MONTANA DEPARTMENT OF FISH, WILDLIFE AND PARKS

FISHERIES DIVISION
JOB PROGRESS REPORT

STATE: MONTANA PROJECT TITLE: STATEWIDE FISHERIES INVESTIGATIONS

PROJECT NO.: F-46-R-2 STUDY TITLE: SURVEY AND INVENTORY OF COLDWATER LAKES

JOB NO.: II-A JOB TITLE: NORTHWEST MONTANA COLDWATER LAKES INVESTIGATIONS, NOXON RAPIDS AND CABINET GORGE RESERVOIRS SEGMENT

PROJECT PERIOD: JULY 1, 1988 THROUGH JUNE 30, 1989

ABSTRACT

Cabinet Gorge and Noxon Rapids reservoirs are adjacent run of-the river hydroelectric impoundments on the lower Clark Fork River extending 56 miles from Thompson Falls, Montana, into the State of Idaho about one-fourth mile. Prior to 1986, Noxon Rapids was subject to an average 35 foot spring drawdown but starting in 1986 this drawdown was limited to 10 feet. Since 1985 a total of 412,000 eyed eggs and 605,000 fingerling brown trout (Salmo trutta) and 2,430 subadult and adult burbot (Lota lota) were planted in the reservoirs and selected tributary streams. Limited data indicate some survival of the brown trout and burbot. Sampling in both reservoirs indicates a continuing expansion of numbers of fish.

BACKGROUND

Cabinet Gorge Reservoir, completed in 1953, and Noxon Rapids Reservoir, completed in 1958, are owned and operated by The Washington Water Power Company (WWP), Spokane, Washington. The reservoirs are adjacent run-of-the-river hydroelectric impoundments with Noxon Rapids extending 38 miles downstream from Thompson Falls to near Noxon, Montana, and Cabinet Gorge 18 miles long with the dam located near Cabinet Gorge, Idaho, about one-fourth mile into Idaho. Cabinet Gorge has a surface area of 3,400 acres at full pool elevation of 2,175 feet msl while Noxon Rapids' surface area is 8,600 acres at 2,331 feet msl.

Cabinet Gorge Reservoir is used as reregulation for Noxon Rapids discharges. Fluctuations of water levels in Cabinet Gorge seldom exceed 5-6 feet, but fluctuation of 2-3 feet occur almost daily. Prior to 1986, annual drawdown of Noxon Rapids averaged about 35 feet and ranged from 6 to 54 feet. Starting July 1, 1986, and for an indefinite time annual fluctuations are now limited to a maximum of 10 feet.

Fishery management activities on Cabinet Gorge Reservoir from the mid-1960's to 1985 were very limited since it was known that what was planted in Noxon Rapids Reservoir would invade the lower reservoir. Since 1985 small numbers of burbot and brown trout have been planted. Management activities on Noxon Rapids from 1958 through

1985 stressed planting of hatchery fish including rainbow (Oncorhynchus mykiss), westslope cutthroat (Oncorhynchus clarki), brown trout, and smallmouth bass (Micropterus dolomieui). The plantings of trout did not result in an acceptable fishery, although brown trout became established in small numbers. Plantings of smallmouth bass in 1982 and 1983 have resulted in a fishable, self-reproducing population. A complete description of management activities in Noxon Rapids and Cabinet Gorge reservoirs prior to 1985 is given by Huston (1985).

OBJECTIVES AND DEGREE OF ATTAINMENT

Objectives included three from the Northwest Montana Coldwater Lakes Investigations (F-46-R-2, II-a) and five from the Northwest Montana Warmwater Lake Investigations (F-46-R-2,III-a). These objectives were:

Northwest Montana Coldwater Lakes Investigations

1. Manage lake and reservoir water levels to minimize impacts on fish populations. Objective was attained using state funding. Washington Water Power Company was able to limit drafting of Noxon Rapids Reservoir to 10 feet although the reservoir was drafted to 10 feet for a longer period of time in January through March, 1989, than in previous years.

5. Provide lake fisheries to sustain an increase of 32,600 angler days by 1992 through natural reproduction and hatchery plants. Provide kokanee fisheries for 12-14" fish at a catch rate of 1 fish/hour. This objective was substantially met. Data presented indicates an increasing fish population in both Noxon Rapids and Cabinet Gorge reservoirs. Kokanee portion of this objective is applicable to other lakes covered by Coldwater Lakes Investigations.

