



R & E Grant Application 09-11 Biennium

Project #:
09-010

Angling Enhancement in the Ochoco Mountain Area

Project Information

R&E Project Request: \$54,640.00
Match Funding: \$12,102.50
Total Project: \$66,742.50
Start Date: 7/1/2009
End Date: 10/31/2010
Project Email: michael.r.harrington@oregon.state.us
Project Biennium: 09-11 Biennium
Organization: ODFW - Prineville Field Office

Applicant Information

Name: Michael Harrington
Address: 2042 SE Paulina Highway
Prineville, OR 97754
Telephone: 541-447-5111 x24
Fax: 541-447-8065
Email: michael.r.harrington@oregon.state.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: Miscellaneous (Restoration)
Summary: The goal of the project is to restore the rainbow trout (*Oncorhynchus mykiss*) fisheries in Walton Lake and Antelope Flat Reservoir by chemically removing illegally introduced bullhead catfish (*Ameiurus nebulosus*) and smallmouth bass (*Micropterus dolomieu*). Successful completion of the project will restore quality fishing opportunities, improve water quality to pre-introduction levels, and will eliminate sources of future illegal introductions. Adjacent landowners will chemically treat Bear Creek Reservoir concurrently, which is fed by Antelope Reservoir to improve quality of their effluent and limit the potential of re-establishing bullhead populations.

Objectives: Bullhead catfish were illegally introduced to Walton Lake and Antelope Reservoir in the 1990's and early 2000's, angler success and satisfaction at these impoundments diminished simultaneous to the introductions.

Smallmouth bass also appeared recently in Walton Lake increasing competition with rainbow trout and threatening downstream populations of native redband trout in Ochoco Creek. We propose to remove illegally introduced smallmouth bass and bullhead catfish from Walton Lake, Ochoco Snow Park, Antelope Reservoir, Bear Creek Reservoir, and in Bear Creek between Antelope Reservoir and Bear Creek Reservoir. The project seeks to:

- provide positive fishing experience for license holders
- improve growth rates and over winter survival of hatchery stocked rainbow trout
- restore quality fishing opportunities in heavily used areas
- prevent depletions of native redband trout (*Oncorhynchus mykiss*) in reservoir outflows
- prevent expansion of non-native fish populations
- eliminate source populations for future illegal introductions
- eliminate factors negatively affecting water quality

Fishery Benefits:

Walton Lake and Antelope Flat Reservoir were popular fisheries through the 1990's and early 2000's. The output of these fisheries fell drastically following the illegal introductions of bullhead catfish in Walton Lake in the 1990's and in Antelope Flat Reservoir in the early 2000's. Although ODFW stocks Walton Lake (18 acres) annually with 10,000 legal trout and 3,000 trophy trout, anglers report catches of mostly small bullhead catfish. Anglers report little to no success fishing for rainbow trout in Antelope Flat Reservoir and report a poor aesthetic experience due to poor water clarity caused by catfish behaviors, which result in the suspension of fine sediments. Treatment of the reservoirs would reverse the described conditions above and would eliminate the threat of smallmouth bass escape from Walton Lake into Ochoco Creek, a native redband fishery.

Watershed Benefits:

The project will benefit the watershed by improving water quality and protecting native redband trout. The soils present in Antelope Flat and the private reservoir downstream have high clay contents. Disturbance by the bottom dwelling bullheads suspends the clays, increasing the level of total suspended solids and turbidity, significantly affecting outflowing streams. The Oregon Department of Environmental Quality considers a 10% increase in turbidity unacceptable, with high levels of suspended solids and turbidity reducing reproductive success, foraging capability, growth, and disease resistance in salmonids. Removal of bullhead would allow the suspended solids to settle, decreasing the turbidity of Antelope Flat Reservoir, Bear Creek Reservoir, and Bear Creek significantly.

Although smallmouth bass and bullhead would not likely find adequate reproductive habitat in the Ochoco creek watershed, escapees from Walton Lake are likely compete with redband trout during warm summer periods. Bullhead escaping from Antelope Flat Reservoir have a greater effect on downstream waterbodies where they flourish in the slower water of Bear Creek and the reservoirs it feeds. Bullhead must be removed from Walton Lake and Antelope Flat Reservoir to ensure sensitive redband populations are protected and water quality standards are met in the Bear Creek drainage.

