Ripples in the Grande Ronde

Summer 2005

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

A new twist to the Wallowa River

by R.Coby Menton, GRMWP, and Nils Christoffersen, Wallowa Resources

Doug McDaniel grew up fishing on the Wallowa River when it was still meandering across the valley floor. He watched as it was moved to the valley edge against the bluff to improve access and management of pasture, and reduce the impacts of flooding. For over a decade now, he's been trying to restore the natural structure and meanders that provide good fish habitat. When he's 85 and retired, he wants to hobble down to the bank and find a good fishing hole.

Above: Project area pre-excavation. Photo taken March 9, 2004. Right: Project area post-excavation. Photo taken August 25, 2004.

The Wallowa River/McDaniel Habitat Restoration Project, an effort to restore a section of the Wallowa River on Doug's property outside of Lostine, Oregon, is finally under way. In 1992, Doug began the process of converting a half mile of straightened river to a natural meandering channel that provides excellent habitat, seasonal flood plain access, and improved water quality. In the fall of 2003, at the suggestions of Grande Ronde Model Watershed Program staff members Coby Menton and Lyle Kuchenbecker, and after many years of frustration in the planning, permitting, and design stages, Doug and project manager Nils Christoffersen of Wallowa Resources visited the Bear Creek channel restoration project at Longley Meadows. What they saw impressed them so much, they immediately signed up Vance McGowan of the Oregon Department of Fish and Wildlife (ODFW) and Allen Childs of the Confederated Tribes of the Umatilla Indian Reservation to their design and construction management team.

The project design is based on one-foot topographic surveys, current channel surveys, and reference channel details. This information is captured with a survey-grade global positioning system (GPS), aerial photography, and stream survey techniques. These surveys not only

describe elevation of the project area, but the current and rebuilt channel length, width, depth, substrate, and hydraulic characteristics. The design methodology includes new channel excavation, logs and root wads to stabilize meander bends and provide fish habitat, rock grade control structures to maintain channel elevation, and a planting program to restore the riparian vegetation. The new meandering channel extends the length by nearly 800 feet (42 percent increase for that section), and decreases the gradient from a 0.95 percent slope to 0.64 percent slope. *See map design in GIS article, Page 5.*

Before the design can be implemented, permitting and Endangered Species Act (ESA) consultation must be accomplished. The Department of State Lands issued a General Authorization for Fish Habitat Enhancement and Wetland Restoration Enhancement for the McDaniel project on June 29, 2004. The Oregon Department of Environmental Quality issued a 401 Certification for the project on July 21, 2004. The project also secured a 404 (fill and removal) permit from the U.S. Army Corps of Engineers, a mining permit from Oregon Department of Geology and Mineral Industries, and cultural resource clearance from the Oregon Historic Preservation Office.

ESA consultation initiates with a biological assessment describing the effects the project may have on ESA-listed plants and animals. Both the National Oceanic and Atmospheric Administration (NOAA) Fisheries and U.S. Fish and Wildlife Service review the biological assessment and issue their own biological opinions with terms and conditions for project implementation. Permitting processes for the McDaniel project began in 1998 and concluded in December 2004 with a biological opinion from the U.S. Fish and Wildlife Service.

Excavation to re-establish the historic channel characteristics finally began in July 2004. Ken Nash led a Hopkins Forestry team that excavated, separated and stockpiled the topsoil and 29,000 cubic yards of gravel-dirt material over the 2,550-foot reconstructed channel. Terry Jones supplied 600 boulders averaging 3 feet in diameter, and Dave Turner brought in 150 20-foot logs and root wads harvested off of RY Timber land. About 90 percent of the channel reconstruction was completed by late fall 2005.

Following the completion of scheduled excavation work, local contractors, high school students, and ODFW staff initiated an ambitious revegetation program over the fall and winter that included transplanting more than 7,000 sedge plugs, 5,000 willow cuttings, several hundred 5- to 10-year-old trees, and distributing

.....Continued on Page 8, TWIST

Contributors

Wallowa River/McDaniel Habitat Restoration Project

- **Doug McDaniel:** Landowner. Doug is contributing 16 percent of the total project cost (including a direct contribution and contribution of all revenue from the sale of excess riparian aggregate to a local ready-mix company).
- **Wallowa Resources:** Project sponsor and project management. Wallowa Resources is providing 11 percent of total project cost.
- **Oregon Department of Fish and Wildlife:** Design, implementation, and on-site management. ODFW is providing 10 percent of total project cost.
- **Grande Ronde Model Watershed Program:** Funding acquisition, funding source, and monitoring. The GRMWP, with support from the Bonneville Power Administration, is providing 31 percent of total project cost.
- **Oregon Watershed Enhancement Board:** OWEB is providing 32 percent of total project cost.
- **Confederated Tribes of the Umatilla Indian Reservation:** CTUIR is providing in-kind contributions in support of the design and on-site construction management.
- **Natural Resources Conservation Service:** NRCS is prepared to contract with the landowner to implement a Conservation Reserve Enhancement Program easement when the project is completed.

