

## FISH MANAGEMENT PLAN DORENA RESERVOIR

### INTRODUCTION

Dorena Reservoir is located at RM 7.5 on Row River (Coast Fork Willamette drainage) about 22 miles south of Eugene and 5 miles south of Cottage Grove in Lane County, Oregon (Figure 1). It is one of 13 Corps of Engineers multipurpose water projects in the Willamette Valley. Water was first impounded in 1949. There are no turbines or a fish ladder in the dam.

Angling, swimming, water skiing, canoeing, and sailing are all popular water sports at the reservoir. There is one large campground and one day-use area adjacent to the reservoir, both of which have developed boat ramps (Figure 2). All facilities are administered by Lane County Parks Department.

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

### HABITAT

#### Description

Dorena Dam is a 145 foot high and 3,305 foot long earth-fill structure with a concrete spillway, which creates a reservoir about three miles long. Surface area of the impoundment fluctuates from 1,815 acres at full pool to 520 acres at minimum pool (65 foot drawdown). Maximum depth is 100 feet. From September to December the reservoir is rapidly drawn down to minimum pool for flood control and is refilled by the following mid-May. Storage at normal full pool is 72,100 acre-feet, and 7,100 acre-feet at normal minimum pool. The reservoir can be drawn down to stream channel, but some large potholes retain water and fish at zero pool.

#### Limitations

Dorena is frequently turbid during winter months from shoreline wave action and suspended clay particles coming downstream from Row River. The annual drawdown severely curtails fish food and fish production. Aquatic vegetation generally is sparse except for dense reed canary grass and sedge cover in the upper drawdown zone (southeast end) of the reservoir.

