From the Archives

The Story of Bird Track Springs: Part II

compiled by
Heather Hall, GRMW

ABOVE: Bird Track Interpretive Trail Trailhead Sign, Photo by GRMW Staff

ABOVE: Bird Track Springs Water Cistern Photo by GRMW Staff

ABOVE: Bird Track Springs Campground Photo by GRMW Staff

In the Winter 2010 issue of Ripples in the Grande Ronde, I shared the story of how Bird Track Springs got its name. After hearing from members of the community and refreshing some memories, I have found that it was actually Explorer Post 110 led by Bob Wilkins and John Detherage that was responsible for the construction of the spring-water cistern. As I reported earlier, Larry Cribbs was involved, but as a member of Explorer Post 110 instead of Explorer Post 114. In a July 14, 2006, article by The Observer, Dick Mason had reported these facts correctly.

The water cistern is still in the Bird Track Springs Campground but is no longer in operation.

Camp hosts are now on site at the Bird Track Springs campground and are happy to share information about and the history of the campground.

The GRMW staff welcomes comments, corrections, and suggestions for future stories about habitat restoration projects and other related activities in the Grande Ronde basin. Please contact Margaret McGladrey, the editor of the Ripples newsletter, at

grmw.ripples.editor@gmail.com,

to provide feedback to the GRMW staff members. We value your continued readership and look forward to hearing from you!

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Grande Ronde Model Watershed

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Spring 2010

Ripples in the Grande Ronde

RIVERS UNITING NEIGHBORS·QUARTERLY NEWS FROM THE GRANDE RONDE MODEL WATERSHED

The GRMW's Project Outlook for 2010 to 2012

by Mason Bailie, GRMW

The GRMW staff is pleased to introduce our potential projects for the 2010-2012 biennium. Please bear in mind that these projects are planned but not guaranteed to be implemented.

1 Dark Canyon / Meadow Creek Cunha Fish Habitat Enhancement

See full project description on pages 2 and 3 of this issue.
Estimated Year: 2010
Estimated Cost: $102,000

2 Grande Ronde Greenway Channel Enhancement

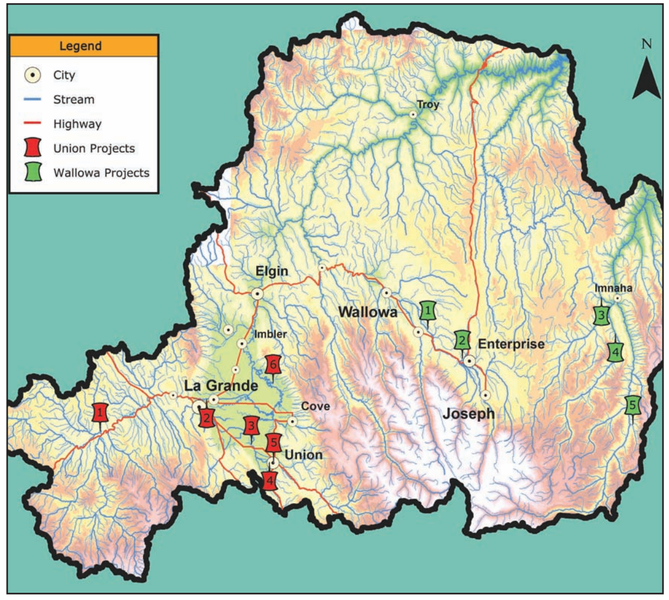
Restore a channelized reach of the mainstem Grande Ronde River running through the City of La Grande that was once the site of gravel mining operations. Complete surveys to identify potential sites for channel enhancement structures intended to create more complex fish habitat, stabilize the channel, enhance floodplain connectivity, and improve riparian conditions.
Estimated Year: 2011-2012
Estimated Cost: $21,500

3 Davis Dams Fish Passage

Reconstruct irrigation diversion facilities on Catherine Creek at the Upper and Lower Davis Dams in order to remove the highest priority barriers to fish passage.
Estimated Year: 2011-2012
Estimated Cost: $1,700,000

4 Townley Dobbin Fish Passage

Replace the channel-spanning Townley Dobbin ditch irrigation diversion structure on Catherine Creek and install a bypass fish-way for juvenile samonids and other resident species.
Estimated Year: 2010
Estimated Cost: $148,500



