

MONTANA DEPARTMENT OF FISH, WILDLIFE AND PARKS
FISHERIES DIVISION

JOB PROGRESS REPORT

STATE; Montana

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STUDY TITLE; Survey and
Inventory of Warmwater Lakes

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JOB TITLE; Tongue River
Reservoir Investigations

ABSTRACT

The Tongue River Reservoir crappie population continues to be dominated by the very strong 1991 year class. Older fish are nearly absent and the 1992, 1993 and 1994 year classes are either absent or weak. Gill net catches of walleye were sharply up in 1994 from 1993. Northern pike numbers remain very low, and no additional northern pike planting is planned.

OBJECTIVES AND DEGREE OF ATTAINMENT

1. Maintain 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 not met. In 1994, only 2.2 percent of crappie in gill net catches met or exceeded the target length.
2. Maintain 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 1994 average 5.3 per net.
3. Incorporate needed water levels into the operating plan for the reservoirs. Work was done toward this effort. Montana DNRC has needed water levels listed in their planning documents.

METHODS

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

RESULTS AND DISCUSSION

Results of gill netting are shown in Table 1. Table 2 compares walleye and crappie statistics for previous years.

Gill net catches in 1994 were heavily dominated by the very strong 1991 (age 3+) year class of crappie as they were in 1992 and 1993. Any indications of age 1+ or age 2+ crappie were absent in gill nets. This confirmed the results of seining in 1992 and 1993. These seine hauls showed very low levels of crappie YOY.

Crappie average size in gill nets has increased greatly from 1992 to 1994, (from 165 mm to 235mm for white crappie), but still relatively few crappie are present in the preferred 250mm+ category. (Table 2). Crappie from the 1989 and 1990 year classes are almost absent, even though the 1990 year class was strong. These year classes would exceed 250mm length were they still present in the population. In 1995, many of the crappie of the 1991 year class should exceed 250mm length, but numbers of these fish will be less because of natural and fishing mortality.

Walleye catch rate in 1994 gill nets was approximately five times higher than in 1993, and average size was rather sharply higher. (Table 2). Northern pike did not appear in gill nets in 1994, despite annual planting of fry and/or fingerlings in most of the last eight years. The reservoir is probably not suitable for survival of young northern pike, and no further plants are planned.

Numbers of young fish in seine hauls was higher in 1994 than in 1992 and 1993 (Table 3), but not nearly as high as some earlier years. Crappie YOY were the second most abundant fish in seine hauls with an average of 19.2 per haul. (Table 4). While this was higher than the figures of 1.7 in 1993, and 8.1 in 1992, it is still well below the figure for some previous years. For example, in 1991, number of crappie YOY averaged over 400 per seine haul. The 1994 figure suggests the formation of a relatively weak 1994 year class.

Spottail shiner numbers in seine hauls averaged 6.7 fish per seine haul, more than in most years since this fish was introduced.

Water Referred to: Tongue River Reservoir

7-21-9000

Key Words: Crappie, Crappie reproduction, Walleye

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Table 1. Results of 10 overnight experimental gill nets sets at Tongue River Reservoir, August 1994.

Species	Number Caught	Mean No./ Net Set	Mean Length (mm)	Mean Weight (gm)	Length Range (mm)	Weight Range (gm)	% of Catch
Carp	11	1.1	467	1263	396-540	750-1860	1.6
Shorthead Redhorse	99	9.9	355	534	209-500	70-1440	14.0
White sucker	28	2.8	383	677	288-473	260-1210	4.0
Longnose sucker	1	0.1	232	120	-	-	0.1
Yellow bullhead	47	4.7	231	153	193-282	70-310	6.7
Black bullhead	15	1.5	250	222	216-270	150-280	2.1
Channel catfish	18	1.8	348	832	218-717	70-5000	2.6
Smallmouth bass	34	3.4	238	189	185-296	50-330	4.8
White crappie	291	29.1	235	168	205-284	100-345	41.3
Black crappie	77	7.7	213	151	193-237	110-200	10.9
Yellow perch	31	3.1	195	91	150-225	30-150	4.4
Walleye	53	5.3	349	414	243-570	100-1850	7.5
TOTALS	705	70.5					100.0

Table 2. Tongue River Reservoir walleye gill net catch rates^a and percentage of crappie >250mm total length in experimental gill nets, 1980-1994.

Year	Walleye Catch Rate ^a	Walleye Mean Total Length (mm)	Percentage of Crappie >250mm Total Length
1994	5.3	349	2.2
1993	1.1	308	0.7
1992	8.4	325	0.8
1991	3.9	383	19.9
1990	4.1	349	2.9
1989	15.7	343	12.8
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

^aAverage number of walleye per overnight experimental gill net.

Table 3. Mean number of young-of-the-year fish in Tongue River Reservoir seine hauls.

Year	Mean Number	Most Abundant Species	Second Most Abundant Species
1994	54	Yellow Perch	Crappie
1993	3	Crappie	Spottail Shiner
1992	17	Crappie	Sunfish
1991	464	Crappie	Carp
1990	569	Crappie	Bullhead
1989	5	Yellow Perch	Smallmouth Bass
1988	271	Crappie	Yellow Perch
1987	68	Yellow Perch	Smallmouth Bass
1986	127	Crappie	Carp
1985	46	Crappie	Yellow Perch
1984	585	Carp	Bullhead
1983	288	Crappie	Walleye

Table 4. Results of 12 seine hauls at Tongue River Reservoir, August 1994.

Species	Number Caught	Mean No./ Haul	Mean Length	Length Range
Spottail Shiner	81	6.7	56	31-65
Carp (juvenile)	33	2.7	116	111-121
Carp YOY	55	4.6	73	66-100
Shorthead Redhorse	2	0.	128	-
Sucker Sp. YOY	15	1.2	53	42-65
Smallmouth Bass	5	0.4	177	123-241
Smallmouth Bass YOY	7	0.6	58	41-65
White Crappie	28	2.3	231	221-243
Black Crappie	2	0.2	209	192-225
Crappie YOY	231	19.2	57	41-76
Largemouth Bass	1	0.1	269	-
Pumpkinseed	2	0.2	141	125-157
Pumpkinseed YOY	2	0.2	30	-
Sunfish YOY	2	0.2	35	34-35
Yellow Perch	59	4.9	146	130-189
Yellow Perch YOY	249	20.7	71	58-78
Walleye YOY	11	0.9	163	138-185