RESTORATION
A NEWSLETTER ABOUT SALMON, COASTAL WATERSHEDS, AND PEOPLE
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New NMFS Report on Hatcheries

Artificial Propagation and Coho Salmon along the Oregon Coast

By Laurie Weitkamp

Pacific salmon hatcheries have been used for more than 100 years to mitigate the effects of human activities on salmon, replace declining or lost natural populations, and provide fish for harvest. Unfortunately, it is becoming increasingly clear that many hatcheries have had substantial adverse effects on native fish populations through demographic, ecological, and genetic vehicles. For example, hatcheries can reduce the genetic diversity within and between salmon populations, increase the effects of mixed-population fisheries on depleted natural populations, alter the behavior of fish, and eliminate the nutritive contribution of spawner carcasses in streams (CPMPNAS 1996). Hatchery fish may also replace, rather than supplement, wild runs, yet are unable to rebuild natural populations (Nickelson et al. 1986). In addition, the belief that hatcheries were the solution for declining wild runs focused resources and efforts to produce more and higher-quality hatchery fish instead of addressing the problems, such as habitat degradation, blockages, or overfishing, that caused the declines in the first place (CPMPNAS 1996).

VARIOUS LINES OF EVIDENCE INDICATE POTENTIAL RISKS TO NATURAL POPULATIONS FROM ARTIFICIAL PROPAGATION.

Artificial propagation of coho salmon has a long history along the Oregon coast and has likely affected natural coho salmon (those that spend their entire life cycle in natural habitat). Unfortunately, the lack of adequate monitoring along the Oregon coast, as in other areas in the Pacific Northwest, makes it extremely difficult to differentiate the impacts of hatchery programs on wild fish from the impacts of other human actions or natural environmental changes. Consequently, it is not easy to determine what role artificial propagation has played in the record low abundance of natural Oregon coast coho salmon in recent years.

There are various lines of evidence, however, that indicate potential risks to natural populations from artificial propagation. These include the number and location of hatchery releases, the incidence of hatchery fish spawning naturally, the degree of overlap of spawn timing of natural and hatchery fish, and the histories or pedigrees of currently maintained stocks. Although this information does not prove that impacts have actually occurred, it provides our best estimate of the potential for impacts. This paper provides a brief

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In this Issue:

Reader Survey

Oregon Sea Grant has been conducting a survey of readers to evaluate and improve *Restoration*. We have sent surveys to a random sample of our mailing list, and we thank the many people who have responded. However, if you were sent a survey and have not yet filled it out and returned it to us, please do so today. If you have misplaced the mailing and need another, leave your name on our toll-free message phone (800-375-9360). In addition, if other readers would like to participate, they should call that number. Everyone's cooperation ensures a valid survey and helps us give you the newsletter you need. Results of the reader survey will be published in the next *Restoration*. Thanks again!

Artificial Propagation and Coho Salmon along the Oregon Coast

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summary of several of these lines of evidence and the potential effects of hatchery production on natural Oregon coast coho salmon.

Releases of Coho Salmon

All things being equal, the more hatchery fish released in a basin, the more likely they will affect natural populations. The average number of hatchery coho salmon recently released in selected basins along the west coast is shown in figure 1. Relatively few coho salmon are released in California, and moderate numbers are released along the Oregon coast and Olympic Peninsula, while the Columbia River, southwest Washington coast, and Puget Sound are the world's leading producers of hatchery coho salmon. Along the Oregon coast, basins with the largest releases, such as the Nehalem, Trask, Salmon, Siletz, Yaquina, Alsea, Umpqua, Coos, Coquille, and Rogue Basins (figure 1, bottom), also have large hatcheries. Many of these basins also have long histories of hatchery production, with some programs beginning near the turn of the century. Commercial hatcheries in the Yaquina, Siuslaw, and Coos Basins are no longer in operation, but they released over 20 million coho salmon smolts annually during peak years in the 1980s. Hatchery coho salmon have also been released into almost all coastal basins without hatcheries since artificial propagation of the species began. This practice of widespread releases has largely stopped along the Oregon coast, although notable exceptions to this trend are the Nestucca, Siuslaw, and Tenmile Basins, which have received large (60,000–450,000 fish annually) numbers of hatchery fish in recent years.

ARTIFICIAL PROPAGATION LIKELY CONTRIBUTED TO THE DECLINE [OF NATURAL COHO SALMON ALONG THE OREGON COAST], AND MAY HAVE PLAYED A RELATIVELY LARGE ROLE IN SOME BASINS.

