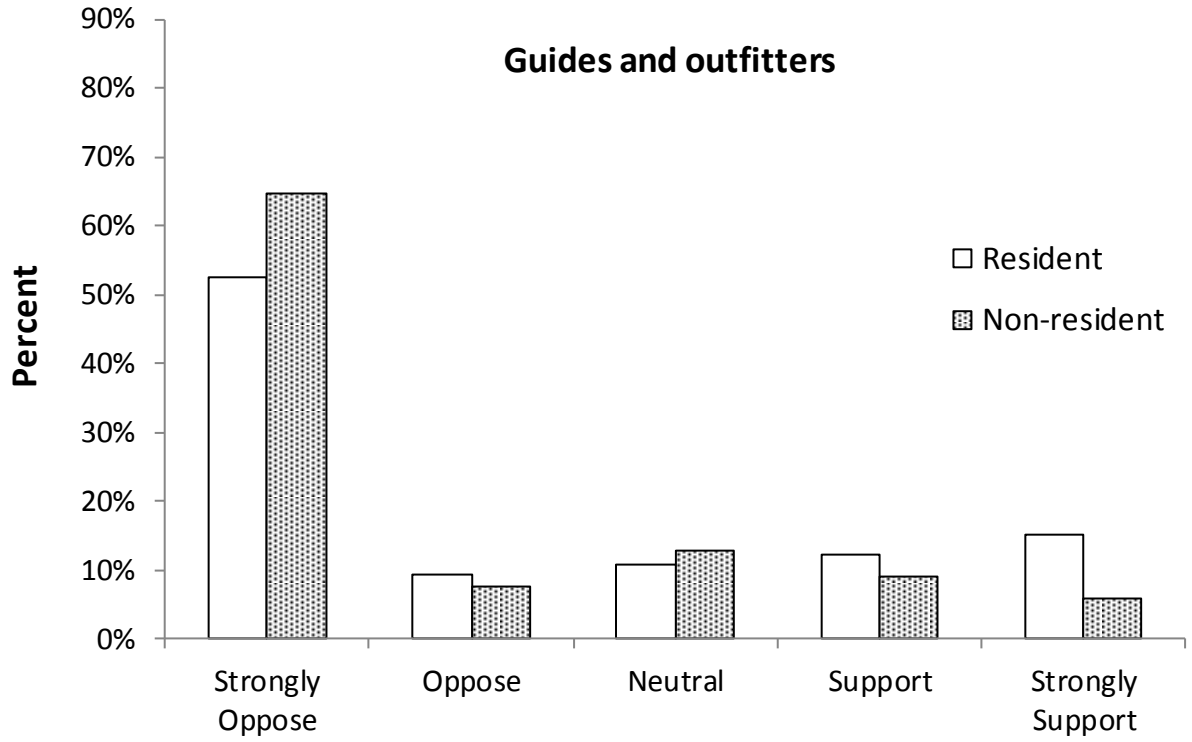

Figure 12. Percent of anglers that strongly oppose, oppose, are neutral, support, and strongly support limiting use by guides and outfitters on the Missouri River by resident and non-resident responses during the creel survey from March 2015 through February 2016.

In 2015, 71% of guided anglers were strongly opposed to limiting use by guides and outfitters compared to 54% of non-guided anglers were strongly opposed to limiting use by guides and outfitters (Figure 13). Twenty-five percent of non-guided anglers supported or strongly supported limiting use by guides and outfitters (Figure 13).

Overall, creel survey results indicate that despite increases in fishing pressure over time, surveyed anglers report feeling no more crowded than during previous surveys, and are more opposed to restrictions that would limit use. These results are likely a combination of factors including the perception of crowding may have changed over time, anglers who felt crowded have been displaced or fish during periods of less pressure, anglers may be more willing to endure crowding or feel less crowded when quality angling opportunities exist, and anglers recognize the economic importance of the fishery.