5 Godley Ditch Fish Passage

Replace an existing leaky check-board system on an existing concrete diversion with a structure that allows for water to be completely sealed off and creates a low-flow channel and an adjacent fish-way.
Estimated Year: 2010-2011 **Estimated Cost:** $120,000

6 Elmer/Hassinger Wetland and Rearing Habitat

Create seasonal wetland habitat and salmonid rearing habitat adjacent to Lower Catherine Creek by relocating a dike and opening up 2,000 feet of "oxbow" channel that had been cut off from the main channel. Relocate a levee originally constructed to protect agricultural land and re-construct it 200 to 500 feet away from the stream channel.
Estimated Year: 2011-2012 **Estimated Cost:** $84,000

1 Cross Country Canal Diversion

Replace an existing, aging, and unstable diversion and headgate structure with a series of rock cross-veins, diversion modifications, and a new headgate in order to improve aquatic organism passage, prevent erosion and sedimentation, and preserve existing in-stream habitat.
Estimated Year: 2011 **Estimated Cost:** $272,305

2 Trout Creek/Alpine Meadows Pump Station Elimination

The Alpine Meadows golf course currently pumps water out of Trout Creek for irrigation, and the City of Enterprise discharges wastewater to the Wallowa River above its confluence with Trout Creek, which produces steelhead. The project plans to improve both the quantity and quality of Wallowa River and Trout Creek water by removing the golf course pump station and reducing wastewater discharge to the Wallowa River.
Estimated Year: 2011-2012
Estimated Cost: $100,000

3 Camp Creek Diversion Fish Passage

Decrease sediment loading to Camp Creek, located on The Nature Conservancy's Zumwalt Preserve, by replacing an earthen push-up dam with a permanent concrete structure and fish by-pass for steelhead. Improve flow in Camp Creek by providing the irrigation company with increased control over diversion rates and conserving water by converting to a closed pipe system.
Estimated Year: 2011-2012
Estimated Cost: $125,000

4 Big Sheep Creek / Buehler Diversion

Replace the existing diversion structure with a permanent rock cross-vane-style diversion that allows for year-round aquatic organism passage, provides for normal bedload transport through the Big Sheep system, and reduces the need for potential diversion structure maintenance.
Estimated Year: 2011
Estimated Cost: $75,000

5 Summit Creek Ditch Diversion Replacement

Remove existing concrete diversion structure on Summit Creek and improve fish passage for steelhead and Chinook. Provide for year-round fish passage above the diversion, improve water quality conditions, and improve irrigation water management.
Estimated Year: 2012-2013
Estimated Cost: $120,000

A New Chapter in the History of Cunha Ranch

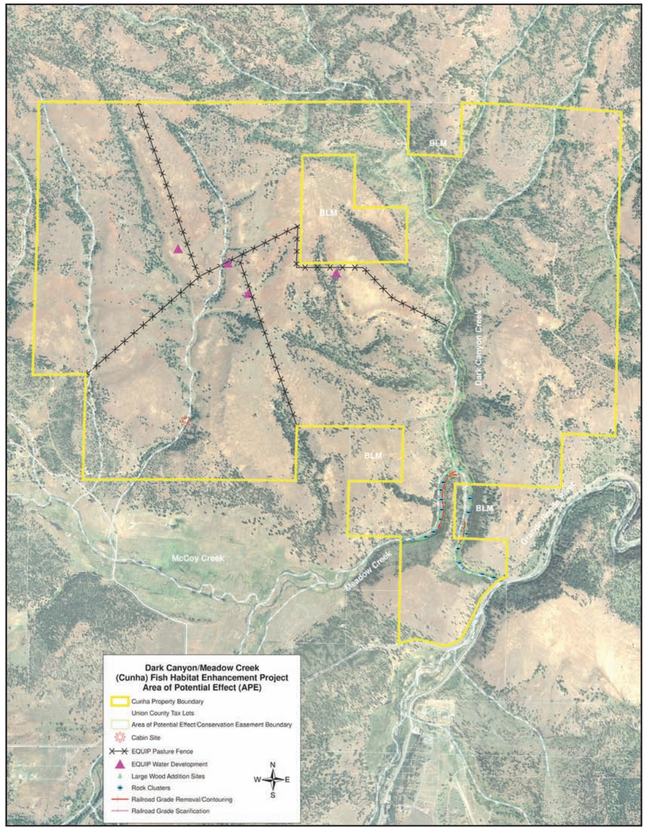
by Allen Childs,
Confederated Tribes of the Umatilla Indian Reservation (CTUIR)
All photos courtesy of the CTUIR

