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3491
Region 4

MONTANA DEPARTMENT OF FISH, WILDLIFE AND PARKS
FISHERIES DIVISION
JOB PROGRESS REPORT

STATE: Montana PROJECT NO. 3491
PROJECT TITLE: Statewide Fisheries Investigations
JOB TITLE: Tiber Reservoir and Lake Frances Summer Creel Survey

1997 Annual Report

ABSTRACT

A total of 290 parties of anglers at Lake Frances and 356 parties at Tiber Reservoir were interviewed throughout the summer of 1997 during weekend creel census surveys. They fished a total of 3079 hours at Lake Frances and 3259 hours at Tiber Reservoir. Anglers targeted walleye in both waters. Catch rates at Lake Frances averaged 0.13 fish per hour for walleye, 0.33 fish per hour for northern pike and 0.24 fish per hour for yellow perch. At Tiber Reservoir, walleye catch rates averaged 0.24 fish per hour. Anglers kept 73 percent of the walleye caught at Lake Frances and 49 percent of the walleye at Tiber Reservoir. Harvested walleye averaged 15.8 inches at Lake Frances and 14.7 inches at Tiber Reservoir. At Lake Frances, June provided the best fishing for walleye while northern pike success improved throughout the summer. At Tiber Reservoir, walleye catches remained constant throughout the summer. The oldest walleye harvested at Lake Frances was fifteen years and the average age was 5.6 years. At Tiber Reservoir, the oldest walleye was eleven years and the average was 4.6 years. The results of this census are compared to studies conducted on Lake Frances in 1989, and 1993-1996, and on Tiber Reservoir in 1991, and 1993-1996.

OBJECTIVES AND DEGREE OF ATTAINMENT

This project will monitor angler use, satisfaction, and success on Tiber Reservoir and Lake Frances by directly interviewing anglers on weekends throughout the summer. It will also provide data to monitor changes in species, size, and age composition and exploitation rate of fish harvested by anglers. Data will be compared to results from similar weekend creel surveys dating back to 1989 for Lake Frances and 1991 for Tiber Reservoir, along with statewide mail survey results to monitor changes. The project will provide current, accurate information on angler satisfaction and success.

Progress was made on the objectives listed above and data are included in this report.

PROCEDURES

Working eight-hour days, ground-based creel clerks interviewed as many parties of anglers as possible on weekends between Memorial Day and Labor Day. Information on species composition, catch rates, angler and trip characteristics, angler satisfaction, and opinions on fisheries managements were obtained from each party interviewed. Clerks recorded number and species of fish caught. Fish were measured to the nearest tenth of an inch and weighed to the nearest hundredth of a pound. All fish caught by an angling party were measured to eliminate bias of measuring one large fish. Dorsal spines of walleye were collected for determination of age classes harvested. Spines were mounted and sectioned as described previously (Hill, et al, 1996). Abbreviations for species listed in tables are as follows: WE=walleye; NP=northern pike; YP=yellow perch.

FINDINGS

The 1997 data from both waters will be compared to earlier creel surveys conducted in 1989, and 1993 through 1996 in Lake Frances, and in 1991, and 1993 through 1996 on Tiber Reservoir (Hill, 1997).

Angler and Trip Characteristics

Angler and trip characteristics are presented in Tables 1a and 1b. During 1997, creel clerks interviewed fewer parties and anglers at both waters than in previous surveys. A total of 356 parties representing approximately 800 anglers were interviewed at Tiber Reservoir in 1997, while 290 parties representing 650 anglers were interviewed at Lake Frances. Approximately one-half of the interviews conducted at Lake Frances during 1997 were completed trips while only 40 percent were completed trips at Tiber Reservoir. When compared to earlier years, the average number of hours decreased for completed boat trips and completed shore trips for Tiber Reservoir, whereas Lake Frances increased in both categories.

Average number of attended lines used by boat and shore anglers remained similar to past years. Tiber anglers continue to show an angling preference for bait or lures and bait while bait is preferred at Lake Frances. Walleye continue to be targeted by anglers at both waters. Angler satisfaction with the number of

Table 1a. Angler and trip characteristics, Tiber Reservoir.

