



# Project Report December 8, 2006

## Strategic Plan

### Objectives:

Maintain diverse, self-sustaining fish and other aquatic resource populations.

86 projects found

### 13210-A-028 - [The Utility of Volitional Release Strategies at Winthrop National Fish Hatchery, Winthrop, WA](#)

<b>Facility</b>	Abernathy Fish Technology Center	<h3>Accomplishment Summary</h3> <p>Data from both 2004 and 2005 study years were compiled and analyzed. Results indicate few if any differences between volitionally and force released fish. Additional samples were collected to determine whether a specific male hormone level is associated with precocious maturation. Project results were presented at the USFWS Region 1 Hatchery Management Workshop (Nov 2005) and the Annula Meeting of the American Fisheries Society, Oregon Chapter (Feb 2006). A manuscript is in preparation.</p> <h3>Description</h3> <p><b>The importance to the Resource:</b></p> <p>Given the apparent untenable status of many wild Pacific salmon populations, the role of hatchery stocks as a conservation tool has been increasingly debated. Numerous reviews of hatchery practices have recommended new practices concerning everything from release strategies to feeding methods that might improve the performance of NFH programs.</p> <p><b>The problem:</b></p> <p>One criticism of hatchery programs is that they release juvenile fish which are not fully ready to undergo downstream migration, this can lead to low post release survival and increased</p>
<b>Expended</b>	\$17650	
<b>Objective</b>	Utilize appropriate scientific and technologic tools in formulating and executing fishery management plans and policies.	
<b>Primary Benefited Species</b>	Rainbow trout ( <a href="#">Oncorhynchus mykiss</a> )	
<b>Primary Benefited Population</b>	<a href="#">Methow River (UCMET-s) population, part of the Upper-Columbia River steelhead ESU.</a>	
<b>Plans</b>	Winthrop Hatchery Genetics Management Plan (Steelhead) Methow Subbasin Plan	
<b>Keyword</b>	Fish Technology	
<b>Need Number</b>	N-002	
<b>Partners</b>	Leavenworth National Fish Hatchery U.S. Bureau of Reclamation	
<b>Accomplishments</b>		

Number of Fishery Management Plan production tasks implemented (PART)	1	<p>levels of precocious maturation in juvenile fish.</p> <p><b>The objective:</b></p> <p>The study objective is to determine if the use of volitional release for NFH juvenile fish results in the release of more physiologically and behaviorally competent smolts. The steelhead production program at Winthrop NFH was chosen as a case study.</p> <p><b>The method:</b></p> <p>Volitionally released juvenile steelhead were compared to force released and non-migrating individuals. Factors compared include smolt physiology, reproductive physiology, and migratory behavior (using PIT tag monitoring technology). A manuscript is being prepared for submission to a peer reviewed journal.</p> <p><b>Further description:</b></p> <p>Ecological Physiology</p>
Number of techniques and culture technology tools developed.	1	
Number of applied science and technology tasks implemented as prescribed by Fishery Management Plans. (PART)	1	

**13210-A-039 - [Genetic and Geographic Origins of Threatened Bull Trout Trapped at Dams in the Clark Fork River, MT.](#)**

<b>Facility</b>	Abernathy Fish Technology Center	<p><b>Accomplishment Summary</b></p> <p>Standardized genetic protocols were developed for identifying geographic origin of bull trout in the Lower Clark Fork River / Lake Pend Oreille. Fifty adults captured at the base of Cabinet Gorge Dam were genotyped in a rapid response mode as part of a selective passage program that involves three dams in the Clark Fork River Basin of ID and MT. This passage allows fish to reach their spawning grounds. 500 bull trout were genotyped to supplement the genetic baseline used to assigning fish.</p> <p><b>Description</b></p> <p><b>The importance to the Resource:</b></p> <p>Genetic information is used to assist with the selective passage of bull trout over three dams in the Clark Fork River Basin of Idaho and Montana. This passage allows fish to reach their spawning grounds. More fish spawning decreases the demographic risk of extinction for this bull trout core area.</p> <p><b>The problem:</b></p> <p>Bull trout are currently listed as threatened under the U.S. Endangered Species Act. In the Clark Fork River three large hydropower dams prevent upstream migration of adult fish back to their natal spawning areas. The reduction in the number of spawners reaching their natal streams has resulted in rapid population declines.</p> <p><b>The objective:</b></p> <p>To genetically identify the sub-basin of origin of trapped adults prior to their release downstream or passage upstream using a</p>
<b>Expended</b>	\$75285	
<b>Objective</b>	Recover fish and other aquatic resource populations protected under the Endangered Species Act.	
<b>Primary Benefited Species</b>	Bull trout ( <a href="#">Salvelinus confluentus</a> )	
<b>Primary Benefited Population</b>	<a href="#">Bull trout - Clark Fork (3) Cabinet Gorge Reservoir</a>	
<b>Plans</b>	Chapter 3, Clark Fork River Recovery Unit, Montana, Idaho, and Washington. 285 p. U.S. Fish and Wildlife Service. Bull Trout ( <i>Salvelinus confluentus</i> ) Draft Recovery Plan. Portland, Oregon.	
<b>Keyword</b>	Genetics	
<b>Need Number</b>	N-002	
<b>Partners</b>	<p>Avista Corporation (\$10000)</p> <p>Confederated Salish Kootenai Tribes (\$5000)</p> <p>Idaho Fish and Game (\$5000)</p> <p>Montana Department of Fish, Wildlife &amp; Parks (\$5000)</p> <p>Mountain Prairie Region Ecological Services Field Office (\$5000)</p>	

## Accomplishments

Number of other Recovery Plan tasks implemented for T&E populations	2
Number of applied aquatic scientific and technologic tools shared with partners.	1
Number of techniques and culture technology tools developed.	1

"rapid response" methodology.

### **The *method*:**

This project identified and developed a suite of DNA markers to genetically identify the sub-basin (or population) of origin of bull trout trapped at the base of main stem dams during their upstream spawning migrations.

**13210-A-044 - [Genetic Identification of Endangered Winter-Run Chinook Salmon in the Sacramento River, CA](#)**

<b>Facility</b>	Abernathy Fish Technology Center
<b>Expended</b>	\$66000
<b>Objective</b>	Recover fish and other aquatic resource populations protected under the Endangered Species Act.
<b>Primary Benefited Species</b>	Chinook salmon or king salmon ( <a href="#">Oncorhynchus tshawytscha</a> )
<b>Primary Benefited Population</b>	<a href="#">Sacramento River Winter-Run Evolutionarily Significant Unit</a>
<b>Plans</b>	National Broodstock Policy and Implementation Guidelines Proposed Recovery Plan for the Sacramento River Winter-run Chinook Salmon
<b>Keyword</b>	Genetics
<b>Need Number</b>	N-002
<b>Partners</b>	California Department of Fish and Game (\$30000) Coleman National Fish Hatchery (\$30000) Red Bluff Fish and Wildlife Office (\$30000)

**Accomplishments**

Number of Fishery Management Plan production tasks implemented (PART)	1
Number of applied aquatic scientific and technologic tools shared with partners.	1

**Accomplishment Summary**

A total of 500 natural origin adults and 384 salmon carcasses were genotyped using "rapid response" methodology to identify winter-run Chinook salmon. These results are critical for maintaining broodstock integrity and estimating abundance of endangered winter-run Chinook in the Sacramento River.

**Description**

**The importance to the Resource:**

Genetic verification of adults used in the NFH program is critical to the genetic integrity of the broodstock and species recovery. Genetic identifications are also performed on spawned-out carcasses retrieved from the Sacramento River to estimate levels of population abundance and recovery among natural spawners.

**The problem:**

Livingston Stone NFH, a conservation NFH, produces listed winter-run Chinook salmon. Adults are trapped for potential broodstock in the Sacramento River. Return timing of fall-run Chinook and spring-run Chinook overlap with winter-run Chinook and genetic information must be used to identify winter-run for broodstock and abundance estimates.

**The objective:**

DNA markers are used to distinguish endangered winter-run Chinook salmon from other "races" of Chinook salmon in the Sacramento River.

**The method:**

Number of techniques and culture technology tools developed.	1	Fin clips from each trapped adult are express mailed to the Abernathy FTC for "rapid response" genetic identification of run type. Genetic identifications are determined within 10 hours of receipt of tissues, and the results sent electronically to the NFH manager for broodstock selection and disposition.
Number of applied science and technology tasks implemented as prescribed by Recovery Plans. (PART)	2	
Number of applied science and technology tasks implemented as prescribed by Fishery Management Plans. (PART)	1	

**13210-A-047 - [Recovery and Genetic Monitoring of Chinook Salmon on the Warm Springs Indian Reservation, OR](#)**

<b>Facility</b>	Abernathy Fish Technology Center
<b>Expended</b>	\$48171
<b>Objective</b>	Restore declining fish and other aquatic resource populations before they require listing under the Endangered Species Act.
<b>Primary Benefited Species</b>	Chinook salmon or king salmon ( <a href="#">Oncorhynchus tshawytscha</a> )
<b>Primary Benefited Population</b>	<a href="#">Warm Springs hatchery spring chinook</a>
<b>Plans</b>	Warm Springs Hatchery and Genetic Management Plan (draft) 1999 NMFS Biological Opinion on Artificial Propagation in the Columbia River Basin.
<b>Keyword</b>	Genetics
<b>Need Number</b>	N-002
<b>Partners</b>	Columbia River Fisheries Program Office (\$20000) Confederated Tribes of The Warm Springs (\$5000)

**Accomplishments**

Number of population assessments completed	1
Number of other Recovery Plan tasks implemented for T&E populations	1

**Accomplishment Summary**

Fin clips were collected from outplanted NFH origin adults and natural origin juvenile, spring Chinook salmon. 180 adults and 450 juveniles were genotyped at 10 DNA loci for assessing natural reproductive success of outplanted NFH-origin adults. Approximately half of the juveniles were parented by an outplant Chinook salmon. A manuscript is in development for submission to a peer-reviewed journal.

**Description**

**The importance to the Resource:**

Shitike Creek supports a depressed population of spring Chinook salmon. The USFWS and Confederated Tribes of the Warm Springs Reservation are attempting to rebuild this stock by outplanting surplus NFH adults from the Warm Springs NFH with the goal that those adults will spawn naturally in Shitike Creek.

**The problem:**

Surplus adults returning to NFHs are potential source of fish for restoring depressed natural populations. The ability of NFH-origin adults to successfully reproduce in the wild and contribute to natural population recovery is unknown.

**The objective:**

To determine the natural spawning success of Warm Springs NFH adult spring Chinook salmon in Shitike Creek and their ability to contribute to recovery of the population.

**The method:**

Number of technical assistance requests fulfilled to support Tribal fish and wildlife conservation	1	All NFH-origin adult spring Chinook salmon outplanted into Shitike Creek are genotyped with a suite of DNA markers, and samples of naturally produced juveniles representing potential offspring are also genotyped. The pedigree relationships between potential parents and offspring will be determined by DNA analyses.
Number of applied aquatic scientific and technologic tools shared with partners.	1	
Number of applied science and technology tasks implemented as prescribed by Recovery Plans. (PART)	1	

13210-A-049 - [Genetic Monitoring and Broodstock Management of Steelhead at the Eagle Creek NFH](#)

<b>Facility</b>	Abernathy Fish Technology Center
<b>Expended</b>	\$10000
<b>Objective</b>	Recover fish and other aquatic resource populations protected under the Endangered Species Act.
<b>Primary Benefited Species</b>	Rainbow trout ( <a href="#">Oncorhynchus mykiss</a> )
<b>Primary Benefited Population</b>	<a href="#">Clackamas River winter run steelhead</a>
<b>Plans</b>	Eagle Creek NFH Winter Steelhead Hatchery and Genetic Management Plan  1999 NMFS Biological Opinion on Artificial Propagation in the Columbia River Basin.
<b>Keyword</b>	Genetics
<b>Need Number</b>	N-002
<b>Partners</b>	Columbia River Fisheries Program Office (\$10000) Eagle Creek National Fish Hatchery (\$500) Lower Columbia Fish Health Center (\$500)

**Accomplishments**

Number of population assessments completed	2
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**Accomplishment Summary**

Genetic assignment tests were used to determine if Eagle Creek NFH steelhead trout are reproducing naturally in Eagle Creek. These findings will aid in the development of a genetic monitoring and broodstock management plan for steelhead at Eagle Creek NFH. This is the second year of a three year study. The first year of the study indicated the majority of the 200 natural-origin steelhead sampled were parented by the ESA listed native winter-run population.

**Description**

**The importance to the Resource:**

In the second year of a three year study, genetic assignment tests were used to determine the genetic impact of the Eagle Creek NFH fish on the ESA listed native winter-run steelhead. The information gathered from this project will aid managers with assessing genetic risks associated with maintaining the current broodstock at Eagle Creek NFH.

**The problem:**

The number of non-native Eagle Creek NFH steelhead spawning naturally in Eagle Creek is unknown. The NFH program is managed as a segregated program with the assumption that few, if any, hatchery steelhead spawn in the wild.

**The objective:**

Determine the reproductive success of Eagle Creek NFH steelhead in the wild.

**The method:**

Number of other Recovery Plan tasks implemented for T&E populations	2	Sixteen DNA markers and genetic assignment tests were used to determine if natural-origin juveniles were parented by hatchery or the ESA listed wild steelhead. A total of 200 juvenile and 50 adult steelhead were examined from five locations in the Eagle Creek basin.
Number of applied aquatic scientific and technologic tools shared with partners.	1	
Number of techniques and culture technology tools developed.	1	
Number of applied science and technology tasks implemented as prescribed by Recovery Plans. (PART)	1	

13310-A-106 - [Bull Trout Recovery Planning](#)

<b>Facility</b>	Columbia River Fisheries Program Office	<p><b>Accomplishment Summary</b></p> <p>Progress made in bull trout status review and recovery planning.</p> <p><b>Description</b></p> <p><b>The importance to the Resource:</b></p> <p>Bull trout remain listed as threatened and need to have a finalized recovery plan.</p> <p><b>The problem:</b></p> <p>The five year review process is still ongoing and finalizing the recovery plan has been put on hold pending the outcome of the review.</p> <p><b>Further description:</b></p>			
<b>Expended</b>	\$50000				
<b>Objective</b>	Recover fish and other aquatic resource populations protected under the Endangered Species Act.				
<b>Primary Benefited Species</b>	Bull trout ( <a href="#">Salvelinus confluentus</a> )				
<b>Primary Benefited Population</b>	Not specified				
<b>Plans</b>	Bull Trout Recovery Plan (Draft) Bull Trout Draft Recovery Plan, Chapter 10 Bull Trout Draft Recovery Plan, Chapter 6 Bull Trout Draft Recovery Plan, Chapter 7 Bull Trout Draft Recovery Plan, Chapter 9 Bull Trout Draft Recovery Plan, Chapter 20 Bull Trout Draft Recovery Plan, Chapter 12				
<b>Keyword</b>	Recovery				
<b>Need Number</b>	N-002				
<b>Partners</b>					
<p><b>Accomplishments</b></p> <table border="1"> <tr> <td>Number of population assessments completed</td> <td>24</td> </tr> <tr> <td>Number of other Recovery Plan tasks implemented for T&amp;E populations</td> <td>7</td> </tr> </table>			Number of population assessments completed	24	Number of other Recovery Plan tasks implemented for T&E populations
Number of population assessments completed	24				
Number of other Recovery Plan tasks implemented for T&E populations	7				

**13310-A-136 - [Columbia River Basin Production Coordination, Hatchery Assessment, Planning, and ESA Compliance](#)**

<b>Facility</b>	Columbia River Fisheries Program Office	<p><b>Accomplishment Summary</b></p> <p>Conserve fishery resources, meet tribal trust responsibilities, and provide sport and commercial fishing opportunities through hatchery planning, coordination and evaluation, to assist with hatchery reform.</p> <p><b>Description</b></p> <p><b>The importance to the Resource:</b></p> <p>National Fish Hatcheries conserve fishery resources, meet tribal trust responsibilities, and provide sport and commercial fishing opportunities.</p> <p><b>The problem:</b></p> <p>Hatchery production, planning and evaluation needs to be a coordinated between fisheries management, research, and production both within the Service and with co-managers &amp; partners.</p> <p><b>The objective:</b></p> <p>Columbia River Fisheries Program Office staff conducts production planning, marking, monitoring, and post-stocking evaluations.</p> <p><b>The method:</b></p> <p>CRFPO staff served in regional production planning and coordination fora. For example, to keep track and coordinate hatchery programs, our office maintains the Columbia River information System and contributes to Pacific States Marine Fisheries Commission databases and participates on Production Advisory Committees and Hatchery Evaluation Teams.</p>
<b>Expended</b>	\$90741	
<b>Objective</b>	Support, facilitate, and/or lead collaborative approaches to manage interjurisdictional fisheries.	
<b>Primary Benefited Species</b>	Chinook salmon or king salmon ( <a href="#">Oncorhynchus tshawytscha</a> )	
<b>Primary Benefited Population</b>	Not specified	
<b>Plans</b>	<p>2005-2007 Interim Management Agreement for Upriver Chinook, Sockeye, Steelhead, Coho, and White Sturgeon</p> <p>U. S. vs OR Columbia River Fishery Management Plan (under renegotiation)</p> <p>1999 NMFS Biological Opinion on Artificial Propagation in the Columbia River Basin.</p>	
<b>Keyword</b>	Monitoring and Assessment	
<b>Need Number</b>	N-002	
<b>Partners</b>	<p>Abernathy Fish Technology Center</p> <p>Big White Salmon River Watershed Council</p> <p>Bonneville Power Administration</p> <p>Columbia River Basin Tribes</p> <p>Idaho Department of</p>	

Fish and Game  
 National Oceanic and  
 Atmospheric Administration,  
 Fisheries  
 Oregon Department of  
 Fish and Wildlife  
 Pacific States Marine  
 Fisheries Commission  
 U.S. Army Corps of  
 Engineers  
 U.S. Bureau of  
 Reclamation  
 Washington  
 Department of Fish and  
 Wildlife

**Further description:**

We also develop Comprehensive Hatchery and Genetic Management Plans and Section 7 Biological Assessments for ESA compliance. We develop collaborative projects to investigate diet, release, and rearing density to improve hatchery performance, as well as develop in-stream studies using traps, radio telemetry, and snorkeling to investigate behavior, wild and hatchery interactions and habitat use.

**Accomplishments**

Number of population assessments completed	19
Number of other Recovery Plan tasks implemented for T&E populations	4
Number of Fishery Management Plan production tasks implemented (PART)	2

13310-A-145 - [Warm Springs National Fish Hatchery Passage System Evaluation](#)

<b>Facility</b>	Columbia River Fisheries Program Office
<b>Expended</b>	\$9498
<b>Objective</b>	Maintain diverse, self-sustaining fish and other aquatic resource populations.
<b>Primary Benefited Species</b>	Chinook salmon or king salmon ( <a href="#">Oncorhynchus tshawytscha</a> )
<b>Primary Benefited Population</b>	Not specified
<b>Plans</b>	Warm Springs Hatchery and Genetic Management Plan (draft) 2000 NMFS FCRPS Biological Opinion - December 21, 2000
<b>Keyword</b>	Fish Technology
<b>Need Number</b>	N-002
<b>Partners</b>	Confederated Tribes of The Warm Springs Warm Springs National Fish Hatchery

**Accomplishments**

Number of other Recovery Plan tasks implemented for T&E populations	2
Number of techniques and culture technology tools developed.	1
Number of applied science and technology tasks implemented as prescribed by Recovery Plans. (PART)	1

**Accomplishment Summary**

CRFPO collected and assessed biological data and consulted with other groups to improve performance of passage operations and brood stock collection of hatchery and wild fish for hatchery reform.

**Description**

**The importance to the Resource:**

Collect hatchery brood stock and protect wild salmon.

**The problem:**

Handling of wild fish can cause mortalities.

**The objective:**

Use state of the art technology to reduce handling on wild fish.

**The method:**

An adult fish passage system was installed at Warm Springs NFH (WSNFH) in 1996 to improve survival of wild and listed fish passed upstream of the hatchery.

**Further description:**

Initial testing from 1997 to 2001 suggested improvements to the passage system were needed. Problems immediately identified were mortality from fish jumping from the passage corridor, estimating wild fish passage, and estimating unintentional passage of hatchery adults upstream. WSNFH was given responsibility for making physical improvements to the system and operations. The Columbia River Fisheries Program Office (CRFPO) collates and collects data for

	monitoring and evaluation.
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**13310-A-151 - [Comprehensive Hatchery and Genetic Management Plan for Warm Springs National Fish Hatchery](#)**

<b>Facility</b>	Columbia River Fisheries Program Office	<p><b>Accomplishment Summary</b></p> <p>Hatchery and Genetic Management Plan drafted and submitted for Section 7 ESA consultation and identify hatchery reform.</p> <p><b>Description</b></p> <p><b>The importance to the Resource:</b> Provide harvest to tribal and sport fisheries while protecting ESA listed fish.</p> <p><b>The problem:</b> Fisheries and populations impacted by habitat, dams, and hatcheries.</p> <p><b>The objective:</b> Hatcheries need to provide fisheries and protect ESA listed fish.</p> <p><b>The method:</b> ESA Section 7 consultation through development of a Hatchery and Genetic Management Plan.</p> <p><b>Further description:</b> The Service is working with the National Marine Fisheries Service (NMFS) and our co-managers to develop a conservation management approach for Columbia River hatcheries, which includes development of Hatchery and Genetic Management Plans (HGMPs) for all hatchery programs as a consultation mechanism to evaluate risks and benefits to listed species. Performance standards will be developed for each specific hatchery program. . The Service is also developing comprehensive management plans</p>
<b>Expended</b>	\$3569	
<b>Objective</b>	Recover fish and other aquatic resource populations protected under the Endangered Species Act.	
<b>Primary Benefited Species</b>	Chinook salmon or king salmon ( <a href="#">Oncorhynchus tshawytscha</a> )	
<b>Primary Benefited Population</b>	Not specified	
<b>Plans</b>	Warm Springs Hatchery and Genetic Management Plan (draft) Comprehensive Hatchery Management Plan- Warm Springs NFH 2000 NMFS FCRPS Biological Opinion - December 21, 2000	
<b>Keyword</b>	Management	
<b>Need Number</b>	N-002	
<b>Partners</b>	Abernathy Fish Technology Center Confederated Tribes of The Warm Springs Lower Columbia River Fish Health Center National Marine Fisheries Service Oregon Department of Fish and Wildlife Warm Springs National	

Fish Hatchery

**Accomplishments**

Number of other Recovery Plan tasks implemented for T&E populations	1
Number of post stocking survival tasks met as prescribed by Fishery Management Plans, for hatchery propagated depleted species (PART)	1
number of marking and tagging targets met, as prescribed by Fishery management plans. (PART)	1
Number of applied science and technology tasks implemented as prescribed by Recovery Plans. (PART)	1
Number of applied science and technology tasks implemented as prescribed by Fishery Management Plans. (PART)	1

for all National Fish Hatcheries in Region One (CHMP). Together, these plans will integrate Service objectives and priorities with those of our co-managers and public to provide a foundation for hatchery reform and review. CRFPO staff will develop plans for Warm Springs, Eagle Creek, Carson, Little White, Willard and Spring Creek National Fish Hatcheries. This project is shared with the above mentioned National Fish Hatcheries, Abernathy Fish Technology Center, and Lower Columbia River Fish Health Center.

13310-A-152 - [Walla Walla River Bull Trout Recovery Efforts](#)

<b>Facility</b>	Columbia River Fisheries Program Office
<b>Expended</b>	\$73923
<b>Objective</b>	Recover fish and other aquatic resource populations protected under the Endangered Species Act.
<b>Primary Benefited Species</b>	Bull trout ( <a href="#">Salvelinus confluentus</a> )
<b>Primary Benefited Population</b>	<a href="#">Walla Walla River core area Bull Trout</a>
<b>Plans</b>	Bull Trout Draft Recovery Plan, Chapter 10 Bull Trout Recovery Plan (Draft)
<b>Keyword</b>	Recovery
<b>Need Number</b>	N-002
<b>Partners</b>	Oregon Department of Fish and Wildlife (\$2000) Umatilla Tribe (\$2000) Upper Columbia Fish and Wildlife Office Walla Walla Basin Watershed Council Washington Department of Fish and Wildlife (\$2000)

**Accomplishments**

Number of miles of in-stream habitat assessed	18.0
Number of other Recovery Plan tasks	5

**Accomplishment Summary**

Continued work to develop habitat suitability criteria for spawning and rearing bull trout in the Walla Walla River, and to refine suitable water temperature criteria. Habitat and temperature criteria will allow development of more realistic instream flows to help recover bull trout. Habitat suitability model validation began during 2006.

**Description**

**The importance to the Resource:**

Bull trout are currently listed as threatened. Development of habitat suitability models will assist in the recovery of bull trout.

**The problem:**

Inadequate instream flows occur throughout the Walla Walla basin, primarily as a result of irrigation withdrawals.

**The objective:**

This project is designed to provide the technical data to improve conditions for ESA-listed bull trout in the Walla Walla basin to make progress towards recovery and delisting.

**The method:**

A probabilistic regression model is being developed to identify suitable habitat for spawning and rearing bull trout. Once suitable habitat is identified, alterations to flow can be modeled and the resulting affects on useable habitat can be estimated following the instream flow methodology.

**Further description:**

implemented for T&E populations		<p>The habitat criteria currently being developed are required to define the physical conditions bull trout need to maintain stable populations, and to develop instream flow recommendations that will assist recovery. Data indicate that current water temperature criteria may not capture the conditions bull trout will use. This could result in elimination of suitable areas from restoration and instream flow development. Results of this work could actually expand the possible distribution of bull trout as a function of temperature conditions and allow us to determine instream flows to provide the necessary physical habitat.</p>
Number of applied aquatic scientific and technologic tools shared with partners.	2	

13310-A-153 - [Subbasin Planning Activities in the Columbia River basin](#)

<b>Facility</b>	Columbia River Fisheries Program Office
<b>Expended</b>	\$121507
<b>Objective</b>	Recover fish and other aquatic resource populations protected under the Endangered Species Act.
<b>Primary Benefited Species</b>	Chinook salmon or king salmon ( <a href="#">Oncorhynchus tshawytscha</a> )
<b>Primary Benefited Population</b>	Not specified
<b>Plans</b>	Lower Columbia Salmon Recovery and Subbasin Plan Columbia Estuary Province Sub-basin Plans Columbia River Basin Fish and Wildlife Program (NPPC 2000)
<b>Keyword</b>	Recovery
<b>Need Number</b>	N-002
<b>Partners</b>	Bonneville Power Administration Lower Columbia River Fish Recovery Board Northwest Power and Conservation Council Oregon Department of Fish and Wildlife

**Accomplishments**

Number of population assessments completed	50
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**Accomplishment Summary**

Provided technical assistance implementing subbasin plans, through assisting with project reviews submittals for fish and wildlife program funding at subbasin, State, and regional levels. In addition, staff represent the Service on advisory groups for implementation and monitoring subbasin plan activities.

**Description**

**The importance to the Resource:**

Through subbasin plans, the Northwest Power and Conservation Council identifies projects for funding under the fish and wildlife program. These projects are important to provide biological information on listed species of salmon (primarily) and resident species (to a lesser degree).

**The problem:**

Installing and operating the system of Federal Dams throughout the Columbia River Basin, in conjunction with other habitat altering activities from a range of sources, and the potential impact of climate change on habitat and hydrology, has decimated fish and some wildlife populations throughout the Columbia Basin.

**The objective:**

The Fish and Wildlife program is supposed to divert funds derived from marketing power at the Federal Dams, to projects and programs that mitigate impacts from installing and operating the system on fish and wildlife populations in the Columbia Basin.

**The method:**

Through a planning process, subbasin plans are supposed to identify conditions and factors that limit fish and wildlife populations in the Columbia Basin, and identify measures, where possible, to correct these conditions or address specific factors for decline. Present efforts are to implement plan recommendations.