Joseph Cunha is a lifelong resident of northeast Oregon and the owner of the 3,000-acre Joseph Cunha Ranch, LLC., near Starkey. He has seen his share of change in his lifetime as a member of a ranching family in the Grande Ronde subbasin. As a 5-year old, Joe remembers 1955 as one of the last years that the family grazed sheep on the ranch. It is not surprising that the sheep ranching left an impression on a young boy, as the grazing operation included six bands of sheep (more 6,000 ewes and lambs) that provided wool and meat for the market, which the family depended on for their livelihood. In the 1960s and continuing to the present day, ranchers turned to cattle ranching and logging activities to make ends meet.

A long history of splash-dam logging on both Meadow Creek and Dark Canyon Creek as well as livestock grazing, road and railroad construction, and commercial logging has shaped the landscape on the Cunha Ranch. Upland range conditions are generally poor in the harsh, dry environment found on the shallow, rocky soils. Historic alteration of riparian and riverine habitat, particularly related to railroad and road construction, has limited normal habitat formation processes by constricting or eliminating floodplains and decreasing the diversity of in-stream habitat types normally found in un-altered rivers and streams.

Revitalizing Cunha Ranch Rangeland and Fish Habitat

In order to improve some of these rangeland and watershed conditions on their ranch, Joe and his wife, Patricia, recently decided to embark on a rangeland and fish and wildlife habitat enhancement project. Their land straddles about one mile of lower Meadow Creek and more than three miles of Dark Canyon Creek near the confluence of Meadow Creek and the Grande Ronde River. The project emphasizes restoring upland grasslands for big game and livestock as well as riparian and in-stream habitat for salmon and steelhead. Joe and Patricia initially contacted the local Natural Resource Conservation Service (NRCS) to look into available conservation programs, with the objective of trying to find ways to increase the quantity and quality of range resources and improve water availability for livestock. Watering sites are limited in the upland pastures, and operators have been forced to utilize Dark Canyon Creek and Meadow Creek for decades. Both Joe and Patricia felt that something could be done to enhance and restore upland and watershed conditions, but they needed technical and financial assistance to design and fund necessary range infrastructure and attract interest in the fish habitat their ranch provides to the subbasin.



ABOVE: Vicinity map of the Cunha Ranch project.

Building the Project Team

Following initial contact with local NRCS Conservationist Mike Burton, Joe and Patricia elected to invite biological staff from the Confederated Tribes of the Umatilla Indian Reservation (CTUIR) Grande Ronde Fish Habitat Program (based at the Agriculture Service Station in Island City) to discuss additional conservation and cost-share opportunities to meet their overall objectives. CTUIR biologists then initiated habitat surveys and field review along Dark Canyon Creek and Meadow Creek to assess existing conditions, identify factors limiting fish production, and develop a list of opportunities to improve in-stream and riparian habitat conditions.

Meet the Board

Daryl Hawes

GRANDE RONDE MODEL WATERSHED

Profile by Jeff Oveson, GRMW

If he had been born in the 1800s, Daryl Hawes probably would have been one of those cowboys like you see in the old Western movies, trailing behind a bunch of cows headed for places unknown. Nowadays, if he is outdoors, Daryl's head is still adorned with a trademark Western hat, his feet are clad in Western boots, and his conversation is sprinkled with a hint of twang that cannot be acquired in the city.

He and Barbara, his wife of 48 years, started out in the cattle business in Anderson, California. The family business involved raising registered Shorthorn cattle, at the time a very popular breed of beef cattle known for their milking ability and their bright red and white coat of hair, which had originally protected them against the elements of their native northeastern England.