Benefits

The Wallowa River/McDaniel Project is generating habitat improvement and local economic benefits:

- The riparian flood plain benefits through natural vegetative recovery. Riparian fencing and adaptive management will protect approximately 30 acres of instream, riparian and upland habitats.
- Instream habitat benefits from the redevelopment of meanders and the restoration of complex pool habitat. These improvements should restore historic spawning and rearing habitat, increase water storage capacity of adjacent meadows, and improve water quality.
- Adult and juvenile summer steelhead and juvenile spring chinook are the targeted species of concern, but many species of wildlife, such as neotropical birds and big game, will benefit as well.
- Local contractors, businesses and landowners benefit from the job and material supply opportunities provided by these types of projects.
- This project is intended to be a model for future river restoration projects in Wallowa County.

Monitoring Plan

Wallowa Resources, ODFW, GRMWP and the landowner will collaborate in project monitoring. The monitoring plan includes:

- Documentation of the physical change in channel morphology. To see change over time, these sites will be resurveyed in the 1st, 5th, and 10th years following project implementation.
- Permanent photographic points will be installed prior to project installation and replicated annually following implementation for up to 10 years. Photo points provide a fine-scale documentation of change that is readily recognized in a project.
- Fish species presence and abundance will be sampled through snorkeling by ODFW throughout the project reach on a bi-annual basis.
- Noxious weeds will be located and eliminated on a continual basis.
- Water quality change will be monitored annually for 10 years above, below and within the project area. Additionally, groundwater observation wells will be installed to observe water-table change in the project reach.

Meet the Staff

GRANDE RONDE MODEL WATERSHED

Lyle Kuchenbecker

Lyle was born and raised in Green Bay, Wisconsin, and is still a big Packer fan. Upon graduation from high school, he attended the University of Wisconsin at Stevens Point, earning a bachelor's degree in forest management in 1972.

Lyle began his professional career with the U.S. Forest Service at the Southern Forest & Range Experiment Station in New Orleans immediately following graduation. He then moved west to work at the Dale Ranger District in Oregon in 1975, staying until 1980 before moving to the Union Ranger District where he worked until 1985. Lyle became the district silviculturist on the La Grande Ranger District, then served there as the INFORMS project leader and subsequently a NEPA planner.

His career took a change in direction when he was detailed to the Grande Ronde Model Watershed Program (GRMWP) in February 1994, where he has served as project planner ever since. Another career change took place June 3, 2005, when Lyle officially retired from the Forest Service. Lyle, though now retired from federal employment, is still an integral part of the GRMWP, serving as a project contractor through the Grande Ronde Model Watershed Foundation, with most of the same duties that he had prior to his retirement.

Lyle resides in Baker City with Cindy, his wife of 26 years, whom he met while both were employed at the Dale Ranger Station. Cindy, raised in Imnaha, is a business teacher at Riverside High School in Boardman. The blissfully wedded couple have two children: Kurt, 24, a business major at the University of Idaho, and Katie, 22, a senior in environmental engineering at Oregon State University.

Lyle enjoys the time he is able to share with his family, and ardently pursues his passion for both golf and fishing, although he admits to being fairly average at both. His companion in the photo is Annie, his 3-year-old chocolate Labrador Retriever.

Longley Meadows project receives award from state

In April, the State Land Board presented the owners of Alta Cunha and Moss Creek ranches, west of La Grande, the 2004 Stream Project Award for the restoration of Longley Meadows in the Grande Ronde Basin.

Ranch owners Carla Cunha, Shauna Mosgrove and Kelly Stinnett, along with numerous partners, launched the project in 1999. Construction began in 2002. The purpose of the project was to restore instream, streambank and wetland habitat along seven miles of three creeks and the mainstem of the Grande Ronde. The project included building seven miles of fence to keep livestock away from the streams, planting 40,000 shrubs and trees, and developing nine off-channel water sources for livestock.

To preserve the investment, the ranch owners enrolled 445 acres of land adjacent to the creeks in the Conservation Reserve Enhancement Program and the Bonneville Power Administration's Fish Habitat Program. The agreements establish a 15-year streambank conservation easement.

