

MEADOW CREEK INSTREAM STRUCTURE AND RIPARIAN EVAL.

9703100

SHORT DESCRIPTION:

Continue the life history work of smolt outmigrant trapping, juvenile rearing and habitat capability, and determination of winter habitat capability for summer steelhead. Riparian vegetation work includes assessment of cattle and big game impacts on species, biomass, and recovery rates.

SPONSOR/CONTRACTOR: USFS

USFS, Wallowa -Whitman National Forest, La Grande Ranger District
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SUB-CONTRACTORS:

Dr. J. Boone Kauffman, Department of Fish & Wildlife, Oregon State University
Dr. James Sedell, Land/Aquatic Interactions Group, PNW Research Station

GOALS

GENERAL:

Adaptive management (research or M&E)

ANADROMOUS FISH:

Research, M&E

NPPC PROGRAM MEASURE:

no response

RELATION TO MEASURE:

This project relates to Measure 205 coordinated Implementation, Monitoring and Evaluation. As such this project will address rebuilding goals and provide information on life history strategies that will help direct restoration activities in tributary ecosystems

OTHER PLANNING DOCUMENTS:

NMFS Proposed Recovery Plan for snake River Salmon - Ecological Goal 10 - Chapter V-1-16. NMFS Proposed Recovery Plan for snake River Salmon - Tasks to Begin Recovery - Chapter V-1-45 Upper Grande Ronde River anadromous Fish Habitat Protection, Restoration and Monitoring Plan - Survey/Inventory/Monitoring page 17 & 18. Grande Ronde Model Watershed Program - Operations Action Plan -Appendix B-4

TARGET STOCK

Grande Ronde Summer Steel head

LIFE STAGE

All freshwater spawning and rearing life stages

MGMT CODE (see below)

P

BACKGROUND

Stream name:

Meadow Creek

Subbasin:

Grande Ronde River

Stream miles affected:

15 miles

Land ownership:

75% Public 25% Private

PURPOSE AND METHODS

SPECIFIC MEASUREABLE OBJECTIVES:

- 1) Identify factors limiting the production of anadromous salmonids in Meadow Creek;
- 2) Based on limiting factor analysis, identify restoration techniques that will increase production of anadromous salmonids in

Meadow Creek;

- 3) Collect and analyze data on habitat characteristics, fish populations and assemblages, and salmonid smolt production to evaluate life history strategies of summer steelhead.
- 4) Quantify the rates of shrub regrowth over time.
- 5) Quantify the rates of establishment and densities of all woody species growing on gravel bars;
- 6) Quantify the influence of native ungulates on shrub recovery.

BIOLOGICAL NEED:

Instream and riparian habitat improvement projects have been funded in the Columbia River Basin to the amazing amount of over \$100 million. Although this represents a large number of improvement efforts, the associated number of evaluations of this work has been suprisingly low. Continued funding of improvement projects without knowledge of the benefits to salmonid production raises the question of the past 20 years - "Are we producing Paper Fish?"

To maximize the effectiveness of a habitat program a coordinated approach is necessary where adequate funds are available for program and project planning, implemenation, and long-term evaluation of results. This long-term evaluation of both the physical and biological effectiveness of habitat improvement on Meadow Creek will display the changes in salmonid smolt production that can be realized from similar improvement projects. This is currently one of the only long-term projects of its kind in the interior Columbia River Basin.

HYPOTHESIS TO BE TESTED:

Summer steelhead exhibit a variety of early life history strategies in the Grande Ronde River Basin which influences smolt production from the system. Riparian area restoration in an intermountain stream system will improve water quality and channel morphology over time, thereby leading to an increase in the system to produce salmonid smolts. The removal of livestock grazing from Meadow Creek will initiate the recovery of woody riparian species. Wild ungulate herbivory is an important factor influencing early recovery rates of riparian shrub communities.