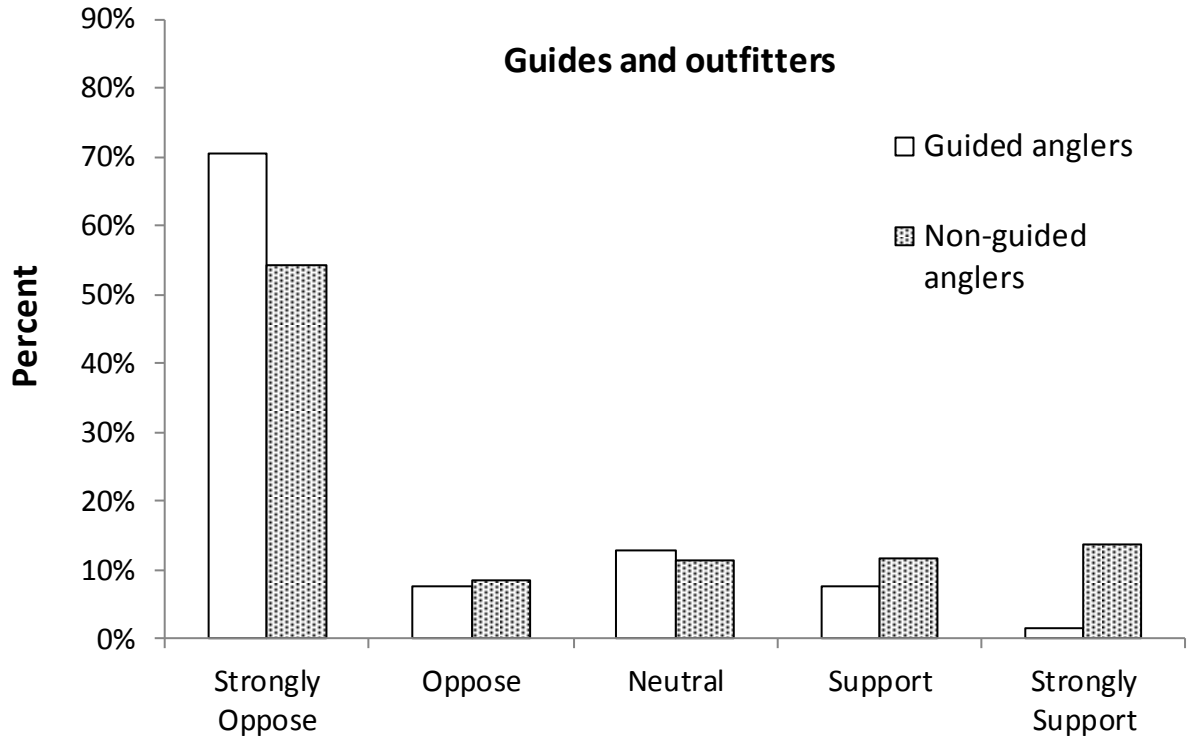

Figure 13. Percent of anglers that strongly oppose, oppose, are neutral, support, and strongly support limiting use by guides and outfitters on the Missouri River by guided and non-guided responses during the creel survey from March 2015 through February 2016.

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Appendices

Appendix 1. Creel count schedule and list of holidays (25 May 2015 – Memorial Day, 04 July 2015 – Fourth of July, 07 September 2015 – Labor Day, 12 October 2015 – Columbus Day, 11 November 2015 – Veteran's Day, 01 January 2016 – New Year's Day, 15 February 2016 – President's Day) considered as weekend days (2) as opposed to weekdays (1) when randomly selecting count days. Start area represents the area (1 = Holter and Craig sections, 2 = Prewett Creek and Pelican Point sections) in which the counts were started.

Year	Month	Day	Day Type	1st Count Time	Start Area	2nd Count Time	Start Area
2015	March	2	1	9:04	2	12:04	1
		3	1	12:03	1	15:03	1
		6	1	7:57	2	12:57	1
		7	2	7:55	1	10:55	1
		9	1	9:51	2	14:51	1
		11	1	8:47	2	14:47	1
		12	1	8:45	2	14:45	1
		15	2	10:39	2	15:39	2
		17	1	9:35	2	12:35	1
		18	1	8:33	1	11:33	2
		19	1	9:31	1	12:31	2
		21	2	9:27	1	14:27	1
		23	1	7:23	1	12:23	2
		26	1	11:17	1	14:17	2
		27	1	9:15	1	13:15	1
		28	2	8:13	1	15:13	1
		31	1	7:07	2	14:07	1
2015	April	1	1	12:05	1	16:05	1
		2	1	7:03	1	12:03	1
		4	2	10:59	2	14:59	2
		7	1	11:53	2	16:53	2
		9	1	7:49	2	14:49	2
		10	1	6:47	2	13:47	2
		12	2	12:44	1	15:44	2
		14	1	8:40	1	11:40	2
		15	1	9:38	2	16:38	2
		17	1	12:34	1	16:34	1
		19	2	7:31	1	11:31	2
		20	1	11:29	1	16:29	2
		21	1	9:27	1	16:27	2
		24	1	7:22	2	14:22	1
		25	2	8:20	2	15:20	2
		27	1	8:16	2	15:16	1
		28	1	12:15	1	17:15	1
		30	1	7:12	2	10:12	1

Appendix 1. Cont.

Year	Month	Day	Day Type	1st Count Time	Start Area	2nd Count Time	Start Area
2015	May	2	2	9:08	1	13:08	2
		5	1	8:04	2	15:04	1
		6	1	12:02	1	15:02	1
		8	1	7:59	1	14:59	1
		10	2	12:56	1	15:56	1
		11	1	7:55	2	12:55	2
		13	1	6:52	2	9:52	1
		15	1	12:50	1	16:50	1
		17	2	6:48	2	12:48	1
		19	1	11:45	1	15:45	2
		20	1	5:44	1	10:44	1
		21	1	8:43	2	13:43	2
		23	2	8:41	2	13:41	2
		24	2	9:40	2	15:40	1
		27	1	11:38	1	17:38	1
		28	1	9:37	1	15:37	2
		31	2	5:35	2	11:35	2
2015	June	1	1	9:34	1	14:34	2
		3	1	9:33	2	15:33	2
		5	1	12:32	1	17:32	1
		6	2	12:31	2	15:31	2
		9	1	9:30	1	16:30	1
		10	1	6:30	1	12:30	2
		12	1	6:30	1	12:30	1
		13	2	9:30	1	12:30	2
		15	1	7:29	1	11:29	2
		18	1	9:30	1	15:30	1
		19	1	9:30	1	12:30	1
		20	2	5:30	2	10:30	1
		22	1	11:30	2	17:30	1
		24	1	12:31	2	15:31	2
		26	1	11:32	1	15:32	2
		28	2	10:33	1	14:33	1
		29	1	14:33	1	17:33	2
2015	July	2	1	9:35	2	16:35	1
		3	2	6:35	2	9:35	1
		4	2	11:36	2	15:36	1
		6	1	12:38	1	16:38	2
		8	1	10:39	2	15:39	2
		10	1	10:41	1	16:41	1

Appendix 1. Cont.

Year	Month	Day	Day Type	1st Count Time	Start Area	2nd Count Time	Start Area
2015	July	11	2	7:42	1	10:42	2
		13	1	11:44	1	16:44	2
		15	1	8:46	2	11:46	2
		17	1	10:48	1	16:48	2
		18	2	10:49	2	16:49	2
		21	1	5:52	1	9:52	2
		22	1	5:53	2	12:53	1
		24	1	6:55	2	10:55	1
		26	2	10:58	2	16:58	2
		27	1	12:59	2	16:59	2
		28	1	14:00	2	18:00	2
		31	1	11:04	1	14:04	1
2015	August	2	2	7:06	1	13:06	1
		3	1	12:08	2	16:08	2
		5	1	6:10	2	10:10	1
		7	1	7:13	2	12:13	2
		8	2	6:14	1	13:14	2
		12	1	10:19	1	16:19	2
		13	1	13:20	1	16:20	2
		14	1	6:22	2	9:22	1
		15	2	6:23	1	11:23	2
		18	1	10:27	2	17:27	2
		20	1	12:30	2	16:30	2
		21	1	8:31	2	13:31	2
		22	2	12:32	1	15:32	2
		26	1	9:38	1	12:38	2
		27	1	7:39	2	13:39	1
		28	1	8:40	1	12:40	1
		30	2	7:43	1	10:43	1
2015	September	2	1	8:47	1	11:47	2
		3	1	9:48	1	12:48	1
		4	1	8:49	2	12:49	1
		6	2	8:52	2	11:52	1
		7	1	10:53	2	16:53	2
		9	1	7:56	2	10:56	1
		11	1	7:59	2	14:59	1
		12	2	10:00	1	13:00	1
		14	1	10:03	2	15:03	2
		16	1	9:05	1	14:05	2

Appendix 1. Cont.