Dirks-Edmunds donates to Oregon Watershed Councils

In March, the Grande Ronde Model Watershed Foundation was the recipient of a $1,000 gift from the Jane Claire Dirks-Edmunds estate. Ms. Edmunds was an avid ecologist who cared deeply about the health of Oregon's forest ecologies and authored a book titled "Not Just Trees." A longtime professor of biology at Linfield College, she used this book to tell the story of a 50-year study of an ancient Douglas Fir forest. The observations used for the story started in the 1930s and ended in the 1980s.

In her bequest to a number of Oregon Watershed Councils, the executor of her estate asked simply that the gift be made to "high ranked" watershed councils, that it be used to further local conservation efforts, and that an acknowledgement of the gift be made by the recipients.

The Oregon Watershed Enhancement Board matched the gift with another $1,000, the total of which will be used to support the education and outreach work of the Grande Ronde Model Watershed Program.

This thing called GIS

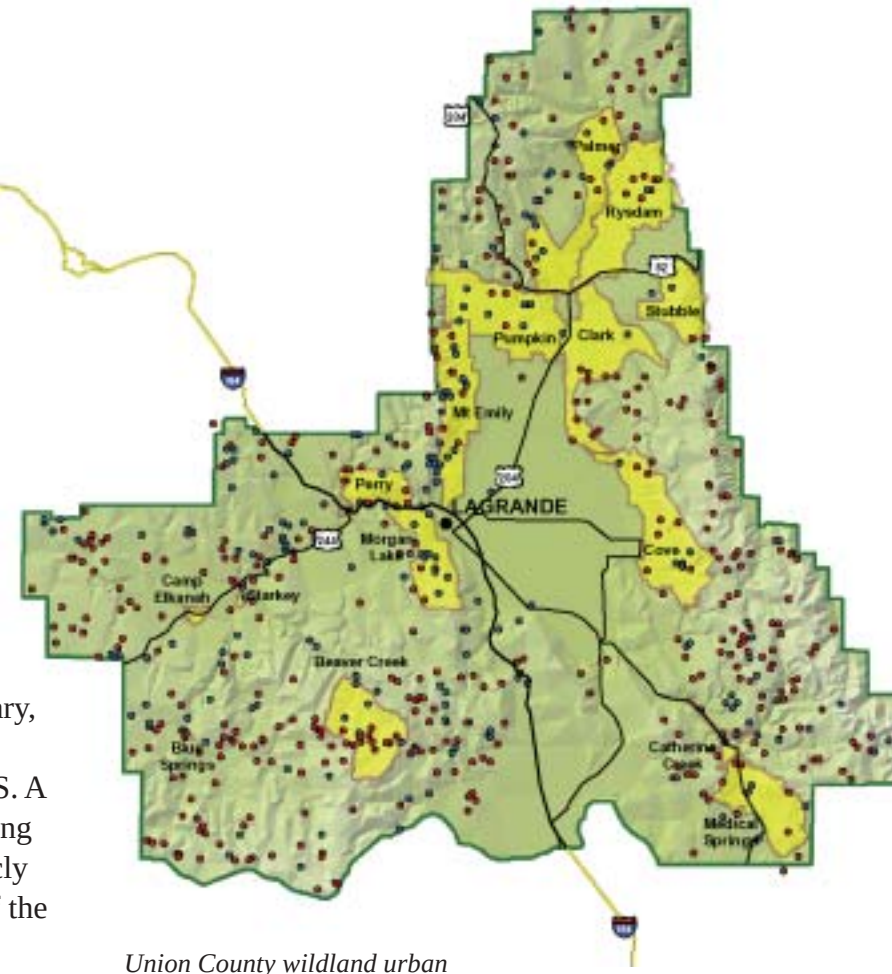
by Cecilia Noyes, GRMWP

GIS is an abbreviation of the term Geographic Information System. GIS is a computer system used to collect, edit, analyze and display geographically referenced information. The science of analyzing geographic information and producing maps is not new, but GIS has made it easier and faster, and has become a multibillion-dollar industry taught in schools, colleges and universities through-out the world.

Map making is a critical part of a GIS, and one that the public sees frequently. But a GIS is much more than creating maps with a computer. Each location identified in a GIS map can have a wide variety of data describing the location. For example, a point on a map representing the city of Elgin shows where the city is located, but the GIS data linked to the point can give a lot more information. You could find out Elgin's population size, zip code, number of schools, acreage within the city boundary, and much more.

Analysis is another component of GIS. A simple example of an analysis done using GIS is calculating the acreage of publicly owned lands within a 10-mile radius of the town of Elgin. If you are interested in finding out more about GIS, a good start is the U.S. Geological Survey presentation available at the website http://erg.usgs.gov/isb/pubs/gis_poster/.

