

BULL TROUT ASSESSMENT - WILLAMETTE/MCKENZIE

9405300

SHORT DESCRIPTION:

Monitor distribution, population trends, and habitat use of bull trout populations in the Upper Willamette Basin; draft and implement a reintroduction proposal for bull trout in Middle Fork Willamette population.

SPONSOR/CONTRACTOR: ODFW

Oregon Department of Fish and Wildlife
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SUB-CONTRACTORS:

N/A

GOALS

GENERAL:

Maintains biological diversity, Maintains genetic integrity, Increases run sizes or populations

RESIDENT FISH:

Research, M&E

NPPC PROGRAM MEASURE:

10.5A.1

RELATION TO MEASURE:

This project includes bull trout population and habitat surveys in the Middle Fork Willamette and McKenzie River systems as specified in Measure 10.5A.1.

TARGET STOCK

Bull trout

LIFE STAGE

MGMT CODE (see below)

(P),W, E (Middle Fork
Willamette Sub-basin),
RSH,RSL

AFFECTED STOCK

Spring Chinook Salmon

BENEFIT OR DETRIMENT

Beneficial

BACKGROUND

STREAM AREA AFFECTED

Stream name:

McKenzie River/Middle Fork Willamette River; and tributaries

Subbasin:

Upper Willamette

Stream miles affected:

160

Land ownership:

both

Hydro project mitigated:

Blue River, Cougar, Dexter, Hills Creek,
Leaburg/Waltermville (federally licensed), Lookout
Point, Trail Bridge (federally licensed)

HISTORY:

Project initiated in 1994. Three field seasons of collecting field data have been completed. Project has generated major commitments of time and funding from the U.S. Forest Service, Eugene Water and Electric Board, local and national angling groups, and others. Monitoring information is being used by the McKenzie Watershed Council, U.S. Forest Service, and Oregon Department of Fish and Wildlife in land management decisions.

BIOLOGICAL RESULTS ACHIEVED:

During the course of this study (1994-1997), we have increased our knowledge of bull trout in several ways. We have surveyed 85 miles of stream, refining our knowledge of bull trout distribution in the Upper Willamette Basin. No bull trout were found in the Middle Fork Willamette in these surveys. We have developed indexes of bull trout abundance such as pool and redd surveys, and juvenile counts at Anderson Creek. These indexes have provided indications of the health of each population and allowed us to focus recovery efforts. Radio transmitters implanted in adult bull trout have increased knowledge of bull trout habitat use, seasonal movements, and spawning.

PROJECT REPORTS AND PAPERS:

FY95 1st Qtr report sent 2/95. FY95 3rd Qtr report sent 7/95. FY95 4th Qtr report sent 10/95. 1995 Annual report sent. FY96 1st Qtr report sent 1/96. FY96 3rd Qtr report sent 8/96. FY96 4th Qtr report sent 11/96. 1996 Annual report completed. FY97 1st Qtr. report sent 1/97

ADAPTIVE MANAGEMENT IMPLICATIONS:

Identification of bull trout habitat during previous years of the project has allowed us to refine our research and conservation efforts in the upper Willamette Basin. We have learned to focus our efforts on specific population indexes, such as standard pool counts and spawning surveys. Habitat information will also be applied to the development/implementation of a reintroduction plan for bull trout in the Middle Fork Willamette River.

Knowledge gained from this project will aid us in mitigating the impacts of hydro development and land management practices on bull trout and chinook salmon in the Upper Willamette Basin. This knowledge will be useful for planning and lessening the impacts of projects such as retrofitting temperature control to Cougar Reservoir.

PURPOSE AND METHODS

SPECIFIC MEASUREABLE OBJECTIVES:

Quantifiable information on bull trout populations in the Upper Willamette Basin. Information about distribution, population trends, and habitat use of bull trout populations will aid in population monitoring, bull trout reintroductions, and in mitigation of hydroelectric/flood control projects.

CRITICAL UNCERTAINTIES:

No apparent risks. Possible uncertainties include stochastic events (e.g. flooding), land management practices, and angling mortality that may affect bull trout survival.

