

RESTORATION

A NEWSLETTER ABOUT SALMON, COASTAL WATERSHEDS, AND PEOPLE

Oregon Sea Grant • Winter 1999 • FREE

Refugia-Based Approaches: Trends in Salmon Conservation Strategies

By Paul Hoobyar

In 1892, U.S. Fish Commission agent Livingston Stone urged his contemporaries to "provide some refuge for salmon, and provide it quickly After the rivers are ruined and the salmon are gone, they cannot be reclaimed" (Stone, 1892). Most of the efforts to sustain salmon in the intervening century have focused on artificial production instead of, as Stone suggested, protecting the watersheds on which salmon depend. Often called "refugia-based strategies," these approaches rely on identifying and protecting places where ecological functions support a multitude of plant and animal communities, including salmon.

Although the realization of this idea has been slow for salmon, refugia-based approaches for other wildlife gained popular support in the past century. For example, Ducks Unlimited, a conservation group of hunters and waterfowl enthusiasts, supports "the habitat needs of North America's waterfowl and other wildlife by protecting, enhancing, restoring, and managing important wetlands and associated uplands" (Mission Statement,

<www.ducks.org>). Ducks Unlimited has contributed to the conservation of more than 8 million acres of wildlife habitat, and now waterfowl preserves exist throughout North America. The federal government has also supported the concept through national parks and national wildlife refuges.

Although no similar preserves exist for salmon, proponents of refugia-based salmon strategies have made gains in recent years. In the early 1990s, for instance, the Northwest Forest Plan unveiled its Aquatic Conservation Strategy. The basis of the Aquatic Conservation Strategy plan was the designation of nearly 200 "key watersheds" throughout the region that would create "a large system of refugia comprising watersheds that are crucial to at-risk fish species and stocks" (USDA, 1993). The framers of the Aquatic Conservation Strategy thought that the best way to protect and restore functional freshwater habitats would be to couple key watersheds with (1) riparian reserves (where land use is restricted along streams); (2) watershed analysis (to determine how the watershed is functioning, where restoration and protection would be effective, and where, if possible, resource extraction activities could take place); and (3) watershed restoration.

In addition, late successional reserves were created in the Northwest Forest Plan as large reserves to help protect threatened species and biodiversity. According to

IMPORTANT

Reader survey inserted in random copies. If you get one, *please* complete it and send it in.

Gordon Reeves, one of the principal scientists involved in developing the Aquatic Conservation Strategy, late successional reserves and key watersheds "match very closely, and the combination affords more protection for fish than either alone." Reeves also notes that "Key watersheds are not reserves in the sense that the general public probably thinks. Activity is allowed within key watersheds but requires a watershed analysis first. Key watersheds are not preserves . . . and by themselves, will not insure the recovery of salmon populations."

Key watersheds and the Aquatic Conservation Strategy met with strong opposition, however, from the timber, mining, and agricultural industries, as well as from many counties and local communities whose economies depended on the continued extraction of resources from federal lands.

There were other attempts to use refuge-based approaches for salmon and watersheds. In 1994, Bill Bradbury, then president of the Oregon State senate, asked a group of scientists and professionals to develop a framework for prioritizing watershed restoration work, regardless of land ownership. "There is

In this Issue:

- Executive Order Changes Agencies Statewide 4
- Hatcheries Challenged ... 6
- New Forest Practices Advisory Committee 7

Continued on page 2

Refugia-Based Approaches

Continued from page 1

little question that we are not going to be able to do everything we want to do for salmon immediately,” Senator Bradbury wrote, “So how do we decide what we should do first?”

THE FAILURE RATE OF RESTORING DEGRADED ECOSYSTEMS IS FAR GREATER THAN THAT OF PROTECTING FULLY FUNCTIONAL SITES.

Federal, state, and private scientists involved in the project, known as “the Bradbury process,” agreed that the “most important first step is *protection* of relatively intact, functioning areas. This is because protecting functioning ecosystems is much more certain and less expensive than restoring degraded ecosystems, and it is the relatively intact areas that provide the source populations for recovery of native fish populations” (Nehlsen, 1995).

Six months in the making and involving 30 scientists and resource professionals, the document created little interest, although some restoration efforts have used it. The Umpqua Watershed Council is currently using a modified version of the process, and other groups have adapted the established principles.

Refugia-based approaches continue to gain salmon and watershed supporters, even if that support has grown slowly. Today, increased recognition of this approach by resource professionals may be helping to broaden support among wider constituencies. For instance, the writers of a 1997 draft of the *Watershed Assessment Manual*, released by the Governor’s Watershed Enhancement Board, led the user through a series of data- and information-gathering exercises to determine the condition of the watershed. The authors noted that “Because the failure rate of restoring degraded ecosystems is far greater than that of protecting fully

functional sites, protecting and preserving intact ecosystems should represent the first priority of any watershed-scale restoration program” (GWEB, 1997).

Another example of increased endorsement for refugia-based approaches comes from a group called the Coalition for Watershed and Salmon Health, which includes the Oregon Business Council (an independent organization of Oregon business executives), the Oregon Forest Industries Council, Oregon Trout, Defenders of Wildlife, and The Nature Conservancy. The coalition is currently proposing a major overhaul of the Oregon Plan for Salmon and Watersheds. Their proposal is divided into two sections: “Watershed Health” and “Governance.”

The “Watershed Health” section advocates that “habitat management should follow three basic principles: (1) *It is more cost effective to protect habitat than to restore it* (emphasis added); (2) restoration activities should be designed to take advantage of the stream’s natural healing process

and capacity; and (3) restoration and mitigation efforts must be prioritized and cost effective.” While the emphasis is on the *cost-effectiveness* of habitat protection, the implied message is that such habitats are presumably “functional”—that is, they have the capacity to support salmon and the biological processes upon which they depend, and therefore society needs to prevent their demise instead of relying on the restoration of already degraded habitat as its sole strategy.