**Further description:**

This project provides data and information on current restoration and monitoring activities and provide guidance for future restoration activities for the sub-basins in the Columbia River Gorge, Columbia River Estuary, Lower Columbia River, and Columbia Plateau provinces. Plans to recover Columbia Basin salmon and steelhead, the NMFS and FWS Biological Opinions on the Federal Columbia River Power System, and the Northwest Power and Conservation Council's (NPCC's) Fish and Wildlife Program all require the completion of sub-basin plans. In concept, subbasin plans will help integrate and guide recovery efforts for many species. A primary focus of the CRFPO was to try and ensure that subbasin plans contained elements that are necessary for bull trout recovery as well as include measures for all species under FWS jurisdiction, particularly those which are imperiled. CRFPO assisted with the development of 17 subbasin plans. CRFPO is now participating in the implementation phase of the completed subbasin plan in the Lower Columbia River Area, through the Technical Advisory Committee, and Recovery Steering Committee

13310-A-154 - [Salmon Technical Recovery Team Participation](#)

<b>Facility</b>	Columbia River Fisheries Program Office	<p><b>Accomplishment Summary</b></p> <p>Accomplishment: Participated in the National Marine Fisheries Service Interior Columbia Basin and Lower Columbia/Willamette Technical Recovery Team (TRT) and assisted in developing viability criteria, status assessments, gap analysis, and limiting factors analysis. Developed reports for viability criteria and gap analysis. Reviewed regional recovery plans for consistency with TRT guidance.</p> <p><b>Description</b></p> <p><b>The importance to the Resource:</b></p> <p>The Columbia, was once the most productive river for Pacific salmon in North America; currently, however, there are 13 ESUs of salmon listed under the Endangered Species Act (ESA). In addition to their listing and economic value, salmon are an ecologically-important. The region needs technical criteria to guide for recovery of these populations.</p> <p><b>The problem:</b></p> <p>The region has implemented one of the largest, most administratively complex, and costly (~150 million dollars per year) fisheries restoration programs in the world. Given the listed status for 13 ESUs, and the complex and confounding nature of impacts to these populations, providing consistent guidance for recovery measures is a difficult task</p> <p><b>The objective:</b></p> <p>This project provided information and analysis required by the NOAA Fisheries to develop recovery plans for listed salmon in the interior and lower Columbia River. The criteria and evaluation process that were developed through this project will ensure that recovery</p>
<b>Expended</b>	\$90864	
<b>Objective</b>	Recover fish and other aquatic resource populations protected under the Endangered Species Act.	
<b>Primary Benefited Species</b>	Chinook salmon or king salmon ( <a href="#">Oncorhynchus tshawytscha</a> )	
<b>Primary Benefited Population</b>	Not specified	
<b>Plans</b>	<p>Conservation of Columbia Basin Fish, Final Basinwide Salmon Recovery Strategy, 12/2000 (All H Paper)</p> <p>Federal Columbia River Power System 2002 Biological Opinion</p> <p>Columbia River Basin Fish and Wildlife Program (NPPC 2000)</p>	
<b>Keyword</b>	Recovery	
<b>Need Number</b>	N-002	
<b>Partners</b>	<p>Columbia River Inter Tribal Fish Commission</p> <p>Idaho Department of Fish and Game</p> <p>National Marine Fisheries Service</p> <p>Oregon Department of Fish and Wildlife</p> <p>U. S. Forest Service</p> <p>University of Montana</p> <p>Washington</p>	

Department of Fish and  
Wildlife

### Accomplishments

Number of population assessments completed	134
Number of other Recovery Plan tasks implemented for T&E populations	6
Number of other Fishery Management Plan tasks implemented for populations of management concern.	3
Number of applied science and technology tasks implemented as prescribed by Fishery Management Plans. (PART)	1

measures can be evaluated against a consistent set of benchmarks for recovery.

#### **The method:**

Our staff provided technical expertise to the Technical Recovery Teams in the following areas: 1) population identification; 2) delisting criteria; 3) habitat/fish productivity relationships; 4) salmon limiting factor analysis; 5) hatchery evaluations; 6) monitoring and evaluation design, and 7) estimating survival gaps.

#### **Further description:**

We provided information and analysis required by the NMFS to develop recovery plans for listed salmon in the interior and lower Columbia River. . Our staff provided technical expertise to the Interior and Lower Columbia/Willamette (LCW) Technical Recovery Teams in the following areas: 1) population identification; 2) delisting criteria; 3) habitat/fish productivity relationships; 4) salmon limiting factor analysis; 5) hatchery evaluations; and 6) monitoring and evaluation design. The goal is to develop a sound recovery plan for Columbia River listed salmon. The CRFPO was fully engaged in both TRTs and worked on population identification for Chinook and steelhead in the Interior, a Viability Report for populations in the Interior, application of viability criteria to assess population status in LCW, and reviewed subbasin plans relative to viability criteria.. In addition we reviewed a number of regional recovery plans with respect to viability criteria. The Interior team has begun developing models to assess limiting factors relative to viability criteria. Also, the team is developing methodologies to intergrate the population analyses for an ESU. We developed a modeling system to estimate survival gaps

**13310-A-164 - [Warm Springs NFH Marking to Support Fisheries and Broodstock Management, Stock Assessment, and ESA](#)**

<b>Facility</b>	Columbia River Fisheries Program Office	<p><b>Accomplishment Summary</b></p> <p>In FY '06 624,344 spring Chinook salmon were marked at Warm Springs NFH to support fisheries management, brood stock management, stock assessment, address ESA concerns, and hatchery reform issues.</p> <p><b>Description</b></p> <p><b>The importance to the Resource:</b></p> <p>Marking and tagging of hatchery stocks is critical to west coast fisheries management, hatchery broodstock management, wild stock protection, and recovery actions.</p> <p><b>The problem:</b></p> <p>West coast salmon fisheries catch a variety of ESA listed and other stocks of concern as they target abundant hatchery and other productive wild stocks. A coast wide tagging and stock assessment program to monitor and evaluate status of stocks and impacts of fisheries on various stocks of concern is critical to wild stock protection and recovery.</p> <p><b>The objective:</b></p> <p>This marking project is designed to provide information for hatchery evaluation, harvest management, stock assessment, and brood stock management of wild and hatchery fish as required by co-managers in the Deschutes and Columbia Rivers.</p> <p><b>The method:</b></p> <p>This marking project provided funds to the Columbia River Fisheries Program Office to mark 100% of the Warm Springs NFH spring Chinook production with an adipose fin clip</p>
<b>Expended</b>	\$96022	
<b>Objective</b>	Maintain diverse, self-sustaining fish and other aquatic resource populations.	
<b>Primary Benefited Species</b>	Chinook salmon or king salmon ( <a href="#">Oncorhynchus tshawytscha</a> )	
<b>Primary Benefited Population</b>	Not specified	
<b>Plans</b>	<p>Warm Springs Hatchery and Genetic Management Plan (draft) 2005-2007 Interim Management Agreement for Upriver Chinook, Sockeye, Steelhead, Coho, and White Sturgeon</p> <p>2000 NMFS FCRPS Biological Opinion - December 21, 2000</p> <p>1999 NMFS Biological Opinion on Artificial Propagation in the Columbia River Basin.</p> <p>Columbia River Basin Fish and Wildlife Program (NPPC 2000)</p> <p>Conservation of Columbia Basin Fish, Final Basinwide Salmon Recovery Strategy, 12/2000 (All H Paper)</p>	
<b>Keyword</b>	Monitoring and Assessment	
<b>Need</b>	N-002	

<b>Number</b>		<p>plus coded-wire tag. This marking program at Warm Springs NFH is a pivotal management tool in the management of wild and hatchery fish in the Deschutes River basin.</p> <p><b>Further description:</b></p> <p>The Warm Springs Tribe coordinates with the Service on this project, however, the Service has the lead for the monitoring and assessment of the tagging and release program at the Warm Springs NFH. The 100% adipose and coded-wire tagging program provides the management framework for an automated wild stock fish passage system at the hatchery weir, the ability for intensive hatchery program study evaluations, selective fishery opportunity, and the ability to meet specific brood stock management objectives.</p>
<b>Partners</b>	<p>Confederated Tribes of The Warm Springs National Oceanic and Atmospheric Administration, Fisheries Oregon Department of Fish and Wildlife Warm Springs National Fish Hatchery</p>	
<p><b>Accomplishments</b></p>		
Number of marking and tagging targets met, as prescribed by Recovery plans	2	
Number of post-stocking survival tasks met, as prescribed by Recovery plans for hatchery propagated listed species. (PART)	1	
Number of other Recovery Plan tasks implemented for T&E populations	2	
number of marking and tagging targets met, as prescribed by Fishery management plans. (PART)	1	
Number of other Fishery Management Plan tasks implemented for populations of management concern.	1	
Number of applied aquatic scientific and technologic tools shared with partners.	1	
Number of techniques and culture technology tools developed.	1	

**13310-A-165 - [Evaluation of the Effect of Columbia River Water Management on the Hanford Reach National Monument](#)**

<b>Facility</b>	Columbia River Fisheries Program Office	<p><b>Accomplishment Summary</b></p> <p>Conducted additional habitat modeling and developed Reach-wide spawning habitat model. Completed spawning habitat modeling of Hanford Reach. Recommended operations to reduce juvenile mortality and improve productivity of spawning habitat for fall Chinook while maintaining flexibility for hydropower production. Coordinated with Tribes, States, and assisted with FERC relicensing.</p> <p><b>Description</b></p> <p><b>The importance to the Resource:</b></p> <p>Hanford Reach NM was established in part to protect the last free-flowing section of the mainstem Columbia River in the US, and the internationally significant stock of fall Chinook salmon that spawn and rear there. Evaluation of the effect of water management for power production on stock productivity is required to maintain fishery benefits.</p> <p><b>The problem:</b></p> <p>Spawning habitat and production are degraded and millions of juvenile salmon are killed each spring as a result of hydropower operations. Realistic escapement goals cannot be determined because of compromised freshwater productivity. Habitat-based escapement goals have not yet been determined and productivity and fishery benefits are being lost.</p> <p><b>The objective:</b></p> <p>The objective of the project is to assess the effect of water management, including hydropower operations, on the productivity of the habitat and on juvenile salmon mortality.</p>
<b>Expended</b>	\$41945	
<b>Objective</b>	Utilize appropriate scientific and technologic tools in formulating and executing fishery management plans and policies.	
<b>Primary Benefited Species</b>	Chinook salmon or king salmon ( <a href="#">Oncorhynchus tshawytscha</a> )	
<b>Primary Benefited Population</b>	<a href="#">Col. R. below Priest Rapids Dam - Hanford Reach Fall Chinook</a>	
<b>Plans</b>	<p>Conservation of Columbia Basin Fish, Final Basinwide Salmon Recovery Strategy, 12/2000 (All H Paper)</p> <p>Pacific Salmon Treaty of 1999</p> <p>Columbia River Basin Fish and Wildlife Program (NPPC 2000)</p>	
<b>Keyword</b>	Native Species	
<b>Need Number</b>	N-002	
<b>Partners</b>	<p>Alaska Department of Fish and Game (\$1000)</p> <p>American Rivers (\$1000)</p> <p>Columbia River Inter Tribal Fish Commission (\$2000)</p> <p>Hanford Reach National Monument/Saddle Mountain National Wildlife</p>	

Refuge (\$1000)  
 Umatilla Tribe  
 Upper Columbia Fish  
 and Wildlife Office  
 Yakama Indian Nation

**Accomplishments**

Number of habitat assessments completed	2.0
Number of miles of in-stream habitat assessed	51.0
Number of population assessments completed	1
Number of other Recovery Plan tasks implemented for T&E populations	1
Number of other Fishery Management Plan tasks implemented for populations of management concern.	7
Number of applied aquatic scientific and technologic tools shared with partners.	1
Number of applied science and technology tasks implemented as prescribed by Fishery Management Plans. (PART)	1

Conditions evaluated range from stable, natural streamflows to current load following hydrographs that have resulted in lost productivity.

**The method:**

Physical, hydrodynamic, habitat, and biological models were developed in a GIS to conduct the assessment of water management effects. These models were used to quantify spawning and rearing habitat for a range of streamflows. They were also used to quantify juvenile salmon mortality under existing conditions, and to predict how to reduce mortality.

**Further description:**

Hanford Reach National Monument was established in part to protect the last free-flowing section of the mainstem Columbia River in the US, and the internationally significant stock of fall Chinook salmon that spawn and rear there. Hydropower operations cause hourly fluctuations in streamflow that compromise spawning habitat and production, and result in the death of millions of juvenile salmon each spring during the rearing period. This project developed recommendations for hydro operations during the spring to minimize juvenile salmon mortality, while maintaining flexibility for power production. A spawning habitat model was also completed and used to simulate the effect of streamflows and hydropower operations on spawning habitat. A process was developed to evaluate a range of operational options to be implemented each season. Options were designed to accommodate both hydropower production and fish production. Technical assistance was provided to the FERC process for the relicensing of the upstream hydro project (Priest Rapids) to protect the Chinook salmon that use the Hanford Reach, to protect the other significant resources of the Hanford

	Reach National Monument, and maintain flexibility for power production.
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13310-A-166 - [Evaluate Factors Limiting Columbia River Gorge Chum Salmon Populations](#)

<b>Facility</b>	Columbia River Fisheries Program Office	<p><b>Accomplishment Summary</b></p> <p>Estimated abundance, timing, and characteristics of adult and juvenile chum salmon in Hardy Creek and Hamilton Springs; monitored early juveniles using emergence traps.</p> <p><b>Description</b></p> <p><b>The importance to the Resource:</b></p> <p>Chum salmon, which are listed as threatened under the Endangered Species Act, consistently spawn in a limited number of areas and tributaries in the Columbia River basin. Suitable spawning habitat in one such tributary, Hardy Creek, is entirely located on Pierce National Wildlife Refuge.</p> <p><b>The problem:</b></p> <p>Factors limiting Chum salmon abundance in tributaries of Pierce National Wildlife Refuge are currently unknown. This information is needed to direct habitat restoration efforts or habitat modifications on refuge property</p> <p><b>The objective:</b></p> <p>Objective of this work is to develop a better understanding of chum salmon life history requirements so that opportunities to improve production through habitat restoration or creation may be assessed (e.g., evaluating the potential contribution of the artificial spawning channel at Pierce NWR).</p> <p><b>The method:</b></p> <p>Combination of fish abundance (spawning adults, migrating fry) and habitat parameter monitoring (temperature, dissolved oxygen, substrate composition) will be used to a</p>	
<b>Expended</b>	\$0		
<b>Objective</b>	Recover fish and other aquatic resource populations protected under the Endangered Species Act.		
<b>Primary Benefited Species</b>	Chum salmon ( <a href="#">Oncorhynchus keta</a> )		
<b>Primary Benefited Population</b>	<a href="#">Lower Gorge Chum Salmon</a>		
<b>Plans</b>	<p>Federal Columbia River Power System 2002 Biological Opinion</p> <p>Columbia Gorge Subbasin Plan</p> <p>Lower Columbia Salmon Recovery And Fish &amp; Wildlife Subbasin Plan: Volume II, Chapter A – Lower Columbia Mainstem and Estuary for Washington State - 2004</p>		
<b>Keyword</b>	Monitoring and Assessment		
<b>Need Number</b>	N-002		
<b>Partners</b>	<p>Bonneville Power Administration (\$263888)</p> <p>Pierce National Wildlife Refuge</p>		
<p><b>Accomplishments</b></p> <table border="1"> <tr> <td>Number of habitat assessments completed</td> <td>1.0</td> </tr> </table>			Number of habitat assessments completed
Number of habitat assessments completed	1.0		

Number of population assessments completed	3	develop habitat suitability indices.
Number of other Fishery Management Plan tasks implemented for populations of management concern.	1	
		<p><b>Further description:</b></p>
		<p>The CRFPO has monitored adult and juvenile chum salmon in Hardy Creek since 1997, and began monitoring adult and juvenile chum salmon in Hamilton Springs and adult salmon movement in the Columbia River in 1999. The goal of the project is to provide a better understanding of life history requirements and factors affecting chum salmon in the Columbia River Gorge, and investigate approaches to increase spawning habitat. Objectives of the project are: 1) Assess movement of adult chum salmon among three spawning areas (Hamilton Springs, Hardy Creek, and the mainstem Columbia River); 2) Determine abundance and biological characteristics of adult chum salmon; 3) Estimate chum smolt abundance in Hardy Creek, Hardy Creek Spawning Channel and Hamilton Springs; and 4) Evaluate habitat parameters associated with chum salmon spawning success. All work conducted at Hardy Creek and the constructed spawning channel is located on Pierce National Wildlife Refuge. The project is consistent with action agency commitments for implementation of the 2004 FCRPS BiOp and monitoring recommended in the Lower Columbia River Subbasin Plan. The project receives funding from the Bonneville Power Administration.</p>

**13310-A-169 - [Malheur National Wildlife Refuge Stream Improvement Biological Verification and Monitoring](#)**

<b>Facility</b>	Columbia River Fisheries Program Office
<b>Expended</b>	\$28055
<b>Objective</b>	Maintain diverse, self-sustaining fish and other aquatic resource populations.
<b>Primary Benefited Species</b>	Rainbow trout ( <a href="#">Oncorhynchus mykiss</a> )
<b>Primary Benefited Population</b>	Not specified
<b>Plans</b>	Columbia River Basin Fish and Wildlife Program (NPPC 2000)
<b>Keyword</b>	Monitoring and Assessment
<b>Need Number</b>	N-002
<b>Partners</b>	Malheur National Wildlife Refuge Oregon Department of Fish and Wildlife

**Accomplishments**

Number of habitat assessments completed	1.0
Number of miles of in-stream habitat assessed	2.0
Number of population assessments completed	1

**Accomplishment Summary**

Conducted habitat restoration post-construction survey to describe fish and aquatic macroinvertebrate communities at reference and treatment sample sites. This was the second post-construction survey conducted. Fish community appears more diverse throughout study area and higher densities of redband trout associated with restoration sites.

**Description**

**The importance to the Resource:**

The goal of the project is to evaluate biological responses to stream habitat improvements on the Blitzen River. The primary fish species intended to benefit from the work is redband trout, a sensitive aquatic species. Improved habitat conditions for this species will contribute toward the prevention of listing.

**The problem:**

Habitat in the Blitzen River has been degraded by such activities as overgrazing, channelization, and water management. Improvements to aquatic and riparian habitats were planned for a 4-km reach to benefit the aquatic community.

**The objective:**

Establish baseline dataset by describing habitats and fish and aquatic macroinvertebrate communities before planned habitat improvements are performed and compare fish and aquatic macroinvertebrate communities between control and treatment sites (i.e., reaches without and with habitat improvements).

	<p><b>The <i>method</i>:</b></p> <p>Pre-construction monitoring occurred in 2002. Post-construction monitoring occurred in 2003 and 2005. Monitoring was conducted at treatment (habitat improvement) and control (status quo) sites and included documenting changes in biological and physical parameters.</p>
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**13310-A-178 - [Determination of Bull Trout Instream Flow and Passage Needs in the Umatilla River Basin.](#)**

<b>Facility</b>	Columbia River Fisheries Program Office
<b>Expended</b>	\$88389
<b>Objective</b>	Recover fish and other aquatic resource populations protected under the Endangered Species Act.
<b>Primary Benefited Species</b>	Bull trout ( <a href="#">Salvelinus confluentus</a> )
<b>Primary Benefited Population</b>	<a href="#">Umatilla River core area Bull Trout</a>
<b>Plans</b>	Bull Trout Draft Recovery Plan, Chapter 10 Bull Trout Recovery Plan (Draft)
<b>Keyword</b>	Monitoring and Assessment
<b>Need Number</b>	N-002
<b>Partners</b>	Oregon Department of Fish and Wildlife Umatilla Tribe

**Accomplishments**

Number of population assessments completed	2
Number of other Recovery Plan tasks implemented for T&E populations	6

**Accomplishment Summary**

Work continued to assimilate physical and biological data. Spawning ground surveys were conducted, and surveys to determine juvenile and subadult distribution. Downstream movement of bull trout was detected during spring. Distribution of these fish will identify the area for instream flow targets.

**Description**

**The importance to the Resource:**

Bull trout are federally-listed as threatened. In the lower Umatilla River, there are a multitude of irrigation withdrawals that cause the river to be de-watered seasonally. Bull trout have been shown to utilize the lower river, and the lack of flow their potentially limits their production.

**The problem:**

Sections of the lower Umatilla River are de-watered seasonally making fish passage impossible and potentially limiting the production of bull trout, which have been shown to utilize the lower river. The de-watered sections result from extensive withdrawal of river water for irrigation.

**The objective:**

The objective is to determine when, seasonally, bull trout are impacted by the irrigation withdrawals, and to develop instream flow targets for the affected stream sections and time periods.

**The method:**

Snorkeling, radio tagging, and PIT-tagging in combination with remote PIT tag arrays will be

used to monitor the seasonal distribution and movement of migratory bull trout. This information will be used in modeling instream flow and setting flow targets for the impacted stream reaches.

**Further description:**

This project is designed to provide the technical data to improve conditions for ESA-listed bull trout in the Umatilla basin to make progress towards recovery and delisting. Inadequate instream flows occur throughout the basin, primarily as a result of irrigation withdrawals. Spawning ground surveys continued in the N. Fork Umatilla to maintain an index of bull trout population abundance and to quantify numbers of resident and fluvial spawners. Sampling during spring revealed a small downstream movement of subadult bull trout. These fish were either PIT-tagged to determine movement past remote detection arrays or radio tagged so they could be mobility tracked. The tagged fish remained in the upper Umatilla River, upstream from areas impacted by water diversions. Larger, older subadult bull trout rearing below the spring trapping site are currently being captured by snorkeling and dip-netting at night. They will also be radio-tagged and tracked throughout the year. Continued snorkeling, PIT tagging, and radio tagging will be used to track movements through fall, winter, and spring to determine usage and movement through the impacted lower section of the river.

**13310-A-182 - [Determination of Bull Trout Instream Flow and Passage Needs in the John Day River Basin.](#)**

<b>Facility</b>	Columbia River Fisheries Program Office	<p><b>Accomplishment Summary</b></p> <p>Spawning ground surveys were conducted, and surveys to determine juvenile and subadult distribution which can be used when setting instream flow targets. Based on limited data, North Fork John Day bull trout historically moved large distances. Fluvial sized bull trout in the North Fork that were radio tagged and monitored during 2006 remained in the North Fork John Day. Their migration pattern may be limited due to insufficient water, warmer water temperatures and push-up dams.</p> <p><b>Description</b></p> <p><b>The importance to the Resource:</b></p> <p>This project is designed to provide the technical data to improve conditions for ESA-listed bull trout in the John Day basin to make progress towards recovery and delisting.</p> <p><b>The problem:</b></p> <p>Inadequate instream flows occur throughout the basin, primarily as a result of irrigation withdrawals. Push up dams for irrigation diversions may limit passage.</p> <p><b>The objective:</b></p> <p>The objective is to determine when, seasonally, bull trout are impacted by the irrigation withdrawals, and to develop instream flow targets for the affected stream sections and time periods.</p> <p><b>The method:</b></p> <p>Snorkeling, radio tagging, and PIT-tagging will be used to monitor the seasonal distribution and movement of migratory bull trout. This</p>					
<b>Expended</b>	\$88389						
<b>Objective</b>	Recover fish and other aquatic resource populations protected under the Endangered Species Act.						
<b>Primary Benefited Species</b>	Bull trout ( <a href="#">Salvelinus confluentus</a> )						
<b>Primary Benefited Population</b>	<a href="#">John Day River core area Bull Trout</a>						
<b>Plans</b>	Bull Trout Draft Recovery Plan, Chapter 9 Bull Trout Recovery Plan (Draft)						
<b>Keyword</b>	Monitoring and Assessment						
<b>Need Number</b>	N-002						
<b>Partners</b>	Oregon Department of Fish and Wildlife						
<p><b>Accomplishments</b></p> <table border="1"> <tr> <td>Number of miles of in-stream habitat assessed</td> <td>12.0</td> </tr> <tr> <td>Number of population assessments completed</td> <td>1</td> </tr> <tr> <td>Number of other Recovery Plan tasks implemented for T&amp;E populations</td> <td>4</td> </tr> </table>			Number of miles of in-stream habitat assessed	12.0	Number of population assessments completed	1	Number of other Recovery Plan tasks implemented for T&E populations
Number of miles of in-stream habitat assessed	12.0						
Number of population assessments completed	1						
Number of other Recovery Plan tasks implemented for T&E populations	4						

information will be used in modeling instream flow and setting flow targets for the impacted stream reaches.

**Further description:**

This project is designed to provide the technical data to improve conditions for ESA-listed bull trout in the John Day basin to make progress towards recovery and delisting. Inadequate instream flows occur throughout the basin, primarily as a result of irrigation withdrawals. Push up dams are prevalent for irrigation diversions in the mainstem John Day. Spawning ground surveys continued in the John Day to maintain an index of bull trout population abundance and to quantify numbers of resident and fluvial spawners. Continued snorkeling, PIT tagging, and radio tagging will be used to track movements through fall, winter, and spring to determine usage and movement through the impacted lower section of the river.

13310-A-185 - [Conservation Planning Activities](#)

<b>Facility</b>	Columbia River Fisheries Program Office	<p><b>Accomplishment Summary</b></p> <p>Provided input, leadership and coordination to efforts for conserving lamprey, freshwater mussels, coastal cutthroat trout and Oregon chub.</p> <p><b>Description</b></p> <p><b>The importance to the Resource:</b></p> <p>CRFPO staff participate in various conservation planning arenas, particularly on aquatic species in the Pacific Northwest that have traditionally not received adequate attention.</p> <p><b>The problem:</b></p> <p>Management planning occurs that involves many of the trust species for the USFWS, particularly lamprey, cutthroat trout, Oregon chub, and western pearlshell mussels. To be effective, these planning forums need technical expertise from the USFWS.</p> <p><b>The objective:</b></p> <p>Staff serve to coordinate the Lamprey Technical Work Group which is managed under the CBFWA, coordinate and participate with a Coastal Cutthroat Tehnical Workgroup, participate on a Freshwater Mussel Technical Work Group and participate in decisions on Oregon chub management and recovery..</p> <p><b>The method:</b></p> <p>The various management groups met regularly and provided guidance to regional managers on priority work, management activities, proposal review, and funding recommendations.</p>
<b>Expended</b>	\$43400	
<b>Objective</b>	Recover fish and other aquatic resource populations protected under the Endangered Species Act.	
<b>Primary Benefited Species</b>	Pacific lamprey ( <a href="#">Lampetra tridentata</a> )	
<b>Primary Benefited Population</b>	Not specified	
<b>Plans</b>	<p>Conservation of Columbia Basin Fish, Final Basinwide Salmon Recovery Strategy, 12/2000 (All H Paper)</p> <p>Coastal Cutthroat Trout Framing Document (draft)</p> <p>Columbia River Basin Fish and Wildlife Program (NPPC 2000)</p> <p>Recovery Plan for the Oregon Chub (<i>Oregonichthys crameri</i>)</p>	
<b>Keyword</b>	Interjurisdictional	
<b>Need Number</b>	N-002	
<b>Partners</b>	<p>Alaska Department of Fish and Game</p> <p>Bonneville Power Administration</p> <p>Columbia River Basin Tribes</p> <p>Columbia River Inter Tribal Fish Commission</p> <p>Confederated Tribes of</p>	

The Warm Springs  
 Idaho Department of  
 Fish and Game  
 Oregon Department of  
 Fish and Wildlife  
 Oregon State  
 University  
 U.S. Geological Survey  
 Umatilla Tribe  
 Washington  
 Department of Fish and  
 Wildlife

**Further description:**

The lamprey group reviewed proposals for work on lamprey (e.g. AFEP proposals to COE and proposals to FWS and BPA). As coordinator of the group, CRFPO also acted as a liaison to other lamprey groups in the region. CRFPO staff provided technical guidance to the development of a lamprey conservation strategy being pursued by the Region (1) Office. Finally, CRFPO staff were (and are) one of the lead entities involved in the development of a coastal cutthroat symposium, monitoring framework design, and conservation plan.

**Accomplishments**

Number of population assessments completed	6
Number of other Recovery Plan tasks implemented for T&E populations	3
Number of other Fishery Management Plan tasks implemented for populations of management concern.	2
Number of applied science and technology tasks implemented as prescribed by Fishery Management Plans. (PART)	2

13310-A-198 - [Fisheries Restoration and Irrigation Mitigation Act \(FRIMA\)](#)

<b>Facility</b>	Columbia River Fisheries Program Office
<b>Expended</b>	\$0
<b>Objective</b>	Develop and improve long-term partnerships with States, Tribes, other Federal agencies, non-governmental organizations, and other Service Programs to develop collaborative conservation strategies for aquatic resources.
<b>Primary Benefited Species</b>	Chinook salmon or king salmon ( <a href="#">Oncorhynchus tshawytscha</a> )
<b>Primary Benefited Population</b>	Not specified
<b>Plans</b>	Fisheries Restoration and Irrigation Mitigation Act of 2000 (PL 106-502)
<b>Keyword</b>	Fish Passage
<b>Need Number</b>	N-002
<b>Partners</b>	Oregon Department of Fish and Wildlife (\$363739) Oregon Water Trust

**Accomplishments**

Fish passage barriers removed or bypassed	1
Number of other Fishery Management Plan tasks implemented for populations of management concern.	2

**Accomplishment Summary**

Ranked projects competing for screens funding and, once selected, helped assure that all projects have completed the necessary environmental compliance procedures.

