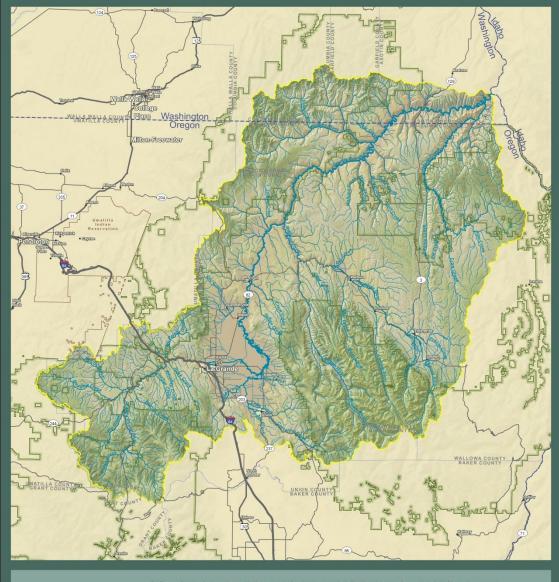


Grande Ronde River Basin







The Tucannon River is a river in southeastern Washington state that flows from headwaters in the Blue Mountains to a confluence with the Snake River 4 miles upstream from Lyons Ferry Park and the mouth of the Palouse River. The Tucannon itself drains 318 square miles and is 82.3 miles long. Tributary Pataha Creek enters the Tucannon about 11 miles above the Tucannon's confluence with the Snake River, and drains a watershed of an additional 185 square miles.

The Tucannon basin ranges in elevation from 540 feet (195 m) above sea level at the confluence of the Tucannon River and Snake River to 6,400 feet (1,350 m) above sea level in the Wenaha-Tucannon Wildermess, which lies in the Umstilla National Forest of the Blue Mountains.







Fish Habitat & Watershed Restoration



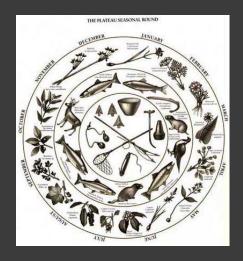
Protect, enhance and restore functional floodplain, channel and watershed processes to support and sustain ecological and social services

Tier 1 actions: Reconnect Isolated Habitats

Tier 2 actions: Restore Long Term Processes (Water Quality, Nutrients, etc.)

Tier 3 actions: Restore Long Term Processes (Riparian Vegetation)
Tier 4 actions: Restore Short Term Processes (In-stream Habitat)









First Foods

- Water
- Salmon
- Deer
- Cous
- Huckleberry



Fisheries Habitat Program Goals & Objectives

Protect, enhance and restore functional floodplain, channel and watershed processes to provide sustainable and healthy habitat for aquatic species of the First Food order.

- Develop comprehensive and scientifically defensible restoration strategies based on the most recent and best available scientific information. (Includes prioritizing actions and geographic areas)
- Maintain and apply an updated knowledge of floodplain, channel and watershed function as it relates to healthy aquatic conditions and fish populations.
- Build and maintain cooperative and coordinated relationships with other key agencies and stakeholders in order to maximize project efficiency, effectiveness and success.

CTUIR River Vision and NOAA Hierarchical Approach

Tier 1 actions: Reconnect Isolated Habitats

Tier 2 actions: Restore Long Term Processes (Water Quality, Nutrients, etc.)

Tier 3 actions: Restore Long Term Processes (Riparian Vegetation)
Tier 4 actions: Restore Short Term Processes (In-stream Habitat)

CTUIR Partnership & Collaboration

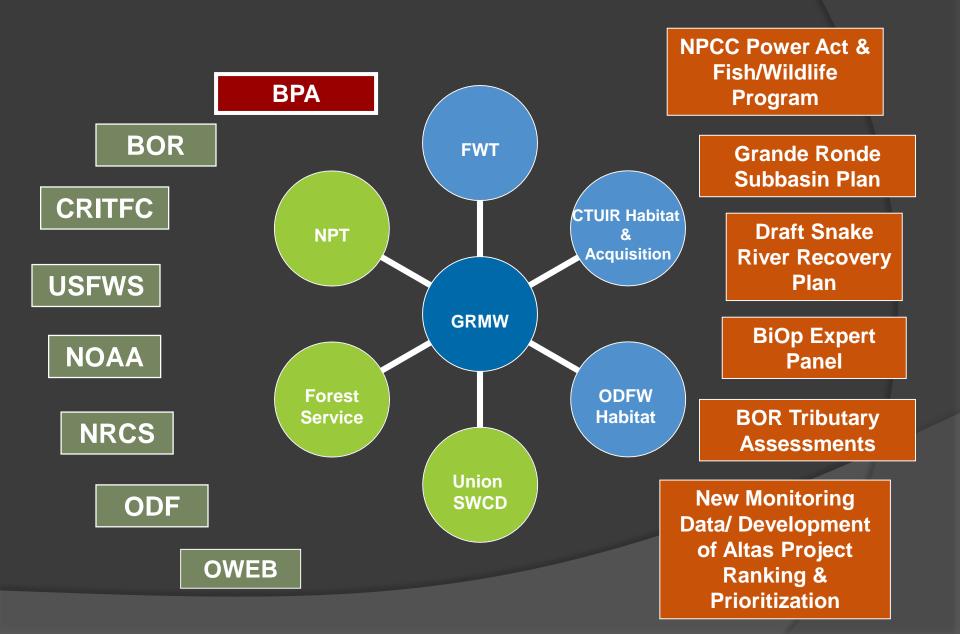
CTUIR staff participation in GRMW

- -Board of Directors Member
- -Executive Committee Member
- -Technical Project Review Team Member
- -BiOp Expert Panel
- -Science Technical Review Team/Atlas Development
- -Grande Ronde and Catherine Creek Atlas Implementation Team

GRMW-BPA Funding and Staffing (1996 to Present)

- -20 plus projects sponsored by CTUIR with multiple basin partners
- -24 projects where CTUIR was a partner
- -Nearly 65 miles of habitat enhancement & restoration work in Basin

Grande Ronde Watershed Partners



Background: Grande Ronde planning documents

- Current Pie Chart priorities (now updated):
 - Depicting CCC2 & 3 as highest priority, with Water Quality and Habitat Diversity as most important LF
- BOR Tributary Assessment Priorities:
 - Prioritizes Reaches 1-4, with highest priority appearing to be R3&4.
- Recovery Plan identified LF:
 - Priority to middle reaches of Catherine Creek. Projects addressing flows, temp, reconnection of floodplains, riparian, instream diversity.
- Monitoring Data Results:
 - Potential priority of summer rearing as opposed to overwintering habitat.
- Sub Basin Plan
 - EDT analysis

An Integrated Plan with a Leader is Needed → Atlas

Objectives of a Planning Level Atlas:

- Aligning planning documents with field based reach knowledge (Biologically Significant Reach Breaks, LFs and Activity Types)
- Prioritize project implementation by current science and feasibility (Prioritization and Ranking Matrix)
 - Note: The most significant LF may not be feasible to address.
- Communicate LF's & Priorities for funding and stakeholder integration

Grand Ronde Next Steps:

- Biologically Significant Reach breaks defined by species utilization and geomorphology.
 (Catherine Creek) Draft Complete.
- Limiting Factors refined by BSR
- Identify habitat actions to address LF by BSR
- Identify restoration potential by geospatial data.
- Develop ranking & prioritization matrix

NOAA Hierarchical Approach

A hierarchical framework that established a sequencing of restoration activities considering a holistic watershed view, addressing the aquatic habitat restoration needs for recovery and long term persistence of salmon and steelhead populations.

