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

STATE: Montana PROJECT NO. F-46-R-7
PROJECT TITLE: Statewide Fisheries Investigations JOB NO. IV-F
STUDY TITLE: Survey and Inventory of Warmwater Lakes
JOB TITLE: Creel Census - Lake Frances & Tiber Reservoir

PERIOD COVERED: July 1, 1993, through June 30, 1994

ABSTRACT

Over 400 interviews each were conducted on Lake Frances and Tiber Reservoir on weekend creel census during the summer. Boat fishermen averaged approximately five hours per completed trip. Most anglers originate from within a 75 mile radius of the lakes. Walleye are the main target species with catch rates of 0.17 and 0.38 fish per hour, at Lake Frances and Tiber Reservoir, respectively. Anglers at Lake Frances kept 73 percent of the walleye and 40 percent of the northern pike that they caught. At Tiber Reservoir, they kept 54 percent of the walleye and 83 percent of the northern pike. July was the best month to catch northern pike with walleye taken more readily during August in both waters. The majority of the walleye harvested were four years old. The results of this census are compared to studies conducted on Lake Frances in 1989 and on Tiber Reservoir in 1991.

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 summer weekends. 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 detailed creel surveys conducted during 1989-1992 on the two reservoirs and 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 management 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 individual party were measured to eliminate bias of measuring one large fish. Dorsal spines or pelvic fin rays of walleye were collected for determination of age classes harvested.

FINDINGS

The 1993 data from both waters will be compared to earlier creel surveys conducted in 1989 (Lake Frances) and 1991 (Tiber Reservoir). The comparisons are also presented in table form in the Appendix.

Angler and Trip Characteristics

Angler and trip characteristics are presented in Table A1. During 1993, creel clerks interviewed 409 parties at Tiber Reservoir and 402 parties at Lake Frances. Approximately 30 percent, and 50 percent, respectively, of these were completed trip interviews. The average hours per completed trip for boat anglers was 5.1 at Tiber and 4.8 at Frances. (These figures are slightly less than the earlier studies). Shore fishermen spent approximately one hour less at Tiber and two hours less at Frances. Numbers of attended lines are comparable in both waters.

As in 1989 and 1991, the majority of anglers fishing both waters are considered local (within a 75 mile radius). Walleye continue to be the main species targeted but "any fish" also ranked high. Lures and bait combinations was the most popular angling method at Tiber while bait predominated at Frances.

During interviews, creel clerks asked anglers about their satisfaction with the number and size of fish caught. Approximately 45 percent of the fishermen at Tiber and 68 percent at Frances were dissatisfied with the number of fish caught. Similar dissatisfaction with the size of fish was expressed: 38 percent at Tiber and 59 percent at Frances.

Catch Statistics and Angler Success

Catch statistics and angler success are presented in Table A2. Catch rates at Tiber during 1993 are comparable to 1991. Anglers were most successful in catching walleye at a rate of 0.38 fish per hour. At Frances, although fishermen targeted walleye, northern pike were more readily caught at 0.28 fish per hour. Walleye catch rates were approximately one half that experienced in 1989. Weather was a major factor in angling success in both waters during 1993. Abnormally low temperatures and above normal precipitation kept water temperatures approximately ten degrees (°F.) cooler than normal. Success gradually improved throughout the summer with July producing the most northern pike and August the most walleye.

Harvest rates are fairly comparable to the earlier surveys. Walleye at Tiber during 1993 were harvested at slightly higher rates. At Frances during 1993, walleye were harvested at lower rates and northern pike at higher rates. The overall walleye population at Frances is down and probably influenced catch and harvest rates. Good reproduction was experienced in recent years and numbers are expected to improve. This is documented in another report (Hill, 1994). Higher harvest rates of northern pike at Frances are attributed to an increasing population.

During 1993, fishermen kept approximately 54 percent of the walleye and 83 percent of the northern pike caught in Tiber. The reverse was noted in Frances, with 73 percent of the walleye and 40 percent of the northern pike being kept. The average length of walleye kept in 1993 was 15.3 inches in Tiber and 15.4 inches in Frances. This differed from the earlier surveys which shows a larger average length for Tiber (15.9), but smaller for Frances (14.4). Harvested northern pike were larger in Tiber than in Frances in 1993.

