

Future Growth Patterns in the Willamette: A Landscape Perspective

By Paul Hoobyar

Editor's Note: The following article is the last in our series on the Willamette River. Whereas previous articles have focused on the challenges facing the Willamette Basin, this article discusses what the projected increases in future human population may mean for the Willamette Valley's quality of life and ecological resources. The editors wish to thank Stan Gregory and David Hulse, of the Pacific Northwest Ecosystem Consortium, for discussing the atlas with this writer.

What would the Willamette Valley look like if a metropolis the size of Denver were plopped in the middle of the valley—in addition to the cities of Portland, Salem, Corvallis, and Eugene/Springfield? According to a number of population and urban growth studies, by the year 2050, the Willamette Valley will have the equivalent of such a scenario—approximately 3.9 million people. That's an additional 2 million residents from 1990.¹

And, according to the recently published *Willamette River Basin Planning Atlas*, these new residents will need between 50,000 and 187,000 additional acres for housing and other development purposes.² Where this burgeoning populace will live is one of the key questions that the valley's residents will have to face.

More residents means more impervious surfaces in the form of roads, housing, retail stores, and industrial and manufacturing sites. More residents means more cars, more congestion, more smog, and more industrial and residential effluent. More residents also means

¹Extrapolated from the "Long-Term Population and Employment Forecasts for Oregon, State and County Total Populations," January 1997, Office of Economic Analysis, Department of Administrative Service, State of Oregon, http://www.oea.das.state.or.us/demographic/longterm/co_pop.htm.

²David Hulse, Stan Gregory, and Joan Baker, eds., 2002, *Willamette River Basin Planning Atlas: Trajectories of Environmental and Ecological Change* (Corvallis, OR: Oregon State University Press), 192 pp., \$55.00.

more demands on water supplies for agriculture, domestic uses, and public resources. And more residents means greater impacts on existing habitat for fish, wildlife, and ecological processes.

Is this an argument for putting a barricade across Interstate 5 and preventing more emigration into Oregon? No. However, the sheer size of the expected growth begs the valley's residents to look at the impacts of such growth on cities, rivers, and their quality of life. These population projections also underscore the need to decide whether the valley's residents want to manage such growth or just let it happen as a result of market forces.

The Willamette River and its surrounding valley already experience significant environmental challenges (see *Restoration* #29 and #30). How will Oregon address this one-two punch of millions more people living here when the valley already faces degrading aquatic and upland ecosystems?

According to polls and the voting patterns of the past couple of elections, most Willamette Valley residents want to maintain their unique quality of life. It's obvious that if the valley's residents just watch the projected growth happen, without planning for it, they may find themselves living in an environment more closely resembling California's San Fernando Valley than the present-day Willamette Valley.

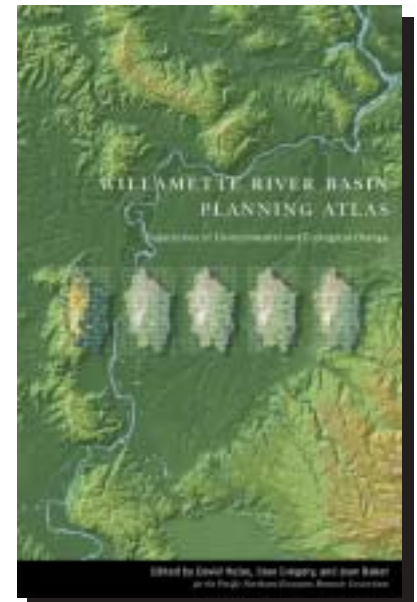
A Planning Tool for the Future

The *Willamette River Basin Planning Atlas: Trajectories of Environmental and Ecological Change* highlights these issues, as well as some of the choices that the valley's residents can make to help guide their future. It's an oversized book stuffed with computer-gener-

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The Willamette River Basin Planning Atlas is a trove of information about the Willamette Valley.

Future Growth Patterns

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ated graphics and maps that are designed to help the reader understand the effects of growth in the valley and some of the trade-offs between intentionally managing the swelling population and merely letting market forces design such growth.

The atlas introduces the reader to these issues by giving an overview of what the valley looked like between the 1850s and 1990. The authors amassed data from a wide spectrum to provide a realistic picture that highlights such attributes as human population densities, forest and vegetation types, agricultural production, fish and wildlife habitat, and road densities across time. Beginning in 1970, the atlas also provides a picture of the size and number of urban growth boundaries over time. A set of maps and computer images provides glimpses of the anthropogenic changes the valley has experienced over this 150-year span.

The greatest value of the atlas, however, comes in the section titled "Trajectories of Change." Three main alternatives are presented for what the valley may look like in the year 2050. The alternatives reflect different levels of planning and management of the projected growth. They range from allowing market forces to determine how growth will evolve, to establishing greater protection and restoration of ecological functions as a determinant to guide growth. A middle alternative projects growth using the planning and management guidelines that are now in place.

How did the authors of this section choose these categories for mapping out future growth alternatives? They enlisted a group of citizens and industry and government officials to help create different assumptions about the future of the valley. Scientists then translated these assumptions into maps of the basin that graphically represent what the land use and land cover would look like under the different alternatives.

