Ripples in the Grande Ronde

Fall 2005

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

Catching spring chinook on the run

by Lyle Kuchenbecker, GRMW

The restoration of spring chinook in the Grande Ronde Basin involves both habitat restoration and supplementation programs. Habitat restoration often takes years, even decades, to produce noticeable benefits. In the short term, supplementation programs are vital to maintaining the long-term viability of the chinook populations. What is supplementation? It is the release and management of artificially propagated fish in streams with the intent to increase or establish wild fish populations while minimizing associated genetic and ecological risks.

The Grande Ronde Basin Endemic Spring Chinook Salmon Supplementation Program was initiated in 1995 to prevent the extinction of endemic spring chinook stocks in the Grande Ronde Basin. It is a cooperative effort among the Grande Ronde Basin fish co-managers – the Confederated Tribes of the Umatilla Indian Reservation (CTUIR), the Nez Perce Tribe, and the Oregon Department of Fish and Wildlife.

The first question one may ask is "Why is this necessary?" The second might be "What is an endemic stock?" The answer to the second question might help answer the first. A fish stock is defined as "a part of a fish population usually with a particular migration pattern, specific spawning grounds, and subject to a distinct fishery." An endemic stock is defined as "native to or limited to a specific region." Maintaining a native stock preserves the genetics of a population that has evolved over many generations. A native stock has unique characteristics that enable it to survive over the long term under conditions unique to a particular stream system. Grande Ronde Basin fisheries managers feel it is imperative that the endemic fish stocks in the Grande Ronde are maintained to preserve options for use of these stocks in future artificial propagation programs and to rebuild the Grande Ronde chinook populations.

Snake River spring chinook populations have declined in both the Grande Ronde River Basin and in the entire Snake River Basin, many to the point of extinction. The Grande Ronde River Basin historically supported large populations of spring and fall chinook. The decline of chinook salmon was a result of the

CTUIR

A 5-year-old spring chinook attempts to jump the weir (metal pickets blocking fish passage) at the upper Grande Ronde adult collection facility during the first year of collection at the site. Weir design has been modified to encourage fish to enter the trap instead of jumping over it.

combined effects of construction and operation of mainstem Columbia and Snake River hydroelectric facilities, overfishing, and loss and degradation of critical spawning and rearing habitat.

Hatcheries were built in Oregon, Washington and Idaho under the Lower Snake River Compensation Plan (LSRCP) to compensate for losses of anadromous salmonids due to the construction and operation of the four lower Snake River dams (Ice Harbor 1961, Little Goose 1970, Lower Granite 1975, and Lower Monumental 1969). Lookingglass Fish Hatchery on Lookingglass Creek, a tributary of the Grande Ronde River, was completed under the LSRCP in 1982, and has served as the main incubation and rearing site for chinook salmon used in supplementation programs throughout Oregon's Grande Ronde and Imnaha rivers. Despite these hatchery programs, natural spring chinook populations continued to decline, resulting in the National Marine Fisheries Service listing Snake River spring/summer chinook salmon as "threatened" under the federal Endangered Species Act on April 22, 1992.

Continuing poor returns (escapement levels) of adult chinook to the Grande Ronde and declining population trends indicated that Grande Ronde River Basin native spring chinook salmon were in imminent danger of extinction. Although Lookingglass Hatchery was available as the primary production facility for spring chinook programs in the Grande Ronde Basin, there were never any adult or juvenile fish satellite facilities developed in the tributary streams to be supplemented. These continuing trends led fisheries co-managers to initiate the Grande Ronde Endemic Spring Chinook Salmon Supplementation Program in 1995. The supplementation program was implemented in three Grande Ronde River tributaries – the Lostine, the upper Grande Ronde, and Catherine Creek.

The supplementation program employs two broodstock strategies utilizing captive and conventional brood sources. The "captive" broodstock program involves collecting juvenile fish (parr) in headwater tributaries and raising them in captivity for their entire life cycle. Upon maturity, the adults are spawned (the mixing of the sperm of a male fish and the eggs of a female fish), the eggs hatch, and the resulting juveniles (smolts) are released back into their natal streams. Smolts then migrate to the ocean and return three, four or five years later. The "conventional" broodstock program involves trapping adult fish during their upstream migration, spawning those fish and then releasing the first generation directly into their natal streams to migrate to the ocean and return.