	1991	1993	1994	1995	1996	1997
No. of parties interviewed	528	409	463	499	401	356
No. of anglers represented	1245	996	965	1039	902	794
No. completed trip interviews	147	120	203	188	185	139
Avg. hours/completed trip - boat	5.8	5.1	5.0	5.2	5.0	4.7
- shore	5.3	4.2	4.1	2.6	3.5	2.1
Avg. no. attended lines - boat	1.2	1.1	1.0	1.0	1.0	1.1
shore	1.5	1.4	1.6	1.5	1.5	1.6
Angler origin (%)-local (75 mi. radius)	78	74	75	74	74	81
-Western Montana	6	7	6	10	6	8
-Other Montana	14	17	19	13	17	11
-Non-resident	2	2	0	3	2	1
Angling method (%) - Lures	7	19	19	15	15	8
- Bait	38	37	32	35	37	39
- Lures and bait	55	44	49	50	49	53
Target species WE	72	42	57	58	63	61
(% of anglers) NP	1	0	1	1	0	0
YP	0	1	0	0	0	0
WE/NP	6	2	1	2	1	1
WE/NP/YP	11	1	0	0	0	Tr.
Any fish	11	55	41	40	36	38
Angler satisfaction (%) - No. of fish	--	54	62	34	46	37
- Size of fish	--	61	55	46	67	30

Table 1b. Angler and trip characteristics, Lake Frances.

	1989	1993	1994	1995	1996	1997
No. of parties interviewed	962	402	301	451	377	290
No. of anglers represented	2102	939	690	1108	792	652
No. completed trip interviews	433	209	215	251	228	147
Avg. hours/completed trip - boat	5.3	4.8	4.6	4.6	4.6	5.2
- shore	3.9	2.8	2.8	3.8	3.7	3.9
Avg. no. attended lines - boat	1.1	1.1	1.2	1.2	1.3	1.3
- shore	1.2	1.0	1.2	1.2	1.4	1.3
Angler origin(%)-local (75 mi. radius)	70	71	83	75	79	72
-Western MT	17	13	9	8	9	16
-Other MT	10	13	7	15	12	12
-Non-Resident	3	3	1	2	Tr.	1
Angling method (%) - Lures	13	13	4	12	9	15
- Bait	35	54	60	58	52	67
- Lures & bait	52	33	36	30	39	18
Target species WE	59	52	54	54	46	66
NP	9	8	3	3	3	6
YP	1	1	1	1	3	2
WE/NP	14	7	10	17	28	10
WE/NP/YP	3	3	12	6	7	3
Any fish	15	29	20	19	13	13
Angler satisfaction(%) - No. of fish	--	29	24	49	37	55
- Size of fish	--	38	25	64	48	47

fish caught decreased to 37 percent at Tiber but increased to 55 percent at Lake Frances. Satisfaction with size of fish also decreased to a low of 30 percent at Tiber but at Lake Frances remained similar to 1996 with 47 percent. This satisfaction is directly related to mostly small walleye at Tiber and larger, good condition walleye at Frances.

Seventy to 80 percent of the anglers originate locally, within a 75-mile radius. An increase in Western Montana anglers was documented at Lake Frances in 1997 as compared to the recent past.

Catch Statistics and Angler Success

Catch statistics and angler success are presented in Tables 2a and 2b for both waters. At Tiber Reservoir, catch rates for walleye averaged 0.24 fish/hour in 1997, the lowest level recorded since creel surveys were initiated in 1991. Harvest rates of walleye also decreased from previous years. Northern pike catch rates also decreased while yellow perch catch rates remained about the same.

At Lake Frances, walleye catch rates continue at low levels, a trend noticed since 1993. Catch rates for yellow perch remain fairly stable at 0.24 fish/hour while northern pike rates have increased since 1995. Harvest rates for walleye at Lake Frances are generally lower than that found at Tiber but northern pike and yellow perch harvest rates have always been higher than Tiber.

Anglers at Tiber generally keep approximately 50 percent of the walleye caught, whereas at Lake Frances, they keep from 75 to 85 percent of the walleye caught. Slightly more than 50 percent of the northern pike was also kept at Tiber in 1997 but less than 40 percent were kept at Frances. An overall decline in yellow perch kept at Tiber has been observed since 1993. During 1997, monthly catch rates at Tiber did not vary appreciably for either walleye or northern pike. At Lake Frances, walleye was more readily caught in June while northern pike catch rates increased throughout the summer.

A slight increase was observed for average length of walleye creeled at Tiber during 1997 as compared to previous years although very little change has occurred over the past four years. At Lake Frances, average length of walleye creeled has steadily increased from 1989 through 1996, but decreased significantly in 1997. Average length of northern pike creeled at Tiber is generally better than at Lake Frances.

Table 2a. Catch statistics and angler success, Tiber Reservoir.