BIOLOGICAL NEED:

This project is being conducted under Section 9.3G (1) of the Northwest Power Planning Council's Resident Fish and Wildlife amendments which states the need to "fund bull trout population and habitat surveys in the Middle Fork Willamette and McKenzie River systems and habitat improvements identified in the surveys to benefit bull trout." The project is consistent with the ODFW McKenzie Sub-basin Fish Management Plan. Bull trout have been classified as warranted but precluded under the ESA.

HYPOTHESIS TO BE TESTED:

1) H0: Bull trout are no longer present in the Middle Fork Willamette River (MFW), Ha: A remnant population of bull trout exists near the headwaters of the MFW. 2) H0: Bull trout numbers are increasing or remaining constant in the Willamette system, Ha: Bull trout numbers are declining in the Willamette system. 3) H0: Bull trout populations are limited by habitat quantity and quality in the Upper Willamette Basin, Ha: Habitat does not limit bull trout population size.

ALTERNATIVE APPROACHES:

N/A

JUSTIFICATION FOR PLANNING:

N/A

METHODS:

We will describe the range of bull trout in the Upper Willamette Drainage Basin system by surveying tributaries by snorkeling or electrofishing. We will continue to monitor the population size using a downstream migrant trap in Anderson Creek and snorkel counts in the McKenzie River and South Fork McKenzie. Bull trout captured in the downstream migrant trap will be transferred to newly opened habitat in Sweetwater Creek by the USFS. Spawning surveys will be conducted to identify spawning areas and estimate the number of spawners. We will continue to monitor the movements of radio-tagged bull trout in the mainstem McKenzie to observe year-round habitat use and behavior. Additional bull trout will be radio-tagged on the South Fork McKenzie to locate spawning areas. We will evaluate the effectiveness of existing habitat improvement projects for bull trout within the Basin. We will produce and implement a reintroduction plan for bull trout in the Middle Fork Willamette River.

PLANNED ACTIVITIES

SCHEDULE:

Planning Phase **Start** 1994 **End** 1997 **Subcontractor** no

Task 1994: Original project planning 1997: Plan reintroduction of bull trout into Middle Fork Willamette River.

Implementation Phase **Start** 1994 **End** 2002 **Subcontractor** no

Task 1997 Continue monitoring radio-tagged bull trout in mainstem McKenzie River. 1997 Continue redd surveys in Anderson and Olallie creeks and McKenzie River above Trail Bridge Reservoir. 1997 Continue adult counts in standard pools on the McKenzie River and South Fork McKenzie. 1997 Continue radio tagging adult bull trout above Cougar Dam and track to spawning areas. 1997 Continue transferring bull trout from Anderson Creek to Sweetwater Creek. 1998-2000 Continue to monitor bull trout in the Upper Willamette Basin through standard pool counts, redd surveys, and radio-tracking. 1998-2001 Begin reintroduction of bull trout to Middle Fork Willamette River by transferring fry from Anderson Creek to Middle Fork tributaries. 1998-2002 Transfer of bull trout fry from Anderson Creek to Middle Fork Willamette as part of reintroduction plan.

O&M Phase **Start** 1994 **End** 2002 **Subcontractor** no

Task Equipment repair and maintenance

PROJECT COMPLETION DATE:

2002

CONSTRAINTS OR FACTORS THAT MAY CAUSE SCHEDULE OR BUDGET CHANGES:

None

OUTCOMES, MONITORING AND EVALUATION

SUMMARY OF EXPECTED OUTCOMES

Expected performance of target population or quality change in land area affected:

This project will provide information that resource managers can use to better manage bull trout populations in the McKenzie and Middle Fork Willamette watersheds. With better management, these populations can be expected to slowly increase and become sustainable over time. These fish are the largest aquatic predator in the food web of these systems.

