

MANAGEMENT PLAN

THOMPSON VALLEY RESERVOIR

INTRODUCTION

Thompson Valley Reservoir is an irrigation impoundment on Silver Creek in Lake County. It is located within the Fremont National Forest approximately 15 miles south of the town of Silver Lake (Fig. 1). The reservoir was constructed in 1926 and is owned and operated by the Silver Lake Irrigation District. There is no minimum pool stipulation. However, under normal operation, the reservoir maintains enough water to support a year-around fish population. The Department of Fish and Wildlife manages the reservoir for a trout fishery.

The Fremont National Forest constructed and maintains two campgrounds with boat launching facilities. Angling is the most popular recreational activity, while other uses include camping, hunting and bird-watching. The Forest Service estimated that the reservoir received 9,000 recreational visitor-days of use in 1983. Use in 1984 was substantially higher.

In November 1986, the Oregon Fish and Wildlife Commission accepted the Department's recommendation to manage Thompson Valley Reservoir for hatchery trout and look at the potential of eventually introducing bass or bass hybrids.

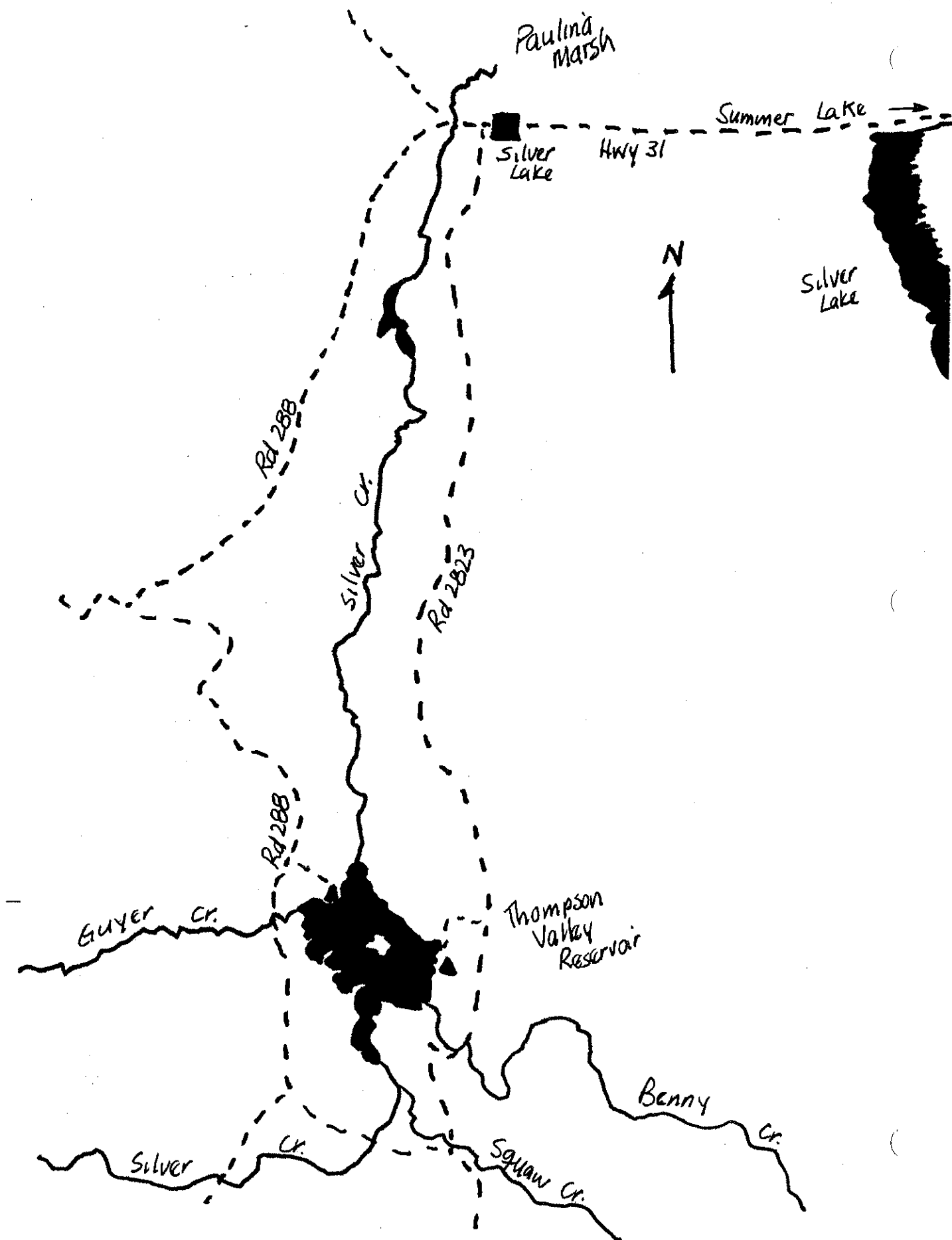
HABITAT

Description

The reservoir inundated a large wet meadow where four tributaries converged to form Silver Creek. The fringe of the meadow and a higher ridge in the center of the meadow were covered with ponderosa pine forest. Inundation of these areas left a number of snags underwater and created a timbered island. The main tributaries are Guyer, Silver, Squaw and Benney creeks. Only Guyer Creek is perennial, but all streams carry substantial flows in the spring. Maximum surface acreage is 2,550; minimum is 210; and average is 1,500. Irrigation storage at spillway elevation is 18,470 acre-feet. Volume at complete drawdown is 340 acre-feet. Maximum depth at full pool is 34 feet, and at minimum pool 7 feet. At full pool about 95 percent of the reservoir is less than 25 feet deep. Water records show that the reservoir has filled 67 percent of the time and has maintained a minimum pool of over 8,000 acre-feet 58 percent of the time. Elevation is 5,084 feet above mean sea level. The extensive shallows and relatively clear water create a large photic (lighted) zone in the reservoir making it highly productive.

Limitations

Irrigation drawdown can reduce the reservoir area as much as 90 percent during dry weather cycles. This severely reduces food production. Dense aquatic weed beds and planktonic algae blooms during July and August reduce the palatability of trout. These problems are most pronounced in low-water years.



FISH POPULATION

Thompson Valley Reservoir contains a tui chub, Gila bicolor (a native cyprinid), and stocked trout. The reservoir and tributaries have been chemically treated six times since 1955 to eliminate chubs, all without permanent success.