The captive broodstock program began in 1995 with the collection of spring chinook parr from the three tributary streams. The conventional broodstock component of the program began in 1997 with the collection of natural adults returning to the tributaries. The Confederated Tribes of the Umatilla Indian Reservation operate the facilities located on Catherine Creek and the upper Grande Ronde River. The Nez Perce Tribe operates the facilities on the Lostine River. ODFW also operates a similar facility on the Imnaha River.

Two essential components of the Grande Ronde Endemic Spring Chinook Salmon Supplementation Program are the construction of (1) facilities to trap adults and (2) facilities to acclimate juveniles. Adult trapping required the installation of channel-spanning weirs to collect adult chinook. Initially, temporary weirs were installed in 1997 in Catherine Creek just above the city of Union, in the upper Grande Ronde River below Vey Meadows, and in the Lostine River about one mile upstream from the mouth for the collection of adult broodstock for the

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Top: The Catherine Creek adult collection facility uses a hydraulically operated weir to block upstream passage of migrating adult chinook. Fish enter a concrete collection facility along the near streambank and are then processed by CTUIR personnel. A proportion of the fish are transported to Lookingglass Hatchery and incorporated into the captive or conventional broodstock programs. The remainder are allowed to continue their migration upstream to spawn naturally.

Right: Mike McLean, CTUIR Project Leader-Production/Management, holds a 5-year-old Catherine Creek spring chinook trapped at the Catherine Creek adult collection facility, just upstream from Union.

conventional component of the program. Later more permanent facilities were installed.

The Catherine Creek adult collection facility is located approximately two miles upstream from Union. The facility consists of a hydraulically operated weir that is attached to a concrete channel-spanning wall. Trapping of adult spring chinook salmon is accomplished by directing adults into an off-channel trap through a one-way opening (fyke) into a holding area that is 25 feet long, 6 feet wide, and 6 feet deep.

The upper Grande Ronde adult collection facility is located along the Grande Ronde River Road 51, approximately 10 miles above the Starkey Store. The facility consists of a floating weir that spans the entire stream, effectively blocking upstream passage. Trapping adult summer steelhead and spring chinook salmon is accomplished by directing adults into a trapbox (fyke opening) located in the main channel near the bank. The trapbox measures 11 feet long, 10 feet wide, and normally 2.5 feet deep.

CTUIR

The Lostine River adult collection facility is located about one mile upstream from the confluence with the Wallowa River. The facility is similar to the one on the Grande Ronde River.

The weirs enable co-managers to collect all adult migrants in each of the streams. Broodstock collection at the facilities is based on a sliding scale developed by the co-managers. The sliding scale was developed to allow for increases and decreases in the number of returning naturally produced and hatchery-produced fish, and to provide a basin-specific approach to broodstock and natural spawner management. The scale is based on pre-season population estimates, and regulates the percentage of natural and hatchery broodstock to be retained and hatchery/wild ratios above the weir. For example, in 2002 in Catherine Creek, one in every five wild adult chinook were transported to Lookingglass Hatchery. In the upper Grande Ronde, every other wild adult chinook was taken to the hatchery. Adult chinook are transported from the weir sites to the hatchery using tanks on trailers. The tanks are equipped with aerators and an oxygen supply; dissolved oxygen levels are monitored during transport.

Adults are spawned in late August. The eggs hatch in March. Fry are raised to 3-6 inches over the next 11 months. Smolts are transported to the acclimation facilities in February and are released after a six-week stay. Juvenile "acclimation" facilities are necessary to provide a place and a period of time for smolts, transferred from the hatchery, to acclimate and imprint to the stream where they will be released. Juvenile fish acclimation facilities were built in 2000 for smolts produced by the captive and conventional broodstock programs. The facilities are located above the adult collection sites on each of the three streams.

