

MANAGEMENT PLAN

HAGG RESERVOIR

INTRODUCTION

Hagg Reservoir is a Bureau of Reclamation (BOR) multi purpose reservoir on Scoggins Creek, Washington County, 6 miles southwest of Forest Grove (Fig. 1). It was constructed in 1974 and filled the first time in 1975.

The Department of Fish and Wildlife entered into an agreement with Washington County and BOR in 1973 to provide fishery management. One hatchery pond was constructed to rear trout; trout to compensate for those lost through the unscreened outlet, and paid for by Washington County. Anadromous fish trapping facilities were constructed below the dam, adjacent to the spillway.

Washington County maintains public facilities around the reservoir and they are heavily used. Other major recreational activities, in addition to angling, are boating and swimming. BOR information from 1984 shows about 539,000 visitors.

In November 1986, the Oregon Fish and Wildlife Commission accepted the Department's recommendation to manage Hagg Reservoir for hatchery trout and wild hatchery warmwater species.

HABITAT

Description

Inundated lands, for the most part, were gently rolling, cultivated agricultural lands. Three primary streams are tributaries to Hagg Reservoir (Fig. 2): Scoggins Creek, Sain Creek, and Tanner Creek. Maximum reservoir surface acreage is 1,159; minimum is 600; and average is 991. Maximum depth is 90 feet, but about 21 percent of it is less than 25 feet. Elevation is 290 feet above mean sea level. The reservoir and tributaries above the dam (Fig. 2) were chemically treated in the late fall 1974, prior to total impounding, to minimize initial production of rough fish.

Limitations

The impoundment is too small to produce enough fish to satisfy the metropolitan area angler demand. Aquatic food production is adequate now, but will continue to decrease as the reservoir ages. The annual drawdown pulls up to 50 percent of the acreage out of food production and reduces living space. Escape cover is lacking - both from anglers and from larger predator fish. Surface water temperatures get too warm to stock trout during the summer. Smallmouth bass habitat is primarily limited to the riprapped faces of the dam and isolated road fills, and to steeply sloping features of the lower reservoir. Rearing habitat currently being used is limited to the dam face. Almost no natural cover, either topographic features or woody or non-woody vegetation, exists for use by other warmwater species that have been introduced. Water temperatures are sub-optimal but usable for most of our warm water fishes.

