MONTANA DEPARTMENT OF FISH, WILDLIFE AND PARKS

FISHERIES DIVISION
JOB PROGRESS REPORT

STATE: MONTANA PROJECT TITLE: STATEWIDE FISHERIES INVESTIGATIONS

PROJECT NO: F-46-R-1 STUDY TITLE: SURVEY AND INVENTORY OF COLDWATER AND WARMWATER ECOSYSTEMS

JOB NO.: V-e JOB TITLE: NORTHEAST MONTANA WARMWATER ECOSYSTEM INVESTIGATIONS

PROJECT PERIOD: JULY 1, 1987 THROUGH JUNE 30, 1988

ABSTRACT

Gill netting in the Fort Peck dredge cuts/tailwater produced poor catches of sauger and walleye for the second consecutive year; however, the catch of cisco increased slightly. Paddlefish harvest and tagging records were maintained for populations in the dredge cuts and Missouri River above Fort Peck Reservoir. Harvest from both areas remains low. Netting in Fresno Reservoir produced good catches of walleye, lake whitefish, yellow perch, and northern pike. Beach seining, monofilament gill netting and night electrofishing were utilized to determine young-of-year (YOY) walleye numbers. A walleye stocking plan was developed for Fresno Reservoir and water level management plans were prepared for Fresno and Nelson Reservoirs. Beach seining at Nelson Reservoir indicated fair reproduction of walleye, excellent perch reproduction and poor northern pike spawning success. Night electrofishing for YOY walleye was successful. Management recommendations are presented for all waters.

OBJECTIVES AND DEGREE OF ATTAINMENT

Job Objectives: (streams)

1) To ensure within hydrologic constraints that streamflows do not fall below 1975-85 averages. Objective accomplished; water surface profile data was collected on Big and Little Dry Creek for minimum instream flow recommendations.

2) To maintain all the region's streambanks and channels in their present or improved condition. Objective accomplished using state funding.

3) To develop seasonal flow recommendations to improve flows for walleye spawning in the Milk River. Objective accomplished; provided fisheries information to U.S. Bureau of Reclamation (USBR) and U.S. Fish & Wildlife Service (FWS) for environmental assessment of the Milk River Supplemental Water Project.

4) To ensure that Fort Peck tailwater/dredge cut fish population is adequately protected from development related to hydropower expansion. Objective accomplished and data presented.

5) To acquire maximum spring flows within hydrologic constraints through the International Joint Commission Agreement. Objective accomplished using state funding.

6) To maintain paddlefish populations and angler catch rates at existing levels. Objective accomplished and data presented.

7) To acquire public fishing access through lease or purchase and develop a fishing access site acquisition and development plan for the region. Objective accomplished using state funding.

Job Objectives: (lakes)

1) To collect 20-30 million walleye eggs for fry and fingerling stocking from the Miles City hatchery. Objective accomplished utilizing state funding.

2) To develop two new fishing reservoirs and maintain ten existing fisheries per year. Objective accomplished; eight new bass reservoirs were developed in the region and six additional reservoirs were maintained by fish stocking.

3) To acquire fishing access through lease or purchase and develop a fishing access site acquisition and develop plan for the region. Objective accomplished utilizing state funding.

4) To acquire suitable water level and minimum pool for Fresno and Nelson Reservoir. Objective accomplished and data presented.

5) To maintain a variety of species combinations distributed geographically throughout the region in 45 small reservoirs. Objective accomplished utilizing state funding.

6) To provide 10,000 angler days and catch of 0.25 walleye per hour at Nelson Reservoir. Objective accomplished; data presented. Quantification of fishing pressure will be accomplished by utilizing data from the statewide fishing pressure survey in 1989-90.

7) To maintain a population balance of predators versus perch and crappie. Objective accomplished; tiger muskellenge introductions were made in two reservoirs.

8) To maintain or improve forage base for predator species in numerous reservoirs throughout the region. Objective accomplished; forage fish transplants were made in 9 small reservoirs. Forage fish populations were evaluated in Fresno and Nelson Reservoirs and data is presented.

PROCEDURES

Floating and sinking standard experimental gill nets 125 feet in length and 6 feet deep consisting of 25-foot panels of 3/4-, 1-, 1 1/4-, 1 1/2-, and 2-inch square mesh were fished to acquire information on overall fish populations. Beach seining to determine abundance and reproductive success of sport and forage fish was conducted in late summer and early fall utilizing a 100- x 9-foot seine of 1/4-inch square mesh. Monofilament gill nets 100- x 6-foot with 1/2-inch square mesh were set horizontally in the dredge cuts to sample smelt and cisco, and in Fresno and Nelson Reservoirs to sample YOY walleye. A boom-rigged electrofishing boat was employed to sample juvenile fish in Fresno and Nelson Reservoirs.

RESULTS AND DISCUSSION

Fort Peck Dredge Cuts and Tailwater

Fish population sampling continued in the Fort Peck dredge cut and tailwater complex in August, 1987, utilizing 10 experimental gill nets. This netting effort was initiated in 1979 to obtain information on the fish population due to potential impacts associated with a Corps of Engineers proposal to construct additional hydropower facilities which included a reregulating dam 8 miles downstream.