Whether the coalition’s proposal will be accepted by the legislature and the public is still uncertain. But the salient point is that executives in some of Oregon’s largest industries—wheat, timber, hydroelectricity, and even aluminum producers—are supporting an approach to salmon restoration that includes habitat protection as well as habitat restoration. Does this mean that the timber industry will forego entering roadless or de facto wilderness areas in the future if those areas are determined to be highly productive for salmon? Does it mean that

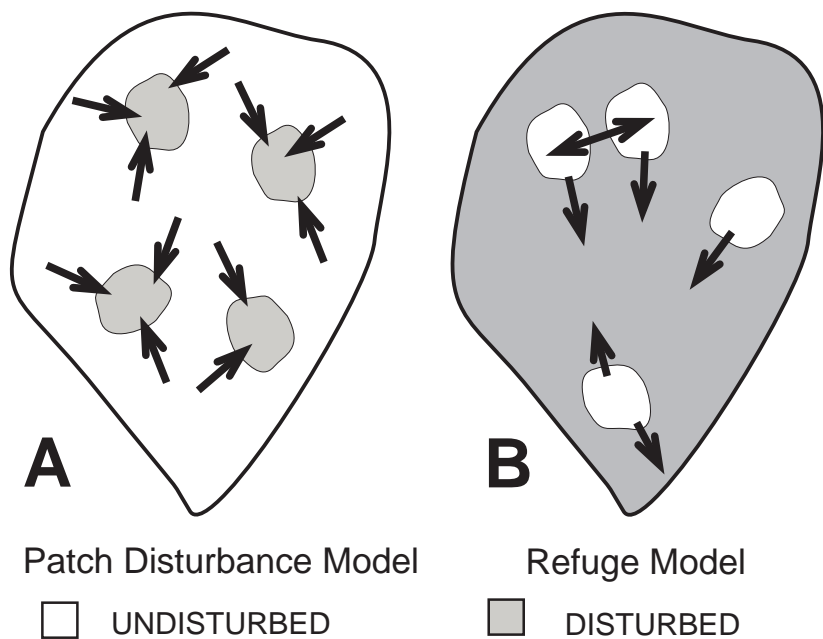


Figure 1. The changing context of habitat management and recovery. In A, degraded habitats (shaded) are isolated patches within high-quality, richly inhabited areas. Abundant, well-connected populations supply a steady source of colonists (arrows) to reestablish or supplement populations in disturbed areas. Whereas A may be a good model of the historical condition, case B is probably a more accurate model of current conditions. Here, high-quality habitats are isolated remnants in a disturbed and degraded habitat. The fragmented habitat islands or refugia provide relatively weak and localized sources of colonists (arrows). Source: C. Frissell, *A new strategy for watershed restoration and recovery of Pacific salmon in the Pacific Northwest*, 1993, Pacific Rivers Council, Eugene, OR, p. 26.

builders and farmers will create "set aside areas" that have been designated as having a "high" habitat ranking for salmon? No one knows at this point. But if this proposal accurately reflects the views of its coalition members, then support for identifying and protecting refuges may be growing within broader constituencies

A question remains, however. Assuming that refugia-based approaches gain acceptance by a wider public, do we have any proof that they actually work?

One long-term study of watershed restoration on a tributary of the Siuslaw River provides some answers to that question. The eight-year-old restoration project on Knowles Creek identified and protected the refuge areas within the basin as the foundation of its strategy. The project is a collaborative effort with the Mapleton District of the U.S. Forest Service, the John Hancock Timber Resources Group (an industrial landowner with large holdings in the Knowles Creek basin), Oregon's Department of Fish and Wildlife, and the Pacific Rivers Council.

Through closely monitoring Knowles Creek salmon populations over time, the project produced data showing that during the highest flood on record and the worst drought on record, coho fry survived by retreating to the few refuges where wood, sediment, and cobble were retained in a combination that supported them and other species.

After the major flood of 1996, for instance, the lower two-thirds of Knowles Creek was scoured anew of any of the large wood, gravel, and sediment deposits needed to support salmon. Yet, in the refuges in the upper part of Knowles Creek (in and near a spotted owl reserve), these habitats stayed intact. As a result, the entire 1996 year class of coho came from these refuges and the adjacent areas restored by the partners.

The Knowles Creek technical team spent almost a decade creating baseline data and making observations before any active restoration projects began. For instance, before the partners placed any wood and boulders in the stream, the locations of the refuges were identified. A historical reconstruction of the watershed was also

completed to help establish the basin's characteristics when salmon were far more abundant. Then the roads and upslope areas above the refuges were inventoried for potential management-related landslides (some roads needed work). The team then designed and strategically placed log and boulder structures near the refuges in a successful attempt to extend and link the size and capacity of these areas. Storm proofing the roads and upslope areas above the refugia and juxtaposing the instream structures and the refuges assured the survival of the 1996 coho population in Knowles Creek during the highest flood on record.

Likewise, the drought of 1992-93 created taxing conditions for coho: the 1993 class of coho juveniles in Knowles Creek was only 9 percent of the coho population surveyed in 1992, and 10 percent of the coho surveyed in 1994. As with the flood of 1996, approximately 80 percent of the coho surveyed in 1993 were in the refuge areas.

As the Bradbury handbook, the *Watershed Assessment Manual*, and the Coalition for Watershed and Salmon Health proposal note, given the high cost and risk of restoring degraded habitat, inventorying and protecting the few places that still provide high-quality habitat can, at the very least, hedge against our future restoration efforts and increase our chances of successfully recovering the region's salmon and watersheds.

References

- GWEB (Governor's Watershed Enhancement Board). October 1997. Watershed assessment manual, p. 6.
- Oregon Business Council. 1998. Organizing our efforts to restore salmon and watersheds. (Draft).
- Nehlsen, Willa, et al. 1995. Handbook for prioritizing native salmon and watershed protection. Pacific Rivers Council, Eugene, Oregon, p. 4.
- Stone, Livingston. 1892. A national salmon park. Transactions of the American Fisheries Society. D. S. Walton, NY, NY: p. 162.
- USDA (U.S. Department of Agriculture). Forest Service et al. 1993. The report of the forest ecosystem management assessment team, p. V-32.

COMMUNITIES

Oregon Watershed Advisors

As the role of watershed councils increases in watershed management, the legal issues in which they are involved will also continue to grow. The resolution of such issues can call for legal support not readily available within the council membership. In response to this situation, a new law firm is providing *pro bono* legal advice to local watershed councils in Oregon.