So how is GIS being used here in northeast Oregon? Here are three examples.



Union County wildland urban interface (WUI) boundaries, and locations of lightning and human-caused fires for 1994-2003. Source: Wallowa Whitman National Forest and Oregon Department of Foresty, NE Region.

Community Wildfire Protection Plans

City, county, state and federal governments; fire departments; and local community stakeholders have joined together to develop Community Wildfire Protection Plans (CWPP) in Union and Wallowa counties. One of the first steps in developing the CWPPs was to establish a map defining the "wildland urban interface" (WUI), areas where potentially dangerous combustible wildland fuels are found adjacent to or intermingled with structures or other human development. Priority WUIs were developed by analyzing U.S. Forest Service and Oregon Department of Forestry GIS data, including vegetation condition, fuel levels, topography, fire history, transportation routes, and areas of consequence to the community (homes, infrastructure, recreation resources and economic resources).

One of the next steps of the Community Wildfire Protection Plans is to enhance emergency plans for responding to wildfires. GIS will again be an integral tool for this process. One of its uses will be to identify and produce maps of the safest access and evacuation routes to and from a wildfire for emergency responders and the public. More information on the CWPPs will be forthcoming in your local newspaper.

Draft CWPPs for both Wallowa and Union counties can be viewed online at http://www.odf.state.or.us/areas/eastern/northeast/

GPS unit mounted on an ATV, used to collect GIS site data.

wallowaco_cwpp.htm and http://www.odf.state.or.us/areas/eastern/northeast/unionco_cwpp.htm, respectively.