		1991	1993	1994	1995	1996	1997
Catch rate (fish/hr)	WE	0.35	0.38	0.72	0.44	0.38	0.24
	NP	0.07	0.03	0.03	0.06	0.07	0.02
	YP	0.04	0.01	0.04	0.02	0.03	0.02
Harvest rate (fish/hr)	WE	0.18	0.21	0.24	0.22	0.21	0.12
	NP	0.03	0.03	0.01	0.02	0.03	0.01
	YP	0.03	0.01	0.01	0.01	0.01	Tr.
Fish kept (%)	WE	51	54	33	49	54	49
	NP	48	83	38	26	34	52
	YP	82	76	29	33	35	16
Avg.length(in.)	WE	15.9	15.3	14.4	14.3	14.6	14.7
	NP	22.1	22.6	21.5	21.1	20.7	21.3
	YP	---	8.5	8.9	9.8	9.9	8.4

Catch rates by month (fish/hr.)		1991		1993		1994		1995		1996		1997	
		WE	NP	WE	NP	WE	NP	WE	NP	WE	NP	WE	NP
	June	0.54	0.05	0.16	0.02	0.52	0.05	0.48	0.09	0.28	0.09	0.23	0.02
	July	0.51	0.12	0.44	0.04	0.99	0.04	0.59	0.06	0.60	0.06	0.29	0.03
	August	0.36	0.04	0.68	0.03	0.87	0.03	0.21	0.05	0.22	0.05	0.22	0.02

Table 2b. Catch statistics and angler success, Lake Frances.

		1989	1993	1994	1995	1996	1997
Catch rate (fish/hr)	WE	0.35	0.17	0.13	0.13	0.11	0.13
	NP	0.11	0.28	0.35	0.21	0.36	0.33
	YP	0.29	0.13	0.22	0.23	0.24	0.24
Harvest rate (fish/hr)	WE	0.17	0.12	0.11	0.11	0.08	0.10
	NP	0.07	0.11	0.13	0.09	0.12	0.12
	YP	0.12	0.08	0.18	0.11	0.11	0.15
Fish kept (%)	WE	50	73	86	84	73	73
	NP	64	40	38	43	33	37
	YP	46	63	83	50	46	63
Avg.length(in.)	WE	14.4	15.4	15.8	16.8	17.3	15.8
	NP	21.2	19.5	20.2	20.2	20.0	19.2
	YP	9.4	9.9	9.6	8.5	9.2	9.0

Catch rate by month (fish/hr)		1989		1993		1994		1995		1996		1997	
		WE	NP	WE	NP	WE	NP	WE	NP	WE	NP	WE	NP
	June	0.31	0.10	0.11	0.28	0.14	0.21	0.19	0.16	0.15	0.27	0.21	0.28
	July	0.15	0.10	0.07	0.39	0.18	0.42	0.13	0.20	0.08	0.39	0.09	0.33
	August	0.82	0.13	0.32	0.23	0.08	0.43	0.07	0.26	0.04	0.61	0.08	0.40

Management Concerns

Approximately 89 percent of the anglers interviewed stated that they did not feel there were any management problems at either water. At Tiber, the majority of those who listed concerns wanted more forage and improved facilities. At Lake Frances, greatest concerns include increasing the northern pike limit and stocking more fish, particularly walleye.

Age and Growth

The age structure of 1997 harvested walleye is presented in Tables 3 and 4, for Tiber Reservoir and Lake Frances, respectively.

Of 181 walleye spines analyzed from Tiber in 1997, approximately 75 percent of the harvested fish ranged in length from 12.0 - 16.9 inches and were represented by age groups two through eight years. Overall, walleye ranged in length from 7.8-22.8 inches with the oldest fish being eleven years.

At Lake Frances, 242 walleye spines were collected and analyzed from fish harvested during the 1997 creel. Age groups two through fifteen years were represented and ranged in length from 10.8-28.0 inches.

Examination of Table 5 reveals that the average age of 1997 harvested walleye at Tiber remains comparable to past years, at 4.6 years. The table also shows that the harvest continues to be composed of small, young-age fish. Also in Table 5, at Lake Frances, the average age of 1997 harvested walleye dropped to 5.6 years as compared to increases in average age every year from 1989 through 1996. More smaller and younger-aged walleye was harvested during 1997 as compared to 1996. In 1997, 35 percent of the spines analyzed were from fish that ranged in length from 12.0-15.9 inches, while 48 percent of the spines were from fish that ranged in length from 16.0-19.9 inches. In contrast, in 1996, 23 percent of the spines aged were in the 12.0-15.9 inch group and 61 percent were in the 16.0-19.9 length group.