After the births of children Becky, Mindy, and Eugene, this branch of the Hawes family relocated to Hereford, Oregon, a small (we're talking really small) community in the Burnt River Valley. They acquired a spread just downstream of the Unity Reservoir, where they converted their registered operation into a commercial 500-cow unit. The Hawes family grazed their cattle on private, U.S. Forest Service, and Bureau of Land Management rangelands near the Burnt River Valley. Along with the cattle operation, Barbara and Daryl owned and operated a bed and breakfast, which also served as home-base for a guided elk and deer hunting business that Daryl ran for 10 years on private land.

The cattle operation provided the means for the Hawes family to put their kids through school. As each child was born, he or she was given a heifer as a foundation animal. The progeny and successive generations of animals became their college fund, and each of the Hawes kids put the fund to good use. Eugene graduated from Washington State University, Mindy from Eastern Oregon University, and Becky from Oregon State University. When he relates the conversation during which his banker told him it was "costing too much" to take care of the cattle owned by the kids, Daryl offers a look on his face that is half-smirk and half-smile. Daryl shared some other choice observations about this banker that shall remain unprinted, but that he would probably share with you if you run into him and are looking for a good laugh.

Photo courtesy of GRMW staff

Daryl began working with the Farm Bureau in California 45 years ago and is still involved, having served on the Oregon State Board for 15 years and played an instrumental role in forming the Oregon Agricultural Legal Foundation, an organization that later made the "Hawes Case" one of some notoriety in environmental legal history.

When it came time to retire five years ago, Barbara and Daryl wanted to stay in Baker County but instead came across the "perfect" place just west and north of Elgin. Their 80-acre gem of a property features a creek that dissects a meadow frequented by big game and small animals alike. A timbered hillside, a comfortable home, and plenty of out-buildings in which he can practice his hobbies of wood- and metal-working make the place complete. Now members of the Elgin Lions Club, the Hawes were most recently involved in helping the GRMW screen the video "The Best Country: People Restoring Rivers" at the historic Elgin Opera House (described on page 6 of this issue). Nowadays, Daryl is still raising money for the Lions and their charities. If you see him, be prepared to buy some tickets for the annual "Yellow Ducky Derby" to be held June 19.

GRMW is not Daryl's first exposure to habitat projects, having served for eight years on the Habitat and Access Committee for Oregon Department of Fish and Wildlife. As for his motivation to be a member of the GRMW Board, on which he has served since December 2008 after acting as an alternate for several years, he says simply that he's "trying to represent the landowners' interests," and he does a great job of it.

Fish Online!

www.grmw.org

- Adult salmon counts at the dams
- Snake River Basin stream flows
- Snow and precipitation reports
- Habitat enhancement projects
- Meetings, activities, and events
- Past issues of *Ripples* and more!

Grande Ronde Model Watershed

Upcoming Board Meetings

The public is welcome to attend

- **Tuesday, May 25: 6:30 p.m.**
  Wallowa Community Center
  204 East Second Street
  Wallowa, Oregon
- **Tuesday, July 27: 6:30 p.m.**
  Elgin Community Center
  260 North 10th Street
  Elgin, Oregon
- **Tuesday, September 28: 6:30 p.m.**
  Wallowa Community Center
  204 East Second Street
  Wallowa, Oregon

Meeting dates are subject to change. Please call 541-663-0570 to confirm. Thank you!

Back to Nature

The Ladd Creek / Ladd Marsh Wildlife Management Area Channel Reconstruction and Wetland Restoration Project

By Lyle Kuchenbecker, GRMW

RIGHT: After channel reconstruction in 2010. Note woody structures placed in and around the channel. Active flow will be diverted from the ditch into the new channel later this year. Photo courtesy of ODFW.

BELOW LEFT: Before project in 2007. Middle Fork of Ladd Creek (ditch) at right flowing east toward Highway 204. Photo courtesy of ODFW.

Background and History

Located five miles south of La Grande, the Ladd Marsh Wildlife Area (LMWA) has been undergoing a steady transformation back to its original marsh conditions. In the late 1800s and early 1900s, the area was converted from wetlands to agricultural lands by channelizing streams and digging ditches. Tule Lake, just north of Hot Lake, and surrounding wetlands once covered many thousands of acres on the south end of the Grande Ronde Valley. Most of the East, Middle, and West Forks of Ladd Creek were converted into ditches (see example pictured at top-left on page 5). The original Tule Marsh was reduced in size to 400 acres by 1948.