Tier 1 actions: Reconnect Isolated Habitats: Ensure that restoration activities focus first on restoring connectivity to historically accessible salmon and steelhead habitat. Examples of Tier 1 actions include correction of culvert-fish passage barriers and re-opening access to historical side channels, floodplains, and off-channel habitat.

Tier 2 actions: Restore Long Term Processes (Roads, Water Quality, Marine Derived Nutrients, etc.): Ensure that restoration activities focus on addressing physical and biological processes important for sustained watershed function. The focus for Tier 2 actions is broad and encompasses the following categories of restoration actions: 1) road-related activities, 2) water quality improvements, 3) in-stream flows, 4) marine derived nutrients, 5) law enforcement, and 6) public education.

NOAA Hierarchical Approach

Tier 3 actions: Restore Long Term Processes (Riparian Vegetation): Focus on restoring the primary ecological function of riparian areas for sustained riparian and aquatic habitat function. Examples of Tier 3 actions include riparian land acquisitions and easements; riparian planting; eradication of invasive weeds; and riparian thinning and conifer release.

Tier 4 actions: Restore Short Term Processes (In-stream Habitat): Ensure that in-stream aquatic habitat conditions improve productivity in the short term while longer term restoration benefits from Tier 1, 2, and 3 actions accrue. An example of a Tier 4 action is the addition of large woody material to stream channels to restore structural habitat complexity and stream channel processes such as regulating the transport of sediment, gravels, and organic matter through the stream ecosystem.

Planning Process Objectives:

- Program Evolution (BPA & Sponsor)
 - Ability to implement suites of actions that will more effectively identify & address priority Limiting Factors
 - 2) Strategic vs Opportunistic Implementation
 - 3) Accountability for Conservation Investment
 - 4) Integration of existing planning documents and latest monitoring data at the local implementation level
 - 5) Set baseline for future adaptive management
 - 6) Communication: Stakeholder Integration & Partnership Leveraging
 - Support Sponsors in successful negotiation of Categorical Review