Except for releases of cutthroat trout fry and fingerling in 1956 and 1958, stocking has been with rainbow trout fingerling until 1971. Most trout were 100 to 150 per pound at release. In 1971 the Department began stocking limited numbers of Eagle Lake rainbow trout, a race of trout with the reputation of preying on and competing well with tui chubs. Plants from 1971-73 consisted of fall releases of small fingerling. Because of poor success with fall plants of small fish in 1974, we began holding the trout until the following spring for release at 15-40 per pound. However, low water conditions, insufficient numbers of Eagle Lake rainbow, poor survival of trout released in early spring and large numbers of chubs hampered the program through the 1970's. As a result, the reservoir was chemically treated when it was drawn completely down in 1977 and 1981. Following the 1981 treatment, the impoundment was restocked with 100,000 Eagle Lake and 100,000 Lahontan rainbow cutthroat trout, both known for their adaptation to Great Basin waters and their predation on rough fish. Survival of the 1982 plants was poor, though growth was exceptional. The poor survival was attributed to early release before the water warmed and before zooplankton production was sufficient to provide adequate food. In 1983, a one-month delay in stocking the same numbers of fish resulted in excellent survival of Eagle Lake rainbow, though cutthroat numbers remained low. Growth of both species decreased because of the building chub population. The same stocking program in 1984 resulted in fair trout survival and a good fall population of both rainbow and cutthroat from releases made in 1983 and 1984. However, trout growth and condition continued to decline through 1985.

Survival, growth and condition of Lahontan cutthroat trout has been substantially less than that of Eagle Lake rainbow. Since their introduction, Lahontan cutthroat have comprised only 24 percent of the trout in population samples. Cutthroat have reached a mean size of 10.0 inches after one growing season compared to 11.2 inches for rainbow.

FISHERY

Angler use of Thompson Valley Reservoir fluctuates greatly depending on the status of the trout population. Practically no use occurs during the first year after a chemical treatment. The Department conducted a statistical angler survey at the reservoir in 1976 and estimated a total annual use of 7,700 angler-days. In 1983, when angling was generally poor, the Forest Service estimated that the reservoir received 9,000 recreational visitor-days of use, mostly by anglers. In 1984, with excellent angling, use was very heavy, though an estimate was not made. Recreational use has subsequently dropped off as the fishery declined during 1985 and particularly 1986.

Since 1961 angler catch rates at Thompson Valley Reservoir (except years with no angling) have ranged from 0.1 to 1.1 trout per angler-hour with a mean of 0.4. As with angler use, catch rates fluctuate greatly. Since the reservoir produces large trout, anglers are generally satisfied with fewer fish than at other waters. The percentage of large trout (over 14 inches) in the catch has ranged from 4 to 86 percent, with a mean of 35 percent.