Sauger and walleye are the most popular sport fish species in the area. In 1986 the catch for both these species was the lowest on record (Table 1). The catch for sauger and walleye increased somewhat in 1987, but remained low. A high combined catch of sauger and walleye in 1980 and 1981 was believed to be associated with a migration of rainbow smelt from Garrison Reservoir (Lake Sakakawea). The relationship of sauger/walleye and smelt abundance is illustrated in Figure A.

No smelt were taken in experimental nets in 1987. Four 100- x 8-foot monofilament gill nets with 1/2-inch square mesh were also fished overnight since nets of this design have been effective for sampling smelt in the past. These monofilament nets captured 4 smelt in 1987.

Cisco appeared in the experimental gill net catch for the first time in 1985 with a catch of four. The cisco catch increased to 12 in 1986 having an average of 13.5 inches total length and an average weight of 0.86 pounds. An additional 21 cisco (4.0- to 5.2-inches) were taken in four monofilament (1/2-inch square mesh) gill nets. In 1987 experimental nets captured 17 cisco averaging 9.9 inches total length and 0.34 pounds. The presence of cisco is attributed to downstream migration through Fort Peck Dam. Numerous dead or injured cisco were observed and recovered from the Fort Peck tailpool during the winters of 1984-85 and 1985-86.

Table 1. A summary of the catch from ten 125-foot experimental gill net sets in the Fort Peck dredge cut/ tailwater area, 1979-87.

Species	1979			1980			1981			1982		
	No.	Avg. Lgth. (in.)	Avg. Wt. (lb.)	No.	Avg. Lgth. (in.)	Avg. Wt. (lb.)	No.	Avg. Lgth. (in.)	Avg. Wt. (lb.)	No.	Avg. Lgth. (in.)	Avg. Wt. (lb.)
Sauger	7	15.3	0.96	67	14.7	1.03	47	15.0	0.93	9	16.1	1.06
Walleye	8	16.4	1.48	27	16.8	1.80	9	17.4	1.86	7	18.3	1.82
Sh. sturg.[1]	137	25.1	1.94	66	25.4	2.15	83	25.9	2.25	52	25.6	2.19
Rb. smelt	---	---	---	29	6.9	0.08	4	7.0	0.08	---	---	---
Wht. suck.	5	13.6	1.78	7	14.6	1.57	16	12.5	1.04	7	15.7	1.85
R. carps.	32	15.2	1.62	23	15.6	1.75	12	15.2	1.72	17	15.0	1.58
Sht. redh.	---	---	---	6	15.0	1.45	2	16.4	1.98	2	13.1	0.80
Goldeye[2]	150	12.4	0.55	255	12.5	0.55	190	12.1	0.51	167	12.0	0.52
Carp	9	17.3	2.41	9	17.6	2.66	10	18.7	3.04	5	17.5	2.32
Ln. suck.	---	---	---	7	13.3	1.43	4	15.2	1.67	3	18.6	2.98
Ch. cat.	13	17.8	1.77	5	20.6	2.68	4	17.3	1.86	15	18.4	2.08
Bl. suck.	5	23.2	4.05	1	23.8	4.46	2	24.2	4.05	---	---	---
No. pike	3	26.8	4.33	1	28.5	6.90	---	---	---	23	22.8	2.27
Sm. buff.	1	27.5	12.20	---	---	---	1	24.3	6.25	2	16.7	1.98
Burbot	---	---	---	---	---	---	---	---	---	1	12.8	0.43
Lk. white.	---	---	---	---	---	---	---	---	---	---	---	---
Yel. perch	---	---	---	---	---	---	---	---	---	---	---	---
Cisco	---	---	---	---	---	---	---	---	---	---	---	---
Ch. Sal.	---	---	---	---	---	---	---	---	---	---	---	---

Table 1. Continued.