Fish Habitat Project Planning

Sub-basin Plan

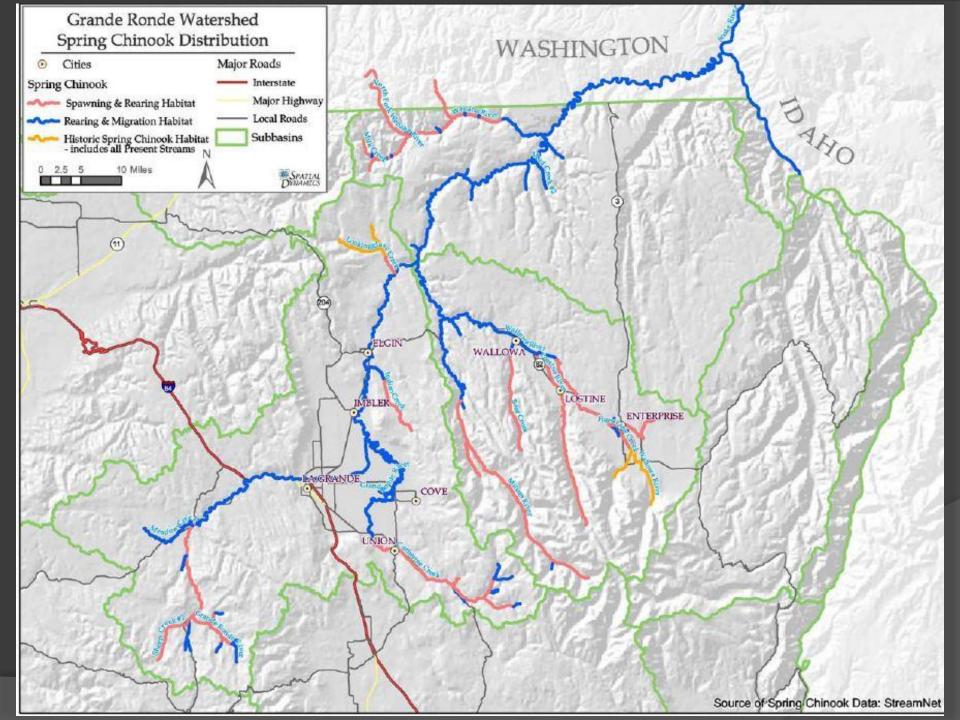
NOAA Recovery Plan

Made

BiOp Expert Panel

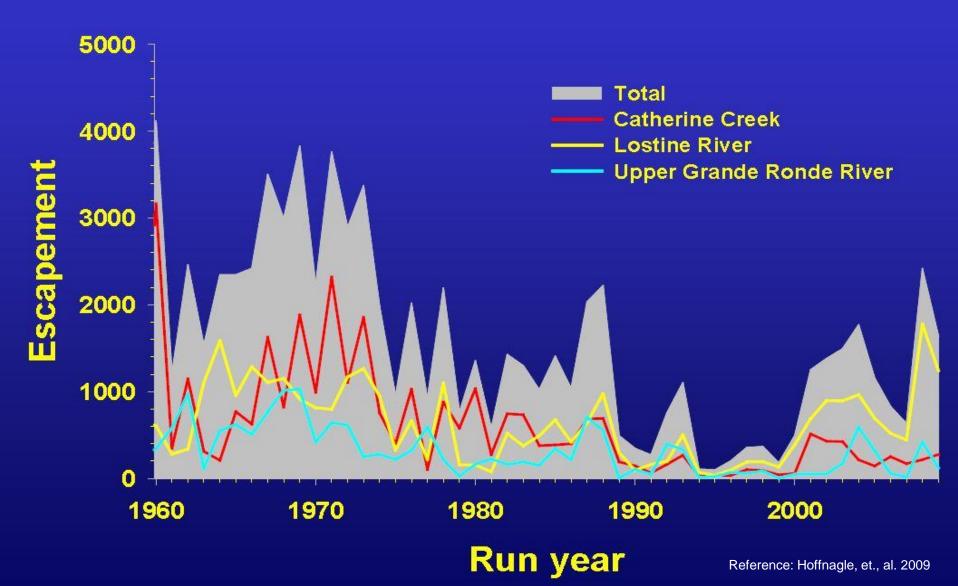
Restoration Atlas

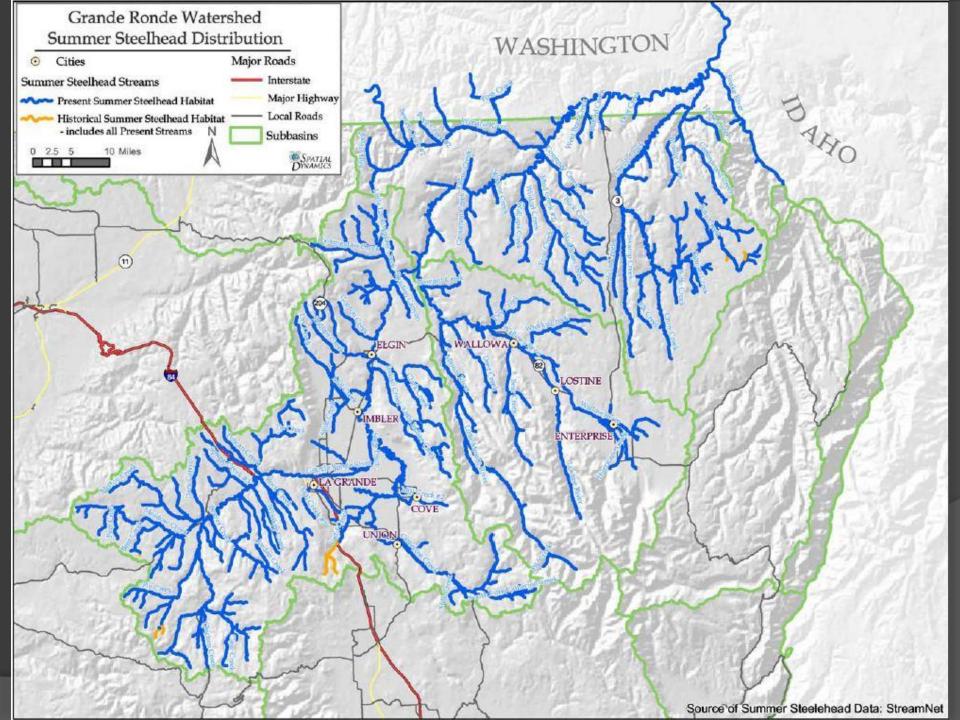
PROJECT RANKING & PRIORITIZATION



<u> Adult Returns 1960-2009</u>

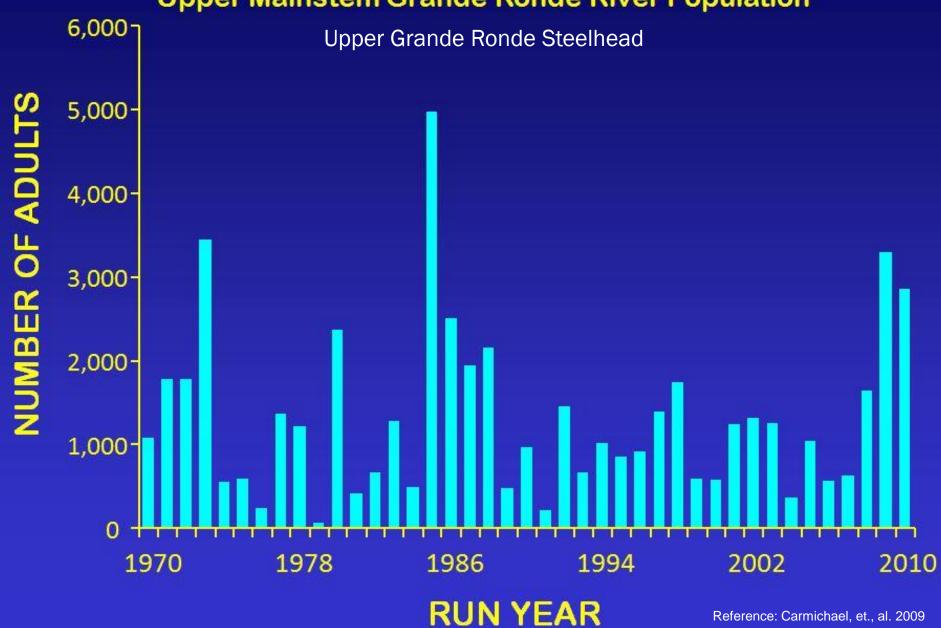
Grande Ronde Spring-Summer Chinook

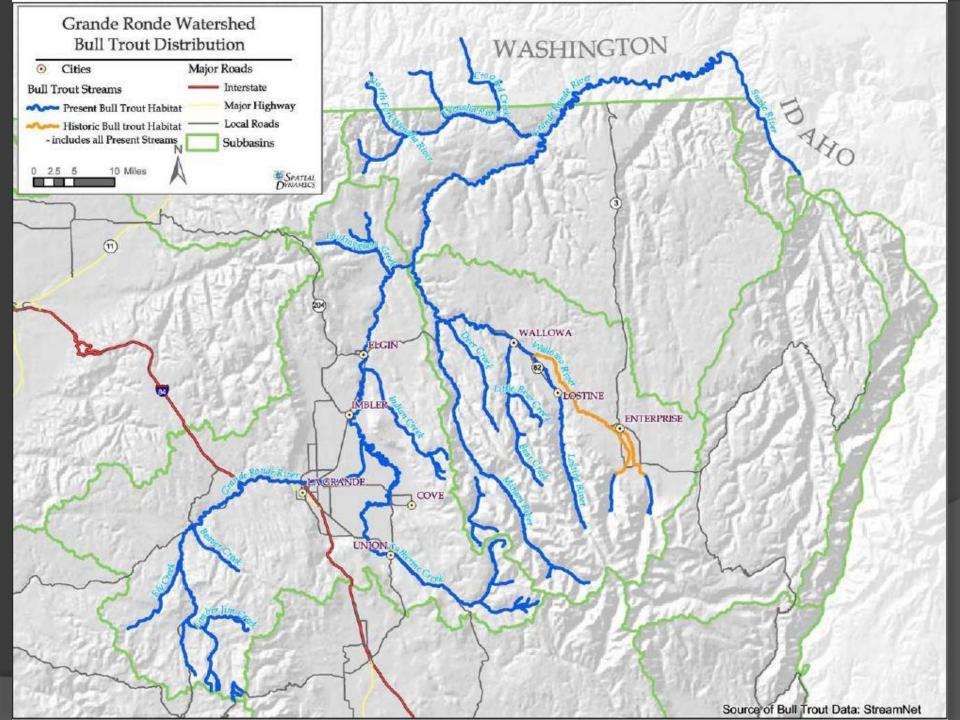




Natural Adult Abundance

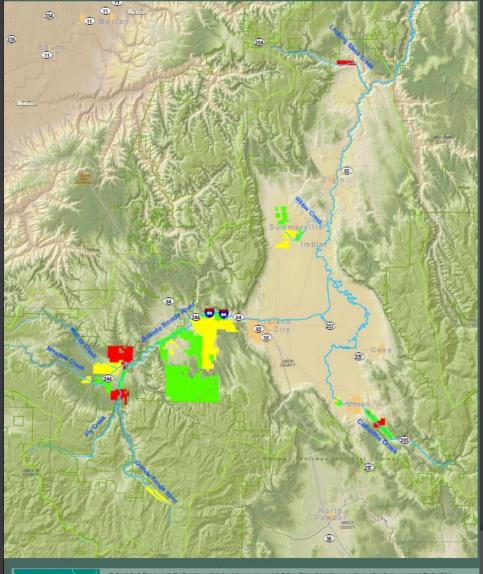
Upper Mainstem Grande Ronde River Population



