



# R & E Grant Application 07-09 Biennium

Project #:  
07-078

## *Blitzen River Redband Study 2008*

### ***Project Information***

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**R&E Project Request:** \$9,700.00  
**Match Funding:** \$58,152.00  
**Total Project:** \$67,852.00  
**Start Date:** 3/15/2008  
**End Date:** 9/30/2008  
**Project Email:** steve.jacobs@oregonstate.edu  
**Project Biennium:** 07-09 Biennium  
**Organization:** ODFW - Corvallis Research Lab

### ***Applicant Information***

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### ***Past Recommended or Completed Projects***

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This applicant has no previous projects that match criteria.

### ***Project Summary***

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

**Activity Type:** Research

**Summary:** The project continues an assessment of migratory life history and fishery characteristics of large migratory redband trout in the Blitzen River. The movements of the redband are being tracked throughout the year with a focus on passage at the irrigation diversion dams and water quality conditions. Radio telemetry will provide detailed movement information on a subset of individuals while PIT tagging will provide more statistically robust information on movement trends in the population. This study is being conducted in conjunction with OSU Department of Fisheries and Wildlife and supports a Master's Thesis project. Requested funding will be used to purchase additional tags to provide an additional season of data collection.

**Objectives:** Objective -- Determine the life history and migratory characteristics of adult redband trout in the Blitzen River and associated tributaries. This includes assessing timing of spring and fall movement, spawning and summer

rearing locations, and potential passage problems.

Task 1.1 Collect adult redband trout at selected irrigation diversion structures in the lower Blitzen River during the spring of 2008.

Task 1.2 Collect redband trout by angling in the Blitzen River above Page Springs gauging weir and/or by collecting fish at the Page Springs irrigation diversion structure during the spring and summer of 2008.

Task 1.3 For each fish, record length and weight, collect scale samples, scan for an existing PIT tag, and implant a tag if not already present.

Task 1.4 Surgically implant radio tags into 40 adult redband trout. Radio tag approximately 20 fish collected in the lower Blitzen River, and 20 fish collected near the Page Springs gauging weir.

Task 1.5 Track redband trout movement in the mainstem Blitzen River and selected tributaries using radio telemetry receivers. Operate fixed receiver stations and conduct mobile tracking surveys including aerial surveys.

Task 1.6 Operate four directional PIT tag antennas to track movement of fish tagged in 2007 and 2008.

**Fishery Benefits:**

The Blitzen River is a popular recreational destination for anglers. The Blitzen provides an opportunity to catch large, migratory redband trout, especially during wet climate cycles. Currently the Blitzen River is managed to provide a consumptive trout fishery; anglers are allowed to retain two trout per day during the summer months. However, the population of large redband trout may be much smaller than it was historically due to fish passage and water quality issues. The results of this study will be useful in prioritizing fish passage improvements and informing water flow management to benefit the redband trout population. Such improvements will help to stabilize and augment this important fish resource. An important addition to work planned for 2008 is the integration of this study with the angler creel survey that will be funded through R&E Project 07-054. Tag collection during the creel survey will provide estimates of the contribution of various life history types to the recreational fishery.

**Watershed Benefits:**

This project focuses on the ways that fish passage and summer water temperature influence the migratory life history of the redband trout in the Blitzen River. These potential bottlenecks to the productivity of the population can best be understood in the context of fish movement and behavior. During the first season of the project, 46 fish were radio tagged and over 500 fish were PIT tagged. Many of the fish moved upstream past all the diversion dams during the spring spawning period. However, during this upstream migration, fish were disproportionally distributed below the diversion dams. Many sexually mature fish moved up to dams but never moved past those dams to reach spawning habitat. This data suggests that passage may be impeded at some of the diversion dams. PIT tag antennas have been established at fish ladders at three of the diversion dams to collect additional data on fish passage efficiency. Efforts to evaluate the passage at these dams will continue through the summer of 2008. Another factor potentially limiting redband trout production in the Blitzen River is summer stream temperature. An array of 20 Hobo temperature loggers has been deployed in order to compare reach-scale water temperatures with summer fish distribution. Fish tracking through the summer and fall will help determine usable summer habitat and survival of fish located in high temperature reaches during the summer. Recaptured fish will provide information on growth and fitness related to rearing location.

