

FISH MANAGEMENT PLAN

FOR

HOSMER LAKE

I. Adopted Policies and Objectives

635-500-706 Hosmer lake shall be managed for hatchery and natural production under the Feature Species alternative of Oregon's Trout Plan. Adopted 10-10-90; ef. 10-15-90

II. Introduction

The Fish Management Policy of the Oregon Department of Fish and Wildlife directs that fish management plans will be prepared for all waters of the state. The Oregon Trout Plan, which was prepared as a secondary level of planning under the Fish Management Policy, gives the direction for preparation of basin and subbasin plans as well as plans for individual rivers and standing water bodies.

The following document is an operational plan for Hosmer Lake.

III. Overview

Hosmer Lake and its water supply are entirely in US Forest Service ownership. The lake and adjacent lands are managed by the Forest under recreation and visual classifications. The water of the lake is state-owned and the fish resources are managed by the Oregon Department of Fish and Wildlife (ODFW).

Hosmer Lake is a natural lake located about 40 miles west of Bend via County Road 46 (Century Drive) and Forest Road 470 (figure 1).

One main campground, one overflow campground and a concrete boat ramp are managed by the Deschutes National Forest.

Hosmer Lake covers 160 surface acres and lies at an elevation of 4,950 feet. Maximum water depth is 11 feet (figure 2) and most of the lake is very shallow. The only inlet to the lake is Quinn Creek, a spring-fed stream with a flow of 25 cfs and a near-constant temperature of 42°F. The natural outlet of the lake was a basalt rock sump. In 1958, a rubble-masonry dam 75 feet long and 4 feet high was placed across the outlet by the Oregon State Game Commission. The dam was fitted with an Armco gate and 24-inch pipe to control lake level. In addition to this outlet, there are