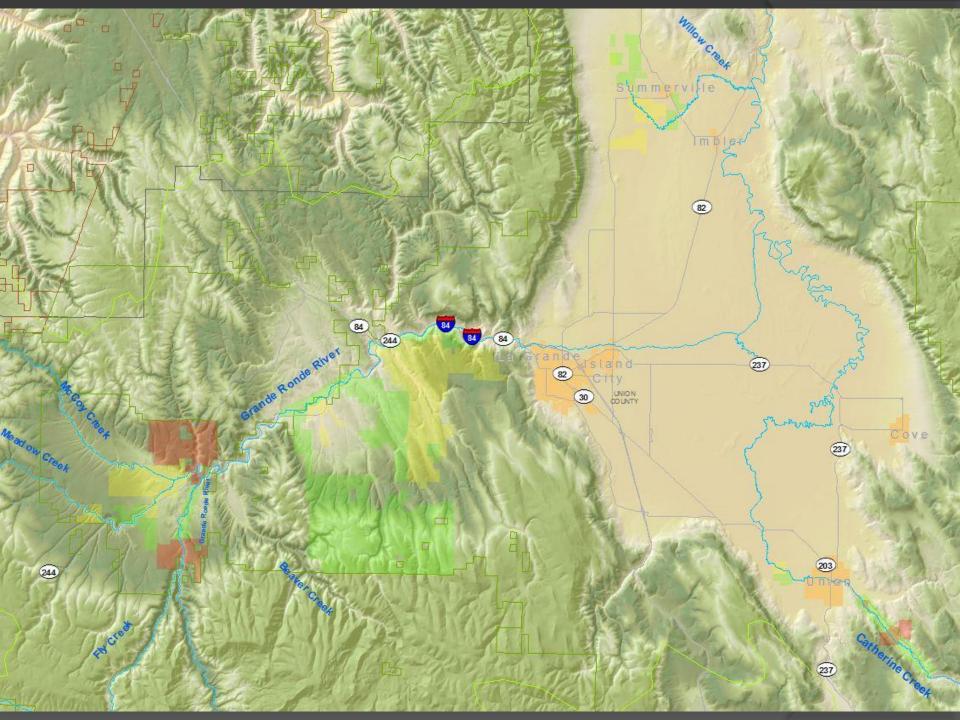


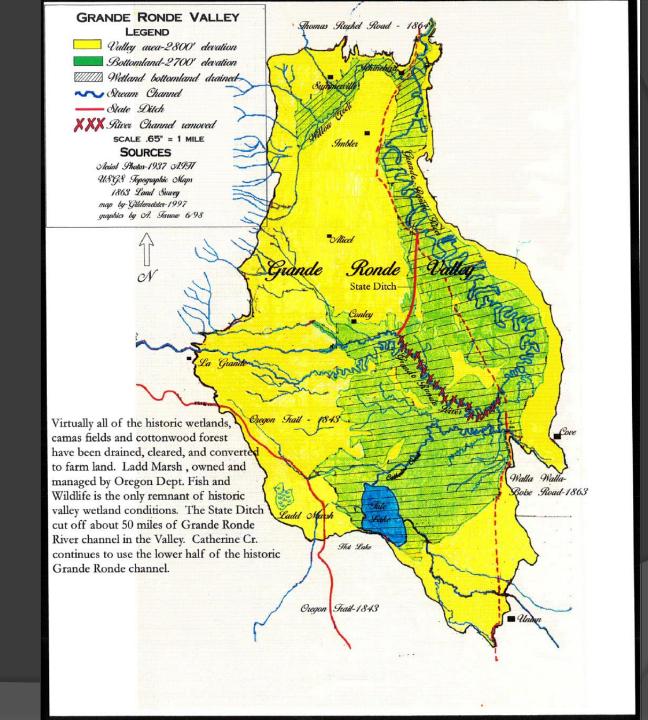
Upper Grand Ronde River Basin













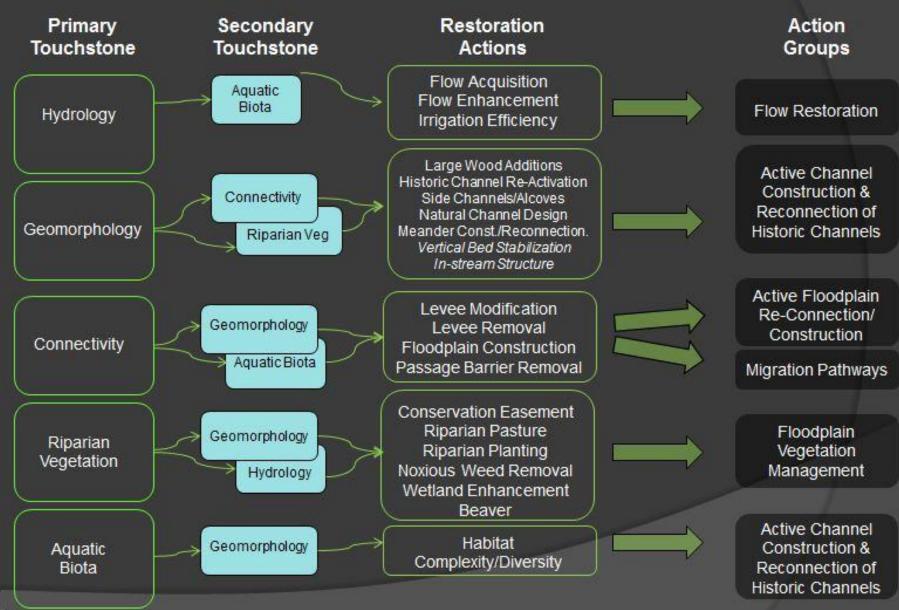


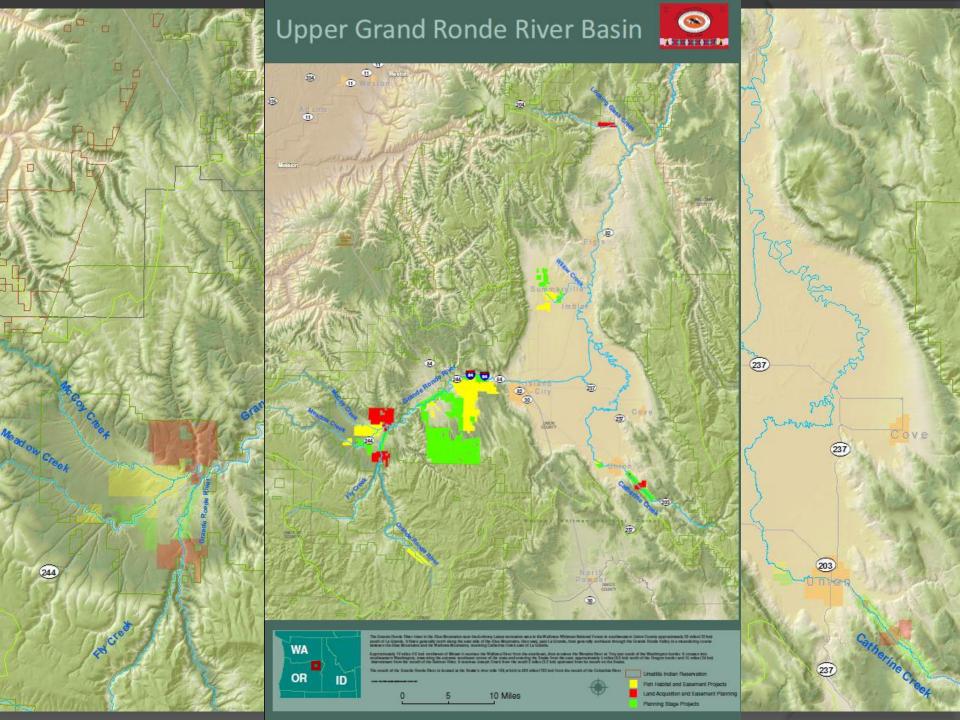






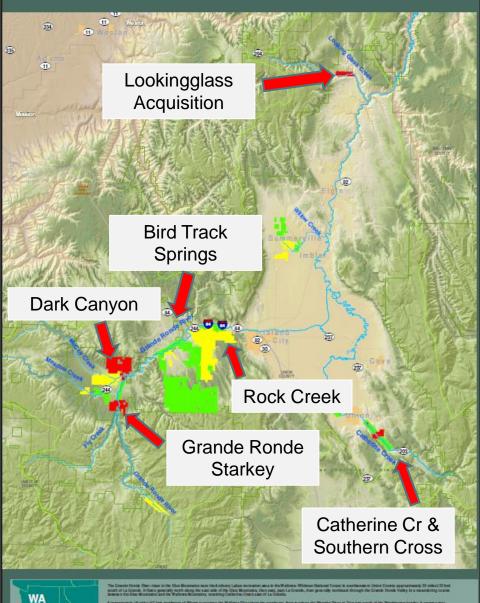
Vision Application: Fisheries Habitat





Upper Grand Ronde River Basin



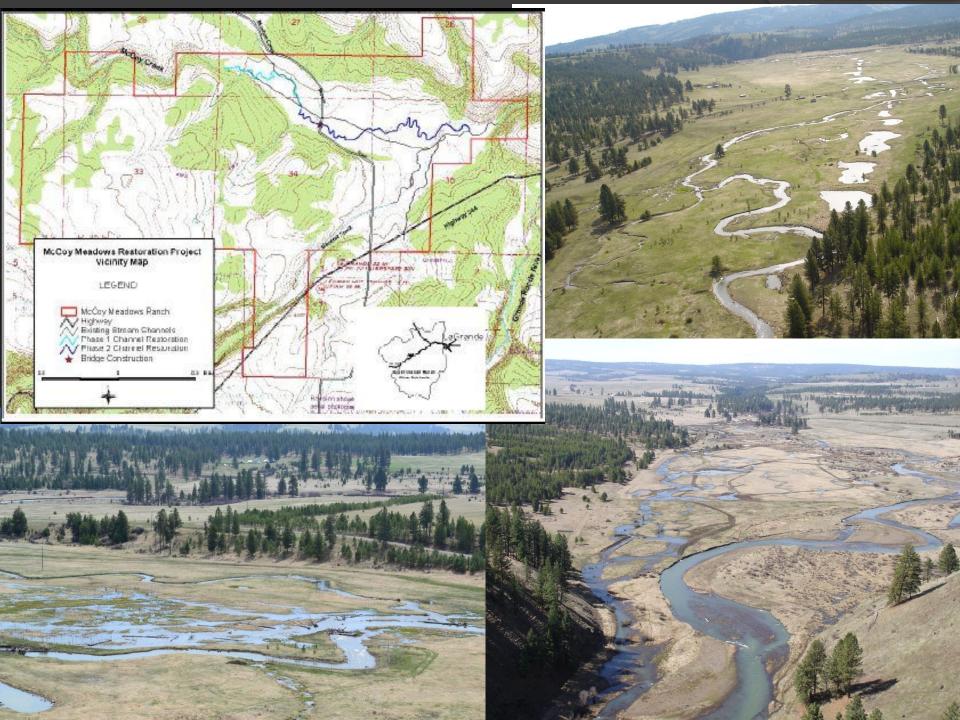


CTUIR Grande Ronde Fish Habitat Project Project Planning and Implementation 2015-2018

- Fish Habitat Projects
 - -Rock Creek Phase 3
 - -Catherine Creek (CC44 Complex)
 - -Catherine Creek CC43
 - -Grande Ronde Upper Starkey
 - -Grande Ronde Bird Track Springs

CTUIR Accord Land Acquisition

- -Cunha Dark Canyon Easement
- -Catherine Creek, Southern Cross
- -Lookingglass Creek Nielson





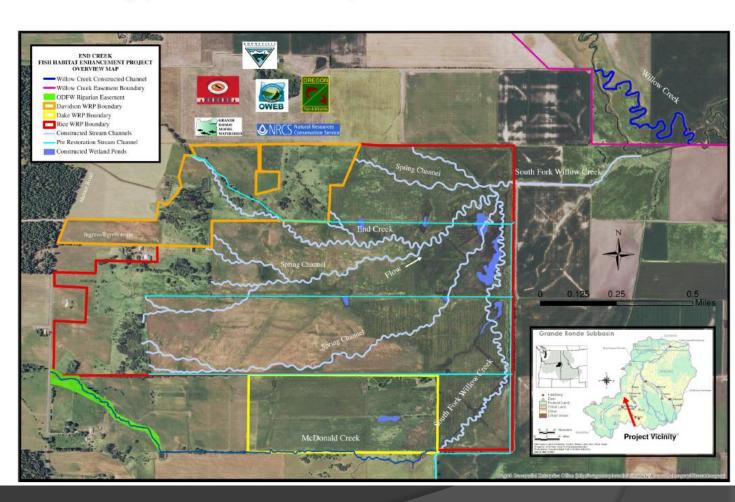
End Creek Fish Habitat Enhancement Project (Implementation Summer-Fall 2006)

Project Cooperators: GRMW, ODFW, CTUIR, NRCS and Landowners: Rice, Davidson, and Dake Cost Share: NRCS-WRP \$355,985, GRMW-BPA \$197,792, OWEB \$61,880

In-Kind Contributions: NRCS \$20,000, CTUIR-BPA \$65,000, ODFW-BPA \$50,000

Project Overview:

- Developed a permanent Wetland
 Reserve Program conservation easement
 for 776 acres within three contiguous
 private land parcels.
- Constructed approximately 1.87 miles of new channel for End Creek, 1.64 miles of new channel for South Fork Willow Creek, and 5.4 miles of spring channels.
- Constructed and contoured 9 floodplain ponds (10.15 acres) and created approximately 363 acres of emergent wetlands.
- Placed wood structures at sites within the constructed channel to alter flow velocities, increase pool quantities and depths, and increase spawning gravel deposition.
- Initiation of native plant community restoration, including installation of approximately 20,000 sedge/rush plugs, mechanical planting of approximately 15,000 willow whips, and installation of 7,800 pounds of native grass seed on approximately 430 acres.