For instance, the "plan trend" (status quo) alternative assumes that the current level of land use planning administered by the state

through the Department of Land Conservation and Development, as well as such federal policies as the Northwest Forest Plan, will continue to influence land use decisions through the year 2050.

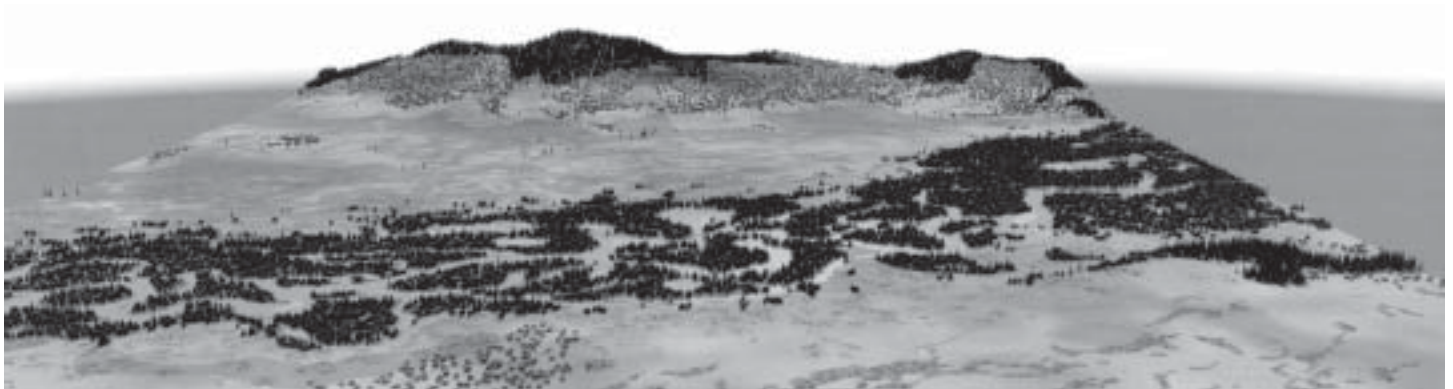
The "conservation" alternative assumes that conserving and restoring native habitats and the species dependent upon such habitats are primary. It also assumes more planning and greater restrictions will be used to decide where, and how intensive, urban growth will be.

Finally, the "Development" alternative places a higher value on market-driven forces to determine land and water uses. This alternative emphasizes short-term economic returns and assumes the state will impose fewer restrictions on development—largely by "relaxing" existing land use laws.

These alternatives are presented for a host of different attributes, from urban areas, to rural residential development, to forestry and natural vegetation, to water availability and fish and wildlife habitat. And the way they influence growth in the valley is markedly different. The atlas also provides the reader with some insights into the trade-offs between a laissez-faire approach to development and a more intentional, planned approach. For instance, the two million additional residents in 2050 are projected to occupy former agricultural land. The atlas projects that agricultural lands will be reduced in both the development and conservation options—but for very different reasons. Under the conservation option, the width of riparian vegetation buffers is increased and some agricultural lands are converted back to wetlands, in keeping with that alternative's greater emphasis on maintaining the ecological function of the watershed basin. As a result, 1 to 2 percent more of the valley's "prime" agricultural land is taken out of production under the conservation alternative than in the status quo (plan trend) alternative.

Conversely, under the development option, 6 to 7 percent more of the valley's prime agricultural land is taken out of production for development purposes than would occur under

In the year 2050, almost 2 million more residents will live in the Willamette Valley than live here today.



Computer-generated visualization of the Willamette Basin near Harrisburg, circa 1851. The view is toward the east.

the plan trend option in the year 2050. Also under the development alternative, about 129,000 acres will be developed within expanded urban growth boundaries, but another 58,000 acres of development will occur as sprawl in rural areas outside of the urban growth areas.

The atlas highlights other changes in each scenario that are today's battle lines between conservationists and pro-development constituencies. For instance, the riparian vegetation buffers in the conservation alternative (which prohibits development in these zones) are projected to be 200 feet wide for all of Portland Metro's streams, 100 feet wide for the mainstem Willamette River outside of the Metro area, and 25 to 50 feet wide for smaller tributaries of the Willamette. In the plan trend and development alternatives, no riparian buffers were designated that excluded development.

The atlas also predicts that under the development alternative, habitat for wildlife would actually increase as a result of an increase in residential yards, gardens, and hobby farms. However, the fragmented nature of these habitats leaves some question about how functional they would actually be for wildlife.

Understanding the Political Context

How likely is it that Oregonians may choose to let unfettered development dictate growth patterns in the Willamette Valley over the next 50 years, given current land use laws that have broad public support? A number of recent efforts by property rights activists have attempted to scale back the state's land use laws. These efforts provide some indication of at least the interest in such an alternative. Constitutional amendments and voter initiatives for diminishing the authority of land use laws are increasingly placed on the ballots, and bills have been introduced in recent sessions of the state legislature that advocate for "relaxing" the state's land use laws.

For instance, the number of initiatives filed by property rights activist Bill Sizemore and

the property rights organization Oregonians In Action is informative of the level of interest in changing, or rescinding, the state's land use laws. In 2001, Sizemore authored Measure 7, the constitutional amendment that requires governments to pay landowners if regulations reduce property values. This initiative is part of a national effort to address what proponents call the "taking" of property rights (or property value) by government regulation. Measure 7 had enough votes to pass but was recently found unconstitutional by the Oregon Supreme Court.