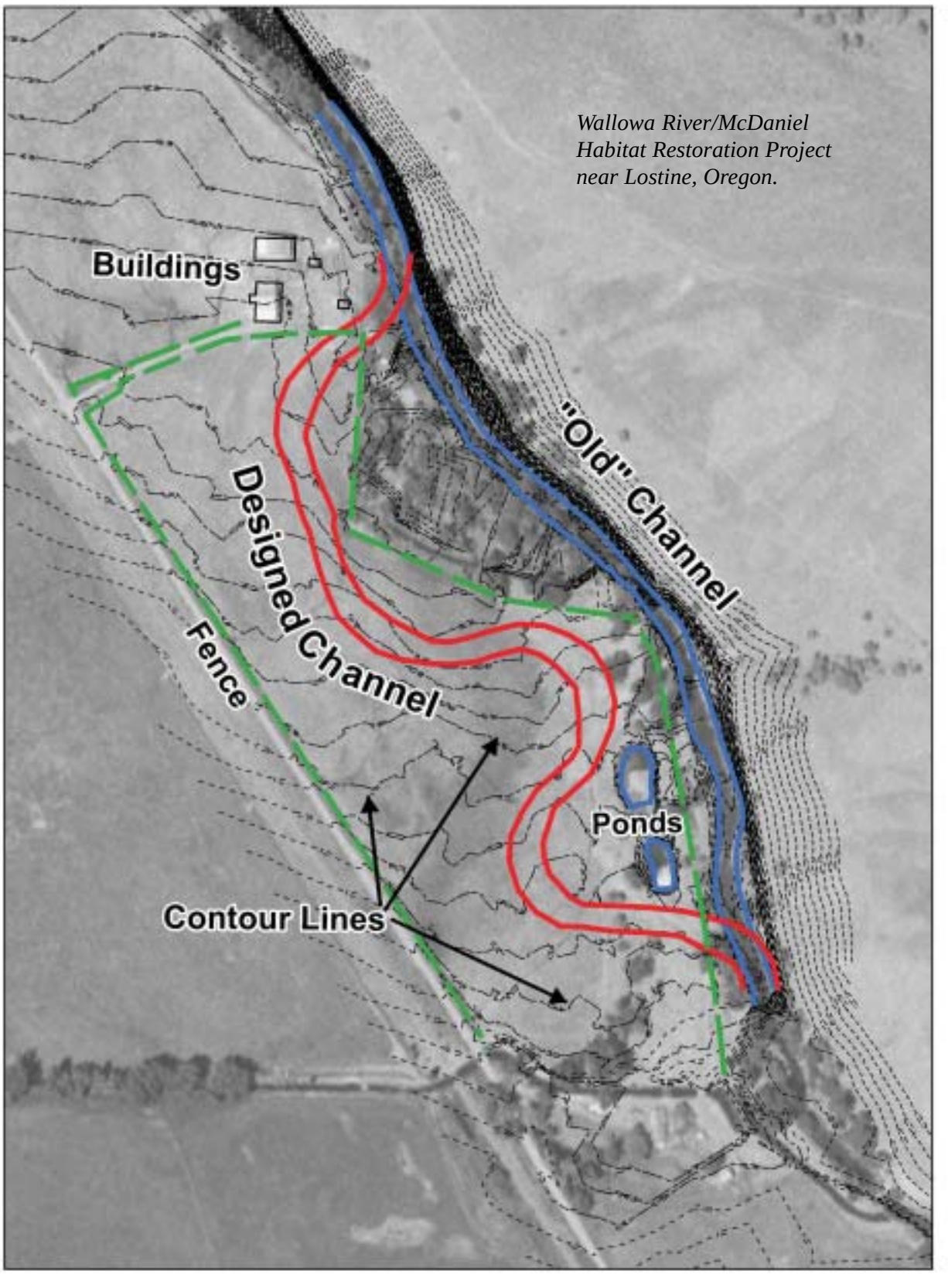
Wallowa River/McDaniel Project

Natural resource agencies and organizations frequently use GIS as an aid in assessing soil, water, habitat, plant, fish, and wildlife population conditions and planning activities to protect and/or improve conditions. The Wallowa River/McDaniel Habitat Restoration Project (*see article on Page 1*) is an example of the Oregon Department of Fish and Wildlife using GIS to implement a stream relocation project. The design and layout of the new stream channel for this project was aided by the use of GIS. Over 3,700 location and elevation coordinates were collected at the project site with a surveyor's grade global positioning system (GPS). Back in the office, the GPS coordinates were uploaded to a computer and plotted as 1-foot contour lines on top of aerial photography. This map was used to determine the best placement for the new stream channel based on topography and obstacles, such as buildings and ponds, that required re-routing the channel. By drawing the new channel location onto the computer map and uploading the coordinates to the GPS equipment, the new channel location and depth could easily and accurately be staked out on the ground for use by the excavation contractors.

Grande Ronde Watershed

GIS was also used to create the map on Page 8 showing the location of over 600 watershed restoration projects completed in the Grande Ronde Basin since 1985. Besides depicting the distribution of restoration activities, this GIS database is used by the Grande Ronde Model Watershed Program to answer questions about what the local community, governments, agencies and tribes are doing to make the Grande Ronde Basin a healthier watershed.

For each project, information is recorded about accomplishments (such as miles of fence built, acres of riparian habitat planted, etc.), habitat restoration objectives, location, cooperators, and costs. One example of information that can be derived from the project database pertains to fencing. In the Grande Ronde Basin, more than 200 miles of fence have been installed to protect 150 miles of stream and 2,500 acres of riparian habitat from livestock grazing since 1995. When it comes to fish passage, more than 90 stream sites have been treated (including improved road crossings, improved irrigation diversions, removal of obstacles) to improve salmon and steelhead fish passage. ■



Wallowa River/McDaniel Habitat Restoration Project near Lostine, Oregon.

One screwy fish **trap**

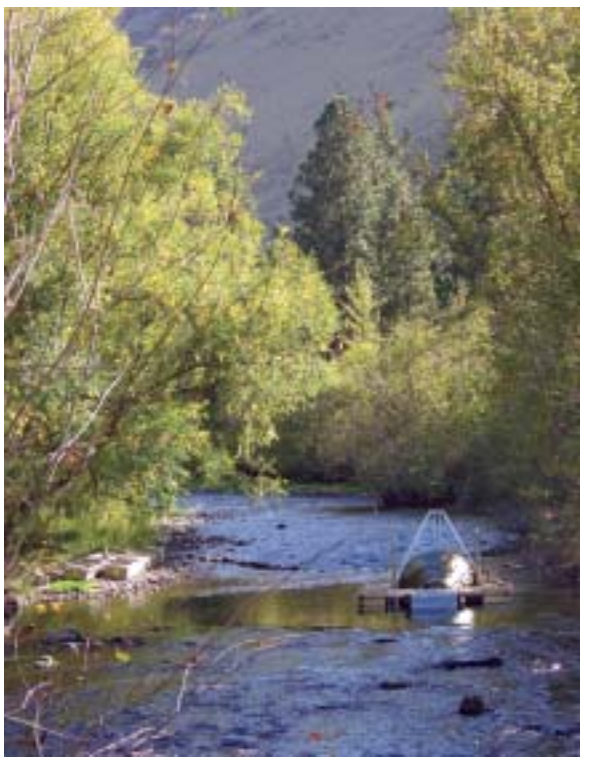
by Lyle Kuchenbecker, GRMWP

Just what are those space-capsule-looking, floating contraptions you may have seen in the upper Grande Ronde, Lostine, Minam and Wallowa rivers? They are "rotary screw traps" and they are used to capture juvenile chinook salmon and steelhead during their downstream migration. So, why trap fish?