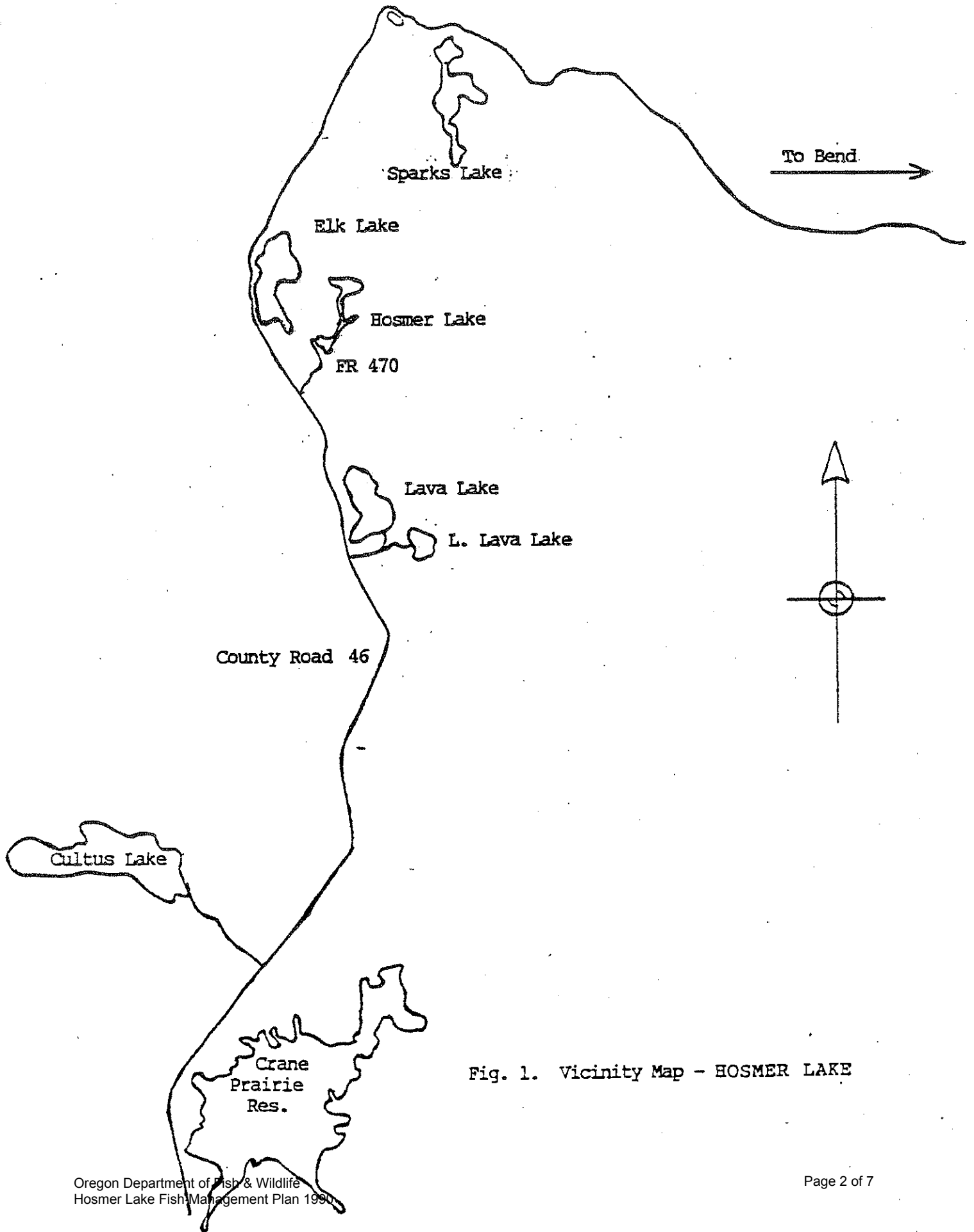


Fig. 1. Vicinity Map - HOSMER LAKE

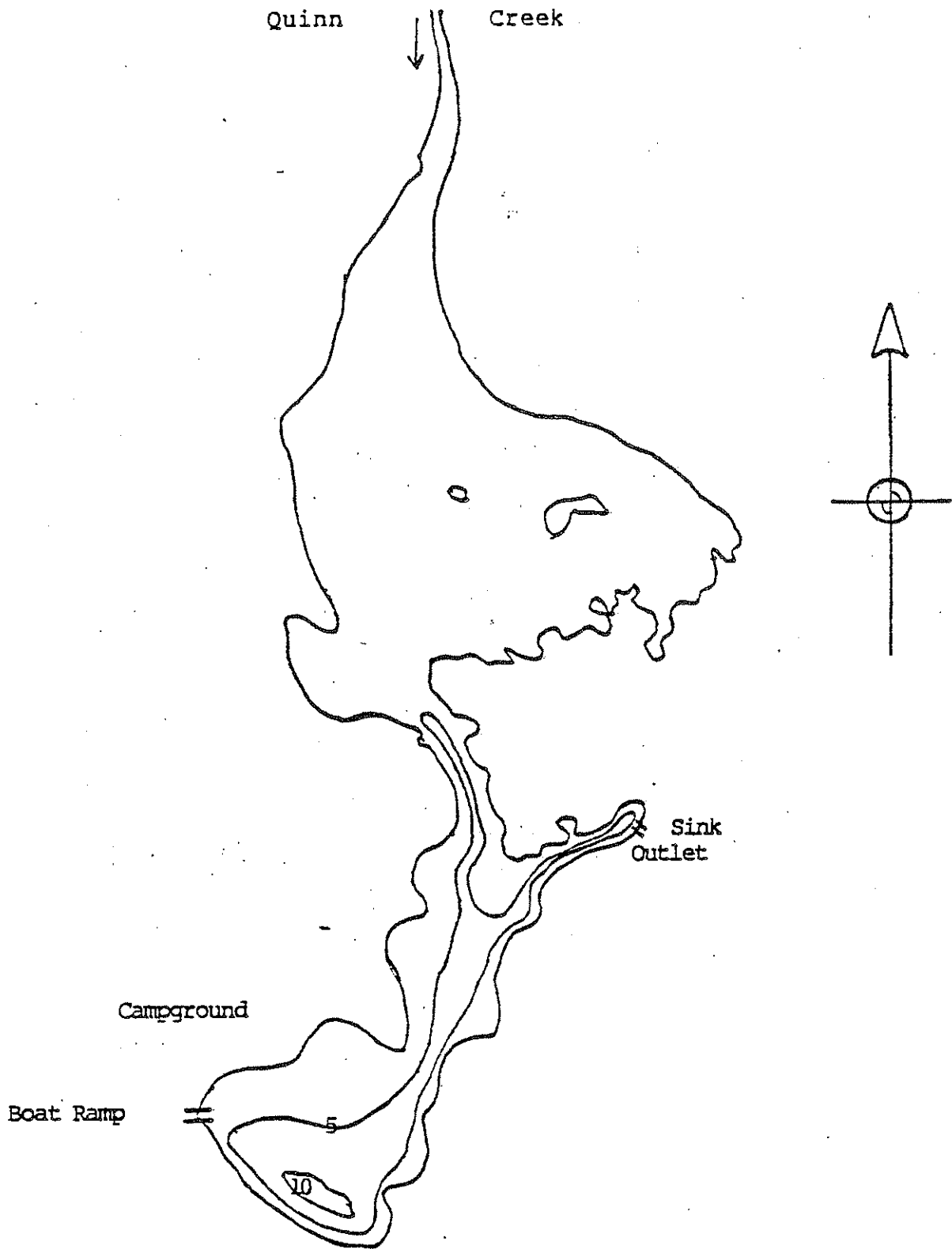


Fig. 2. HOSMER LAKE

several other water loss seeps in the upper lake. The fate of water leaving the lake is unknown.

Summer water temperatures in the lower lake reach 68°F while the upper lake temperatures rarely exceed 50°F. The pH varies from 7.1 to 8.0. Total dissolved solids (TDS) are 64 ppm. Specific conductance is 100 micromhos/cm. Dissolved oxygen ranges from 8.7 to 9.3 ppm.

The lake bottom is comprised of mud, peaty deposits and vegetative detritus. The lake shoreline is bounded by extensive beds of aquatic vegetation. There are emergent, submerged and floating plants including bullrush, water lily and pond weed. Upland, there are stands of lodgepole pine and fir. The lake evolution is toward an alpine marsh because of vegetation encroachment.

IV. Fish Resources and Habitats

Hosmer Lake is atypical of lakes in this area of the Cascades. It lies in a high snowfall zone at almost 5000 feet, yet has aquatic vegetation more typical of a natural marsh found at much lower elevations. It is shallow (11 feet maximum), yet has summer water temperatures ranging from 45-68°F. The extensive beds of vegetation provide most of the fish cover and aquatic food. The lake is very productive with caddis fly, Mayfly, midges and freshwater shrimp providing the bulk of aquatic invertebrates. An occasional crawfish can be found near rocky outcrops or sunken logs.