Oregon Watershed Advisors (OWA) is a nonprofit organization whose mission is to provide *pro bono* legal services and advice solely to watershed councils. OWA's services include legal assistance with issues relating to environmental laws, land use laws, liability, incorporation, and other legal questions that arise in the course of council operations. OWA will also provide support services to local attorneys who advise councils on a *pro bono* basis.

Interested parties should contact OWA through the council coordinator, when possible. Councils that function without a coordinator should have a significant council member contact OWA.

OWA is headed by Michael Fife, with oversight from a board of directors. An attorney himself, Fife has been working with watershed councils throughout the Northwest, providing educational materials on legal issues relevant to councils. For more information, contact OWA at 3727 SW Comus St., Portland, OR 97219. OWA's phone number is 503-452-3136; e-mail is <fife@hevanet.com>.

Executive Order Changes Agencies Statewide

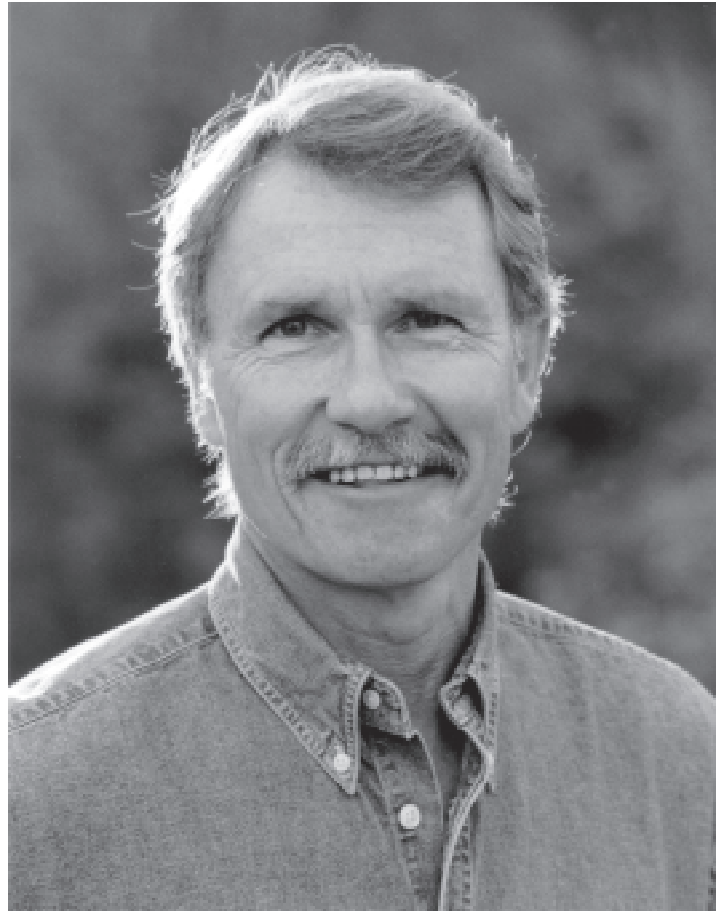
Editor's Note: Governor Kitzhaber released a new executive order on January 8 to agencies whose programs affect salmon. The governor's action is, at least in part, a response to the anticipated salmon listings under the Endangered Species Act (see "News Updates") expected in March. The order makes four significant changes from the original memorandum of understanding signed by the state and the federal government in 1997 to implement the Coastal Salmon Restoration Initiative. (1) It officially expands the Oregon Plan across the entire state. (2) It refers to all salmon and trout species (not just coho). (3) All agencies are expected to protect salmon species in their activities and to develop action plans that show how this will be accomplished. (4) It includes a directive to set biological and habitat goals and objectives on a basin or regional basis by January 1, 2000. The order also directs the Board of Forestry to establish a new advisory committee to determine what, if any, changes to existing forest practices are necessary to meet water quality and salmon restoration needs. This committee replaces the original Memorandum of Agreement Forest Practices Committee, which disbanded after Oregon coastal coho were listed. Below are excerpts from the order. The entire executive order can be found on the governor's Web site at <www.governor.state.or.us>, "Sections within the Governor's Office."

Through this Executive Order, the State of Oregon reaffirms its intent to play the leading role in protecting and restoring Oregon Coast coho and other salmonids through the implementation of the Oregon Plan. This Executive Order provides the framework and direction for state agencies to implement (to the extent of their authorities) the Oregon Plan in a timely and

effective manner. This Executive Order also provides a framework for extending the state's efforts beyond a focus on Oregon Coast coho, to watersheds and fisheries statewide. Consistent with the principle of adaptive management, this Order applies the experience gained to date in implementing the Oregon Plan to provide additional detailed direction to state agencies. Finally, this Executive Order establishes a public involvement process to prioritize continuing efforts under the Oregon Plan.

NOW THEREFORE, IT IS HEREBY ORDERED AND DIRECTED:

- (1) Overall Direction
- (b) The overall objective for state agencies under the Oregon Plan and this Executive Order is to protect and restore salmonids and to improve water quality.
- (c) The Governor will, in cooperation with the Joint Committee, IMST [Independent Multidisciplinary Science Team], affected state agencies, watershed councils, and other affected local entities and persons develop and implement a process to set biological and habitat goals and objectives to protect and restore



Governor John Kitzhaber

salmonids on a basin or regional basis as soon as practicable. . . .

- (e) State agencies will take, fund and/or authorize actions that are primarily for the purpose of restoring salmonids or the habitat they depend upon, including actions implementing the Oregon Plan. . . .
- (h) As the Oregon Plan grows in geographic scope and in intensity of activity, there is a growing need to streamline and prioritize state agency activity at the regional level. One proposal has been to organize state natural resource agency field operations along hydrologic units. Therefore, state agencies will consider this proposal and, through the collective efforts of state agency directors, develop an organization

plan that focuses state agency field effort on the activities and areas of highest priority under the Oregon Plan. . . .

**STATE AGENCIES WILL TAKE
ACTIONS PRIMARILY FOR THE
PURPOSE OF RESTORING
SALMONIDS.**

(l) Monitoring is a key element of the Oregon Plan. Each state agency will actively support the monitoring strategy described in the Oregon Plan. Each affected agency will participate on the monitoring team to coordinate activities and integrate analyses. . . .