**Description**

**The importance to the Resource:**

Improperly screened or unscreened diversions may directly kill fish or indirectly kill fish through intrainment into irrigation works. In some cases, these fish are listed under the ESA, and mortality at diversions can impede recovery.

**The problem:**

Irrigation diversions throughout the Pacific Northwest may be unscreened or not screened to appropriate criteria. This may lead to direct fish mortality or indirect through intrainment into canal/irrigation works. Diversion structures may be impassable and restrict or inhibit habitat use by fish.

**The objective:**

The objective is to modify diversions to allow passage and screen diversions to prevent intrainment of adult and juvenile fish into irrigation works.

**The method:**

Projects install new screens and passage facilities at existing sites to bring them into compliance with Oregon guidelines.

**Further description:**

The Columbia River Fisheries Program Office assists FRIMA implementation by serving as

	<p>the coordinator for projects in Oregon. This entails working with the Oregon Department of Fish and Wildlife, and other cooperators to rank projects competing for funding and, once selected, assuring that all projects have completed the necessary environmental compliance procedures. The focus of FRIMA is to provide funding to construct and install screening and passage facilities at water diversion sites.</p>
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13310-A-199 - [Deschutes River Genetics Monitoring](#)

<b>Facility</b>	Columbia River Fisheries Program Office	<p><b>Accomplishment Summary</b></p> <p>Study design and work plans have been developed with Abernathy FTC (\$23,000 allocated to run genetic samples), NOAA Fisheries, Warm Springs Tribe, and Oregon Department of Fish and Wildlife. Sampling fish to describe their genetics has begun.</p> <p><b>Description</b></p> <p><b>The importance to the Resource:</b></p> <p>The project entails characterizing the life history characteristics and genetic make-up of hatchery and wild ESA listed steelhead trout populations in the Deschutes River, Oregon to assist with recovery planning.</p> <p><b>The problem:</b></p> <p>Lack of genetic information on steelhead could hinder recovery.</p> <p><b>The objective:</b></p> <p>The objective of the study is to determine the population structure and genetic characteristics of hatchery and wild fish, and also determine the origin of stray hatchery steelhead based on their genetics.</p> <p><b>The method:</b></p> <p>Juvenile and adult fish were sampled at multiple locations throughout the Deschutes River, Oregon. Small tissue samples (partial fin clips) were collected and analyzed for genetic DNA markers.</p> <p><b>Further description:</b></p> <p>Study design, planning, equipment and supplies purchase occurred in FY 04. Sample</p>
<b>Expended</b>	\$56407	
<b>Objective</b>	Utilize appropriate scientific and technologic tools in formulating and executing fishery management plans and policies.	
<b>Primary Benefited Species</b>	Rainbow trout ( <a href="#">Oncorhynchus mykiss</a> )	
<b>Primary Benefited Population</b>	Not specified	
<b>Plans</b>	<p>1999 NMFS Biological Opinion on Artificial Propagation in the Columbia River Basin.</p> <p>Warm Springs Hatchery and Genetic Management Plan (draft)</p> <p>2000 NMFS FCRPS Biological Opinion - December 21, 2000</p>	
<b>Keyword</b>	Genetics	
<b>Need Number</b>	N-002	
<b>Partners</b>	<p>Abernathy Fish Technology Center</p> <p>Confederated Tribes of The Warm Springs National Marine Fisheries Service</p> <p>Oregon Department of Fish and Wildlife (\$3000)</p> <p>Portland General Electric (\$3000)</p>	

**Accomplishments**

Number of other Recovery Plan tasks implemented for T&E populations	2
Number of applied science and technology tasks implemented as prescribed by Recovery Plans. (PART)	1

collection began in FY 05. Abernathy Fish Technology Center began processing genetic samples in FY06. This project will lead to hatchery reform and habitat protection to better maintain the wild fish population traits in the Deschutes River. This project will assist the Technical Recovery Teams.

13310-A-211 - [National Fish Passage Program Project on Bridge Creek](#)

<b>Facility</b>	Columbia River Fisheries Program Office	<p><b>Accomplishment Summary</b></p> <p>The Sweet and Hashknife fish passage project was funded in FY 2005, replacing a culvert and an old diversion structure blocking fish passage on Bridge Creek, Oregon. Bridge Creek is a tributary of the John Day River, entering the lower John Day River.</p> <p><b>Description</b></p> <p><b>The importance to the Resource:</b></p> <p>In combination the Sweet diversion passage upgrade and the Hashknife culvert replacement will open 3.8 miles of habitat to unimpeded fish passage. The habitat is utilized by the listed mid-Columbia River steelhead trout, among other native fish.</p> <p><b>The problem:</b></p> <p>The existing diversion structure is degraded impeding passage. The Hashknife culvert is undersized and perched seasonally restricting fish passage.</p> <p><b>The objective:</b></p> <p>The objective is to restore year round fish passage past the diversion structure and the culvert.</p> <p><b>The method:</b></p> <p>The diversion structure will be replaced with a series of stepped rock weirs that allow passage, and the culvert will be replaced with a bridge.</p> <p><b>Further description:</b></p> <p>The National Fish Passager Program was created in 1999 with the goal of restoring</p>			
<b>Expended</b>	\$20000				
<b>Objective</b>	Maintain diverse, self-sustaining fish and other aquatic resource populations.				
<b>Primary Benefited Species</b>	Rainbow trout ( <a href="#">Oncorhynchus mykiss</a> )				
<b>Primary Benefited Population</b>	<a href="#">John Day River Lower Mainstem Tributaries Steelhead</a>				
<b>Plans</b>	Oregon Conservation Strategy				
<b>Keyword</b>	Fish Passage				
<b>Need Number</b>	N-002				
<b>Partners</b>	Local Landowner(s) (\$7900) Oregon Watershed Enhancement Board (\$90618) Wheeler Soil and Water Conservation District (\$3000)				
<p><b>Accomplishments</b></p> <table border="1"> <tr> <td>Number of miles re-opened to fish passage</td> <td>3.8</td> </tr> <tr> <td>Fish passage barriers removed or bypassed</td> <td>2</td> </tr> </table>			Number of miles re-opened to fish passage	3.8	Fish passage barriers removed or bypassed
Number of miles re-opened to fish passage	3.8				
Fish passage barriers removed or bypassed	2				

	<p>native fish and other aquatic species to self-sustaining levels by reconnecting habitat that has been fragmented by barriers. The program utilizes a voluntary, non regulatory approach to remove and bypass barriers. Generally projects are conducted in conjunction with local partners, including States, Tribes, other Federal agencies, and local private cooperators. The Sweet and Hashknife project restores access to 3.75 miles of stream by replacing a barrier culvert and failing diversion structure. This project is taking place on Bridge Creek, which is a tributary to the Lower John Day River, in Oregon.</p>
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**13310-A-215 - [Simulated Natural Rearing \(NATURES\) Environments compared to standard hatchery ponds.](#)**

<b>Facility</b>	Columbia River Fisheries Program Office	<p><b>Accomplishment Summary</b></p> <p>Hatchery reform to increase health and survival rates of hatchery fish by mimicking conditions in the natural environment.</p> <p><b>Description</b></p> <p><b>The importance to the Resource:</b></p> <p>Warm Springs National Fish Hatchery, Oregon will serve as the pilot facility for this evaluation. This hatchery produces and releases fish native to its watershed and strives to maintain characteristics of the native stocks in both the hatchery and stream environment.</p> <p><b>The problem:</b></p> <p>Survival of hatchery fish is lower than wild fish, once the hatchery fish are released into the stream, from the smolt to adult phase.</p> <p><b>The objective:</b></p> <p>NATURES rearing seeks to improve survival of hatchery stocks and minimize impacts on imperiled wild stocks.</p> <p><b>The method:</b></p> <p>This project will investigate the performance of fish reared in simulated natural rearing (NATURES) environments compared to standard hatchery ponds. This project will develop features at the hatchery to simulate natural habitat found in streams, including shade, cover, instream structure, color, flow, and rearing density.</p> <p><b>Further description:</b></p> <p>The Columbia River Fisheries Program Office</p>	
<b>Expended</b>	\$10913		
<b>Objective</b>	Develop and share applied aquatic scientific and technologic tools with partners.		
<b>Primary Benefited Species</b>	Chinook salmon or king salmon ( <a href="#">Oncorhynchus tshawytscha</a> )		
<b>Primary Benefited Population</b>	<a href="#">Warm Springs hatchery spring chinook</a>		
<b>Plans</b>	Warm Springs Hatchery and Genetic Management Plan (draft) 1999 NMFS Biological Opinion on Artificial Propagation in the Columbia River Basin.		
<b>Keyword</b>	Fish Technology		
<b>Need Number</b>	N-002		
<b>Partners</b>	Abernathy Fish Technology Center Confederated Tribes of The Warm Springs Lower Columbia River Fish Health Center Warm Springs National Fish Hatchery		
<p><b>Accomplishments</b></p> <table border="1"> <tr> <td>Recovery Plan production tasks implemented (PART)</td> <td>1</td> </tr> </table>			Recovery Plan production tasks implemented (PART)
Recovery Plan production tasks implemented (PART)	1		

Number of applied science and technology tasks implemented as prescribed by Recovery Plans. (PART)	1	will monitor juvenile fish in each treatment/control group and in streams to assess and compare performance; and develop techniques to measure performance including growth, survival, cryptic coloration, predator avoidance, foraging behavior, habitat utilization, and fish health.
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13310-A-216 - [Deep Creek Fish Passage Project](#)

<b>Facility</b>	Columbia River Fisheries Program Office	<p><b>Accomplishment Summary</b></p> <p>Work done this FY was getting the coop agreement together and signed, and funding to the project proponent. Actual construction work is slated for 2007. Environmental compliance was done by the Oregon FWO Partners Program Staff, who also contributed funding for the bypass.</p> <p><b>Description</b></p> <p><b>The importance to the Resource:</b></p> <p>This project provides the fish bypass for the new screen/passage system installed on Deep Creek, in the Warner Basin, Oregon. Deep Creek is one of three main tributaries to the Warner Lakes system. Fish species benefited include the Warner sucker (threatened) and Warner Basin redband trout.</p> <p><b>The problem:</b></p> <p>The O'Keefe diversion is unscreened, allowing fish to be entrained into the irrigation system.</p> <p><b>The objective:</b></p> <p>The objective of the project is to provide the bypass system to the new screening and passage facilities built with FRIMA funding.</p> <p><b>The method:</b></p> <p>The bypass is approximately 200 feet long, and will include drop wells, designed and implemented by the Oregon Department of Fish and Wildlife screen shop.</p> <p><b>Further description:</b></p> <p>Correcting this diversion will restore passage to approximately 2.5 miles of habitat.</p>			
<b>Expended</b>	\$25000				
<b>Objective</b>	Maintain diverse, self-sustaining fish and other aquatic resource populations.				
<b>Primary Benefited Species</b>	Warner sucker ( <a href="#">Catostomus warnerensis</a> )				
<b>Primary Benefited Population</b>	<a href="#">Warner Valley</a>				
<b>Plans</b>	Oregon Conservation Strategy				
<b>Keyword</b>	Fish Passage				
<b>Need Number</b>	N-002				
<b>Partners</b>	<p>FRIMA (for other project purposes) (\$27657)</p> <p>Lakeview Soil and Water Conservation District (\$2000)</p> <p>Local Landowner(s) (\$10010)</p> <p>Oregon Department of Fish and Wildlife (\$72900)</p> <p>Partners For Fish and Wildlife (\$5000)</p> <p>Warner Basin Watershed Council (\$2000)</p>				
<p><b>Accomplishments</b></p> <table border="1"> <tr> <td>Number of miles re-opened to fish passage</td> <td>2.5</td> </tr> <tr> <td>Number of population assessments completed</td> <td>3</td> </tr> </table>			Number of miles re-opened to fish passage	2.5	Number of population assessments completed
Number of miles re-opened to fish passage	2.5				
Number of population assessments completed	3				

13310-A-217 - [South Fork John Day/John Day Watershed Fish Passage Projects](#)

<b>Facility</b>	Columbia River Fisheries Program Office
<b>Expended</b>	\$45000
<b>Objective</b>	Develop and improve long-term partnerships with States, Tribes, other Federal agencies, non-governmental organizations, and other Service Programs to develop collaborative conservation strategies for aquatic resources.
<b>Primary Benefited Species</b>	Chinook salmon or king salmon ( <a href="#">Oncorhynchus tshawytscha</a> )
<b>Primary Benefited Population</b>	<a href="#">John Day River upper mainstem Spring Chinook</a>
<b>Plans</b>	Oregon Conservation Strategy The Oregon Plan for Salmon and Watersheds
<b>Keyword</b>	Fish Passage
<b>Need Number</b>	N-002
<b>Partners</b>	Grant County Soil and Water Conservation District, Oregon (\$314211) Oregon Water Trust (\$5000) Oregon Watershed Enhancement Board (\$27736)

**Accomplishments**

Number of miles re-opened to fish passage	23.0
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**Accomplishment Summary**

Four projects are addressed this season, opening 23 miles of habitat to year round access and removing nine barriers

**Description**

**The importance to the Resource:**

The John Day River is the 2nd longest free flowing river system in the U.S., running nearly 300 miles. Upper river projects benefit several species: bull trout, Mid\_Columbia River steelhead, resident interior redband, and westslope cutthroat trout. Bull trout and steelhead are listed as threatened.

**The problem:**

Numerous small push-up dams are constructed along the river seasonally, as well as numerous fixed diversion points on the mainstem and tributaries. These may block access as well as intrain fish into irrigation systems if unscreened or improperly screened.

**The objective:**

The objective is to restore passage and prevent intrainment into irrigation systems.

**The method:**

Several methods may be applied, replacing diversions with pumps, lay-flat stanchion structures that provide passage for all life stages, and consolidating several diversion points into a single diversion with passage and screening facilities.

**Further description:**

The first stage of this project addresses Lower

Fish passage barriers removed or bypassed	9	South Fork John Day, Roberts Creek, Lawrence Diversion, and South Reynolds Creek.
Number of population assessments completed	3	
Number of other Fishery Management Plan tasks implemented for populations of management concern.	1	

13310-A-218 - [Elk Creek Nehalem River fish Passage Project](#)

<b>Facility</b>	Columbia River Fisheries Program Office
<b>Expended</b>	\$15000
<b>Objective</b>	Recover fish and other aquatic resource populations protected under the Endangered Species Act.
<b>Primary Benefited Species</b>	Coho salmon or silver salmon ( <a href="#">Oncorhynchus kisutch</a> )
<b>Primary Benefited Population</b>	<a href="#">Lower Columbia River ESU (Threatened)</a>
<b>Plans</b>	Oregon Conservation Strategy
<b>Keyword</b>	Fish Passage
<b>Need Number</b>	N-002
<b>Partners</b>	Columbia County, Oregon (\$2500) Oregon Department of Fish and Wildlife (\$2400) Oregon Watershed Enhancement Board (\$10194)

**Accomplishments**

Number of miles re-opened to fish passage	3.6
Number of population assessments completed	3

**Accomplishment Summary**

Upon completion of this project we will eliminate fish passage barrier associated with undersized culverts on Elk Creek at two crossings. Final designs will allow removal of the culvert and replacement with an appropriately sized bridge or culvert. Correcting this barrier will restore access to 3.6 miles of stream. Initial funding in year one will be used to design the project. Subsequent funding will be used to implement the design and restore full passage conditions

**Description**

**The importance to the Resource:**

Elk Creek is a key tributary within the watershed with high intrinsic value for Coho production. Fish species verified as using this creek include coho, sea-run and residential coastal cutthroat trout, and brook lamprey. This system contains a large percentage of low gradient habitat, suggesting high potential for coho habitat use.

**The problem:**

Improperly sized culverts impede passage at two crossings on Elk Creek. The current condition impedes adult passage, conditional upon depth and velocity of flow, and a year round juvenile passage barrier.

**The objective:**

The objective of the project is to remove the undersized culverts and replace them with an appropriately sized bridge or culvert to restore full passage.

**The method:**

	<p>Culvert replacement with a bridge or appropriately sized culvert.</p> <p><b>Further description:</b></p> <p>This is a cross program project in conjunction with ecological services and State and local partners. Upon completion of this project we will eliminate fish passage barrier associated with undersized culverts on Elk Creek at two crossings. Final designs will allow removal of the culvert and replacement with an appropriately sized bridge or culvert. Correcting this barrier will restore access to 3.6 miles of stream. Initial funding in year one will be used to design the project. Subsequent funding will be used to implement the design and restore full passage conditions</p>
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**14226-A-110 - [Health Monitoring of Spring & Fall Chinook at Tribal Facilities and coho at Dworshak NFH](#)**

<b>Facility</b>	Idaho Fish Health Center	<p><b>Accomplishment Summary</b></p> <p>Monitored juvenile SCS &amp; FCS at Nez Perce Tribe hatchery and acclimation sites resulting in the release of 1.5 million healthy fish into the Snake &amp; Clearwater rivers to re-establish naturally spawning populations.</p> <p><b>Description</b></p> <p><b>The importance to the Resource:</b></p> <p>As part of this relatively new tribal fisheries program, the Idaho Fish Health Center insured that healthy fish were released into the Snake and Clearwater rivers to assist in reestablishing natural spawning populations of fall and spring chinook salmon.</p> <p><b>The problem:</b></p> <p>historic populations of chinook and coho salmon were exterpedated from the Clearwater drainage and severely reduced in the Snake River by dams put in the early part of last century.</p> <p><b>The objective:</b></p> <p>The Nez Perce Tribe is making an effort to restore populations of chinook and coho salmon in the Snake and Clerawter drainages to a point where Tribal and sport harvests as well as natural reproduction occurs.</p> <p><b>The method:</b></p> <p>The Tribe operates FCS acclimation facilities, SCS hatchery and acclimation facilities and have a growing coho program. The Tribe is now spawning many of their own fish. The IFHC samples during spawning, rearing, and prior to release for these programs.</p>
<b>Expended</b>	\$27309	
<b>Objective</b>	Develop and improve long-term partnerships with States, Tribes, other Federal agencies, non-governmental organizations, and other Service Programs to develop collaborative conservation strategies for aquatic resources.	
<b>Primary Benefited Species</b>	Chinook salmon or king salmon ( <a href="#">Oncorhynchus tshawytscha</a> )	
<b>Primary Benefited Population</b>	<a href="#">Clearwater River Lower Mainstem Tributaries</a>	
<b>Plans</b>	Federal Columbia River Power System 2002 Biological Opinion U. S. vs OR Columbia River Fishery Management Plan (under renegotiation) Biological Opinion on Artificial Propagation in the Columbia River Basin.	
<b>Keyword</b>	Fish Health	
<b>Need Number</b>	N-002	
<b>Partners</b>	Nez Perce Tribe (\$4570)	
<b>Accomplishments</b>		
Number of population assessments completed	9	

Number of technical assistance requests fulfilled to support Tribal fish and wildlife conservation	2	<b>Further description:</b>
Number of training session to support Tribal fish & wildlife conservation.	1	
		<p>The Nez Perce Tribe has contracted with the Idaho Fish Health Center to do fish health monitoring and prerelease exams at three Tribal Acclimation sites, one Washington Department of Fish and Wildlife hatchery facilities, one Tribal Hatchery complex, and one cho program. Center staff does the fish health sampling for the import permit into Idaho, weekly health monitoring at these sites, any diagnostic and treatment prescriptions necessary, and conduct prerelease examinations at all sites. Funding is under subactivity 1937 and amounted to \$31870 in 2006.</p>

14226-A-112 - [Health Monitoring at National and commercial Fish Hatcheries](#)

<b>Facility</b>	Idaho Fish Health Center	<p><b>Accomplishment Summary</b></p> <p>Provide fish health services to Kooskia National Fish Hatchery, and commercial facilities to produce healthy steelhead, rainbow trout, Coho, and spring chinook salmon.</p> <p><b>Description</b></p> <p><b>The importance to the Resource:</b></p> <p>Idaho Fish Health Center programs strive to assist facilities in the production of healthy steelhead, rainbow trout, Fall Chinook salmon, Coho, and spring chinook salmon, thus minimizing the likelihood that hatchery fish may affect naturally producing fish after release and increase adult returns for Tribal and sport harvest.</p> <p><b>The problem:</b></p> <p>The public (and organizational) perception of fish hatcheries is that hatcheries pose a risk to wild and native populations by introducing disease to the wild. The major problem is ignorance of biology but by releasing healthy fish, we are helping difuse this idea.</p> <p><b>The objective:</b></p> <p>The Idaho Fish Health Center staff have responsibility for fish health inspections at five commercial hatcheries to insure interstate transport of healthy fish and eggs to prevent transmission to wild fish in surrounding areas.</p> <p><b>The method:</b></p> <p>At Kooskia National Fish Hatchery we conduct routine monitoring, fish health exams, and prerelease exams in support of their spring chinook salmon production program. Also Center staff provide fish health extension</p>			
<b>Expended</b>	\$166345				
<b>Objective</b>	Maintain diverse, self-sustaining fish and other aquatic resource populations.				
<b>Primary Benefited Species</b>	Chinook salmon or king salmon ( <a href="#">Oncorhynchus tshawytscha</a> )				
<b>Primary Benefited Population</b>	Not specified				
<b>Plans</b>	U.S. Fish and Wildlife Service National Aquatic Animal Health Policy U. S. vs OR Columbia River Fishery Management Plan (under renegotiation)				
<b>Keyword</b>	Fish Health				
<b>Need Number</b>	N-002				
<b>Partners</b>	Nez Perce Tribe				
<p><b>Accomplishments</b></p> <table border="1"> <tr> <td>Number of population assessments completed</td> <td>1</td> </tr> <tr> <td>Number of technical assistance requests fulfilled to support Tribal fish and wildlife conservation</td> <td>1</td> </tr> </table>			Number of population assessments completed	1	Number of technical assistance requests fulfilled to support Tribal fish and wildlife conservation
Number of population assessments completed	1				
Number of technical assistance requests fulfilled to support Tribal fish and wildlife conservation	1				

	<p>services, disease diagnoses and treatment recommendations, to state, commercial, tribal, and private fish propagation facilities.</p> <p><b>Further description:</b></p> <p>The overall aim of this program to insure success of the hatchery program and safety of fish released into the environment.</p>
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**14226-A-114 - [Health Monitoring to Provide Healthy Fish for Use in Lower Snake River Mitigation Programs](#)**

<b>Facility</b>	Idaho Fish Health Center
<b>Expended</b>	\$131000
<b>Objective</b>	Meet the Service's responsibilities for mitigating fisheries.
<b>Primary Benefited Species</b>	Chinook salmon or king salmon ( <a href="#">Oncorhynchus tshawytscha</a> )
<b>Primary Benefited Population</b>	Not specified
<b>Plans</b>	Biological Opinion on Artificial Propagation in the Columbia River Basin. Lower Snake River Compensation Plan Federal Columbia River Power System 2002 Biological Opinion
<b>Keyword</b>	Fish Health
<b>Need Number</b>	N-002
<b>Partners</b>	

**Accomplishments**

Number of population assessments completed	3
Number of activities conducted to support the management and control of aquatic invasive species	1
Number of visitors to service facilities.	43
Number of applied aquatic scientific and technologic tools shared with partners.	1
Number of techniques and culture technology tools developed.	1

**Accomplishment Summary**

Health monitoring programs assisted national fish hatcheries in the production of healthy fish which are physiologically ready to migrate, and will have the least health impact on wild fish.

**Description**

**The importance to the Resource:**

Health and physiology monitoring programs assisted national fish hatcheries in the production of healthy steelhead and spring chinook salmon, which are physiologically ready to migrate, and have the least health impact on wild fish.

**The problem:**

The public (and organizational) perception of fish hatcheries is that hatcheries pose a risk to wild and native populations by introducing disease to the wild. The major problem is ignorance of biology but by releasing healthy fish, we are helping diffuse this idea.

**The objective:**

The Idaho Fish Health Center staff have responsibility for fish health inspections at two LSRCP hatcheries to insure interstate transport of healthy fish and eggs to prevent transmission to wild fish in surrounding areas.

**The method:**

The Idaho Fish Health Center staff conduct physiological and pathogen monitoring, diagnostic, and prerelease exams at Dworshak and Hagerman National Fish Hatcheries in support of their spring chinook salmon and steelhead production programs, respectively.

	<b>Further description:</b> :
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14226-A-117 - [Wild Fish Health Survey: Detection of Fish Pathogens in Wild Fish Populations](#)

<b>Facility</b>	Idaho Fish Health Center	<p><b>Accomplishment Summary</b></p> <p>In FY 2005, the IFHC collected and analyzed 981 fish from 33 sites. Several fish pathogens were found, substantiating the idea that pathogens are naturally present in wild fish populations.</p> <p><b>Description</b></p> <p><b>The importance to the Resource:</b></p> <p>Wild fish pathogen data maintained in the National Wild Fish Health Survey Database is available to fishery professional for use restoration and recovery efforts.</p> <p><b>The problem:</b></p> <p>Prior to the inception of the Wild Fish Health Survey, very little was known about the pathogen history of wild populations. The work had not been done.</p> <p><b>The objective:</b></p> <p>Each year during the sampling season, the IFHC samples as many wild and native populations with as many partners as possible in Idaho, Eastern Washington and Eastern Oregon. These samples then have assays run to determine if a set group of pathogens are present. Data is then entered into the WFHS dadatabase.</p> <p><b>The method:</b></p> <p>Working in cooperation with the Washington Department of Ecology, the Nez Perce Tribe, Idaho Dept of Fish &amp; Game, and the U. S. Forest Service, samples were collected and examined using current laboratory techniques. Several fish pathogens were identified, substantiating the idea that pathogens are</p>
<b>Expended</b>	\$84045	
<b>Objective</b>	Maintain diverse, self-sustaining fish and other aquatic resource populations.	
<b>Primary Benefited Species</b>	Chinook salmon or king salmon ( <a href="#">Oncorhynchus tshawytscha</a> )	
<b>Primary Benefited Population</b>	Not specified	
<b>Plans</b>	National Wild Fish Health Survey	
<b>Keyword</b>	Fish Health	
<b>Need Number</b>	N-002	
<b>Partners</b>		

naturally present in wild fish populations.

**Further description:**

In 2006, as part of the National Wild Fish Health Survey, the Idaho Fish Health Center Staff collected and analyzed 739 fish from 27 sites as of 9/7/06. Sampling will continue up until the end of FY 06.