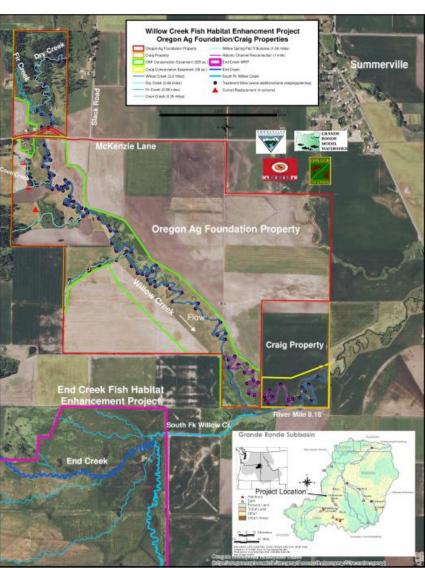
Willow Creek Fish Habitat Enhancement Project (Implementation Summer-Fall 2012)

Project Cooperators: GRMW, CTUIR, ODFW, and Landowners: Oregon Ag Foundation & Stephen Craig. Cost Share: \$337,100 GRMW-BPA, \$50,000 CTUIR-BPA Accord.

In-Kind Contributions: GRMW-BPA, \$5,000, CTUIR-BPA Accord \$35,000, OD PW-BPA \$20,000

Project Overview:

- Approximately 1 mile of historic channel meander along lower Willow Creek within the project area was re-constructed and activated.
- Grazing by livestock was eliminated on all portions of the Project in 2011 and will be put into a conservation easement (CREP).
- Vertical stream banks were shaped at a 3:1 ratio to increase high flow capacity and provide flood plain activation.
- A total of 86 a rge wood addition sites encompassing nearly 9,000 linear feet of vertical, actively eroding stream banks were treated along Dry, Fir, Willow, and Coon creeks using approximately 2,400 pieces of wood ranging from 1.2 to 25' in length.





Catherine Creek River Mile 37 (CC 37) Fish Habitat Enhancement Project (Implementation Summer-Fall 2012)

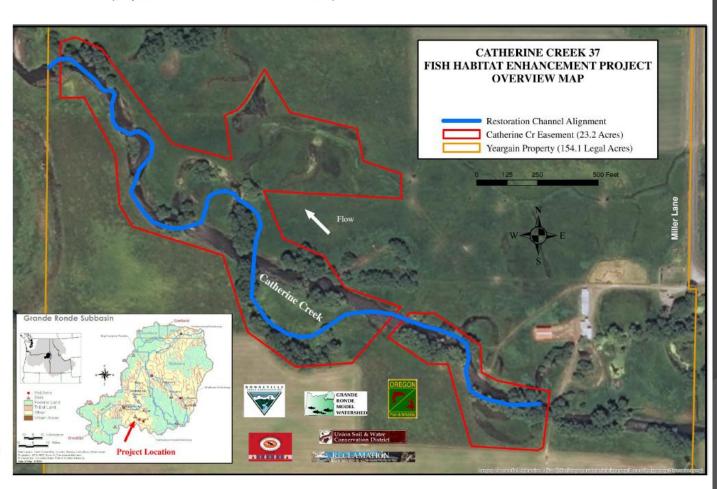
 $\begin{array}{ll} \textbf{Project Cooperators:} & \textbf{USWCD, USBR, GRMW, CTUIR,} \\ \textbf{ODFW, and the landowner: Yeargain.} \end{array}$

Cost Share: GRMW-BPA \$313,443

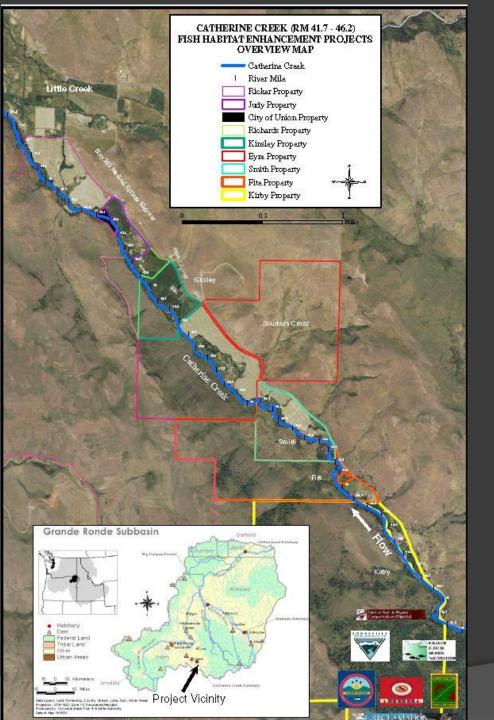
In-Kind Contributions: BOR-USWCD \$529,692, CTUIR-BPA \$65,000, ODFW-BPA \$35,000

Project Overview:

- Developed a 15 year riparian conservation easement along 0.75 mile of Catherine Creek between CTUIR-BPA and the landowner.
- Constructed 1.5 miles of 4-strand barbed wire fence to exclude cattle grazing, protecting 21 acres of riparian, stream, and wetlands.
- A total of 81 engineered LWD structures were installed at specific locations throughout the project Reach to maintain the desired channel configuration and increase habitat complexity.
- Existing incised and near-vertical stream banks were pulled back from a slope of 1.5:1 to 3:1 (horizontal/vertical) to decrease soil erosion, increase pool scour and depth potential, and support re-vegetation.
- Distinct riffle, glide and pool habitat segments were created through channel reconfiguration, selective LWD and boulder placement, and substrate augmentation.
- Approximately 1405 square yards of salvaged sedge mats were placed within the active channel.
- Site-appropriate native grasses (approximately 600 lbs.) were planted on 16 acres of stream banks, upland terraces, and adjacent riparian habitat.
- Approximately 6,200 willow whips and 1,350 containerized plants were planted on floodplain terraces, point bars, and within log structures to provide stability, natural recruitment, and protection from high flow events.