Oregonians in Action is another group active in land use and property rights issues. According to the Oregonians in Action Web site, the group is "a statewide, non-profit organization devoted solely to fighting for property rights and against excessive land use regulations."

The group has attempted to place a number of initiatives on the ballot that would relax or rescind the state's land use planning laws. For instance, it filed two initiatives this year that would have allowed landowners to develop residences on individual farm parcels through Measure 124 and Measure 125. Titled "Overrides Laws Limiting Residential Development On Farmland By Permitting Dwelling On Exclusive Farm Use Land," these initiatives didn't gather sufficient signatures, which might also be interpreted as a vote opposed to their stand.

The Economic Implications

These activities underscore the fact that some level of support currently exists for changing our land use planning laws, and they give credence to the assumptions identified in the development alternative presented in the planning atlas.

Not everything in the atlas is easily accessible. The atlas begs a few questions and uses language that makes it less than ideal for the average citizen to interpret some of the information presented. For instance, one question left unanswered is the economic effects of these

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By 2050 agricultural lands in the valley will be reduced in two of the three alternative scenarios—the "Development" and "Conservation" options—for entirely different reasons.



The same Willamette Basin reach showing actual land use in 1990. Notice the changes in stream channel complexity and the loss of riparian forest.

Salmon-Friendly Wineries Harvest More than Grapes

By John Baur

When you think of wine and fish together, you're most likely thinking of which Gewürztraminer or Chardonnay to serve with your grilled salmon. But there's another issue concerning the two, an issue people tend not to think of right away. It's the question of how that wine got to your table and what impact that process may have had on watersheds and salmonid habitat.

Fortunately for the fish, that question has been addressed in Oregon. Through an alliance of the Oregon Salmon Safe program, which until 2001 was part of the Pacific Rivers Council, and Low Income Viticulture and Enology (LIVE), a program affiliated with the Northwest Berry and Grape Information Network, a program has been developed to keep soil on the hillsides that grape growers usually select for their vineyards, and out of the region's rivers and streams.

The Salmon Safe program enjoys some enthusiastic support from Oregon winemakers. "It took millions of years to make that soil," said Dave Buchanan, co-owner of Tye Vineyards, located just south of Corvallis. "What right do we have to wash it all into the creek in just a few years?"

Tye is one of many Oregon wineries that have taken part in the program, trying new techniques to lessen the impact of their operations on the watersheds. "We're working with a large contingent of the Oregon wine industry," said Dan Kent, the executive director of Salmon Safe. "We look primarily at measures of

controlling erosion on vineyards, getting them to plant permanent cover crops. We look at a lot of other issues. Most of these tend not to be as significant for viticulture as for other sectors of the agriculture industry: Pesticide use, water use, irrigation efficiency."

The response was slow at first, Kent said. "It's taken a number of years." Kent said the program went "door to door," tracking down progressive members of the wine industry to spearhead the initiative.

The Cameron and Sokel Blosser wineries were the first to sign on. Since then more than 70 have become involved, with 23 being certified under the standards created by Salmon Safe and LIVE.

Buchanan is also owner of Beaver Creek Vineyard, the fourth-generation family farm he runs in southern Benton County. But he brings more to the table than a family history of farming. Buchanan spent 30 years as a marine biologist, working in Alaska, with the Oregon Department of Fish and Wildlife, and with Oregon State University. When he returned to run the family farm after his father's death, changing the dairy farm to a vineyard, he was well aware of the impact agriculture can have on fish habitat. So he was more than open to adopting practices that would improve both his operation and its effect on the watershed. Beaver Creek first became part of Salmon Safe in 1996, following a visit from a representative of the Pacific Rivers Council.

The biggest changes the representative suggested were not new or complicated practices. They were things to stop doing. "We were spraying Roundup. We had grass between the rows, but every spring around the grapes I'd spray Roundup to get rid of the grass around the vines." This led to the possibility of erosion, with soil being washed downhill into the creek, occluding the water.

"I wanted to keep the soil on the hillside and not let it go into the creeks," Buchanan said. "[The representative] suggested planting some low-growing hard fescue. . . . When you look at our vineyard now it looks kind of grassy. But we don't have any erosion. It saves us a bunch of money, and the soil stays on the hillside, where it belongs."

There has been another, unexpected, benefit as well, Buchanan said. Allowing the grass to compete with the vines kept the vines from getting too robust. The vines still produce plenty of grapes, but they don't become so overgrown that they hide the fruit from the

"It took millions of years to make that soil. What right do we have to wash it all into the creek in just a few years?"

—Dave Buchanan, Tye Wineries



John Baur

Dave Buchanan is one of many Willamette Valley growers using salmon-friendly agricultural practices.

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A River of Restoration Opportunity

By Travis Williams

Declining populations of native salmon and trout and the contamination of resident fish species with toxic pollutants are two results of the Willamette River's significant habitat loss and pollution. Although these problems have been the subject of many studies over the past decade, the greater question is what to do about them. When we add in the likelihood of a significant increase in human population over the next 50 years, it is easy to see why initiating efforts to restore the river now is critical.

