MONTANA DEPARTMENT OF FISH AND GAME
FISHERIES DIVISION

JOB PROGRESS REPORT
Research Project Segment

State Montana

Cooperators Washington Water Power Company

Project No. F-34-R-8 Title Reservoir Investigations

Job No. I-a Title Noxon Rapids-Cabinet Gorge Reservoir Study

Period Covered July 1, 1973 through June 30, 1974

ABSTRACT

Electrofishing and gill net sampling was done in Noxon Rapids, Cabinet Gorge Reservoirs and Triangle Pond. The Company and Department started determining dissolved gas saturation levels entering Noxon Rapids and leaving Cabinet Gorge Reservoirs. Washington Water Power Company will have a deep sea diver inspect the culvert connecting Deep Pond to Cabinet Gorge Reservoir to determine feasibility of installing a standpipe.

BACKGROUND

Noxon Rapids and Cabinet Gorge Reservoirs are "run-of-the-river" hydroelectric impoundments owned and operated by Washington Water Power Company. Thompson Falls Reservoir, owned and operated by Montana Power Company, lies immediately above Noxon Rapids Reservoir. The Cabinet Gorge Dam and the first 1/4 mile of the reservoir are in the State of Idaho. The three dams impound about 63 miles of the Clark Fork River.

Intensive fishery management measures have been attempted in Noxon Rapids and Cabinet Gorge Reservoirs. Primary efforts have been planting the reservoirs with large numbers of rainbow trout (Salmo gairdneri), yellowstone cutthroat trout (Salmo clarki), brown trout (Salmo trutta), and kokanee (Oncorhynchus nerka). Small numbers of burbot (Lota lota) were introduced in Noxon Rapids Reservoir to establish the species. At this time, none of these plantings have produced a thriving sport fishery. Evaluation of planting kokanee and burbot in Noxon Rapids Reservoir since 1970 has not been completed.

Wide fluctuation of water levels, rapid water exchange rates and annual spills of the reservoir surface waters are thought to be deterrents to establishment of an attractive sport fishery. Tributary streams suitable for natural reproduction of salmonids are scarce in both reservoirs. Downstream movement of planted rainbow trout is known to deplete reservoir populations. Downstream movement of other planted species is thought to occur.

OBJECTIVES

The objectives of this job were: (1) continue engineering and design studies to determine the best method to prevent fish movement through a culvert connecting Deep Pond to Cabinet Gorge Reservoir; (2) sample to determine success of introduction of kokanee and burbot in Noxon Rapids Reservoir; (3) sample dissolved gas saturation levels at strategic points throughout the river-impoundment system; and (4) continue fish sampling in Triangle Pond.

PROCEDURES

The upper ends of Noxon Rapids and Cabinet Gorge Reservoirs were sampled with electrofishing gear and two areas of lower Cabinet Gorge and Triangle Pond were sampled using standard sinking and floating gill nets. Fish caught were identified by species, data were acquired on weights and total lengths. Scale samples were taken from gill netted game fish. Scales were not taken and fish were released alive during electrofish sampling.

Total dissolved gas levels are being determined during periods of turbine discharge and combination of turbine and spill discharge at Thompson Falls, Noxon Rapids and Cabinet Gorge dams. Sampling using a Weiss saturometer was started April 22, 1974, and is anticipated to be concluded about September 15, 1974. Nine stations are being sampled, one in each of the forebays of Thompson Falls, Noxon Rapids and Cabinet Gorge Reservoirs and two (One on each bank) below each dam. Sampling is being done weekly during the time the dams are spilling water and either bi-weekly or monthly during the time water is used for power generation only. Sampling is being done alternately by department and company personnel.

Washington Water Power Company has assumed the responsibility of researching methods for eliminating fish passage in the culvert connecting Deep Pond to Cabinet Gorge Reservoir.

FINDINGS

The tailraces of Thompson Falls Dam and Noxon Rapids Dam (upper ends of Noxon Rapids Reservoir and Cabinet Gorge Reservoir) were sampled at night using boat-mounted electrofishing gear. One night spent on each tailrace in mid-September, 1973, was to search for recently introduced burbot and kokanee in the Thompson Falls tailrace and determine presence of spawning brown trout or Dolly Varden (Salvelinus malma) in the Noxon Rapids tailrace. About 400 sub-adult burbot were planted in the upper end of Noxon Rapids in 1970 and about 400,000 kokanee fry have been planted yearly in Thompson Falls Reservoir starting in spring 1970.