Both waters show similar average lengths for harvested walleye for ages two through seven years. The average length of these fish over a six-year period is shown in Table 6. Beyond eight years, more variability in average length is noticed.

Table 3. Age composition of walleye harvested in Tiber Reservoir, 1997.

Length	No. per inch group	No. fish per age group 2	3	4	5	6	7	8	9	10	11
7	1	1									
8	1		1								
9	1		1								
10	0										
11	14	6	4	2	2						
12	23	6	10	5	2						
13	38	1	7	15	11	4					
14	32		1	17	13		1				
15	22		1	9	11	1					
16	20		1	1	11	5	1	1			
17	10				5	3	1		1		
18	9			1	1	4	3				
19	6					2		1	1		2
20	1						1				
21	2							1	1		
22	1									1	
Total	181	14	26	50	56	19	7	3	3	1	2
Avg. Length		11.7	12.5	14.1	15.0	16.6	17.3	19.3	19.3	22.8	19.9
Length range		7.8-13.0	8.1-16.6	11.5-18.0	11.8-18.0	13.3-19.3	14.0-20.0	16.9-21.3	17.3-21.1	22.8	19.9-19.9

Table 4. Age composition of walleye harvested in Lake Frances, 1997.

Length	No. per inch group	No. fish per age group													
		2	3	4	5	6	7	8	9	10	11	12	13	14	15
10	2	1	1												
11	18	1	17												
12	40		39	1											
13	27		26	1											
14	9		4	5											
15	9			4	4					1					
16	26			2	12	8	3	1							
17	45				9	20	10	4			2				
18	24				1	4	7	6		3	2	1			
19	22					1	5	7	2	1	4		1	1	
20	11						3	3	1	3	1				
21	1										1				
22	3								1		2				
23	1											1			
24	1														1
25	2												1	1	
28	1													1	
Total	242	2	87	13	26	33	28	21	4	8	12	2	2	3	1
Avg. length		10.9	12.6	14.8	16.7	17.3	18.2	18.7	20.5	18.9	19.8	20.9	22.4	24.4	24.0
Length		10.8-11.0	10.5-14.6	12.7-16.6	15.0-18.5	16.0-19.0	16.2-20.5	16.5-20.2	19.0 22.7	15.1-20.8	17.2-22.6	18.7-23.0	19.5-25.2	19.6-28.0	24.0

Table 5. Compostion of harvested walleye by length and age, Tiber Reservoir and Lake Frances.

	TIBER RESERVOIR					
	1991	1993	1994	1995	1996	1997
Average age	4.7	4.5	4.9	4.3	4.6	4.6
Composition by length:						
8 - 11.9"	0%	4%	13%	5%	7%	9%
12 - 13.9"	9	21	37	50	34	34
14 - 15.9"	42	42	23	24	37	30
16 - 17.9"	40	21	14	12	12	17
18 - 19.9"	7	9	10	7	7	8
20" +	2	3	3	1	3	2
Composition by age:						
2 years	1%	3%	3%	0%	Tr.%	8%
3	20	19	16	28	18	14
4	26	40	37	42	40	28
5	30	18	18	16	24	31
6	17	11	8	8	10	10
7	3	6	7	2	4	4
8	1	2	5	3	1	2
9	2		5	1	1	2
10			0		1	Tr.
11			1		1	1

	LAKE FRANCES					
	1989	1993	1994	1995	1996	1997
Average age	3.6	4.9	5.8	6.2	7.0	5.6
Composition by length:						
8 - 11.9"	15%	3%	2%	1%	1%	8%
12 - 13.9"	44	21	13	14	4	28
14 - 15.9"	16	51	35	22	19	7
16 - 17.9"	7	15	32	29	30	29
18 - 19.9"	10	5	12	23	31	19
20" +	7	5	6	11	16	8
Composition by age:						
2 years	12%	1%	0%	1%	1%	1%
3	40	12	6	12	1	36
4	21	43	25	13	14	5
5	27 *	21	27	20	12	11
6		6	14	16	20	14
7		10	5	8	14	12
8		4	10	8	9	9
9		0	6	12	10	2
10		1	3	3	11	3
11		0	0	4	5	5
12		0	3	3	1	1
13		1	1		1	1
14						1
15						Tr.

* 1989 Lake Frances - Composition for age five includes five and older fish.