Year	Month	Day	Day Type	1st Count Time	Start Area	2nd Count Time	Start Area
2015	September	17	1	11:07	2	15:07	2
		20	2	11:11	2	14:11	1
		22	1	8:13	1	14:13	1
		23	1	9:15	2	12:15	2
		25	1	7:17	2	13:17	2
		26	2	9:19	1	12:19	2
		28	1	12:21	2	15:21	2
		30	1	11:24	1	14:24	1
2015	October	2	1	12:27	2	15:27	1
		3	2	7:28	1	10:28	1
		6	1	7:32	1	11:32	1
		7	1	10:34	2	14:34	1
		9	1	10:36	1	14:36	2
		10	2	10:38	1	14:38	2
		11	2	8:39	2	14:39	2
		13	1	11:42	2	15:42	1
		15	1	9:45	1	14:45	1
		17	2	8:48	2	13:48	1
		19	1	7:51	2	12:51	1
		20	1	7:52	1	12:52	2
		21	1	11:53	2	14:53	1
		25	2	10:59	2	13:59	1
		28	1	10:04	2	15:04	2
		29	1	10:05	2	13:05	2
		30	1	8:07	1	14:07	1
		31	2	11:08	1	15:08	1
2015	November	3	1	9:13	1	13:13	2
		4	1	8:14	2	11:14	2
		6	1	8:17	2	11:17	1
		8	2	8:20	2	13:20	2
		9	1	7:22	1	12:22	1
		11	2	9:25	2	12:25	2
		12	1	8:26	1	13:26	1
		14	2	7:29	1	10:29	2
		17	1	8:33	1	12:33	2
		18	1	8:35	1	12:35	1
		19	1	8:36	2	11:36	1
		21	2	9:39	2	12:39	2
		23	1	7:42	1	13:42	1
		25	1	7:45	2	12:45	1
		27	1	7:46	1	11:46	2

Appendix 1. Cont.

Year	Month	Day	Day Type	1st Count Time	Start Area	2nd Count Time	Start Area
2015	November	29	2	7:50	1	10:50	2
		30	1	8:51	1	11:51	1
2015	December	1	1	7:52	2	10:52	1
		2	1	9:54	2	12:54	1
		5	2	9:57	1	12:57	1
		8	1	10:00	2	13:00	1
		9	1	9:01	2	12:01	1
		10	1	10:02	2	13:02	1
		13	2	8:05	1	11:05	2
		14	1	8:06	1	12:06	2
		16	1	10:07	1	13:07	2
		18	1	10:09	2	13:09	2
		19	2	10:09	1	13:09	1
		22	1	8:11	1	11:11	1
		23	1	8:11	2	13:11	1
		24	1	8:12	2	13:12	1
		27	2	9:13	1	12:13	2
		28	1	9:13	1	12:13	2
		29	1	9:13	1	12:13	2
2016	January	1	2	9:13	1	12:13	2
		3	2	8:13	2	12:13	1
		4	1	9:13	1	13:13	2
		5	1	8:13	1	11:13	1
		6	1	8:13	2	11:13	2
		9	2	8:12	2	12:12	2
		11	1	9:11	2	13:11	2
		13	1	8:10	1	12:10	1
		15	1	10:09	2	13:09	1
		16	2	8:08	2	12:08	2
		17	2	9:07	1	13:07	1
		20	1	8:05	1	12:05	2
		21	1	8:04	1	14:04	2
		24	2	8:01	2	14:01	2
		26	1	8:59	2	13:59	1
		28	1	7:57	1	12:57	2
		29	1	8:56	2	11:56	1
		31	2	8:53	2	11:53	1
2016	February	1	1	7:52	1	10:52	1
		3	1	9:50	2	12:50	1

Appendix 1. Cont.

Year	Month	Day	Day Type	1st Count Time	Start Area	2nd Count Time	Start Area
2016	February	4	1	9:48	2	12:48	1
		7	2	9:44	2	13:44	2
		10	1	9:40	1	14:40	2
		11	1	10:38	2	14:38	2
		12	1	7:36	2	12:36	2
		13	2	8:35	1	11:35	2
		14	2	7:33	1	12:33	1
		16	1	9:30	1	12:30	1
		18	1	7:27	1	12:27	1
		20	2	8:23	2	11:23	1
		22	1	11:20	2	14:20	1
		24	1	9:16	1	13:16	2
		25	1	8:14	2	13:14	2
		27	2	8:11	2	13:11	1

Appendix 2. Angler count sheets, angler interview sheet, and harvested fish data sheet used during the 2002 creel survey on the Missouri River.

