

PROGRESS REPORT - November 1987

Fish Management Plan - Detroit Reservoir

- Management plan adopted by the Commission 1982

- Management objectives are being met and the management program is doing well. Recreation days probably approaching 100,000.

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Adopted 1982

FISH MANAGEMENT PLAN

DETROIT RESERVOIR

Oregon Department of Fish and Wildlife

Fish Division

August 1982

TROUT MANAGEMENT PLAN

DETROIT RESERVOIR

INTRODUCTION

Detroit Reservoir is a 3,580 acre Corps of Engineers multipurpose reservoir located at river mile 48.5 on the North Santiam River (Fig. 1). The dam is located just below the confluence of the North Santiam and Breitenbush rivers. The reservoir was impounded in 1953 and is 9 mi long and over 1 mi at its widest point. Surface elevation is 1,569 ft at full pool.

The reservoir is located about 50 mi east of Salem and road access is via State Highway 22. A large overnight campground and a day use area, both with boat launching facilities, are maintained by the Parks and Recreation Division of the Oregon Department of Transportation. The U.S. Forest Service (USFS) maintains two campgrounds on the south side of the reservoir, and there are two commercial boat concessions near the town of Detroit. Most of the area surrounding the lake is USFS land, although there are some private homesites on the North Santiam arm near Detroit. The reservoir receives heavy recreational use during the spring and summer months, including fishing, swimming, boating, camping, and water skiing.

Fish passage structures were not incorporated in either Detroit or Big Cliff (reregulating dam) dams and consequently some 82 mi of stream are no longer available to former runs of spring chinook salmon and winter steelhead.

In July 1982, the Oregon Fish and Wildlife Commission accepted the Department's recommendation to manage Detroit Reservoir for hatchery fish.

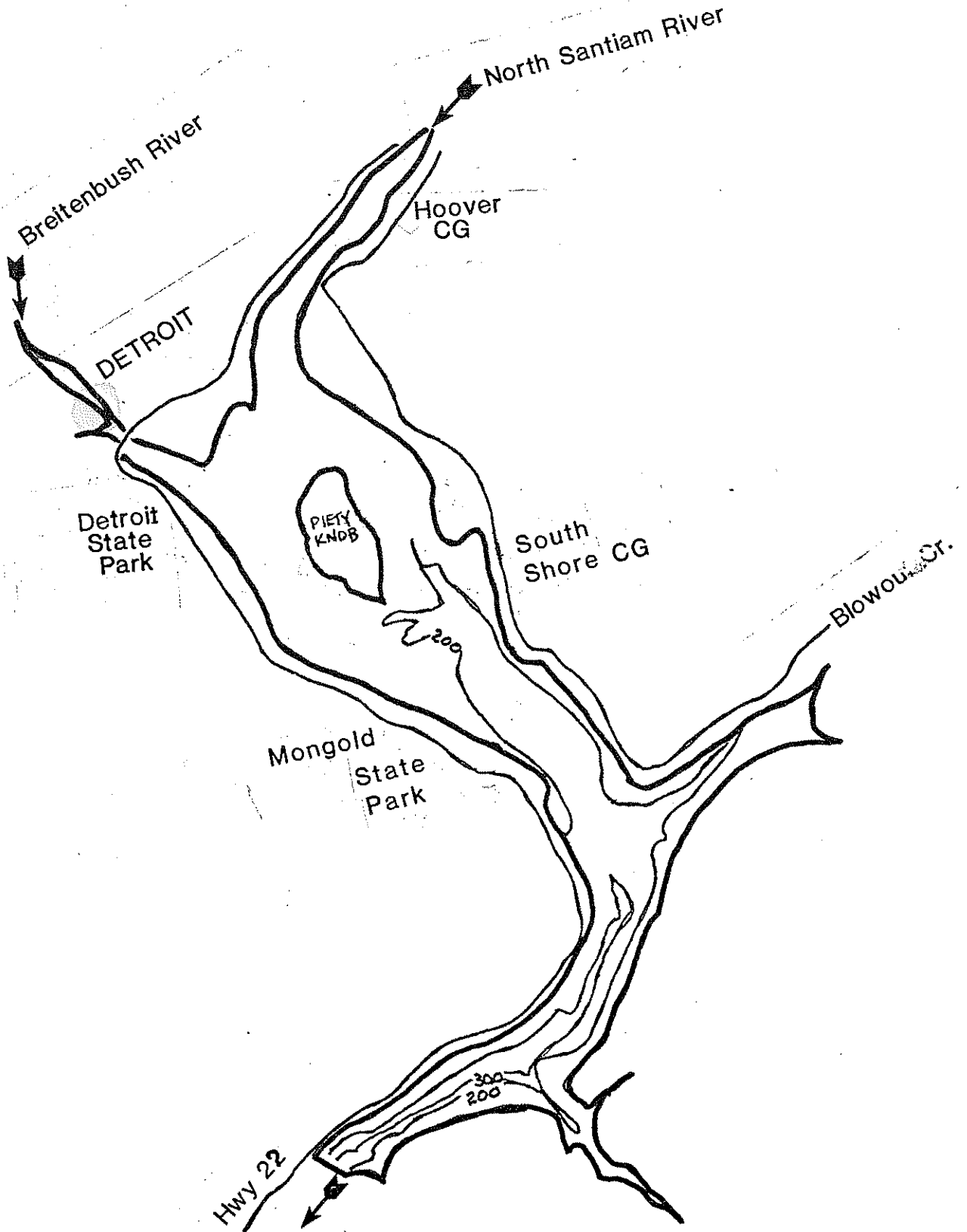
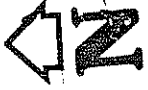
HABITAT