Species	1983			1984			1985			1986			1987		
	No.	Avg. Lgth. (in.)	Avg. Wt. (lb.)	No.	Avg. Lgth. (in.)	Avg. Wt. (lb.)	No.	Avg. Lgth. (in.)	Avg. Wt. (lb.)	No.	Avg. Lgth. (in.)	Avg. Wt. (lb.)	No.	Avg. Lgth. (in.)	Avg. Wt. (lb.)
Sauger	12	14.3	0.92	14	12.6	0.50	41	14.4	0.93	6	16.7	1.35	12	14.3	0.89
Walleye	8	17.2	1.58	8	13.6	0.92	6	14.1	0.82	1	18.6	1.90	2	15.6	1.20
Sh. sturg.[1]	54	26.8	2.55	30	26.1	2.28	53	27.4	2.70	23	26.9	2.76	20	26.8	2.35
Rb. smelt	2	7.2	0.10	---	---	---	---	---	---	---	---	---	---	---	---
Wht. suck.	8	14.6	1.65	17	13.9	1.39	3	13.4	1.39	13	13.7	1.15	10	11.3	0.93
R. carps.	16	15.6	1.59	21	15.9	1.75	25	15.7	2.11	15	15.6	1.70	9	15.3	1.67
Sht. redh.	---	---	---	3	14.5	1.19	4	14.5	1.87	1	15.6	1.80	4	15.5	1.78
Goldeye[2]	159	11.6	0.54	241	11.9	0.45	187	11.3	0.47	224	11.5	0.54	208	11.4	0.49
Carp	11	17.4	2.35	2	18.5	3.04	5	17.3	2.64	3	17.3	2.33	4	17.2	2.34
Ln. suck.	---	---	---	1	---	---	---	---	---	1	17.8	2.30	---	---	---
Ch. cat.	5	18.4	1.98	6	18.8	2.10	2	20.2	3.30	5	17.8	1.84	11	17.3	1.88
Bl. suck.	---	---	---	1	26.8	6.50	---	---	---	---	---	---	---	---	---
No. pike	3	31.0	8.10	4	23.8	3.46	6	26.8	4.16	3	28.9	6.88	---	---	---
Sm. buff.	1	19.2	2.98	1	20.5	4.20	2	18.1	3.91	2	15.7	1.90	1	22.5	6.20
Burbot	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Lk. white.	---	---	---	1	23.0	6.58	---	---	---	---	---	---	---	---	---
Yel. perch	---	---	---	2	5.9	0.10	8	5.9	0.09	3	6.9	0.15	1	7.1	0.22
Cisco	---	---	---	---	---	---	4	10.6	0.45	12	13.5	0.86	17	9.9	0.34
Ch. Sal.	---	---	---	---	---	---	---	---	---	1	7.2	0.20	---	---	---
Paddlefish	---	---	---	---	---	---	---	---	---	---	---	---	1	52.0	15.40

[1]Length data in 1981 is based on 66 fish.
[2]Length and weight data based on 122 fish in 1984, 127 in 1985 and 1986, and 126 in 1987.

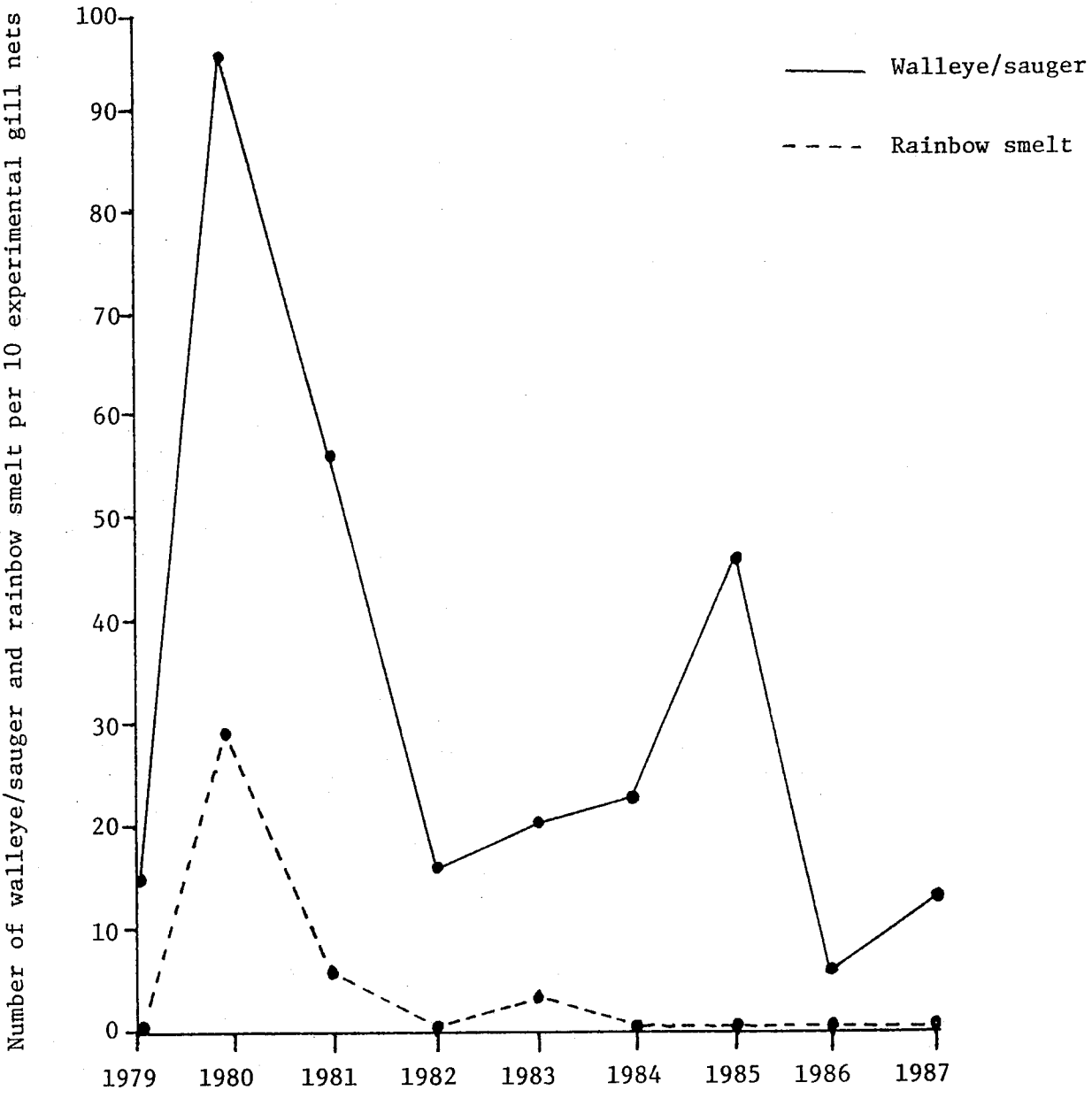

Figure A. An illustration of changes in numbers of walleye and sauger in Fort Peck dredge cuts/tailwater in relation to the catch of rainbow smelt.