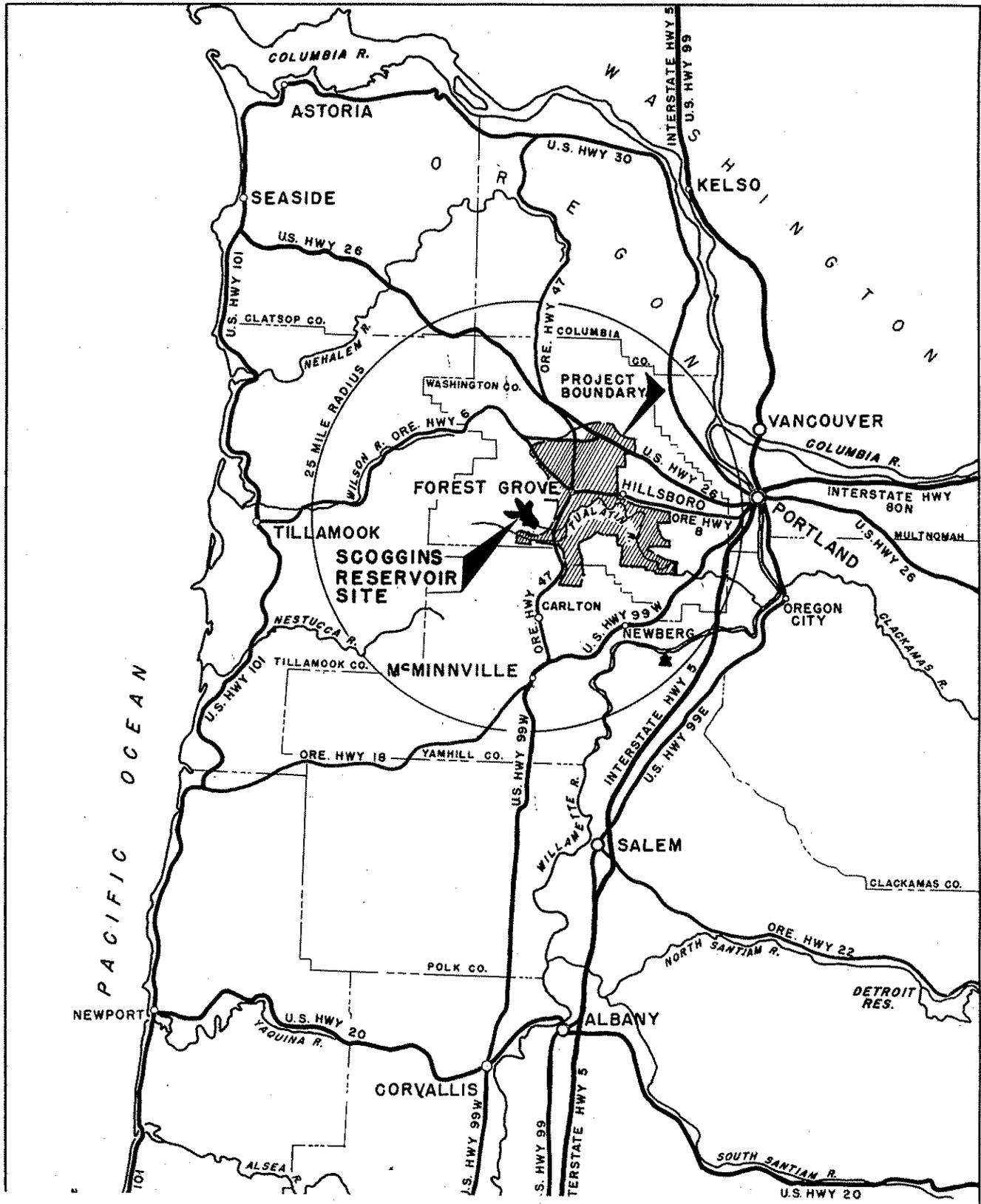


Figure 1. Area map of Hagg Lake.