The screw traps are used in the Grande Ronde Salmonid Early Life History Research Project being conducted by the Oregon Department of Fish and Wildlife (ODFW) Fish Research Program. The project began in 1993 to gather baseline abundance and productivity data, and to increase our knowledge of the various life history strategies of threatened juvenile spring chinook salmon in northeast Oregon streams. The study continues and has evolved into a long-term monitoring program to assess the success of habitat restoration and hatchery supplementation efforts in the Grande Ronde Basin. Currently ODFW is monitoring the production of juvenile spring chinook salmon and steelhead from four steelhead and chinook populations in the Catherine Creek, upper Grande Ronde River, Lostine River, and Minam River subbasins. The project is funded by the Bonneville Power Administration. Co-managers with the Oregon Department of Fish and Wildlife are the Confederated Tribes of the Umatilla Indian Reservation and the Nez Perce Tribe.

Why do this research?

Historically, the Grande Ronde River Basin produced an abundance of salmonids, including spring, summer and fall chinook salmon, sockeye salmon, coho salmon, and summer steelhead. It is estimated that prior to the construction of the Snake and Columbia River dams, more than 20,000 adult spring chinook salmon



returned to spawn in the Grande Ronde River Basin annually. A spawning escapement of 12,200 adults was estimated for the basin in 1957.

During the past century, numerous factors have led to a reduction in salmonid stocks such that the only viable remaining populations are spring chinook salmon and summer steelhead. Furthermore, spring chinook salmon populations in the Grande Ronde Basin have diminished in size and are substantially depressed from historic levels.

In 1999, estimated spring chinook escapement for the Grande Ronde Basin was 540 adults. The range of spring chinook salmon spawning in the Grande Ronde River Basin has also been constricted. Historically, spring chinook were distributed among 21 streams, yet today most production is limited to only six tributaries, namely the upper Grande Ronde River, Catherine Creek, Lookingglass Creek, the Minam River, the Lostine River and the Wenaha River. These precipitous declines in Snake River spring chinook salmon populations resulted in these stocks, including Grande Ronde River stocks, being listed in 1992 as "threatened" under the Endangered Species Act.

Development of sound recovery strategies for these salmon stocks requires knowledge of stock-specific life history strategies and critical habitats for spawning, rearing, and downstream migration. Before this study was initiated, it was not clear how much mortality occurred during the smolt migration, and how much occurred during fall and winter rearing. The goal of the Grande Ronde Salmonid Early Life History research is to find the answers to these questions.

A combination of techniques

The research uses a combination of mark-and-recapture, tagging, and scale-aging techniques on juvenile chinook and steelhead. Screw traps are used to monitor downstream migration timing and abundance of juvenile chinook salmon and steelhead as they leave their spawning and rearing streams and begin their smolt migration seaward. Depending on streamflow, rotary screw traps catch 2-50 percent of the juvenile chinook salmon and steelhead swimming past

Above: *Rotary screw trap in Catherine Creek to trap juvenile salmon and steelhead.* ***Right:*** *Hand-held transceiver reading a PIT tag in a juvenile chinook.* ***Right top:*** *PIT tag and inserting tag into fish.*

Objectives

- Determine migration timing and abundance of spring chinook juveniles *within* the Grande Ronde Basin.
- Estimate and compare summer steelhead and spring chinook smolt survival probabilities at mainstem Snake and Columbia River dams.
- Determine spring chinook egg-to-parr survival, parr abundance, and age composition in Catherine Creek and the Lostine River.
- Investigate the significance of alternate life history strategies of spring chinook salmon in Catherine Creek and Lostine River.
- Document migration timing, duration and smolt abundance for juvenile steelhead.

the trap. In the fall, when streamflow is low, the traps will catch up to 50 percent of the fish moving downstream. During the spring run-off, the traps may catch only 2-5 percent of the fish during peak flows, and about 15-20 percent during the average spring flows.

Juvenile chinook salmon and steelhead captured at the traps are tagged with passive integrated transponder (PIT) tags to monitor their migration past the Snake and Columbia River dams, and to estimate their survival. Survival is estimated by PIT tagging and releasing a known number of fish and then determining how many were detected as they passed through the dams on the Snake and Columbia rivers. Survival is calculated to Lower Granite Dam, the first dam that smolts from the Grande Ronde River will encounter on their journey to the ocean.