Paddlefish

Dredge Cut Complex

Records were maintained on the harvest and movement of tagged paddlefish in the dredge cut area and Missouri River below Fort Peck Dam. No additional paddlefish were tagged in the study area in 1987. This report includes tagging and harvest data from work conducted in 1984 by Ken Frazer, working on a Corps of Engineers funded study, and Bill Gardner under Dingell-Johnson Project FW-2-R; and tagging conducted from 1979-82 by Phil Stewart under Dingell-Johnson Project FW-2-R.

Five tagged paddlefish were harvested by fishermen during 1987; one in the dredge cuts by bow and arrow, three by snaggers at Intake Dam, and one at the confluence of the Yellowstone and Missouri Rivers. To date, 116 paddlefish tagged in this study area have been harvested; 60 (51.7%) in the dredge cuts where tagging occurred and 56 (48.3%) in the Yellowstone River, primarily at Intake Dam. During the past six years of 1982-87, however, 81.2% (39 of 48) of the tag returns for fish tagged in the study area have been harvested at Intake Dam.

The harvest rate for paddlefish in this area remains low as summarized in Table 2. The average annual percent harvest for 817 fish tagged during 1974-87 varies from 0.0-2.5%. The average annual harvest rate prior to 1974 was 1.0% (Needham, 1985). Paddlefish tagged in the Missouri River downstream from the Milk River also have experienced a low exploitation rate. In this river segment of the study area, 150 paddlefish were tagged during 1979-82 and eight have been returned representing an average annual harvest varying from 0.0-1.0% after exposure to fishing for 5-9 years. All tag returns from this group of fish have been from the Yellowstone River or the confluence with the Missouri River.

The largest groups of paddlefish tagged in a single season are 189 in 1974, 162 in 1978, and 151 in 1979; and after 14, 10, and 8 years of fishing pressure, all groups have exhibited an average annual harvest rate of 1.4%. The highest overall harvest rates for any group are 27.5% for 40 fish tagged in 1977, 21.1% for 48 fish tagged in 1976, and 19.9% for 189 fish tagged in 1974.

Fort Peck Reservoir and Missouri River Upstream

Paddlefish tagging and harvest records were maintained, but no additional fish were tagged. From 1973-86 a total of 497 paddlefish were tagged in this study area. This total includes 191 fish tagged in the upper portion of Fort Peck Reservoir in 1978. Four tagged paddlefish were harvested by snaggers in 1987. These represent two fish tagged in 1975 and two in 1978.

Tag return data reveals a low rate of harvest for this population as summarized in Table 3. The average annual rate of harvest varies from 1.3-10.0%. However, the highest harvest rate of 10.0% is based on only two fish tagged in 1983. The lowest tag return rate of 1.3% involves 226 fish tagged in 1978; however, 191 (84.5%) of this total consists of fish tagged in the upper Fort Peck Reservoir from the UL Bend to Beauchamp Bay rather

Table 2. A summary of paddlefish tagging and harvest data from the dredge cut complex and Missouri River, 1974-87. Actual tag return rate is given in bold and was derived by adjusting for harvest of tagged fish. All fish were tagged in the dredge cuts except 40 fish in 1979 and all fish in 1980-82 which were tagged in the Missouri River.

Year	No. Tagged	Number Tagged Paddlefish Harvested '74	'75	'76	'77	'78	'79	'80	'81	'82	'83	'84	'85	'86	'87	Total	% Harvest	Average Annual % Harvest
1974[1]	189	1	5	0	2	4	5	1	4	3	1	3	0	0	2	31	19.9	1.4
	186	**0.5**	**2.7**		**1.1**	**2.2**	**2.8**	**0.6**	**2.4**	**1.8**	**0.6**	**1.9**			**1.3**			
1976[2]	48			0	1	1	2	2	1	0	2	0	0	0	0	9	21.1	1.8
	47				**2.1**	**2.2**	**4.4**	**4.7**	**2.4**		**5.3**							
1977	40				0	0	3	0	0	0	1	4	0	2	0	10	27.5	2.5
							7.5				**2.7**	**11.1**		**6.2**				
1978[3]	162					3	4	3	2	4	2	0	0	2	1	21[4]	13.9	1.4
	157					**1.9**	**2.5**	**2.0**	**1.3**	**2.7**	**1.4**			**1.4**	**0.7**			
1979	151						3	3	1	5	2	4	2	0	0	20	13.0	1.4
							2.0	**2.0**	**0.7**	**3.5**	**1.4**	**1.9**	**1.5**					
1979	40 (river)						0	0	0	0	0	1	0	0	1	2	5.1	0.6
												2.5			**2.6**			
1980	29 (river)							0	1	0	1	0	0	0	0	2	7.0	0.9
									3.4		**3.6**							
1981	60 (river)								0	0	2	0	0	1	1	4	6.8	1.0
											3.3			**1.7**	**1.8**			
1982	21 (river)									0	0	0	0	0	0	0	0	0
1984	77											0	0	2	0	2	2.6	0.6
														2.6				