This summer the Pacific Northwest Ecosystem Research Consortium published the second edition of the *Willamette River Basin Planning Atlas*. This updated resource provides a look at the history of the river, reviews its current status, and suggests ways to improve the river's condition in the next few decades. The publication goes a long way toward answering the question of where to focus restoration efforts.

For the Willamette Basin neophyte, the atlas also provides a detailed history of floodplains, river species, land use, and population trends and gives an account of current conditions. Its true genius, however, lies in the bold step it takes into the future to show how the river, and we, might look in 2050 and how actions taken now can affect the river then. The guide illustrates what various scenarios for the river could look like with detailed, simulated images of each alternative on the stretch of river between Eugene and Harrisburg. This imagery shows that even under the "conservation" scenario, the appearance of this stretch of river will change little from how it looks today, except for key riparian buffers and backwater areas. (Editor's note: See this issue, pages 8 and 9.)

To anyone interested in improving the condition of the Willamette River, the publication of this edition is a welcome event. It is easy to travel the Willamette and see multiple opportunities for restoration, from denuded riparian areas to long ago, cut-off side channels. In fact, the dilemma is where to focus our energy among these many areas, given that we have 187 miles of main-stem river.

Restoration is not a question of assigning blame, but one of assigning possibility. This atlas lays out the possibilities that have been arrived at with thoughtful input from a variety of "real" people. The authors added credibility to the atlas' proposals by asking various landowners and others how realistic the restoration opportunities were in different sections of the river, a process that provided

valuable ground-truthing for an otherwise important academic exercise. We now need to ask ourselves, How can this information best be used?

Under the conservation scenario, key areas appear on the map that might present the best options for riparian and floodplain restoration. Here the authors have identified areas where we can get the most for the conservation dollar spent, with the fewest limitations—based on the available research.

A concerted effort should get underway to search out these restoration opportunities. We need to identify landowners in these areas who are amenable to easements and restoration projects. We also need to identify land available for outright purchase from willing sellers.

Because there is a growing awareness by landowners that they can not only contribute to restoration but also benefit financially, linking up these people with the opportunities that exist is important. In the areas of highest ecological potential, we need to go mile by mile, examining every known opportunity and seeking to create new ones.

Other opportunities exist as well. More landowners can be encouraged to take advantage of the Conservation Reserve Enhancement Program, an underused federal program that could provide significant riparian restoration. As an example of the Conservation Reserve Enhancement Program's potential, a private landowner recently enrolled his island at the confluence of the Willamette and Long Tom Rivers in the program. This individual saw the opportunity for restoration of a significant portion of the island. He also saw the opportunity to receive compensation for replanting significant sections of the island with native species. This is a beautiful section of the river, one that is not unlike many others on the upper Willamette. This case shows other parties that they can benefit from restoration efforts on the main stem and tributaries.

In the example above, Benton County is also a key partner with a very active role. The county will be facilitating an easement on this section of the river. This is the kind of opportunity that we need to seek and the kind of approach that the atlas indicates is needed.

What is needed is a statewide effort that recognizes and rewards preservation on private lands.



Travis Williams

Travis Williams is director and riverkeeper for Willamette Riverkeeper, a Willamette Valley nonprofit organization that seeks to protect and restore the Willamette River.

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Science Panel Amasses Data about Agricultural Impacts

By Paul Hoobyar

The latest report from the Independent Multidisciplinary Science Team (IMST), the technical review and advisory panel of scientists for the Oregon Plan for Salmon and Watersheds, shows a strong relationship between current agricultural practices in western Oregon and declines in salmon populations and watershed health. Although the report, entitled *Recovery of Wild Salmonids in Western Oregon Lowlands*, also focuses on road and transportation systems in western Oregon lowlands, its main significance lies in its detailed analysis of existing research on agricultural practices.

Stan Gregory, a fisheries biologist at Oregon State University and one of the panel's scientists, said that the report is "a summary of lowland agricultural systems and amasses all the available data that we could find."

Gregory, a professor in the OSU Department of Fisheries and Wildlife, called the report "a first for the agricultural lowlands systems. I can't point to any other state that has completed a comprehensive review of the environmental consequences of land use practices in lowlands."

The report cites numerous studies that indicate the detrimental impacts of agricultural practices on salmon populations in the low-elevation, low-gradient reaches of western Oregon's rivers. For example, the report states that "In the Oregon Coast Range, Nickelson et al. (2001) observed an estimated four-fold reduction in coho salmon smolt capacity at a low-elevation agricultural site, compared with adjacent state-owned forest land" (p. 25).

The report cites extensive changes to the Willamette Valley's riparian forests (over 40 percent converted to agricultural use by 1990). It notes impacts attributed to agriculture, including soil erosion, increased runoff, and leaching of pesticides, herbicides, fertilizers, and nutrients known to be detrimental to salmon.

The authors write that "In another study, Ewing (2000) sampled herbicides from tributaries in forests, agricultural areas, and small municipalities in the Alsea watershed. . . . The highest levels of atrazine and hexazinone (483 ± 16 ug/L and 188 ± 30 ug/L) were found below an agricultural site. These high levels could have potentially harmful effects on aquatic organisms" (p. 78). Elsewhere, they state that

"Typically, agricultural croplands and confined animal feeding operations are a greater source of nutrients than forests and pastures" (p. 80). The report further explains that nutrients in excessive concentrations can be detrimental to fish.