**Current Situation:**

The Blitzen River supports a unique, relatively abundant group of rainbow (redband) trout (*Oncorhynchus mykiss*). Blitzen River redband include resident and migratory (fluvial and possibly adfluvial) life histories. The persistence of large, migratory fish represents a life history that was much more widespread among inland redband populations but is now relatively rare because of anthropogenic alterations of flow regimes. Even in the

Blitzen River, fish passage and summer water quality may still be limiting factors for migratory redband trout. The initial field season provided important insight into the characteristics and conditions of the trout population in the Blitzen, but additional data is needed. The infrastructure for the project, including two fixed station telemetry receivers, four PIT tag antenna stations, and water temperature loggers, is established from the first phase of the project. Many fish that were tagged during 2007 will continue to be tracked through the summer of 2008. Deploying additional tags in 2008 will provide movement information on a larger sample of fish and will provide a more thorough understanding of the characteristics of the fishery. Redband trout in the Blitzen River and its tributaries are managed for natural production consistent with the Native Fish Conservation Policy (ODFW 2003). The Blitzen system is managed for featured species (ODFW 1987). Management for featured species and waters includes: Habitat protection and maintenance of productive capacity, genetic integrity, and life history characteristics (ODFW 1987).

**Alternatives:** None N/A

**Designer:** ODFW Native Fish Investigations Project, ODFW High Desert Region, and ODFW Recreational Fisheries Staff; Oregon State University Department of Fisheries and Wildlife.

**Methods:** Methods

Redband trout will be collected using traps in fish ladders at selected irrigation diversion dams in the lower Blitzen River during the spring of 2007. Potential trapping locations include Sod House, Grain Camp and Page Springs Dams (Note that Page Springs dam may be used as the upper collection site). In addition, redband trout will be collected in the stream reach above the Page Springs Gauging weir by angling. Radio tags will be surgically implanted in 20 redband trout larger than 400 mm in total length. Radio tags will be inserted in approximately 20 fish collected in the lower Blitzen River, and 10 fish collected near or above the Page Springs gauging weir. Tags will be capable of providing a signal for a minimum of 400 days. All redband captured but not radio-tagged will be tagged with PIT tags and numbered anchor tags to assess angler catch rates and harvest rates.

Tracking of radio-tagged and PIT tagged redband trout will continue into the summer of 2008. Redband trout will be tracked to determine spawning and summer rearing location, passage problems, timing of and delays in migration, and habitat use. Redband trout will be tracked approximately biweekly during periods of high movement and approximately bimonthly during more sedentary periods. Mobile tracking will be undertaken using portable receivers (on foot, horseback and by vehicle). In addition, 2 solar powered stationary radio receivers and 4 Stationary PIT tag detection Arrays will be placed at the mouths of major tributaries, and near key

passage structures, such as the Page Springs gauging weir. Fixed wing aircraft will be used to track redband trout that cannot be located via mobile tracking surveys.

All locations of radio-tagged fish observed from tracking will be geo-referenced via a GPS receiver. GIS will be used to correspond coordinated fish locations to a digital stream network. Additionally, general habitat characteristics occurring at fish locations will be collected to associate fish distribution with associated habitat features such as spawning, holding and feeding habitat.

A statistical creel survey will be conducted on the mainstem Blitzen River and major tributaries during the consumptive angling season of 2008 as part of R&E Project 07-054. Pressure counts and angler interviews will be conducted. Additionally, harvested fish will be measured and examined for the presence of tags, and anglers will be asked for information on tagged fish caught and released.

#### Literature Cited

Bowers, W., R. Smith, R. Messmer, C. Edwards, and R. Perkins. 1999. Conservation status of Oregon Basin redband trout. Oregon Department of Fish and Wildlife, Salem.

Buchanan, D.V., A.R. Hemmingsen, D.L. Bottom, P.J. Howell, R.A. French, and K.P. Currens. 1989. Native trout project. Oregon Department of Fish and Wildlife, Fish research Project F-136-R. Portland.

Oregon Department of Fish and Wildlife. 1987. Oregon's Trout Plan. Oregon Department of Fish and Wildlife, Portland, OR.

Oregon Department of Fish and Wildlife. 2003. Native Fish Conservation Policy. Oregon Department of Fish and Wildlife Policy 635-007-0502, Salem, OR.

United States Government (?). 2000. Steens Mountain Cooperative Management and Protection Act H.R. 4828.

**Inspector:** Final Report/ peer reviewed publications(s) submitted to R&E Board.

**Funding Elements:** Purchasing radio tags and PIT tags.

**Partners:** Yes

**Existing Plan:** BLM-funding for S&S (field supplies)  
USFWS-traps at irrigation diversions for capturing fish, field housing and logistic support, supply of field vehicle and fuel  
Yes

**Affected Contacted:** Steens Mountain Cooperative Management and Protection Act (2000) established a redband trout reserve, and promoted conservation, management, and protection of healthy watersheds on Steens Mountain.  
Yes

**Affected Supportive:** Yes

**Affected Comments:** Met with BLM and USFWS on 6 Jan 2006. Both agencies will provide both direct and in-kind support.

***Project Schedule/Participants/Funding***

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This project has no Schedule/Participants/Funding.

**Affected Species:** Redband Trout

***Project Permits***

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This project has no permits.