[1]Harvest based on 188 fish beginning in 1979 since one tagged fish found dead; and 187 fish in 1983, 186 fish in 1984, and 185 in 1987 due to removal of tags.
[2]Harvest based on 47 fish beginning in 1978 since one tagged fish found dead.
[3]Harvest based on 161 fish in 1979, 160 in 1980, 158 in 1982, 157 in 1986 due to tagged fish found dead.
[4]Total includes one fish which may have been tagged in 1977.

Table 3. A summary of paddlefish tagging and harvest data from the Missouri River and Fort Peck Reservoir, 1973-87. The actual tag return rate given in bold was derived by adjusting for previous harvest of tagged fish.

Year	No. Tagged	Number Tagged Paddlefish Harvested '73	'74	'75	'76	'77	'78	'79	'80	'81	'82	'83	'84	'85	'86	'87	Total	% Harvest	Average Annual % Harvest
1973	45	0	1 **2.2**	1 **2.3**	0	1 **2.4**	0	1 **2.4**	3 **7.3**	1 **2.6**	0	1 **2.7**	0	0	0	0	9	21.9	1.5
1974	55		3 **5.6**	0	1 **1.9**	1 **2.0**	1 **2.0**	0	1 **2.0**	0	1 **2.1**	0	1 **2.1**	1 **2.2**	2 **4.4**	0	12	24.3	1.7
1975	29			0	0	1 **3.4**	0	2 **7.1**	0	1 **3.8**	0	0	0	1 **4.0**	0	2 **8.3**	7	26.6	2.0
1976	23				1 **4.3**	1 **4.5**	2 **9.5**	0	0	1 **5.3**	0	0	1 **5.6**	0	0	0	6	29.2	2.4
1977[1]	60					4 **6.6**	1 **1.8**	0	1 **1.8**	2 **3.6**	0	0	0	1 **1.9**	0	0	9	15.7	1.4
1978	226[2]						4 **1.8**	2 **0.9**	1 **0.5**	1 **0.6**	2 **0.9**	1 **0.5**	7 **3.3**	0	8 **3.8**	2 **1.0**	28	13.3	1.3
1979	11							0	0	0	0	2 **18.2**	0	0	1 **11.1**	0	3	29.3	3.3
1980	33								5 **15.2**	0	2 **7.1**	0	0	0	0	0	7	22.3	2.8
1983	2											0	0	0	1 **50.0**	0	1	50.0	10.0
1986	13														0	0	0	0	0

[1]Total adjusted for one fish killed by commercial fisherman in August, 1981.
[2]191 tagged in Fort Peck Reservoir from the UL Bend to Beauchamp Bay.

rather than in the river where snagging occurs. The lower tag return rate for paddlefish tagged in the reservoir indicates some fish remain in the reservoir and do not make annual spring migrations into the Missouri River where they are subject to harvest by snagging. The 1983 and 1978 tag returns are extremes, and if excluded, the average annual rate of harvest for seven other groups of fish tagged prior to 1986 varies from 1.3-3.3%.

Fresno Reservoir

Fresno Reservoir is a highly fluctuating irrigation reservoir of 5,757 surface-acres located on the Milk River 12 miles northwest of Havre. In most years the demand for irrigation water results in water level fluctuations of 10-25 feet. Systematic gill netting was conducted in the 1960's and 1970's but was discontinued in 1974. Gill-net stations were reestablished at traditional sites in August of 1987 to determine changes in sport fish abundance and species composition. Samples were collected utilizing six experimental gill nets fished overnight.

Lake whitefish, yellow perch, walleye and northern pike were well represented in the catch (Table 4). The lake whitefish catch was 14 times greater than in any previous sampling effort. Significantly higher numbers of yellow perch were also captured. Gill netting also indicated a large northern pike population in the reservoir. Other species netted included longnose suckers and black crappie.

The catch of walleye was good and average size was larger than that found in previous nettings. The gill-netting results indicate a "top heavy" walleye population of old fish, as 68% of the fish captured were Age IV+ and older. The 1986 walleye year-class was well represented in the gill-net catch which is surprising in light of poor YOY beach seining results in 1986. There appears to be little correlation between the number of YOY walleye captured by summer beach seining and adult walleye year-class strength reflected by gill-net sampling. Recruitment to the adult walleye population is apparently limited by factors other than reproductive success and first summer survival of juvenile walleye. This conclusion is derived from 1984 beach seining results which produced the highest number of YOY walleye ever captured, but not a single fish from that year-class was sampled by gill netting in 1987. Successful recruitment of juvenile walleye to the adult population may be related more closely to winter reservoir storage. Additional gill-netting data is needed to determine this relationship.