A PIT tag is a read-only tag that is programmed to transmit a unique code only when activated. The tag is an antenna coil and an integrated circuit chip encapsulated in a glass tube 12 millimeters long by 2.1 mm in diameter. It relies on an external source of energy to operate, such as a stationary transceiver/reader at a hydroelectric dam, or a hand-held transceiver/reader used by biologists at the rotary screw traps (*see photo to left*). The tag only transmits its unique code when the tag is present in the transceiver's electromagnetic activation field. The unique code of the PIT tag allows researchers to track the migration of individual fish.

What we now know

The spring chinook salmon smolt migration from the Grande Ronde River Basin occurs in spring. Data collected since 1993 indicate a substantial number of juveniles move out of upper rearing areas during fall and overwinter downstream within the Grande Ronde Basin. The proportion of the total migrant population these early migrants represent, and their survival to Snake and Columbia River dams, varies among years and streams.

In recent years, the number of juvenile chinook salmon leaving headwater streams in the Grande Ronde Basin has varied tremendously. For example, the number of juvenile chinook salmon leaving the upper Grande Ronde River has ranged from less than 1,000 to 15,000 fish, and the number of juvenile steelhead has ranged from 6,000 to 18,000 fish. The number of juvenile chinook salmon leaving the Minam River has ranged from 25,000 to 80,000 fish, and the number of juvenile steelhead has ranged from 28,000 to 45,000 fish.

Spring chinook salmon leave the Grande Ronde River subbasin and begin their smolt migration at 1 ½ years of age. Steelhead leave at 1, 2, or 3 years of age. Although juvenile migration of both species out of the Grande Ronde system takes place in the spring, there is a percentage of fish that begin their migration the preceding fall. An estimated 60-80 percent of the juvenile chinook salmon and 25-45 percent of the juvenile steelhead in Catherine Creek leave upper rearing areas in the fall and overwinter in the Grande Ronde Valley.

The number of fall migrants are considerably lower for the upper Grande Ronde River: 10-20 percent of the juvenile chinook salmon and 5-10 percent of the juvenile steelhead. For the Lostine River, the number of fall migrants are 20-40 percent of the chinook salmon and 50-70 percent of the juvenile steelhead. For the Minam River, the numbers are 20-60 percent of the chinook salmon and 5-20 percent of the juvenile steelhead. Lostine and Minam River fall migrants overwinter in the lower Wallowa River and lower Grande Ronde River.

Juvenile chinook survival from headwater rearing areas to Lower Granite Dam varies by river system and whether they began their migration in the fall or spring. On average, 15-20 percent of the juvenile chinook salmon tagged in late summer in their rearing areas in Catherine Creek, Lostine River, and Minam River survive to Lower Granite Dam the following spring. Approximately 25 percent of the juvenile fall migrant chinook salmon that leave Catherine Creek and the upper Grande Ronde River survive to Lower Granite Dam the following spring. The survival of fall migrant chinook salmon from the Lostine and Minam rivers is 30 percent. However, approximately 50 percent of the juvenile chinook salmon that leave Catherine Creek and the upper Grande Ronde River in the spring survive to Lower Granite Dam. Approximately 55 percent of the juvenile chinook salmon that leave the Minam River and 70 percent that leave the Lostine River in the spring survive to Lower Granite Dam.

The average travel time to Lower Granite Dam for fish leaving Catherine Creek in the spring is about 8 weeks, with the fastest fish arriving in 10 days, and the slowest fish taking 15 weeks. The average travel time to Lower Granite Dam for fish leaving the Minam River in the spring is about 7 weeks, with the fastest fish arriving in 6 days, and the slowest fish taking 12 weeks.

Chinook salmon juveniles that leave upper rearing areas in Catherine Creek and the upper Grande Ronde River in fall encounter conditions in the Grande Ronde Valley that are vastly different than what existed historically. Stream conditions below La Grande consist of both meandering and channeled sections of stream that run through agricultural land. Riparian vegetation in this area is sparse and provides little shade or instream cover. The fall migration from upper rearing areas in Catherine Creek constitutes a substantial portion of the juvenile production. Therefore the quantity and quality of winter rearing habitat in the Grande Ronde Valley may be important factors limiting spring chinook salmon smolt production in the Grande Ronde River.

Numerous enhancement activities have been undertaken in an effort to restore spring chinook salmon populations in the Grande Ronde River Basin. The Oregon Department of Fish and Wildlife, the Confederated Tribes of the Umatilla Indian Reservation, and the Nez Perce Tribe have initiated supplementation programs. Life history and abundance information obtained by this project was used to develop strategies for

the use of hatchery fish to enhance natural production of spring chinook salmon in the Grande Ronde subbasin. This project will be an important tool to assess the success of hatchery-produced fish in enhancing natural production.