2015-2016 Angler Counts – Missouri River

Date: ____ / ____ /____ **Day of Week:** Weekend Holiday Weekday

Type of count: Ground Water **Direction of count:** Upstream Downstream

Start Time: _____ **End Time: _____** **Weather: _____**

HOLTER DAM TO WOLF CREEK BRIDGE

BOAT TYPE	# Angler Boats	**# Anglers Fishing**	# Anglers not fishing	# Other Rec. Boats	# Other Rec. Users
Non-Motorized					
Motorized					

# Float Tubes anglers	**# Shore anglers**	COMMENTS:

Pelicans

Type of count: Ground Water **Direction of count:** Upstream Downstream

Start Time: _____ **End Time: _____** **Weather: _____**

WOLF CREEK BRIDGE TO CRAIG BRIDGE

BOAT TYPE	# Angler Boats	**# Anglers Fishing**	# Angler not fishing	# Other Rec. Boats	# Other Rec. Users
Non-Motorized					
Motorized					

# Float Tubes anglers	**# Shore anglers**	COMMENTS:

Pelicans

2015-2016 Angler Counts – Missouri River

Date: ____ / ____ /____ **Day of Week:** Weekend Holiday Weekday

Type of count: Ground Water **Direction of count:** Upstream Downstream

Start Time: _____ **End Time: _____** **Weather: _____**

MOUNTAIN PALACE FISHING ACCESS SITE TO POWER LINES

BOAT TYPE	# Angler Boats	**# Anglers Fishing**	# Angler not fishing	# Other Rec. Boats	# Other Rec. Users
Non-Motorized					
Motorized					

# Float Tubes anglers	**# Shore anglers**	COMMENTS:

Pelicans

Type of count: Ground Water **Direction of count:** Upstream Downstream

Start Time: _____ **End Time: _____** **Weather: _____**

POWER LINES TO IRRIGATION PUMP (CASCADE SHOCKING SECTION)

BOAT TYPE	# Angler Boats	**# Anglers Fishing**	# Angler not fishing	# Other Rec. Boats	# Other Rec. Users
Non-Motorized					
Motorized					

# Float Tubes anglers	**# Shore anglers**	COMMENTS:

Pelicans

2015-2016 Interview Sheet

Interview#: _____ **ALS#**_____ **Area Fished:** Section: 1 2 5 6 **Date:** ____/____/____

River Mile ____.___ (Boat Angler) Launch Point – River Mile ____.____ Takeout Point – River Mile ___.____

Type of Fishing: 1 – Boat 2 - Shore 3 – Tube **No. of Anglers in Party:** _____ (Record for only 1 member of each party)

Boat Type: 1 – Non-motorized 2 – Small motor (≤15 HP) 3 – Large motor (≥15 HP)

Time Started Fishing (military): ____:____ **Time of Interview (military):** ____:____

Hours Fished: _____.____ **Time not Fishing (hours):** ____.____

Done Fishing for Day? 1 – Yes 2 – No **Guided Trip?** 1 – Yes 2 – No **Percent of anglers you think are guided today?** ____

Angler Origin: 1 – Cascade Co. (Great Falls) 2 – Lewis & Clark Co. (Helena) 3 – Other Montana
4 – Non Resident State - _____ 5 – Foreign (i.e. Canada)

Target Species: 1 – Rainbow trout 2 – Brown trout 3 – Whitefish 4 – Trout (general) 5 – Trout & Whitefish
6 – Walleye 7 – Trout & Walleye 8 - Any Fish 9 – Other (specify)_____

If a walleye fisherman: What percent of the time do you report tagged fish to FWP? _____

Tackle type: 1 – Lures 2 – Flies 3 – Spawn Bags/Fish Eggs 4 – Other Bait (i.e. worms) 5 – Any combination

Catch Data:

	Rainbow Trout	Brown Trout	Whitefish	Walleye	Walleye Tag #
# Kept					
# Released					
TOTAL #					

Please rate your satisfaction with the number of fish you caught today (circle one): 1 2 3 4 5
Very satisfied very unsatisfied

Please rate your satisfaction with the size of fish you caught today (circle one): 1 2 3 4 5
Very satisfied very unsatisfied

How crowded did you feel on your fishing trip today (circle one number)?

1 2 3 4 5 6 7 8 9
not crowded slightly moderately extremely crowded

Creeled before? 1 - Yes 2 - No **Have your opinions changed?** 1 - Yes 2 - No

How many days did you fish the Missouri b/w Holter and Cascade in 2014? 1) <7 2) 7-14 3) 15-30 4) 30+

Do you think there are any resource management issues on the Missouri River between Holter Dam and Cascade? 1 - Yes 2 – No **If yes, what are they? Suggested solutions (if any)?**

How would you rank the level of use on the Missouri between Holter Dam and Cascade? _____
1 - Too low 2 – Low 3 – About right 4 – High 5 – Too high

How do you feel about the following possibilities for managing recreational use for this reach?

	1- Strongly oppose	2 - Oppose	3 - Neutral	4 - Support	5 - Strongly support
Limit use by resident anglers					
Limit use by non-resident anglers					
Limit use by guides and outfitters					
Limit use by other recreational users					

Fish Data Sheet

Interview #	Date	Time	River Mile	Species	Length	Comments

Appendix 3. Angler effort (hours) and 95% confidence interval (±95%CI) by section, year, month, and angler type for the Missouri River from March 2015 through February 2016.