12. Attempt to acquire sites and provide facilities on all lakes and reservoirs capable of sustaining more than 300 mandays of fishing per year on a priority basis at the rate of one lake per year. This objective was met using state funding. WWP, U. S. Forest Service, area bass clubs, area residents, and the Department are cooperating to build one new boat ramp and campground facility on each reservoir. Marten Bay ramp on Noxon Rapids Reservoir was scheduled for construction in late April, 1989, but unexpected refilling of the reservoir in early April precluded ramp installation. Road access, toilets, parking area, and day-use facilities were constructed in June, 1989, with boat ramp installation scheduled for spring, 1990. The Eddy Creek ramp on Cabinet Gorge Reservoir is scheduled for installation in August, 1989, when the reservoir will be drawn down 15 feet for safety inspection of the dam structure.

Northwest Montana Warmwater Lake Investigations

1. Establish and maintain fishable populations (catch rate = 0.25 fish/hour) of bass in Noxon and Cabinet Gorge reservoirs. Objective was partially met. Data presented in this report will show that bass populations in Noxon Rapids Reservoir are improving while bass populations in Cabinet Gorge may be declining.

2. Attempt to acquire and develop access sites on all lakes and reservoirs with the potential for more than 500 mandays of fishing annually. First priority should be given Lake Blaine and those lakes with adjoining Champion International or Plum Creek Timberlands property. Objective was met using state funding. The Department and WWP are exploring methods to install a boat ramp at the Thompson Falls State Park and to reconstruct the existing boat ramp and facilities at the Flatiron Ridge fishing access site.

6. Enhance fish populations through the placement of artificial habitat. This objective was met. The Department, area bass clubs, and WWP cooperated in placing tree reefs in the Robinson Rock area of Noxon Rapids Reservoir. Reef placement was done in late May, 1989.

7. Define the mechanisms of predator/prey relationships in area lakes. Reduce competition with game fish and reduce overabundant populations of nongame fish. This objective was met.

8. Encourage increased public knowledge and participation in resource decisions. This objective was met. Department personnel and the WWP fisheries technician attended meetings of area service and sports clubs. The technician will be conducting an attitude survey of recreationists in calendar year 1989. This survey is designed to measure people's ideas about fishing and available facilities.

PROCEDURES

Fish populations of both reservoirs were sampled using 100-foot long gill nets comprised of 25-foot sections of 1", 1¼", 1½" and 2" bar measure mesh. Net sets were made at three stations in Noxon Rapids and one in Cabinet Gorge reservoirs in spring and fall, 1988. Spring sampling was done in late April and fall sampling in mid-October.

Brown trout redd counts were made by walking or floating selected reaches of streams after water temperatures had dropped below 35°F. Redds were visually identified by the presence of clean gravel, and a depression and tail spill mound in the gravel.

STATUS OF FISH POPULATIONS

Catch per net night by species (Table 1) showed little change between 1987 and 1988 for either reservoir with the exception of yellow perch (Perca flavescens) in Noxon Rapids Reservoir. Catch of perch increased about 250 percent from 1987 to 1988. This large increase in numbers of perch is considered to be both an actual population increase as well an aberration of gill net sampling. Netting done in late April, 1988, occurred when perch were spawning and average catch was 87 fish per net. Average catch in mid-October, 1988, was only 12 fish per net.

Table 1. Average catch per net nigh in bottom gill nets set in Cabinet Gorge and Noxon Rapids reservoirs, spring and fall of 1987 and 1988.

	Average Catch Per Net Night by Species			
	Noxon Rapids		Cabinet Gorge	
Species	1987 (23)*	1988 (24)	1987 (4)	1988 (4)
Rainbow trout	0.2	0.0	0.0	0.0
Bull trout	0.4	0.1	0.0	0.3
Brown trout	0.8	0.5	2.5	3.3
Mountain whitefish	0.2	0.1	0.0	1.0
Lake whitefish	0.3	0.5	3.0	2.8
Largemouth bass	0.1	0.3	0.3	0.0
Smallmouth bass	0.3	0.3	0.0	0.0
Northern pike	0.1	0.0	0.0	0.0
Longnose suckers	0.2	0.7	0.0	0.5
Largescale sucker	4.6	3.9	2.0	1.8
Northern squawfish	4.6	8.2	3.8	6.0
Black bullhead	1.9	2.7	0.0	0.3
Peamouth	19.3	12.3	11.8	8.3
Yellow perch	19.0	49.8	4.5	7.8
TOTAL	52.0	79.4	27.9	32.1

*Number in parenthesis is number of net sets.