(2) Continuation and Expansion of Existing Efforts. . . .

(c) In addition to recent modifications to hatchery practices and programs, a new vision is needed for how Oregon will utilize hatcheries in the best and most effective manner. Therefore, the ODFW and the OFWC (Oregon Fish and Wildlife Commission) shall engage in a process to create a strategic plan for fish hatcheries in Oregon over the next decade. . . .

(f) Draft watershed assessment protocols have been developed and are being field tested. Beginning in 1999, SWCDs, watershed councils and others will be able to use the protocols as the basis for action plans to identify and prioritize opportunities to protect and restore salmonids. . . .

(h) ODA [Oregon Department of Agriculture] and ODF [Oregon Department of Forestry] have each entered into a Memorandum of Understanding with the Oregon Department of Environmental Quality relating to the development of Total Maximum Daily Loads (TMDLs) and Water Quality Management Area Plans (WQMAPs). ODA will adopt and implement WQMAPs (through the Healthy Streams Partnership) and ODF will review the adequacy of forest practices rules to meet water quality standards. . . .

(k) State agencies will continue to encourage, support and work to provide incentives for local, tribal, and private efforts to implement the Oregon Plan. In addition, state agencies will continue to provide financial assistance to local entities for projects to protect and restore salmonids to the extent consistent with their budgetary and legal authorities, and consistent with their work programs in the Oregon Plan. . . .

(3) Key Agency Efforts. . . .

(c) The Oregon Board of Forestry will determine . . . to what extent changes to forest practices are needed to meet state water quality standards and to protect and restore salmonids. . . . [An] advisory committee will make recommendations to the Board at both site and watershed scales on threats to salmonid habitat relating to sediment, water temperature, freshwater habitat needs, roads and fish passage. Based on the advisory committee's recommendations and other scientific information, the Board will make every effort to make its determinations by June 1999. . . .

(d) Consistent with administrative rule, and statutory and constitutional mandates for the management of state forests, ODF State Forest management plans will include an aquatic conservation strategy that has a high likelihood of protecting and restoring properly functioning aquatic habitat for salmonids on state forest lands.

(e) ODF will present to NMFS a Habitat Conservation Plan (HCP) under Section 10 of the federal ESA that includes the Clatsop and Tillamook State Forests. . . . The draft HCP will be presented to NMFS by June 1999. . . .

(i) ODFW will expedite its applications for instream water rights and OWRD [Oregon Water Resources Department] will process such applications promptly where flow deficits are identified as adversely affecting

salmonids, and where such rights are not already in place. . . .

(l) DSL [Division of State Lands] will seek the advice of the IMST regarding whether gravel removal affects gravel and/or sediment budgets in a manner that adversely affects salmonids. . . .

(n) DLCD, DEQ, ODF, ODA, ODFW, and DSL and their respective boards and commissions will evaluate and implement programs to protect and restore riparian vegetation for the purposes of achieving statewide water quality standards and protecting and restoring aquatic habitat for salmonids. . . .

(s) State natural resource agencies will continue, to the extent feasible, to support watershed councils by providing technical assistance to develop watershed assessments, restoration plans and to develop watershed priorities to benefit salmonids. . . .

(4) Future Modifications; Public Involvement for the Oregon Plan Generally.

The GNRO will solicit public comments and input from participants in the Oregon Plan regarding whether there are refinements or changes to the Plan and/or the organizational framework for implementing the Plan that are necessary or desirable based on the experience gained over the past three years, or resulting from the widespread listings and proposed listings of salmon and trout under the federal ESA.

Report Challenges Hatchery Programs

Editor's Note: In December, the Independent Multidisciplinary Science Team (IMST) released a report entitled *Review of the Hatchery Measure in the Oregon Plan for Salmon and Watersheds*. The IMST was convened by the legislature to provide technical recommendations for the Oregon Plan. Below are excerpts from the executive summary of that report. The full report is available from the Governor's Watershed Enhancement Board at 503-378-3589, ext. 821.

The key question addressed by the IMST in this report is: Does the Oregon Plan recognize the concerns common to the three science panels, and do the measures in the Oregon Plan adequately address those concerns?

The three scientific panels were:

- National Fish Hatchery Review Panel.
- Up Stream [sic]: Salmon and Society in the Pacific Northwest.
- Return to the River: Restoration of Salmonid Fishes in the Columbia River Ecosystem.

The three panels are in agreement on four important issues. The IMST describes these issues, determined [sic] the consistency of the Oregon Plan with them, and makes recommendations whether improvements are needed.

Issue 1. Hatchery programs have failed to meet their objectives. Most hatcheries were built to mitigate for habitat lost during the development of rivers by replacing native fish with hatchery-produced fish. In spite of some examples of success, they generally have not achieved this goal.

The IMST concludes that the Oregon Plan is not adequately addressing the question of hatchery effectiveness.

Issue 2. Management of hatchery programs has impacted wild stocks. Hatchery management such as broodstock selection, mixed stock fisheries, and interbasin transfers are perceived



The IMST report recommends review of hatchery practices.

to be generally detrimental to wild stocks of salmon and has [sic] failed to conserve salmon biodiversity. Since these problems are largely related to hatchery management they should be solvable.

The IMST concludes that the Oregon Plan recognizes the issue because it has adopted measures designed to address at least two elements of the issue. However, the Oregon Plan does not include procedures to determine effectiveness, relying on indirect measures such as the ratio of wild to hatchery fish on spawning beds. . . . The ratio of wild to hatchery fish is one useful measure of the potential for interaction, but it is insufficient as a basis for evaluating the impact of such interactions. . . .

Issue 3. Monitoring of hatchery programs is inadequate. Hatchery programs have not been adequately monitored. This lack of monitoring has made it difficult to determine why hatcheries have failed to meet their objectives, and to identify and correct the genetic and ecological risks that hatcheries pose to wild stocks.

The IMST concludes that the Oregon Plan recognizes the need to monitor the hatchery program.

However, the program described in the Oregon Plan is not adequate.