***Project Monitoring***

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This project has no monitoring.

***Project Maintenance***

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This project has no maintenance plans.

## Project Match Funding

Funding Source	Cash	In-Kind	Other	Description	Total	Secured?	Conditions?	Comments
R&E Request	\$9,700.00	\$0.00	\$0.00		\$9,700.00	No	No	
ODFW Sports Fish Restoration Match funds	\$35,152.00	\$0.00	\$0.00	Graduate Student Stipend	\$35,152.00	Yes	No	
ODFW Staff time	\$0.00	\$20,000.00	\$0.00		\$20,000.00	Yes	No	
Malheur National Wildlife Refuge	\$0.00	\$2,000.00	\$0.00	vehicle, fuel and field housing	\$2,000.00	Yes	No	
Oregon State Police	\$0.00	\$1,000.00	\$0.00	flights for telemetry tracking	\$1,000.00	No	No	
				Total Match Funding:	\$67,852.00			

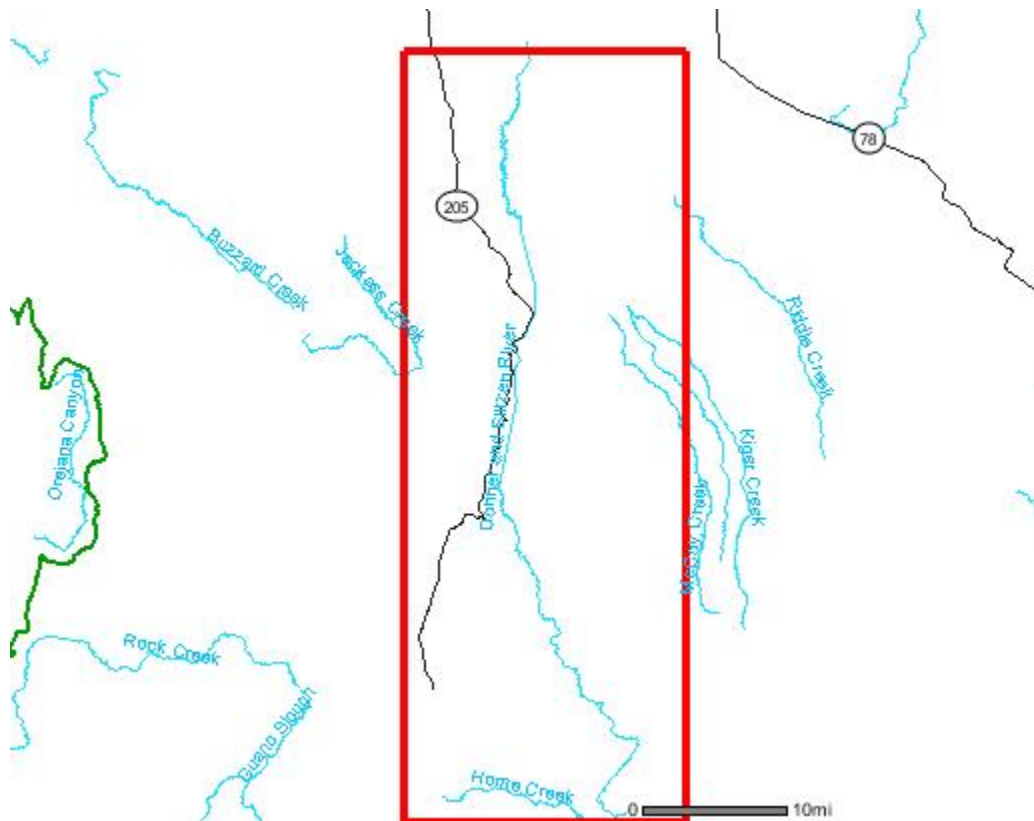
## Project Budget

Item	Item Type	Units	Unit Cost	R&E Funds	Match Funds	Total
Flight Time	Contracted Services	5	\$200.00	\$1,000.00	\$0.00	\$1,000.00
Graduate student support	Contracted Services	1	\$35,152.00	\$0.00	\$35,152.00	\$35,152.00
Lotek NTC-6-2 Nano Radio Tags	Equipment	30	\$250.00	\$7,500.00	\$0.00	\$7,500.00
ODFW staff time	Personnel	5	\$4,000.00	\$0.00	\$20,000.00	\$20,000.00
PIT tags	Supplies/Materials /Services	300	\$4.00	\$1,200.00	\$0.00	\$1,200.00
Flight Time	Travel	5	\$200.00	\$0.00	\$1,000.00	\$1,000.00
Vehicle and Fuel	Travel	4	\$500.00	\$0.00	\$2,000.00	\$2,000.00
					Total Budget:	\$67,852.00



## Project Map

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### ***Additional Files***

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