Brown Trout (Salmo trutta) - From fall 1985 through fall 1988 a total of 412,000 eyed eggs and 605,000 fingerling brown trout were planted in Noxon Rapids Reservoir and five tributaries and in two tributaries of Cabinet Gorge Reservoir. In December 1988, 150,000 eyed brown trout eggs were planted in three Noxon Rapids and one Cabinet Gorge tributaries. Several of the man-made redds in Noxon Rapids tributaries were opened up after hatching should have been completed and egg mortality was considered near 100 percent. Eyed brown trout eggs shipped to the Giant Springs Trout Hatchery in Lewistown, Montana, at the same time suffered a complete mortality. The Department traded surplus rainbow trout eggs for about 100,000 brown trout fry from a private hatchery. These fry will be reared to about six inches and planted into Noxon Rapids Reservoir in late September 1989.

Brown trout redd counts were made in sections of Bull River, tributary to Cabinet Gorge Reservoir, and Prospect Creek, Marten Creek, and Vermilion River tributary to Noxon Rapids Reservoir. Number of redds counted compared to 1986 and 1987 is shown in Table 2.

Table 2. Number of brown trout redds in sections of Prospect Creek, Vermilion River, Marten Creek, and Bull River 1986, 1987, and 1988.

Stream (Reservoir tributary)	1986	1987	1988
Prospect Creek (Noxon Rapids)	12	15	14
Vermilion River (Noxon Rapids)	12	26	40
Marten Creek (Noxon Rapids)	25	36	20
Bull River (Cabinet Gorge)	64	94	95

Redd counts were made on Prospect Creek, Marten Creek, and Bull River December 27-28, 1988, and on Vermilion River January 14, 1989. Past observations on brown trout spawning has indicated that egg laying is not completed until stream temperatures drop to 34-35°F. Temperature of Prospect Creek, Marten Creek, and Bull River was 37-38°F during the December 27-28 counts; therefore it is likely that spawning in these streams was not completed. Temperature in Vermilion River in mid-January, 1989, was 35°F and spawning may not have been completed in this stream either.

Numbers of redds observed in Bull River and Prospect Creek were comparable to previous year's data. The increased number of redds found in Vermilion River may be related to the later count date in 1989 compared to the "normal" late December count dates in 1986 and 1987. The lower number of redds found in Marten Creek in 1988 compared to prior years is likely related to beaver activity. Beaver dams built in 1988 eliminated access into about two miles of spawning area, leaving only about three-fourths mile of habitat available.

Small numbers of spawning brown trout were collected from both reservoirs in October 1988. Average total length and range of lengths for fish caught in fall 1988 compared to fish caught in 1986 and 1987 is shown in Table 3.

Table 3. Length of spawning brown trout caught in Cabinet Gorge and Noxon Rapids reservoirs in 1988 compared to 1986 and 1987.

Reservoir	Year	Average Length	(Range) (inches)	Number of Fish
Cabinet Gorge	1986-87	19.6	(13.9-19.6)	42
	1988	22.7	(18.4-26.8)	6
Noxon Rapids	1986-87	19.2	(14.7-25.7)	31
	1988	20.8	(14.7-25.3)	11

The limited amount of data indicate little change in size of spawning brown trout from either reservoir.

Largemouth Bass (Micropterus salmoides) - An attempt was made to capture and tag largemouth bass in Noxon Rapids Reservoir in an area around the town of Trout Creek, Montana, two weeks prior to a Montana B.A.S.S. Federation fishing tournament. Total catch after fishing 6 trap nets 2 nights, 6 hours of night time electrofishing and 12 hours of angling was 4 largemouth bass. Therefore, the marking effort was terminated. During the 2-day bass fishing tournament, a total of 35 anglers caught 116 largemouth bass ranging from 12-18' long and 61 bass less than 12' long.

Scale samples from about 100 largemouth bass were collected from fish caught during the tournament. Aging and growth analysis has not been completed.

Anglers are complaining that largemouth bass fishing has declined in the upper end of Cabinet Gorge Reservoir in recent years due to drought. This concern is likely true and likely related to operation of Noxon Rapids and Cabinet Gorge dams and low inflows into Noxon Rapids Reservoir in recent years. For the last three years inflow into Noxon Rapids Reservoir during late June and July have generally been less than plant capacity for both Noxon Rapids and Cabinet Gorge generation facilities. This low water has resulted in increased depth of daily drawdown of Cabinet Gorge Reservoir, likely resulting in disorientation of largemouth bass during spawning and poor spawning success. Hopefully near normal inflow into Noxon Rapids Reservoir in June and July, 1989 will exceed generating capacities of both dams, reducing the frequency and depth of fluctuations in Cabinet Gorge Reservoir.