Current Situation:

Walton Lake and Antelope Flat Reservoir are artificial impoundments within the Crooked River watershed that once supported popular rainbow trout fisheries. Both waterbodies are located on public lands administered by the USDA Ochoco National Forest. The Crooked River Subbasin Plan (ODFW 1996) directs the Oregon Department of Fish and Wildlife (ODFW) to manage Walton and Antelope Flat as basic yield fisheries for hatchery rainbow trout (*Oncorhynchus mykiss*). Brown bullhead (*Ameiurus nebulosus*) were illegally introduced into each waterbody and smallmouth bass (*Micropterus dolomieu*) were illegally introduced into Walton, followed by a significant decline in the rainbow trout fishery. The fishing community responded to the rainbow trout decline by issuing numerous complaints. Consistent with management objectives identified in the subbasin plan, ODFW proposes to implement a chemical treatment project to rehabilitate both fisheries.

Walton Lake

Walton Lake is an 18 acre reservoir within on the Ochoco National Forest, approximately 30 miles northeast of Prineville. The lake is at the Ochoco Creek headwaters and a Forest Service campground is in the nearby trees. The lake and campground are popular recreational destination for residents of Prineville and other central Oregon communities. Annual hatchery stocking of rainbow trout began in 1954 and included both fingerling and catchable sized fish. Fingerling stocking was unsuccessful and the current stocking program includes 10,000 legal sized trout (8 inches) and 3,000 trophy trout (12-14 inches) released on five separate dates from mid May through mid September.

Brown bullhead were first observed in Walton Lake in 1995 and by 1999 brown bullhead were the dominant species captured by trout anglers and by ODFW in annual sampling efforts. Bullhead compete for a limited food base resulting in reduced growth rates and minimal over winter trout survival. In 2007 smallmouth bass were reported in Walton, which will further limit growth and survival of stocked rainbow trout. The smallmouth bass population may also threaten native redband trout populations in Ochoco Creek. The outlet to Walton is unscreened and ODFW confirmed Forest Service reports of bullhead in Ochoco Creek near the confluence of Ahalt Creek in September of 2008. Although it is unlikely that bullhead or smallmouth could reproduce in Ochoco Creek, they could successfully compete with native redband trout. We propose to eliminate bullhead and smallmouth bass by chemically treating Walton and a neighboring gravel pit (Ochoco Sno Park), which has a source population of bullhead for future illegal introduction.

Antelope Flat Reservoir

Antelope Flat Reservoir is a 170 acre irrigation reservoir on the south side of the Maury Mountains in central Oregon, approximately 30 miles southeast of Prineville. The reservoir is at the headwaters of Bear Creek at the west end of Antelope Flat. Water from Antelope Flat Reservoir feeds Bear Creek, a tributary Prineville Reservoir. Antelope Flat Reservoir is partially located on the Lookout Mountain Ranger District, administered by the Ochoco National Forest. Private landowners, who own approximately 50% of the shoreline at the head of the reservoir, manage reservoir storage. Although the reservoir was built for irrigation, it is a popular destination for boating, fishing, and camping.

The eutrophic nature of Antelope Flat Reservoir creates high growth rates in Rainbow trout. Historically, this allowed ODFW to rely exclusively on a fingerling stocking program unless periodic winterkills necessitated the stocking of catchables. Bullhead catfish appeared in Antelope Flat Reservoir in 2001 and were the dominant species in the reservoir by 2004. The fish stocking program shifted thereafter to initially include a combination of 5,000 fingerling and 2000 legal sized rainbows. Poor performance of fingerlings forced ODFW to shift the stocking program to exclusively 2500 legal sized rainbows annually. The trout stocking program currently supports a limited fishery with poor growth rates. Anglers have expressed concern over the deterioration of the fishery and requested ODFW take corrective action.

The large number of bullhead catfish caused high turbidity levels in Antelope Flat, impairing water quality in the reservoir and downstream waterbodies. Bear Creek flows from Antelope Flat through approximately 20 miles of private property before entering Prineville Reservoir. The outlet of the Antelope Flat is unscreened resulting in occasional entrainment of fish into Bear Creek and the private reservoir downstream. Landowners managed the private reservoir downstream for fee fishing; however, brown bullhead have limited the fishery and reduced the marketability of the reservoir. The landowner has expressed concern with the bullhead populations in the two reservoirs and the resulting water quality of Bear Creek flowing through their ranch. They have advocated cost sharing a chemical treatment project to remove the bullhead from both reservoirs and the stream connecting them, and perceive it to be an urgent matter.