Table 6. Average length by age group of harvested walleye from Tiber Reservoir and Lake Frances.

Lake	Census year	Age group 2	3	4	5	6	7	8	9	10	11	12	13	14	15
Tiber Reservoir	1991	-	13.9	15.1	16.1	17.3	18.5	19.9	19.5	24.0					
	1993	11.3	13.2	14.9	16.3	17.8	17.7	19.8	19.0	20.5	22.2				
	1994	10.0	12.1	13.3	14.8	16.6	17.2	17.7	18.5	20.4	27.1				
	1995	-	12.8	13.9	15.2	16.1	16.3	20.4	19.9	21.7					
	1996	10.7	12.3	13.7	15.1	16.9	17.8	18.7	18.8	21.6	-	24.3			
	1997	11.7	12.5	14.1	15.0	16.6	17.3	19.3	19.3	22.8	19.9				
	Averages	10.9	12.8	14.2	15.4	16.9	17.5	19.3	19.2	21.8	23.0	24.3			
Lake Frances	1989*	11.1	12.7	14.0											
	1993	10.1	12.7	14.3	15.3	16.6	18.5	18.8	22.5	22.5	25.0	21.0	24.4		
	1994	11.0	12.6	13.9	15.4	16.6	17.2	17.8	19.4	20.2	20.0	20.9	23.3		
	1995	11.5	12.9	14.4	15.8	17.2	17.9	18.9	19.1	20.9	20.8	22.5			
	1996	10.5	12.3	14.5	15.9	17.2	17.3	18.7	19.7	20.2	21.2	20.9	20.0		
	1997	10.9	12.6	14.8	16.7	17.3	18.2	18.7	20.5	18.9	19.8	20.9	22.4	24.4	24.0
	Averages	10.9	12.6	14.3	15.8	17.0	17.8	18.6	20.2	20.5	21.4	21.2	22.5	24.4	24.0

* 1989 at Lake Frances - data not presented beyond age four because data lumped for age five and older fish.

DISCUSSION AND RECOMMENDATIONS

More than 60 percent of the anglers interviewed in 1997, at both Tiber Reservoir and Lake Frances, prefer to catch walleye. This preference was also evident in earlier creel surveys. Both waters continue to be important walleye fisheries in Region Four and northcentral Montana. Northern pike and yellow perch are taken incidentally, although some anglers may specifically angle for these species. Angler satisfaction with number and size of fish varies considerably between waters and within each water when compared to the previous year or years. During 1997, Tiber anglers were less satisfied with number and size than the previous year and also when compared with Lake Frances. Average length of Tiber walleye increased slightly to 14.7 inches but catch rates declined from 0.38 to 0.24 fish per hour. Lake Frances size and number satisfaction increased in 1997 over 1996, although average size of walleye decreased from 17.3 inches in 1996 to 15.8 inches in 1997, and catch rates only increased from 0.11 to 0.13 fish per hour. Average length of walleye in 1997 in Frances has decreased and may be attributed to older, larger fish being replaced by younger, smaller fish. As mentioned in an earlier document (Hill, et al., 1997), walleye numbers are on a downward trend in Lake Frances. Poor recruitment of young-of-the-year walleye may be attributed to predation by northern pike. Anglers kept a smaller percentage of northern pike at Frances in 1997 than they did at Tiber and is probably related to the abundance of small fish available. Frances anglers also kept a higher proportion of yellow perch than Tiber anglers and relates to few perch available at Tiber. Few anglers voiced management concerns when interviewed at either water. At Tiber, improved facilities are desirable along with more forage, even though cisco was introduced as a forage fish during 1997. At Frances, anglers would like to see walleye stocked and an increase in the northern pike limit. Walleye fingerlings were stocked in Frances during 1997 and will be stocked on an as-needed basis in the future. Walleye stocking will be discussed in a separate document.

It is recommended to continue the creel surveys on Lake Frances and Tiber Reservoir if funding permits. The weekend creel surveys are an effective tool for monitoring these fisheries.

ACKNOWLEDGMENTS

Alvin Smith conducted the creel census on Tiber Reservoir while Kelly Widhalm carried out the Lake Frances survey. Paul Hamlin and Kelly Smith also assisted in the surveys, mounted spines or analyzed data.

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PREPARED BY: William J. Hill

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PRINCIPAL FISH SPECIES INVOLVED: Walleye, northern pike, yellow perch.

CODE NUMBERS OF WATERS REFERRED TO IN REPORT:

14-7440 Lake Frances
14-9240 Tiber Reservoir