Present utilization and conservation potential of target population or area:

Bull trout in the Upper Willamette Basin are currently divided into three populations: Mainstem McKenzie, South Fork McKenzie (above Cougar Dam), and Trail Bridge Reservoir. The Middle Fork Willamette population has probably been extirpated. The mainstem McKenzie population is the largest and most stable in the Basin, with a constant or slowly increasing population size. The number of bull trout in the population above Cougar Dam is unknown but thought to be small. The Trail Bridge population is small but probably increasing in size due to transfers of bull trout fry to newly available habitat in Sweetwater Creek. Current fishing and land use regulations, increased law enforcement efforts to curb angling mortality, and habitat improvement projects should result in a slow increase in all populations.

Assumed historic status of utilization and conservation potential:

Bull trout in the McKenzie existed as one population ranging from Tamolitch Falls and the upper South Fork McKenzie to the Willamette River, possibly as far north as the Long Tom River. There was probably occasional genetic exchange between this population and a Middle Fork Willamette bull trout population that ranged from near Oakridge upstream to the upper reaches of Salt Creek, North Fork Middle Fork Willamette, and various tributaries of the Middle Fork Willamette.

Long term expected utilization and conservation potential for target population or habitat:

The goal is to establish sustainable bull trout populations in the Upper Willamette Drainage Basin with eventual reconnection of populations.

Contribution toward long-term goal:

The project will provide quantifiable information on bull trout in the Upper Willamette Basin and allow ODFW to fulfill its role in reintroduction efforts.

Indirect biological or environmental changes:

The project will help identify bull trout habitat. Conservation of bull trout and bull trout habitat will likely improve conditions for other fishes (e.g. chinook salmon) and terrestrial species .

Physical products:

We are currently monitoring five radio-tagged bull trout, and we expect to add to the number of tagged fish throughout the 1997 season. More genetic samples will be taken in addition to the 13 samples already collected.

Environmental attributes affected by the project:

Habitat improvement/protection in areas of bull trout habitat may result in reduced stream temperatures, beneficial flow changes, and improved land use practices. Angling regulations may change and enforcement of current regulations may be enhanced in some areas to protect bull trout.

Changes assumed or expected for affected environmental attributes:

Changes in land use practices may include increased riparian buffers resulting in cooler, more shaded streams. Decreased runoff potential combined with increased levels of coarse woody debris may lead to a close approximation of historic flows with more side channel habitat for bull trout rearing areas. Modifications to angling regulations and enforcement may result in lower angling mortality to bull trout and other species.

Measure of attribute changes:

N/A

Assessment of effects on project outcomes of critical uncertainty:

We will assess the effects of critical uncertainties by establishing baseline measures of bull trout abundance (through pool counts and redd surveys) throughout this multi-year project and correlating these measures with variations in factors such as flow, angling pressure, and stream temperatures.

Information products:

Information learned about bull trout life history will be summarized in quarterly, annual, and final project reports. Information and reports can also guide the Upper Willamette Bull Trout Working Group's efforts to coordinate a regional strategy for bull trout conservation and reintroduction in the Basin.

Coordination outcomes:

Coordination within the Bull Trout Working Group and between other cooperating agencies has produced information on the spatial and temporal distribution of bull trout in the Upper Willamette Basin, population sizes, monitoring techniques, and coordinated reintroduction plans.

MONITORING APPROACH

Bull trout population status can be monitored in several ways. We will measure relative adult abundance with standard pool surveys, spawning activity with redd surveys, and spawning success/juvenile abundance with the Anderson Creek trap. Success of reintroduction efforts will be measured by similar monitoring efforts in the future on the Middle Fork Willamette River.

Provisions to monitor population status or habitat quality:

Bull trout population status can be monitored in several ways. We will measure relative adult abundance with standard pool surveys, spawning activity with redd surveys, and spawning success/juvenile abundance with the Anderson Creek trap. Success of reintroduction efforts will be measured by similar monitoring efforts in the future on the Middle Fork Willamette River.

Data analysis and evaluation:

Data, such as pool counts and juvenile numbers, collected during this year's portion of the project, will be summarized and compared to counts of previous years to evaluate population trends.

Information feed back to management decisions:

Information on bull trout population size and habitat requirements will be used to manage the populations in the future, including decisions for reintroduction plans, angling regulations, law enforcement focus, habitat protection, and restoration.