Sampling below Thompson Falls Dam yielded several hundred largescale suckers (Catostomus macrocheilus), numerous northern squawfish, (Ptychocheilus oregonensis), 9 mountain whitefish (Prosopium williamsoni), and 2 rainbow trout. No burbot or kokanee were caught or observed. Numerous largescale suckers, peamouth (Mylocheilus caurinus) and squawfish, 1 westslope cutthroat trout, (Salmo clarki, subsp.), 3 rainbow trout and 2 mature brown trout were caught below Noxon Rapids Dam. Several large brown trout and Dolly Varden were seen but not captured.

Both brown trout and Dolly Varden are known to spawn in the delta of Rock Creek which enters Cabinet Gorge Reservoir about 1 mile below Noxon Rapids Dam and in subsurface springs flowing into Cabinet Gorge Reservoir about 1/4 to 1/2 mile below Noxon Rapids dam. Sampling in previous years (unreported data) indicated that both Dolly Varden and brown trout start congregating in these areas about mid-September.

Triangle Pond was sampled using gill nets in September, 1973, and gill nets and electrofishing in April, 1974. Catch from two nets fished overnight in September totalled 5 westslope cutthroat trout, 1 yellow perch (Perca flavescens) and 41 longnose suckers. Catch from two nets fished in April was 9 cutthroat trout, 3 yellow perch, 23 longnose suckers and 1 peamouth. Catch from about one hour of electrofishing was 4 cutthroat trout and one longnose sucker.

Cutthroat trout caught in April were large fish averaging 15.1 inches long and ranging from 13.7 to 16.6 inches long total length. All were examined internally and found to be mature or ripe fish. Several of the females contained eggs that would be laid this year and egg shells from previous years, and males examined were ripe. Age at maturation for most westslope cutthroat trout is four years indicating that these fish were four or more years of age. Triangle Pond was last planted in 1972 and these fish should have been about ten inches long in fall, 1973 and spring, 1974. Absence of any of these smaller fish in the catch indicates very poor or no survival. This lack of survival of the planted fish is thought to be related to the large numbers of non-game fish in the pond. It has been decided to eliminate the fish population in this pond in late summer, 1974, with a fish toxicant. This work will be done with state funds.

Washington Water Power Company officials researched methods to prevent fish passage through a culvert connecting Deep Pond and Cabinet Gorge Reservoir. At the present time, it appears the best method is installation of a standpipe as described by Huston1/. The Company will obtain a deep sea diver to examine the culvert in summer, 1974, to determine the feasibility of installing a standpipe.

Bull River Bay and Elk Creek Bay of Cabinet Gorge Reservoir were gill net sampled in April, 1974. A total of 9 bottom and 3 surface overnight gill net sets were made. Catch included 5 westslope cutthroat trout, 5 rainbow trout, 8 Dolly Varden, 7 brown trout, 7 lake whitefish (Coregonus clupeaformis), 9 mountain whitefish, 255 peamouth, 38 northern squawfish, 30 largescale and 5 longnose suckers (Catostomus catostomus) and 31 yellow perch. Diversity of species and numbers of non-game fish caught were expected.

Catch of game fish comprised about 10 percent of the total catch and was more than in previous years' nettings. Of particular interest was the size range of Dolly Varden and brown trout. Brown trout ranged from 8.7 to 19.7 inches total length while Dolly Varden ranged from 7.6 to 31.1 inches. The catch of these few fish indicates a small self-sustaining population. Small Dolly Varden and brown trout were very rare in previous samplings.

Sampling to determine gas saturation levels entering Noxon Rapids Dam and leaving Cabinet Gorge Dam was started April 22, 1974. Samples will be taken weekly during periods of spill discharge expected to extend into July. Sampling

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1/ Huston, Joe E. 1973. Noxon Rapids-Cabinet Gorge Reservoirs Study, Job Progress Report, Federal Aid to Fish Reservoir Proj. F-34-R-7, Job 1-a, Montana Department of Fish and Game, 5pp. mimeo.

will be reduced to a bi-weekly or monthly schedule during periods when all discharge is through generators. These data will be presented in next year's progress report.

RECOMMENDATIONS

Sampling efforts to determine success of planting burbot and kokanee in project waters should be intensified. Determination of total dissolved gas saturation levels entering Noxon Rapids and leaving Cabinet Gorge Reservoirs should be continued through mid-September, 1974. Triangle Pond should be treated with fish toxicant and replanted with a suitable salmonid species in late summer, 1974. Gill net surveys should be performed to determine success of the chemical treatment. Reservoir operations in Noxon Rapids and Cabinet Gorge should be examined to determine effects upon fishery habitat.

Prepared by: Joe E. Huston

Date: July 2, 1974

Waters referred to:

05-8512-05	Cabinet Gorge Reservoir
05-9328-05	Noxon Rapids Reservoir
05-9685-30	Triangle Pond