Beach seining was conducted at 12 standard sampling sites around the reservoir in a continuing effort to evaluate reproductive success of sport fishes and assess forage abundance. The seining results, when compared to previous years, indicate excellent reproduction of walleye, northern pike, yellow perch, and emerald shiners (Table 5). Spottail shiners have not reached expected population levels despite flourishing emerald shiner numbers. Emerald shiners may be able to out-compete the relatively similar spottail in this reservoir.

Table 4. A summary of the catch in overnight sinking experimental gill-net sets in Fresno Reservoir, 1965-87. Number of nets used varied from four to eight.

Species	Year	Number	Average No. Per. Net Set	Average Length (inches)	Average Weight (pounds)	Percent of Total
Lake whitefish	1970	1	0.1	19.9	3.30	0.7
	1971	1	0.2	18.7	2.94	1.2
	1972	4	0.5	17.8	2.35	6.2
	1974	3	0.8	19.5	3.15	8.6
	1987	65	10.8	12.2	0.71	36.1
Yellow perch	1969	7	0.9	5.4	0.07	12.3
	1970	20	2.5	6.9	0.16	13.8
	1971	6	1.5	7.6	0.23	7.4
	1972	2	0.3	8.7	0.40	3.1
	1974	2	0.5	5.7	0.09	5.7
	1987	43	7.2	6.2	0.13	23.9
Walleye	1965	14	0.9	12.4	0.80	17.9
	1966	14	2.3	11.6	0.62	34.2
	1967	11	1.6	12.9	0.88	24.4
	1968	29	3.6	12.3	0.64	56.9
	1969	24	3.0	12.9	0.92	42.9
	1970	95	11.9	14.4	1.16	65.5
	1971	28	7.0	13.6	1.08	34.6
	1972	34	4.3	16.1	1.44	52.4
	1974	22	5.5	15.9	1.35	62.9
	1987	37	6.2	16.7	1.99	20.6
Northern pike	1965	23	1.6	18.2	1.23	29.5
	1966	6	1.0	20.1	1.68	14.6
	1967	7	1.0	20.6	2.50	15.6
	1968	9	1.1	17.8	1.66	17.6
	1969	9	1.1	19.7	1.88	16.1
	1970	12	1.5	16.3	1.33	8.3
	1971	30	7.5	17.0	1.12	37.0
	1972	5	0.6	17.3	0.93	7.7
	1974	1	0.3	20.6	1.84	2.9
	1987	35	5.8	19.1	1.74	19.4

Three monofilament sinking gill nets of 1/2-inch square mesh were fished overnight in October to capture YOY walleye. A total of three YOY walleye were captured. In October, a boom-rigged AC electrofishing boat was also used after dark to sample YOY walleye. Shorelines in Kiehn's and Fresno Bays were electrofished a total of 2.5 hours. Two yearling and seven YOY walleye were netted. Shocking efficiency was affected by murky water and poor response of fish to the electric field.

Sport fish populations appear to be good at present and recruitment promises to be exceptional. Walleye and northern pike populations may recover rapidly from the droughts of several years ago if water levels remain satisfactory. A supplemental walleye plant of 500,000 fry was made in 1987. The contribution this plant made to the overall YOY catch could not be determined.

Public pressure to stock walleye resulted in the development of a stocking contingency plan for Fresno Reservoir (Attachment A) A proposed USBR project to supply additional water to the Milk River drainage prompted the development of water level management recommendations for Fresno Reservoir to be used by the USBR in assessing fishery impacts of the project (Attachment B). Excessive fluctuations in Fresno Reservoir are still considered to be the major factor limiting the fishery. Although natural reproduction appears to be sufficient in most years, supplemental stocking of walleye may assist in rebuilding the walleye population following excessive drawdown years.

Nelson Reservoir

This reservoir is utilized by the Bureau of Reclamation for off-stream storage of irrigation water. At full storage capacity it covers approximately 4,500 surface acres, but reservoir levels have fluctuated dramatically during the last 10 years. Extreme drought conditions reduced the reservoir to its conservation pool of 1,700 surface acres in both 1984 and 1985. However, good water levels were maintained in 1986 and 1987.

Beach seining was conducted in July at nine sites on the reservoir, encompassing 495 feet of shoreline (Table 6). The sport fish YOY catch consisted of 1,987 yellow perch and 5 walleye. No YOY northern pike were captured. Other forage species sampled in decreasing order of abundance were white sucker, spottail shiner, crappie sp., and buffalo sp.. Aquatic vegetation hampered seining efforts considerably.

Water level management recommendations were developed for Nelson Reservoir and submitted to the USBR (Attachment C). Should supplemental water be delivered to the Milk River in the future, it is hoped that water levels will be managed for fisheries benefit.

RECOMMENDATIONS

Continued gill-net sampling is recommended in the Dredge Cuts study area to acquire information on the status of sport and forage fish. The Corps of Engineers has proposed 10 scenarios to increase hydropower at Fort Peck Dam consisting of reregulating dams, afterbays, off-stream storage, and higher unregulated flows producing greater daily fluctuations which would impact fish movement and habitat.