ALTERNATIVE APPROACHES:

N/A

JUSTIFICATION FOR PLANNING:

N/A

METHODS:

Smolt production will be assessed utilizing 2 rotary smolt traps, operated from iceout to ice up. Smolt and presmolts will be estimated by a mark recapture techniques and estimates made using a efficiency coefficient for each trap. Summer carrying capacity will be assessed by use of the Hankin and Reeves basinwide habitat inventory and subsampling habitat units for fish population and assemblages with an electrofishing unit. Population estimates will be made using a two pass removal estimation technique. Adult escapement will be determined by redd counts in the spring throught out the Meadow Creek System. Hardwood species have been marked permanently and measured annually to quantify parameters of growth; height, crown area, mainstem diameter, number of stems and biomass. Permanent belt transects on gravel bars have been placed to quantify rates of shrub establishment.

PLANNED ACTIVITIES

SCHEDULE:

<u>Planning Phase</u>	<u>Start</u> 3/97	<u>End</u> 4/98	<u>Subcontractor</u> 3/98
<u>Task</u> Activity : Start : Finish			
Spring Smolt Trapping	: 3/97	: 6/97	
Summer Habitat/Fish Sampling	: 6/97	: 6/97	
Riparian Vegetation Recovery	: 6/97	: 9/97	
Redd Surveys	: 5/97	: 5/97	
Habitat Mapping	: 8/97	: 8/97	

Stream Flow/Gauging Stations (2) : 10/96 : 9/97

Stream Temperature Monitoring : 10/96 : 9/97

Fence Maintenance : 5/97 : 6/97

Report Preparation : 6/97 : 4/98

All activities will be repeated each year for at least an additional five (5) years.

O&M Phase

Start 5/97

End 6/97

Subcontractor

Task Fence Maintenance

PROJECT COMPLETION DATE:

2005

CONSTRAINTS OR FACTORS THAT MAY CAUSE SCHEDULE OR BUDGET CHANGES:

The only potential risk of this project is the handling of salmonids during sampling. Tremendous care is taken in using sampling procedures that reduce stress on the sampled fish from using MS-222 as the anesthetic to sampling during early morning hours in the summer when water temperatures are low to avoid additional stress.

OUTCOMES, MONITORING AND EVALUATION

SUMMARY OF EXPECTED OUTCOMES

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

This project will produce data that will show both instream and riparian habitat changes and the associated changes in stream morphology and water quality parameters over time. These changes will be associated with changes in fish population and assemblages and smolt production over time. These changes in habitat and corresponding fish production can then be used to assess the the contributions of tributary ecosystems to recovery efforts.

MONITORING APPROACH

(See Methods section)

RELATIONSHIPS

RELATED BPA PROJECT

8400900 Meadow Creek Project under BPA closed contract No.DE-AI79-84BP17578, Grande Ronde River Habitat Enhancement. This project funded the implementation of the instream work and riparian fencing and the research for the first two years of the riparian

RELATIONSHIP

This project continues the monitoring of life history strategies and riparian vegetation recovery

RELATED NON-BPA PROJECT

Meadow Creek Summer Steelhead Life History Research/USDA Forest Service, PNW Research Station and Wallowa-Whitman National Forest

RELATIONSHIP

This project has been funded for 10 years by the USFS and the subject proposal will continue the life history investigation in a cooperative manor

OPPORTUNITIES FOR COOPERATION:

This project is a cooperative effort between the Wallowa-Whitman National Forest, USDA Forest Service PNW Research Station, Oregon State University. Past cooperators included Bonneville Power Administration and Humboldt State University, USDA Forest Service PNW Regional Office, and Washington State University. This project proposal provides the opportunity for Bonneville Power Administration to work cooperatively with other federal agencies in understanding life history strategies in the Columbia River Basin of summer steelhead and to determine effective and cost efficient ways to meet the recovery goals in tributary ecosystems.

COSTS AND FTE

1997 Planned: \$54,000

FUTURE FUNDING NEEDS:

<u>FY</u>	<u>\$ NEED</u>	<u>% PLAN</u>	<u>% IMPLEMENT</u>	<u>% O AND M</u>
1998	\$60,000			
1999	\$65,000			
2000	\$65,000			
2001	\$65,000			

PAST OBLIGATIONS (incl. 1997 if done):

1997 OVERHEAD PERCENT: 15%

HOW DOES PERCENTAGE APPLY TO DIRECT COSTS:

[Overhead % not provided so BPA appended older data.]