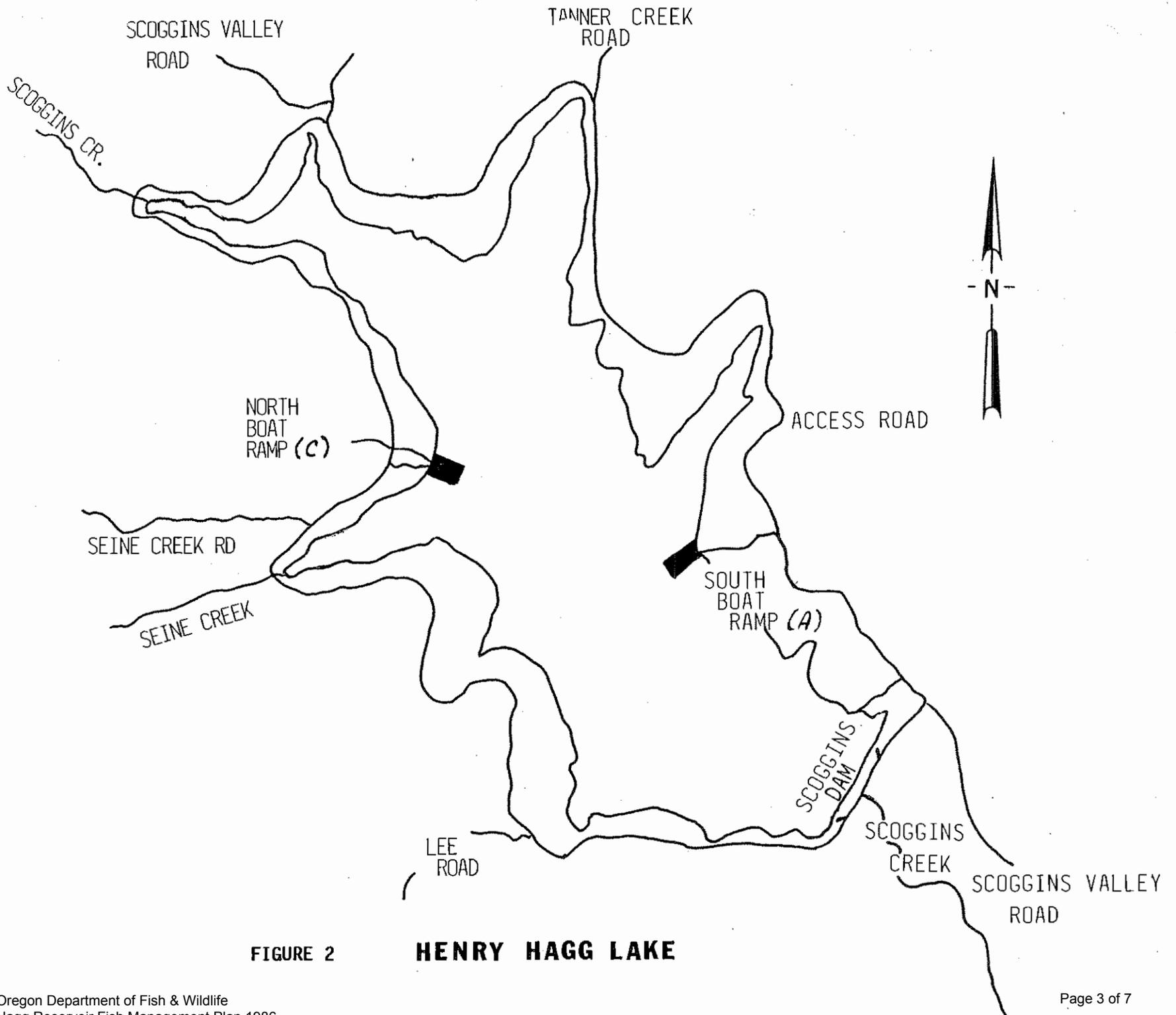


FIGURE 2

HENRY HAGG LAKE

FISH POPULATION

We began stocking Hagg Reservoir with fingerling rainbow trout in the fall of 1974. Rainbow yearlings were added beginning in 1975. Cutthroat trout are native and move into the reservoir from tributary streams.

The theoretical trout population makeup prior to opening day 1982 was as follows:

- 10,000 recently stocked hatchery yearling rainbow.
- 3,400 holdover hatchery legal trout from 1981 (29,400 stocked in 1981).
- 10,450 fingerling hatchery trout remaining from 1981 (61,000 stocked in 1981).
- 23,850 trout.

Yellow bullhead, brown bullhead, smallmouth bass, largemouth bass, and yellow perch were illegally introduced. Bullheads were first observed in net samples in 1981. Smallmouth bass were first seen in the creel during 1982 and largemouth were first captured by electrofishing in the fall of 1983. The presence of yellow perch was documented in net samples taken during the spring of 1984. All warmwater species are reproducing in the reservoir. Yellow perch reproduction appears good with four abundant year classes represented.

Coursescale suckers first appeared in nets in 1976, probably as a consequence of escaping chemical treatment. The apparent population built rapidly, but may have leveled-off in the past two years.

Redsided shiners were first captured during electro-fishing in the spring of 1985. The shiners were probably introduced with some of the illegal warmwater fish introductions.

FISHERY

Angler use is heavy. BOR estimated about 214,000 angler visits in 1979, the only year a reliable estimate of angler use was made. Numbers of anglers on opening day of trout season were 29,000 in 1981 and 16,500 in 1982.

From the first opening day it became apparent that the trout population was going to be removed quickly. Beginning in 1981, the daily bag limit was reduced from 10 to 5 in an effort to spread the trout over a longer period of time. It is doubtful that it has made much of an impact. The trout population was almost harvested by the end of opening day 1982, i.e., 16,500 anglers with a catch rate of 1.1 trout per angler for 18,150 fish from an estimated trout population of 23,850.

Anglers have appeared more satisfied to catch fewer large trout than a large number of small trout. Consequently, fingerling trout stocking has been kept at a level to produce yearling trout near 12 inches in length.

Most of the warmwater fish catch has been incidental to trout angling. A small, but steady fishery exists for smallmouth bass along the dam where almost all the smallmouth appear to occur. Some yellowperch are being caught incidental to trout angling and a few anglers are now fishing exclusively for perch.

Smallmouth bass is a popular game fish which attracts many anglers to good-populations. The nearest strong smallmouth fisheries are in the South Umpqua River and mid-Columbia River.

DISCUSSION

We have been managing Hagg Reservoir with fingerling (50 per pound) and yearling (3 per pound) rainbow trout since it filled. At present, the 60,000 fingerling and 40,000 yearling trout stocked annually provide a marginal trout fishery only through June, in spite of a reduced daily bag limit. Stocking more fingerling would produce more trout, but they would be smaller. We could probably double or triple the number of yearling trout and still not carry a good trout fishery through the season. In addition, increases in yearling trout here means a decrease somewhere else. Trout fisheries are very much in demand in the metropolitan area.

