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-7 Title Reservoir Investigations

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

Period Covered July 1, 1972 through June 30, 1973

ABSTRACT

Two ponds connected to the reservoirs were surveyed and mapped. They were found suitable to support a sport fishery if fish passage through culverts could be blocked. One small bay connected to Cabinet Gorge Reservoir by a small neck was found to be unsuitable for severance from the reservoir. The Triangle Pond near Noxon, Montana was gill netted and found to contain a good population of planted westslope cutthroat trout (Salmo clarki subsp.) and small numbers of longnose suckers (Catastomus catastomus). Longnose suckers have not been reported from this pond since it was first chemically rehabilitated in 1964. One northern pike (Esox lucius) was netted from Noxon Rapids Reservoir for the first authenticated catch of this species from the reservoir. Pike have been in the Clark Fork River drainage upstream from Noxon Rapids Reservoir since the late 1950's.

BACKGROUND

Noxon Rapids and Cabinet Gorge Reservoirs are "run-of-the-river" hydroelectric impoundments owned and operated by Washington Water Power Company. The reservoirs have followed the "typical" sport fishing pattern of good angling during early years of impoundment followed by a mediocre fishery as they aged. The annual fluctuation for Noxon Rapids has been about 40 feet and 10 feet for Cabinet Gorge. Water exchange rates for both reservoirs is rapid; 75 days for Noxon Rapids and 15 days for Cabinet Gorge under normal operation.

Each reservoir contains a fish population made up of 10 non-game and 8 game species. In addition burbot (Lota lota) have been planted in Noxon Rapids and a northern pike was captured for the first time in 1972. The 18 species are listed by Huston[1].

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[1]Huston, Joe E. 1965. Investigation of two Clark Fork River hydroelectric impoundments. Proc. Mont. Acad. Sci.; 25:20-40, 1965.

Tributary streams suitable for natural reproduction of Salmonids are scarce in both reservoirs so production of a sport fishery has been attempted by planting hatchery fish. Cabinet Gorge has been planted with large numbers of Yellowstone cutthroat trout (Salmo clarki), kokanee (Ondorhynchus nerka), and rainbow trout (Salmo gairdneri). Noxon Rapids Reservoir has been planted with rainbow trout and brown trout (Salmo trutta). None of these plantings has produced a sustaining fishery. Since 1970 management has centered around establishing a sport fishery by planting species that might successfully compete with the numerous non-game fishes and survive in the fluctuating environment. Burbot and kokanee have been planted in Noxon Rapids while 2,500 catchable size rainbow trout have been planted annually in Cabinet Gorge.

Additional effort has been expended upon development of single-species sport fisheries in ponds that could be severed from the reservoirs.

OBJECTIVES

The objectives of this job were to start sampling the reservoirs to determine success of introductions of kokanee and burbot in Noxon Rapids and determine feasibility of severing three ponds from the reservoirs for development of single-species fisheries.

PROCEDURES

Flat and contour maps were made of two ponds connected to the reservoirs by culverts and one bay connected by a narrow channel. A plane table and survey chain were used to map flat surfaces and a battery-powered sonar was used to determine water depths. The field data were platted using drafting equipment provided by Washington Water Power Company. Location, size and depth of culverts were obtained from reservoir construction maps.

Triangle Pond near Noxon and Graves Creek bay of Noxon Rapids Reservoir near Thompson Falls were netted using standard experimental bottom gill nets. Fish caught were identified by species, weighed, measured (total length) and scale samples for age and growth taken from game fish caught in Graves Creek bay. Washington Water Power Company was assigned the job of researching methods of blocking fish passage in culverts connecting ponds to reservoirs.

FINDINGS

Triangle Pond is a water-filled gravel pit within the Cabinet Gorge Reservoir project boundaries having a maximum depth of 35 feet and a surface area of about 8 acres. This pond fluctuates with the reservoir but at about half the reservoir rate. It was first surveyed in 1962 and found to contain a mixed species population similar to that found in the reservoir. The pond was chemically rehabilitated in 1964 and replanted with Yellowstone cutthroat trout. The planted fish provided excellent fishing for about 3 years until infestation with pumpkinseed (Lepomis gibbosus) severely reduced trout growth and survival. The pond was retreated with rotenone in 1968 and replanted with westslope cutthroat trout (Salmo clarki subsp). The westslope cutthroat trout has provided excellent angling since summer 1969.

The primary differences between the two subspecies of cutthroat are: (1) the westslope is native to this area of Montana and highly prized by local anglers and (2) the westslope have produced larger fish than the Yellowstone in Triangle Pond. The largest Yellowstone cutthroat trout recorded was about 16 inches long while the largest westslope was about 21 inches long. The largest Yellowstone cutthroat caught by gill netting have averaged about 14 to 15 inches while westslope cutthroat trout averaged about 19 inches long.

The larger size of the westslope cutthroat trout may be, in part, due to a forage fish being present in the pond. Small numbers of small size longnose suckers were caught in gill nets fished in 1972. The larger cutthroat were found to be feeding on these suckers. Longnose suckers were found in the Triangle Pond prior to the first poisoning in 1964 but have not been caught or reported again until summer of 1972. It would appear that this species was man-introduced into the pond.

