R & E Grant Application 05-07 Biennium

Project #: 05-141

Alsea Steelhead Acoustic Tagging Project

Project Information

R&E Project Request:	$50,000.00
Match Funding:	$36,500.00
Total Project:	$86,500.00
Start Date:	3/1/2007
End Date:	6/30/2007
Project Email:	steve.johnson@oregonstate.edu
Project Biennium:	05-07 Biennium
Organization:	ODFW - Newport

Applicant Information

Name:	James Ray
Address:	2040 SE Marine Science Drive Newport, OR 97365
Telephone:	541-867-0300 x253
Fax:	541-867-0311
Email:	James.Ray@state.or.us

Past Recommended or Completed Projects

This applicant has no previous projects that match criteria.

Project Summary

This project is NOT part of ODFW's 25 Year Angling Plan.

Activity Type: Research

Summary: Survival of winter steelhead smolts released from the Alsea Hatchery has dropped over the past two decade. Because the drop in survival has not correlated well with ocean conditions, factors during freshwater migration may also play a significant role in determining smolt survival. In order to understand factors contributing to in-river and estuarine survival, we plan to implant acoustic tags in hatchery reared and naturally reared winter steelhead smolts in the Alsea River. The movements of the tagged smolts would be monitored by receivers placed throughout the main-stem river and estuary. The information would be used to determine in-river and estuarine survival of the smolts. It would also provide information on migration timing and habitat use of these fish during their migration.

Objectives: Objective 1. Determine the in-river and estuarine survival of hatchery reared and naturally reared winter steelhead smolts in the Alsea River.

Objective 2. Determine if hatchery reared smolts differ from wild smolts in their spatial and temporal used of in-river and estuarine habitat as they migrate to the ocean.

Fishery Benefits: To be successful over time, hatchery propagation programs must understand what factors influence survival not only within the hatchery, but post-release as well. This project will provide information that will help managers understand the factors influencing survival of hatchery reared smolts as they migrate to the ocean. It will also highlight differences between hatchery reared and naturally reared steelhead smolts in migration timing and habitat use during their migration to the ocean. Results of this project should lead to more informed decisions about creating cost effective hatchery programs which ultimately benefit the recreational fishery.

Watershed Benefits: The recently completed Hatchery Research Center (HRC), located on Fall Creek of the Alsea River, was built principally to examine the interactions and the differences between hatchery reared and "wild" salmonids. These questions are important because hatchery programs are part of the watershed, and may have an impact, either positive or negative, on the overall success of the fish populations and the fisheries of the watershed. Because of the HRC, the Alsea watershed is particularly well suited for the proposed study. While many of the genetic differences in hatchery and wild fish may be addressed within the confines of the HRC, studying the ecological impact of hatchery programs on fish rearing in the wild may need to be done outside the laboratory. The proposed study would provide initial information about potential bottlenecks in survival that may be occurring during the smolt migration to the ocean. It will also build the foundation for other ecological studies that the HRC may wish to pursue.

Current Situation: The current release program for winter steelhead smolts at the Alsea Hatchery calls for a release of 120,000 smolts in early April. The 120,000 release is comprised of two groups. One group of 60,000 smolts is the progeny of the long established Alsea Hatchery broodstock. A second group of 60,000 is the progeny of naturally reared adult steelhead that were recently brought into the hatchery program to develop a new broodstock. We propose to only tag the established Alsea Hatchery broodstock in the present study. Tributaries of the upper Alsea watershed produce naturally reared steelhead. Smolts from one of these tributaries will be captured and tagged to provide a sample of these naturally produced fish.

Alternatives: Other approaches were considered but thought to be inadequate to successfully address the objective of the study. Using field crews to seine throughout the river and estuary have been used in the past. This type of sampling can only be achieved in a limited number of sites where seining equipment is usable. Although some information regarding migration timing is possible from seining the river and estuary, quantitative information about survival and habitat use is not possible. Tagging the smolts with radio-telemetry tags was also considered. However, radio-telemetry tags do not transmit once the fish enter saltwater in the estuary,

thus they were considered inappropriate for this study. Because acoustic tags transmit to the receivers in both fresh and saltwater, and because the receivers were scheduled to be placed in the Alsea River and Estuary in the spring of 2007 for another study involving cutthroat trout (see question below concerning additional partners), we therefore elected to use acoustic tags to answer the objectives of this study.

Designer: The study design for the project will be completed by ODFW staff involved with the mid-coast Life Cycle Monitoring Project (Steve Johnson) and the ODFW district office (James Ray).