In 1949, the Oregon Department of Fish and Wildlife (ODFW) established the LMWA by initially purchasing 240 acres of private land. Additional acquisitions and land trades have expanded the wildlife area to its current size of about 6,000 acres. The LMWA includes grain fields, tree and shrub areas, native prairie, wetland marshes, open water habitat, and several miles of critical habitat for spring Chinook salmon and summer steelhead. In addition to being an important staging area for migratory waterfowl, the LMWA serves as a nesting area for many bird species. The LMWA hosts either as residents or as visiting migrants more than 200 species of birds, 40 species of mammals, and 13 species of reptiles and amphibians.

The ODFW has been restoring wildlife habitat and wetlands in Ladd Marsh since the first land acquisitions in 1949. Projects have included establishment of native vegetation, windrow plantings, channel reconstructions, pond construction, and levee construction. A cooperative project with the City of La Grande resulted in the use of treated effluent from the wastewater treatment facility to enhance and create wetlands. Over the years, cooperators and funding entities on LMWA projects have included Ducks Unlimited, the Bonneville Power Administration, the U.S. Fish and Wildlife Service, the Natural Resource Conservation Service, the Confederated Tribes of the Umatilla Indian Reservation (CTUIR) as well as many others. Today, Ladd Marsh has been restored to more than 3,000 acres of wetlands and wet meadows.

The Project

The most recent project in the LMWA is the Ladd Creek/Ladd Marsh Wildlife Management Area Channel Reconstruction and Wetland Restoration Project, which is nearing completion. Planning for the project began in 2006. The Grande Ronde Model Watershed program (GRMW) sponsored the project and acquired funds from the Bonneville Power Administration, the Oregon Watershed Enhancement Board, and the Blue Mountain Habitat Restoration Council. The project is also receiving funding from the Federal Aviation Administration through Union County, as it constitutes a mitigation effort for the planned Union County Airport runway extension.

The project area includes the main Ladd Creek and portions of its three forks (East, West, and Middle) that run through the wildlife area. The downstream portion of the project is located approximately five river miles upstream from the confluence with Catherine Creek.

The primary objective of the project is to improve habitat for Endangered Species Act (ESA) listed Snake River summer steelhead and spring Chinook. Steelhead use Ladd Creek for spawning and juvenile rearing, and juvenile salmon use the lower reaches of Ladd Creek for rearing. This project will restore the Ladd Creek channel to its near-historic natural configuration as well as create more than 40 acres of wetlands. Although the primary purpose of the project is to improve fish habitat, many wetland-dependent bird and animal species will also benefit from the enhanced habitat.

The Project Timeline

The ODFW is the lead technical agency for the project, with contributions from the CTUIR and the GRMW to planning and design, permitting, construction contract and field administration, maintenance, and monitoring/evaluation activities. Vance McGowan, ODFW Northeast Region Habitat Biologist, designed the channels and administered the construction contract. The construction contract was awarded to Partney Construction in October 2009, and work began in November. Favorable weather allowed work to continue throughout the winter to the end of February 2010.

Revegetating the streambanks and floodplains of the new channels is an essential component of the project. A Youth Conservation Corps crew from Union High School supervised by Annette Howell and Mark Wing gathered about 16,000 willow cuttings from other areas of Ladd Marsh and planted disturbed ground along the new channels. The crew also planted chokecherry, dogwood, rose, hawthorn, peachleaf willow, snowberry, and mock orange. The crew planted during the week of spring break and every Friday and Saturday throughout April 2010. The Youth Conservation Corps crew from La Grande assisted in gathering willow cuttings. The Hells Canyon Preservation Council organized and sponsored a planting day on March 13.

The remaining channel construction and ditch reclamation will be completed this summer when the ground dries out. When the new channels are completed, crews will salvage fish, amphibians, and reptiles from the ditches using seines and electroshocking. Following fish salvage, flow will be directed into the new channels. Material that was excavated from the new channels and stockpiled along the ditches will be used to fill in 3.6 miles of the former stream channels (see image at top-right on page 5). Additional planting and seeding will continue into late fall. Vegetation management (planting and weed control) and general operations and maintenance of the project will continue beyond the construction period into the foreseeable future.