The evacuation of the reservoir for flood control each fall is not conducive to productivity. The reservoir is subjected to an annual drawdown from 3,580 to 1,450 surface acres and from an elevation of 1,569 ft to 1,450 ft. Approximately 35% of the 32 mi of shoreline has a gradient of 30% or greater, and 60% has a gradient of 5-30%. Maximum depth is 350 ft near the dam.

The primary food source for fish is zooplankton. Quantitative zooplankton sampling has been conducted for three successive years (1979-81). Some variations have occurred in numbers and peak periods. A good phtoplankton bloom usually occurs in June, although it was not in evidence in 1981. Opposum shrimp were stocked in 1967, but there has been no indication they survived.

Water quality is good although not highly productive. Surface temperatures may reach 70F in the summer and this temperature may extend to a depth of 100 ft by late summer.

The principle tributaries entering the reservoir are the North Santiam and Breitenbush rivers and Kinney, Blowout, Tumble, and French creeks.



FISH POPULATIONS

After an initial release of rainbow fry in 1953, both fingerling and legal-sized rainbow have been stocked annually. Kokanee were first introduced in 1959, and good populations matured in 1962, 1963, and 1964. A major flood swept through the reservoir in the winter of 1964-65 and although kokanee were stocked for a few years afterwards, they experienced low survival. Stocking of kokanee was resumed in 1979 when plankton sampling indicated the food was there. Experimental releases of other species have been made over the years, including cutthroat trout, coho and spring chinook salmon, and surplus adult steelhead.

Cottids and dace are the only indigenous non-game fish present. Brown bullhead catfish from an unknown source have been present since the reservoir was first impounded. Although the bullhead reproduce annually, limited habitat has kept their population static and low water productivity has limited fish size. Whitefish are native to the system, but are generally only found near inlet streams. Although cutthroat trout are abundant in tributaries, they are rarely caught in the reservoir.

Spring chinook periodically show up in the reservoir sport catch. These apparently escaped from the Marion Forks Fish Hatchery which is located above the reservoir. In 1973, chinook weighing several pounds appeared in the catch and 35 fish that had matured in the reservoir returned to Marion Forks Hatchery. The adults were spawned and the resultant fry released below the hatchery. The release was apparently unsuccessful as large landlocked chinook have not been reported in recent years. Chinook fingerlings were released into the reservoir in 1974 and 1975 in an attempt to produce these large fish, but the releases were unsuccessful.