Acclimation facilities vary with each site, but generally consist of raceways (tanks), pumps or gravity-feed pipes to provide stream water, and outlet pipes to return water to the stream and release smolts. Fish are transported to the acclimation facilities from Lookingglass Hatchery by ODFW personnel in tanker trucks. The acclimation period usually runs from the last week of February to mid-April. The fish are fed once per day at a variable rate depending on water temperatures. Passive integrated transponder (PIT) tags are implanted into a proportion of the fish to track downstream migration as well as their return from the ocean as adults. Fish are allowed to volitionally leave the raceways the last two weeks of the acclimation period. At the end of the acclimation period, the remaining fish are forced out. PIT tag detectors are located on the exit pipes to monitor release times.

The Grande Ronde Endemic Spring Chinook Salmon Supplementation Program will preserve the native Grande Ronde spring chinook populations into the foreseeable future. In addition to preserving the genetics of the native chinook in Catherine Creek, the Grande Ronde and Lostine rivers, the program provides adults for tribal ceremonial purposes and harvest. When returning adult numbers permit, a recreational sport fishery may also be possible. ■

CTUIR

Top: The upper Grande Ronde acclimation facility has four raceways (tanks). Water continually flows through the raceways and is supplied by gravity through intake pipes connecting to the river several hundred feet upstream of the site. Chinook smolts, transported from the hatchery, acclimate here for six weeks before release into the Grande Ronde River.

Left: The upper Grande Ronde collection facility uses a manually operated weir and collection pens. The channel-spanning weir is dropped down below water level during high flow periods and when adult fish are not migrating.

Native Grass Seed

A growing industry

by Beth Stewart, Editor

Few people are as passionate about native plants as Andy Huber. Huber is an agronomist and Oregon State University faculty member who teaches crop and soil science at Eastern Oregon University in La Grande. Back in 1993, Huber established GROWISER, a non-profit organization that owns and manages a 220-acre preserve north of La Grande atop Pumpkin Ridge. Spend a morning walking the grounds with Huber, and it becomes apparent that he knows every inch of the preserve – be it the native plant species or the soil type and depth beneath them.

Originally chosen for its large tracts of relatively pristine native plant communities, the preserve is managed for native trees, shrubs, forbs and grasses. Short for "Grande Ronde Overlook Wildflower Institute Serving Ecological Restoration," GROWISER not only provides ecological education opportunities for students of all ages, but explores ways to propagate native forbs and grasses for use in land restoration efforts. One day may find Huber plowing up a small tract of land to plant native Idaho fescue, while another finds him leading 30 sixth-graders through the preserve, teaching them the benefits of native species and testing the kids' plant identification skills.

Huber is one of the locals working closely with the U.S. Forest Service to identify native seed sources in the mountains of eastern Oregon and to encourage local farmers to grow the grasses commercially. Huber melds the botanist in him with his roots as a farm kid in Wisconsin to research techniques in growing native species on a large scale. According to Huber, it's no longer a matter of "if." Today's farming practices and technology have demonstrated that native grasses can indeed be grown on a large scale. The trick, he says, is having a reliable market for the seed to make it economically feasible and attractive to the grower.

That is exactly what the La Grande Ranger District of the Wallowa-Whitman National Forest is trying to do. Geneticist Rosemary Guttridge and botanist Penny Hall are heading up the native seed propagation program for the Forest Service in the Grande Ronde Valley. The program includes collecting seed from native grasses in the wild; contracting with local farmers to grow the seed; meeting state seed certification standards; maintaining a local supply of native seed; using that seed to revegetate areas after fires or road closures, for example; and securing the funding that makes this all happen.

Why all the fuss? Because using native plant species makes good environmental *and* economic sense. Agencies such as the Forest Service, Bureau of Land Management, Oregon Department of Forestry, and the Oregon Department of Fish and Wildlife use plants and grasses to revegetate areas after wildfires, to control erosion, stabilize streambanks, improve fish and wildlife habitat, reclaim roads now closed, and to establish desirable vegetation after killing off noxious weeds in an area. And what better way to do this than to use plant species that are native to the area – those best suited and adapted to grow in the harsh and arid conditions of eastern Oregon. Andy Huber puts it in simple terms, "They're the ones that know how to grow here." These native species are also a component of the natural plant communities and ecosystem of the area, and don't pose the threat of altering genetics or disrupting natural plant succession like non-native or invasive plant species would.