LEFT: Nearly all of Ladd Creek in the Ladd Marsh Wildlife Management Area was straightened and channelized like the ditch pictured here in the late 1800s and early 1900s to allow for cultivation and farming. Photo by GRMW.

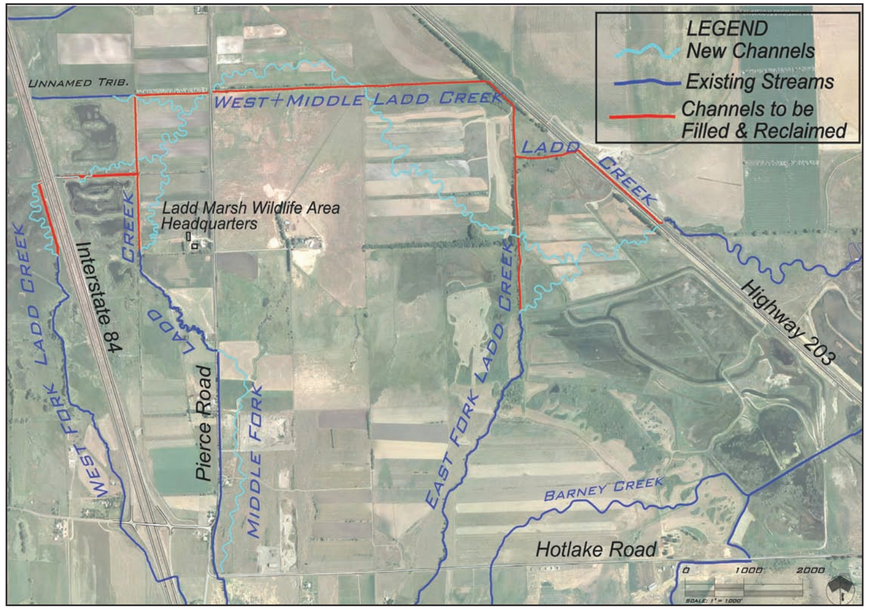
The new channel locations will require the replacement of two stream crossings. Currently, an undersized culvert is located where Ladd Creek crosses Pierce Road. With funding from the Blue Mountain Habitat Restoration Council, the Union County Public Works Department will replace the culvert with a full channel-spanning bridge this summer. At the lower end of the project, approximately three-quarters of a mile of Ladd Creek is currently locked in place between Highway 203 and the railroad. The relocated channel segments on the west side of the highway will require the highway bridge's relocation to match up with the railroad bridge. The GRMW is pursuing funding for this bridge project.

ABOVE: Material excavated for construction of the new channels was stockpiled along channelized ditches (at right). This material will be used to fill in the ditches when the stream is directed into the new channels. Photo by GRMW.

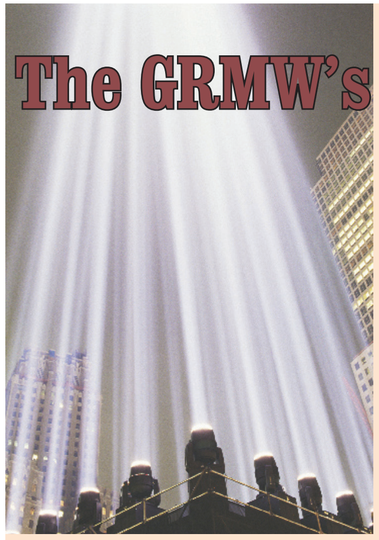
LEFT: Large woody material was excavated into the streambanks of the new channels to provide diverse habitat for fish. Photo courtesy of ODFW.

Project Benefits

Benefits of transforming the ditches into natural meandering channels are numerous. Sinuous channels result in increases in stream length (which translates into more habitat), reduced water velocities, reduced channel incision, higher water tables, and improved floodplain interaction. Restoring channels to natural configurations should result in reduced erosion, increased off-channel and wetland habitat, improved groundwater interaction, reduced stream temperatures, and improved summer and winter habitat for ESA-listed salmonids species. Upon completion of this project, nearly all of Ladd Creek in the LMWA will have been restored to more natural channels that have not existed for more than 100 years. ■



RIGHT: Project map courtesy of ODFW.