Alternatives:

Bullhead catfish are extremely prolific and resilient to environmental conditions. Mechanical removal is not an option due to the high investment required to depress bullhead populations slightly. Chemical removal is the only method that could completely remove bullhead, restoring rainbow trout fisheries, protecting native redband trout, and restoring ecosystem function. Powdered rotenone is the most economic method and will suffice for Walton Lake and Bear Creek Reservoir. However, rotenone experts certified by the American Fisheries Society have recommended that liquid rotenone is the only suitable method for Antelope Flat Reservoir given its high suspended sediment load.

Designer:

The Deschutes District Fish Biologist and his Assistant District Fish Biologist will design and implement the study.

Methods:

ODFW Upper Deschutes District proposes to treat Walton Lake, Ochoco Sno Park, Antelope Flat Reservoir, and Bear Creek Reservoirs with piscicides. ODFW consulted American Fisheries Society (AFS) experts and ODFW rotenone project managers who all recommend the use of the piscicides CFT Legumine (liquid rotenone) and rotenone fish toxicant powder. The U.S. EPA and Oregon Department of Agriculture (ODA) have registered rotenone and approve of its use as a fisheries management tool. The Oregon Department of Environmental Quality and ODA were notified of our intents and do not currently require permits for the application of this chemical. ODFW will follow guidelines from the Rotenone Use in Fisheries Management Manual, published by AFS, in the completion of the project.

ODFW staff with pesticide applicators licenses will apply rotenone following approved concentrations and protocols to the described waterbodies using backpack sprayers, small boats, and recommended safety equipment. We will detoxify the outflow of Bear Creek Reservoir using Potassium Permanganate. Dead fish will be removed from the water and disposed of at an off site location to the extent possible. Following treatment, Antelope Flat reservoir and Walton Lake will refill naturally throughout the winter and the following spring. ODFW will continue its annual stocking program in May 2010 along with annual monitoring.

The private landowner will purchase a portion of the rotenone to treat Antelope Flat Reservoir as compensation for the roll of ODFW in the treatment of Bear Creek Reservoir. ODFW will develop an indemnification document to be signed by ODFW and the owners of Bear Creek Reservoir in advance of the treatment. ODFW has informed the Ochoco National Forest of our intent to complete this project and it was met with full support.

The project would occur in October when the peak recreational use is over. ODFW and private landowners will lower Antelope Flat and Bear Creek Reservoir to minimum pool prior to the treatment by opening headgates.

ODFW and private landowners will operate a trap and weir in the outlet stream of Antelope Flat to capture fish emigrating from the reservoir. Walton Lake does not have an operational headgate; the Oregon Department of Forestry (ODF) and ODFW will drain Walton Lake using ODF fire pumps. ODFW will initiate an aggressive media campaign to informing the public our objectives and an implementation schedule. The Forest Service has agreed to post signs educating the public of the dangers and consequences of illegally introducing non-native species to any waterbody.

Inspector: The assistant district fish biologist will inspect the project as it is completed and will assess the outcome with biannual seasonal monitoring.

Funding Elements: R&E Funds will be used for:

Rotenone (Walton Lake and Antelope Flat Reservoir)	\$34,350.75
Rotenone shipping	\$7,631.46
Potassium Permanganate (Detoxification of impoundment effluent)	
\$3,270.00	
Potassium Permanganate Shipping	\$170
Safety Equipment	\$500.00
Signs (Interpretive and Safety)	\$2,250.00
Pump operation (drain Walton Lake)	\$400.00
Supplies and materials (10% Contingency)	\$6067.47
R&E TOTAL	\$54,639.68

ODFW will match:

Planning and Staff	\$9,600.00
--------------------	------------

80 hours of time will be used for planning at \$40/hr
160 hours of time will be used for implementation and monitoring

Private Landowners will match:

Rotenone (Treatment of Bear Creek Reservoir)	\$2,502.50
--	------------

Partners: Yes

The McCormack Ranch owns a reservoir downstream of Antelope Flat Reservoir that will be treated by ODFW. The McCormack Ranch will match ODFW funding with \$2502.69 for the rotenone to be applied in their reservoir.