Issue 4. Hatchery programs need fundamental change in order to support recovery of wild stocks. This issue is a logical outcome of the first three. All three panels recognized the need for fundamental change in the hatchery programs. They generally acknowledge that hatchery programs can support the restoration of natural production, but as currently managed they do not.

The IMST concludes that the Oregon Plan recognizes the need for change in the hatchery program, as evidenced by two measures[::] (1) fully implementing ODFW's Wild Fish Management Policy, and (2) reducing the number of hatchery fish released into coastal streams. The IMST's assessment of change in the hatchery program will be hampered until [adoption of objectives and management guidelines] has been completed.

Based on our findings, the IMST recommends that:

1. ODFW give measure II.A.3 (development of management objectives for each hatchery program, including genetic guidelines) of the Oregon Plan

higher priority and complete the development and adoption of objectives and management guidelines for each coastal coho hatchery as quickly as possible.

2. ODFW establish and implement a specific program to determine if its coastal coho hatcheries are meeting their objectives, and the process by which management will be adapted if they are not.
3. ODFW develop and implement a program of research that determines the effects of wild-hatchery fish interactions.
4. Based on research findings (see recommendation 3), ODFW develop monitoring measures that can be used to judge the operational effectiveness of hatchery management programs with respect to their adverse impact on wild fish stocks.
5. ODFW develop a strategy that will be useful in quantifying and reducing the impact of mixed stock fisheries on the recovery of depressed OCN [Oregon Coastal Native Coho Salmon] stocks.
6. ODFW determine the impact of hatchery release practices on predation of hatchery and wild fish. This should be coordinated with the ODFW Action Plan to assess avian and pinniped predation.
7. ODFW use hatcheries as important tools in research that supports monitoring programs.
8. ODFW establish explicit coordination between hatchery programs and monitoring programs to help them ensure that they accomplish management and research objectives.

Forest Practices Advisory Committee Convenes

On January 6, 1999, the New Oregon Board of Forestry created a special committee, the Forest Practices Advisory Committee on Salmon and Watersheds, whose charge is to revise logging regulations on private lands to better protect salmon and trout. The committee is expected to make recommendations to the board in

June 1999. Issues for the new committee include landslides, protection of tributaries too small for fish, and cumulative effects of logging. This committee replaces the original memorandum of agreement committee, which disbanded after Oregon coastal coho were listed under the Endangered Species Act last year. The 13 committee members include representatives from labor, agencies, county government, the environmental community, and the timber, sportfishing, and pulp mill industries.

More ESA Salmon Listings Proposed

The National Marine Fisheries Service will announce its final decisions about 15 chinook evolutionarily significant units (ESUs) in March. These ESUs are located in Washington, Oregon, California, and Idaho. Six of the proposed ESU populations spawn in Oregon waters. Below is a listing of chinook salmon in Oregon that could be affected by the proposed listings:

- Southern Oregon/northern California coastal ESU—both spring and fall chinook species from Cape Blanco south to the terminus of their range in northern California
- Oregon coastal ESU—spring and fall chinook species from the Elk River north to the Columbia River
- Lower Columbia ESU—spring and fall Chinook from the mouth of the Columbia to the crest of the Cascade Range, excluding upper Willamette River chinook that migrate above Willamette Falls
- Upper Willamette River ESU—spring chinook above Willamette Falls (primarily McKenzie River chinook)
- Mid-Columbia River spring ESU—spring chinook from the Deschutes and John Day Rivers. Spring chinook in the Hood and Umatilla Rivers are thought to be extinct.
- Snake River fall ESU—fall chinook in the Deschutes, John Day, and Umatilla Rivers

Millions of Federal Dollars Headed to a Watershed Near You

On January 27, President Clinton announced that he will include \$100 million dollars in his new budget proposal “to rebuild habitat, restore spawning grounds, give salmon a new lease on life. . . . [T]he commitment of the administration sends a very strong signal to everyone, from business to environmentalists, from agriculture to timber to fishermen—both commercial and sports fishermen—to tribes and nontribes, and all levels of government, from local to the federal government, that saving the wild salmon is everyone’s responsibility.” The President’s proposal has been bolstered by the support of key senators, particularly Senator Slade Gorton, chairman of the Appropriations Interior Subcommittee, which controls billions of dollars in natural resource spending. The four Pacific states—Alaska, Washington, Oregon, and California—had jointly requested \$200 million from the federal government for salmon restoration. The \$100 million is expected to be allocated as part of a state matching fund program.

Salem Debates Watershed and Salmon Bills

Editor's Note: Below is a snapshot of bills related to salmon and watershed restoration that are being considered or have been drafted in the current legislative session. Since much of the content may change before the end of the session, if you have an interest in any of the bills listed below, or want more information about other bills related to natural resource issues, you should contact your local senator or representative to find out its current status. Sources for these updates have been the *Oregon Coastal Notes*, written by Holly Harris and published by the Oregon Coastal Zone Management Association, P.O. Box 1033, Newport, OR 97365, and the legislature's Web site at <www.leg.state.or.us>.

Oregon Plan Update

A coalition of industry and environmental interests is proposing a major overhaul of the Oregon Plan. The Oregon Business Council, Oregon Trout, the Oregon Forest Industry Council, and The Nature Conservancy have joined forces to create the Coalition for Watershed and Salmon Health. According to Ned Dempsey, the coalition's natural resources chair, the Oregon Plan has been "too costly and largely ineffective," and the state needs "an implementation plan that coordinates the diverse entities addressing salmon and water quality issues." The coalition's proposal has a goal of restoring "wild, naturally spawning salmon and watershed health." As of this writing, the proposal has not been well received in the legislature. Some rural legislators, for instance, see the proposal as biased. They argue that the Portland-based members of the coalition want to dictate to rural communities how restoration should be done.

Under this proposal, GWEB would be replaced by OWEB (Oregon Watershed Enhancement Board). OWEB would be composed of five board members appointed by the governor and confirmed by the senate to four-year terms. The board would hire an executive director for a four-year term and

appoint five 11-member basin (regional) councils composed of representatives from a wide variety of interests. The basins are upper northwest, southwest, west central, north central, and eastern.