The GRMW's Cinematic Debut

Screening the Documentary "The Best Country: People Restoring Rivers"

by Jeff Oveson, GRMW

What was everyone doing at Huber Auditorium, the Elgin Opera House, and the OK Theater in Enterprise back in mid-April? They came to see the GRMW take a step in a different direction, and they watched it on the big screen. The public debut(s) of "The Best Country: People Restoring Rivers" took place on consecutive evenings in La Grande, Elgin, and Enterprise in cooperation with the Eastern Oregon University Biology Club, the Elgin Lions Club, and the Rotary Club of Wallowa County. These groups all worked together to help GRMW tell the story of river restoration projects and the people who made them happen.

Sometimes, a story is so good that it just has to be told. In the case of these Wallowa River restoration projects, it was more like two stories, with interesting subplots, colorful characters, and happy endings, somewhere between an action thriller and a romantic comedy.

Working hand-in-hand with a plethora of partners, the GRMW has been involved in three major restoration projects on the Wallowa River over a period of 5 years. Called McDaniel I, McDaniel II, and 6-Ranch, these projects were the result of untold hours of planning, design, and construction efforts on the part of project partners. Numerous groups of volunteers had worked on them, hundreds toured them both during and following construction, and the two families that own the properties upon which the projects were completed were gracious and as pleased with the final product as proud new parents.

How to tell this story? The GRMW contracted with Green Fire Productions, a La Grande-based non-profit video production company owned and operated by Karen and Ralf Meyer, who are renowned tellers of visual stories about nature and human interaction with nature (see the Winter 2010 issue of the Ripples for more information about the video production process). The Jubitz Family Foundation of Portland agreed to fund most of the work, while the GRMW paid for the balance.

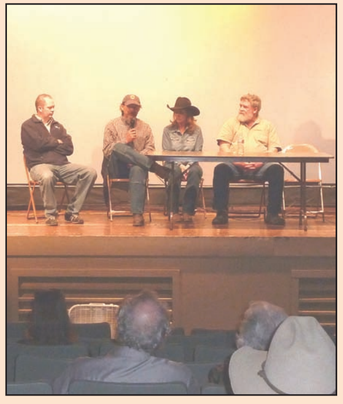
Over a period of more than two years, Karen and Ralf interviewed and filmed footage of conversations with landowners, contractors, funding agency staffers, biologists, designers, engineers, and about anyone else involved with these projects. They coordinated their footage with local musicians, screened rough versions of their video seeking feedback, and finally completed a 35-minute film that does an incredible job of telling the stories of the project from beginning to end.

About 170 people attending the screenings in Elgin, La Grande, and Enterprise were given the chance to interact with some of the central characters immediately after each showing. A moderated panel of four – consisting of landowner Liza Jane Nichols, project engineer Chas Hutchins, Oregon Department of Fish and Wildlife (ODFW) biologist Bill Knox, and tribal biologist Joe McCormack (pictured at right) – answered questions from the crowds in sessions that on each occasion lasted longer than the video. Queries covered a broad spectrum of issues and included questions like:

- "Will this project impact other reaches of the river?"
- "Would you do anything different next time?"
- "Is the land now open to public access?"
- "Don't you think the presence of wolves would keep the deer from eating your willow plantings?"

The GRMW is now in the process of distributing "The Best Country" DVD to high schools and middle schools across the Grande Ronde basin as well as sending copies to funders, cooperators, and other interested parties. The DVD is also available to the public at the La Grande office of GRMW.

ABOVE: An engaged audience listens intently as an audience member asks a question of the moderated panel. Photo by GRMW staff.



ABOVE: The moderated panel consisting of (from left to right) project engineer Chas Hutchins, tribal biologist Joe McCormack, landowner Liza Jane Nichols, and ODFW biologist Bill Knox answer audience questions. Photo by GRMW staff.

The Project's Objectives

Following the initial assessment, both NRCS and CTUIR with assistance from the Cunhas completed a more detailed plan that identified management practices, infrastructure needs, habitat project elements, and a strategy to fund project elements. The overall project plan includes construction of 3.4 miles of upland pasture cross-fencing and installation of four livestock watering facilities on existing springs to provide for improved livestock distribution and management.