Information collected with this research will serve as the foundation for assessing the effectiveness of on-going and future habitat restoration and hatchery supplementation programs. It was also used in the development of the *Grande Ronde River Subbasin Plan* and by the Interior Columbia River Basin Technical Recovery Team to develop recovery plans for threatened Snake River spring chinook salmon and Snake River steelhead. The Grande Ronde Model Watershed Program uses information from this project to identify and prioritize habitat projects within the subbasin. ■

Upcoming Board Meetings

The public is welcome to attend

- Tuesday, June 28, 6:30 p.m.
  Wallowa Community Center, 2nd Street, Wallowa
- Tuesday, July 26, 6:30 p.m.
  St Mary's Catholic Church, 12th Street, Elgin
- Tuesday, August 23, 6:30 p.m.
  Wallowa Community Center, 2nd Street, Wallowa

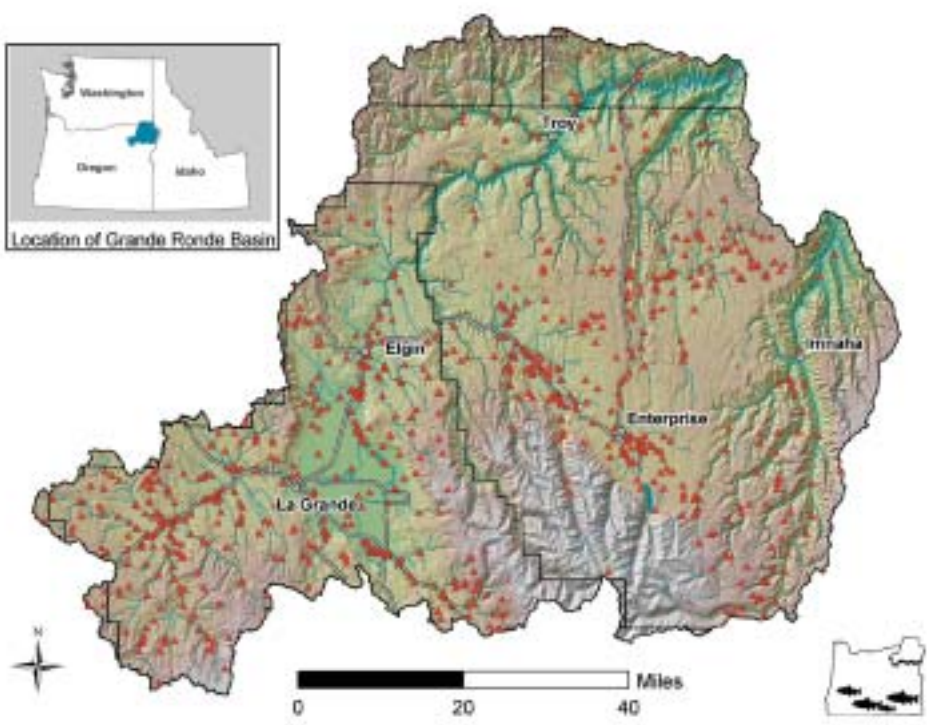
TWIST, continued from Page 2.....

over 100 pounds of riparian seed mix. Most of the material came from Doug's own property, with the Wallowa Union Railroad contributing willow cuttings from its right-of-way. Pam Harshfield provided additional rooted stock.

Doug McDaniel provided regular weed control. ODFW established 11 permanent photo points and four channel cross-sections for long-term monitoring.

In July 2005 construction will resume. The final 470 feet of reconstructed channel will be excavated to connect it to the Wallowa River, and the existing channel will be filled. The old dikes will be blended into the existing topography. Two ponds adjacent to the new channel will be re-contoured and enlarged.

In the fall, project implementation will conclude with another round of planting. The project should be completed around Doug's 70th birthday. This stretch of the Wallowa River will nearly double in length; provide excellent habitat for fish, wildlife, and other aquatic organisms; and improve hydrologic, flood plain, and water storage function. These benefits will be realized because a dedicated landowner and persistent project sponsor refused to let an opportunity supported by current knowledge go unrealized. ■



Grande Ronde Watershed

Grande Ronde Basin restoration projects implemented through the Grande Ronde Model Watershed Program, 1985-2004.

Grande Ronde Model Watershed Program

10901 Island Ave ■ La Grande OR 97850
ph 541-962-6590 ■ fax 541-962-6593

Beth Stewart, Editor
bstewart@eoni.com