Critical uncertainties affecting project's outcomes:

The major critical uncertainties in this project are a result of background environmental variation. We may resolve these uncertainties by correlating trends in bull trout abundance with trends in environmental variables such as stream flow. Broader-scale research into the basis for variability in watersheds is not covered by this project. For example, the project does not assess why some streams are suitable for bull trout and others are not.

EVALUATION

The success of the project can be assessed through project reports, which will include findings about spawning areas, distribution, and critical habitat needs. In addition, re-introductions can be evaluated by assessing population status in receiving waters.

Incorporating new information regarding uncertainties:

New information about variations in watersheds may lead to increased knowledge of bull trout habitat requirements that can be incorporated into the project's bull trout monitoring plans.

Increasing public awareness of F&W activities:

Participating agencies have had and will continue to have frequent contact with the news media about the efforts to restore bull trout in the Willamette Basin. Increased knowledge of bull trout resulting from this project may prompt new angling regulation, directly impacting the public. Alteration of hydropower project operations based on knowledge of bull trout habitat and migration requirements would also increase public awareness. Finally, ODFW employees have frequent contact with the public while working on this project in the field. Answers we give to public inquiry greatly increase public awareness of bull trout.

RELATIONSHIPS

RELATED BPA PROJECT

9405400

RELATIONSHIP

The proposed project would be a continuation of project # 9405400

RELATED NON-BPA PROJECT

Upper South Fork McKenzie aquatic restoration/USFS
South Fork McKenzie wood replacement project/USFS
Paradise Side Channel hazard tree replacement/USFS
Buck Side Channel enhancement projects/USFS
Anderson Creek study reach/USFS

RELATIONSHIP

cooperator
cooperator
cooperator
cooperator
cooperator

Horse Creek instream projects/USFS	cooperator
Leaburg Lake large woody debris placement/EWEB	cooperator
Deer Creek large woody debris placement/USFS, EWEB	cooperators
Sweetwater Creek bull trout transplant/USFS, EWEB	cooperators
Olallie Creek culvert replacement/USFS, ODOT, EWEB	cooperators
Sweetwater Creek culvert replacement/USFS, ODOT, EWEB	cooperators

OPPORTUNITIES FOR COOPERATION:

This project has the cooperation in both funds and personnel of Oregon Department of Fish and Wildlife (ODFW), Willamette National Forest (WNF), Eugene Water and Electric Board (EWEB), Oregon Department of Transportation (ODOT), Oregon Trout, and the Federation of Flyfishers. Without these public and private efforts, this project would be considerably less cost effective.

COSTS AND FTE

1997 Planned: \$47,800

FUTURE FUNDING NEEDS:

<u>FY</u>	<u>\$ NEED</u>	<u>% PLAN</u>	<u>% IMPLEMENT</u>	<u>% O AND M</u>
1998	\$85,000	5%	90%	5%
1999	\$10,000	5%	90%	5%
2000	\$10,000	5%	90%	5%
2001	\$10,000	5%	90%	5%
2002	\$10,000	5%	90%	5%

PAST OBLIGATIONS (incl. 1997 if done):

<u>FY</u>	<u>OBLIGATED</u>
1994	\$37,579
1995	\$21,370
1996	\$58,151
1997	\$83,222
TOTAL:	\$200,322

Note: Data are past obligations, or amounts committed by year, not amounts billed. Does not include data for related projects.

<u>FY</u>	<u>OTHER FUNDING SOURCE</u>	<u>AMOUNT</u>	<u>IN-KIND VALUE</u>
1998	USFS	Unknown	Unknown
1999	USFS	Unknown	Unknown
2000	USFS	Unknown	Unknown
2001	USFS	Unknown	Unknown
2002	USFS	Unknown	Unknown

OTHER NON-FINANCIAL SUPPORTERS:

Oregon Council of the Federation of Flyfishers, McKenzie Flyfishers, Oregon Trout

LONGER TERM COSTS: N/A

1997 OVERHEAD PERCENT: 20.5% until 9/30/97

HOW DOES PERCENTAGE APPLY TO DIRECT COSTS:

Applies to total direct project costs

SUBCONTRACTOR FTE: N/A