The north half of the lake is quite different from the south half in terms of habitat. Since Quinn Creek enters in the northern most part of the lake, that portion is characterized by cool water, shallow flats and sparse aquatic vegetation. Cover for fish in this half is primarily undercut banks and deepwater pockets along the shoreline.

The north half of the lake is joined to the south half by a narrow meandering channel characterized by extensive beds of vegetation and deeper water. This connecting channel provides an abundance of cover and aquatic food. The deepest part of the lake is in the south half. This portion of Hosmer also has extensive vegetative cover and aquatic food production.

Habitat limitations at Hosmer are as follow:

- (1) Shallow water and lack of cover in the north half of lake.
- (2) Lack of spawning habitat in Quinn Creek.
- (3) Short growing season and heavy ice cover.
- (4) Loss of water through porous basalt formations.

Hosmer Lake contains Atlantic salmon (*Salmo salar*) and brook trout (*Salvelinus fontinalis*). The lake was chemically treated in 1957 to remove a population of carp (*Cyprinus carpio*), Tui chub (*Siphateles bicolor*) and brook trout. The treatment successfully removed all carp and Tui chub, but not all brook trout. Non-game fish have not reappeared since 1957.

Since the stock was originally sea-run, the young salmon smolted at 8-9 inches and exhibited the normal pattern of scale loss and downstream migration common to Pacific salmon.