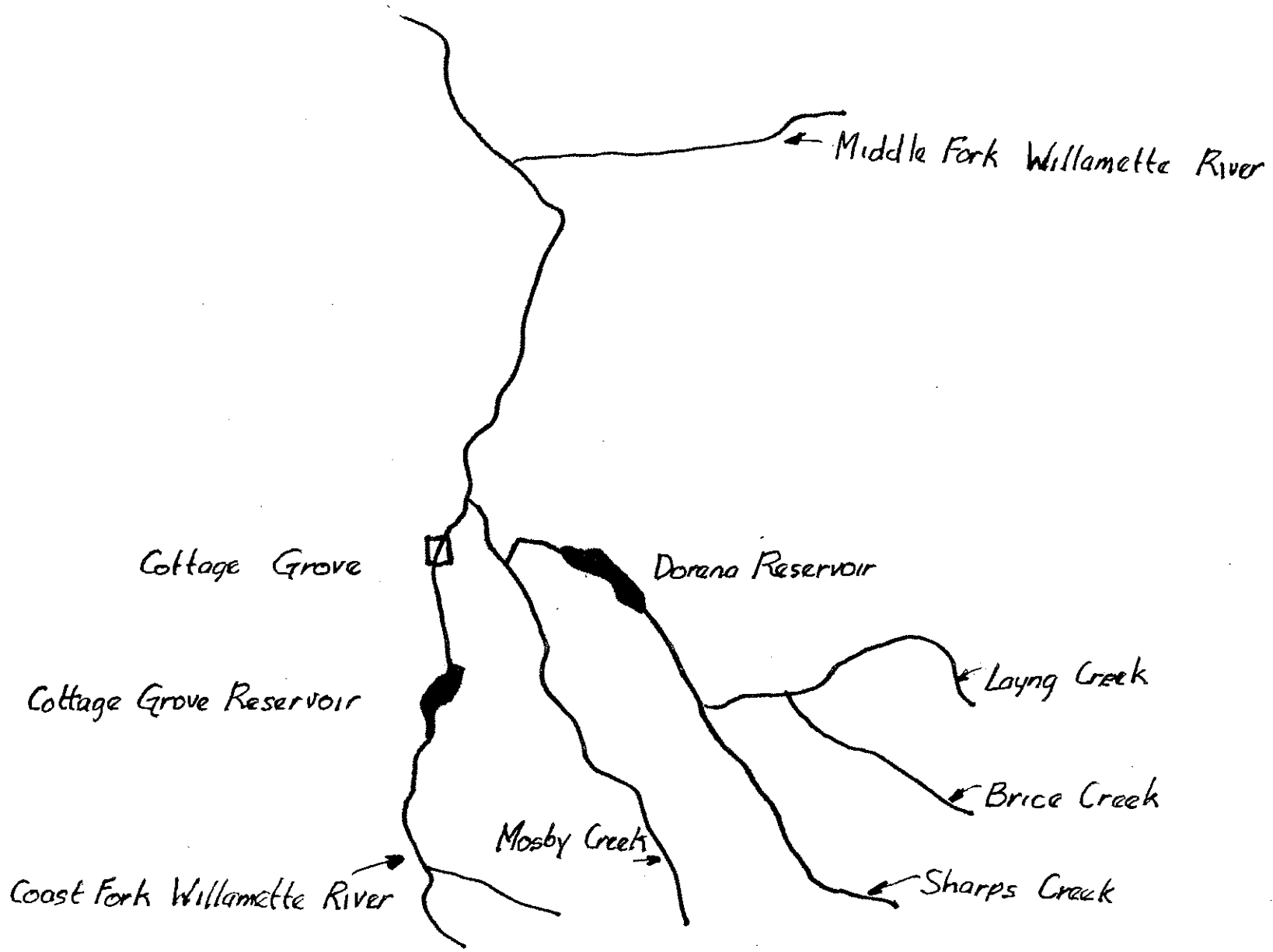


Figure 1. Coast Fork Willamette River Drainage

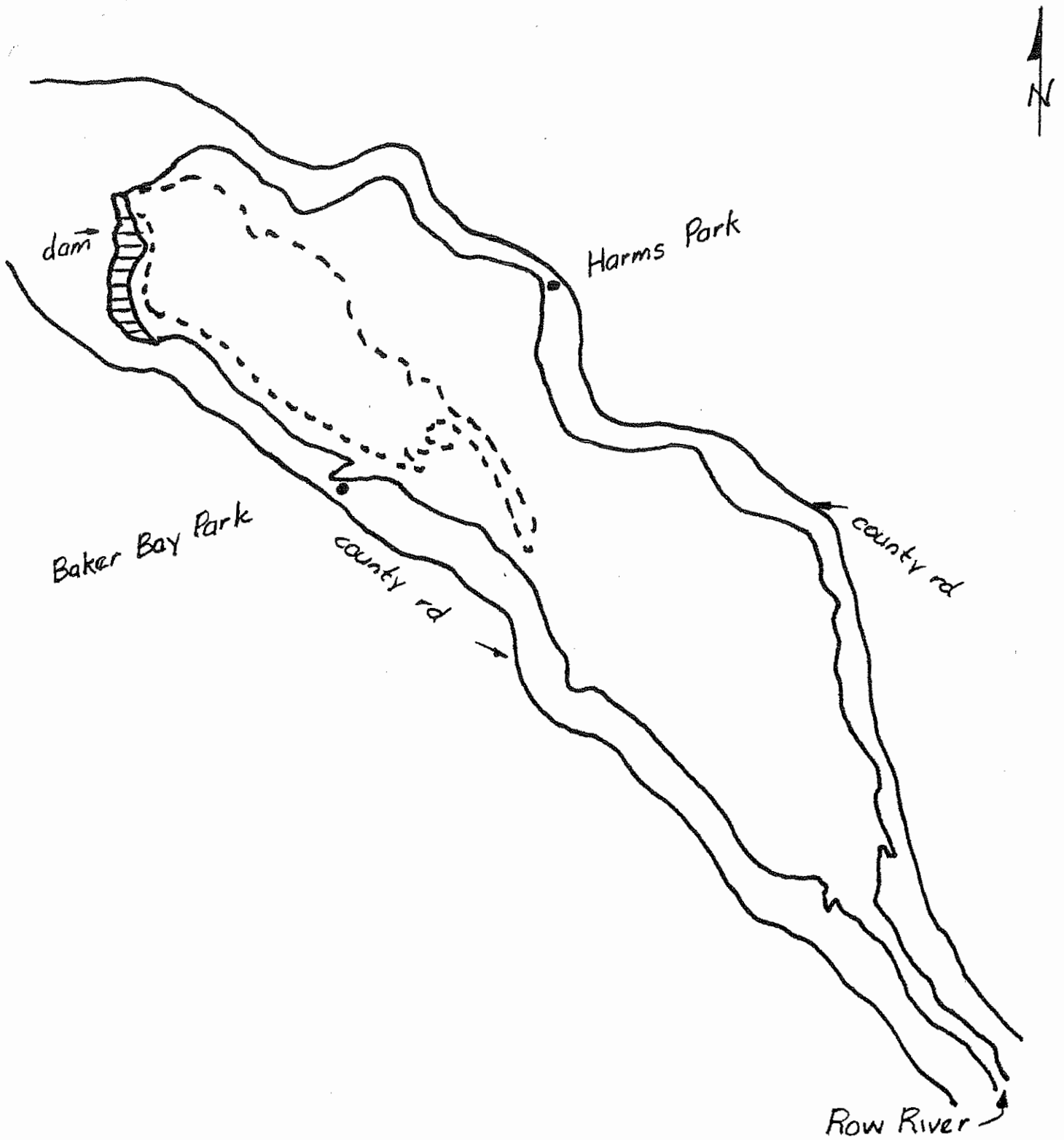


Figure 2. Dorena Reservoir

## FISH POPULATION

### Stocking History

The reservoir basin and Row River tributaries up to Wildwood Falls (6 miles above the reservoir) were chemically treated to remove undesired fish prior to initial stocking in October 1949. Annual stocking with fingerling trout (usually rainbow but occasionally cutthroat) began in 1950, and annual releases of legal-sized rainbow began in 1954.

Spring releases of fingerling trout provided a suitable sized fish the first fall, but these fish failed to carry-over to the next year in significant numbers. It is believed that many of them were flushed from the reservoir during annual flood control evacuation. This was partially confirmed by a trout fishery which materialized below Dorena Dam beginning in 1953; early season anglers that year were more successful in Row River below the dam than in the reservoir.

Largemouth bass and brown bullhead were illegally introduced into Dorena in the early years of water impoundment (1952 or 1953). Warmwater game fish, primarily brown bullhead, accounted for 46 percent of angler harvest by 1957; net sampling revealed that suckers and brown bullhead were rapidly overpopulating.

Dorena was drained and chemically treated again in September 1958. Species composition of the kill indicated a population of 60 percent suckers, 30 percent brown bullhead, 8 percent largemouth bass and 2 percent other species. No squawfish have been observed in the reservoir