

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

STATE: Montana PROJECT TITLE: Statewide Fisheries Investigations

PROJECT: F-46-R-6 STUDY TITLE: Survey and Inventory of Warmwater Lakes

JOB NO: 4-E JOB TITLE: Tongue River Reservoir Investigations

Segment (Fiscal) Period: July 1, 1992 - June 30, 1993
Report Period: April 1, 1992 - March 30, 1993

ABSTRACT

Crappie average size at Tongue River Reservoir decreased greatly from 1991 to 1992, suggesting the possibility of overharvest of adult crappie. Walleye numbers remained high, but survival of planted fingerling and fry northern pike is very low. The spottail shiner, introduced in 1990, has not become abundant.

OBJECTIVES AND DEGREES 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 250mm total length. This objective was not met. In 1992 less than 1% of crappie in gill net catches measured at least 250mm 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 1992 averaged 8.4 walleye per net.
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. Despite northern pike planting this objective was not met. Gill nets failed to collect any northern pike.

METHODS

Fish populations were sampled with gill nets, seines and frame trap nets. 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. Traps had 4x6 feet frames and 50 foot leads. Crappies were aged from enlargements of scale impressions.

RESULTS AND DISCUSSION

Results of gill netting are shown in Table 1. Table 2 compares walleye and crappie statistics with previous years. Crappie numbers remain high (Table 1), but in 1992 gill net catches were dominated by crappies ranging in size from mostly 140-175mm. Average size of white crappie in 1991 was 235mm, but only 165mm in 1992. Examination of scales indicated that these crappie were all yearling (1991 year class) fish. This situation is in sharp contrast to recent years when much larger crappie have dominated summer gill net catches.

These small (age 1+) crappie have grown well and so are not considered overabundant. Older, larger crappie appear much less abundant than in recent past years, suggesting that age II+ and older crappie have been harvested sufficiently to significantly decrease their numbers. Regulations to decrease the angler harvest of crappie may be needed if fishing pressure remains high, as is expected.

Walleye gill net catch rates continue to exceed objectives set for the reservoir, but northern pike numbers remain below the objective, despite annual planting of fry and/or fingerlings.

Size of crappie spawners in May 1992 (Table 3) is similar to recent years. Crappie of the 1991 year class were too small to appear in the May 1992 frame trap catches. Although data has not yet been analyzed, frame trap nets fished in April 1993 were dominated by the 1991 crappie year class. These fish were mostly 170-180mm total length at that time.

Catches of young-of-the-year fish in August 1992 seine hauls were among the lowest ever measured (Tables 4 and 5). The water in Tongue River Reservoir remained high through August 1992. Possibly this high water level decreased the effectiveness of seining in collecting small fish. Spottail shiners, introduced for forage in 1990 have yet to become abundant.

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

Key Words: Crappie, walleye, spottail shiner

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Table 1. Results of 10 overnight experimental gill net sets at Tongue River Reservoir, August 1992.

Species	No. Caught	Mean no./net set	Mean length (mm)	Mean weight (mm)	Length range (mm)	Weight range (gm)	% of catch
Carp	12	1.2	465	1247	226-545	150-1730	1.9
Shorthead redhorse	71	7.1	338	456	187-470	70-1050	11.1
White sucker	22	2.2	369	626	231-470	140-1060	3.4
Yellow bullhead	79	7.9	233	164	154-302	45-340	12.3
Black bullhead	29	2.9	202	124	130-280	30-300	4.5
Channel catfish	2	0.2	344	445	242-445	90-800	0.3
Pumpkinseed	1	0.1	133	50	- -	- -	0.2
Green sunfish	1	0.1	155	80	- -	- -	0.2
Rock bass	1	0.1	175	110	- -	- -	0.2
Smallmouth bass	21	2.1	236	219	154-362	40-680	3.3
White crappie	196	19.6	165	59	121-250	20-200	30.6
Black crappie	58	5.8	154	58	126-253	30-270	9.0
Yellow perch	64	6.4	191	82	150-255	50-200	10.0
Walleye	84	8.4	325	410	140-589	20-2230	13.1
Totals	641	64.1					100.1

Table 2. Tongue River Reservoir walleye gill net catch rates^(a) and percentage of crappie >250mm total length in experimental gill nets, 1980-1992.

Year	Walleye catch rate ^(a)	Walleye mean total length (mm)	Percentage of crappie >250mm total length
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

(a) Average number of walleye per overnight experimental gill net.

Table 3. Size of crappie taken in frame trap nets at Tongue River Reservoir, May 21 and 22, 1992^(a).

Species	Sex	N	Mean length (mm)	Mean weight (gm)	Length range (mm)	Weight range (gm)
White crappie	F	56	261	259	233-323	181-463
White crappie	M	3	251	202	249-254	200-204
Black crappie	F	7	236	213	213-261	141-295
Black crappie	M	2	251	245	231-272	182-309

^(a) Data from Wyoming Game and Fish.

Table 4. Results of 14 seine hauls at Tongue River Reservoir, August 1992.

Species	Number caught	Mean no./ haul	Mean length (mm)	Mean weight (gm)	Length range (mm)	Weight range (gm)
Spottail shiner	1	0.1	67	-	- -	- -
Carp	2	0.1	-	-	- -	- -
Shorthead redhorse	5	0.4	240	180	180-338	60-400
Sunfish YOY	87	6.2	30	-	22-38	- -
Smallmouth bass	55	3.9	148	44	118-185	15-80
Smallmouth YOY	29	2.1	66	-	47-88	- -
Largemouth bass	1	0.1	190	-	- -	- -
Largemouth YOY	2	0.1	89	-	87-90	- -
Crappie YOY	113	8.1	43	-	26-58	- -
Yellow perch	2	0.1	169	-	167-170	- -
Yellow perch YOY	1	0.1	74	-	- -	- -
Walleye YOY	2	0.1	145	-	142-148	- -

Table 5. Mean number of young-of-the-year fish in Tongue River Reservoir seine hauls.

Year	Mean number	Most abundant species	2nd most abundant
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