The board and executive director would hire five basin coordinators to staff the councils. Five watershed support teams would be created with up to five state employees, and representatives of federal agencies with lands or facilities in the basin would serve on the support teams. Each team member would be expected to have sufficient expertise in a number of specific areas to assist watershed councils in preparing action plans. The areas are watershed restoration, hydroelectric power, forestry, fisheries, conservation biology, and the preparation of TMDLs, implementation plans, and agricultural water-quality management plans.

OWEB would develop policy goals for the state to follow in all efforts to restore salmon, watersheds, and native habitat and would establish a framework for a locally based, integrated planning and management process designed to assist watershed councils and coordinate their efforts to satisfy requirements of state and federal law without duplication. OWEB would also review the strategic plans and rules of each agency to coordinate plans and implementation, form basin councils, and appoint basin coordinators. Funds would be allocated and a grant program administered using Measure 66 funds.

Other Bills Worth Watching

HB 2162 establishes a procedure for decommissioning hydroelectric projects no longer producing power. It also establishes an annual fee and allows imposition of project-specific fees for hydroelectric projects.

HB 2411 eliminates duplicative provisions in watershed restoration statutes, changes eligibility for GWEB grants, and allows grants to graduate students who are performing research under direction of members of the Independent Multidisciplinary Science Team.

Senate Bill 321 is the governor's bill for implementation of Measure

66. The budget for Measure 66 is included in House Bill 5038, Section 11, which is the Economic Development Fund budget bill.

SB 12 establishes a policy for protecting the public from landslide hazards. It directs agencies to implement specific responsibilities related to protecting the public from landslides.

SB 130 directs the state Fish and Wildlife Commission to develop and implement a remote hatchbox program and to report to the legislative assembly on progress.

SB 131 allows the Oregon Department of Administrative Services to provide liability protection to voluntary local watershed councils and their officers.

SB 133 expands the scope of responsibility of the Joint Legislative Committee on Salmon and Stream Enhancement to include oversight of activities pertaining to all native or anadromous fish.

Regarding Measure 66, the Joint Legislative Committee on Salmon and Stream Enhancement has heard from the legislative counsel that discretion exists for how Measure 66's funds can be spent. Although many of the measure's supporters thought they were voting for additional funding for salmon restoration and state parks, the legislature may use Measure 66 funds to "backfill" funding for those agencies, like the Department of Fish and Wildlife, which are involved in salmon restoration or state parks, thus freeing the general funds normally earmarked for these agencies to other budget allocations.

HJM 1 memorializes the President and Congress to withhold National Marine Fisheries Service funding for taking enforcement action in Oregon until Congress provides sufficient funds to assist Oregon in restoration of salmon.

Publications

Catherine Creek—Scientific Perspectives

In the intense debates surrounding the fields of salmon and watershed restoration, an often heard question is, Whose science are you using? It is not uncommon in scientific research for two or more studies of the same issue to reach vastly different conclusions. A recent publication by the Agricultural Experiment Station of Oregon State University, entitled *A Catherine Creek Study—Perspectives*, provides insight into how scientists differ in their thinking, methodologies, and conclusions. Three different research papers analyze grazing and its relationship to salmon redds in Catherine Creek, a tributary of the Grande Ronde River. The three papers are published by research teams from two different departments at OSU—rangeland resources, and fisheries and wildlife. Although the discussion of methods and statistics can be dry, readers should find very valuable one particular exchange: the criticism by the fisheries and wildlife team of the methodology used by the rangeland resources team and the latter's defense of that methodology. Both groups offer recommendations for how to proceed with this research to create more credible data and analyses. The original rangeland resources paper, published in 1995, created quite a stir in salmon restoration circles. It is available from the Department of Rangeland Resources, OSU, 202 Strand Agriculture Hall, Corvallis, OR 97331-2218, or the Department of Fisheries and Wildlife, OSU, 104 Nash Hall, Corvallis, OR 97331-3803.

OSU Extension Tabloid Available

The Oregon State University Extension Service has recently published *A Snapshot of Salmon in Oregon*, a 24-page tabloid that is available to the public at no charge. You can also find an electronic

version on the Web at eesc.orst.edu/salmon/.

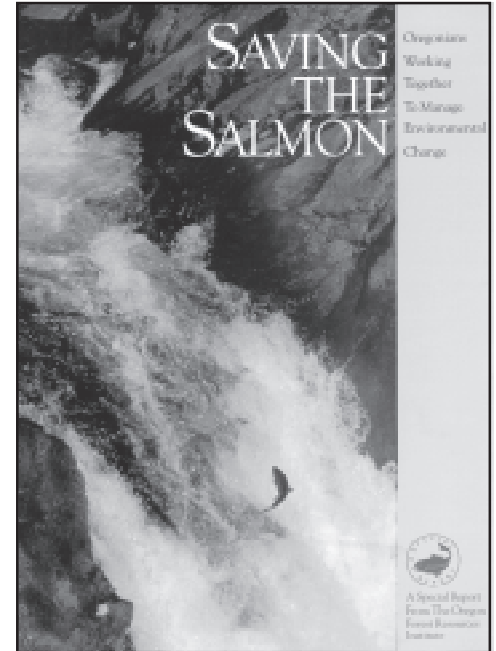
The goal of this publication is "to promote thoughtful conversation among the citizens of Oregon," say OSU President Paul Risser and Extension Service Director Lyla Houglum. The nontechnical publication uses many points of view to give citizens a broad picture of the biological, economic, and social dimensions of the salmon issue. Copies are available at no charge by calling 1-800-561-6719 or writing Publication Orders, Extension and Station Communications, OSU, 422 Kerr Administration, Corvallis, OR 97331-2119.

Livestock Influences Listed

Oregon State University has published a bibliography of information sources entitled *Livestock Influences on Riparian Zones and Fish Habitat*. Over 1,500 entries are included. The sources are organized by topic heading (for example, grazing categories, grazing management system), by methodology (experimental, documented case history, observational, and so on), and by agency, if the source was an agency publication. The entries are loaded onto four floppy disks for IBM-compatible computers. The cost is \$15.00. To order a copy, contact Oregon State University Extension Service's Web site at eesc.orst.edu/tango/pubsearch/.