MANAGEMENT CONCERNS

During interviews, anglers were asked whether or not there was any management problems. Approximately 79 percent of those interviewed at Tiber and 77 percent at Frances said there were no problems. A listing of comments on management concerns appears in Table A3. Concerns are similar at Tiber and Frances. The majority of those responding would like to see improved facilities, more fish planted and better water level management. Better access was suggested for Tiber and respondents at Frances would like to see more walleye stocked. Fishermen at Frances were also concerned that the lake was overfished, the northern pike limit should be increased, and that a slot limit should be enacted.

AGE AND GROWTH

The age structure of harvested walleye is presented in Tables A4 and A5. Cross sections of 285 walleye spines from Lake Frances were examined, representing length groups from 9 through 25 inches, and age groups two through thirteen years. Four year old fish accounted for nearly 43 percent of the harvest. Approximately 87 percent of the harvested walleye were four years old or older.

A total of 426 walleye spines from Tiber Reservoir were analyzed. Harvested fish ranged in age from two to eleven years and were represented in length groups from 10 through 22 inches. The harvest of walleye at Tiber is similar to that found at Lake Frances in that over 40 percent were four year old fish and 78 percent of the harvested fish were four years or older.

In both waters, considerable overlap in ages is evident at any one length group. Or conversely, a particular age group may cover several length groups. For example, at Lake Frances, walleye in the 14 inch length group can range in age from three to eight years. On the other hand, five year old walleye from Tiber can

occur in length groups 11 through 19 inches.

Both waters are considered to have slow growth rates. The average length of harvested walleye as reported earlier is not attained until four years of age in Tiber and five years in Frances. Tiber growth is somewhat better than Frances through age six. From age seven on, Frances walleye exhibit better growth.

DISCUSSION AND RECOMMENDATIONS

The weekend creel survey results from Lake Frances and Tiber Reservoir are considered to be very valuable in monitoring these fisheries. Walleye continue to be the target species in both waters with catch rates considered very good in Tiber. Catches at Frances are approximately half of that found in 1989 but are expected to improve in the future with strong year classes of walleye about to enter the fishery. It is recommended to continue the weekend surveys on both waters as funding permits.

ACKNOWLEDGEMENTS

Brandy Widhalm conducted the creel census on Lake Frances while Alvin Smith did the Tiber Reservoir survey. Others assisting in the surveys, mounting spines, and analyzing data or spines include Steve Leathe, George Liknes, Paul Hamlin and Kelly Smith.

LITERATURE CITED

Hill, W. J. 1994. Survey and inventory of warmwater lakes. Montana Department of Fish, Wildlife and Parks. Job Progress Report F-46-R-7, Job No. IV-b. Helena, MT.

Leathe, S. A., and W. J. Hill. 1993. Lake Frances creel census, May 1989-May 1990. Montana Department of Fish, Wildlife and Parks. Federal Aid in Fish Restoration, F-46-R-3, Job No.IV-b. Helena, MT.

Leathe, S. A. 1992. Tiber Reservoir creel census, April 1991-March 1992. Montana Department of Fish, Wildlife and Parks. Federal Aid in Fish Restoration, F-46-R-5, Job No. IV-f. Helena, MT.

PREPARED BY: William J. Hill

DATE: September 1994

PRINCIPAL FISH SPECIES INVOLVED: Walleye, northern pike.

CODE NUMBERS OF WATERS REFERRED TO IN REPORT:

14-7440 Lake Frances
14-9240 Tiber Reservoir

Table A1. Angler and trip characteristics, Tiber Reservoir and Lake Frances.

		Tiber Reservoir		Lake Frances	
		1991	1993	1989	1993
No. of interviews		528	409	962	402
Completed trip interviews		147	120	433	209
Avg. hours/completed trip-boat		5.8	5.1	5.3	4.8
-shore		5.3	4.2	3.9	2.8
Avg. no. attended lines-boat		1.2	1.1	1.1	1.1
-shore		1.5	1.4	1.2	1.0
Angler origin(%):	Local (75 mi.rad.)	78	74	70	71
	Western MT	6	7	17	13
	Other MT	14	17	10	13
	Non-resident	2	2	3	3
Angling method(%):	Lures	7	19	13	13
	Bait	38	37	35	54
	Lures & bait	55	44	52	33
Target species*: (by no.of anglers)	WE	900	419	1242	495
	NP	3	0	188	77
	YP	0	2	14	8
	WE/NP	70	18	291	62
	WE/NP/YP	132	7	61	27
	Any fish	140	550	306	270

* Species abbreviations: WE = walleye; NP = northern pike; YP = yellow perch; Rb = rainbow trout

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Table A2. Catch statistics and angler success, Tiber Reservoir and Lake Frances.