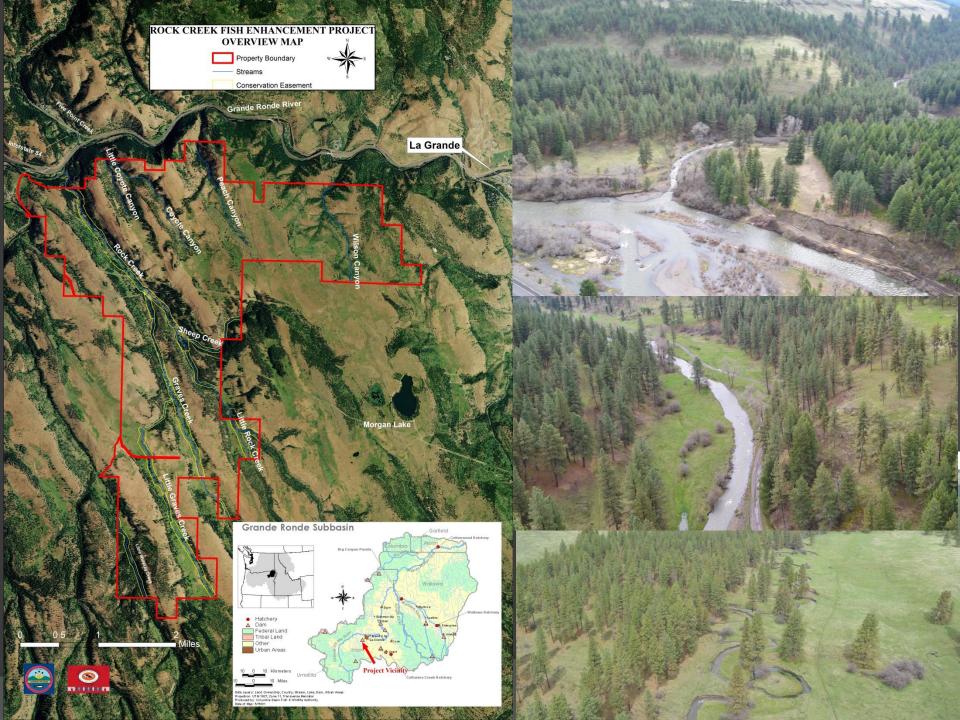


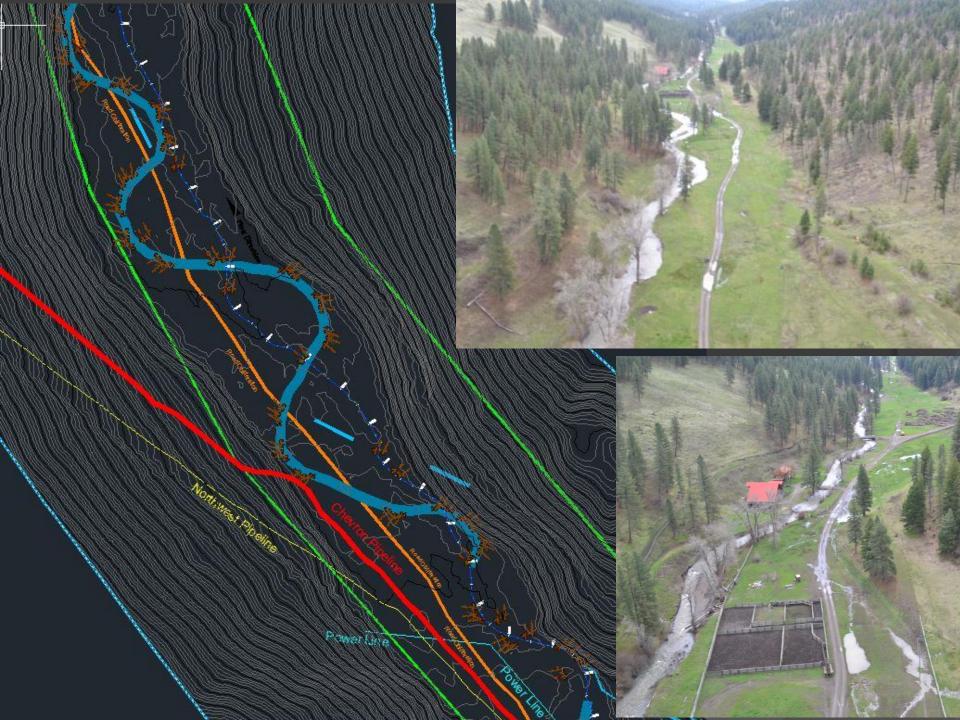






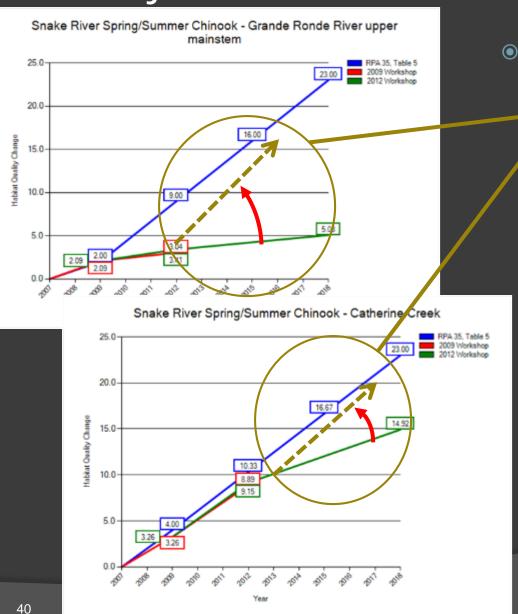








Atlas Objectives



- Need to create a trajectory to meet HQI Targets
 - Upper Grande Ronde 23%
 - Catherine Creek 23%

Atlas Objectives

Program Evolution

(Opportunistic Strategic Restoration)

- 1) Integration of existing planning documents & latest monitoring data (research evidence) at local level
- 2) Implement suites of actions that will more effectively identify & address Priority Limiting Factors
- 3) Accountability for **Restoration Investment**
- 4) Set baseline for future adaptive management
- 5) Stakeholder integration & partnership leveraging

Atlas Objectives



Strategy Leads to Prioritized Restoration Implementation

- Mechanism to integrate latest scientific findings
- Consensus on project benefits prior to investment of restoration funding
- Transparency of process
- Roadmap of opportunities identified on the landscape





Science TAC:

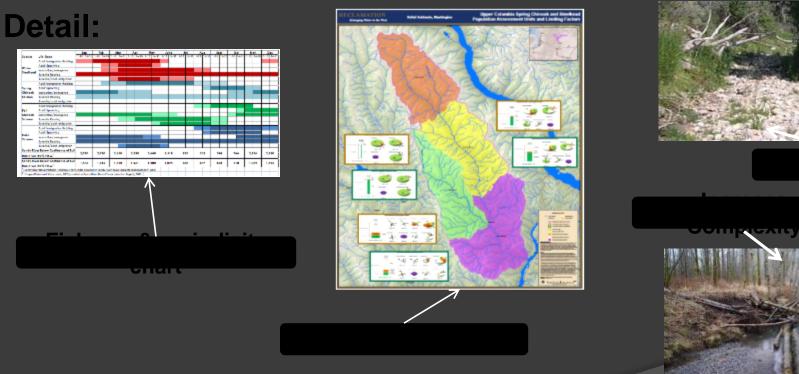
- Technical steering committee assembled from local biologists and regional experts to assist in implementation strategy development and provide objective defensibility to planning process.
- Provides "check and balance" to competing interests resulting in a