14226-A-118 - [The Investigational New Animal Drug \(INAD\) Initiative](#)

<b>Facility</b>	Idaho Fish Health Center	<p><b>Accomplishment Summary</b></p> <p>Identified and monitored the use of new drugs and chemicals for the treatment of fish at state, federal, and tribal fish hatcheries.</p> <p><b>Description</b></p> <p><b>The importance to the Resource:</b></p> <p>Identified and monitored the use of new drugs and chemicals for the treatment of fish at state, Federal, and Tribal fish hatcheries.</p> <p><b>The problem:</b></p> <p>Approved drugs for aquaculture are very few. To o=prevent the inadvertant spread of pathogens to wild fish, hatchery fish must be as healthy as possible. While fish culture practices play a big role in this, the use of approved drugs adds another tool in the box.</p> <p><b>The objective:</b></p> <p>purpose of the INAD program is to identify drugs and treatments to control fish disease outbreaks, under strict laboratory guidelines, to gain approval for nationwide use from the U. S. Food and Drug Administration (FDA).</p> <p><b>The method:</b></p> <p>Idaho Fish Health Center serves as a Monitor Facility under the U. S. Fish and Wildlife Service's Investigational New Animal Drug (INAD) Program for Dworshak, Kooskia, and Hagerman National Fish Hatcheries, in addition to Idaho and Nez Perce Tribe fish propagation facilities.</p>
<b>Expended</b>	\$5121	
<b>Objective</b>	Maintain diverse, self-sustaining fish and other aquatic resource populations.	
<b>Primary Benefited Species</b>	Chinook salmon or king salmon ( <a href="#">Oncorhynchus tshawytscha</a> )	
<b>Primary Benefited Population</b>	Not specified	
<b>Plans</b>	U.S. Fish and Wildlife Service National Aquatic Animal Health Policy Lower Snake River Compensation Plan	
<b>Keyword</b>	Fish Health	
<b>Need Number</b>	N-002	
<b>Partners</b>	Idaho Dept of Fish & Game	
<b>Accomplishments</b>		
Number of surveys conducted for aquatic invasive species baseline/trend information	1	
Number of technical assistance requests fulfilled to support Tribal fish and wildlife conservation	2	

14330-A-001 - [Steelhead evaluation studies](#)

<b>Facility</b>	Idaho Fisheries Resource Office	<p><b>Accomplishment Summary</b></p> <p>We continued propagation of fall returning broodstock, thereby improving the fall steelhead fishery in the Clearwater River. We also completed an evaluation of brood stock selection for B-run steelhead.</p> <p><b>Description</b></p> <p><b>The importance to the Resource:</b></p> <p>Fall returning steelhead are an important part of the diverse life history of the Clearwater B steelhead run as well as comprising a valuable part of the Idaho sport and tribal harvest. As the sole repository for the Clearwater 'B' run steelhead it is important that Dworshak NFH preserves that life history characteristic through proper management.</p> <p><b>The problem:</b></p> <p>If the collection of broodstock does not occur throughout the entire spectrum of the run loss of particular genetic traits such as return timing or spawning timing may impact the overall fitness of the stock. Loss of these fish may jeopardize the long-term existence of the run.</p> <p><b>The objective:</b></p> <p>The objective is to include the entire spectrum of the run thereby protecting the genetic integrity of the Clearwater 'B' steelhead and providing a fall steelhead fishery for sport and tribal anglers.</p> <p><b>The method:</b></p> <p>We open the ladder at Dworshak NFH in October to ensure collection of any fall returning fish. We spawn these fish separately and then monitor and evaluate their return to</p>			
<b>Expended</b>	\$84000				
<b>Objective</b>	Maintain diverse, self-sustaining fish and other aquatic resource populations.				
<b>Primary Benefited Species</b>	Rainbow trout ( <a href="#">Oncorhynchus mykiss</a> )				
<b>Primary Benefited Population</b>	<a href="#">North Fork Clearwater River</a>				
<b>Plans</b>	<p>A Review of Dworshak National Fish Hatchery Mitigation Record (Miller, 1987)</p> <p>Dworshak NFH Steelhead HGMP</p> <p>Columbia River Basin Fish and Wildlife Program (NPPC 2000)</p>				
<b>Keyword</b>	Mitigation				
<b>Need Number</b>	N-002				
<b>Partners</b>	Idaho Department of Fish and Game Nez Perce Tribe				
<p><b>Accomplishments</b></p> <table border="1"> <tr> <td>number of marking and tagging targets met, as prescribed by Fishery management plans. (PART)</td> <td>1</td> </tr> <tr> <td>Number of other Fishery Management Plan tasks implemented for populations of management concern.</td> <td>7</td> </tr> </table>			number of marking and tagging targets met, as prescribed by Fishery management plans. (PART)	1	Number of other Fishery Management Plan tasks implemented for populations of management concern.
number of marking and tagging targets met, as prescribed by Fishery management plans. (PART)	1				
Number of other Fishery Management Plan tasks implemented for populations of management concern.	7				

Number of mitigation tasks implemented as prescribed in approved plans. (PART)	1	the hatchery and the sport and tribal fisheries.
Number of mitigation production tasks implemented as prescribed in approved plans. (PART)	1	
Number of consultations conducted to support Tribal fish & wildlife conservation.	1	

14330-A-002 - [Salmon Supplementation Studies in Idaho Rivers \(ISS\)](#)

<b>Facility</b>	Idaho Fisheries Resource Office
<b>Expended</b>	\$97000
<b>Objective</b>	Develop and share applied aquatic scientific and technologic tools with partners.
<b>Primary Benefited Species</b>	Chinook salmon or king salmon ( <i>Oncorhynchus tshawytscha</i> )
<b>Primary Benefited Population</b>	<a href="#">South Fork Clearwater River</a>
<b>Plans</b>	Supplementation Studies in Idaho Rivers (ISS) (Bowles and Leitzinger 1991)
<b>Keyword</b>	Monitoring and Assessment
<b>Need Number</b>	N-002
<b>Partners</b>	Bonneville Power Administration Idaho Department of Fish and Game Nez Perce Tribe Shoshone-Bannock Tribe

**Accomplishments**

Number of population assessments completed	1
Number of other Fishery Management Plan tasks implemented for populations of management concern.	2
Number of consultations conducted to support Tribal fish & wildlife conservation.	1

**Accomplishment Summary**

We continued to collect and PIT-tag naturally produced smolts in Clear Creek. We snorkel surveyed Clear and Pete King creeks, and estimated parr abundance. Escapement and natural spawning were documented on Clear and Pete King creeks. Adult Chinook salmon continued to be passed above the KNFH weir to meet natural production recruitment goals for Clear Creek. With help from our cooperators, the BY03 Cooperative Report was completed.

**Description**

**The importance to the Resource:**

This project develops recommendations on how to restore or rebuild naturally spawning populations of spring/summer Chinook in Idaho.

**The problem:**

Spring/summer Chinook populations in Idaho have been in decline due to mortality associated with the lower Snake River and Columbia River dams and reservoirs.

**The objective:**

The objective of this project is to assess the use of hatchery Chinook to restore or augment naturally spawning spring/summer Chinook populations in Idaho. Also, this project will evaluate the effects of supplementation on the survival and fitness of existing natural populations.

**The method:**

Streams will be supplemented with hatchery origin spring/summer Chinook for 1 to 2

Number of applied aquatic scientific and technologic tools shared with partners.	1	generations. Experimental treatments will include supplementation with a particular life stage and/or a particular brood source. Population responses (i.e. parr abundance, emigration, survival, and adult escapement) will be measured.
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14330-A-032 - [Fisheries Restoration and Irrigation Mitigation Act \(FRIMA\)](#)

<b>Facility</b>	Idaho Fisheries Resource Office
<b>Expended</b>	\$20000
<b>Objective</b>	Restore declining fish and other aquatic resource populations before they require listing under the Endangered Species Act.
<b>Primary Benefited Species</b>	Bull trout ( <a href="#">Salvelinus confluentus</a> )
<b>Primary Benefited Population</b>	Not specified
<b>Plans</b>	Fisheries Restoration and Irrigation Mitigation Act of 2000 (PL 106-502)
<b>Keyword</b>	Fish Passage
<b>Need Number</b>	N-002
<b>Partners</b>	Idaho Department of Fish and Game NOAA Fisheries

**Accomplishments**

Number of other Fishery Management Plan tasks implemented for populations of management concern.	2
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**Accomplishment Summary**

We reviewed and ranked Idaho FRIMA proposals, assisted the State of Idaho with environmental compliance requirements for Idaho projects. We completed 4 contracts, performed partner outreach, and visited several potential and completed project sites. Participated in CBFWA Fish Screen Oversight Committee meetings and discussions.

**Description**

**The importance to the Resource:**

Preventing listed anadromous and resident salmonids from being lost down unscreened water diversions is a direct benefit to the population in question. The risks posed by improving water diversions are low, the potential success at increasing numbers of fish is high, and dislocation of existing social and economic activities is minor.

**The problem:**

Large numbers of migrating fish, including listed anadromous and resident salmonids, are killed annually by unscreened irrigation diversions.

**The objective:**

The FRIMA program in Idaho is administered by the Idaho FRO. In FY06 Congress appropriated \$2,000,000 to match federal funds with local, state, and tribal water use programs that increase fish survival, reduce entrainment in water distribution systems, and increase access to productive fish habitats. The Idaho FY06 allocation was \$463,000.

**The method:**

	<p>Projects are identified and proposals are submitted for review and ranking by state, local, tribal, and federal representatives to insure that the requirements of the act are met and the greatest benefit projects are funded.</p>
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14330-A-033 - [East Fork American River Culvert Replacement](#)

<b>Facility</b>	Idaho Fisheries Resource Office
<b>Expended</b>	\$1
<b>Objective</b>	Recover fish and other aquatic resource populations protected under the Endangered Species Act.
<b>Primary Benefited Species</b>	Bull trout ( <a href="#">Salvelinus confluentus</a> )
<b>Primary Benefited Population</b>	<a href="#">South Fork Clearwater</a>
<b>Plans</b>	Bull Trout Recovery Plan, Ch 16 Clearwater RU
<b>Keyword</b>	Fish Passage
<b>Need Number</b>	N-002
<b>Partners</b>	Bureau of Land Management (\$10000)

**Accomplishments**

Fish passage barriers removed or bypassed	1
Number of other Recovery Plan tasks implemented for T&E populations	2

**Accomplishment Summary**

All work completed during summer of 2006 includes (1) culvert removed, new bridge constructed; (2) rock upstream v check dam, and large woody debris installed in American River, mouth area E. Fk. American River; (3) all initial erosion control, mulching, seeding completed, and (4) road gravelled. Follow-up for revegetation scheduled for fall 2006. This project is complete. Project was funded with \$19,000 FY05 funds, on-the-ground work was not completed until FY06.

**Description**

**The importance to the Resource:**

The East Fork American River provides habitat for steelhead trout, spring/summer Chinook salmon, and bull trout (adult/subadult foraging). This stream is 4 - 5 C cooler than American River, and provides an important thermal refuge during the summer months.

**The problem:**

A round culvert installed in 1984 at the mouth is currently a partial/full fish passage barrier, restricting movement of spring/summer Chinook, steelhead trout and bull trout into the drainage during low flows. During high spring flows a velocity barrier occurs in this culvert.

**The objective:**

Remove the barrier culvert and associated fill materials and replace it with a bridge, enabling passage of all aquatic organisms at all flows.

**The method:**

The culvert will be replaced with a bridge, eroding fill will be removed, and habitat

	structures will be placed in American River near the mouth of the East Fork American River.
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	<b>Further description:</b>
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14330-A-035 - [Assess impacts of unmarked hatchery steelhead on ESA-listed stocks](#)

<b>Facility</b>	Idaho Fisheries Resource Office
<b>Expended</b>	\$148700
<b>Objective</b>	Maintain diverse, self-sustaining fish and other aquatic resource populations.
<b>Primary Benefited Species</b>	Rainbow trout ( <a href="#">Oncorhynchus mykiss</a> )
<b>Primary Benefited Population</b>	<a href="#">South Fork Clearwater River</a>
<b>Plans</b>	Clearwater Subbasin Summary Biological Opinion on Artificial Propagation in the Columbia River Basin. Draft Clearwater Subbasin Management Plan
<b>Keyword</b>	Interjurisdictional
<b>Need Number</b>	N-002
<b>Partners</b>	NOAA Fisheries

**Accomplishments**

Number of other Recovery Plan tasks implemented for T&E populations	1
Number of other Fishery Management Plan tasks implemented for populations of management concern.	1
Number of consultations conducted to support Tribal fish & wildlife conservation.	1

**Accomplishment Summary**

We coded-wire tagged and elastomer marked the last year of juvenile steelhead to be released in this study. A portion of these steelhead received PIT-tags. The final release was made. We radio-tagged 124 unmarked adult hatchery steelhead and tracked their movements throughout the Clearwater River basin.

**Description**

**The importance to the Resource:**

Managers are concerned that unmarked hatchery steelhead, out-planted as juveniles in areas managed for hatchery stocks, will stray and spawn in areas managed for wild stocks.

**The problem:**

Releases of unmarked hatchery steelhead were started in the Clearwater River basin in 2001. Prior to this management action, hatchery-origin steelhead were marked so they could be identified as hatchery fish, and thus be managed accordingly. It was not known how common it would be for unmarked hatchery fish to stray.

**The objective:**

Our objective is to determine if hatchery fish stray into areas managed for wild spawning.

**The method:**

We radio-tag unmarked adults as they pass the last dam they encounter on their spawning run. Fish origin is determined by dorsal-fin erosion (an unintentional result of hatchery rearing). Radio-tagged fish are tracked throughout the Clearwater River basin using fixed and mobile

	tracking techniques in cooperation with the University of Idaho.
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14330-A-038 - [Survey of the New Zealand Mudsnaill in the South Fork Clearwater River](#)

<b>Facility</b>	Idaho Fisheries Resource Office
<b>Expended</b>	\$750
<b>Objective</b>	Minimize range expansion and population growth of established aquatic nuisance species.
<b>Primary Benefited Species</b>	(0) Multiple Species
<b>Primary Benefited Population</b>	Not specified
<b>Plans</b>	DOI Executive Order #13112 (Invasive Species)
<b>Keyword</b>	Aquatic Nuisance Species
<b>Need Number</b>	N-002
<b>Partners</b>	

**Accomplishments**

Number of other Fishery Management Plan tasks implemented for populations of management concern.	1
Number of surveys conducted for early detection	1
Number of activities conducted to support the management and control of aquatic invasive species	1
Number of consultations conducted to support Tribal fish & wildlife conservation.	1

**Accomplishment Summary**

We monitored established sites in the South Fork Clearwater River for early detection of any New Zealand mudsnail invasion.

**Description**

**The importance to the Resource:**

The spread of New Zealand mudsnails (NZMS) is rapidly becoming a problem in the Western US. NZMS have the potential to cause serious impacts to native species, fisheries, and aquatic ecosystems. While it may take years for impacts to show up, then it's often too late, the only hope of control and possible containment is through early detection.

**The problem:**

Hagerman NFH use to stock steelhead into the SF Clearwater River. In 2002 NZMS were found in the hatchery water source. We surveyed the SF Clearwater in 2003 after stopping the releases and no NZMS were found. However, a negative finding does not guarantee that some NZMS were not present, just that we were unable to find any.

**The objective:**

The objective of the project is to control and contain New Zealand mudsnails in the Clearwater River through early detection of any infestation.

**The method:**

We will annually monitor established transects in the South Fork Clearwater River. The sites selected have the highest potential for colonization of New Zealand mudsnails and will be surveyed at the time of peak population

	numbers. Any finding of mudsnails will trigger control and containment efforts.
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**14330-A-050 - [Determine proportion of hatchery steelhead to ESA-listed stocks in the Snake River basin.](#)**

<b>Facility</b>	Idaho Fisheries Resource Office
<b>Expended</b>	\$26000
<b>Objective</b>	Support, facilitate, and/or lead collaborative approaches to manage interjurisdictional fisheries.
<b>Primary Benefited Species</b>	Rainbow trout ( <a href="#">Oncorhynchus mykiss</a> )
<b>Primary Benefited Population</b>	<a href="#">North Fork Clearwater River</a>
<b>Plans</b>	2005-2007 Interim Management Agreement for Upriver Chinook, Sockeye, Steelhead, Coho, and White Sturgeon
<b>Keyword</b>	Interjurisdictional
<b>Need Number</b>	N-002
<b>Partners</b>	Idaho Department of Fish and Game Nez Perce Tribe

**Accomplishments**

Number of population assessments completed	1
Number of Fishery Management Plan production tasks implemented (PART)	3
Number of other Fishery Management Plan tasks implemented for populations of management concern.	1

**Accomplishment Summary**

A total of 2698 scale samples have been collected from return years 2002- 2006. Of those, 428 have been cleaned, 290 have been scanned, and 147 have been read and measured. Twelve scale features were analyzed for hatchery origin indicators, and a model was developed using 6 of these. This model had good accuracy, but poor repeatability. A new model is being developed that will focus on only 1 or 2 features. The new model will address many limitations of the previous model.

**Description**

**The importance to the Resource:**

Since the early 1980s all hatchery steelhead in the Columbia basin have had their adipose fin clipped to identify them as hatchery fish suitable for sport harvest. Beginning in 2000, unclipped, unmarked hatchery steelhead have been released in the Snake River basin as part of an agreement between the tribes, states, and federal agencies.

**The problem:**

Returning adults are counted as wild or hatchery based upon presence or absence of the adipose fin. Unclipped hatchery fish are counted as wild, thereby inflating wild adult counts. Without adjustment, recovery cannot be accurately measured. There are no quantifiable methods to determine between hatchery and wild steelhead.

**The objective:**

There is a compelling need to account for the proportion of unclipped hatchery fish in wild

adult steelhead returns in the Snake River basin.

**The *method*:**

Scales were collected from returning adult steelhead at Lower Granite Dam. We are using scale pattern analysis to develop a quantifiable model distinguishing between hatchery and wild steelhead in run years 2002-2006. Data will be applied to future return years and used to monitor recovery of listed wild steelhead in the Snake River basin.

**14330-A-059 - [Evaluate factors limiting migration success and spawning distribution of adult Pacific Lamprey](#)**

<b>Facility</b>	Idaho Fisheries Resource Office	<p><b>Accomplishment Summary</b></p> <p>Work began the end of June. Lamprey collected at Little Goose and Lower Monumental dams are outfitted with radio transmitters and transported to release sites upstream from Lower Granite Dam. To date we have tagged 20 adult lamprey out of a target of 50. Collection and tagging will continue until migration ends in late September. Stationary receiver sites in the Snake and Clearwater rivers and mobile units will be used to track fish through the winter and spawning period, spring of 2007.</p> <p><b>Description</b></p> <p><b>The importance to the Resource:</b></p> <p>Pacific lamprey are the least understood anadromous fish in the Columbia and Snake river basins, and their populations in the Snake River have declined significantly. Those Pacific lamprey returning to Idaho are the farthest migrating populations in the range of Pacific lamprey.</p> <p><b>The problem:</b></p> <p>Factors affecting the adult and juvenile migrations are thought to be critical in limiting current reproductive potential of these upstream populations. Basic understanding of spawning distributions and habitat preferences are also lacking.</p> <p><b>The objective:</b></p> <p>Use radiotelemetry to monitor migration, identify spawning distributions and classify habitat and stream conditions preferred by spawning adult lamprey. All information will be geo-referenced and placed in GIS databases</p>	
<b>Expended</b>	\$48715		
<b>Objective</b>	Maintain diverse, self-sustaining fish and other aquatic resource populations.		
<b>Primary Benefited Species</b>	Pacific lamprey ( <a href="#">Lampetra tridentata</a> )		
<b>Primary Benefited Population</b>	<a href="#">Columbia River Pacific Lamprey</a>		
<b>Plans</b>	Draft Clearwater Subbasin Management Plan		
<b>Keyword</b>	Native Species		
<b>Need Number</b>	N-002		
<b>Partners</b>	U.S. Army Corps of Engineers, Walla Walla District (\$46500) University of Idaho (\$50000)		
<p><b>Accomplishments</b></p> <table border="1"> <tr> <td>Number of other Fishery Management Plan tasks implemented for populations of management concern.</td> <td>1</td> </tr> </table>		Number of other Fishery Management Plan tasks implemented for populations of management concern.	1
Number of other Fishery Management Plan tasks implemented for populations of management concern.	1		

to facilitate use by relevant management agencies.

**The method:**

Adult Pacific lamprey will be trapped at McNary, Ice Harbor and Lower Granite dams during summer, surgically outfitted with radio transmitters, and monitored as they migrate upstream past dams, through reservoirs and into spawning tributaries of the Snake River. Identify areas and conditions that create passage barriers to lamprey.

**14330-A-060 - [Goat Creek Culvert Replacement, South Fork Salmon River, Payette National Forest, Idaho](#)**

<b>Facility</b>	Idaho Fisheries Resource Office	<p><b>Accomplishment Summary</b></p> <p>Project design, environmental compliances and associated activities are completed. The contract will be awarded September 2006, construction will start July 2007 and be completed by November 2007.</p> <p><b>Description</b></p> <p><b>The importance to the Resource:</b></p> <p>Goat Creek is a tributary of the South Fork Salmon River (SFSR). Before the construction of the SFSR Road in 1953, Goat Creek likely provided up to 1.2 miles of habitat for Chinook salmon, steelhead, bull trout, and westslope cutthroat trout. The South Fork Salmon River is an important spawning and rearing area for these species as well.</p> <p><b>The problem:</b></p> <p>The SFSR road crossing at the mouth of Goat Creek is an 8-foot diameter culvert, which drops about 7 feet directly onto rocks in the SFSR. The culvert has resulted in significant sediment deposits upstream of the culvert, and a complete barrier to fish migration into Goat Creek.</p> <p><b>The objective:</b></p> <p>Replace the culvert, reconnect the habitat and remove 3700 cubic meters of road fill that continually erodes into the SFSR, impacting spawning and rearing habitat.</p> <p><b>The method:</b></p> <p>Replace the Goat Creek culvert with an open-bottomed structure that will reconnect the 1.20 miles of habitat for listed fishes upstream of the</p>	
<b>Expended</b>	\$10152		
<b>Objective</b>	Recover fish and other aquatic resource populations protected under the Endangered Species Act.		
<b>Primary Benefited Species</b>	Rainbow trout ( <a href="#">Oncorhynchus mykiss</a> )		
<b>Primary Benefited Population</b>	<a href="#">South Fork Salmon River</a>		
<b>Plans</b>	Bull Trout Recovery Plan, Ch 17 Salmon RU		
<b>Keyword</b>	Fish Passage		
<b>Need Number</b>	N-002		
<b>Partners</b>	Payette National Forest (\$840000)		
<p><b>Accomplishments</b></p> <table border="1"> <tr> <td>Number of other Recovery Plan tasks implemented for T&amp;E populations</td> <td>2</td> </tr> </table>			Number of other Recovery Plan tasks implemented for T&E populations
Number of other Recovery Plan tasks implemented for T&E populations	2		

	culvert. <b>Further description:</b>
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14330-A-061 - [Burns Creek Fish Passage Project](#)

<b>Facility</b>	Idaho Fisheries Resource Office
<b>Expended</b>	\$15053
<b>Objective</b>	Maintain diverse, self-sustaining fish and other aquatic resource populations.
<b>Primary Benefited Species</b>	Yellowstone cutthroat trout ( <a href="#">Oncorhynchus clarkii bouvieri</a> )
<b>Primary Benefited Population</b>	<a href="#">Palisades-Salt River</a>
<b>Plans</b>	2003 Revised Caribou-Targhee Forest Plan Memorandum of Agreement for Conservation and Management of Yellowstone Cutthroat Trout (Oncorhynchus clarkii bouvieri) among Montana, Idaho, Wyoming, Nevada, Utah, U S. Forest Service, Yellowstone National Park and Grand Teton National Park.
<b>Keyword</b>	Fish Passage
<b>Need Number</b>	N-002
<b>Partners</b>	Caribou Targhee National Forest (\$24000) Trout Unlimited (\$24000)

**Accomplishments**

Number of miles re-opened to fish passage	5.0
Fish passage barriers removed or bypassed	1

**Accomplishment Summary**

Undersized perched culvert was replaced with correct sized arched culvert that simulates natural stream bottom. All work is complete.

**Description**

**The importance to the Resource:**

Burns Creek, tributary to Palisades Reservoir is a stronghold for Yellowstone cutthroat trout (USFS sensitive species, State species of concern), and its habitat quality is considered to be good. Resident cutthroat trout exist throughout the stream and adfluvial cutthroat migrate upstream to the culvert at FS Road 087.

**The problem:**

At its crossing with Burns Creek, the original culvert was placed poorly. It is perched, out of alignment with the stream, and under capacity. Fluvial Yellowstone cutthroat trout cannot pass upstream into spawning and rearing habitat.

**The objective:**

Replace this culvert to restore upstream passage for fluvial Yellowstone cutthroat trout. The restoration of fish passage at this crossing will restore the migratory run of Yellowstone cutthroat trout to Burns Creek, increasing the potential for the long term viability of the Burns Creek population.

**The method:**

Replace existing culvert with bottomless arch culvert that will pass all life stages of aquatic organisms at all flows.

Number of other Fishery Management Plan tasks implemented for populations of management concern.	1	
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14330-A-063 - [Skinner Creek Idaho Fish Passage and Restoration](#)

<b>Facility</b>	Idaho Fisheries Resource Office	<p><b>Accomplishment Summary</b></p> <p>An agreement has been established between the Forest and the Bureau of Reclamation Hydraulics Lab to design and install the 4 necessary bypass and screens in lower Skinner Creek. Construction will occur in 2007. Natural Resources Conservation Service and the C-T National Forest will re-establish the riparian vegetation in the old feedlot along Skinner Creek in October 2006. When photos are available, we will share them with USFWS.</p> <p><b>Description</b></p> <p><b>The importance to the Resource:</b></p> <p>Skinner Creek is a Bonneville cutthroat trout stronghold stream that flows off Caribou-Targhee National Forest, through private land in Nounan, Idaho, directly into Bear River.</p> <p><b>The problem:</b></p> <p>Cattle grazing and a feedlot operation have negatively impacted Skinner Creek and it's riparian corridor. The channel is wide and shallow, there is little stream habitat and riparian vegetation.</p> <p><b>The objective:</b></p> <p>Benefit approximately 5 miles of stream through increased shading and stream depth, and decreased stream width and sedimentation, and improvements to fish passage.</p> <p><b>The method:</b></p> <p>Remove a feedlot from the stream, exclude cattle from the stream, screen two small diversions, and create a bypass around another diversion. Bonneville cutthroat trout</p>	
<b>Expended</b>	\$10000		
<b>Objective</b>	Restore declining fish and other aquatic resource populations before they require listing under the Endangered Species Act.		
<b>Primary Benefited Species</b>	Bonneville cutthroat trout ( <a href="#">Oncorhynchus clarkii utah</a> )		
<b>Primary Benefited Population</b>	<a href="#">Bonneville cutthroat trout, Bear River, UT, ID, WY</a>		
<b>Plans</b>	Range-wide Conservation Agreement and Strategy for Bonneville Cutthroate Trout(Oncorhynchus clarki utah).		
<b>Keyword</b>	Fish Passage		
<b>Need Number</b>	N-002		
<b>Partners</b>	Bear River Project Environmental Coordination Committee (\$43000) Caribou Targhee National Forest (\$20000)		
<p><b>Accomplishments</b></p> <table border="1"> <tr> <td>Number of other Fishery Management Plan tasks implemented for populations of management concern.</td> <td>1</td> </tr> </table>			Number of other Fishery Management Plan tasks implemented for populations of management concern.
Number of other Fishery Management Plan tasks implemented for populations of management concern.	1		

	would directly benefit from the implementation of this project.
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14330-A-065 - [Fish Passage on Middle Fork Brownlee Creek, Idaho](#)

<b>Facility</b>	Idaho Fisheries Resource Office	<p><b>Accomplishment Summary</b></p> <p>Restore access to 7 miles of spawning and rearing habitat for native redband trout by removing two perched culverts and installing modular bridge. This project was funded with \$18,000 FY05 carryover funds that were obligated in FY06.</p> <p><b>Description</b></p> <p><b>The importance to the Resource:</b></p> <p>The Brownlee Creek system has been fragmented from the other drainages of the Snake River by Brownlee Dam. The Middle Fork Brownlee Creek is approximately one-third of the Brownlee Creek system. The likelihood of maintaining a viable native redband trout population will increase by allowing migration back into the Middle Fork.</p> <p><b>The problem:</b></p> <p>Currently only the West Fork Brownlee Creek and mainstem Brownlee Creek have migratory stocks of redband trout. All three Brownlee Creek drainages are steep and have a history of severe flooding events plus an increased likelihood high intensity fires.</p> <p><b>The objective:</b></p> <p>Allowing fish migration into all three sub-drainages of the Brownlee Creek system will provide opportunities for populations to reestablish after severe fire and flood events, help maintain genetic diversity within the Brownlee Creek system and reduce the likelihood of extinction for this isolated population.</p> <p><b>The method:</b></p>	
<b>Expended</b>	\$18000		
<b>Objective</b>	Maintain diverse, self-sustaining fish and other aquatic resource populations.		
<b>Primary Benefited Species</b>	Rainbow trout ( <a href="#">Oncorhynchus mykiss</a> )		
<b>Primary Benefited Population</b>	Not specified		
<b>Plans</b>	Columbia River Basin Fish and Wildlife Program (NPPC 2000)		
<b>Keyword</b>	Fish Passage		
<b>Need Number</b>	N-002		
<b>Partners</b>	Idaho Department of Fish and Game (\$7000)		
<p><b>Accomplishments</b></p> <table border="1"> <tr> <td>Number of other Fishery Management Plan tasks implemented for populations of management concern.</td> <td>1</td> </tr> </table>			Number of other Fishery Management Plan tasks implemented for populations of management concern.
Number of other Fishery Management Plan tasks implemented for populations of management concern.	1		

	<p>This project will remove two culverts and install a modular bridge on lower Middle Fork Brownlee Creeks, opening up 7 miles of spawning and rearing habitat.</p>
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14330-A-066 - [Restore/Recover Yellowstone Cutthroat in 50 acres in Falls Creek, ID per WNTI management priorities](#)

<b>Facility</b>	Idaho Fisheries Resource Office
<b>Expended</b>	\$8000
<b>Objective</b>	Restore declining fish and other aquatic resource populations before they require listing under the Endangered Species Act.
<b>Primary Benefited Species</b>	Yellowstone cutthroat trout ( <a href="#">Oncorhynchus clarkii bouvieri</a> )
<b>Primary Benefited Population</b>	<a href="#">South Fork Snake River</a>
<b>Plans</b>	Memorandum of Agreement for Conservation and Management of Yellowstone Cutthroat Trout ( <i>Oncorhynchus clarkii bouvieri</i> ) among Montana, Idaho, Wyoming, Nevada, Utah, U S. Forest Service, Yellowstone National Park and Grand Teton National Park.
<b>Keyword</b>	Habitat
<b>Need Number</b>	N-002
<b>Partners</b>	Caribou Targhee National Forest (\$4000) Greater Yellowstone Coordinating Committee (\$4000)

**Accomplishments**

Number of riparian miles restored	2.0
Number of other Fishery Management Plan	1

**Accomplishment Summary**

The barrier rocks have been delivered to site and placement is occurring. Work is expected to be completed by the end of September 2006.