			Shore anglers		Boat anglers		Total hours	
Section	Year	Month	Effort	±95%CI	Effort	±95%CI	Effort	±95%CI
Holter								
	2015	March	3,065.2	850.8	1,697.6	622.4	4,762.8	1,054.1
		April	3,479.4	769.2	3,052.1	985.1	6,531.5	1,249.9
		May	3,777.3	1,131.1	3,424.6	1,131.1	7,201.8	1,599.6
		June	3,957.1	994.4	5,638.2	1,804.7	9,595.3	2,060.6
		July	5,179.8	1,035.1	7,478.7	1,797.9	12,658.5	2,074.6
		August	3,240.8	770.3	3,947.2	1,248.2	7,188.0	1,466.7
		September	3,141.4	730.4	4,576.5	1,032.0	7,717.9	1,264.3
		October	2,343.0	524.4	2,974.6	1,029.7	5,317.6	1,155.5
		November	591.9	326.5	173.0	109.3	764.9	344.3
		December	1,174.3	358.4	87.0	67.2	1,261.2	364.6
	2016	January	1,023.3	417.2	317.6	163.6	1,340.9	448.1
		February	1,772.8	640.4	601.1	290.4	2,373.9	703.2
		Total	**32,746.2**	**2,622.2**	**33,968.1**	**3,596.9**	**66,714.3**	**4,451.2**
Craig								
	2015	March	1,002.1	308.0	1,379.3	602.7	2,381.4	676.9
		April	1,904.5	610.1	4,211.9	1,146.2	6,116.4	1,298.4
		May	2,483.9	720.4	9,729.8	2,392.1	12,213.7	2,498.2
		June	3,570.4	1,001.0	13,924.4	3,055.0	17,494.7	3,214.8
		July	3,803.2	1,037.6	14,020.8	2,999.6	17,824.0	3,174.0
		August	955.6	340.8	3,891.8	959.5	4,847.4	1,018.2
		September	1,661.1	399.8	5,830.8	1,244.2	7,491.9	1,306.8
		October	1,752.2	479.3	6,866.0	1,826.2	8,618.2	1,888.0
		November	546.4	274.8	382.4	257.6	928.8	376.6
		December	521.9	221.7	78.3	74.7	600.2	233.9
	2016	January	652.8	256.4	282.3	167.1	935.1	306.0
		February	672.4	253.1	774.3	307.6	1,446.8	398.4
		Total	**19,526.4**	**1,955.7**	**61,372.2**	**5,632.7**	**80,898.6**	**5,962.6**
Prewett Creek								
	2015	March	730.9	337.4	424.4	212.2	1,155.3	398.6
		April	988.9	317.1	1,562.7	650.7	2,551.5	723.8
		May	1,234.6	488.0	3,645.0	1,238.2	4,879.6	1,330.9
		June	892.6	345.3	4,373.7	1,101.0	5,266.3	1,153.8
		July	624.4	258.9	2,767.3	764.6	3,391.7	807.3
		August	401.6	240.6	1,398.8	530.7	1,800.5	582.7
		September	508.5	188.9	1,740.2	526.4	2,248.7	559.3
		October	590.8	205.1	1,670.7	604.4	2,261.5	638.2
		November	82.0	64.4	100.2	104.8	182.1	122.9

Appendix 3. Cont.

Section	Year	Month	Shore anglers Effort	Shore anglers ±95%CI	Boat anglers Effort	Boat anglers ±95%CI	Total hours Effort	Total hours ±95%CI
Prewett Creek								
	2015	December	147.9	101.6	17.4	34.1	165.3	107.2
	2016	January	132.3	147.4	17.6	34.6	150.0	151.4
		February	489.0	220.2	81.5	64.0	570.5	229.3
		Total	**6,823.6**	**926.9**	**17,799.4**	**2,177.1**	**24,623.0**	**2,366.2**
Pelican Point								
	2015	March	424.4	289.1	235.8	156.0	660.2	328.5
		April	720.3	322.2	1,086.5	373.6	1,806.8	493.3
		May	705.5	331.1	1,940.1	714.8	2,645.6	787.7
		June	639.7	284.8	2,648.0	668.5	3,287.7	726.6
		July	553.5	227.0	1,532.6	564.2	2,086.1	608.1
		August	429.3	214.7	1,191.1	437.8	1,620.4	487.6
		September	632.8	266.6	1,909.7	721.5	2,542.5	769.2
		October	692.7	300.0	1,293.7	542.2	1,986.5	619.7
		November	72.8	57.6	36.4	42.6	109.3	71.7
		December	78.3	70.5	0.0	0.0	78.3	70.5
	2016	January	70.6	78.8	8.8	17.3	79.4	80.7
		February	417.7	207.8	81.5	75.8	499.2	221.2
		Total	**5,437.6**	**833.4**	**11,964.3**	**1,566.5**	**17,401.9**	**1,774.4**

Appendix 4. Estimated harvest rate (number of fish per hour), estimated harvest, 95 percent confidence interval for harvest (± 95%CI), estimated overall catch rate (number of fish per hour), and 95 percent confidence interval for the overall catch rate (± 95%CI), by species, section, year, and month.

Section	Year	Month	Harvest Rate	Harvest	± 95%CI	Overall Catch Rate	± 95%CI
Holter							
Rainbow trout	2015	Mar	0.025	138.5	135.6	0.378	0.158
		Apr	0.020	87.2	83.2	0.562	0.226
		May	0.054	222.7	206.3	0.144	0.095
		Jun	0.045	279.6	310.9	0.556	0.210
		Jul	0.012	94.2	103.5	0.379	0.093
		Aug	0.042	227.4	178.7	0.462	0.145
		Sep	0.029	270.8	286.0	0.284	0.082
		Oct	0.077	208.3	187.9	0.381	0.189
		Nov	0.052	35.6	59.6	0.830	0.229
		Dec	0.028	34.3	42.1	0.597	0.214
	2016	Jan	0.036	47.7	68.4	0.846	0.248
		Feb	0.055	116.2	130.0	0.208	0.103
		Total	**0.035**	**1,762.6**	**592.6**	**0.458**	**0.051**
Brown trout							
	2015	Mar	0.006	34.6	69.8	0.014	0.017
		Apr	0.000	0.0	0.0	0.016	0.014
		May	0.000	0.0	0.0	0.000	0.000
		Jun	0.000	0.0	0.0	0.006	0.011
		Jul	0.000	0.0	0.0	0.029	0.020
		Aug	0.004	22.7	45.2	0.058	0.043
		Sep	0.008	62.6	90.0	0.023	0.022
		Oct	0.000	0.0	0.0	0.089	0.109
		Nov	0.013	8.9	18.5	0.061	0.066
		Dec	0.007	8.6	17.1	0.056	0.063
	2016	Jan	0.000	0.0	0.0	0.050	0.041
		Feb	0.000	0.0	0.0	0.004	0.007
		Total	**0.003**	**137.4**	**125.2**	**0.032**	**0.010**
Mountain whitefish							
	2015	Mar	0.000	0.0	0.0	0.046	0.042
		Apr	0.000	0.0	0.0	0.009	0.010
		May	0.000	0.0	0.0	0.018	0.031
		Jun	0.000	0.0	0.0	0.095	0.059
		Jul	0.000	0.0	0.0	0.019	0.016
		Aug	0.000	0.0	0.0	0.024	0.026
		Sep	0.000	0.0	0.0	0.029	0.032

Appendix 4. Cont.

