

PRE-REHABILITATION PLAN

Fourth of July Lake (Lincoln County)

I. PROPOSAL

A. Justification for Proposed Rehabilitation

The management objective for this lake is to provide for a production wintertime rainbow trout fishery. This type of fishery is prized as an opportunity for families to recreate together, as well as provides an appropriate challenge for winter hardy anglers.

Fourth Of July Lake has only been rehabilitated once in its history of WDFW fish management. September 30, 1958 the lake was treated with Toxaphene to eliminate common carp. Since that initial treatment and stocking Fourth Of July Lake has provided an excellent winter opener fishery.

Fourth of July is a closed system, highly alkaline basin that is close to too alkaline to support trout. As a result this lake is highly productive and has a reputation for producing rainbow trout that consistently reach lengths of greater than 20 inches at age 3. This fishery has become increasingly popular; over 500 anglers participate in the opening day fishery for this lake. A steady decline in the fishery over the past 5 years has been observed and commented on by the angling public.

Growth, condition and recruitment of rainbow trout in the fishery at Fourth of July have consistently dropped over the past 5 years. It was suspected that low water years and avian predation were contributing to the poorly performing fishery. While the aforementioned issues contributed to the poorly performing fishery, fathead minnows were detected during electrofishing sampling in 2003. Since 2003, fathead minnows have grown in abundance to the point where interspecific competition has eliminated rainbow trout spring fry recruitment, and negatively affected catchable rainbow trout condition, growth and recruitment to the fishery. Fathead minnows are known competitors for secondary productivity with rainbow trout; their presence is the largest contributor to the decline in the fishery that has been observed over the last five years.

Generally, fathead minnows would be viewed as a potential forage source for larger piscivorous rainbow trout. Several attempts have been made to stock advanced sized rainbow trout to predate upon the minnows. The stock of rainbow trout available to plant has not proven to be an effective predator on fathead minnows. The stock of fish available for use is coastal rainbow trout; this stock is more inclined to be zooplanktivorous/insectivorous than piscivorous. This stock of rainbow trout is the only stock available to WDFW to plant in our lowland lakes program. Brown trout could be stocked in the lake that would utilize the forage base, but brown trout are difficult to catch. WDFW does not have the infrastructure or money to plant sufficient numbers of brown trout into the lake. Secondly, brown trout would predate upon and limit rainbow trout recruitment into the fishery, eliminating or at least limiting the species that fulfills the WDFW management objective for this lake.

The final attempt at controlling fathead minnows through the use of piscivorous fish is currently under investigation. WDFW has stocked tiger trout (hybrid brook trout x brown trout) into the

lake in an attempt to control fathead minnows. Final sampling and analysis of the results will not be completed until August 2009. If tiger trout prove to be effective in limiting fathead minnow abundance the rehabilitation will not be conducted.

B. Physical Description of Water Proposed for Rehabilitation

1. WATER: **Fourth of July Lake**
2. LOCATION: Sec 1 and 2, T20N R38E Lincoln County
3. SURFACE ACRES: 112 MAXIMUM DEPTH: 40ft
4. VOLUME: 2016 acre-feet; 5,483,520,000 lbs H₂O
5. OUTLET: None
6. STREAM: N/A
7. PUBLIC ACCESS: Yes
8. LAND OWNERSHIP: PUBLIC 10% (DNR leased by WDFW) PRIVATE 90% (Single Landowner)
9. ESTABLISHED RESORTS: None on lake

C. Proposed Management Actions

1. WATER: **Fourth of July Lake**
2. TARGET SPECIES: fathead minnow
3. DATE LAST REHABED: September 30, 1958, treated with Toxaphene
4. PROPOSED TREATMENT DATE: September-November 2009
5. REPLANTING DATE: Spring 2010
6. SPECIES: rainbow trout
7. CATCHABLES: 20,000 FINGERLINGS: 40,000
8. PROPOSED TOXICANT: Rotenone, powder and liquid CONCENTRATION: ~3.9 ppm
AMOUNT (ROTENONE AT 5% ACT. INGRED): 21000 lbs. powder, 30 gal. liquid
9. METHOD OF APPLICATION: pumper boat slurry and airboat spray
10. CREW DESCRIPTION: Leader(s) Chris Donley, Personnel ~ 8

II. PURPOSE:

The Washington Department of Fish and Wildlife (DFW) provides many types of fisheries in response to public desires. WDFW manages both trout and warmwater recreational fisheries based on many different species of fish and levels of difficulty. Public demand for and participation in production trout fisheries is high. These fisheries are prized as opportunities for families to recreate together, as well as providing an appropriate challenge for occasional or novice anglers. Winter Lakes Opening Day trout fisheries provide a relaxed recreational opportunity, give anglers outdoor opportunity during late fall and winter months, and are also integral to the State and local economies.

Alternatives to rehabilitation are costly or impossible. To maintain a reasonably comparable fingerling-stocked trout fishery in these waters with catchable-sized fish would take 20,000 – 30,000 catchable rainbow. Stocking catchable sized fish costs almost ten times the cost of a fry plant, and Region One lacks the hatchery space and water to institute a catchable fish-stocking program as a substitute for lake rehabilitation. Spring fry survival in lakes free of competing species ranges from 50-80 percent. Regardless of fish size at stocking, interspecific competition with fathead minnows limits fish growth and condition significantly. Ultimately, reduced trout recruitment and fish quality lead to an undesirable trout fishery.