The Forest Service has issued a regional directive that native plant species be used in restoration and revegetation activities on federal lands in Oregon and Washington. Accord-

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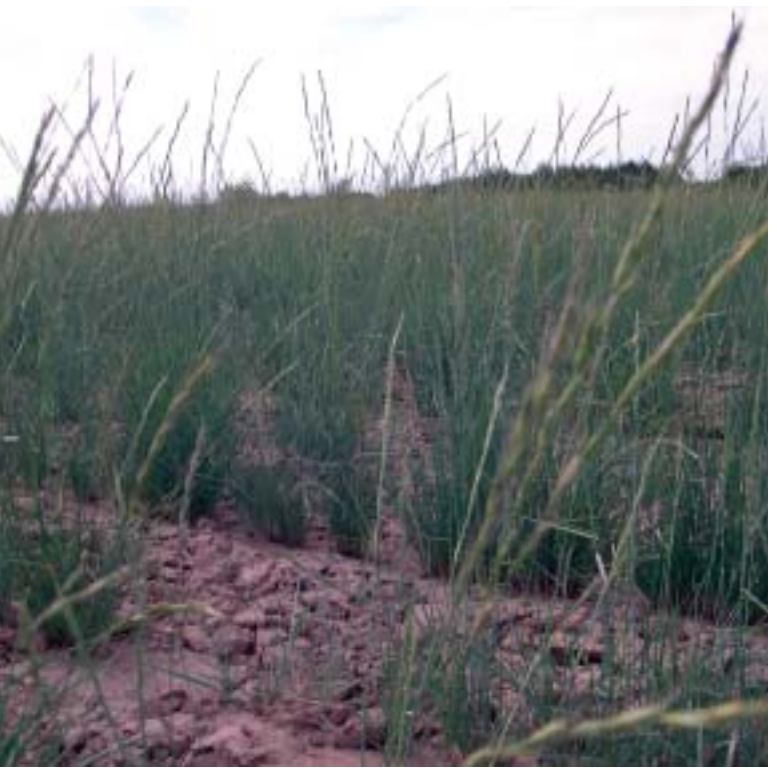
ing to Vicky Erickson, a geneticist for the three Blue Mountain national forests (Umatilla, Malheur and Wallowa-Whitman), the Forest Service is about to release a *nationwide* policy regarding the use of native plant species. "The Pacific Northwest has been a real leader in this arena," says Erickson, who administers regional contracts with growers in eastern Oregon to produce native seed. The pool of growers consists of about 10 seed producers, but the Forest Service hopes to increase that number in the near future. Erickson's role in the native seed propagation program also includes identifying the appropriate plant species to use on a particular site as well as setting guidelines for wildland seed collection, propagation, commercial harvest, and planting disturbed sites to optimize success and genetic diversity.

When it comes to collecting seed and revegetating an area, be it after a wildfire or noxious weed treatment, the goal is to match plant species, elevation and other habitat conditions as closely as possible. The closer the seed source is to the project area, the better. The La Grande Ranger District, for example, has seed from various grass species that originated from the Grande Ronde and Catherine Creek drainages, which will be stored and saved to one day plant again in those respective areas. In the future, the Forest Service hopes to be able to do the same with seeds from various native forbs, such as yarrow, lupine and penstemon.

Few will argue the advantages of using native seed; the challenge comes in obtaining the seed, and obtaining it in sufficient quantities. That's where people like Kurt Bowman and Morgan Olson of La Grande come in. Graduates of EOU in agri-business and crop science, Bowman, 30, and Olson, 29, started growing native species in 2001. This year, their Bolson Seed Company farmed 12 acres of eight different native grass species, representing 15 different contracts with the Forest Service. According to Olson, some fields are as large as five acres and some as small as a quarter acre.



