MONTANA DEPARTMENT OF FISH, WILDLIFE AND PARKS
FISHERIES DIVISION

JOB PROGRESS REPORT

STATE: Montana PROJECT TITLE: Statewide Fisheries Investigations

PROJECT: F-46-R-2 STUDY TITLE: Survey and Inventory of Warm Water Lakes

JOB NO: IV-e JOB TITLE: Tongue River Reservoir Investigations

SEGMENT (FISCAL) PERIOD: July 1, 1988 - June 30, 1989

REPORT PERIOD: April 1, 1988 - March 31, 1989

ABSTRACT

Walleye numbers in Tongue River Reservoir in 1988 were the highest measured in many years. Evidence indicates that most of these fish are from fingerling plants made in 1985 and 1986. Larger crappie in 1988 were more abundant then in any year since 1981. Evidence is presented that high walleye numbers may be partially responsible for increased numbers of larger crappie. A large year class of crappie was probably formed in 1988.

OBJECTIVES AND DEGREE OF ATTAINMENT

1. To increase the average size of crappie so that 10 percent of crappie in mid-summer gill net catches are at least 250 mm total length. This objective was met. Over 19% of crappie in 1988 gill net catches measured at least 250 mm total length.

2. To increase mid-summer gill net catches of walleye to an average of at least 2.0 walleye per overnight experimental gill net set. This objective was met. Catch rates in 1988 averaged more than 19 walleye per gill net set.

3. To increase mid-summer gill net catches of northern pike to an average of at least 2.0 northern pike per experimental gill net set. This objective was not met. The required northern pike fingerlings were not available for planting.

Methods

Fish populations were sampled with gill nets, seines and boat-mounted electrofishing gear. Gill nets were of the sinking experimental type, 125 feet long. A bag seine of 100 feet length and with 1/4 inch mesh was set from a boat and then hauled to shore.

Results and Discussion

Experimental gill nets were fished in early August 1988 over the length of the reservoir for a total of 10 net nights. Results are shown in Table 1. Overall catch rates, which were up in 1987, (51.3 fish/net night) were even higher in 1988 (101.2 fish/net night). Five fish species account for most of the difference between the two years: shorthead redhorse, yellow bullhead, smallmouth bass, yellow perch and walleye. The increase in gill net catch rate was largest for smallmouth bass (0.3 vs 3.8 fish per gill net night).

As in past years white crappie was the most abundant species in gill net catches. Larger crappie were more abundant in 1988 then in any years since 1981 (Table 2), continuing a trend began in 1987.

Gill net catch rate of walleye in 1988 was the highest in many years (Table 2). Almost all of these walleye are 1985 and 1986 year class, the only recent years when walleye fingerlings were planted.

Table 2 suggests a direct relationship between walleye abundance and abundance of crappie larger than 250 mm, with perhaps a lag of one or two years in abundance of larger crappie. A large 1983 year class was still present in 1988 and may have partially caused the 1988 peak in larger crappie.

Crappie young-of-the year were the most abundant fish in seine hauls at Tongue River Reservoir in August 1988 (Table 3). In recent years, the mean number of crappie per seine haul in 1988 of 142.6 has been exceeded only in 1983 (230 crappie YOY per seine haul). Perch and smallmouth bass YOY were the next most abundant fish in seine hauls. Moderate numbers of walleye YOY were sampled in seine hauls (Table 3) indicating some survival of spring 1988 walleye fry planting. Natural reproduction is considered unlikely because few walleye in spring 1988 were old enough to reproduce.

No walleye YOY were found in August 1987 seine hauls but three one year old walleye (approximately 160 mm total length) were observed in 2 1/2 hours of shore electrofishing at night on May 11, 1988.

Waters Referred to: Tongue River Reservoir 7-21-9000

Key Words:

Crappie Walleye management

Prepared by: Phillip A. Stewart

Date: March 14, 1989

Table 1. Results of 10 overnight experimental gill net sets at Tongue River Reservoir, August 1988.

Species	No. caught	Mean No. net set	Mean Length (mm)	Mean weight (gm)	Length range (mm)	Weight range (gm)	% of catch
Carp	14	1.4	408	886	262-495	220-1430	1.4
Shorthead redhorse	196	19.6	296	308	202-510	70-1430	19.1
White sucker	36	3.6	353	541	240-468	250-1120	3.5
Longnose sucker	4	0.4	267	205	235-326	120-390	0.4
Yellow bullhead	84	8.4	198	120	140-325	30-480	8.2
Black bullhead	1	0.1	275	270	-	-	0.1
Channel catfish	27	2.7	405	613	317-505	270-1060	2.6
Pumpkinseed	1	0.1	149	-	-	-	0.1
Smallmouth bass	38	3.8	230	201	158-320	50-490	3.7
White crappie	202	20.2	216	154	138-303	20-360	19.7
Black crappie	37	3.7	211	166	145-308	50-400	3.6
Yellow perch	185	18.5	187	83	137-238	30-170	18.0
Sauger	8	0.8	452	835	360-530	390-1370	0.8
Walleye	194	19.4	332	355	250-473	130-1180	18.9
Totals	1027	101.2					100.1

Table 2. Tongue River Reservoir walleye gill net catch rates a/ and percentage of crappie >250 mm total length in experimental gill nets, 1980-1988.

Year	Walleye catch rate a/	Walleye mean total length (mm)	Percentage of crappie >250 mm total length
1988	19.4	332	18.9
1987	5.6	279	4.2
1986	1.6	273	0.0
1985	0.6	463	2.7
1984	0.4	417	1.2
1983	0.2	427	3.4
1982	2.0	397	1.7
1981	5.6	377	27.8
1980	4.3	319	11.4

a/ Average number of walleye per overnight experimental gill net set.

Table 3. Results of 12 seine hauls at Tongue River Reservoir, August 1988.

Species	Number caught	Mean No./ haul	Mean length (mm)	Mean Weight (gm)	Length range (mm)	Weight range (gm)
Golden shiner	1	0.1	66	-	-	-
Carp	4	0.3	487	1750	480-494	1350-2150
Carp YOY	391	32.6	81	-	63-97	-
Shorthead redhorse	22	1.8	163	75	66-298	20-270
White sucker	1	0.1	158	-	-	-
Black bullhead YOY	11	0.9	58	-	49-68	-
Pumpkinseed	53	4.4	105	31	82-135	15-50
Pumpkinseed YOY	38	3.2	38	-	30-45	-
Smallmouth bass	23	1.9	181	106	115-262	20-300
Smallmouth bass YOY	400	33.3	68	-	48-104	-
Largemouth bass	20	1.7	102	18	87-119	10-35
Largemouth bass YOY	18	1.5	65	-	55-76	-
White crappie	31	2.6	204	121	147-267	50-220
Black crappie	4	0.3	176	95	151-209	50-150
Unidentified crappie (adult)	27	2.2	-	-	-	-
Crappie YOY	1711	142.6	52	-	31-65	
Yellow perch	18	1.5	134	32	112-197	10-80
Yellow perch YOY	646	53.8	62	-	54-70	-
Walleye YOY	42	3.5	147	30	110-158	5-45