Existing Plan: Yes

The Crooked River Basin Plan directs ODFW to manage redband trout for natural production in order to protect the genetic diversity, adaptiveness and abundance of wild redband trout and provide angling opportunities for wild trout. Invasive fish species have limited the ability of ODFW to meet this goal by competing with redband trout and limiting water quality in their habitats. The potential for invasive species to expand their territories into native redband trout habitats will further prevent ODFW from meeting this directive.

Affected Contacted: Yes

Affected Supportive: Yes

Affected Comments: ODFW and the U.S. Forest Service have a memorandum of understanding that identifies ODFW as the agency responsible for the management of fish and wildlife on its properties. ODFW has informed the USFS of its intentions, which have been met with support. Administrative and policy issues have prevented the USFS from matching funds on the project, however they are making upgrades to campgrounds within the forest that include the campgrounds at Antelope Flat Reservoir and Walton Lake in the fall of 2009. The McCormack Ranch is a partner in the project.

Project Schedule/Participants/Funding

Activity	Date	Participants
Obtain grant approval	7/17/2009	Mike Harrington
Order all chemical	7/20/2009	Mike Harrington
Order all safety equipment	7/20/2009	Mike Harrington
Design and order all signs	7/24/2009	Mike Harrington
Drain or pump impoundments to be treated	10/19/2009	Mike Harrington, ODF, Kurt Kundiff
Treat reservoirs	10/20/2009	ODFW employees (4)
Monitor Success	10/26/2009	Mike Harrington
Monitor Success	5/1/2010	Mike Harrington

Affected Species:

Rainbow Trout

Project Permits

This project has no permits.

Project Monitoring

Organization	Address	Activity	Frequency
--------------	---------	----------	-----------

ODFW Deschutes District	2042 SE Paulina HWY Prineville, OR 97754	Population assessment	Biannual
-------------------------	---	-----------------------	----------

Project Maintenance

This project has no maintenance plans.