since this treatment. Fingerling rainbow were restocked soon after treatment. Although brown bullhead and largemouth bass were not restocked, net samples revealed these fish again present and rebuilding by 1960. Bluegill from unknown origin were first observed in 1962 and black crappie in 1977.

In 1967 and 1968, the Fish Commission of Oregon evaluated feasibility of rearing sockeye in several Willamette Valley reservoirs, including Dorena. Limnology, fish distribution and food habitat studies were conducted. Due to a lack of juvenile sockeye, juvenile coho were used for the rearing evaluation. It was concluded that Dorena was unsuitable for rearing sockeye but had potential for species tolerant of the uniformly warm water and low dissolved oxygen present in the reservoir by late summer. Loss of the reservoir's cooler bottom water, necessary for good salmonid rearing, results from water evacuation which begins in late July to augment Willamette River flows downstream.

Dorena has not been chemically treated since 1958. Complete reservoir evacuation (1970, 1974, and 1985) conducted by Corps of Engineers personnel for dam maintenance has occasionally eliminated most fish from the reservoir, including abundant sucker and brown bullhead populations. Following the 1985 evacuation, legal-size rainbow trout, juvenile and adult largemouth bass, black crappie and bluegill were reintroduced by the Corps of Engineers and Oregon Department of Fish and Wildlife. We anticipate continuing the annual releases of yearling hatchery rainbow, but fingerling will not be released in the future.