Section	Year	Month	Harvest Rate	Harvest	± 95%CI	Overall Catch Rate	± 95%CI
Holter							
Mtn. whitefish	2015	Oct	0.000	0.0	0.0	0.006	0.012
		Nov	0.000	0.0	0.0	0.000	0.000
		Dec	0.000	0.0	0.0	0.019	0.023
		Jan	0.006	7.9	15.9	0.042	0.033
	2016	Feb	0.000	0.0	0.0	0.019	0.027
		Total	**0.000**	**7.9**	**15.9**	**0.027**	**0.009**
Walleye							
	2015	Mar	0.095	519.5	496.9	0.153	0.144
		Apr	0.067	445.3	400.5	0.094	0.086
		May	0.127	519.6	615.3	0.226	0.273
		Jun	0.000	0.0	0.0	0.000	0.000
		Jul	0.004	31.4	62.7	0.008	0.011
		Aug	0.000	0.0	0.0	0.000	0.000
		Sep	0.000	0.0	0.0	0.000	0.000
		Oct	0.000	0.0	0.0	0.000	0.000
		Nov	0.000	0.0	0.0	0.000	0.000
		Dec	0.091	111.4	149.7	0.119	0.130
	2016	Jan	0.018	23.8	35.8	0.018	0.026
		Feb	0.029	106.3	123.1	0.044	0.049
		Total	**0.035**	**1,757.4**	**910.4**	**0.053**	**0.026**
Craig							
Rainbow trout	2015	Mar	0.014	20.9	40.1	1.016	0.540
		Apr	0.000	0.0	0.0	0.606	0.291
		May	0.007	80.3	125.3	0.932	0.246
		Jun	0.002	51.5	102.2	0.661	0.207
		Jul	0.015	359.5	361.8	0.565	0.122
		Aug	0.000	0.0	0.0	0.250	0.156
		Sep	0.012	65.1	125.7	0.414	0.133
		Oct	0.000	0.0	0.0	0.735	0.188
		Nov	0.000	0.0	0.0	0.632	0.334
		Dec	0.000	0.0	0.0	0.503	0.321
	2016	Jan	0.000	0.0	0.0	0.737	0.272
		Feb	0.153	230.8	263.8	0.469	0.241
		Total	**0.016**	**808.1**	**494.0**	**0.623**	**0.067**
Brown trout							
	2015	Mar	0.000	0.0	0.0	0.053	0.069
		Apr	0.000	0.0	0.0	0.057	0.040

Appendix 4. Cont.

Section	Year	Month	Harvest Rate	Harvest	± 95%CI	Overall Catch Rate	± 95%CI
Craig							
Brown trout	2015	May	0.004	22.1	44.2	0.050	0.029
		Jun	0.000	0.0	0.0	0.067	0.048
		Jul	0.000	0.0	0.0	0.068	0.028
		Aug	0.000	0.0	0.0	0.021	0.021
		Sep	0.000	0.0	0.0	0.034	0.027
		Oct	0.000	0.0	0.0	0.101	0.057
		Nov	0.000	0.0	0.0	0.067	0.059
		Dec	0.000	0.0	0.0	0.115	0.134
	2016	Jan	0.000	0.0	0.0	0.069	0.049
		Feb	0.000	0.0	0.0	0.011	0.021
		Total	**0.000**	**22.1**	**44.2**	**0.057**	**0.012**
Mountain whitefish							
	2015	Mar	0.000	0.0	0.0	0.036	0.046
		Apr	0.000	0.0	0.0	0.005	0.009
		May	0.000	0.0	0.0	0.046	0.035
		Jun	0.000	0.0	0.0	0.041	0.032
		Jul	0.000	0.0	0.0	0.064	0.034
		Aug	0.000	0.0	0.0	0.012	0.017
		Sep	0.000	0.0	0.0	0.023	0.027
		Oct	0.000	0.0	0.0	0.030	0.033
		Nov	0.000	0.0	0.0	0.000	0.000
		Dec	0.000	0.0	0.0	0.000	0.000
	2016	Jan	0.000	0.0	0.0	0.074	0.078
		Feb	0.008	12.1	24.5	0.068	0.064
		Total	**0.001**	**12.1**	**24.5**	**0.041**	**0.012**
Walleye							
	2015	Mar	0.000	0.0	0.0	0.000	0.000
		Apr	0.000	0.0	0.0	0.000	0.000
		May	0.000	0.0	0.0	0.000	0.000
		Jun	0.000	0.0	0.0	0.000	0.000
		Jul	0.000	0.0	0.0	0.000	0.000
		Aug	0.000	0.0	0.0	0.000	0.000
		Sep	0.000	0.0	0.0	0.000	0.000
		Oct	0.000	0.0	0.0	0.000	0.000
		Nov	0.000	0.0	0.0	0.000	0.000
		Dec	0.000	0.0	0.0	0.000	0.000
	2016	Jan	0.000	0.0	0.0	0.000	0.000

Appendix 4. Cont.