Efforts to maintain records on harvest and movement of existing tagged paddlefish should continue. Low harvest rates have been observed in both study areas and no major emphasis on additional tagging is recommended for the immediate future. Fishing pressure and harvest during 1986 in the study area involving upper Fort Peck Reservoir and Missouri River upstream were comparable to 1973-78, and creel census efforts are recommended at 4- to 5-year intervals to provide harvest data for management needs. A snagging fishery has developed in the Frazer area on the Missouri River below Fort Peck Dam and this may merit creel census efforts in the future.

All phases of paddlefish investigations downstream from Fort Peck Dam will provide valuable information to address potential impacts associated with the Corps of Engineers' proposals to develop additional hydropower at Fort Peck Dam. New hydro projects would increase peaking power capacity and river stage fluctuations, and/or involve construction of a reregulating dam which could block paddlefish access to the upper dredge cuts.

In 1981, restrictive regulations limiting individual fishermen to only two paddlefish per year and a tagging requirement were implemented on the Yellowstone River. These restrictions are not recommended for either fishery on the Missouri River due to low fishing pressure and harvest. A regulation was also adopted to prevent catch and release (higrading) on the Yellowstone River. This regulation is not recommended for the Missouri River, since few fish are presently released, angler congestion is not a problem, and anglers that do release fish tend to release large females to perpetuate reproduction.

Standardized late summer seining to assess sport fish reproduction and forage fish abundance should be continued at Fresno Reservoir. Sampling efficiency for YOY walleye should be investigated by utilizing 1/2-inch monofilament gill nets and night electrofishing. Sampling of adult sport fishes should be expanded by gill netting to determine relationships of recruitment to other parameters such as YOY abundance and winter reservoir water levels.

Traditional beach seining locations are becoming unusable at Nelson Reservoir due to expansion of aquatic vegetation. Efforts to sample YOY walleye by electrofishing proved very promising in 1987 and should be expanded. Walleye reproduction has been inconsistent in recent years and supplemental stocking is recommended in conjunction with study efforts to identify factors affecting natural reproduction.

LITERATURE CITED

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Waters Referred to:

16-5140-06 Ft. Peck Reservoir
16-2500-01 Missouri River Sec. 05
16-2520-02 Missouri River Sec. 06
15-5240-06 Fresno Reservoir
15-6480-06 Nelson Reservoir

Key words or fish species:
paddlefish, harvest, cisco, smelt, walleye

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Attachment A

FRESNO RESERVOIR WALLEYE STOCKING CONTINGENCY PLAN

Background

Fresno Reservoir provides good walleye fishing under favorable reservoir conditions. Significant spawning habitat for walleye is available in most years and the reservoir exhibits good natural walleye reproduction demonstrated by the ability to provide strong year-classes for the maintenance of the population. Introductions of forage fish such as yellow perch, emerald shiners, and more recently, spottail shiners have been successful. These forage fish are able to provide sufficient food for walleye and northern pike. However, sport and forage fish production is often offset or minimized by extreme reservoir drawdowns associated with irrigation demands. Predicting seasonal reservoir water levels and irrigation demand is difficult; therefore, a walleye stocking contingency plan was developed to promptly respond in years when natural walleye reproduction is inadequate or when good walleye production is severely affected by extreme reservoir drawdowns.

Stocking Proposal

One-half million walleye fry will be requested annually to supplement natural reproduction. Stocking is subject to the following conditions:

A) Walleye will not be stocked in a year following good walleye production. A determination of good walleye production will be based on a catch-rate of two (2.0) or more walleye young-of-year per seine haul as determined by a beach seining survey of 12 sampling sites utilized since 1968. (Walleye production of 2.0 or more young per/haul has occurred in 7 of 14 years sampled.)

B) If extreme drawdowns occur (below reservoir elevation 2551) during years of good walleye reproduction, stocking will be scheduled for the following year to assist the recovery of the walleye population. (Drawdowns below elevation 2551 have occurred in 8 of the last 20 years.)

C) If reservoir water levels and projected run-off are low and extreme drawdown below reservoir elevation of 2551 is expected to occur, stocking will be reassessed in light of anticipated fish losses associated with irrigation withdrawals.

D) The ability to stock in any particular year will depend upon the reservoir's rank in the annual statewide walleye stocking priority system and the availability of fry.

E) Beach seining and gill netting will be continued to evaluate walleye spawning, stocking, and impacts of water levels and determine benefits attributed to stocking.

Attachment B

FRESNO RESERVOIR WATER LEVEL MANAGEMENT RECOMMENDATIONS

Evidence suggests that moderate water level fluctuations can be beneficial to walleye/perch populations. However, excessive drawdowns in Fresno Reservoir significantly limit fish production and dictate the success of all management efforts at the present time. The following are preferred water level management recommendations for the enhancement of the fishery resource in Fresno Reservoir. These recommendations are contingent on the Bureau of Reclamation operating the reservoir at or near full pool whenever possible. These recommendations do not preclude the need for suitable flows within the Milk River to support resident and migratory fishes.