**Description**

**The importance to the Resource:**

Falls Creek, tributary to the South Fork Snake River, contains an isolated population of Yellowstone cutthroat. This population is integral maintaining the species range and life history diversity.

**The problem:**

Currently, motorized vehicles have access to the riparian area of lower Fall Creek in many locations. Dispersed camping sites have been established and they continue to expand near the stream. This is impacting riparian vegetation, introduces sediment to the stream, and erodes stream banks.

**The objective:**

Benefit an isolated population of Yellowstone cutthroat trout through riparian and stream channel restoration and decreased sedimentation.

**The method:**

1) limit vehicular access in 50 acres of riparian area to defined areas; 2) rehabilitate dispersed camping sites and isolate them from the riparian area; 3) install interpretive signs to educate the public on the importance of healthy riparian areas and stream habitat for Yellowstone cutthroat trout.

tasks implemented for populations of management concern.		
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**14330-A-067 - [Restore/Recover Bull Trout in 6 miles of Mores Creek, ID per NFHI/WNTI management habitat priorities](#)**

<b>Facility</b>	Idaho Fisheries Resource Office
<b>Expended</b>	\$12500
<b>Objective</b>	Recover fish and other aquatic resource populations protected under the Endangered Species Act.
<b>Primary Benefited Species</b>	Bull trout ( <a href="#">Salvelinus confluentus</a> )
<b>Primary Benefited Population</b>	<a href="#">Boise River</a>
<b>Plans</b>	Bull Trout Recovery Plan, Ch 18 Southwest Idaho RU
<b>Keyword</b>	Habitat
<b>Need Number</b>	N-002
<b>Partners</b>	<p>City of Idaho City, Idaho (\$7000)</p> <p>Idaho Department of Fish and Game (\$8000)</p> <p>Southwest Idaho Resource Advisory Committee (\$177000)</p>

**Accomplishments**

Number of riparian miles restored	6.0
Number of other Recovery Plan tasks implemented for T&E populations	1

**Accomplishment Summary**

Service funds were used to partially fund floodplain restoration, purchase native plants and salvage native plants that will be replanted in the floodplain. Revegetation will be done in fall 2006 and spring 2007

**Description**

**The importance to the Resource:**

Mores Creek is a migration corridor for bull trout and redband trout, and the headwater reaches are important for spawning and rearing for these two species.

**The problem:**

Mores Creek was extensively dredge-mined in the early and mid 1900's. Dredge piles confine the channel, altering the hydrology and floodplain function. There is a lack of vegetation and woody debris to provide habitat, thermal cover and channel integrity. Elevated water temperatures often are a thermal block to upstream passage.

**The objective:**

Restore Mores Creek to a naturally functioning ecosystem, with bank and instream integrity, vegetation and habitat so that spawning and rearing capacities for bull trout and redband trout are improved.

**The method:**

- 1) Excavate and isolate mine tailings from Mores Creek; 2) revegetate the floodplain with wetland trees, shrubs and grasses; 3) introduce large woody debris and boulders to modify the hydrology that now consists of long

	<p>straight runs lacking pool and riffle structure. This project will restore 6 miles of bank and instream habitat integrity.</p>
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14330-A-068 - [Restore/Recover Bonneville Cutthroat in 1 mile of Nieber Springs, ID per WNTI management priorities.](#)

<b>Facility</b>	Idaho Fisheries Resource Office
<b>Expended</b>	\$5000
<b>Objective</b>	Restore declining fish and other aquatic resource populations before they require listing under the Endangered Species Act.
<b>Primary Benefited Species</b>	Bonneville cutthroat trout ( <a href="#">Oncorhynchus clarkii utah</a> )
<b>Primary Benefited Population</b>	<a href="#">Bonneville cutthroat trout, Bear River, UT, ID, WY</a>
<b>Plans</b>	Range-wide Conservation Agreement and Strategy for Bonneville Cutthroate Trout(Oncorhynchus clarki utah).
<b>Keyword</b>	Habitat
<b>Need Number</b>	N-002
<b>Partners</b>	Bear River Project Environmental Coordination Committee (\$5000) Caribou Targhee National Forest (\$5000)

**Accomplishments**

Number of other Fishery Management Plan tasks implemented for populations of management concern.	1
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**Accomplishment Summary**

This project excludes cattle from Nieber Springs to benefit Bonneville cutthroat trout. The fence is currently being installed and photographs will be shared when they are available. Project should be completed in October 2006.

**Description**

**The importance to the Resource:**

Nieber Spring is at the headwaters of Mill Creek, a tributary to Ovid Creek within the Bear River Drainage. It is an important rearing area for Bonneville cutthroat trout.

**The problem:**

Currently, cattle have access to Nieber Springs and their trampling and grazing has impacted a Bonneville cutthroat trout population.

**The objective:**

This fencing project will exclude cattle from riparian and upland aspen stands, restoring habitat for beaver and Bonneville cutthroat trout that exist in Mill Creek. Approximately 1 mile of Mill Creek will benefit, but indirect benefits are expected throughout upper Mill Creek due to a decrease in sediment delivery and an increase in shading.

**The method:**

Fence out cattle from the stream, riparian areas and upland aspen stands and restore riparian and aquatic habitat in Nieber Spring and upper Mill Creek. Beaver are expected to recolonize the area, creating additional rearing and holding habitat.

**14330-A-069 - [Restoring/Recovering Bull Trout in 8 miles of Little Lost River, ID per WNTI management priorities.](#)**

<b>Facility</b>	Idaho Fisheries Resource Office	<p><b>Accomplishment Summary</b></p> <p>Consultant was hired to design the restoration project. Designs are being finalized, and construction will occur after the irrigation season in fall 2006.</p> <p><b>Description</b></p> <p><b>The importance to the Resource:</b></p> <p>The Little Lost River has an isolated population of listed bull trout, and Badger Creek is an important spawning and rearing stream in the drainage.</p> <p><b>The problem:</b></p> <p>The existing irrigation diversion on private property is a complete barrier to upstream passage, and irrigation withdrawals totally dewater the stream below the diversion. Paast land use has altered the riparian vegetation and habitat within Badger Creek. Bull trout cannot access the headwaters of Badger Creek.</p> <p><b>The objective:</b></p> <p>Restore passage into Badger Creek from the Little Lost River, and improve riparian and instream habitat that has been impacted by previous land use.</p> <p><b>The method:</b></p> <p>1) remove the existing diversion on Badger Creek, which is a passage barrier; 2) reconnect Badger Creek, which is currently diverted and isolated from the Little Lost River, back to the Little Lost River; 3) revegetate the reconstructed Badger Creek channel; 4) fence Badger Creek from cattle grazing.</p>
<b>Expended</b>	\$8206	
<b>Objective</b>	Recover fish and other aquatic resource populations protected under the Endangered Species Act.	
<b>Primary Benefited Species</b>	Bull trout ( <a href="#">Salvelinus confluentus</a> )	
<b>Primary Benefited Population</b>	<a href="#">Little Lost River</a>	
<b>Plans</b>	Bull Trout Recovery Plan, Ch 19 Little Lost RU	
<b>Keyword</b>	Habitat	
<b>Need Number</b>	N-002	
<b>Partners</b>		

14330-A-070 - [Roaring River Fish Passage Restoration Project Previously 14330-2005-006](#)

<b>Facility</b>	Idaho Fisheries Resource Office
<b>Expended</b>	\$1
<b>Objective</b>	Recover fish and other aquatic resource populations protected under the Endangered Species Act.
<b>Primary Benefited Species</b>	Bull trout ( <a href="#">Salvelinus confluentus</a> )
<b>Primary Benefited Population</b>	<a href="#">Boise River</a>
<b>Plans</b>	Bull Trout Recovery Plan, Ch 18 Southwest Idaho RU
<b>Keyword</b>	Fish Passage
<b>Need Number</b>	N-002
<b>Partners</b>	Boise National Forest (\$191443) Southwest Idaho Resource Advisory Committee (\$110000)

**Accomplishments**

Number of other Recovery Plan tasks implemented for T&E populations	1
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**Accomplishment Summary**

Project costs came in above original projections. Additional funds have been secured and work will start in the fall of 2006.

**Description**

**The importance to the Resource:**

Provide access to 35 miles of perennial stream habitat for bull trout and other aquatic organisms.

**The problem:**

Current culvert is a complete migration barrier to bull trout and other aquatic organisms.

**The objective:**

Remove the migration barrier and restore passage to bull trout and other aquatic organisms in the Roaring River drainage.

**The method:**

This project will replace a major (15 feet diameter) culvert with a bottomless arch culvert or bridge on Forest Road 255.

**Further description:**

Removal of the barrier will open up 18 miles of habitat to bull trout and provide access to 35 miles of perennial stream for other fish and aquatic organisms. Gene flow will be restored to the isolated bull trout population and the potential for catastrophic events to impact the population will be reduced.

14330-A-075 - [Survey of the New Zealand Mudsnaill in the Upper Salmon River](#)

<b>Facility</b>	Idaho Fisheries Resource Office
<b>Expended</b>	\$1250
<b>Objective</b>	Minimize range expansion and population growth of established aquatic nuisance species.
<b>Primary Benefited Species</b>	(0) Multiple Species
<b>Primary Benefited Population</b>	Not specified
<b>Plans</b>	DOI Executive Order #13112 (Invasive Species)
<b>Keyword</b>	Aquatic Nuisance Species
<b>Need Number</b>	N-002
<b>Partners</b>	

**Accomplishments**

Number of other Fishery Management Plan tasks implemented for populations of management concern.	1
Number of surveys conducted for early detection	1
Number of activities conducted to support the management and control of aquatic invasive species	1
Number of technical assistance/coordination activities conducted	1

**Accomplishment Summary**

We established and monitored sites in the Upper Salmon River for early detection of any New Zealand mudsnail invasion.

**Description**

**The importance to the Resource:**

The spread of New Zealand mudsnails (NZMS) is rapidly becoming a problem in the Western US. NZMS have the potential to cause serious impacts to native species, fisheries, and aquatic ecosystems. While it may take years for impacts to show up, then it's often too late, the only hope of control and possible containment is through early detection.

**The problem:**

Hagerman NFH stocks steelhead into the Upper Salmon River. In 2002 NZMS were found in the hatchery water source. We surveyed the Upper Salmon River in 2004 and no NZMS were found. However, a negative finding does not guarantee that some NZMS were not present, just that we were unable to find any.

**The objective:**

The objective of the project is to control and contain New Zealand mudsnails in the Upper Salmon River through early detection of any infestation.

**The method:**

We will annually monitor established transects in the Upper Salmon River. The sites selected have the highest potential for colonization of New Zealand mudsnails and will be surveyed at the time of peak population numbers. Any

	finding of mudsnails will trigger control and containment efforts.
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13231-A-007 - [National Wild Fish Health Survey](#)

<b>Facility</b>	Lower Columbia River Fish Health Center	<p><b>Accomplishment Summary</b></p> <p>Surveyed over 1500 wild fish from 21 watersheds in WA, OR, ID and the Columbia River to evaluate disease and to prevent spread of aquatic pathogens for improved aquatic ecosystem management.</p> <p><b>Description</b></p> <p><b>The importance to the Resource:</b></p> <p>Initiated by Congress in 1997 because wild fish populations were being decimated by disease, the National Wild Fish Survey gathers health information for wild fish to ascertain the extent of disease problems and ways to manage disease in the wild.</p> <p><b>The problem:</b></p> <p>Disease disables and kills wild fish. A limited knowledge of disease sources and their environmental inducers inhibits better management of habitat problems for wild fish.</p> <p><b>The objective:</b></p> <p>The 9 National Fish Health Ctrs undertook this project to survey the health of wild fish and to make this information available to federal, state, and tribal fishery managers. Information is used to improve fisheries management and monitor specific populations. The national database (<a href="http://wildfishsurvey@fws.gov">http://wildfishsurvey@fws.gov</a>) is available for public use.</p> <p><b>The method:</b></p> <p>In FY06, the Lower Columbia River FHC examined over 1500 wild fish from 21 watersheds in WA, OR, ID and the Columbia River. We tested for 13 pathogens (virus, bacteria, parasites) using state-of-the-art</p>
<b>Expended</b>	\$64977	
<b>Objective</b>	Facilitate management of aquatic habitats on national and regional scales.	
<b>Primary Benefited Species</b>	Rainbow trout ( <a href="#">Oncorhynchus mykiss</a> )	
<b>Primary Benefited Population</b>	<a href="#">Wind River summer run steelhead</a>	
<b>Plans</b>	<p>National Wild Fish Health Survey</p> <p>U.S. Fish and Wildlife Service National Aquatic Animal Health Policy</p> <p>Conservation of Columbia Basin Fish, Final Basinwide Salmon Recovery Strategy, 12/2000 (All H Paper)</p> <p>1999 NMFS Biological Opinion on Artificial Propagation in the Columbia River Basin.</p> <p>2000 NMFS FCRPS Biological Opinion - December 21, 2000</p> <p>Yakima Subbasin Plan</p>	
<b>Keyword</b>	Fish Health	
<b>Need Number</b>	N-002	
<b>Partners</b>	<p>Confederated Tribes of The Warm Springs</p> <p>Oregon Department of Fish and Wildlife</p> <p>U.S. Geological Survey</p>	

(\$5000)  
 Washington  
 Department of Fish and  
 Wildlife  
 Yakama Indian Nation  
 (\$900)

technology to confirm presence/absence of disease in freshwater and seagoing fish.

**Further description:**

The National Wild Fish Health Survey was initiated by Congress in 1997 because wild fish populations were being decimated by disease and there was little information available on the extent of the problem and ways to manage disease in the wild. The 9 National Fish Health Ctrs undertook this project to survey the health of wild fish and to make this information available to federal, state, and tribal fishery managers. This year, the Lower Columbia River Fish Health Ctr, in cooperation with the Yakama Nation, extensively sampled over 10 fish species in Drano Lake, a popular fishing lake that also serves as nursery habitat for Chinook salmon, a resting area for salmonid adults migrating up the Columbia River and the inlet/outlet for the Little White Salmon Hatchery fish. In anticipation of Condit Dam removal, fish in the White Salmon River were sampled for future health comparisons. Information from the wild fish health surveys are used by state/federal agencies for Ecosystem Diagnosis models for improving aquatic resource management and by the various cooperators for monitoring specific populations of fish. The national database, a repository of all survey information, is available for managerial and public use.

**Accomplishments**

Number of population assessments completed	21
Number of post-stocking survival tasks met, as prescribed by Recovery plans for hatchery propagated listed species. (PART)	1
Number of other Recovery Plan tasks implemented for T&E populations	1
Number of post stocking survival tasks met as prescribed by Fishery Management Plans, for hatchery propagated depleted species (PART)	1
Number of other Fishery Management Plan tasks implemented for populations of management concern.	1
Number of technical assistance requests fulfilled to support Tribal fish and wildlife conservation	3
Number of applied aquatic scientific and technologic tools shared with partners.	1
Number of techniques and culture technology tools developed.	1
Number of applied science and technology tasks implemented as prescribed by Recovery Plans. (PART)	1
Number of applied science and technology tasks implemented as prescribed by Fishery Management Plans. (PART)	2

13231-A-010 - [Yakama Indian Nation Fish Health Program](#)

<b>Facility</b>	Lower Columbia River Fish Health Center	<p><b>Accomplishment Summary</b></p> <p>The Lower Columbia River Fish Health Ctr. inspected and certified the health of over 1 million salmon for the Yakama Indian Nation's supplementation programs at the Klickitat and Prosser Hatcheries.</p> <p><b>Description</b></p> <p><b>The importance to the Resource:</b></p> <p>The Yakama/Klickitat Fisheries Project of the Yakama Nation seeks to rebuild and maintain populations of naturally spawning salmon to replace runs of fish made extinct by habitat changes, harvest, and hydropower.</p> <p><b>The problem:</b></p> <p>Habitat changes, harvest and hydropower have reduced runs of salmon to the Klickitat and Yakima Basins, reducing traditional fisheries and cultural activities of the Yakama Nation.</p> <p><b>The objective:</b></p> <p>As part of a large program that intends to improve salmon survival, the Lower Columbia Fish Health Ctr. (FHC) plays an integral role by helping minimize the transmission of pathogens to produce healthy coho, fall and spring Chinook salmon, and steelhead for release into the Yakima and Klickitat Basins.</p> <p><b>The method:</b></p> <p>The FHC uses up-to-date technology to examine the health of fish coming into and being released from the Yakiman and Klickitat Basins. Along with the Prosser Hatchery and its acclimation sites, the FHC recently took on the fish health care of the Klickitat Hatchery, a new acquisition for the Yakama Nation.</p>			
<b>Expended</b>	\$71142				
<b>Objective</b>	Provide technical assistance to Tribes.				
<b>Primary Benefited Species</b>	Chinook salmon or king salmon ( <a href="#">Oncorhynchus tshawytscha</a> )				
<b>Primary Benefited Population</b>	<a href="#">Yakima River Summer/Fall-Run Chinook Salmon</a>				
<b>Plans</b>	<p>U.S. Fish and Wildlife Service National Aquatic Animal Health Policy</p> <p>Yakima Subbasin Plan</p> <p>1999 NMFS Biological Opinion on Artificial Propagation in the Columbia River Basin.</p> <p>Conservation of Columbia Basin Fish, Final Basinwide Salmon Recovery Strategy, 12/2000 (All H Paper)</p>				
<b>Keyword</b>	Fish Health				
<b>Need Number</b>	N-002				
<b>Partners</b>	Yakama Indian Nation				
<p><b>Accomplishments</b></p> <table border="1"> <tr> <td>Number of post-stocking survival tasks met, as prescribed by Recovery plans for hatchery propagated listed species. (PART)</td> <td>1</td> </tr> <tr> <td>Number of other Recovery Plan tasks implemented for T&amp;E populations</td> <td>2</td> </tr> </table>			Number of post-stocking survival tasks met, as prescribed by Recovery plans for hatchery propagated listed species. (PART)	1	Number of other Recovery Plan tasks implemented for T&E populations
Number of post-stocking survival tasks met, as prescribed by Recovery plans for hatchery propagated listed species. (PART)	1				
Number of other Recovery Plan tasks implemented for T&E populations	2				

Number of Fishery Management Plan production tasks implemented (PART)	2	<p><b>Further description:</b></p> <p>The FHC visits the Prosser Hatchery at least 20 times per year to monitor fish health and to ensure that proper nutrition and disease management are maintained. Beginning in July, the same protocols are being followed at the Yakama's latest acquisition, the Klickitat Hatchery. For the Lower Yakama supplementation efforts in FY06, we examined the health of 9 stocks of salmon at the Prosser and Klickitat Hatcheries and 2 stocks of salmon at 3 acclimation sites. The wild steelhead kelts are also examined for whirling disease when needed. The Lower Columbia FHC and the Olympia FHC (for Yakama's CleElum Program) sign an annual MOU with the Yakama Nation who funds these programs.</p>
Number of other Fishery Management Plan tasks implemented for populations of management concern.	3	
Number of technical assistance requests fulfilled to support Tribal fish and wildlife conservation	5	
Number of applied science and technology tasks implemented as prescribed by Fishery Management Plans. (PART)	1	

**13231-A-012 - [Ecological Interactions of Wild and Hatchery Fish in the Warm Springs and Deschutes River System](#)**

<b>Facility</b>	Lower Columbia River Fish Health Center	<p><b>Accomplishment Summary</b></p> <p>Measured health of wild Chinook salmon and other native fish from the Warm Springs River and Shitike Creek. Fish health testing shows that wild and hatchery salmon carry the same pathogens, an indication of their identical genetic origins, similar ocean destinations and food sources. Additional field sampling and testing of other native species is ongoing. DNA technology is used for disease detection and to prevent the spread of microbial aquatic nuisance species that cause disease.</p> <p><b>Description</b></p> <p><b>The importance to the Resource:</b></p> <p>The Warm Springs National Hatchery annually releases 750,000 fish into the Deschutes River system which contains wild Chinook salmon, steelhead and endangered bull trout. It is important to ensure that both the wild and hatchery fish cohabit without adverse consequences, a goal of the Confederated Tribes of the Warm Springs.</p> <p><b>The problem:</b></p> <p>Interactions of wild and hatchery fish can result in disease transmission.</p> <p><b>The objective:</b></p> <p>To increase fish survival and to prevent disease transmission between hatchery and wild fish. While the common myth states that hatchery fish transmit disease to wild fish, the converse can be true and pathogens of native fish may be transmitted through the river water to the captive hatchery fish. This study examines both hatchery and wild fish</p>
<b>Expended</b>	\$9731	
<b>Objective</b>	Facilitate management of aquatic habitats on national and regional scales.	
<b>Primary Benefited Species</b>	Bull trout ( <a href="#">Salvelinus confluentus</a> )	
<b>Primary Benefited Population</b>	<a href="#">Lower Deschutes River core area Bull Trout</a>	
<b>Plans</b>	<p>U.S. Fish and Wildlife Service National Aquatic Animal Health Policy</p> <p>National Wild Fish Health Survey</p> <p>Warm Springs Hatchery and Genetic Management Plan (draft)</p> <p>1999 NMFS Biological Opinion on Artificial Propagation in the Columbia River Basin.</p> <p>2000 NMFS FCRPS Biological Opinion - December 21, 2000</p> <p>Conservation of Columbia Basin Fish, Final Basinwide Salmon Recovery Strategy, 12/2000 (All H Paper)</p>	
<b>Keyword</b>	Fish Health	
<b>Need Number</b>	N-002	
<b>Partners</b>	Confederated Tribes of The Warm Springs	

U.S. Geological  
Survey, Columbia River  
Research Lab

## Accomplishments

Number of population assessments completed	2
Number of post-stocking survival tasks met, as prescribed by Recovery plans for hatchery propagated listed species. (PART)	1
Number of other Recovery Plan tasks implemented for T&E populations	3
Number of post stocking survival tasks met as prescribed by Fishery Management Plans, for hatchery propagated depleted species (PART)	1
Number of other Fishery Management Plan tasks implemented for populations of management concern.	1
Number of technical assistance requests fulfilled to support Tribal fish and wildlife conservation	2
Number of consultations conducted to support Tribal fish & wildlife conservation.	1
Number of techniques and culture technology tools developed.	1
Number of applied science and technology tasks implemented as prescribed by Recovery Plans. (PART)	1
Number of applied science and technology tasks implemented as prescribed by Fishery Management Plans. (PART)	3

### **The method:**

Since the inception of the hatchery, its fish have been subjected to intensive health exams and management by the Lower Columbia River Fish Health Ctr. To address issues of disease transmission between hatchery and wild fish in FY06, wild fish were examined for disease pathogens using DNA technology and standard methodology.

### **Further description:**

Interactions of wild and hatchery fish can result in disease transmission. The Warm Springs National Hatchery annually releases 750,000 fish into the Deschutes River system which contains wild Chinook salmon, steelhead and endangered bull trout. Since the inception of the hatchery, its fish have been subjected to intensive health exams and management by the Lower Columbia River Fish Health Ctr. This is to increase fish survival and to prevent disease transmission to the wild fish. Conversely, the pathogens of native fish can be transmitted through the river water to the captive hatchery fish. To address issues of disease transmission between hatchery and wild fish in FY06, wild fish were examined for disease pathogens. Clinical testing shows that wild and hatchery salmon carry the same pathogens, an indication of their identical genetic origins, similar ocean destinations and food sources. Additional field sampling and testing of other native species is ongoing. DNA technology is used for disease detection and to prevent the spread of microbial aquatic nuisance species that cause disease. This technology is also being tested to determine whether non-lethal sampling methods can be used to detect infections. FONS# 2000-003.

13231-A-015 - [Wild Fish Health Information Management](#)

<b>Facility</b>	Lower Columbia River Fish Health Center
<b>Expended</b>	\$38089
<b>Objective</b>	Utilize appropriate scientific and technologic tools in formulating and executing fishery management plans and policies.
<b>Primary Benefited Species</b>	Rainbow trout ( <a href="#">Oncorhynchus mykiss</a> )
<b>Primary Benefited Population</b>	<a href="#">Wind River summer run steelhead</a>
<b>Plans</b>	National Wild Fish Health Survey 1999 NMFS Biological Opinion on Artificial Propagation in the Columbia River Basin. Conservation of Columbia Basin Fish, Final Basinwide Salmon Recovery Strategy, 12/2000 (All H Paper)
<b>Keyword</b>	Management
<b>Need Number</b>	N-002
<b>Partners</b>	

**Accomplishments**

Number of other Recovery Plan tasks implemented for T&E populations	3
Number of post stocking survival tasks met as prescribed by Fishery Management Plans, for hatchery propagated depleted species	1

**Accomplishment Summary**

Information on over 20 wild fish species in WA ,OR and ID has been inputted into the National Wild Fish Health Survey Database for use in fish management by states, federal, tribal and private entities. The Fish Health Ctr. helped assess the spread of Whirling Disease in the Clackamas watershed and in cooperation with researchers at Oregon State University, published a paper detailing the dissemination of the parasite. Other information is being used for management of fisheries in OR and WA.

**Description**

**The importance to the Resource:**

Data from wild fish health exams is used to provide information to help guide management decisions by the states, federal and tribal entities.

**The problem:**

The Lower Columbia River Fish Health Ctr. has collected over 13,500 wild/native fish for health assessment as mandated by the National Wild Fish Health Survey Initiative.

**The objective:**

To expedite completion of lab assays of microbial aquatic nuisance species, like the parasite causing Whirling Disease.