The report also looks at water diversions that deplete streams at critical times for juvenile and returning salmon, block passage of fish, or divert fish to croplands. "Nichols (1990) identified over 40,000 surface water diversions in western Oregon where surface water is removed from rivers and streams, primarily for agriculture. Unfortunately, the vast majority of diversion structures were found to be unscreened (over 98%), and, as a result, they may have significant impacts on fish populations in western Oregon lowlands" (p. 62).

Gregory noted that many of the studies they cited in the report were designed at a "very small" scale. The small number of studies and the small scale of most studies preclude any broad conclusions. And the report studiously avoids making such broad conclusions about agricultural practices or their impacts on salmon and aquatic resources. Yet, the power of the lowlands report is that it aggregates all of the existing research into a tome that shows a strong relationship between current agricultural practices and salmon and watershed decline.

When asked why the report doesn't make a broad concluding statement about the impacts of agriculture on watershed health, Gregory noted that the charge of the science team is not to "get into policy."

"The IMST's charge," Gregory said, "is to look at the science behind the practices, not to direct what agencies or government should be doing." Gregory noted that "We [the science team members] don't think that it's appropriate for the IMST to dictate about policy or recommend specific actions to the agencies charged with management of these activities." Other members of the IMST are John Buckhouse, Department of Rangeland Resources, Oregon State University; Wayne Elmore, Bureau of Land Management, U.S. Department of Interior; Kathleen Kavanagh, Forest Resources Department, University of Idaho; William Percy, College of Oceanic and Atmospheric Sciences, Oregon State Univer-

"Approximately 90% of the declines in Pacific salmon stocks are thought to be related to habitat degradation."
—*Recovery of Wild Salmonids*

The IMST Web address is www.fsl.orst.edu/imst

sity; and Carl Schreck, Department of Fisheries and Wildlife, Oregon State University.

The lowlands report relies in many instances on the scientific work done for the *Oregon State of the Environment Report* (see the summer 2000 issue of *Restoration*), particularly in water quality impacts in the lowlands.

“The *State of the Environment Report* showed that the lowland systems are where the people live and where the impacts are higher,” Gregory said. “Basically, people equal impacts.”

The lowlands report reinforces that conclusion. The report also makes offhanded statements that would grab headlines in another context. For instance, the public hears frequently that Pacific salmon declines are a function of multiple processes, such as El Niño climate changes, ocean productivity, and other macro forces outside the control of humans. The lowlands report dispenses with that perception: “Approximately 90% of the declines in Pacific salmon stocks are thought to be related to habitat degradation” (p. 22).

The report concludes with a set of recommendations directed at Oregon State agencies that IMST believes can implement or effect changes in management. Gregory noted that some people have criticized the science team for not being more prescriptive about riparian buffer widths in specific areas, for example, or about other site-specific recommendations. Yet he believes that the first two recommendations by the science team in the lowlands report are “huge.”

Recommendation #1 is for the state to “develop and implement a landscape approach to salmonid habitat in western Oregon lowlands” with a goal “to achieve greater consistency in riparian zone management across land uses.” This recommendation also includes establishing greater habitat protections and restoration efforts in the lowland reaches and creating better connections between high-quality habitats in lowland areas.

Recommendation #2 calls for a statewide riparian policy that is consistent across all land ownership and land uses. This recommendation, along with the

recommendation to create a statewide policy for the management of large wood in and near streams (to increase the availability of large wood in lowlands) and recommendations to better determine the fish abundance in lowland streams, underscores the science team’s emphasis on managing watersheds at a larger spatial scale and across multiple land uses (and multiple agency mandates). It also points to the need for greater management and assessment of the ecological processes in the lower stream reaches of western Oregon.

Gregory noted that one of the challenges in developing the lowlands report was the lack of available data. “Most of the lowlands are in private lands and not as much data exist as for forest practices.” Gregory also noted that these areas are in much more complex social systems, which adds to the challenges of managing them for ecological outcomes, as well as gathering research data in them.

Some of the team’s recommendations are specifically targeted to better assess, or mitigate, the effects of agricultural land uses on salmon populations. For instance, recommendation #8 says that the Departments of Agriculture and Environmental Quality “should establish the effects that land use activities in western Oregon lowlands have on salmonid populations and habitat quality.” Recommendation #9 suggests that the Department of

“People equal impacts.”
—Stan Gregory,
Oregon State
University

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The Lowlands Report highlights the importance of agricultural practices that support streams and riparian areas.

Natural Resources Conservation Service

Future Growth Patterns

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different scenarios. Under the conservation alternative, for example, the authors predict that by 2050, the amount of water left instream (through transfers of water rights) will have increased 10 percent from 1990. This increase in streamflow is projected as a result of the transfer of agricultural lands to riparian buffers; the irrigation water rights would be converted to instream rights at the time of the transfer. In addition, wetlands and other habitat designations would decrease the amount of irrigated agricultural acreage and the correspondingly large demand for water that agriculture necessitates. The authors also predict water savings through enhanced irrigation efficiency and “an 8% reduction in municipal per capita water consumption rates relative to Plan Trend 2050” (p. 90). How this 8 percent municipal reduction will be achieved, they do not say, nor do they give an economic analysis of the benefits or costs of increasing these instream rights.