III. INTENDED OUTCOME/MEASURE OF SUCCESS:

WDFW intends to restore Fourth of July Lake to a popular, easily accessible winter trout fishery based on fingerling-stocked trout. The average catch rates should be 3 to 5 fish/angler on the opener with a sustained harvest of 2 to 3 fish/angler for the duration of the season. Spring fry should be a minimum of 12 inches, and carryover harvest should be 20 to 25 percent of the overall harvest. Success will be measured during Opening Day and random creel contacts and biological surveys. Given a reasonable chance of eliminating the population of undesirable species, the beneficial effects should last approximately 20 years under current management schemes. In addition to reasons listed under Resource, Recreational and Economic Impacts, to abandon this lake as a trout fishery is to invite other incursions across the state in trout only managed lakes.

IV. RESOURCE IMPACTS:

1. The population of the target species, fathead minnow, will be severely and negatively impacted. The aforementioned species is an exotic species that is not desired for a fishery under the current lake management plan.
2. Regional Lands, Habitat, Wildlife and Non-Game managers have been appraised of our rehabilitation plans. No unmitigated concerns have been expressed on the potential impacts to non-targeted species.
3. According to Bradbury (1986), the effects of rotenone on benthos are variable, depending on the concentrations and species. Crustaceans are most tolerant while the smaller insects are most affected. Immediate reduction of populations averages 25%, and survival doubles when access to bottom sediments exists. Benthic communities generally recover to at least pretreatment levels within two months. Zooplankton is more severely impacted, and communities generally take two to twelve months to fully recover. While relatively tolerant of even heavy doses of rotenone, amphibians (especially larval) are at risk, and herptiles are affected somewhat less so. Almost no chance of eliminating an entire population exists.
4. During treatment the lake will be closed to angling, and other recreational uses such as boating, and swimming will be curtailed during the planned period of treatment. There will be a loss of the winter fishery for 2010 associated with our activities. The lake will be stocked to provide a fishery with catchable sized and fall fry rainbow trout prior to the Winter Lakes Opener in 2010.
5. Professional biologists and other naturalists have visited these sites frequently over the past 50 years. To our knowledge, no endemic, rare, threatened or otherwise listed species will be impacted by the rehabilitation.

V. MITIGATING FOR ADVERSE IMPACTS:

1. Trout fry survival and growth for the proposed water will be greatly enhanced, and the future trout fishery will attain the previous status. No removal of dead fish is planned as the nutrient base contained therein is best returned to the lake.

2. Early Spring rehabilitation will not interfere with waterfowl late spring nesting. The eradication fathead minnow will also benefit waterfowl through increased production of invertebrates. Stocked populations of trout will not be anywhere near as numerous as the current fathead minnow population.

3. Livestock use of the waters to be treated will not be significantly affected. The concentration of rotenone used in the treatment will be far below that considered harmful to mammals. The landowners will be notified of the rehabilitation and consequent exposure of livestock to rotenone.

4. No endemic, rare, threatened or otherwise listed species are known to inhabit this area.

5. Protective wear for the eyes, face and hands will be available for all purveyors of rotenone.

6. Lakes will be posted according to Department of Ecology guidelines to notify the public of the treatment and discourage the public from possessing or consuming dead fish.

VI. RECREATIONAL IMPACT:

See Section III.

Angler success should reach 3 to 5 fish/angler on the opener and 2-3 fish/angler sustained harvest for the duration of the season. Yearling trout should average about 12 inches. Carryovers should be expected to be about 20 to 25 percent of the catch and average 15 inches for 2-year-olds and 18 inches for 3-year-olds.

VII. ECONOMIC IMPACTS:

An estimated minimum of 5,000 trips annually will be made to Fourth of July Lake as a result of the proposed management action would result in an increased economic impact totaling \$189,500 per year (1991 dollars; based WDW estimate of \$37.90 per trip). If the project is successful for 10 years it will generate a minimum of \$1,895,000 in economic activity. The total annual cost to plant these lakes with rainbow trout is less than \$10,000. The rehabilitation will cost the Department about \$50,000 (including costs of rotenone, time, travel). The investment by the state is realized within 2 years following treatment.

Estimates for the cost of the enforcement action necessary to curtail the activity of the individuals responsible for illegal fish plants are not available. However, this cost might be looked upon as a statewide expenditure since some preventive benefit would certainly occur as perpetrators find out the Department takes illegal transport and planting of fish very seriously.

VIII. RELATED MANAGEMENT ACTION:

See I.C.6. for fish planting data

Increased penalties and enforcement activities are desirable if WDFW is ever going to dissuade illegal stocking of state managed waters. Educating the public about the costs in Department dollars and time with emphasis on what WDFW might be able to accomplish with those resources would be a very worthwhile activity for O & E. This may result in stemming recruitment to this ill advised group and turning local opinion against the offenders.

IX. PUBLIC CONTACT:

Public meetings will be held during July 2009 in Ephrata, Spokane, Colville and Olympia to explain WDFW's 2009-10 rehabilitation proposals, assess public opinion, and address local concerns.

Initiated by: Region One, District 2 Fisheries Management