Smallmouth bass is a popular game fish which attracts many anglers to good populations. They exhibit strong cover-seeking tendencies at all life stages, preferring protection from light by virtue of depth, topography, or woody or non-woody structure. Adults tend to frequent drop-offs and areas of large boulders, crevices, standing timber or stumps. Spawning typically occurs in shallow water on gravel or broken rock. Smallmouth bass are much less adaptive in that respect than are largemouth bass. Young-of-the-year fish prefer quiet near-shore areas with dark shelter such as rocks or brush. Although smallmouth bass populations are much less constrained by the need for rearing cover, they still exhibit a strong preference for rip-rap or rubble if available.

Most of the substrate available to spawning bass and rearing young-of-the-year is mud, sand, or hardpan, none of which is preferred. Most of the reproduction now occurring probably takes place in the vicinity of the dam on clean rip-rap.

Development of this population in Hagg Lake will be limited by available habitat and by basic productivity. As the available rearing habitat along the dam becomes saturated in the future recruitment will stabilize, setting limits on the adult population. Adults will continue to utilize the deep water near the dam, where some steeply sloping erosion resistant banks occur. Some spawning and rearing may develop in the vicinity of Scoggins Creek, but little adult holding water is available.

Largemouth bass are more suited to the low gradient bottom topography and lack of rocky substrate than are smallmouths, but are still seriously constrained by low productivity and lack of cover. Although the shape of Hagg Reservoir's basin is well suited to largemouth bass, almost no structure attractive to adult bass nor shallow water vegetation for fry-rearing exists. Some of that

structure and cover could be developed, but only with considerable expenditure of money and volunteer labor. Vegetation plantings for young-of-the-year bass would have to be very extensive to have any real benefit.

Warm-water or cool-water species not currently in Oregon or having limited distribution at present could be considered as alternatives or additions to our current species inventory. Some species such as white bass/striped bass hybrids have the advantage of being pelagic fishes (therefore not requiring the structured habitat needed by black basses) and not reproducing in the circumstances present at Hagg. Numerous other species could also be considered, but the intrinsic productivity of the system limits all fishes. In addition, until we have experience with a particular species, it is very difficult to adequately predict either the success of the exotic predator or its interaction with other species present.

In order to support a fishable population of predatory fishes it is necessary to provide a prey population. It is advantageous if those prey are also desirable game fishes, such as bluegill sunfish or crappies. At Hagg Lake one combination might be large mouth and smallmouth bass with yellowperch, bluegills and/or black crappies. All species consume aquatic insects during part of the year, and bass and crappies consume small fishes. Crappies tend to occupy deeper water during the growing season than bass or bluegills. Competition with trout could exist for food produced in shallow flats and near shore zones, as well as for zooplankton, and any predator which occupied open-lake habitat could feed on fingerling trout.

It is obvious that management for trout alone provides a short term fishery. Stocking enough trout to meet angler demand is not feasible; likewise, the smallmouth bass now becoming established will not be able to substantially alter the fishery due to limited habitat. Largemouth bass are more suited to conditions available, and are popular sport fish which can be caught through much of the year. Yellowperch may provide adequate forage. If the benefits of these introductions are to be realized there must be a substantial commitment to habitat development in the form of vegetative plantings and non-living structures. Development of that habitat will require investment of time and money, and must be approved by the Bureau of Reclamation. It is entirely possible that the necessary habitat improvement might not be approved by the Bureau.

We don't have a good "two-story" fishery (trout and warm water) in the state; maybe because of angler preference and habit regardless of the species mix, past history of the water body, or inadequate time spent by us determining limiting factors and correcting them. If the alternative is chosen to manage Hagg for both trout and warm water species, potentially we can develop such a fishery.

Several inquiries have been directed at the Department relative to different management programs since the existing trout program provides such a short-term fishery and several warmwater species have become established in recent years.

RECOMMENDATION

Management Option: Manage for hatchery trout and wild and hatchery warmwater species presently used in Oregon programs.

We will continue to monitor the trout population for growth and condition, specifically since competition from other species is increasing. We will also monitor warmwater populations for growth, abundance, and size composition via creel sampling, netting and electrofishing. We need to explore the potential of improving habitat. We have the offer of volunteer labor.