A Timber Industry Perspective

The Oregon Forest Resources Institute has published a report entitled *Saving the Salmon*. It is the first in a projected series of such reports. The report focuses on Oregon's response to declining salmon runs—the Oregon Plan for Salmon and Watersheds. As can be expected, the report emphasizes the timber industry's role in, and support for, the plan. One noteworthy part of the report is a large-format foldout, suitable for wall hanging, that illustrates the landscapes salmon depend on, with descriptions of the life cycle and habitat needs of salmon (including



descriptions of good and poor habitat). The four-color foldout is printed on high-quality paper. To receive a copy, contact OFRI at 503-229-6718 or info@ofri.com.

Internet Sites of Note

Surf Your Watershed

A number of Web sites show a good deal of promise for providing information on local surface waters and watersheds. Much of the information is GIS based, so you can call up colorful maps and graphics. You can click on a local watershed in Oregon or any other state. It's part of EPA's "Surf your Watershed" program that makes information on local watersheds easy to obtain with a graphics-based format. Unfortunately, when you peel down to the local watershed layers, much of the information on "watershed indicators" has yet to be posted. It is hoped that this is a work in progress, because it could be a handy place to get watershed information on many local subbasins (for example, the Molalla River as a tributary of the Willamette, or the Little Deschutes as a tributary of the Deschutes).

Continued on page 11

Highlights from the American Fisheries Society Meeting

The Oregon Chapter of the American Fisheries Society recently held its annual conference in Sunriver. Below, with permission of the authors, are excerpts from abstracts of papers submitted; they have been edited for space and clarity. Other abstracts may be included in future issues.

Developing Scenarios of Environmental Change for the Willamette River Basin: 1850–2050. Stan Gregory, Department of Fisheries and Wildlife, Oregon State University, 104 Nash Hall, Corvallis, OR 97331; Stanley.Gregory@orst.edu

The Pacific Northwest Ecosystem Research Consortium (PNW-ERC) is a regional multidisciplinary research program designed to (1) create a regional landscape context for interpreting trajectories of regional ecosystem change; (2) identify and understand critical processes; and (3) develop approaches for evaluating outcomes of alternative future land use, management, and policy. The consortium attempts to integrate information on both human and nonhuman ecosystem components at a variety of scales relevant to both human decision making and ecological processes. The PNW-ERC focuses on patterns of ecosystem condition and trajectories of change from 100 years past to 50 years in the future. Its ultimate goal is not simply a better understanding of ecosystem behavior over the large scales of time and space, but an understanding that is scaled to the primary demands of the human decision-making process. The consortium's research is based on the development of "possible futures," in concert with a representative stakeholder group, the Willamette Valley Livability Forum. The assumptions guiding these possible future depictions generally bracket a spectrum of plausible land conservation and development options from "high conservation" to "high development" with the "plan trend

scenario" representing future outcome of current policies and trajectories. The consortium will use projections of land use and ecological conditions to explore the implications of ecological change and decision-making processes.

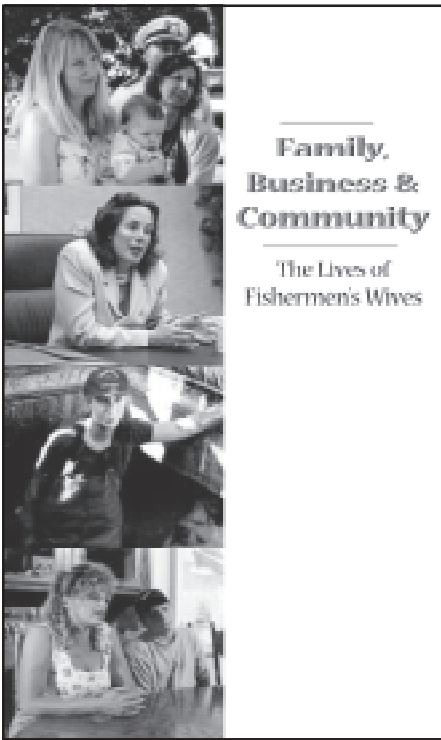
Conservation Aquaculture and Endangered Species: Theory behind the Practice. Paul J. Anders, University of Idaho, Aquaculture Research Institute, Moscow, ID 83844; and9662@uidaho.edu.

Another source of information on this topic is the November 1998 issue of *Fisheries*, p. 28.

Aquaculture has been used with varying degrees of success to conserve endangered fish populations and remains a controversial recovery issue in fisheries. Fisheries management decisions concerning conservation aquaculture are often complex, accompanied by uncertainty, and are relied upon to resolve crisis situations. To address these challenges, people in fisheries management should base their decisions regarding conservation aquaculture on sound population and conservation biology theory. Conservation aquaculture is an adaptive, creative practice that prioritizes preservation of wild populations, the locally adapted gene pools, and characteristic phenotypes and behaviors. Conservation aquaculture can provide an increased, effective population base on which natural selection can operate. Although not proposed as a panacea, timely implementation of appropriately designed conservation aquaculture programs can prevent demographic and genetic bottlenecks [loss of population size or genetic diversity], inbreeding fitness depression, and loss of unique and important locally adapted genes, thereby reducing extinction risk. Aquaculture programs for any purpose are not risk free. Therefore, the need to objectively evaluate the use of conservation aquaculture, on a case-by-case basis, is critical. When viewed as a "last resort" in fisheries and endangered species management, the success of any aquaculture program may be jeopardized by problems associated with small population size.

Melding Ecological Restoration and the Artificial Propagation of Anadromous Salmonids: Do We have a Coherent Strategy? Charles W. Huntington, Clearwater BioStudies, Inc., 23252 S. Central Point Rd., Canby, OR 97013; 503-266-7824; cwbio@europa.com.