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GROWISER

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Clockwise: Andy Huber, professor of crop and soil science at EOU and founder of GROWISER. The species of choice are blue wildrye (center), mountain brome, Idaho fescue, prairie junegrass, bluebunch wheatgrass, Sandberg's bluegrass, and bottlebrush squirrel tail (above). Under controlled temperature and humidity in a seedbank, native grass seed is expected to store for up to eight years. Students tour the 220-acre GROWISER preserve during the spring colors. On Pumpkin Ridge, north of La Grande, the preserve overlooks the Grande Ronde Valley.

The young, energetic growers are thrilled with the opportunity to dabble in native grasses. "It opens up a niche for people like us who can't compete with the huge growers in the valley," says Olson, who admits the process is labor intensive and not for everyone. Olson and Bowman hand harvest their fields, dry the grasses, then thrash and clean the seed by hand. "It's been a steep learning curve, but it's flattening out," says Olson.

While they build their native seed business, the two work full-time jobs in town – Bowman as a crop consultant for Western Farm Service and Olson as a technical director for the Boise Particle Board Plant. During the spring and summer, the two spend every evening and weekend tending to their crops. Olson recognizes that it will take a healthier, more consistent market before his seed business turns into a full-time venture, but he remains optimistic. "Every year we try to get smarter, reduce our costs, and increase our profit margin."

On the other end of the spectrum is grower Bill Teeter of Imbler. Teeter has been growing grass seed commercially in the Grande Ronde Valley for 30 years. Along with peppermint, wheat, hay and cattle, Teeter has 300 to 400 acres in grass for the commercial turf seed market. What would it take for him to grow native grass seed commercially? "To be able to market it at a profit each year," says Teeter without hesitation. Teeter gave it a try four years ago, but couldn't sell the native seed. There just wasn't a market for it. This fall, he's trying it again, this time on contract with the Forest Service. "If it'll make a guy money, you'll have all the native seed produced you need," says Teeter.

Guttridge and Hall of the La Grande Ranger District have already seen a drop in the cost of native seed. Ten years ago, the Forest Service was paying $15 to $20 per pound for native seed. Today, the cost is closer to $5 to $10 per pound of certified seed. "The object is to get the cost down and provide an economic opportunity for growers," says Hall, who has worked with about six growers in the Grande Ronde Valley thus far.

To date, dedicated dollars for the program have been scarce. Guttridge and Hall have been

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A lesson in chemistry

by R. Coby Menton, GRMW

It's not often that high-school and college students get to take part in "real" science. That is, step out of the classroom and into the field to collect data that professional resource managers need and value. That has changed, however, with a new partnership between the Grande Ronde Model Watershed and Eastern Oregon University in La Grande.

In the winter of 2005, EOU and the Model Watershed began a water-quality monitoring program specific to General Chemistry 206 students during the spring term and summer intern students at EOU. Dr. Anna Cavinato, professor of chemistry at EOU, is both the instructor of Chemistry 206 and the advisor of summer interns Amanda Barber, now a senior at La Grande High School, and Jessica Herrig, a junior at Union High School. Last spring and summer, Cavinato's team began monitoring water quality on End Creek before efforts began to rechannel the stream and improve fish habitat.

The rechannelization project, called the End Creek/Rice Project, is funded by the Grande Ronde Model Watershed, the Oregon Watershed Enhancement Board, the Confederated Tribes of the Umatilla Indian Reservation, Oregon Department of Fish and Wildlife, landowner Joel Rice, the Natural Resource and Conservation Service, and the Farm Services Agency. Cavinato and Watershed staff members Jeff Oveson and Coby Menton chose the End Creek/Rice Project for the student monitoring program because construction on the creek had not yet begun. Collecting "pre-project" samples and data will allow the establishment of a baseline set of data that can be compared to data collected during and after project implementation. In documenting potential water-quality change as a result of the project, students not only participate in an actual conservation project, but learn outside the laboratory and classroom environment.