Methods: Please see Question 7 for a general description of the experiment. We will use methods outlined in previous studies to implant the acoustic tags in the smolts (Jepsen et al. 2001; Anglea et al. 2004). All tagged fish will be held in isolation for at least 24 hours after tagging to be sure fish are fully recovered prior to release. Acoustic receivers will be placed in the river and estuary in a manner to maximize detections of the tagged fish (Clements et al 2005).

Inspector: Biologists from state, federal, and academic institutions.

Funding Elements: R&E funds will be used to purchase acoustic tags, tagging supplies (sutures, scalpels, forceps, hemostats, etc), and smolt trapping supplies (steel cable, pulleys, ropes). ODFW district staff time (Derek Wilson) will be used to tag smolts. ODFW Life Cycle Monitoring Project staff (Steve Johnson and EBA) will install and run a rotary screw trap, and deploy and monitor acoustic receivers.

Partners: Yes

Researchers working for the Environmental Protection Agency (EPA) will be working cooperatively with ODFW's Life Cycle Monitoring Project in the Alsea watershed in the spring of 2007 on a separate acoustic tagging study involved with cutthroat trout. Because of the cutthroat trout study, the EPA will be placing acoustic receivers throughout the Alsea Estuary and lower Alsea River. They have agreed to provide additional receivers for the upper Alsea River for the proposed steelhead smolt study. EPA staff will be involved in deploying and monitoring acoustic receivers.

Existing Plan: Yes

This project fits within the framework and objectives of the Alsea River Basin Fish Management Plan (1998).

Affected Contacted: Yes

Affected Supportive: Yes

Affected Comments: The EPA has agreed to work cooperatively on this project Because of the EPA cutthroat study, the acoustic receivers will be in place throughout

much of the Alsea River main-stem and estuary, allowing us to do the steelhead study without the cost of buying and maintaining the acoustic receivers. The EPA cutthroat trout study is evaluating estuarine habitat use by salmonids, thus the results from the proposed steelhead smolt tagging study are also of interest to them. Mid-coast district staff has also contacted HRC staff and Alsea Hatchery staff. The proposal has also been discussed with project managers in ODFW's Research and Monitoring section.

Project Schedule/Participants/Funding

This project has no Schedule/Participants/Funding.

Affected Species:

Steelhead

Project Permits

Name	Issued By	Secured?	Date Secured	Date Expected
NA	NA	No	1/1/0001	1/1/0001

Project Monitoring

Organization	Address	Activity	Frequency
ODFW	,	Monitoring Acoustic Receivers	Weekly

Project Maintenance

Organization	Address	Activity	Frequency
NA	NA NA, OR NA	NA	NA

Project Match Funding

Funding Source	Cash	In-Kind	Other	Description	Total	Secured?	Conditions?	Comments
R&E Request	$50,000.00	$0.00	$0.00		$50,000.00	No	No	
EPA	$0.00	$30,000.00	$0.00	use of the acoustic receiver array	$30,000.00	Yes	No	
ODFW	$0.00	$6,499.00	$0.00	staff time and equipment	$6,499.00	Yes	No	
				Total Match Funding:	$86,499.00			

Project Budget

Item	Item Type	Units	Unit Cost	R&E Funds	Match Funds	Total
Acoustic Receivers	Equipment	30	$1,000.00	$0.00	$30,000.00	$30,000.00
Smolt Trap Supplies	Equipment	1	$2,500.00	$2,500.00	$0.00	$2,500.00
staff time, project design,analysis, and QA/QC	Personnel	80	$23.75	$0.00	$1,900.00	$1,900.00
Staff time, EBA, smolt trap, receiver monitorig	Personnel	160	$12.50	$0.00	$2,000.00	$2,000.00
Staff time, NRS 2, smolt trapping	Personnel	80	$23.75	$0.00	$1,900.00	$1,900.00
Staff Time, NRS 2, tagging	Personnel	40	$17.50	$0.00	$700.00	$700.00
Acoustic Tags	Supplies/Materials /Services	150	$300.00	$45,000.00	$0.00	$45,000.00
Tagging Kits	Supplies/Materials /Services	150	$16.66	$2,500.00	$0.00	$2,499.00
					Total Budget:	$86,499.00

Project Map


Newport
Waldport
Yachats
101
20
223
34
36
Elk Creek
Drift Creek
Alsea River
Lake Creek
Indian Creek
Mudgy Creek
0
13mi

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