FISHERY

The present fishery relies on the annual stocking of 100,000 legal-sized and 200,000 fingerling rainbow. Current releases of 100,000 kokanee will contribute to the fishery if they adequately survive. Catchable rainbow are stocked monthly from April through July. Rainbow fingerling are usually stocked in May and reach a length of 8 to 10 inches by fall. They not only contribute to the fall fishery, which goes through December, but they make a substantial contribution to the next year's catch.

An analysis of the opening day catch has shown that rainbow fingerling, when stocked the previous year at a rate of 200,000, provided 63-70% of the total catch. In 1980 and 1981, the reservoir was stocked with 20,000 catchable rainbow about 3 weeks prior to the season to provide a known number of fish from which a theoretical total population estimate was computed. With these stocking rates, respective pre-season trout populations of 74,000 and 77,000 were estimated. Only 2.5 to 11% of the population consisted of holdover catchables.

Statistical programs to determine total angler use and catch have not been attempted on the reservoir; however, a variety of car counts with expanded catch data were employed in some of the earliest years of the fishery. From 1954 to 1961, the estimated number of anglers steadily increased from 49,000 to 137,000. Present annual use is estimated to be 150,000 anglers.

The opening day catch has been periodically sampled over the 29 year history of the reservoir. The catch for the current 5 years (1977-81) has exceeded most previous year's success with boat anglers averaging from 4 to 7.8 fish each. Over the years, angling success usually experiences a "slump" during the summer months, and then markedly improves in the fall. It was for this reason that the season was extended through November in 1965 and in 1974 extended through December. Although angling pressure is not high in November and December, there is still considerable effort on days with good weather.

DISCUSSION

As a fluctuating reservoir, Detroit will never be highly productive in fish food organisms, but it does have the capability of producing reasonable fingerling growth in the summer months with available zooplankton. With the heavy angling pressure on the reservoir, it is tempting to increase fingerling stocking but this could result in a smaller, less desirable fish. It is doubtful the catchable rainbow allocation will be able to exceed the present 100,000 fish due to budget considerations. We appear to be locked into our current rainbow stocking program with little room for deviation.

We do not know if the annual stocking of 100,000 kokanee in 1980 and 1981 will prove successful. At best, their contribution may merely be a bonus and not a substantial part of the harvest. In 1963, when a high kokanee population existed, they comprised only 12% of the annual sport catch. If they fail to materialize, the 100,000 fingerling allotment could revert back to rainbow and should increase the rainbow fingerling stocking program by 33%.

The basic management challenge for Detroit is how to provide a satisfactory fishery for some 100,000 plus anglers in a body of water with limited productivity. There is a potential for harvesting more fish within the season if fish can be located with echosounding equipment during the summer and the information is given to and used by anglers. If pressure increases, anglers may have to be satisfied with a lower catch rate.

RECOMMENDATIONS

Management Option:

Manage Detroit Reservoir for hatchery trout since wild production will not meet the angler demand.

Objectives:

1. Attempt to maintain existing catches by continuing present stocking rates of 100,000 catchable rainbow, 200,000 rainbow fingerling, and 100,000 kokanee fingerling.

2. Determine best time and location for releasing kokanee and rainbow fingerlings by monitoring plankton production and peak occurrence.
3. Evaluate kokanee survival and contribution to the sport fishery.
4. Try to improve angler success by attempting to locate kokanee and/or rainbow in specific areas and depths by use of echosounding equipment and relating this information to anglers.
5. Determine the contribution of fingerlings released the previous year by monitoring the opening day catch and estimating the percentage caught of the 20,000 legal-sized rainbow released prior to opening day.
6. Determine growth of spring-released rainbow fingerling by conducting a gill net inventory in late summer.
7. Attempt to correlate angling success with echosounding findings by conducting periodic creel checks during the summer.