**The method:**

Using state-of-the-art technology for detection of DNA and standard lab assays, a backlog of fish samples were processed and the information entered into the National Wild Fish Health Survey database. This information is being used by state agencies and universities

(PART)		
Number of other Fishery Management Plan tasks implemented for populations of management concern.	1	
Number of applied aquatic scientific and technologic tools shared with partners.	1	
		<p>for management planning.</p> <p><b>Further description:</b></p> <p>The Lower Columbia River Fish Health Ctr. has collected over 13,500 wild/native fish for health assessment as mandated by the National Wild Fish Health Survey Initiative. Data from wild fish health exams is used to provide information to help guide management decisions by the states, federal and tribal entities. The Fish Health Ctr. was able to expedite completion of lab assays of microbial aquatic nuisance species, like the parasite causing Whirling Disease. The Fish Health Ctr. helped assess the spread of Whirling Disease in the Clackamas watershed and in cooperation with researchers at Oregon State University, published a paper detailing the dissemination of the parasite. Other information has and will be used in ecosystem diagnosis modeling to determine how to best manage fisheries in the Wind River, White Salmon and Klickitat Watersheds. This is FONS project 13231-2000-005, funded by the Columbia Basin Salmon Initiative.</p>

13231-A-021 - [Eagle Creek Ecological Interactions Study \(2002-005\)](#)

<b>Facility</b>	Lower Columbia River Fish Health Center	<p><b>Accomplishment Summary</b></p> <p>Wild fish in the Clackamas/Eagle Creek Basin were sampled for health status by measuring their exposure to 13 pathogens.</p> <p><b>Description</b></p> <p><b>The importance to the Resource:</b></p> <p>As identified in the Endangered Species Act and Biological Opinions, the fate of fish released from our National Fish Hatcheries and their potential effect on the aquatic community needs to be assessed.</p> <p><b>Further description:</b></p> <p>As identified in the Endangered Species Act and Biological Opinions, the fate of fish released from our National Fish Hatcheries and their potential effect on the aquatic community needs to be assessed. In the first year of this study, the Lower Columbia River Fish Health Center has sampled wild fish in the Clackamas/Eagle Creek Basin to determine their exposure to 13 pathogens, including the one causing whirling disease. Along with other techniques, DNA technology is being used for disease detection and to prevent the spread of microbial aquatic nuisance species that cause disease. The health status of wild fish had been non-existent and already, the results from this project has been shared with the Oregon Department of Fish &amp; Wildlife and used for management of hatcheries. (FONS project #13231-2002-005)</p>
<b>Expended</b>	\$9633	
<b>Objective</b>	Utilize appropriate scientific and technologic tools in formulating and executing fishery management plans and policies.	
<b>Primary Benefited Species</b>	Rainbow trout ( <a href="#">Oncorhynchus mykiss</a> )	
<b>Primary Benefited Population</b>	<a href="#">Clackamas River winter run steelhead</a>	
<b>Plans</b>	<p>Eagle Creek NFH Winter Steelhead Hatchery and Genetic Management Plan</p> <p>U.S. Fish and Wildlife Service National Aquatic Animal Health Policy</p> <p>National Wild Fish Health Survey</p> <p>1999 NMFS Biological Opinion on Artificial Propagation in the Columbia River Basin.</p> <p>2000 NMFS FCRPS Biological Opinion - December 21, 2000</p> <p>Conservation of Columbia Basin Fish, Final Basinwide Salmon Recovery Strategy, 12/2000 (All H Paper)</p>	
<b>Keyword</b>	Fish Health	
<b>Need Number</b>	N-002	

**Partners**

Oregon Department of  
Fish and Wildlife  
U. S. Forest Service

**Accomplishments**

Number of population assessments completed	1
Number of other Recovery Plan tasks implemented for T&E populations	3
Number of Fishery Management Plan production tasks implemented (PART)	1
Number of post stocking survival tasks met as prescribed by Fishery Management Plans, for hatchery propagated depleted species (PART)	1
Number of other Fishery Management Plan tasks implemented for populations of management concern.	1
Number of activities conducted to support the management and control of aquatic invasive species	1
Number of technical assistance/coordination activities conducted	1
Number of surveys conducted for aquatic invasive species baseline/trend information	4
Number of applied science and technology tasks implemented as prescribed by Recovery Plans. (PART)	1
Number of applied science and technology tasks implemented as prescribed by Fishery Management Plans. (PART)	3

**13231-A-025 - [Development of Native Broodstock Techniques for Use in Restoration and Recovery: Steelhead](#)**

<b>Facility</b>	Lower Columbia River Fish Health Center	<p><b>Accomplishment Summary</b></p> <p>Develop methods to rear naturally produced steelhead to adulthood under hatchery conditions, spawn them, and use their progeny to produce a self-sustaining population of 5,000 fish. Progeny from these steelhead were sampled for over 13 different pathogens to check their health and enhance their survival.</p> <p><b>Description</b></p> <p><b>The importance to the Resource:</b></p> <p>To comply with NMFS' Biological Opinion and USFWS restoration and recovery efforts, Abernathy Fish Technology Center staff are working to establish a native stock of naturally-spawned fish to return a natural population of steelhead to Abernathy Creek, WA.</p> <p><b>The problem:</b></p> <p>Most of the native wild stock of Abernathy Creek had been extirpated.</p> <p><b>The objective:</b></p> <p>Develop methods to rear naturally produced fish under hatchery conditions; use the progeny of this native broodstock to recover the depleted population; avoid the removal of ESA listed adult fish as native broodstock; and ultimately produce a self-sustaining stock of steelhead.</p> <p><b>The method:</b></p> <p>The fish will be spawned, the progeny stocked in Abernathy Creek, and the entire population will be monitored for health, physiology, and abundance. Fish were monitored for the presence of over 13 different pathogens by the</p>
<b>Expended</b>	\$6000	
<b>Objective</b>	Restore declining fish and other aquatic resource populations before they require listing under the Endangered Species Act.	
<b>Primary Benefited Species</b>	Rainbow trout ( <a href="#">Oncorhynchus mykiss</a> )	
<b>Primary Benefited Population</b>	<a href="#">lower Columbia River Steelhead</a>	
<b>Plans</b>	<p>National Wild Fish Health Survey</p> <p>U.S. Fish and Wildlife Service National Aquatic Animal Health Policy</p> <p>1999 NMFS Biological Opinion on Artificial Propagation in the Columbia River Basin.</p> <p>2000 NMFS FCRPS Biological Opinion - December 21, 2000</p> <p>Conservation of Columbia Basin Fish, Final Basinwide Salmon Recovery Strategy, 12/2000 (All H Paper)</p>	
<b>Keyword</b>	Fish Health	
<b>Need Number</b>	N-002	
<b>Partners</b>		
<b>Accomplishments</b>		

Number of other Recovery Plan tasks implemented for T&E populations	4	<p>Lower Columbia River Fish Health Ctr. to assay health indices and survival in the wild.</p> <p><b>Further description:</b></p> <p>To comply with NMFS' Biological Opinion and USFWS restoration and recovery efforts, Abernathy Fish Technology Center staff are working to establish a native stock of naturally-spawned fish to return a natural population of steelhead to Abernathy Creek, WA. Study goals are: 1) develop methods to rear naturally produced fish under hatchery conditions; 2) use the progeny of this native broodstock to recover the depleted population; 3) avoid the removal of ESA listed adult fish as native broodstock; and 4) ultimately produce a self-sustaining stock of steelhead. In Sept. 1999, 500 naturally-spawned juvenile steelhead were collected from Abernathy Creek. Using minimal human contact, automatic feeders, raceway covers and predator netting, an 88% survival rate has been achieved. Another 500 were collected Sept.2000, year 2 of the study. The fish will be spawned, the progeny stocked in Abernathy Creek, and the entire population will be monitored for health, physiology, abundance, and the Wild Fish Health Survey. In comparison, undisturbed steelhead populations in adjoining drainages will also be monitored. This project is shared with Abernathy FTC and Columbia River Fisheries Program Office.</p>
Number of post stocking survival tasks met as prescribed by Fishery Management Plans, for hatchery propagated depleted species (PART)	1	
Number of other Fishery Management Plan tasks implemented for populations of management concern.	1	
Number of applied science and technology tasks implemented as prescribed by Fishery Management Plans. (PART)	1	

13231-A-027 - [Hatchery Review Team Participation by Lower Columbia River Fish Health Ctr](#)

<b>Facility</b>	Lower Columbia River Fish Health Center	<p><b>Accomplishment Summary</b></p> <p>Fish health expertise was contributed to the Hatchery Review Team's analysis and recommendations of Warm Springs National Fish Hatchery (NFH), the Leavenworth NFH Complex, and Eagle Creek NFH.</p> <p><b>Description</b></p> <p><b>The <i>importance</i> to the Resource:</b></p> <p>All USFWS National Fish Hatcheries in the Pacific NW are undergoing a scientific review of their effectiveness in managing fisheries, fulfilling mitigation needs, and to ensure that they meet the critical missions and enhance needs of states, tribes and federal agencies, now and into the future.</p> <p><b>The <i>problem</i>:</b></p> <p>Not all hatcheries are effectively achieving the best results needed.</p> <p><b>The <i>objective</i>:</b></p> <p>There is a need to thoroughly investigate and review the stocks being reared in NW hatcheries to ensure that they are producing the fish stocks best suited for their basins.</p> <p><b>The <i>method</i>:</b></p> <p>A team of experts from USFWS and NMFS gather information, inspect each hatchery and make recommendations for each hatchery. All information is supplied via the hatchery review team website.</p>
<b>Expended</b>	\$15678	
<b>Objective</b>	Develop and improve long-term partnerships with States, Tribes, other Federal agencies, non-governmental organizations, and other Service Programs to develop collaborative conservation strategies for aquatic resources.	
<b>Primary Benefited Species</b>	(0) Multiple Species	
<b>Primary Benefited Population</b>	Not specified	
<b>Plans</b>	Conservation of Columbia Basin Fish, Final Basinwide Salmon Recovery Strategy, 12/2000 (All H Paper)	
<b>Keyword</b>	Management	
<b>Need Number</b>	N-002	
<b>Partners</b>	<p>Confederated Tribes of The Warm Springs</p> <p>National Oceanic and Atmospheric Administration, Fisheries</p> <p>Oregon Department of Fish and Wildlife</p> <p>U. S. Forest Service</p> <p>Washington Department of Fish and Wildlife</p> <p>Yakama Indian Nation</p>	

## Accomplishments

Number of other Recovery Plan tasks implemented for T&E populations	4
Number of applied science and technology tasks implemented as prescribed by Recovery Plans. (PART)	1

14110-A-510 - [Steelhead harvest mitigation](#)

<b>Facility</b>	Lower Snake River Compensation Plan Office	<p><b>Accomplishment Summary</b></p> <p>Approximately 4.2 million juvenile steelhead were released in 2006 from five LSRCP hatcheries (Magic Valley, Clearwater, Irrigon, Wallowa, and Lyons Ferry). Fish were marked for LSRCP evaluations, and in accordance with the U.S. vs Oregon Settlement Agreement. Approximately 156,000 adult steelhead returned to the Snake River basin, above Lower Granite Dam, in 2005, of which nearly 72,000 were originated from the LSRCP. The LSRCP annual adult return goal for steelhead is 55,100.</p> <p><b>Description</b></p> <p><b>The importance to the Resource:</b></p> <p>Prior to completion of four hydroelectric dams on the lower Snake River, an average of 114,800 steelhead returned to spawn in basin annually. The progeny of these fish helped support commercial, recreational and tribal fisheries in the mainstem Columbia River and Snake River basin.</p> <p><b>The problem:</b></p> <p>The U.S. Army COE Coordination Act Report (June 1975) estimated that constructing and operating the 4 dams would reduce the annual steelhead spawning escapement in the Snake River by about 59,700, which would lead to a significant reduction of steelhead for harvest.</p> <p><b>The objective:</b></p> <p>To mitigate for the lost harvest of steelhead caused by the construction and operation of the four lower Snake River dams as required by the Fish and Wildlife Coordination Act.</p>
<b>Expended</b>	\$7462822	
<b>Objective</b>	Meet the Service's responsibilities for mitigating fisheries.	
<b>Primary Benefited Species</b>	Rainbow trout ( <a href="#">Oncorhynchus mykiss</a> )	
<b>Primary Benefited Population</b>	Not specified	
<b>Plans</b>	Lower Snake River Compensation Plan	
<b>Keyword</b>	Mitigation	
<b>Need Number</b>	N-002	
<b>Partners</b>	<p>Bonneville Power Administration</p> <p>Confederated Tribes of the Umatilla Indian Reservation</p> <p>Idaho Department of Fish and Game</p> <p>National Marine Fisheries Service</p> <p>Nez Perce Tribe</p> <p>Oregon Department of Fish and Wildlife</p> <p>Pacific States Marine Fisheries Commission</p> <p>Shoshone-Bannock Tribe</p> <p>United States Army Corps of Engineers</p> <p>Washington Department of Fish and Wildlife</p>	

## Accomplishments

Number of visitors to service facilities.	4250
Number of mitigation tasks implemented as prescribed in approved plans. (PART)	6
Number of mitigation production tasks implemented as prescribed in approved plans. (PART)	2
Number of mitigation marking & tagging tasks implemented as prescribed in approved plans.	1

## The *method*:

Five fish hatcheries (Lyons Ferry, Wallowa, Clearwater, Magic Valley and Irrigon) and off-site acclimation ponds, were constructed by the U.S. Army Corps of Engineers to hatch, rear and release steelhead into the basin. Returning adults, surplus to broodstock needs, would be available for harvest.

## Further description:

The LSRCP program is directly funded as a Power Related Cost by the Bonneville Power Administration. The Lyons Ferry Fish hatchery is operated by the Washington Department of Fish and Wildlife. The Irrigon and Wallowa hatcheries are operated by the Oregon Department of Fish and Wildlife. The Magic Valley and Clearwater fish hatcheries are operated by the Idaho Department of Fish and Game. Each agency listed above also participates in an integrated hatchery evaluation program and operates an ongoing fish health program.

13330-A-103 - [Restoring fish passage into upper Icicle Creek](#)

<b>Facility</b>	Mid-columbia River Fisheries Resource Office	<p><b>Accomplishment Summary</b></p> <p>We continued efforts to resolve issues and ESA compliance necessary to implement Phase II of the Icicle Creek Restoration Project at Leavenworth NFH. Biological The project, to restore fish passage and improve habitat conditions in Icicle Creek, has been unfortunately delayed to legal action and inability to resolve issues from certain parties.</p> <p><b>Description</b></p> <p><b>The importance to the Resource:</b></p> <p>Restoring fish passage in Icicle Creek (past Leavenworth NFH) will help populations of ESA-listed steelhead and bull trout as well as non-listed native species.</p> <p><b>The problem:</b></p> <p>Leavenworth NFH has blocked most fish passage to areas upstream of the hatchery since construction about 1940. We have been pursuing long-term solutions but until certain issues are resolved with respect to the long term solution we will continue to seek opportunities to improve passage conditions.</p> <p><b>The objective:</b></p> <p>To provide passage opportunities to all non-hatchery fish into areas of Icicle Creek upstream of Leavenworth NFH without compromising hatchery broodstock collection or the Yakama Nation tribal fishery. as natural</p> <p><b>The method:</b></p> <p>We continue to meet with all parties to resolve disagreements regarding the optimum passage solution at the hatchery.</p>	
<b>Expended</b>	\$200000		
<b>Objective</b>	Recover fish and other aquatic resource populations protected under the Endangered Species Act.		
<b>Primary Benefited Species</b>	Rainbow trout ( <a href="#">Oncorhynchus mykiss</a> )		
<b>Primary Benefited Population</b>	<a href="#">Wenatchee River (UCWEN) population, part of the Upper-Columbia River steelhead ESU.</a>		
<b>Plans</b>	Bull Trout Draft Recovery Plan, Chapter 21 Leavenworth Hatchery Genetics Management Plan USFWS Biological Opinion for the Operations and Maintenance of Leavenworth National Fish Hatchery		
<b>Keyword</b>	Fish Passage		
<b>Need Number</b>	N-002		
<b>Partners</b>	Leavenworth National Fish Hatchery U.S. Bureau of Reclamation Washington Department of Fish and Wildlife		
<p><b>Accomplishments</b></p> <table border="1"> <tr> <td>Number of miles re-opened to fish passage</td> <td>1.2</td> </tr> </table>			Number of miles re-opened to fish passage
Number of miles re-opened to fish passage	1.2		

Number of habitat assessments completed	1.0
Number of miles of in-stream habitat assessed	3.0
Number of population assessments completed	1
Number of other Recovery Plan tasks implemented for T&E populations	4
Number of applied science and technology tasks implemented as prescribed by Fishery Management Plans. (PART)	1

**Further description:**

In FY 2006, the Mid-Columbia River Fishery Resource Office (MCRFRO) continued extensive effort working with partner's including Leavenworth National Fish Hatchery (LNFH), the Bureau of Reclamation, National Marine Fisheries Service, the Yakama Nation, Ecological Services, and the Washington Department of Fish and Wildlife to resolve disagreements over long-term passage solutions at the hatchery. Some short-term passage improvements have been implemented this year which are providing benefit to ESA-listed and native non-listed fish.

**13330-A-104 - Habitat availability and population trends of at risk anadromous and resident fish species.**

<b>Facility</b>	Mid-columbia River Fisheries Resource Office	<p><b>Accomplishment Summary</b></p> <p>Completed salmon and bull trout spawning and habitat surveys in upper Columbia River tributaries, completed and distributed associated reports, and neared completion of a report on a 5-year radio telemetry tracking study of adult bull trout movements in Wenatchee River Basin.</p> <p><b>Description</b></p> <p><b>The importance to the Resource:</b></p> <p>The annual monitoring of salmon, steelhead and bull trout populations, their composition, and distribution throughout Upper Columbia River tributaries is critical for effective management of the resources.</p> <p><b>The problem:</b></p> <p>Effective resource management is often limited by insufficient data regarding fish populations, compositions, and distributions. The specific cause of the problem is most often limited funding for monitoring activities.</p> <p><b>The objective:</b></p> <p>The objective of this project is to annually survey the abundance and distribution of salmon, steelhead and bull trout populations, and their habitats, in key tributaries in the Upper Columbia Basin and provide this data to resource managers.</p> <p><b>The method:</b></p> <p>The MCRFRO conducts annual spawning ground surveys to determine abundance, composition (hatchery/wild) and distribution of salmon, steelhead and bull trout. Radio-</p>					
<b>Expended</b>	\$40000						
<b>Objective</b>	Recover fish and other aquatic resource populations protected under the Endangered Species Act.						
<b>Primary Benefited Species</b>	Bull trout ( <a href="#">Salvelinus confluentus</a> )						
<b>Primary Benefited Population</b>	<a href="#">Wenatchee River Bull Trout</a>						
<b>Plans</b>	Bull Trout Draft Recovery Plan, Chapter 22 Entiat Hatchery Genetics Management Plan Entiat Subbasin Plan						
<b>Keyword</b>	Monitoring and Assessment						
<b>Need Number</b>	N-002						
<b>Partners</b>	U. S. Forest Service U.S. Bureau of Reclamation Washington Department of Fish and Wildlife						
<p><b>Accomplishments</b></p> <table border="1"> <tr> <td>Number of population assessments completed</td> <td>3</td> </tr> <tr> <td>Number of other Recovery Plan tasks implemented for T&amp;E populations</td> <td>2</td> </tr> <tr> <td>Number of other Fishery Management Plan</td> <td>2</td> </tr> </table>			Number of population assessments completed	3	Number of other Recovery Plan tasks implemented for T&E populations	2	Number of other Fishery Management Plan
Number of population assessments completed	3						
Number of other Recovery Plan tasks implemented for T&E populations	2						
Number of other Fishery Management Plan	2						

tasks implemented for populations of management concern.

telemetry studies provide additional data regarding bull trout migrations and habitat preferences throughout the Upper Columbia basin.

**Further description:**

In FY 2006, the Mid-Columbia River Fishery Resource Office, in cooperation with U.S. Forest Service (USFS) and Washington Dept. of Fish and Wildlife (WDFW), continued an ongoing effort to assess fish populations, compositions (hatchery/wild), and distributions, and habitat preferences in tributary streams of the Wenatchee, Entiat, and Methow River basins. Benefit: assessment of habitat and population trends in the rivers facilitates proper management decisions leading to the appropriate restoration actions on over one-hundred miles of tributary streams. These streams historically supported thousands of returning adult Chinook salmon and some still support tribal and sport fisheries. During 2006 we conducted summer Chinook and bull trout spawning surveys. We also neared completion of a report detailing results from a radio telemetry tracking study of Endangered Species Act listed bull trout populations in the Wenatchee River Basin. Benefit: study provides information on bull trout life history, distribution, habitat use, and migratory corridors. Data collected are an invaluable asset to development of bull trout management plan which will lead to the recovery of bull trout populations in the basin.

13330-A-107 - [Mid-Columbia River Tributary Bull Trout Radio Telemetry and Thermal Regime Project](#)

<b>Facility</b>	Mid-columbia River Fisheries Resource Office	<p><b>Accomplishment Summary</b></p> <p>In coordination with Public Utility Districts (PUD's), Washington State, and FWS, University of Idaho, bull trout locations and movements were telemetry monitored in the Methow River Basin. Information will be used for management decisions leading to species recovery.</p> <p><b>Description</b></p> <p><b>The importance to the Resource:</b></p> <p>Resource managers are hampered by a lack of specific information necessary to make informed decisions reducing impacts to species and habitats. Similarly, specific locations utilized by bull trout in the Methow Basin had not previously been precisely identified diminishing sufficiency of management plans there.</p> <p><b>The problem:</b></p> <p>Information associated with bull trout seasonal distribution and spawning locations are lacking which hampers management leading to the eventual recovery of the bull trout.</p> <p><b>The objective:</b></p> <p>The object of this project is to describe the seasonal distribution and spawning locations of bull trout in the Methow River watershed. Information from this project will improve resource and aquatic species management plans leading to recovery and eventual de-listing of the species.</p> <p><b>The method:</b></p> <p>Bull trout in the Methow River were surgically</p>	
<b>Expended</b>	\$53341		
<b>Objective</b>	Recover fish and other aquatic resource populations protected under the Endangered Species Act.		
<b>Primary Benefited Species</b>	Bull trout ( <a href="#">Salvelinus confluentus</a> )		
<b>Primary Benefited Population</b>	<a href="#">Methow River Bull Trout</a>		
<b>Plans</b>	Bull Trout Draft Recovery Plan, Chapter 22 Methow Subbasin Plan		
<b>Keyword</b>	Monitoring and Assessment		
<b>Need Number</b>	N-002		
<b>Partners</b>	Chelan County Public Utility (\$50000) Douglas County Public Utility District (\$50000) U. S. Forest Service (\$10000) U.S. Bureau of Reclamation Washington Department of Fish and Wildlife (\$1000)		
<p><b>Accomplishments</b></p> <table border="1"> <tr> <td>Number of population assessments</td> <td>1</td> </tr> </table>			Number of population assessments
Number of population assessments	1		

completed		<p>implanted with radio tags, released, and will be tracked for up to three years to describe seasonal distribution. Telemetry data will be collected from fixed sites, mobile ground and air surveys.</p> <p><b>Further description:</b></p> <p>Current resource management plans, including water management operations by the Public Utility Districts and the Bureau of Reclamation in the Columbia River Basin are hampered by a lack of specific information necessary to make informed decisions reducing impacts to species and habitats. Similarly, specific locations utilized by bull trout in the Methow Basin had not previously been precisely identified diminishing sufficiency of management plans there. A bull trout radio telemetry monitoring project in the Methow basin was initiated in FY 2005. This project provides a continuance of an effort to describe bull trout movements throughout the middle and upper Columbia Basin. In addition to radio telemetry monitoring, MCRFRO also conducted bull trout spawning surveys in Goat Creek to assess population status, habitat conditions and recreational impacts. The MCRFRO, in coordination with Douglas County PUD, will continue to monitor adult bull trout populations in the Methow River basin.</p>
Number of other Recovery Plan tasks implemented for T&E populations	2	
Number of other Fishery Management Plan tasks implemented for populations of management concern.	3	

**13330-A-109 - [Recovery of ESA-listed Entiat River Salmonids Through Improved Management Action](#)**

<b>Facility</b>	Mid-columbia River Fisheries Resource Office	<p><b>Accomplishment Summary</b></p> <p>Operated a juvenile salmonid trap throughout the year. Population and survival estimates were determined for spring and summer Chinook salmon. Data are now available real-time. This monitoring operation uses methods approved under BPA's Monitoring Strategy for the Upper Columbia Basin.</p> <p><b>Description</b></p> <p><b>The importance to the Resource:</b></p> <p>The effort will assist the recovery of ESA-listed spring Chinook salmon, steelhead and bull trout inhabiting the Entiat River Basin by gathering previously unknown information about the juvenile life history characteristics and populations of these species in this basin.</p> <p><b>The problem:</b></p> <p>The status of fish populations are largely unknown due to a lack of consistent monitoring. Funding for such monitoring programs is difficult to secure without partners.</p> <p><b>The objective:</b></p> <p>The MCRFRO will continue to monitor populations of fish, including ESA-listed species, produced in the Entiat River Basin. The effort assist recovery of ESA-listed spring Chinook salmon, steelhead and bull trout inhabiting the Entiat River Basin by gathering information about the juvenile life history characteristics and populations in this basin.</p> <p><b>The method:</b></p> <p>A rotray screw trap was operated throughout the year to capture migrating juvenile salmon</p>	
<b>Expended</b>	\$29695		
<b>Objective</b>	Recover fish and other aquatic resource populations protected under the Endangered Species Act.		
<b>Primary Benefited Species</b>	Chinook salmon or king salmon ( <a href="#">Oncorhynchus tshawytscha</a> )		
<b>Primary Benefited Population</b>	<a href="#">Entiat River (UCENT) spring chinook salmon.</a>		
<b>Plans</b>	Entiat Hatchery Genetics Management Plan Entiat Subbasin Plan		
<b>Keyword</b>	Monitoring and Assessment		
<b>Need Number</b>	N-002		
<b>Partners</b>	National Oceanic and Atmospheric Administration, Fisheries		
<p><b>Accomplishments</b></p> <table border="1"> <tr> <td>Number of population assessments completed</td> <td>1</td> </tr> </table>			Number of population assessments completed
Number of population assessments completed	1		

and steelhead and other fish following methods approved under BPA's Monitoring Strategy for the Upper Columbia Basin. A portion of captured fish were pit-tagged, generating travel time and survival estimates through the Columbia River corridor.

**Further description:**

MCRFRO continued the fourth year of an intensive and long term juvenile salmonid monitoring program. The effort will assist the recovery of ESA-listed spring Chinook salmon, steelhead and bull trout inhabiting the Entiat River Basin by gathering previously unknown information about the juvenile life history characteristics and populations of these species in this basin. This information will improve resource management decisions. A rotary screw trap operated nearly continuously, following methods approved under BPA's Monitoring Strategy for the Upper Columbia Basin, throughout the year and was highly successful in capturing a significant number and variety of species. All data is available in real-time and is disseminated widely. A portion of emigrating Chinook , steelhead and bull trout were pit-tagged, generating travel time and survival estimates through the Columbia River corridor. Tissue has been collected from Chinook and steelhead juveniles for genetic analysis. Some captured salmonids have been utilized to construct pathological profiles as part of the National Wild Fish Health Survey. Data collected this past year will be furthered compared to asses any potential impacts between hatchery versus the wild populations.