Presumably, if more water is left in the streams, there will also be an increase in habitat for fish and other water-dependent species. Increasing salmon populations, for instance, could have a direct economic benefit for both recreational and commercial fishing and the nearby communities. In addition, the costs of addressing temperature-related water quality problems, as well as other Clean Water Act parameters, such as dissolved oxygen, could be reduced because fewer water-treatment facilities would be needed. These economic benefits, although difficult to quantify, are not

conceptually discussed in the atlas, so readers have to make their own interpretations.

Conversely, costs are also associated with making less water available for out-of-stream consumption. Less water for agricultural production, for public and private uses, such as parks, golf courses, and other water-based recreation, likely is the result of increased instream allotments. Any costs associated with such changes are not discussed.

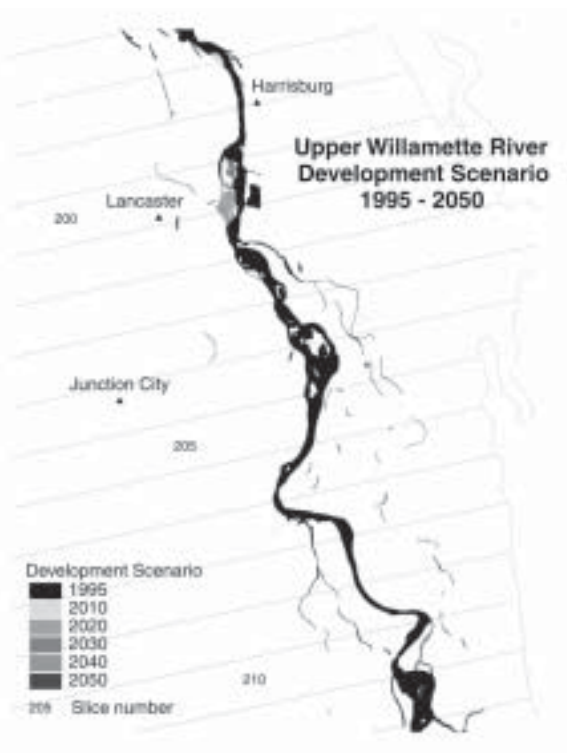
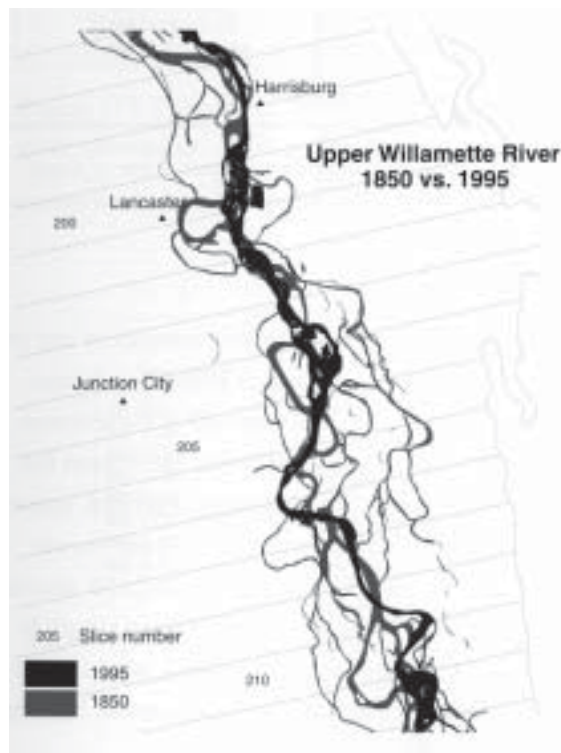
Another case in point is the economic impact of putting private, nonindustrial forest lands on 150-year rotations. The atlas makes assumptions in the conservation alternative about private landowners’ moving toward such longer harvest rotations. Yet, potential costs are associated with such practices for landowners who opt for longer harvest rotations. These costs are longer intervals between harvest-generated revenue and a longer time frame in which cash is expended in the form of management costs for thinning, pest management, and other activities between harvests.

On the other hand, longer harvest rotations have some economic benefits, such as the higher market value that mature timber receives in the marketplace and the increase in ecological function associated with fewer harvests and fewer intrusions onto the land by heavy equipment. These benefits can be in the form of more natural drainage patterns and less soil compaction. The reader would be in a better position to understand the trade-offs of the different alternatives if some discussion of the potential economic impacts of the various alternatives were provided.

Another challenge the atlas presents is its use of technical jargon. Most of the text is easily accessible for a broader audience.

What is the economic impact of decreasing agricultural lands by 248,000 acres?

The Willamette River Basin Planning Atlas includes numerous graphics, such as this one showing past, present, and future stream channel configurations.



However, the authors occasionally revert to techno-speak that glazes this reader's eyes. To wit: "Using a consistent analytical framework, longitudinal patterns in selected biophysical and socioeconomic characteristics are quantified along the entire river length, from Eugene to Portland" (p. 131).