Current land use at the project site, located between Island City and Summerville on Hunter Road, is irrigated agriculture. To accommodate crop production, End Creek was straightened and confined in the 1930s, resulting in drained ground for conventional tillage, a lower water table, diminished fish habitat, reduced water quality, limited riparian function, and decreased summer flows. Historically, End Creek accommodated steelhead spawning and rearing habitat. The goal of the End Creek/Rice Project is to transform the straight and habitat-deficient End Creek into a sinuous habitat-rich channel with access to its seasonal flood plain.

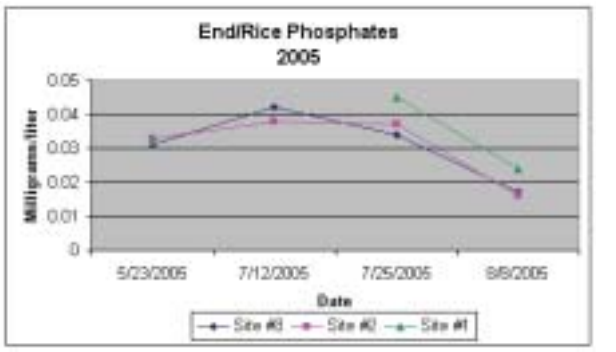
Water-quality changes are the focus of the work to be done by Cavinato and her chemistry students. In the spring of 2005, Cavinato's team began a multi-year sampling effort by sampling several water-quality parameters to document pre-construction conditions. Sampling included nitrogen, phosphorous, dissolved oxygen, pH, and total suspended solids – all water-quality parameters of concern in the Grande Ronde Basin. Three sites were sampled in the project area (one above, one in the middle, and one site at the bottom of the project), allowing resource managers to compare water quality throughout the project as well as to identify any changes that might occur in water chemistry as End Creek flows through the project site. Incorporating this sampling effort into General Chemistry 206 and the summer internship program curriculum at EOU ensures that sampling will continue during and after project completion.

Example: Phosphorous

Note: The description of phosphorous data collection is purely an example and does not imply it being more or less important than other water quality parameters.

The three sampling sites in order are Site 1 at the mouth, Site 2 mid project, and Site 3 above the project. Phosphorous data measured in milligrams per liter (mg/L) shows the following by day and site in 2005.

	5/23/05	7/12/05	7/25/05	8/8/05
Site 1	0.032	No data	0.045	0.024
Site 2	0.033	0.038	0.037	0.016
Site 3	0.031	0.042	0.034	0.017



While interpretation at this point in the monitoring program is purely speculative, as only one year of data has been collected, it appears that phosphate levels increase from spring to early summer then decline from mid to late summer. By day, phosphate levels at Sites 3 and 2 are very similar with Site 1, recording slightly elevated levels between July 25 and August 8. The Environmental Protection Agency suggests that typical natural concentrations of phosphorous should not exceed 0.01 mg/L, therefore this parameter will be critical to monitor following project completion.

The Grande Ronde Model Watershed is excited about this partnership with EOU, not only for the documentation of water quality and its change through an implemented project, but for providing a learning opportunity for students. While monitoring water quality is common throughout the Grande Ronde Basin, this type of monitoring is generally on a regional scale and not project specific. By monitoring water quality at this local level, both pre- and post-project for up to 10 years, resource managers hope to demonstrate the water-quality benefits from channel restoration projects. ■

End Creek/Rice Project Objectives

- Improve fish habitat in End Creek.
- Improve riparian function and vegetation composition.
- Raise the water table with resultant increase in upland water storage.
- Improve water quality.
- Increase flow volume in the summer months.

Meet the Staff

Coby Menton

GRANDE RONDE MODEL WATERSHED

by Jeff Oveson, GRMW

Though his job title is "Monitoring Coordinator," Coby Menton does much more than that for the Grande Ronde Model Watershed. Presently the only staff member who lives in Wallowa County, Coby is called upon to serve as the emissary to a number of Wallowa County partners, helping coordinate projects, participating in local committees and advisory groups, gauging stream flows, and generally "covering the bases" for the Grande Ronde Model Watershed in Wallowa County.