Regional status assessments show a clear pattern of decline for multiple species of anadromous salmonids across broad areas of the Pacific Northwest. Several independent science panels have concluded that contributors to this pattern include adverse human-caused changes in our watersheds and streams, overfishing, the inability of fish hatcheries to meet unrealistic expectations (e.g., to fully compensate for widespread habitat damage), and interactions between hatchery and wild fish. Addressing each of these factors of decline will require new ways of thinking, both within the fisheries profession and in society at large. A review of watershed conditions, salmon status, ecological restoration efforts, and artificial propagation programs along the Oregon coast raises a number of issues and questions. One important issue is that although Oregon's coastal basins are not without significant problems, they still support relatively diverse salmon populations and represent many of our state's best conservation opportunities. However, opportunities to conserve salmon diversity along the Oregon coast may be complicated by hatchery programs unless resource managers and scientists develop a common vision of the future. Geographic patterns evident in recent data on the general abundance of wild/natural and hatchery salmon in our coastal basins suggest that (1) our hatchery programs need to be examined on the large spatial scales considered by restoration planners and (2) it would make sense to alter (or end) the use of artificial propagation in some basins and watersheds so that we diversify our approaches to salmon conservation, to reflect broader ecological goals and to allow for truly adaptive management.



**Family,
Business &
Community**

*The Lives of
Fishermen's Wives*

**Oregon Sea Grant
Announces a New
Video Release:**

*Family, Business, and Community:
The Lives of Fishermen's Wives*

Commercial fishing is a life filled with change: changing weather, changing markets, changing regulatory climates, and a changing resource. For many, what's constant is the family—especially the spouse, who keeps things going while the fisher is at sea. In this 20-minute video, the wives of four Oregon fishermen talk about their lives and the roles they play as working partners in their families, their communities, and the businesses on which their livelihoods depend.

This video was produced in cooperation with the Department of Anthropology at Oregon State University. It will be of particular interest to those in the fishing industry, fisheries management, women's studies, family studies, sociology, and visual and applied anthropology. It is available for \$15 from Oregon Sea Grant. To see a short Quicktime excerpt, go to <<http://seagrant.orst.edu/communications/video.html>>. To order, write Sea Grant Communications, Oregon State University, 402 Kerr Admin. Building, Corvallis, OR 97331-2134, or go to <<http://seagrant.orst.edu/sgpubs/howto.html>>.

Media Received

Continued from page 9

Index of Watershed Indicators

<http://www.epa.gov/surf2/iwi/>

The index is a compilation of information on the health of aquatic resources in the United States. It looks at a variety of indicators that point to whether rivers, lakes, streams, wetlands, and coastal areas are well or ailing and whether activities on the surrounding lands that affect our waters are placing them at risk.

Enviromapper for Watersheds

<http://www.epa.gov/surf2iwimapper/>

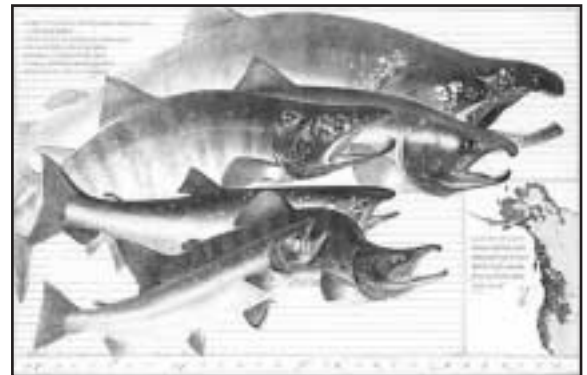
Enviromapper for Watersheds is an interactive mapping tool that allows users to look at many geographical levels of environmental data. The mapper shows data at the national, state, and county levels from the Index of Watershed Indicators as layovers on the maps and incorporates GIS functionality, such as displaying multiple spatial layers, zooming, panning, identifying features, and querying single points.

**Environmental
Contaminants Encyclopedia**

<http://www.aqd.nps.gov/toxic/index.html>

The Environmental Contaminants Encyclopedia summarizes environmental toxicology benchmarks and general information related to fish, wildlife, invertebrates, and other nonhuman living resources. The data focuses on low, typical, and high environmental concentrations found throughout the world; concentrations that are toxic to various organisms; and standards, criteria, and other benchmark values. Brief sections at the beginning of each entry give general overviews on the compound, its hazards, its more dangerous toxic effects (carcinogenic, developmental, reproductive, endocrinologic, genotoxic), and its environmental fate. Also included is important summary information (such as government gray literature and personal communications) that is otherwise difficult to find in searches of electronic or peer reviewed sources.

Pacific Salmon of North America



Ecotrust has teamed up with award-winning wildlife artist Dugald Stermer to produce this full-color, 24" x 36" print portraying the five Pacific salmon plus steelhead, along with a new map of watersheds where one or more native salmon stocks have been eliminated. Special offer: \$12 plus shipping.

Contact:

Ecotrust
1200 NW Naito Pkwy.
Suite 470
Portland, OR 97209

(503)227-6225
info@ecotrust.org
www.ecotrust.org/salmon.htm



ECOTRUST

Calendar of Events

Clatsop Community College/ MERTS is offering a summer training program in technical skills, sponsored by the National Science Foundation. Courses are from one to five days. Tentative training courses include water-quality monitoring, wetland delineation, indicators of biological integrity, GIS/data management, habitat restoration, habitat assessment, the Clean Water Act, and environmental conflict resolution. Contact Tony Laska, 503-338-7650, or <tlaska@clatsop.cc.or.us>.

Watershed Council Day at the legislature is April 6. Contact Dana Erickson at 541-683-6578, Maria Levay at 541-268-3044, or Tracy Bosen at 541-276-2190 for more information. Watershed council members and staff will be visiting legislators to educate them about the role of local watershed councils in the Oregon Plan and in local communities.

Restoration

Restoration (ISSN 1521-5261) is a quarterly publication of Oregon Sea Grant, a marine research, education, and outreach program based at Oregon State University. The newsletter was partially supported by grant no. NA76RG0476 from the National Oceanic and Atmospheric Administration (NOAA) and by appropriations made by the Oregon State legislature. The views expressed herein are those of the authors and do not necessarily reflect the views of NOAA or any of its subagencies.

*Editor in Chief: Joseph Cone
Editor: Paul Hoobyar
Managing Editor: Sandy Ridlington
Production: Joel Southern
Circulation: Cynthia Newberry
Banner photograph by Trygve Steen*

Office phone: 541-737-2716

E-mail:

sea.grant.communications@orst.edu

Back issues of Restoration:

http://seagrant.orst.edu/

communications/restore.html