Section	Year	Month	Harvest Rate	Harvest	± 95%CI	Overall Catch Rate	± 95%CI
Craig							
Walleye	2016	Feb	0.000	0.0	0.0	0.000	0.000
		Total	**0.000**	**0.0**	**0.0**	**0.000**	**0.000**
Prewett Creek							
Rainbow trout	2015	Mar	0.000	0.0	0.0	1.376	0.956
		Apr	0.000	0.0	0.0	0.275	0.118
		May	0.000	0.0	0.0	0.533	0.152
		Jun	0.011	59.1	69.1	0.484	0.183
		Jul	0.005	14.2	28.1	0.341	0.105
		Aug	0.000	0.0	0.0	0.642	0.277
		Sep	0.000	0.0	0.0	0.706	0.350
		Oct	0.000	0.0	0.0	1.336	0.922
		Nov	0.133	18.2	36.1	0.133	0.243
		Dec	0.095	14.1	33.8	0.857	1.973
	2016	Jan	0.185	24.4	34.8	0.677	0.366
		Feb	0.127	86.8	106.4	0.678	0.446
		Total	**0.020**	**216.8**	**143.3**	**0.602**	**0.112**
Brown trout							
	2015	Mar	0.017	16.5	34.5	0.069	0.041
		Apr	0.012	29.6	44.3	0.266	0.131
		May	0.000	0.0	0.0	0.263	0.110
		Jun	0.004	19.7	39.3	0.217	0.116
		Jul	0.000	0.0	0.0	0.243	0.114
		Aug	0.000	0.0	0.0	0.165	0.104
		Sep	0.000	0.0	0.0	0.404	0.319
		Oct	0.000	0.0	0.0	0.167	0.144
		Nov	0.000	0.0	0.0	0.000	0.000
		Dec	0.095	14.1	25.7	0.095	0.161
	2016	Jan	0.000	0.0	0.0	0.185	0.209
		Feb	0.047	25.6	30.9	0.125	0.092
		Total	**0.009**	**105.5**	**79.5**	**0.218**	**0.047**
Mountain whitefish							
	2015	Mar	0.000	0.0	0.0	0.119	0.079
		Apr	0.000	0.0	0.0	0.010	0.015
		May	0.000	0.0	0.0	0.040	0.028
		Jun	0.000	0.0	0.0	0.036	0.025
		Jul	0.000	0.0	0.0	0.015	0.016
		Aug	0.000	0.0	0.0	0.006	0.013

Appendix 4. Cont.

Section	Year	Month	Harvest Rate	Harvest	± 95%CI	Overall Catch Rate	± 95%CI
Prewett Creek							
Mtn. whitefish	2015	Sep	0.000	0.0	0.0	0.008	0.015
		Oct	0.000	0.0	0.0	0.037	0.044
		Nov	0.000	0.0	0.0	0.000	0.000
		Dec	0.000	0.0	0.0	0.000	0.000
		Jan	0.000	0.0	0.0	0.000	0.000
	2016	Feb	0.000	0.0	0.0	0.031	0.060
		Total	**0.000**	**0.0**	**0.0**	**0.029**	**0.010**
Walleye							
	2015	Mar	0.000	0.0	0.0	0.000	0.000
		Apr	0.000	0.0	0.0	0.000	0.000
		May	0.000	0.0	0.0	0.000	0.000
		Jun	0.000	0.0	0.0	0.000	0.000
		Jul	0.000	0.0	0.0	0.000	0.000
		Aug	0.000	0.0	0.0	0.000	0.000
		Sep	0.000	0.0	0.0	0.000	0.000
		Oct	0.000	0.0	0.0	0.000	0.000
		Nov	0.000	0.0	0.0	0.000	0.000
		Dec	0.000	0.0	0.0	0.000	0.000
	2016	Jan	0.000	0.0	0.0	0.000	0.000
		Feb	0.000	0.0	0.0	0.000	0.000
		Total	**0.000**	**0.0**	**0.0**	**0.000**	**0.000**
Pelican Point							
Rainbow trout	2015	Mar	0.150	95.6	148.6	0.574	0.420
		Apr	0.000	0.0	0.0	0.543	0.253
		May	0.000	0.0	0.0	1.149	0.301
		Jun	0.004	13.3	26.2	0.430	0.180
		Jul	0.023	36.7	44.1	0.481	0.122
		Aug	0.056	106.8	100.9	0.644	0.226
		Sep	0.025	163.3	216.8	0.833	0.220
		Oct	0.000	0.0	0.0	0.591	0.265
		Nov	0.250	36.4	60.8	0.643	0.752
		Dec	1.600	125.3	185.6	3.200	3.763
	2016	Jan	0.000	0.0	0.0	0.556	0.000
		Feb	0.181	75.5	79.7	1.626	1.661
		Total	**0.045**	**652.9**	**355.5**	**0.730**	**0.113**

Appendix 4. Cont.

Section	Year	Month	Harvest Rate	Harvest	± 95%CI	Overall Catch Rate	± 95%CI
Pelican Point							
Brown trout	2015	Mar	0.000	0.0	0.0	0.090	0.094
		Apr	0.000	0.0	0.0	0.345	0.186
		May	0.000	0.0	0.0	0.398	0.122
		Jun	0.000	0.0	0.0	0.142	0.071
		Jul	0.000	0.0	0.0	0.216	0.066
		Aug	0.007	8.8	12.7	0.212	0.113
		Sep	0.000	0.0	0.0	0.289	0.092
		Oct	0.000	0.0	0.0	0.173	0.104
		Nov	0.000	0.0	0.0	0.316	0.374
		Dec	0.000	0.0	0.0	1.067	0.836
	2016	Jan	0.000	0.0	0.0	0.984	0.093
		Feb	0.026	10.8	22.6	0.413	0.694
		Total	**0.002**	**19.6**	**25.9**	**0.266**	**0.048**
Mountain whitefish							
	2015	Mar	0.000	0.0	0.0	0.045	0.053
		Apr	0.000	0.0	0.0	0.079	0.088
		May	0.000	0.0	0.0	0.070	0.036
		Jun	0.000	0.0	0.0	0.032	0.035
		Jul	0.000	0.0	0.0	0.031	0.024
		Aug	0.000	0.0	0.0	0.027	0.030
		Sep	0.000	0.0	0.0	0.036	0.031
		Oct	0.000	0.0	0.0	0.000	0.000
		Nov	0.000	0.0	0.0	0.000	0.000
		Dec	0.000	0.0	0.0	0.000	0.000
	2016	Jan	0.000	0.0	0.0	0.000	0.000
		Feb	0.000	0.0	0.0	0.000	0.000
		Total	**0.000**	**0.0**	**0.0**	**0.035**	**0.012**
Walleye							
	2015	Mar	0.000	0.0	0.000	0.0	0.000
		Apr	0.000	0.0	0.000	0.0	0.000
		May	0.000	0.0	0.000	0.0	0.000
		Jun	0.000	0.0	0.000	0.0	0.000
		Jul	0.000	0.0	0.000	0.0	0.000
		Aug	0.000	0.0	0.000	0.0	0.000
		Sep	0.000	0.0	0.000	0.0	0.000
		Oct	0.000	0.0	0.000	0.0	0.000
		Nov	0.000	0.0	0.000	0.0	0.000

Appendix 4. Cont.