Smallmouth bass (Micropterus dolomieui) - Smallmouth bass fingerlings were planted into Noxon Rapids in 1982 and 1983. Spawning by these fish was first documented in 1987 when young-of-the-year smallmouth bass were caught. Aging of scales of smallmouth bass caught in the 1988 netting shows that successful spawning also occurred in 1986. Size of year classes produced in 1986 and 1987 is not known at this time.

Burbot (lota) - In spring 1985, 23 adult burbot were planted into Triangle Pond. This eight-acre lake, an old gravel pit, is connected to Cabinet Gorge Reservoir by intergravel flows and is about four miles west of the town of Noxon, Montana. Prior to planting with burbot the lake's game fish population was comprised of hatchery-reared rainbow trout and longnose suckers (Catastomus catastomus). It is known that at least 10 of the 23 adult burbot were caught by anglers between time of planting and spring 1989. Anglers also reported catching small burbot in winter 1988-89.

One trap net fished three days in late April, 1989, when surface temperature was 52°F caught three burbot measuring 6, 10, and 29 inches long. In mid-May, 1989 four trap nets fished two nights caught no burbot. Surface temperature during this effort was 58°F. This very limited catch information indicates that some adults from the 1985 planting have survived until spring 1989 and that successful reproduction has occurred at least two years.

Both adult and juvenile burbot were planted in Noxon Rapids and Cabinet Gorge reservoirs in 1985 through 1988. Success of these fish in establishing a reproducing population has not yet been determined. Burbot were caught in both reservoirs in spring 1989 in trap nets and gill nets, so it is known that some survived. Two burbot have been found in Noxon Rapids Dam turbine wells, so it is known that some fish have escaped from Noxon Rapids Reservoir.

Black Crappie (Pomoxis nigromaculatus) - Black crappie were illegally introduced into Cabinet Gorge Reservoir sometime before or during 1988. An angler caught two crappie in summer 1988 and gave them to a Department employee for identification. One additional crappie was caught in May, 1989. Estimated size of the three fish was about 9-11" long. The likeliest source of crappie for this introduction would be Lake Pend Oreille, Idaho, which is about 10 miles downstream from Cabinet Gorge Reservoir.

RECOMMENDATIONS

The Department (Huston, 1988) recommended to Washington Water Power (WWP) that their fish technician position be continued. WWP may make this position a permanent job with an indefinite termination. The job responsibilities of this position have also been expanded to include considerable public relations activities and management of WWP lands around both reservoirs. Therefore this person will not be able to work full time on aquatic biology. Work objectives for the coming year will have to be limited unless the Department can increase its efforts.

The objectives for Fiscal Year 1990 are listed below for the current manpower available:

1. Conduct creel census and attitude survey through September, 1989.

2. Count brown trout redds in selected streams and stream reaches.

3. Trap brown trout spawning runs in two tributaries of Noxon Rapids Reservoir.

4. Determine size of burbot population in Triangle Pond and transplant excess fish into Noxon Rapids Reservoir.

5. Determine if burbot planted in Noxon Rapids and Cabinet Gorge are reproducing.

6. Determine times of and places of spawning by largemouth and smallmouth bass and northern pike (Esox lucius).

7. Conduct spring and fall gill net sampling to determine population trends. Expanding perch populations may require additional personnel working gill nets. Rather than increase personnel requirements it is recommended that nets used for sampling be changed, eliminating the minimum 1.0" bar mesh section. The new nets would be made of 50-foot long sections of 1 1/4", 1 1/2", and 2" bar measure mesh. Two nets of 25-foot long 3/4" and 1" bar measure mesh would be used to collect smaller fish.

LITERATURE CITED

Huston, Joe E. 1985 Thirty-two years of fish management, Noxon Rapids and Cabinet Gorge reservoirs. Montana Department of Fish, Wildlife and Parks, Helena, MT 59620.

Huston, Joe E. 1988. Northwest Montana coldwater lakes investigations, Noxon Rapids and Cabinet Gorge reservoirs segment, Job II-1, Project No. F-46-R-1, Helena, MT 59620, mimeo, 33 pp.

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Key words: reservoir operation, brown trout, burbot, yellow perch

Waters referred to:

Noxon Rapids Reservoir	05-9328
Prospect Creek	05-5648
Vermilion River	05-7712
Marten Creek	05-4432
Cabinet Gorge Reservoir	05-8512
Bull River	05-0864
Triangle Pond	05-9685