Project objectives include:

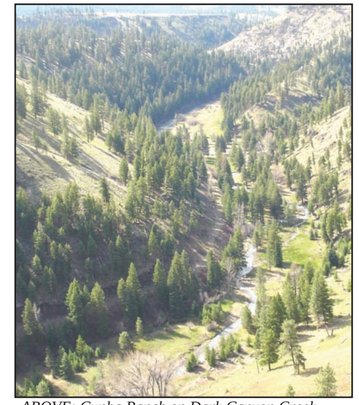
- **Developing Protect Habitat.** This objective involves developing a riparian conservation easement along 3.5 miles of Dark Canyon and 0.5 miles of Meadow Creek. Currently, Bureau of Land Management tracts within the project area are fenced and excluded from grazing, which will be opened with the new conservation easement.
- **Enhancing In-stream Structural Diversity and Complexity.** This objective involves installing large wood complexes and rock structures to facilitate the development of riffle, run, pool, and glide habitat representation and provide in-stream diversity, mimicking the natural recruitment of wood and rock needed for productive fish habitat.
- **Enhancing Floodplain Connectivity.** This objective involves removing and/or breaching segments of old railroad grade that currently restrict floodplain function and riparian/wetland habitat along Meadow Creek.
- **Enhancing Riparian Habitat Conditions.** In conjunction with planned upland infrastructure developments and establishment of the riparian conservation easement, this objective involves eliminating livestock use of riparian habitat along Dark Canyon Creek and Meadow Creek, enhancing hydrologic connectivity where feasible, and increasing riparian aquatic plant communities through artificial (planting/seeding) and natural recruitment strategies.

The fish habitat component of the project encompasses approximately 3.5 miles of Dark Canyon Creek and 0.75 miles of Meadow Creek, beginning at the confluence of Meadow Creek with the Grande Ronde River and continuing upstream along Meadow Creek to McCoy Meadows, then along Dark Canyon to the Wallowa-Whitman National Forest boundary. Fish habitat improvements include placing wood and rock clusters in-stream to enhance in-stream diversity and create pool habitat as well as removing a portion of an old railroad grade to re-activate the floodplain along Meadow Creek during high-water events. Funding for the fish habitat component of the project will be provided by the GRMW, the Bonneville Power Administration, and the CTUIR.

Following completion of the in-stream habitat work planned for Summer 2010, the landowners will enroll approximately 65 acres of riparian habitat along Dark Canyon and Meadow Creek into the Conservation Reserve and Enhancement Program (CREP), which will provide funding for the installation of riparian fencing and planting to be completed by Summer 2011.

Project Benefits

Project benefits include the Cunhas' enhanced ability to manage livestock by using a rest pasture rotation system with adequate upland water resources. Another benefit is the protection of approximately four miles of summer steelhead spawning and rearing habitat as well as protection of rearing habitat for spring Chinook salmon. Under the project plan, grassland communities and riparian and in-stream habitat should improve significantly over the long term.



ABOVE: Cunha Ranch on Dark Canyon Creek looking south (downstream) toward its confluence with Meadow Creek.

The project is closely related to ongoing and proposed restoration activity in the Meadow Creek watershed. Since the mid-1980s, ongoing restoration efforts along Meadow Creek and its tributaries (McCoy Creek, McIntyre Creek, and Dark Canyon Creek) have included obliteration of extensive amounts of roadways, removal of railroad grade, the addition of large woody structures, construction of meandering river channels in areas where streams had been previously channelized, and improvement of rangeland conditions, such as water developments and fencing, riparian planting, and noxious weed control.

ABOVE: Meadow Creek. Note the abandoned floodplain at left and the railroad grade (the mound of earth at right).

The foresight and willingness of landowners like Joe and Patricia to contribute to conservation efforts while maintaining a working ranch help improve fish and wildlife habitats within the Grande Ronde Basin. Projects like this one on the Cunha Ranch greatly contribute to other restoration actions in the watershed by providing connectivity between projects near the confluence of the mainstem Grande Ronde River. This connectivity is important for the long-term improvement of available habitat needed to sustain threatened and endangered fish species as well as wildlife.

ABOVE: Lower Meadow Creek. The old railroad grade is located along the right side of the streambank.