1) A conservation pool should be maintained between reservoir elevation 2560 and full pool to provide maximum benefit to the fishery and utilization of the reservoir for recreation. An absolute minimum pool at elevation 2551 should be maintained. Drawdowns below this level severely impact the fishery and recreation usage. Benefits of maintaining a minimum pool include:

   A) Decrease in turbidity by exposing less silt in the upper delta to the effects of inflow water. Increased water clarity promotes primary productivity in the form of algal and aquatic weed growth and enhances zooplankton production.

   B) Increased water retention time allows available nutrients to be assimilated by lake organisms.

   C) Increased surface area provides more usable habitat and rearing areas for fishes.

   D) Increased depth helps moderate high summer temperatures experienced in high drawdown years.

   E) Reduction in fish losses due to emigration or overcrowding.

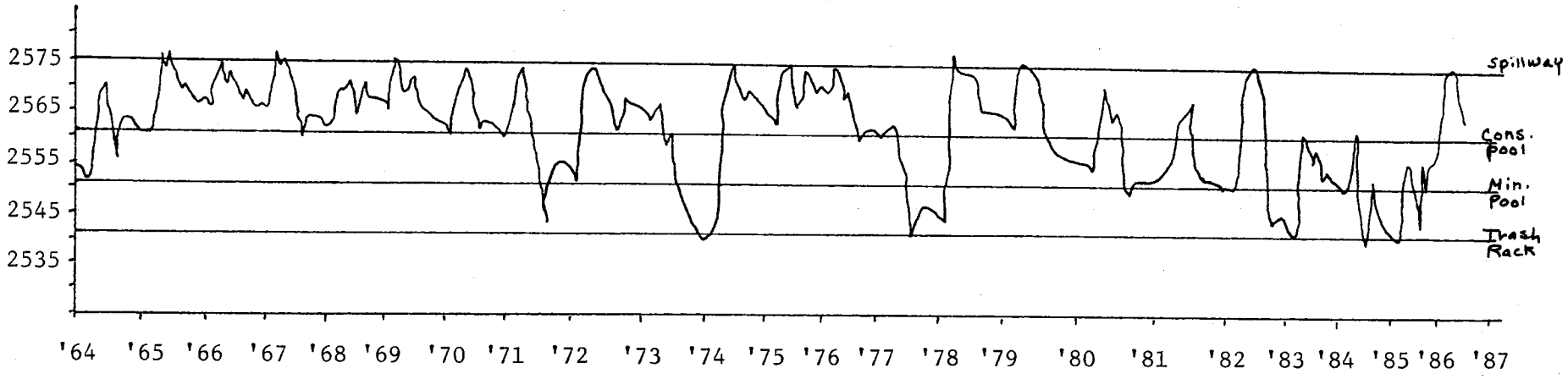
2) The reservoir should be filled rapidly immediately after ice-out. This action would inundate shoreline vegetation, washed gravel and rubble, and facilitate yellow perch and walleye reproduction.

3) A gradual drawdown should begin no earlier than mid-May. A gradual drawdown at this time would provide sufficient time for walleye and perch eggs to hatch and prevent stranding of fry. Terrestrial vegetation would begin to establish in the dewatered littoral zone to provide perch spawning substrate the following spring.

4) Partial filling of the reservoir after irrigation season would help achieve target water levels the following spring.

5) The installation of fish screens in conjunction with a minimal pool could significantly reduce fish losses.

Fresno Reservoir Mean Monthly Water Elevations, 1964-86



Attachment C

NELSON RESERVOIR WATER LEVEL MANAGEMENT RECOMMENDATIONS

Evidence suggests that moderate water level fluctuations can be beneficial to walleye/perch populations. However, excessive drawdowns in Nelson Reservoir significantly limit fish production and dictate the success of management efforts at the present time. The following are preferred water level management recommendations for the enhancement of the fishery resource in Nelson Reservoir. These recommendations are contingent on the Bureau of Reclamation operating the reservoir at or near full pool whenever possible. These recommendations do not preclude the need for suitable flows within the Milk River to support resident and migratory fish.

1) A conservation pool should be maintained between reservoir elevation 2215 and full pool to provide maximum benefit to the fishery resource and utilization of the reservoir for recreation. An absolute minimum pool at elevation 2210 should be maintained. Drawdowns below this level severely impact the fishery and recreational usage. Benefits of maintaining a minimum pool include: A) Reduces the number of fish flushed from the reservoir, B) The amount of productive shoal area is increased which facilitates fish food production, C) Cover and security for forage and sport fish also increases.

2) The reservoir should be rapidly filled immediately after ice-out to cover washed gravel and rubble for walleye spawning and inundate shoreline vegetation to facilitate yellow perch reproduction.

3) Gradual drawdown commencing in mid-May to allow hatching of walleye and perch eggs. This provides suitable nursery habitat and prevents stranding of fry. This also allows for revegetation of the dewatered littoral zone.

4) Partial filling of the reservoir after irrigation season would help achieve target water levels the following spring.

5) The addition of fish screens on the outlets could significantly reduce fish losses.