Coby usually spends one day per week in Union County with other partners and staff members, coordinating monitoring and stream gauging, with some weeks requiring the 140-mile round trip commute two or more times.

Born in Minnesota in 1970, Coby moved shortly thereafter to northern California. In 1983, he moved to Joseph, where he continues to reside today along with his wife, Deve, and their 19-month-old son, Bayden.

The years between the relocation to Joseph and today were filled with education and adventure. Coby matriculated at the University of Oregon, receiving a B.S. in geology in 1993, then followed his college career with a variety of stints at a bicycle shop, building trails, working in a bakery, landscaping, and carpentry.

In May 1996, Coby started work for the Wallowa Soil and Water Conservation District, measuring stream flow and monitoring water quality, coordinating and working with a number of partners such as the Oregon Department of Water Resources and U.S. Geological Survey, as well as a large number of private landowners.

In 2002, the Grande Ronde Model Watershed made the decision to add a position on staff, and Coby's work with the Soil and Water Conservation District made him extremely well qualified to become the Monitoring Coordinator. Today, Coby is responsible for developing and implementing a monitoring program across the Grande Ronde and Imnaha subbasins, developing and storing data available to anyone, and being there to help develop new restoration projects.

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resourceful in the past, and have partnered with agencies such as the U.S. Fish and Wildlife Service, the Natural Resource and Conservation Service, the Union County Soil and Water Conservation District, and the Federal Highway Administration for funding and support. They hope a national native plant policy will help steer more Forest Service dollars to the local program.

Following the Umatilla National Forest's lead, the La Grande Ranger District has made great strides during the past five years. Guttridge says 2005 will be the most productive year for growing native seed in the Grande Ronde Valley. With this year's crop, Guttridge expects to have nearly 6,000 pounds of grass seed stockpiled – each bag labeled by species and drainage – in the Forest Service seedbank near the La Grande Airport. That means there should be enough seed for projects already on the books as well as those not anticipated, such as the Mule Peak Fire that burned parts of the Catherine Creek watershed this summer.

Guttridge and her team at the Forest Service hope to involve more local agencies, such as the Oregon departments of Forestry, Fish and Wildlife, and Transportation, in their grassroots efforts. Like any commodity, the native grass seed market is a function of supply and demand. The larger the demand for native seed, the larger number of growers willing to supply seed. And that's good for business, no matter how you cut it. ■

Grande Ronde Model Watershed

Upcoming Board Meetings

The public is welcome to attend

- Tuesday, September 20, 6:30 p.m.
  St Mary's Catholic Church, 12th Street, Elgin
- Tuesday, October 25, 6:30 p.m.
  Wallowa Community Center, 2nd Street, Wallowa
- Tuesday, November 22, 6:30 p.m.
  St Mary's Catholic Church, 12th Street, Elgin
- December, Annual Planning Session
  Date, time and place to be announced

Grande Ronde Model Watershed staff moves to new office

We've moved! The Grande Ronde Model Watershed's new office is located at 1114 J Avenue in La Grande, Oregon. We plan to have the office up and running the week of September 26. Please visit www.grmw.org for our new email addresses.

1114 J Avenue, La Grande, OR 97850
New Phone: 541-663-0570
New Fax: 541-962-1585
Coby Menton, Enterprise: 541-426-0389

Longley Meadows Tour

On July 28, the Grande Ronde Model Watershed and landowner Carla Cunha (yellow shirt) hosted a tour of the Longley Meadows Stream Restoration Project on the upper Grande Ronde River. Among those attending were representatives of the Bonneville Power Administration and the Northwest Power and Conservation Council. Guiding the tour were project managers Allen Childs (with flip chart) of the Confederated Tribes of the Umatilla Indian Reservation and Vance McGowan (above on left) of the Oregon Department of Fish and Wildlife. Photos by B. Stewart.

Grande Ronde Model Watershed

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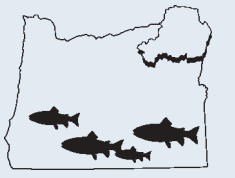

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