An expanding population of longnose suckers may require a third chemical treatment of Triangle Pond in future years.

Graves Creek Bay

Six overnight gill net sets were made in Graves Creek Bay of Noxon Rapids Reservoir in October 1972. Catch included small numbers of lake whitefish (Goregonis clupeaformis), rainbow trout, brown trout, peamouth (Mylocheilus caurinus), northern squawfish (Ptychocheilus oregonensis), and suckers (Catastomus catastomus and C. macrocheilus). One 21-inch long northern pike was also taken. This specimen was the first authenticated capture of a northern pike from either Noxon Rapids or Cabinet Gorge Reservoir. Northern pike were illegally planted into the Clark Fork River drainage at Dry Fork Reservoir in the late 1950's.

Dry Fork Reservoir is a small irrigation impoundment on the Little Bitterroot River near Hot Springs, Montana, over 100 miles upstream from Noxon Rapids Reservoir.

It is estimated that northern pike may not become a fishery of any importance in Noxon Rapids Reservoir. The possibility for successful reproduction is remote since reservoir drafting has eliminated almost all shoreline vegetation. The reservoir is generally below full pool for the period of March through late June each year which probably would coincide with pike spawning. The pike may be able to reproduce successfully in Cabinet Gorge Reservoir since this impoundment is generally at or near full pool during the spring. Emergent aquatic vegetation (which appears suitable for pike spawning) is abundant in localized areas. Potentially, pike could add to the sport fishery of Cabinet Gorge.

Deep Pond

Deep Pond near Heron, Montana, was mapped. It is connected to Cabinet Gorge Reservoir by a culvert under the Burlington Northern railroad tracks. The pond has a surface area of 13.4 acres and a maximum depth of about 50 feet. The culvert is reported to be a 4-foot round pipe lying about 30 feet below

full pool elevation. Vehicular access to the pond is from a county road and crossing Cabinet Gorge Reservoir project lands. Adequate land is available for development of fishermen and boat access and day-use facilities. The pond was deemed to have excellent potential for a sport fishery development if fish movement through the culvert could be eliminated.

This pond was netted, poisoned and renetted in summer 1962 to determine fish movement between the pond and reservoir. Average catch per unit effort before treatment was 40 fish per net night. Rotenone was used to treat the pond and netting immediately following treatment indicated an excellent kill. Sampling 3 months after treatment caught an average of 52 fish per net night indicating rapid restocking.

Preliminary design for preventing fish movement between the reservoir and pond indicates the best installation may be a stand pipe attached to the culvert. A schematic drawing of this stand pipe is shown in Figure 1. Deep Pond has a small spring entering in addition to probably water exchange from subsurface flows through the railroad fill. Water level within the standpipe would be controlled by the level of the reservoir creating a drop within the pipe on the Deep Pond side of the railroad fill.

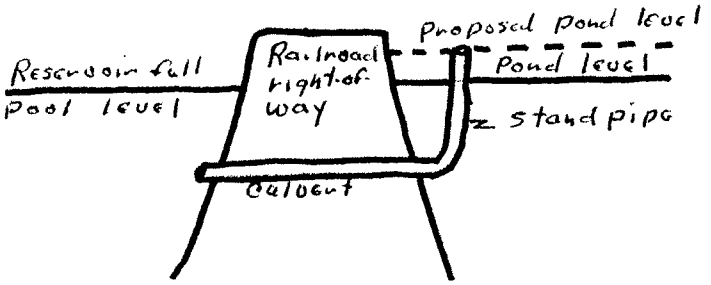

Figure 1. Schematic drawing, Deep Pond Standpipe

Installation of the standpipe may be expensive and would be difficult since it would have to be fitted to the culvert under water. Another method under consideration is the installation of a new culvert under the railroad grade several feet above the full reservoir elevation and plugging the present pipe.

Any construction on Deep Pond involves Burlington-Northern mainline railroad tracks and will have to be done with their approval. Washington Water Power Company will continue research into design of fish passage prevention and negotiate with Burlington-Northern Railroad Company.

Unnamed pond, Noxon Reservoir

Another unnamed pond connected to Noxon Rapids Reservoir near Trout Creek, Montana, was mapped. When full, this pond has a surface area of 11.5 acres and a maximum depth of 30 feet. It is connected to the reservoir by a 2-foot round culvert under the Burlington-Northern tracks. The pond is completely dewatered when Noxon Rapids is drafted more than 30 feet, an almost

yearly occurrence. Likely water exchange between the pond and reservoir is through both subsurface flows and through the culvert. This pond could support a fair sport fishery if a method could be devised to prevent fish movement through the culvert and water loss through the substrate into the reservoir. The unnamed pond has no water supply other than surface run-off and from the reservoir. Additional information on subsurface water transfer from the pond into the reservoir during periods of reservoir fluctuation is needed.

RECOMMENDATIONS

Sampling efforts should be intensified to determine success of planting burbot and kokanee into Noxon Rapids Reservoir. The Department and Company should continue efforts toward development of the Deep Pond and unnamed pond as fisheries separate from the reservoirs.

Prepared by Joe E. Huston

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Waters referred to:

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05932805
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