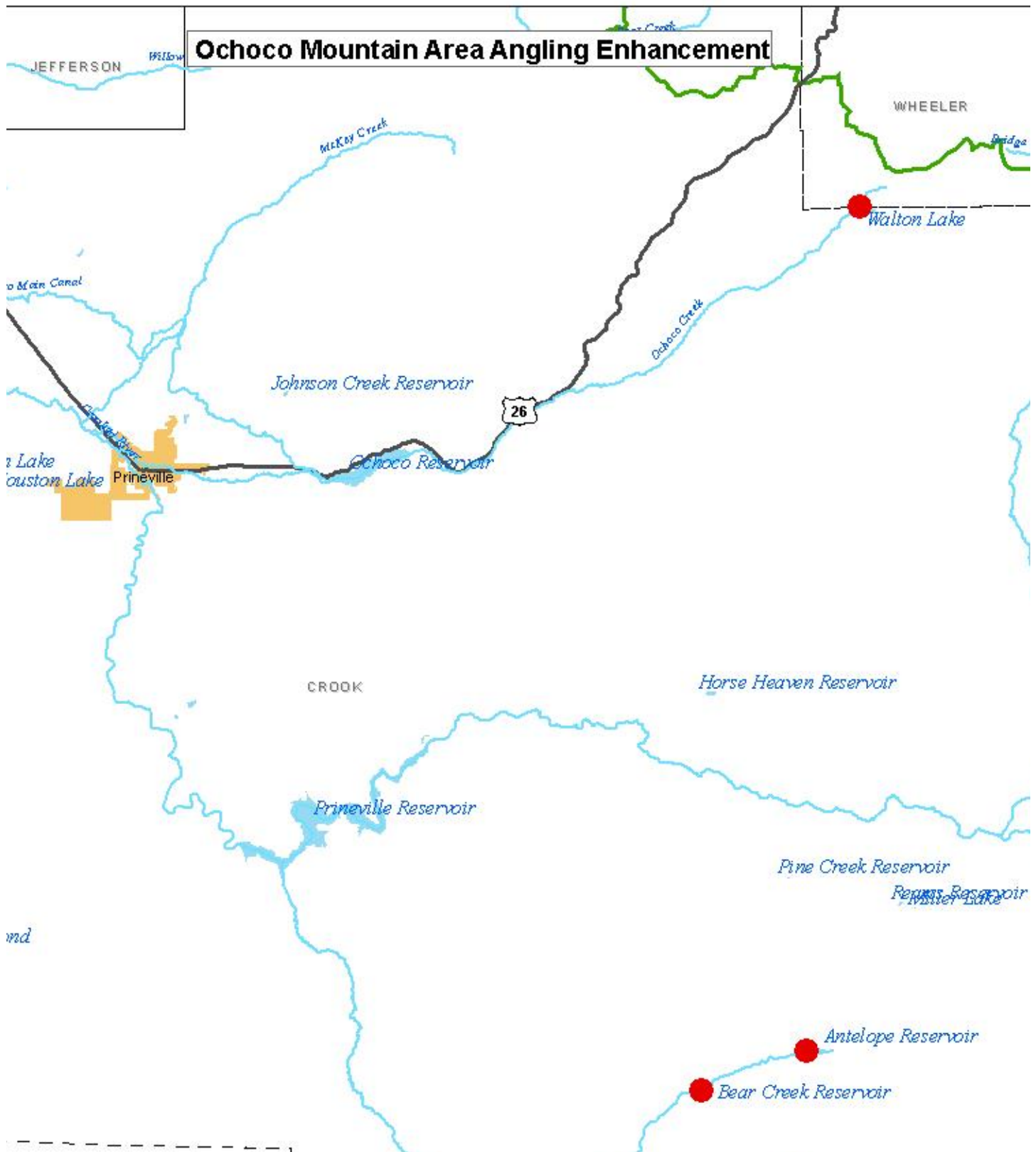
Project Match Funding

Funding Source	Cash	In-Kind	Other	Description	Total	Secured?	Conditions?	Comments
R&E Request	\$54,640.00	\$0.00	\$0.00	project equipment	\$54,640.00	No	No	Pending grant approval
McCormack Ranch	\$2,503.00	\$0.00	\$0.00		\$2,503.00	No	No	Funding for ODFW to treat reservoir downstream of Antelope Flat Reservoir.
ODFW match	\$0.00	\$0.00	\$9,600.00	Cost of labor for planning and implementation	\$9,600.00	Yes	No	
				Total Match Funding:	\$66,743.00			

Project Budget

Item	Item Type	Units	Unit Cost	R&E Funds	Match Funds	Total
Fuel for water pump operation	Equipment	100	\$4.00	\$400.00	\$0.00	\$400.00
interpretive signs	Equipment	2	\$1,000.00	\$2,000.00	\$0.00	\$2,000.00
Liquid rotenone	Equipment	360	\$76.00	\$27,360.00	\$0.00	\$27,360.00
Potassium Permanganate	Equipment	1000	\$3.27	\$3,270.00	\$0.00	\$3,270.00
powder rotenone	Equipment	2151	\$3.25	\$6,990.75	\$0.00	\$6,990.75
Powder rotenone (private reservoir)	Equipment	770	\$3.25	\$0.00	\$2,502.50	\$2,502.50
Safety Equipment	Equipment	20	\$25.00	\$500.00	\$0.00	\$500.00
Safety signs	Equipment	50	\$5.00	\$250.00	\$0.00	\$250.00
Shippin liquid rotenone	Equipment	360	\$3.91	\$1,407.60	\$0.00	\$1,407.60
shipping potassium permanganate	Equipment	1000	\$0.17	\$170.00	\$0.00	\$170.00
Shipping powder rotenone	Equipment	2922	\$2.13	\$6,223.86	\$0.00	\$6,223.86
supply and material contingency	Equipment	1	\$6,067.79	\$6,067.79	\$0.00	\$6,067.79
ODFW implementation (4 employees)	Personnel	160	\$40.00	\$0.00	\$6,400.00	\$6,400.00
ODFW planning (2 employees)	Personnel	80	\$40.00	\$0.00	\$3,200.00	\$3,200.00
					Total Budget:	\$66,742.50

Project Map



Additional Files

Click a link to view that particular file.

[LOS-landowner](#)

[LOS-suriver anglers](#)

[Signature](#)