13330-A-111 - [From extirpation to colonization: an attempt to restore salmon back to their former streams](#)

<b>Facility</b>	Mid-columbia River Fisheries Resource Office	<p><b>Accomplishment Summary</b></p> <p>Monitoring and evaluations of adult salmon outplant continued in 2006. Surveys were conducted to determine adult chinook presence and distribution. A rotary screw trap was used to monitor Peshastin Creek juvenile salmon, steelhead and bull trout populations.</p> <p><b>Description</b></p> <p><b>The importance to the Resource:</b></p> <p>Depressed or exterperated populations of salmon may be bolstered by using hatchery origin fish. Recovery of ESA-listed and non listed depressed or exterperated populations may be facilitated by such programs.</p> <p><b>The problem:</b></p> <p>Native spring Chinook salmon have not been observed in Peshastin Creek since 1997. Obviously the native stock has been lost from the system. Habitat degradation and fish passage problems are believed to be the primary cause of the problem.</p> <p><b>The objective:</b></p> <p>The objective of this project was to determine if hatchery origin Chinook salmon could successfully reestablish a self reproducing population.</p> <p><b>The method:</b></p> <p>Spawning ground surveys in 2006 will document the ability of hatchery origin chinook salmon to rebuild a wild population without any further supplementation. We also continued to operate a rotray screw trap to monitor the juvenile fish population.</p>
<b>Expended</b>	\$12680	
<b>Objective</b>	Recover fish and other aquatic resource populations protected under the Endangered Species Act.	
<b>Primary Benefited Species</b>	Chinook salmon or king salmon ( <a href="#">Oncorhynchus tshawytscha</a> )	
<b>Primary Benefited Population</b>	<a href="#">Wenatchee River (UCWEN) spring chinook salmon</a>	
<b>Plans</b>	<p>Wenatchee Subbasin Plan</p> <p>Conservation of Columbia Basin Fish, Final Basinwide Salmon Recovery Strategy, 12/2000 (All H Paper)</p> <p>Leavenworth Hatchery Genetics Management Plan</p>	
<b>Keyword</b>	Monitoring and Assessment	
<b>Need Number</b>	N-002	
<b>Partners</b>	<p>Bonneville Power Administration</p> <p>Chelan County Public Utility</p> <p>Leavenworth National Fish Hatchery</p> <p>Yakama Indian Nation</p>	
<b>Accomplishments</b>		

Number of population assessments completed	1	<b>Further description:</b>
Number of other Fishery Management Plan tasks implemented for populations of management concern.	2	
		<p>There is a lack of evidence regarding the ability of hatchery-origin salmon to spawn naturally and contribute to the restoration and recovery of wild populations. From 2001 to 2004, adult spring Chinook salmon of hatchery origin were released into Peshastin Creek. There has been no wild spring Chinook salmon in this creek in since 1997. These outplants of adult hatchery salmon provides an opportunity to assess the ability of naturally spawning hatchery fish to rebuild a wild population. Surveys confirmed that the hatchery salmon were successful in spawning and building a significant number of redds. Snorkeling surveys in 2002 through 2005 along with juvenile trapping in 2006 indicate that these redds were successful in producing juveniles but the quantity and long-term viability are unknown. This project is designed to answer these questions through quantitative trapping methodology to estimate population parameters, morphometrics, and genetic composition in comparison to the hatchery parentage and hatchery-reared cohorts. This long-term monitoring operation uses methods approved under BPA's Monitoring Strategy for the Upper Columbia Basin.</p>

13295-A-011 - [Disease testing of adult spring Chinook salmon at Entiat NFH](#)

<b>Facility</b>	Olympia Fish Health Center	<p><b>Accomplishment Summary</b></p> <p>Adult salmon were tested to prevent disease and losses to production at Entiat NFH</p> <p><b>Description</b></p> <p><b>The importance to the Resource:</b></p> <p>Restoration and supplementation of Pacific salmon are essential to meet Service goals and obligations. Adult salmon inspections are necessary to monitor and control viruses, bacteria and parasites that may enter hatcheries through returns of salmon adults.</p> <p><b>The problem:</b></p> <p>Pathogens cause disease and losses of fish if not detected and held in check.</p> <p><b>The objective:</b></p> <p>Prevent and control pathogens and disease at Entiat NFH.</p> <p><b>The method:</b></p> <p>Scientifically based testing is performed to find any diseases that would be a threat to the population or would cause losses in production. 209 adult Spring Chinook salmon were tested to determine the numbers of pathogens and threat of disease.</p> <p><b>Further description:</b></p> <p>Adult pathogen inspections are required if eggs are moved from the facility.</p>
<b>Expended</b>	\$25000	
<b>Objective</b>	Utilize appropriate scientific and technologic tools in formulating and executing fishery management plans and policies.	
<b>Primary Benefited Species</b>	Chinook salmon or king salmon ( <a href="#">Oncorhynchus tshawytscha</a> )	
<b>Primary Benefited Population</b>	Not specified	
<b>Plans</b>	U.S. Fish and Wildlife Service National Aquatic Animal Health Policy Entiat Hatchery Genetics Management Plan	
<b>Keyword</b>	Fish Health	
<b>Need Number</b>	N-002	
<b>Partners</b>	U.S. Bureau of Reclamation	

13295-A-012 - [Disease monitoring, testing and treatment of juvenile salmon at Entiat NFH](#)

<b>Facility</b>	Olympia Fish Health Center	<p><b>Accomplishment Summary</b></p> <p>Juvenile salmon are monitored, tested and treated to prevent losses of production of fish in support of management and restoration plans for the Columbia River Basin.</p> <p><b>Description</b></p> <p><b>The importance to the Resource:</b></p> <p>Fish production at Entiat NFH supports mitigation and restoration of interjurisdictional fisheries in the Columbia River, Washington and Oregon.</p> <p><b>The problem:</b></p> <p>Diseases can reduce survival and cause losses to production of salmon.</p> <p><b>The objective:</b></p> <p>Prevent and control pathogens and disease losses in juveniles at Entiat NFH</p> <p><b>The method:</b></p> <p>Scientifically based monitoring and testing can detect diseases and fish can be treated to prevent death and increase survival of populations. 247 juveniles were tested for pathogens to determine disease status and proper treatments when necessary.</p> <p><b>Further description:</b></p> <p>Juvenile pathogen inspection are necessary if fish are moved or released from the facility.</p>
<b>Expended</b>	\$30000	
<b>Objective</b>	Utilize appropriate scientific and technologic tools in formulating and executing fishery management plans and policies.	
<b>Primary Benefited Species</b>	Chinook salmon or king salmon ( <a href="#">Oncorhynchus tshawytscha</a> )	
<b>Primary Benefited Population</b>	Not specified	
<b>Plans</b>	U.S. Fish and Wildlife Service National Aquatic Animal Health Policy Entiat Hatchery Genetics Management Plan	
<b>Keyword</b>	Fish Health	
<b>Need Number</b>	N-002	
<b>Partners</b>	U.S. Bureau of Reclamation	

13295-A-013 - [Disease testing of adult Chinook salmon at Leavenworth NFH](#)

<b>Facility</b>	Olympia Fish Health Center	<p><b>Accomplishment Summary</b></p> <p>Adult salmon were tested to prevent disease and losses to production at Leavenworth NFH.</p> <p><b>Description</b></p> <p><b>The <i>importance</i> to the Resource:</b></p> <p>Disease can cause serious reduction in survival of fish intended for mitigation projects to restore lost salmon fishery opportunities to the public and Native Americans</p> <p><b>The <i>problem</i>:</b></p> <p>Hatcheries built to mitigate for habitat and fishing loss due to construction of Grand Coulee Dam can potentially amplify disease if proper monitoring and elimination of pathogens and disease does not occur.</p> <p><b>The <i>objective</i>:</b></p> <p>Monitor and reduce the prevalence of pathogens and disease in hatchery populations</p> <p><b>The <i>method</i>:</b></p> <p>Test fish for pathogens, segregate or eliminate high risk eggs from production lots.</p> <p><b>Further description:</b></p> <p>Adult salmon inspections are necessary to monitor and control viruses, bacteria and parasites that may enter hatcheries through returns of salmon adults. Restoration and supplementation of Pacific salmon are essential to meet Service goals and obligations. Pathogens cause disease and losses of fish if not detected and held in check. Scientifically based testing is performed to find any diseases that would be a threat to the</p>
<b>Expended</b>	\$48000	
<b>Objective</b>	Utilize appropriate scientific and technologic tools in formulating and executing fishery management plans and policies.	
<b>Primary Benefited Species</b>	Chinook salmon or king salmon ( <a href="#">Oncorhynchus tshawytscha</a> )	
<b>Primary Benefited Population</b>	Not specified	
<b>Plans</b>	U.S. Fish and Wildlife Service National Aquatic Animal Health Policy Leavenworth Hatchery Genetics Management Plan	
<b>Keyword</b>	Fish Health	
<b>Need Number</b>	N-002	
<b>Partners</b>	U.S. Bureau of Reclamation	

	<p>population or would cause losses in production. 600 adult salmon were tested to determine the numbers of pathogens and threat of disease.</p>
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13295-A-014 - [Disease monitoring, testing and treatment of juvenile salmon at Leavenworth NFH](#)

<b>Facility</b>	Olympia Fish Health Center	<p><b>Accomplishment Summary</b></p> <p>Juvenile salmon are monitored, tested and treated to prevent losses of production of fish in support of management and restoration plans for the Columbia River Basin.</p> <p><b>Description</b></p> <p><b>The importance to the Resource:</b></p> <p>Disease can cause serious reduction in survival of juvenile fish at mitigation hatcheries intended to restore lost salmon fishery opportunities to the public and Native Americans</p> <p><b>The problem:</b></p> <p>Pathogens and disease can cause significant loss of fish being reared at federal hatcheries.</p> <p><b>The objective:</b></p> <p>Reduce and prevent the prevalence of pathogens and the loss of fish due to disease.</p> <p><b>The method:</b></p> <p>Monitor juveniles for pathogens and disease during the rearing period. Recommend treatments to prevent and control diseases if they appear and present undue risk to the resource.</p> <p><b>Further description:</b></p> <p>Fish production at Leavenworth NFH supports recovery of listed Chinook for mitigation and restoration of interjurisdictional fisheries in the Columbia River, Washington and Oregon. Diseases can reduce survival and cause losses to production of salmon. Scientifically</p>
<b>Expended</b>	\$44519	
<b>Objective</b>	Utilize appropriate scientific and technologic tools in formulating and executing fishery management plans and policies.	
<b>Primary Benefited Species</b>	Chinook salmon or king salmon ( <a href="#">Oncorhynchus tshawytscha</a> )	
<b>Primary Benefited Population</b>	Not specified	
<b>Plans</b>	U.S. Fish and Wildlife Service National Aquatic Animal Health Policy Leavenworth Hatchery Genetics Management Plan	
<b>Keyword</b>	Fish Health	
<b>Need Number</b>	N-002	
<b>Partners</b>	U.S. Bureau of Reclamation	

	<p>based monitoring and testing can detect diseases and fish can be treated to prevent death and increase survival of populations. Over 200 representative juveniles were tested for pathogens to determine disease status and proper treatments when necessary.</p>
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13295-A-020 - [Pacific Northwest Fish Health Protection Committee](#)

<b>Facility</b>	Olympia Fish Health Center	<p><b>Accomplishment Summary</b></p> <p>2 meetings were coordinated and held with representatives of 6 western States, 2 Tribal organizations, National Marine Fisheries Service, Department of Fisheries and Oceans, Canada and 1 Aquaculture Association on Fish Disease Issues</p> <p><b>Description</b></p> <p><b>The importance to the Resource:</b></p> <p>Coordination and resolution of fish health issues between agencies and stakeholders of the Pacific Northwest is critical to solving long term problems with disease in this region.</p> <p><b>The problem:</b></p> <p>Various State, Tribal, Federal and Canadian agencies and entities have jurisdiction over the regulation and control of fish and diseases in the Northwest. Since anadromous fish populations respect no political boundaries, it is critical to coordinate efforts to solve mutual problems with fish diseases in this region.</p> <p><b>The objective:</b></p> <p>Resolve technical and policy issues regarding the prevention and control of important fish diseases in the Pacific Northwest.</p> <p><b>The method:</b></p> <p>Provide a forum and infrastructure to exchange information and encourage agencies and entities that rear fish in the Pacific Northwest to adopt measures to prevent and minimize the impact of disease on fish resources of the Pacific Northwest.</p>
<b>Expended</b>	\$10000	
<b>Objective</b>	Develop and improve long-term partnerships with States, Tribes, other Federal agencies, non-governmental organizations, and other Service Programs to develop collaborative conservation strategies for aquatic resources.	
<b>Primary Benefited Species</b>	(0) Multiple Species	
<b>Primary Benefited Population</b>	Not specified	
<b>Plans</b>		
<b>Keyword</b>	Outreach	
<b>Need Number</b>	N-002	
<b>Partners</b>	<p>Alaska Department of Fish and Game</p> <p>California Department of Fish and Game</p> <p>Columbia River Intertribal Fish Commission</p> <p>Department of Fisheries and Oceans, Canada</p> <p>Idaho Department of Fish and Game</p> <p>Montana Department of Fish Wildlife and Parks</p> <p>Northwest Indian Fisheries Commission</p> <p>Oregon Department of Fish and Wildlife</p> <p>Washington Department of Fish and Wildlife</p>	

	<p><b>Further description:</b></p> <p>The U.S. Fish and Wildlife Service sponsors and attends this multi-agency committee to serve as a forum to discuss and resolve fish health issues that affect conservation agencies, tribes, and commercial fish producers in the Pacific Northwest. The Olympia Fish Health Center is charged with organizational and administrative support for the Pacific Northwest Fish Health Protection Committee through a signed MOU.</p>
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**13295-A-021 - [The effect of hatchery production on health of wild fish in the Icicle Creek and Wenatchee River](#)**

<b>Facility</b>	Olympia Fish Health Center	<p><b>Accomplishment Summary</b></p> <p>Wild salmon and steelhead/rainbow trout were collected and tested in areas that would be influenced by Leavenworth NFH. 60 fish have been collected and tested from areas above the hatchery.</p> <p><b>Description</b></p> <p><b>The <i>importance</i> to the Resource:</b></p> <p>Pathogen and disease interaction between wild and hatchery fish is not well understood, but is suspected to have impacts on each population dependent on situational specific parameters.</p> <p><b>The <i>problem</i>:</b></p> <p>Lack of scientific knowledge of prevalence and magnitude of wild fish above and below Leavenworth NFH.</p> <p><b>The <i>objective</i>:</b></p> <p>Compare timing of occurrence, prevalence and magnitude of representative pathogens within the Leavenworth NFH with timing of occurrence, prevalence and magnitude of the same pathogens in Icicle Creek.</p> <p><b>The <i>method</i>:</b></p> <p>Monitor pathogen prevalence and magnitude in wild populations in Icicle Creek and in hatchery populations.</p> <p><b>Further description:</b></p> <p>Fishery management does not know the impact of fish hatcheries on wild populations or vice versa and can't make valid management decisions on wild fish and habitat restoration</p>
<b>Expended</b>	\$23000	
<b>Objective</b>	Utilize appropriate scientific and technologic tools in formulating and executing fishery management plans and policies.	
<b>Primary Benefited Species</b>	Chinook salmon or king salmon ( <a href="#">Oncorhynchus tshawytscha</a> )	
<b>Primary Benefited Population</b>	<a href="#">Wenatchee River (UCWEN) spring chinook salmon</a>	
<b>Plans</b>	Leavenworth Hatchery Genetics Management Plan	
<b>Keyword</b>	Fish Health	
<b>Need Number</b>	N-002	
<b>Partners</b>	Leavenworth National Fish Hatchery Mid-Columbia Fisheries Resource Office	

	<p>efforts within the Icicle Creek drainage. Wild and hatchery fish survival is dependent on levels of disease within each population and there is likely an interaction and exposure of pathogens between each population. In cooperation with the National Wild Fish Health Survey, Leavenworth NFH and the Mid-Columbia Fisheries Resource Office, standardized tests will be performed on wild salmon captured above and below the hatchery. These test results will be compared to fish disease profiles of salmon in the hatchery to determine if significant interaction does occur.</p>
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13245-A-009 - [Coho salmon to Quilcene Bay net pens \( Tribal\)](#)

<b>Facility</b>	Quilcene National Fish Hatchery	<p><b>Accomplishment Summary</b></p> <p>Transferred 199,191 coho salmon fingerlings weighing 7,758 pounds to Skokomish tribal net pens in Quilcene Bay.</p> <p><b>Description</b></p> <p><b>The importance to the Resource:</b></p> <p>Provide fishing opportunity for treaty / non-treaty; recreational, and commercial fishermen .</p> <p>If these hatchery fish were not there for fishermen, the fishing pressure on wild stocks would be increased.</p> <p><b>The problem:</b></p> <p>Provide fishing opportunity for treaty / non-treaty; recreational, and commercial fishermen .</p> <p>If these hatchery fish were not there for fishermen, the fishing pressure on wild stocks would be increased.</p> <p><b>The objective:</b></p> <p>Increase fishing opportunity for the treaty / non-treaty; recreational, and commercial fishermen. The fish return to the Quilcene Bay for the Skokomish tribal fishermen and other fishermen.</p> <p><b>The method:</b></p> <p>At Quilcene NFH, spawn coho salmon adults, incubate and hatch eggs, and raise fish for over a year until transfer to tribal net pens in Quilcene Bay. These fish are raised for several months before release. The returning hatchery adult salmon are targeted by all groups of fishermen</p>					
<b>Expended</b>	\$96721						
<b>Objective</b>	Provide fish for Tribal resource management.						
<b>Primary Benefited Species</b>	Coho salmon or silver salmon ( <a href="#">Oncorhynchus kisutch</a> )						
<b>Primary Benefited Population</b>	<a href="#">Puget Sound/Strait of Georgia ESU</a>						
<b>Plans</b>	Hood Canal Salmon Management Plan (Quilcene NFH) Puget Sound Salmon Management Plan Pacific Region Fisheries Outreach Action Plan						
<b>Keyword</b>	Tribal						
<b>Need Number</b>	N-002						
<b>Partners</b>	Skokomish Tribe (\$4000) Washington Department of Fish and Wildlife (\$500)						
<p><b>Accomplishments</b></p> <table border="1"> <tr> <td>Number of Fishery Management Plan production tasks implemented (PART)</td> <td>2</td> </tr> <tr> <td>number of marking and tagging targets met, as prescribed by Fishery management plans. (PART)</td> <td>2</td> </tr> <tr> <td>Number of other Fishery Management Plan</td> <td>3</td> </tr> </table>			Number of Fishery Management Plan production tasks implemented (PART)	2	number of marking and tagging targets met, as prescribed by Fishery management plans. (PART)	2	Number of other Fishery Management Plan
Number of Fishery Management Plan production tasks implemented (PART)	2						
number of marking and tagging targets met, as prescribed by Fishery management plans. (PART)	2						
Number of other Fishery Management Plan	3						

tasks implemented for populations of management concern.

**Further description:**

Provided 180,582 coho salmon weighing 6,433 pounds to net pens in Quilcene Bay. This provides additional fishing opportunities to tribal and non tribal fishermen.

All adult fish used in spawning are inspected by US Fish and Wildlife Service fish pathologist prior to any fish transfers. The fish raised at Quilcene National Fish Hatchery are routinely inspected by a US Fish and Wildlife Service fish pathologist.

13245-A-011 - [Genetic Analyses of coho salmon populations in Hood Canal](#)

<b>Facility</b>	Quilcene National Fish Hatchery	<p><b>Accomplishment Summary</b></p> <p>Quilcene NFH funded the Genetic Analyses of Coho Salmon Populations in Hood Canal with the Abernathy Fish Technology Center Genetics Lab. Genetic analyses of 11 hatchery stocks and 17 natural populations are being evaluated. The genetic relationship of the Quilcene NFH stock relative to natural populations within Hood Canal will be determined. This effort provides information to help cooperators decide on objectives and broodstock sources for any new or modified coho programs in Hood Canal.</p> <p><b>Description</b></p> <p><b>The importance to the Resource:</b></p> <p>The Hatchery Scientific Review Group (HSRG) has recommended that the current coho stock at the Quilcene NFH be replaced with a new broodstock derived from an existing natural population in Hood Canal, Big Beef Creek. These fish were chosen in part to reduce the genetic risks of straying of returning hatchery-origin adults from Port Gamble Bay.</p> <p><b>The problem:</b></p> <p>Hood Canal comanagers felt that the HSRG lacked enough scientific information to make the recommendations for coho stocks used for on station release and tribal net pens. The Service is attempting to secure data to scientifically evaluate those recommendations and then act on them.</p> <p><b>The objective:</b></p> <p>Determine the genetic relationship of the Quilcene NFH stock relative to natural populations within Hood Canal. The co-managers can use this genetic information to</p>
<b>Expended</b>	\$34600	
<b>Objective</b>	Utilize appropriate scientific and technologic tools in formulating and executing fishery management plans and policies.	
<b>Primary Benefited Species</b>	Coho salmon or silver salmon ( <a href="#">Oncorhynchus kisutch</a> )	
<b>Primary Benefited Population</b>	<a href="#">Puget Sound/Strait of Georgia ESU</a>	
<b>Plans</b>	Puget Sound and Coastal Washington Hatchery Reform Project Pacific Region Fisheries Outreach Action Plan	
<b>Keyword</b>	Genetics	
<b>Need Number</b>	N-002	
<b>Partners</b>	Jamestown S'Klallam tribe Lower Elwha S'Klallam tribe NOAA Fisheries (\$30000) Port Gamble S'Klallam tribe Skokomish Tribe Suquamish tribe Washington Department of Fish and Wildlife	

## Accomplishments

Number of other Fishery Management Plan tasks implemented for populations of management concern.	4
Number of applied science and technology tasks implemented as prescribed by Fishery Management Plans. (PART)	1

make a sound scientific decision on the HSRG recommendations for Quilcene NFH

### **The method:**

The Genetics Lab at Abernathy Fish Technology Center will use DNA markers to genetically compare 11 hatchery and 17 natural populations of coho salmon in Hood Canal. Out-of-basin populations will serve as genetic “outgroups” for quantifying the genetic similarity of hatchery and natural populations within Hood Canal.

### **Further description:**

The comanagers felt that the HSRG lacked enough scientific information to make the recommendations they did. Quilcene NFH and their partners will use genetic sampling and analyses to make a sound scientific decision on the HSRG recommendations.

The USFWS will work closely with NOAA-Fisheries Northwest Fisheries Science Center to combine the data generated in this study with an extensive coho salmon baseline.

Note that the HSRG recommendations are not a recognized management plan.

13290-A-001 - [Outreach Warm Springs NFH](#)

<b>Facility</b>	Warm Springs National Fish Hatchery
<b>Expended</b>	\$1
<b>Objective</b>	Maintain diverse, self-sustaining fish and other aquatic resource populations.
<b>Primary Benefited Species</b>	Chinook salmon or king salmon ( <a href="#">Oncorhynchus tshawytscha</a> )
<b>Primary Benefited Population</b>	<a href="#">Wild Warm Springs River Spring Chinook</a>
<b>Plans</b>	Pacific Region Fisheries Outreach Action Plan
<b>Keyword</b>	Outreach
<b>Need Number</b>	N-002
<b>Partners</b>	Confederated Tribes of The Warm Springs

**Accomplishments**

Number of other Fishery Management Plan tasks implemented for populations of management concern.	3
Number of visitors to service facilities.	750
Number of aquatic outreach and education activities.	5

**Accomplishment Summary**

Provided the public with a pleasant and educational experience at Warm Springs NFH. Provided various groups with educational information and seminars. Project Leader participated in congressional visits in Washington DC. Project Leader participated in Partners workshop in Washington DC.

**Description**

**The importance to the Resource:**

Provide information to the public concerning all aspects of the fish hatchery, including the program objectives of maintenance of the natural fish populations as well as providing fish for people to catch and consume.

**The problem:**

Public is uninformed about Warm Springs NFH, purpose, importance, objectives.

**The objective:**

Provide the public with a pleasant and educational experience at Warm Springs NFH.

**The method:**

Participated in congressional visits in Washington DC. Participated in Partners workshop in Washington DC. Provided information to the public concerning all aspects of the fish hatchery, including the program objectives of maintenance of the natural fish populations as well as providing fish for people to catch and consume.

**Further description:**

Provide information to the public concerning all

	<p>aspects of the fish hatchery, including the program objectives of maintenance of the natural fish populations as well as providing fish for people to catch and consume. Project Leader participated in congressional visits in Washington DC. Project Leader participated in Partners workshop in Washington DC</p>
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**13320-A-003 - [Chehalis Fisheries Restoration Program - Planning, Administration, Coordination and Assistance](#)**

<b>Facility</b>	Western Washington Fisheries Resource Office	<p><b>Accomplishment Summary</b></p> <p>Staff administered the program, reviewed, planned, and assisted partners with design and implementation of projects. Eight cooperative agreements were written to assist partners with assessment, restoration, and outreach activities. Responded to 41 technical assistance requests by reviewing projects including designs and answering questions regarding fisheries habitat restoration. Specific accomplishments for the program are reported separately under each completed project.</p> <p><b>Description</b></p> <p><b>The importance to the Resource:</b></p> <p>The Chehalis Basin is the second largest in Washington. It has unlisted stocks of Chinook, coho, and chum salmon and cutthroat and steelhead trout. The lower Chehalis Basin is designated foraging, migration, and overwintering habitat for bull trout. These resources are important for sport and commercial, tribal and interjurisdictional fisheries.</p> <p><b>The problem:</b></p> <p>Numerous habitat degradations have caused a decline in Chehalis Basin salmonid populations. This has diminished the fisheries opportunities and economic benefits for all users and the rural communities that depend on them.</p> <p>Degradations include: passage barriers, lack of riparian forests, livestock stream access, and wood removal from streams.</p> <p><b>The objective:</b></p>
<b>Expended</b>	\$64605	
<b>Objective</b>	Restore declining fish and other aquatic resource populations before they require listing under the Endangered Species Act.	
<b>Primary Benefited Species</b>	Coho salmon or silver salmon ( <a href="#">Oncorhynchus kisutch</a> )	
<b>Primary Benefited Population</b>	<a href="#">SW Washington Coast ESU</a>	
<b>Plans</b>	Chehalis River Basin Fishery Resources Study and Restoration Act of 1990 (P.L. 101-452) Chehalis Basin Watershed Management Plan	
<b>Keyword</b>	Restoration	
<b>Need Number</b>	N-002	
<b>Partners</b>	Chehalis Basin Education Consortium Chehalis River Council Confederated Tribes of the Chehalis Reservation Conservation District, Lewis County Conservation District, Mason Educational Service District 113 Quinault Indian Nation Salmon Recovery Funding Board Thurston County	

	Noxious Weed Board	Restore the salmon fishery in the Chehalis Basin by working with partners to implement habitat restoration projects.
<b>Accomplishments</b>		<b>The <i>method</i>:</b>
Number of other Fishery Management Plan tasks implemented for populations of management concern.	7	Staff administered the program, planned projects, and assisted partners with projects. Served on technical advisory groups for Army Corps of Engineers' Ecosystem Restoration Project, Salmon Recovery Funding Board, and Watershed Management planning.

**13320-A-009 - [Predation of Juvenile Chinook Salmon by Predatory Fishes in the Lake Washington system](#)**

<b>Facility</b>	Western Washington Fisheries Resource Office
<b>Expended</b>	\$50000
<b>Objective</b>	Recover fish and other aquatic resource populations protected under the Endangered Species Act.
<b>Primary Benefited Species</b>	Chinook salmon or king salmon ( <a href="#">Oncorhynchus tshawytscha</a> )
<b>Primary Benefited Population</b>	<a href="#">Puget Sound ESU/North Lake Washington Independent Population</a>
<b>Plans</b>	Shared Strategy for Puget Sound and Recovery Plan, Draft
<b>Keyword</b>	Recovery
<b>Need Number</b>	N-002
<b>Partners</b>	Muckleshoot Indian Tribe National Oceanic and Atmospheric Administration, Fisheries

**Accomplishments**

Number of population assessments completed	1
Number of other Recovery Plan tasks implemented for T&E populations	1

**Accomplishment Summary**

We determined the level of predation of juvenile Chinook salmon by several species of predatory fishes in three areas of the Lake Washington system.

**Description**

**The importance to the Resource:**

Puget Sound Chinook salmon have recently been listed as threatened under the Endangered Species Act.

**The problem:**

Juvenile wild Chinook salmon occur in the Cedar River and Bear Creek. These juvenile fish must migrate through Lake Washington and the Ship Canal to reach the marine environment. Because the Lake Washington system is a highly altered system and is inhabited by several exotic species, losses to predation may be abnormally high.

**The objective:**

Our objective is to estimate how many juvenile Chinook salmon are lost to predation in the Lake Washington system.

**The method:**

In FY 2003, we collected over 300 stomach samples from predatory fishes in three main areas (Cedar River, south Lake Washington, and the Ship Canal) and submitted them to NOAA Fisheries for DNA analysis. A final report was completed in February 2004, and a manuscript was completed in FY 2006.

	<p><b>Further description:</b></p> <p>This work was originally funded by King County.</p>
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13320-A-025 - [Fish Surveys of City of Seattle Streams](#)

<b>Facility</b>	Western Washington Fisheries Resource Office
<b>Expended</b>	\$25000
<b>Objective</b>	Maintain diverse, self-sustaining fish and other aquatic resource populations.
<b>Primary Benefited Species</b>	Coho salmon or silver salmon ( <a href="#">Oncorhynchus kisutch</a> )
<b>Primary Benefited Population</b>	<a href="#">Puget Sound/Strait of Georgia ESU</a>
<b>Plans</b>	Shared Strategy for Puget Sound and Recovery Plan, Draft
<b>Keyword</b>	Monitoring and Assessment
<b>Need Number</b>	N-002
<b>Partners</b>	City of Seattle

**Accomplishments**

Number of miles of in-stream habitat assessed	5.0
Number of population assessments completed	20
Number of other Recovery Plan tasks implemented for T&E populations	1

**Accomplishment Summary**

We surveyed all of the City of Seattle streams to document fish distribution.

**Description**

**The importance to the Resource:**

An important element of stream and riparian management is information on the presence or absence of various fish species. Streams and riparian areas in Washington State are often classified according to the presence of fish species and subsequent management is based on this classification.

**The problem:**

Fish species information in the City of Seattle's streams is incomplete or out of date.

**The objective:**

A comprehensive and systematic study of fish distribution in the City of Seattle's streams was needed to help future management decisions.

**The method:**

Fish were collected with electrofishing equipment or beach seining techniques. Each stream was surveyed during the summer of 2005 and was re-surveyed during February 2006. A draft report was prepared in FY 2005 and the final report will be completed in FY 2007. This work was funded by the City of Seattle.

13320-A-026 - [Distribution and Habitat Use of Sculpins in the Lake Washington Basin](#)

<b>Facility</b>	Western Washington Fisheries Resource Office
<b>Expended</b>	\$5000
<b>Objective</b>	Maintain diverse, self-sustaining fish and other aquatic resource populations.
<b>Primary Benefited Species</b>	Prickly sculpin ( <a href="#">Cottus asper</a> )
<b>Primary Benefited Population</b>	Not specified
<b>Plans</b>	Shared Strategy for Puget Sound and Recovery Plan, Draft
<b>Keyword</b>	Monitoring and Assessment
<b>Need Number</b>	N-002
<b>Partners</b>	City of Seattle Muckleshoot Indian Tribe National Oceanic and Atmospheric Administration, Fisheries

**Accomplishments**

Number of habitat assessments completed	1.0
Number of other Recovery Plan tasks implemented for T&E populations	1

**Accomplishment Summary**

We documented the distribution and habitat use of five species of sculpin from a wide variety of habitat types throughout the Lake Washington basin.

**Description**

**The importance to the Resource:**

Sculpins are an important component of freshwater ecosystems of the Pacific Northwest.

**The problem:**

Relatively little is known about sculpin ecology.

**The objective:**

Our objective for this study was to provide information on sculpin populations that could be used to assess future population status. We determined their distribution and habitat use in a wide variety of habitat types within the Lake Washington basin.