The smolting characteristic is a problem. The fish are difficult to handle at this stage because of loose scales and once in the lake, they migrate toward any outflowing water. This led to excessive losses at the lake outlet during high water periods.

Originally, it was hoped the Atlantic salmon would spawn successfully in Quinn Creek. However, they cannot ascend the six-foot falls in lower Quinn Creek. The pumice bottom and annual anchor-ice scouring also nullifies egg development. The population of salmon at Hosmer has been maintained solely by hatchery fish since 1958.

Another serious limitation on Atlantic salmon survival in Hosmer is predation by osprey and otter. The yearling-age salmon congregate in schools and cruise the lake near the surface in open water. They do not use the vegetation for escape cover. These characteristics combined with clear water make them easy targets for the efficient osprey. In some years, it appears most of the entire release of yearling salmon have been removed by osprey. Otter tend to work on the larger salmon and are especially effective at winter fishing under the ice. Otter have removed almost entire releases of brood salmon.

V. Fishery Management

The original management concept for Hosmer was to provide a quality "catch and release" Atlantic salmon fishery.

The lake was closed to angling from 1958 through 1960. It was opened in 1961 with a one fish bag limit. Beginning in 1962 and continuing today, the regulation has been "fly fishing only with a barbless hook and all salmon must be released in the water unharmed". Brook trout may be retained under the standard trout bag limit for lakes. The angling season closes September 30 to protect maturing salmon. Motors are allowed, but not while fishing. There is also a 10 mph speed limit.

From 1958 through 1965, fingerling (less than one year old) salmon were stocked. The number released annually ranged from 1,000 to 50,000 depending on success of rearing an individual age group at Wizard Falls Hatchery. Since 1966, yearling age salmon have been stocked either annually or biennially. The change to yearlings was made because of better growth rates and to assure a more stable "quality size" population. Fingerlings, surplus to hatchery needs, are stocked as forage fish.

The original brood stock of sea-run Atlantic salmon at Wizard Falls has been inbred over 30 years. Inbreeding led to serious problems with the salmon including excessive egg losses, short gill covers, scale loss while hauling and increased vulnerability to predation. In the early 1980's, a search began for a new stock of Atlantic salmon. A landlocked stock of salmon was found in Maine and the first eggs were received at Wizard Falls in 1984. The first release of these Grand Lakes Atlantic salmon into Hosmer was made in 1985. They have been stocked each year since as yearlings, and are performing well, both in terms of catch rates and survival. Brood stock is being held at Wizard Falls as an egg source and spawning age fish in Hosmer might be used in the future as a supplemental egg source.

Stocking records show brook trout have been in Hosmer since at least 1929. Not all brook trout were killed in the 1957 treatment. Stocking has been sporadic and there has been limited reproduction of brook trout in Quinn Creek and in spring seeps in the north half of the lake. Over the years, the lake has been known for its exceptional brook trout. The Oregon record brook trout, until 1980, was taken from Hosmer in 1977, weighing 6 lbs., 12 oz. Brook trout were removed by trapnet from the lake when populations were high to reduce competition with Atlantic salmon. In recent years, a few brook trout have been stocked periodically to produce an occasional trophy-size fish which anglers may keep. Many visitors to Hosmer also enjoy viewing these large trout. Brook trout are very efficient at utilizing the food supply and vegetative cover in Hosmer. The only limiting factors on the brook trout population are lack of suitable spawning habitat and cropping by anglers.

The opportunities to change management at Hosmer may be limited because of the history and popularity of the Atlantic salmon fishery.

A high quality trophy fishery for trout could be developed at Hosmer, but the featured species management alternative would be negated. The bulk of anglers and people who simply want to view fish come to Hosmer because of Atlantic salmon. The fishery has been publicized throughout North America and this publicity over the years

has potentially "locked" the Department into an Atlantic salmon program.

The primary constraints limiting management opportunities are the history, success, uniqueness and popularity of the Atlantic salmon program.

The constraint of popularity would be difficult to mitigate. Management for trophy trout might be possible, but only under the same restrictive regulations. Mitigation or enhancement of spawning areas is not practical nor especially desirable because of the potential to lose control of the population.