Since the 1981 chemical treatment, equal numbers of Eagle Lake rainbow and Lahontan cutthroat have been stocked. However this ratio has not been reflected in angler catch, which has consisted of 82 percent rainbow and only 18 percent cutthroat.

DISCUSSION

Thompson Valley Reservoir has great potential for providing a fishery but also has significant limitations. With good water storage and limited competition from chubs, trout have excellent survival and outstanding growth, and provide an exceptional fishery. However, efforts to permanently eliminate chubs have failed and can be expected to do so in the future and we have no control over water storage.

The past program of periodically eliminating the fish population to control chubs has been justified when it coincided with a complete drawdown of the reservoir. However, it is unsatisfactory as a routine management tool when water storage is normal. Chemical treatment is costly and is becoming more so. It also eliminates angling for one year and provides good angling for only two to three years. There also is growing concern about impacts to bald eagles, ospreys, and other wildlife species that use the reservoir.

Water levels can be expected to be adequate for fish in most years, but dry cycles will occur. The watershed is relatively small.

Stocking of domestic fingerling trout smaller than 50 per pound, in the presence of a chub population, did not generate a good fishery. Eagle Lake rainbow and Lahontan cutthroat were stocked because they are strongly piscivorous. However, as spring spawners, it has been necessary to hold them over winter in a hatchery to release at a size larger than 50 per pound. Subsequent survival and growth has not been consistent. Both species of trout have fed on chubs but neither has been able to compete successfully with a large chub population.

The contribution of Lahontan cutthroat trout to angler catches since their introduction in 1982 has been poor. Though stocked in equal numbers with Eagle Lake rainbow, they have comprised only 18 percent of the angler catch. Some anglers have complained about their poor condition and lack of fighting qualities. Growth and condition of cutthroat is also substantially less than that of the Eagle Lake rainbow.

Managing with yearling hatchery trout in contrast to fingerling stocking would be very expensive. Also, anglers accustomed to catching large fish would likely be dissatisfied with catchable trout. It is also unlikely that a

catchable trout fishery in this remote area would generate enough use to produce an economically sound return of fish to the creel.

Anglers are pleased when the reservoir is providing good angling and large trout. The sporadic nature of the fishery produces many complaints from anglers who expect consistency. This has prompted suggestions over the years that the Department introduce largemouth bass or other species into the reservoir. However, when angling is good most anglers want us to continue our present program.

Piscivorous fish species other than trout could better utilize the large chub population for forage. Chubs are distributed throughout the reservoir and most are less than five inches long, making them suitable prey for most predatory species. Largemouth bass appear well suited to the extensive shallows and abundant cover provided by snags, submerged logs and boulders, and aquatic weed beds in the reservoir. Summer temperatures, which reach the low 70's in early June, are suitable for bass reproduction. Effects of the short growing season on bass growth would be partially offset by the high productivity of the reservoir. Juvenile bass would compete with trout for invertebrates and adult bass could prey upon fingerling trout.

The objective of introducing other fish species into Thompson Valley Reservoir would be to utilize an existing overabundance of forage fish. Therefore we need not consider the introduction of other prey species. However, a littoral fish species, such as largemouth bass, would not fully utilize the forage available in open water.

An open water predator has been successfully introduced into another southeast Oregon reservoir containing abundant tui chub. The white bass/striped bass hybrid (commonly referred to simply as hybrid bass) grows well in Ana Reservoir and may be useful at Thompson Reservoir. Limited stomach sampling at Ana indicates the hybrids are preying strongly on chubs. Ana Reservoir, however, is atypical due to existence of a very large, warm, spring inflow in the reservoir bottom. The ability of hybrid bass to survive harsh winter conditions such as those at Thompson has yet to be established.

If hybrid bass were to be selected for introduction, problems in obtaining or producing them must be overcome. At present, we do not have the facilities or program to support routine stocking of the nonproducing hybrids in Thompson Reservoir. However, an experimental introduction, which occurred as the chub population recovered from chemical treatment, could be feasible.

Whether largemouth bass or hybrid bass are introduced or not, management primarily for trout appears biologically and socially most desirable. Initially at least, any introduction of species other than trout has to be regarded as experimental, and subject to loss if conditions warrant chemical treatment.

RECOMMENDATION

Management Option: Manage Thompson Water Reservoir for hatchery trout and the potential to experimentally introduce bass or bass hybrids) should be pursued. Also, should the unique circumstances and opportunities exist, chemical treatment is allowed.