**The method:**

Sculpins were collected periodically in the Lake Washington basin from 1995 to 2004. Results of this study were presented at the Western Native Fishes Symposium (AFS meetings) in FY 2004. A manuscript was finalized in FY 2006 for inclusion in a book based on the proceedings of the symposium.

**Further description:**

A total of over 15,000 sculpin were collected from six major areas: 1) large lowland lakes (Lake Washington and Lake Sammamish); 2) small independent tributaries to lakes; 3)

	<p>Sammamish River and Bear Creek; 4) Issaquah Creek basin; 5) lower Cedar River basin; and 6) upper Cedar River basin. These collections occurred incidental to other project work in these areas.</p>
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13320-A-033 - [Coho Production Density Study - Quinault NFH](#)

<b>Facility</b>	Western Washington Fisheries Resource Office
<b>Expended</b>	\$24987
<b>Objective</b>	Support, facilitate, and/or lead collaborative approaches to manage interjurisdictional fisheries.
<b>Primary Benefited Species</b>	Coho salmon or silver salmon ( <a href="#">Oncorhynchus kisutch</a> )
<b>Primary Benefited Population</b>	Not specified
<b>Plans</b>	Quinault NFH Cooperative Agreement
<b>Keyword</b>	Fish Technology
<b>Need Number</b>	N-002
<b>Partners</b>	Quinault Indian Nation

**Accomplishments**

Number of other Fishery Management Plan tasks implemented for populations of management concern.	1
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**Accomplishment Summary**

Tag recoveries of coho salmon adults from the final broodyear of this study have been completed and reported to the coastwide tag recovery database. Analysis of complete survival data from ocean fisheries, local terminal fisheries, and returns to the hatchery is continuing on schedule, with final analysis expected during FY 2007.

**Description**

**The importance to the Resource:**

This project will assess whether reducing coho salmon production at Quinault NFH yields the same fishery benefits as higher levels of fish production, thus avoiding potential disease problems at the hatchery as well as lowering production costs.

**The problem:**

Rearing density of coho salmon was recently cut at Quinault NFH because of high levels of disease. Disease levels are now lower, but it is unknown if survival has increased to compensate for the reduced production.

**The objective:**

This project will evaluate production protocols for coho salmon at Quinault NFH to determine production levels that most benefit Tribal, recreational, and commercial fishers of coastal Washington. Other related studies were conducted in different rearing environments and had low statistical power.

**The method:**

Tag recoveries of coho adults from the final broodyear of this study were completed and

	<p>reported to the coastwide tag recovery database. Analysis of complete survival data from ocean fisheries, local terminal fisheries, and returns to the hatchery is continuing on-schedule.</p>
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13320-A-034 - [Chehalis Fisheries Restoration Program - Railcar Creek Fish Passage](#)

<b>Facility</b>	Western Washington Fisheries Resource Office
<b>Expended</b>	\$40000
<b>Objective</b>	Restore declining fish and other aquatic resource populations before they require listing under the Endangered Species Act.
<b>Primary Benefited Species</b>	Coho salmon or silver salmon ( <a href="#">Oncorhynchus kisutch</a> )
<b>Primary Benefited Population</b>	<a href="#">SW Washington Coast ESU</a>
<b>Plans</b>	Chehalis River Basin Fishery Resources Study and Restoration Act of 1990 (P.L. 101-452) Chehalis Basin Salmon Habitat Restoration and Preservation Work Plan
<b>Keyword</b>	Fish Passage
<b>Need Number</b>	N-002
<b>Partners</b>	Conservation District, Mason Green Diamond Resource Company (\$58512) Mary M. Knight School

**Accomplishments**

Upland acres restored	4.0
Number of instream miles enhanced	0.2
Number of acres re-opened to fish passage	71
Number of miles re-opened to fish passage	1.6

**Accomplishment Summary**

Replace an undersized fish-blocking culvert with a fish-passable culvert, remove a fish-blocking culvert and associated railroad crossing fill and abandon one mile of railroad grade. The project is on an unnamed tributary to the East Fork Satsop River on private timber land. The project will re-open 1.6 stream miles and 71 wetland acres of spawning and rearing habitat to coho salmon and steelhead and cutthroat trout.

**Description**

**The importance to the Resource:**

Bingham Creek and tributaries are major salmon spawning streams within the Chehalis Basin. The surrounding geology provides ample gravels for highly productive spawning beds.

**The problem:**

Two culverts, one under a road and another under a railroad crossing, currently block fish access to upstream habitat.

**The objective:**

Remove the fish blockages and provide full fish access to 1.6 stream miles and 71 wetland acres of upstream habitat. The overall objective is increased salmonid usage and production from this tributary.

**The method:**

The road culvert will be removed and replaced with an adequately sized fish passable culvert that meets Washington Department of Fish and Wildlife criteria. The railroad culvert and associated fill will be removed and the stream

Fish passage barriers removed or bypassed	2	will be restored to its natural setting. One mile of adjacent railroad grade will also be abandoned.
Number of other Fishery Management Plan tasks implemented for populations of management concern.	3	

13320-A-035 - [Chehalis Fisheries Restoration Program -Schafer Grade Fish Passage](#)

<b>Facility</b>	Western Washington Fisheries Resource Office
<b>Expended</b>	\$18246
<b>Objective</b>	Restore declining fish and other aquatic resource populations before they require listing under the Endangered Species Act.
<b>Primary Benefited Species</b>	Coho salmon or silver salmon ( <a href="#">Oncorhynchus kisutch</a> )
<b>Primary Benefited Population</b>	<a href="#">SW Washington Coast ESU</a>
<b>Plans</b>	Chehalis River Basin Fishery Resources Study and Restoration Act of 1990 (P.L. 101-452) Chehalis Basin Salmon Habitat Restoration and Preservation Work Plan
<b>Keyword</b>	Fish Passage
<b>Need Number</b>	N-002
<b>Partners</b>	Conservation District, Mason Green Diamond Resource Company (\$54738) Mary M. Knight School

**Accomplishments**

Number of instream miles enhanced	0.1
Number of acres re-opened to fish passage	8
Number of miles re-opened to fish passage	1.4
Fish passage barriers removed or	2

**Accomplishment Summary**

Replace two undersized fish-blocking culverts with fish-passable bridges. The project is on Schafer Creek, which is a tributary to the West Fork Satsop River on private timber land. The project will re-open 1.4 stream miles and 8 wetland acres of spawning and rearing habitat to coho salmon and cutthroat trout.

**Description**

**The importance to the Resource:**

The West Fork Satsop River is a high energy, steep system. Tributaries to the West Fork provide vital spawning and rearing habitat for several salmonid species.

**The problem:**

Two culverts currently block fish access to upstream habitat.

**The objective:**

Remove the fish blockages and provide full fish access to 1.4 stream miles and 8 wetland acres of upstream habitat. The overall objective is increased salmonid usage and production from this tributary.

**The method:**

The two culverts will be removed and replaced with two adequately sized bridges.

bypassed		
Number of other Fishery Management Plan tasks implemented for populations of management concern.	2	

**13320-A-036 - [Chehalis Fisheries Restoration Program - Quinault Indian Nation Salmon Spawning Survey](#)**

<b>Facility</b>	Western Washington Fisheries Resource Office	<p><b>Accomplishment Summary</b></p> <p>Collect spawning information on coho and fall Chinook salmon within the Chehalis Basin that is sufficient to estimate the annual spawning escapement of both species. Data will be used to estimate the adult spawning escapement of coho and fall Chinook salmon in the Chehalis Basin. This data is critical for the management and monitoring of Chehalis Basin salmon stocks.</p> <p><b>Description</b></p> <p><b>The importance to the Resource:</b></p> <p>The Chehalis Basin is the second largest in Washington. It has unlisted stocks of Chinook, coho and chum salmon and cutthroat and steelhead trout. The lower Chehalis Basin is designated foraging, migration, and overwintering habitat for bull trout. These resources are important for sport and commercial, tribal, and interjurisdictional fisheries.</p> <p><b>The problem:</b></p> <p>Numerous habitat degradations, along with other factors including overfishing, have caused a decline in Chehalis Basin salmonid populations. This has diminished the fisheries opportunities and economic benefits for all users and the rural communities that depend on them.</p> <p><b>The objective:</b></p> <p>To provide an accurate estimate of the adult spawning escapement for coho and Chinook salmon and thus determine optimal harvest in tribal, commercial, and recreational fisheries while protecting sufficient numbers of adult</p>			
<b>Expended</b>	\$33493				
<b>Objective</b>	Recognize and promote the Service's distinct obligations toward Tribes within the Fisheries Program.				
<b>Primary Benefited Species</b>	Coho salmon or silver salmon ( <a href="#">Oncorhynchus kisutch</a> )				
<b>Primary Benefited Population</b>	<a href="#">SW Washington Coast ESU</a>				
<b>Plans</b>	Chehalis River Basin Fishery Resources Study and Restoration Act of 1990 (P.L. 101-452) Chehalis Fisheries Restoration Program - Quinault Indian Nation Salmon Spawning Survey - FY2006				
<b>Keyword</b>	Tribal				
<b>Need Number</b>	N-002				
<b>Partners</b>	Quinault Indian Nation Washington Department of Fish and Wildlife				
<p><b>Accomplishments</b></p> <table border="1"> <tr> <td>Number of population assessments completed</td> <td>2</td> </tr> <tr> <td>Number of other Fishery Management Plan</td> <td>3</td> </tr> </table>			Number of population assessments completed	2	Number of other Fishery Management Plan
Number of population assessments completed	2				
Number of other Fishery Management Plan	3				

tasks implemented for populations of management concern.

spawners.

**The *method*:**

Crews will walk spawning stream reaches and count the number of adult coho and Chinook spawners. This data will be used in conjunction with Washington Department of Fish and Wildlife survey data to estimate the adult spawning escapements.

13320-A-039 - [Chehalis Fisheries Restoration Program - Drops of Water newsletter](#)

<b>Facility</b>	Western Washington Fisheries Resource Office	<p><b>Accomplishment Summary</b></p> <p>A 4-page newsletter distributed in newspapers to 45,000 addresses located within the Chehalis Basin. Articles are about current environmental issues (water quality, salmon, aquatic habitat, watershed planning) throughout the Basin. Six issues were published in fiscal year 2006. Residents are made aware of habitat and fisheries issues in the Chehalis Basin. All species and aquatic habitats found within the Chehalis Basin will benefit through increased environmental awareness of citizens.</p> <p><b>Description</b></p> <p><b>The importance to the Resource:</b></p> <p>The Chehalis Basin is the second largest in Washington. It has unlisted stocks of Chinook, coho and chum salmon and cutthroat and steelhead trout. These resources are important for sport and commercial, tribal, and interjurisdictional fisheries. The lower Chehalis Basin is designated foraging, migration, and overwintering habitat for bull trout.</p> <p><b>The problem:</b></p> <p>Numerous habitat degradations, along with other factors, have caused a decline in Chehalis Basin salmonid populations. This has diminished the fisheries opportunities and economic benefits for all users and the rural communities that depend on them.</p> <p><b>The objective:</b></p> <p>Increase environmental awareness of the public within the Chehalis Basin to change attitudes and actions towards environmental issues.</p>	
<b>Expended</b>	\$21439		
<b>Objective</b>	Provide support to States, Tribes, and other partners to identify and meet shared or complementary recreational fishing and aquatic education and outreach objectives.		
<b>Primary Benefited Species</b>	Cutthroat trout ( <a href="#">Oncorhynchus clarkii</a> )		
<b>Primary Benefited Population</b>	Not specified		
<b>Plans</b>	<p>Chehalis River Basin Fishery Resources Study and Restoration Act of 1990 (P.L. 101-452)</p> <p>Chehalis Basin Salmon Habitat Restoration and Preservation Work Plan</p> <p>Chehalis Basin Watershed Management Plan</p>		
<b>Keyword</b>	Outreach		
<b>Need Number</b>	N-002		
<b>Partners</b>	<p>Chehalis Basin Education Consortium</p> <p>Chehalis River Council (\$5125)</p>		
<p><b>Accomplishments</b></p> <table border="1"> <tr> <td>Number of other Fishery Management Plan tasks implemented for populations of</td> <td>5</td> </tr> </table>			Number of other Fishery Management Plan tasks implemented for populations of
Number of other Fishery Management Plan tasks implemented for populations of	5		

management concern.		<p><b>The method:</b></p> <p>Provide environmental education and outreach to 45,000 households on a bimonthly basis. Articles are about current environmental issues (water quality, salmon, aquatic habitat, watershed planning) throughout the Basin.</p>
Number ANS related of outreach/education activities conducted	3	
Number of aquatic outreach and education activities.	6	

13320-A-040 - [Chehalis Fisheries Restoration Program - Brazilian Elodea Control](#)

<b>Facility</b>	Western Washington Fisheries Resource Office	<p><b>Accomplishment Summary</b></p> <p>Remove Brazilian elodea from 10 acres of the Chehalis River using diver suction dredging. Removing Brazilian elodea will increase water movement, decrease sediment buildup and improve water quality. Dissolved oxygen levels will increase due to increased mixing at the surface of the water. Native vegetation will be allowed to re-establish benefiting spring Chinook, fall Chinook and coho salmon; steelhead and coastal cutthroat trout, and Olympic mudminnow.</p> <p><b>Description</b></p> <p><b>The importance to the Resource:</b></p> <p>The Chehalis Basin is the second largest in Washington. It has unlisted stocks of Chinook, coho and chum salmon and cutthroat and steelhead trout. These resources are important for sport and commercial, tribal, and interjurisdictional fisheries. The lower Chehalis Basin is designated foraging, migration, and overwintering habitat for bull trout.</p> <p><b>The problem:</b></p> <p>Non-native Brazilian elodea has an early infestation in the middle reach of the Chehalis River. Brazilian elodea slows water movement and increases water temperatures which prevents adult salmon migration. This has diminished the fisheries opportunities and economic benefits for all users and the rural communities that depend on them.</p> <p><b>The objective:</b></p> <p>Remove the Brazilian elodea which will increase water movement and decrease water temperatures throughout the project area.</p>
<b>Expended</b>	\$20768	
<b>Objective</b>	Minimize range expansion and population growth of established aquatic nuisance species.	
<b>Primary Benefited Species</b>	Chinook salmon or king salmon ( <a href="#">Oncorhynchus tshawytscha</a> )	
<b>Primary Benefited Population</b>	<a href="#">Washington Coast ESU</a>	
<b>Plans</b>	Chehalis River Basin Fishery Resources Study and Restoration Act of 1990 (P.L. 101-452) Chehalis Basin Watershed Management Plan	
<b>Keyword</b>	Aquatic Nuisance Species	
<b>Need Number</b>	N-002	
<b>Partners</b>	City of Centralia Confederated Tribes of the Chehalis Reservation County of Lewis Thurston County Noxious Weed Board (\$62536) Washington Department of Fish and Wildlife Washington Department of Natural Resources	

**Accomplishments**

Wetland acres restored	10.0
Number of other Fishery Management Plan tasks implemented for populations of management concern.	2
Number of activities conducted to support the management and control of aquatic invasive species	1
Number ANS related of outreach/education activities conducted	2
Number of surveys conducted for aquatic invasive species baseline/trend information	1
Number of training session to support Tribal fish & wildlife conservation.	1

**The *method*:**

Use diver suction dredging to remove the entire plant and root structure from the aquatic system. The technique is consistent with the existing hydraulic permit for removing noxious weeds permitted by the Washington Department of Fish and Wildlife. Plant material will be transported away from the river and disposed in an approved upland location.

13320-A-041 - [National Fish Passage Program - Wival Road Culvert](#)

<b>Facility</b>	Western Washington Fisheries Resource Office
<b>Expended</b>	\$32200
<b>Objective</b>	Maintain diverse, self-sustaining fish and other aquatic resource populations.
<b>Primary Benefited Species</b>	Coho salmon or silver salmon ( <a href="#">Oncorhynchus kisutch</a> )
<b>Primary Benefited Population</b>	<a href="#">Puget Sound/Strait of Georgia ESU</a>
<b>Plans</b>	Shared Strategy for Puget Sound and Recovery Plan, Draft
<b>Keyword</b>	Fish Passage
<b>Need Number</b>	N-002
<b>Partners</b>	County of Mason (\$98000)

**Accomplishments**

Number of instream miles enhanced	0.1
Number of miles re-opened to fish passage	0.9
Fish passage barriers removed or bypassed	1
Number of other Recovery Plan tasks implemented for T&E populations	1

**Accomplishment Summary**

One fish-blocking culvert will be replaced with a 10-foot-diameter culvert reopening 0.9 mile of stream to coho salmon and steelhead and cutthroat trout. Streambed gravel and cobbles will be placed in the culvert to meet fish passage needs.

**Description**

**The importance to the Resource:**

The project is located on a spawning and rearing tributary to Gosnell Creek, which flows into southern Puget Sound. Proposed steelhead and species-of-concern cutthroat trout and coho salmon now have unimpeded access to this stream.

**The problem:**

An undersized fish blocking culvert was blocking upstream access to salmonid migration.

**The objective:**

Provide full access to migrating salmon. The overall objective is increased salmonid usage and production from this tributary.

**The method:**

One fish-blocking culvert will be replaced with a 10-foot-diameter culvert that meets Washington Department of Fish and Wildlife criteria. Streambed gravel and cobbles will be placed in the culvert to meet fish passage needs.

13320-A-042 - [National Fish Passage Program - Glover Creek Culvert](#)

<b>Facility</b>	Western Washington Fisheries Resource Office
<b>Expended</b>	\$32200
<b>Objective</b>	Restore declining fish and other aquatic resource populations before they require listing under the Endangered Species Act.
<b>Primary Benefited Species</b>	Bull trout ( <a href="#">Salvelinus confluentus</a> )
<b>Primary Benefited Population</b>	<a href="#">Coastal-Puget Sound DPS - Puget Sound Recovery Unit /Snohomish-Skykomish Core Area</a>
<b>Plans</b>	Shared Strategy for Puget Sound and Recovery Plan, Draft Draft Recovery Plan for the Coastal-Puget Sound Distinct Population Segment of Bull Trout, Volume I, Puget Sound Management Unit.
<b>Keyword</b>	Fish Passage
<b>Need Number</b>	N-002
<b>Partners</b>	Conservation District, Snohomish (\$25200)

**Accomplishments**

Number of instream miles enhanced	0.2
Number of riparian miles restored	0.8
Number of acres re-opened to fish passage	21
Number of miles re-opened to fish passage	1.2

**Accomplishment Summary**

Two undersized fish-blocking culverts will be removed and fish-passable culverts will be installed reopening 1.2 miles and 21 acres of stream and wetland habitat to coho salmon, bull and cutthroat trout. Large woody debris will be placed instream and a 35-foot riparian buffer will be planted along 0.8 miles of creek.

**Description**

**The importance to the Resource:**

Glover Creek is a tributary to the Pilchuck River and the Snohomish River. Glover Creek provides spawning and rearing habitat to coho salmon and cutthroat trout and foraging habitat for bull trout.

**The problem:**

Two undersized culverts blocked fish access to 1.2 miles of stream and 21 acres of wetland habitat. Past agricultural practices degraded the riparian zone and stream channel.

**The objective:**

Provide full fish access to the upstream habitat and restore the riparian zone and stream channel in the project area. The overall objective is increased salmonid usage and production from this tributary.

**The method:**

Two undersized fish blocking culverts were removed and a fish passable culvert and a concrete slab bridge were installed at the two locations. Both structures were designed according to Washington Department of Fish and Wildlife fish passage criteria. Wood was placed in the stream channel and trees and

Fish passage barriers removed or bypassed	2	shrubs were planted in the riparian zone.
Number of other Recovery Plan tasks implemented for T&E populations	2	

13320-A-043 - [National Fish Passage Program - Willapa Stream Fish Passage](#)

<b>Facility</b>	Western Washington Fisheries Resource Office
<b>Expended</b>	\$40250
<b>Objective</b>	Maintain diverse, self-sustaining fish and other aquatic resource populations.
<b>Primary Benefited Species</b>	Coho salmon or silver salmon ( <a href="#">Oncorhynchus kisutch</a> )
<b>Primary Benefited Population</b>	<a href="#">SW Washington Coast ESU</a>
<b>Plans</b>	U.S. Fish and Wildlife Service Refuge Manual
<b>Keyword</b>	Fish Passage
<b>Need Number</b>	N-002
<b>Partners</b>	Campbell Group FishAmerica Friends of the Willapa National Wildlife Refuge The Nature Conservancy Weyerhaeuser Company Willapa Bay Regional Fisheries Enhancement Group (\$95000)

**Accomplishments**

Number of instream miles restored	0.8
Number of miles re-opened to fish passage	3.7
Fish passage barriers removed or bypassed	1
Number of other Fishery Management Plan	1

**Accomplishment Summary**

Replace an undersized fish-blocking culvert with a fish-passable bridge. The culvert is on a tributary to Willapa Bay, immediately upstream of the Willapa National Wildlife Refuge boundary. The stream channel will be re-routed to the historical channel. The project will re-open 3.7 miles of stream for fish use and restore 0.75 mile of instream habitat, benefiting coho and chum salmon and coastal cutthroat trout.

**Description**

**The importance to the Resource:**

The project is on a direct tributary to Willapa Bay. The tributary provides spawning and rearing habitat to coho and chum salmon and cutthroat trout.

**The problem:**

An undersized culvert blocked fish access to 3.7 miles of stream habitat. The stream channel had been channelized and diverted to a crossing downstream of its historic channel.

**The objective:**

Provide full fish access to the upstream habitat and reroute the stream to its historic, natural channel. The overall objective is increased salmonid usage and production from this tributary.

**The method:**

An undersized fish blocking culvert was removed and a fish-passable bridge was installed. The bridge was designed according to Washington Department of Fish and Wildlife fish passage criteria. The stream was rerouted

tasks implemented for populations of  
management concern.

to its historic natural channel.

13265-A-003 - [Production and Distribution of Spring Chinook Salmon](#)

<b>Facility</b>	Winthrop National Fish Hatchery
<b>Expended</b>	\$0
<b>Objective</b>	Meet the Service's responsibilities for mitigating fisheries.
<b>Primary Benefited Species</b>	Chinook salmon or king salmon ( <i>Oncorhynchus tshawytscha</i> )
<b>Primary Benefited Population</b>	<a href="#">Methow River (UCMET) spring chinook salmon.</a>
<b>Plans</b>	Winthrop National Fish Hatchery Genetics Management Plan 2005-2007 Interim Management Agreement for Upriver Chinook, Sockeye, Steelhead, Coho, and White Sturgeon
<b>Keyword</b>	Mitigation
<b>Need Number</b>	N-002
<b>Partners</b>	U.S. Bureau of Reclamation (\$500000) Washington Department of Fish and Wildlife Yakama Indian Nation

**Accomplishments**

Number of Fishery Management Plan production tasks implemented (PART)	9
number of marking and tagging targets met, as prescribed by Fishery management plans.	4

**Accomplishment Summary**

Reared and released 484,000 yearling Spring Chinook Salmon into the Methow River (tributary to the Columbia River). Incubated to the fry stage and released 16,000 Spring Chinook salmon fry into the Methow River. Produced 784,000 Spring Chinook Salmon eggs from 499 returning adult salmon for use in Spring Chinook Salmon production and distribution at Winthrop NFH.

**Description**

**The importance to the Resource:**

The spring chinook program at Winthrop NFH was initiated as mitigation for construction of Grand Coulee Dam, however recently shifted to a recovery effort for the survival of spring chinook salmon in the upper Columbia Basin. Spring chinook in the upper Columbia Basin were listed by the National Marine Fisheries Service as "endangered" in 1999.

**The problem:**

Indigenous spring chinook salmon numbers have been on a gradual downward trend since the construction of several hydroelectric projects on the upper Columbia River. Reasons for decline include the construction and operation of mainstem Columbia River hydropower projects, habitat degradation, harvest management and hatchery practices.

**The objective:**

The objective is to assist in rebuilding the naturally spawning spring chinook salmon populations in the Methow River, tributary to the Columbia River. In addition, the program is designed to provide sport and tribal harvest opportunities during years when escapement

(PART)		goals are exceeded.
Number of other Fishery Management Plan tasks implemented for populations of management concern.	3	<b>The method:</b>
Number of applied science and technology tasks implemented as prescribed by Fishery Management Plans. (PART)	7	Local spring chinook salmon collected from the Methow River (upper Columbia River ESU) are used as broodstock. The Winthrop NFH provides refugia, incubation, rearing, marking, acclimation, and release of spring chinook salmon to the Methow River system.
		<b>Further description:</b>
		The Winthrop National Fish Hatchery is located near the Methow River in North Central Washington State. Returning adults must pass nine dams to reach the Winthrop hatchery. Salmon are reared and released as mitigation for construction of Grand Coulee Dam. The Winthrop National Fish Hatchery raises Salmon in accordance with the Columbia River Fisheries Management Plan. Benefits of the Winthrop stocking program include maintaining returns of Spring Chinook Salmon to the upper Columbia, and Methow Rivers. The Winthrop National Fish Hatchery is one of three hatcheries in the Leavenworth National Fish Hatchery Complex. The Complex was authorized by the Grand Coulee Fish Maintenance Project, April 3, 1937, and reauthorized by the Mitchell Act, May 11, 1938. Currently, the Complex is funded through a reimbursable agreement (sub activity 1932) with the Bureau of Reclamation as mitigation for Grand Coulee Dam, and is authorized by the US v. Oregon decision, and the US Canada Treaty.

13265-A-004 - [Rearing and release of Summer Steelhead for recovery and restoration of species](#)

<b>Facility</b>	Winthrop National Fish Hatchery
<b>Expended</b>	\$0
<b>Objective</b>	Meet the Service's responsibilities for mitigating fisheries.
<b>Primary Benefited Species</b>	Rainbow trout ( <a href="#">Oncorhynchus mykiss</a> )
<b>Primary Benefited Population</b>	<a href="#">Methow River (UCMET-s) population, part of the Upper-Columbia River steelhead ESU.</a>
<b>Plans</b>	Winthrop Hatchery Genetics Management Plan (Steelhead) 2005-2007 Interim Management Agreement for Upriver Chinook, Sockeye, Steelhead, Coho, and White Sturgeon
<b>Keyword</b>	Mitigation
<b>Need Number</b>	N-002
<b>Partners</b>	U.S. Bureau of Reclamation (\$90000) Washington Department of Fish and Wildlife

**Accomplishments**

Number of Fishery Management Plan production tasks implemented (PART)	5
number of marking and tagging targets met, as prescribed by Fishery management plans.	3

**Accomplishment Summary**

Reared and released 103,000 yearling Summer Steelhead into the Methow River (tributary to the Columbia River).

**Description**

**The importance to the Resource:**

The steelhead program at Winthrop National Fish Hatchery is part of the recovery effort for the survival of summer steelhead in the upper reaches of the Columbia River. Steelhead in the upper Columbia were listed by the National Marine Fisheries Service as "endangered" in 1997 and reduced to "threatened" status in 2005.

**The problem:**

Indigenous summer steelhead numbers have been on a gradual downward trend since the construction of several hydroelectric projects on the upper Columbia River. Reasons for decline include the construction and operation of mainstem Columbia River hydropower projects, habitat degradation, release locations, and hatchery practices.

**The objective:**

The objective is to assist the Washington Department of Fish and Wildlife in rebuilding the naturally spawning summer steelhead populations in the Methow River, tributary to the Columbia River. In addition, the program is designed to provide sport and tribal harvest opportunities during years when escapement goals are exceeded.

**The method:**

(PART)		Wells Stock (Upper Columbia ESU) summer steelhead are transferred to Winthrop NFH as eyed eggs in February of each year. The Winthrop NFH provides incubation, rearing, marking, acclimation, and release of yearling steelhead to the Methow River system.
Number of other Fishery Management Plan tasks implemented for populations of management concern.	2	
Number of applied science and technology tasks implemented as prescribed by Fishery Management Plans. (PART)	7	<b>Further description:</b>  A total of 103,000 yearling Summer Steelhead were reared at the Winthrop National Fish Hatchery, and released into the Columbia River Basin. The steelhead are tagged and marked to evaluate the success of recovery efforts. The Winthrop National Fish Hatchery raises steelhead in accordance with the Columbia River Fisheries Management Plan, and National Marine Fisheries Service guidelines. The Winthrop National Fish Hatchery is one of three hatcheries in the Leavenworth National Fish Hatchery Complex. The Complex was authorized by the Grand Coulee Fish Maintenance Project, April 3, 1937, and reauthorized by the Mitchell Act, May 11, 1938. Currently, the Complex is funded through a reimbursable agreement (sub activity 1932) with the Bureau of Reclamation as mitigation for Grand Coulee Dam, and is authorized by the US v. Oregon decision, and the US Canada Treaty.