Section	Year	Month	Harvest Rate	Harvest	± 95%CI	Overall Catch Rate	± 95%CI
Pelican Point							
Walleye	2015	Dec	0.000	0.0	0.0	0.000	0.000
	2016	Jan	0.000	0.0	0.0	0.000	0.000
		Feb	0.000	0.0	0.0	0.000	0.000
		Total	**0.000**	**0.0**	**0.0**	**0.000**	**0.000**

Appendix 5. Percent of anglers interviewed by origin, year, month, and section on the Missouri River from March 2015 through February 2016.

			Section			
Origin	Year	Month	Holter	Craig	Prewett Cr.	Pelican Pt.
Cascade County						
	2015	March	29.6	4.5	50.0	83.3
		April	29.4	17.1	28.9	52.6
		May	64.0	13.6	31.1	18.0
		June	26.5	7.1	23.4	15.9
		July	23.6	4.0	13.2	3.0
		August	14.1	7.5	31.6	24.1
		September	19.6	10.3	19.4	19.5
		October	29.7	3.1	20.0	28.0
		November	25.0	15.4	80.0	50.0
		December	52.8	25.0	100.0	100.0
	2016	January	41.0	23.5	100.0	100.0
		February	37.0	14.3	82.1	100.0
		Total	**32.7**	**12.1**	**48.3**	**49.5**
Lewis and Clark County						
	2015	March	22.5	45.5	15.4	0.0
		April	18.6	29.3	17.8	21.1
		May	6.0	16.9	17.8	8.0
		June	8.2	1.4	10.6	9.1
		July	4.5	3.2	21.1	7.6
		August	12.1	5.0	10.5	1.9
		September	8.7	17.9	6.5	0.0
		October	13.5	6.3	0.0	0.0
		November	22.2	3.8	0.0	0.0
		December	20.8	12.5	0.0	0.0
	2016	January	41.0	26.5	0.0	0.0
		February	7.4	31.4	17.9	0.0
		Mean	**15.5**	**16.6**	**9.8**	**4.0**
Other Montana Counties						
	2015	March	40.8	31.8	23.1	16.7
		April	24.5	12.2	24.4	10.5
		May	10.0	20.3	24.4	16.0
		June	14.3	34.3	10.6	22.7
		July	7.9	14.4	23.7	6.1
		August	8.1	17.5	15.8	11.1
		September	23.9	7.7	12.9	17.1
		October	10.8	18.8	70.0	4.0
		November	41.7	42.3	20.0	33.3
		December	17.0	50.0	0.0	0.0

Appendix 5. Cont.

Origin	Year	Month	Section			
			Holter	Craig	Prewett Cr.	Pelican Pt.
	2016	January	18.0	47.1	0.0	0.0
		February	50.0	51.4	0.0	0.0
		Mean	**22.2**	**29.0**	**18.7**	**11.5**
Domestic Non-Residents						
	2015	March	7.0	18.2	11.5	0.0
		April	22.5	34.1	28.9	15.8
		May	20.0	37.3	26.7	58.0
		June	51.0	55.7	48.9	43.2
		July	61.8	76.8	42.1	74.2
		August	64.6	55.0	42.1	63.0
		September	47.8	61.5	61.3	61.0
		October	45.9	62.5	10.0	68.0
		November	11.1	30.8	0.0	16.7
		December	9.4	12.5	0.0	0.0
	2016	January	0.0	2.9	0.0	0.0
		February	5.6	0.0	0.0	0.0
		Mean	**28.9**	**37.3**	**22.6**	**33.3**
Foreign Non-Residents						
	2015	March	0.0	0.0	0.0	0.0
		April	4.9	7.3	0.0	0.0
		May	0.0	11.9	0.0	0.0
		June	0.0	1.4	6.4	9.1
		July	2.2	1.6	0.0	9.1
		August	1.0	15.0	0.0	0.0
		September	0.0	2.6	0.0	2.4
		October	0.0	9.4	0.0	0.0
		November	0.0	7.7	0.0	0.0
		December	0.0	0.0	0.0	0.0
	2016	January	0.0	0.0	0.0	0.0
		February	0.0	2.9	0.0	0.0
		Mean	**0.7**	**5.0**	**0.5**	**1.7**
All Montana Residents						
	2015	March	93.0	81.8	88.5	100.0
		April	72.5	58.5	71.1	84.2
		May	80.0	50.8	73.3	42.0
		June	49.0	42.9	44.7	47.7
		July	36.0	21.6	57.9	16.7
		August	34.3	30.0	57.9	37.0
		September	52.2	35.9	38.7	36.6

Appendix 5. Cont.

Origin	Year	Month	Section			
			Holter	Craig	Prewett Cr.	Pelican Pt.
		October	54.1	9.4	90.0	32.0
		November	88.9	61.5	100.0	83.3
		December	90.6	87.5	100.0	100.0
	2016	January	100.0	97.1	100.0	100.0
		February	94.5	97.1	100.0	100.0
		Mean	**70.4**	**56.2**	**76.8**	**65.0**
All Non-Residents						
	2015	March	7.0	18.2	11.5	0.0
		April	27.5	41.5	28.9	15.8
		May	10.0	49.2	26.7	58.0
		June	51.0	57.1	55.3	52.3
		July	64.0	78.4	42.1	83.3
		August	65.7	70.0	42.1	63.0
		September	47.8	64.1	61.3	63.4
		October	45.9	90.6	10.0	68.0
		November	11.1	38.5	0.0	16.7
		December	9.4	12.5	0.0	0.0
	2016	January	0.0	2.9	0.0	0.0
		February	5.5	2.9	0.0	0.0
		Mean	**28.7**	**43.8**	**23.2**	**35.0**