## FISHERY

Fishery management in the reservoir has consisted primarily of annual releases of fingerling and legal-size rainbow trout plus occasional introductions of warmwater species (bluegill, brown bullhead, black crappie, and largemouth bass). Due to the shallowness of the reservoir and low dissolved oxygen late in the summer, Dorena is not well suited for trout management. Previous releases of fingerling trout have met with mixed results. Many of these fingerlings, which reach legal size in the fall, were lost during reservoir evacuation for flood control each winter. Because of this loss, the fingerling trout program was discontinued in 1985.

Each spring as the reservoir fills the fishery now emphasizes catches of legal-sized hatchery rainbow released during April and May. Warm surface waters preclude trout releases after mid-May in most years. As the reservoir warms, bullhead catfish and largemouth bass fishing increases in popularity. During the fall, legal rainbow are again caught in good numbers near the head of the reservoir. At that time the trout concentrate in somewhat cooler inflow of Row River. The reservoir is drawn down to minimum pool in winter and the water is often turbid. These conditions combine to limit both access and angler success. Dorena Reservoir has been open to year-round angling since 1961.

Bass clubs have held small tournaments on Dorena since at least 1976. Catch rates for tournaments held in May or June between 1976 and 1984 were typically in the range of 0.1 - 0.2 fish (over 12 inches) per hour. That rate is similar to catch rates in most other western Oregon waters.

## DISCUSSION

The primary fish management constraints at Dorena Reservoir are (1) annual reservoir drawdown, (2) low dissolved oxygen with warm water temperatures during summer.

- 1) Annual reservoir drawdown severely curtails fish food and fish production. As the reservoir is evacuated each fall, much of the rearing area, fish food production and fish population are lost. Previous releases of fingerling rainbow and cutthroat trout during the spring did not contribute well to the fishery the following year. Most of these fish either did not survive in the warm water or left the reservoir during winter evacuation. Hatchery legal-sized rainbow trout contribute well to the fishery during the spring and fall months but must be reintroduced each spring. The annual reservoir drawdown cannot be changed because the primary project authorization is for flood control.
- 2) Warm water and low dissolved oxygen during the summer limit salmonid production. Catches of legal rainbow most frequently occur during spring and fall months. In mid-summer these trout seek deeper, cooler waters and are difficult for anglers to locate.

Periodic introductions of warm water game fish (bass, bluegill, and catfish) have survived and contributed well to the fishery. Bass, bluegill and catfish are better adapted to the summer water temperature regime than trout. Many of these fish, however (especially the juveniles), are lost each year during reservoir evacuation. Annual growth of the remaining warm water game fish is restricted due to cool winter water temperatures and reduced food production from reservoir winter drawdown.

Over-population of suckers and illegally introduced brown bullhead led to chemical rehabilitation in 1958. As expected in years immediately following chemical treatment, composition of the sport catch shifted from warm water species and trout to primarily trout. Angling success during those years ranked high among upper Willamette Valley reservoirs. Frequent chemical treatment is not a viable management option today. The primary reasons are (1) increased costs, (2) environmental concerns with the use of chemicals, (3) concerns over complete reservoir evacuation, with subsequent downstream water quality problems, and (4) concerns for loss of nontarget game fish.

Because of the increased interest in warmwater game fish at Dorena, largemouth bass, black crappie and bluegill were reintroduced following complete reservoir evacuation in January 1985. All previous warmwater fish populations were from illegal introductions and subsequent natural production.

#### RECOMMENDATION

Management Option: Manage Dorena Reservoir primarily for wild and hatchery warmwater game fish and hatchery trout. This alternative best recognizes fish resource issues and opportunities existing at Dorena Reservoir. It also takes advantage of volunteer labor offers to improve habitat.