Conclusion

Aside from the two shortcomings discussed above, the atlas provides fascinating tidbits of information that stimulate the reader's thinking about the valley's future. For instance, under the "Water Availability" section, the reader learns that in August 2050, under the status quo (plan trend) alternative, agriculture is expected to consume 165 percent of the 1990 levels of water used, and in September 2050, agriculture is expected to consume 220 percent of 1990 levels. Conversely, under the development alternative, these expected rates of consumption are held to 133 percent of 1990 levels in August and 171 percent in September. The difference in the consumption rates is attributed to more agricultural land's being converted to residential uses in the development alternative and to the fact that residential use consumes less water than agriculture does.

Finally, the atlas provides some ideas on what the watershed might look like 50 years from now. Given the current interest in restoring degraded fish and wildlife habitat, it's worth thinking about how much restoration the valley's residents might want to engage in by the year 2050 or strategies for restoration in the interim. The authors focus on restoration of the main-stem Willamette River and its

floodplain as an example of the potential for restoration in the basin.

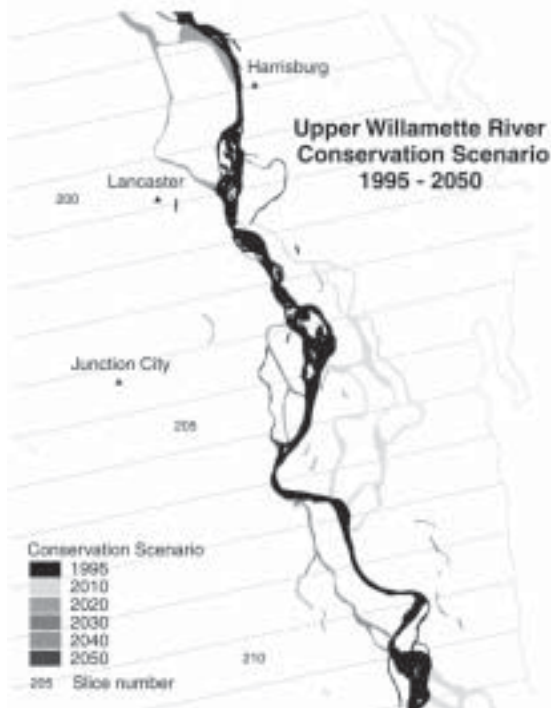
The general approach the authors advocate is sensible: "Areas with high potential for ecological recovery and low socioeconomic constraints have the greatest potential for future restoration. Areas that combine low potential for ecological response with high demographic and economic costs are likely to be poor choices for restoration" (p. 131).

They then assess the potential for restoration of the stream channel, the floodplain vegetation, revetments, and "human systems" (cities, towns, freeways, and so on). They also look at the economic considerations of restoration. This section ends with a discussion of priorities for restoration.

Oregonians will experience a huge influx of population into the Willamette Valley over the next 50 years. The authors of the atlas consistently say that they and others who have studied this issue believe that the changes proposed for the Willamette during that period, under any of the alternatives, will not be as dramatic as the changes the valley has experienced since the 1850s. However, whether the valley's residents can retain much of the remaining habitat richness and open space will hinge, at least in part, on how population and urban growth are managed. This atlas is the best tool out right now to help understand what the options and trade-offs might be. It should become a dog-eared, ready reference for watershed councils, smart growth groups, community planners, and anyone else interested in these issues.

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What are the economic impacts of putting private nonindustrial forest lands on 150-year rotations?



Media Received

State Sustainability Web Site Posted

The state of Oregon has created a new Web site: www.OregonSolutions.net. A result of Governor Kitzhaber's Executive Order on Sustainability, it's designed to develop and promote policies and programs that will assist Oregon in meeting a goal of sustainability within one generation—by 2025. The Web site is designed to be an easily accessible, central location where people can share ideas, experiences, progress, and information on sustainability.

Conservation Grants Web Site

A wide variety of grant opportunities with deadlines through December 2002 can be found at the Conservation Grants Web site at <http://www.conservationgrants.com/water.htm>.

Film of the Elwha River Dam Controversy

Bullfrog Films has recently produced a film titled *Unconquering the Last Frontier*. The Elwha Klallam Tribe is featured as having survived both the damming and undamming of the Elwha River in Washington, making it an excellent educational tool. Visit <http://www.bullfrogfilms.com/catalog/ulf.html> for film details and ordering information.



New Book on Drinking Water Published

Water To Drink: Sustaining Watersheds and the People Who Need Them is a new resource that includes community-based examples of how our human resource demands can be managed within ecological constraints. It includes pictures and stories, as well as educational and technical information. The publication is a reference for groups,

individuals, and agencies concerned with watershed management. For details and ordering information, visit <http://homepage.mac.com/WatertoDrink/>.

Technical Assistance Database

For the Sake of the Salmon has launched a new "Technical Assistance Database." The database is designed to make connections between watershed groups and individuals needing technical assistance with in-the-office, instream, and on-the-ground watershed restoration projects, and firms, agencies, and individuals who have the technical expertise to assist with the implementation of such projects. For more information, visit <http://www.4sos.org/tad/tadsearch.asp>, or call 503-233-8511.