Phase:

Define Fish Use & Periodicity by BSR

Review & Score Limiting Factors & Confirm BSRs

Select & Score Activity Types





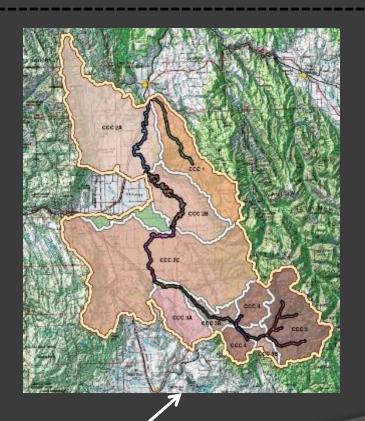
Develop
Prioritization
Framework
(bio. & feasibility)

Rank BSRs

Identify & Map Opportunities

Detail:

Phase:





Phase:

Detail:

Opportunities Summary													
	BSR ranking	Limiting Factors (Quantity & Importance Addressed)	Immediate Term Score	Long Term Score	Natural Process (Beechi et al)	Water Right Date ("Relability)	Water Right Flow Rate (CFS)	Total Habitat	Total Longitudinal (water)	Total Biological Benefit Score			
Name										<u>2</u> 3			
				BSR - CC	СЗа								
Opportunity RM 37 Pyles Creek	Tier 1				Full Restoration	1870-1879	>2.5			,			
		29.4	19	6.2	10	40	10	64.6	50	114.6			
Opportunity RM 38.2-38.6	Tier 1				Full Restoration	1880-1889	0.5-2.5						
		29.1	18	6.2	10	30	5	63.3	35	98.3			
Opportunity RM 38	Tier 1				Full Restoration	1890-1899	<0.5						
		30.7	19	6.4	10	20	2	66.1	22	88.1			
Opportunity RM 39	Tier 1				Partial Restoration	1870-1879	N/A						
		18.2	15	5.3	5	40	0	43.5	40	83.5			
Opportunity RM 39.45	Tier 1				Partial Restoration	1867-1869	0.5-2.5						
		11.2	8.5	3	5	50	5	27.7	55	82.7			
Opportunity RM 40: Godley	Tier 1				Partial Restoration	1867-1869	0.5-2.5						
		11.2	8.5	3	5	50	5	27.7	55	82.7			

Atlas Development – In Summary

1) Define Fish Use & Periodicity by BSR

2) Review & Score Limiting Factors & Confirm BSRs

3) Select & Score Activity Types

4) Develop / Update Prioritization Framework (bio. & feasibility)

5) Rank BSRs

6) Identify & Map Opportunities

Catherine Creek Atlas Products

- Opportunity List prioritized list of project opportunities with highest biological benefit
- High Level Maps graphical representation of potential project opportunities
- Clarifications scores are relative, maps & opportunities are conceptual, detailed maps coming later
- Examples

(Project List)

(1 10)001 =101)										
Opportunities Summary										
	BSR ranking	Total Habitat	Total Longitudinal (water)	Total Biological Benefit Score						
Name				_ F &						
Opportunity RM 37 Pyles Creek Confluence	- CCC3a Tier 1									
		64.6	50	114.6						
Opportunity RM 38.2-38.6	Tier 1	63.3	35	98.3						
Opportunity RM 38	Tier 1	66.1	22	88.1						
Opportunity RM 39	Tier 1	43.5	40	83.5						
Opportunity RM 40: Godley	Tier 1									
Opportunity RM 39.45	Tier 1	27.7	55	82.7						
Opportunity RM 39.6 Hempe-Hutchison	Tier 1	27.7	55	82.7						
Opportunity RM 40.5	Tier 1	27.7	52	79.7						
O	Ti 1	27.7	42	69.7						
Opportunity RM 37.1	Tier 1	61.3	0	61.3						

(Opportunity Map)



Cath. Creek Atlas - Implementation Phase

- Integrating Atlas into existing Step-wise
 - Targeting Spring prospectus to begin formally developing opportunities
 - Confirm members on Implementation Team



What's the Desired State?

Opportunistic



- Development of highest value project opportunities
- Aligned priorities
- Partners working in collaboration
- Right sponsor for the project opportunity
- Transparency
- Accountability

Grande Ronde Stakeholders



















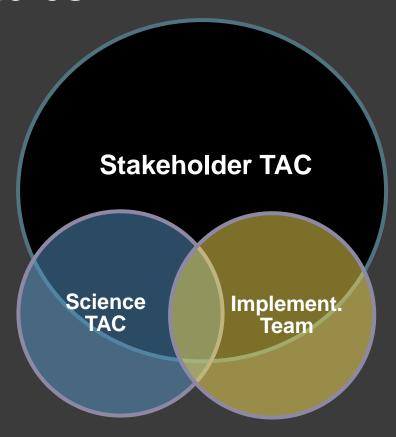








Roles



Stakeholder TAC

- Forum to receive information, ask questions, and provide feedback
- Management
- Policy
- Feasibility

Science TAC

- Research + Implementation Biologists
- Technical Experts
- Objective
- Atlas Development

Implementation Team

- 1 rep + 1 alternate from each organization
- Landowner Contact/Relationships
- Feasibility
- Atlas Implementation

Grande Ronde Stakeholder TAC

- CTUIR Childs
- NPT Taylor
- BOR McLaughlin, Dyke, Trapani, Knutson
- NOAA Lind, Senkyr, Dornbusch, Cooney, Tweten, Coxen, Furfey, Hovekamp
- NOAA Restoration Center
- GRMW Oveson, Kuchenbecker, Steele, Moore, Bailie
- GRMW Board Taylor
- FWS Miller, Stephenson
- NRCS Burton
- Corps Olmstead
- Forest Service Peterson
- ODFW Averett, Myatt, Carmichael, Eddy, Fagan, Jonasson, Bratcher, Favrot, Sedell, Bailey, Morton
- Union SWCD Frenyea
- OWEB Linedecker
- TFT Maxwell, Malmberg
- CRITFC White
- NPCC Weist
- BPA Kaplowe, Welch, Mazaika

Grande Ronde Science TAC

- GRMW Steele, Kuchenbecker
- BOR Knutson, McAffee, Lyons
- CTUIR Childs
- ODFW Bailey, Sedell, Jonasson, Favrot, Fagan, Morton
- CRITFC White
- NOAA Cooney, Coxen
- USFS Vacirca
- FWT Maxwell
- NPT Taylor, Daniel
- Tetra Tech McGowan
- BPA Kaplowe, Welch

Grande Ronde Implementation Team

- To be selected by Stakeholder and Science TAC
 - 1 representative + 1 alternate from each organization
 - Existing "Tech Team" + few additional members
 - Landowner relationships mutual trust, respect
 - Restoration implementation experience
 - Determine feasibility