		Tiber Reservoir		Lake Frances	
		1991	1993	1989	1993
Catch rate (fish/hr.)	WE	0.35	0.38	0.35	0.17
	NP	0.07	0.03	0.11	0.28
	YP	0.04	0.01	0.29	0.13
	Burbot	0.002	-	0.001	-
	Rb	0.02	0.02	-	-
Harvest rate (fish/hr.)	WE	0.18	0.21	0.17	0.12
	NP	0.03	0.03	0.07	0.11
	YP	0.03	0.01	0.12	0.08
	Burbot	0.002	-	0.001	-
	Rb	0.01	0.02	-	-
Fish kept (%)	WE	51	54	50	73
	NP	48	83	64	40
	YP	82	76	46	63
	Burbot	100	-	100	-
	Rb	73	87	-	-
Average length	WE	15.9	15.3	14.4	15.4
	NP	22.1	22.6	21.2	19.5
	YP	-	8.5	9.4	9.9

Catch rates by month (fish/hr.)		Tiber Reservoir				Lake Frances			
		1991		1993		1989		1993	
		WE	NP	WE	NP	WE	NP	WE	NP
	June	0.54	0.05	0.16	0.02	0.31	0.10	0.11	0.28
	July	0.51	0.12	0.44	0.04	0.15	0.10	0.07	0.39
	August	0.36	0.04	0.68	0.03	0.82	0.13	0.32	0.23

Table A3. Comments on management of Tiber Reservoir and Lake Frances (through party interviews).

COMMENT	Number Responding			
	Tiber Reservoir		Lake Frances	
	1991	1993	1989	1993
Doing a good job	61	-	54	-
Maintain water levels	61	9	21	10
Improve/add facilities	19	34	16	21
Limits on small fish	-	-	12	3
Better access	1	10	7	-
Rather have trout	-	-	7	-
More fish	5	15	4	13
Plant bluegills, cisco	-	3	3	-
Close season	-	-	3	1
Stock walleye	-	2	2	10
More forage	10	3	2	1
Outlaw jug fishing	-	-	2	-
Live bait should be allowed	-	-	2	-
New fish cleaning facilities	1	-	1	-
Lake overfished	-	-	1	9
Increase pike limit	-	1	1	8
Bigger fish	1	1	1	-
Increase possession limit	1	-	1	-
Fish numbers are down	-	-	1	2
Need more enforcement	1	2	1	3
More regulations (slot limits)	-	-	-	6
No tournaments	-	-	-	3
Change filet law	2	-	-	-
Reduce pike limit	-	-	-	1

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Table A4. Age composition of walleye harvested in Lake Frances, 1993.

Length	No. per inch group	No. fish per age group											
		2	3	4	5	6	7	8	9	10	11	12	13
9	1	1											
10	2	2											
11	6		6										
12	18		16	2									
13	43		9	31	2	1							
14	80		4	61	13	1		1					
15	65			27	32	2	4						
16	25			1	11	7	5	1					
17	17				1	4	10	2					
18	11					2	6	3					
19	4					1	1	2					
20	1						1						
21	3						1			1		1	
22	3							1	1	1			
23	2									1			1
24	0												
25	4							1			1		2
Totals	285	3	35	122	59	18	28	11	1	3	1	1	3
Avg. length		10.1	12.7	14.3	15.3	16.6	18.5	18.8	22.5	22.5	25.0	21.0	24.4
Length range		9.9-10.2	11.0-14.5	12.4-16.0	13.5-17.0	13.8-19.4	14.0-21.0	14.0-25.0	22.5	21.5-23.5	25.0	21.0	23.0-25.2

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Table A5. Age composition of walleye harvested in Tiber Reservoir, 1993.

Length	No. per inch group	No. fish per age group									
		2	3	4	5	6	7	8	9	10	11
9											
10	5	4		1							
11	10	4	5		1						
12	23	3	19	1							
13	64		36	25	2	1					
14	93		19	64	10						
15	88		2	65	18	2	1				
16	36			11	15	7	2	1			
17	53			3	24	16	9	1			
18	20			1	5	8	5		1		
19	21				2	9	6	2	1	1	
20	7					2	3	2			
21	5						1	3		1	
22	1										1
Totals	426	11	81	171	77	45	27	9	2	2	1
Avg. length		11.3	12.9	15.6	17.3	17.8	17.7	19.8	19.0	20.5	22.2
Length range		10.7-12.3	11.1-15.5	10.3-18.5	11.3-19.0	13.6-20.3	15.5-21.4	16.8-21.6	18.5-19.5	19.6-21.4	22.2

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