Eugene and Salmon Protection

Eugene wants to hear from property owners on proposed rules. The City of Eugene is taking comments from property owners regarding new, proposed rules for salmon protection. City staff has proposed 75-foot development setbacks and 45-foot "transition areas" with limited development along the banks of the Willamette River and its tributaries to help in salmon recovery efforts. Phone your comments to Neil Bjorklund, Natural Resource Planner, City of Eugene, at 541-682-5507, or send comments via the Web at www.ci.eugene.or.us/salmon.

Oregon's Oceans Policy Group Recommends Establishing Marine Protected Areas

A broad-based stakeholder group appointed by Governor Kitzhaber recommended by a nearly unanimous vote in August that marine protected areas should be created off the coast of Oregon (see *Restoration*, spring 2000). These initial protected areas would also be monitored closely as part of an experimental program to determine their effectiveness as a conservation tool before they are widely implemented.

Included in the Oregon Ocean Policy Advisory Committee's report is the recommendation that "before designing any specific marine reserves, Oregon acquire additional information and conduct additional study, analysis, and deliberation through an open, public process with extensive stakeholder involvement." For a copy of the Final Report to the Governor and information on the advisory committee, see: www.oregonocean.org/index.shtml.

Salmon-Safe Wineries

Continued from page 4

sun. And the extra space between the vines helps control fungus.

Salmon Safe guidelines also make sure growers irrigate young vines efficiently and carefully, to prevent wasting water and to keep soil from washing into the watershed. After vines become established and productive, in about three to four years, they need little if any watering, except occasionally to help prevent frost damage.

Salmon Safe vineyards also need to keep a riparian buffer strip between the vines and the creek. At Tyee, Beaver Creek flows through a dense growth of native trees. Standing at the creekside, it's almost like being in the woods, despite the fact that the vineyard is less than 100 feet away. And Buchanan recently planted even more trees to increase the buffer. Any soil that washes down the hill despite the grass growing around the vines will be stopped at the buffer, long before it can cloud the stream and bury the habitat necessary for salmonids to reproduce.

Educating growers is one side of the Salmon Safe project, Kent said. Educating consumers is the other. "People would see the Salmon Safe signs and think, 'Oh, that must be good with salmon,'" Kent said. "It pointed out the need to provide some education."

From 1997 to 1999, Salmon Safe did educational displays in wine shops and grocery stores, even Fred Meyer. The money for that part of the program ran out, so Salmon Safe now works with the wine industry.

John Baur is the science writer with Oregon Sea Grant in Corvallis.

A River of Restoration Opportunity

Continued from page 5

If we fail to take the next key steps, using some of the atlas' information, we will waste years of careful research. All policymakers involved with the Willamette River, from congressional representatives, to state legislators, to county commissioners, to city councilors, need a copy of this document. There is little chance of making informed decisions about the river without it.

Now is the time to get our hands dirty, to work outward from the river, and together, to seize this great river of restoration opportunity. Let's determine whether these areas of highest ecological opportunity can also yield the greatest degree of restoration understanding and, potentially, a renewed river ethic.

Science Panel Amasses Data

Continued from page 7

Agriculture should improve the "technical strength of their program" to "address salmonid habitat requirements." The team goes on to recommend that the Department of Agriculture's Water Quality Monitoring Program should be changed to "include a description of how the plan will contribute to salmonid recovery, and to specifically address factors contributing to salmonid population declines." The team characterizes the agricultural "Water Quality Monitoring Plans" created under Senate Bill 1010 as "not technically strong" because they don't focus specifically on water quality, water quantity, habitat quality, and riparian conditions.

Other recommendations focus on reducing sedimentation and excess nutrients from agricultural lands, minimizing adverse impacts from pesticide uses on agricultural lands, and increasing the research and monitoring of these activities to better understand how all of them affect salmon populations. The team's final recommendation is to "prevent loss of salmonids because of water diversions."

Will changes occur as a result of the lowlands report? Gregory noted that one of the strengths of the report is that "it brings a lot more agencies to the table." He explained that once a report from the science team makes a recommendation for an agency to take some action, that agency has six months in which to respond.

"Essentially, the report starts a dialogue about these issues between the affected agency, the science panel, and state government," Gregory said. What that dialogue will sound like, given the state's current financial shortfall and changing political lineup, is unknown at this time. Nonetheless, the lowlands report cries out for change in agricultural practices in the watersheds of western Oregon.

(All 10 reports can be found at www.fsl.orst.edu/imst/reports/techindex.html, or www.fsl.orst.edu/imst/reports/2002-01.doc.)

Correction

In the previous issue, Steve Greenwood was incorrectly described as the deputy director of the Department of Environmental Quality. Mr. Greenwood was the western Oregon regional administrator. The editors apologize for any confusion that resulted from this error.

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Calendar of Events

Measuring Success: A Workshop on Biodiversity and Habitat Indicators at Multiple Scales

October 30, 2002 (8:45 to 5:00), Oregon State University Willamette Room in the LaSells Stewart Center. For more information: 503-697-3222; e-mail: kstirling@defenders.org; Web: www.biodiversitypartners.org.

Listen to the Ripples

Joint conference between the Oregon Watershed Enhancement Board and the Oregon Association of Conservation Districts. November 20-22, 2002, Deschutes County Fair and Expo Center, Redmond, Oregon. Cost: \$140 for early registration. For more information, call 503-986-0181 or visit www.oweb.state.or.us.



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