The purpose of most hatcheries is to increase the survival of fish during the initial freshwater stages of their life cycle (e.g., egg, alevin, fry, parr, and smolt stages), a period during which survival in the wild is relatively low. Coho salmon are typically released from hatcheries at two stages. Fish released as fry benefit from high survival in the hatchery during the incubation and early rearing stages but typically have much lower survival after release as they contend with natural freshwater habitats for a year before migrating to sea. In contrast, smolts benefit from high survival in the hatchery during their entire

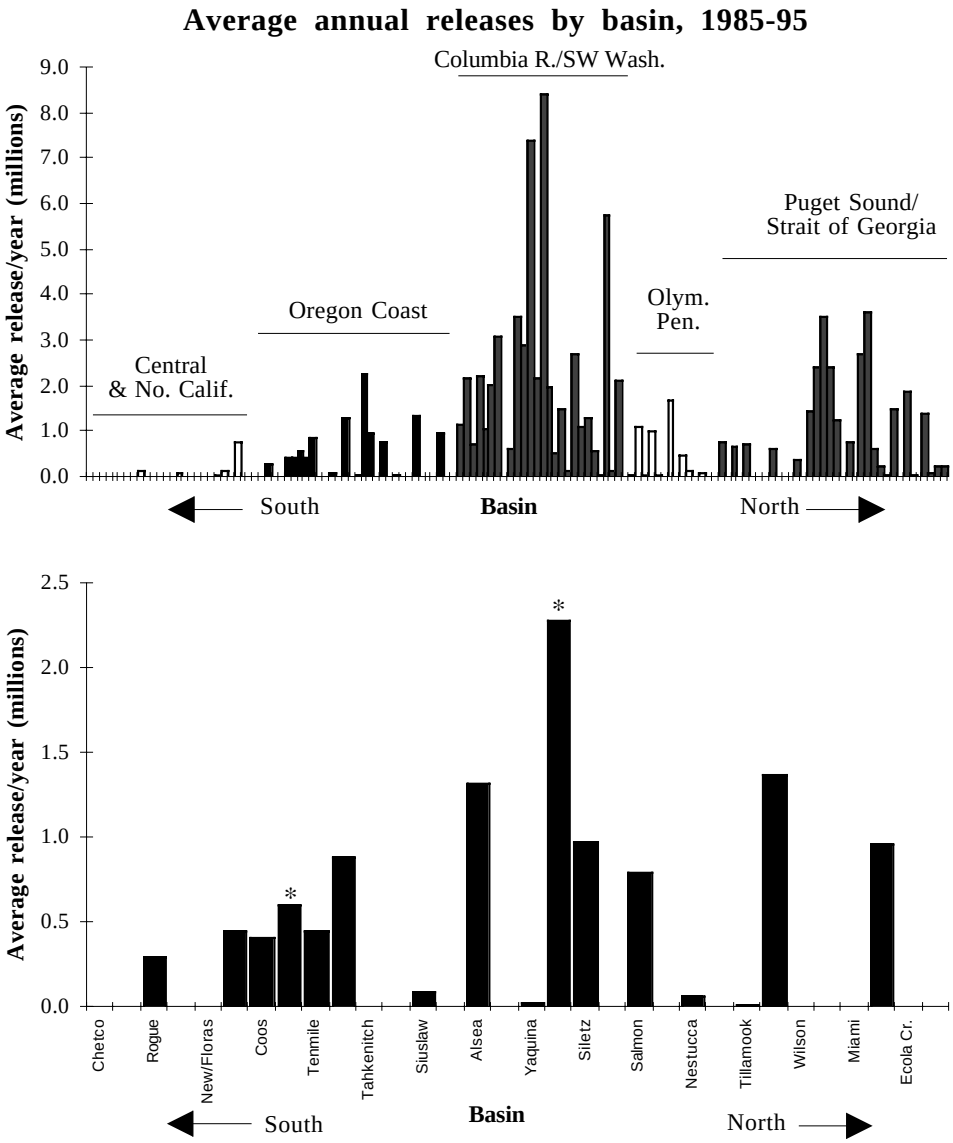

Figure 1. Recent (1985-95) annual releases (millions of fish) of coho salmon into selected river basins from Monterey Bay to southern British Columbia (top), and along the Oregon coast (bottom). Asterisks indicate commercial programs that are no longer in operation. During this time period, about 100 million coho salmon were released each year in the entire area, with most of the fish released in tributaries of the Columbia River, southwest Washington, and Puget Sound. Along the Oregon coast, about 10 million coho salmon were released each year, with most releases occurring in the basins containing hatcheries. The large releases from the commercial facilities have been terminated. Data from NRC (1995) and ODFW (1996).

juvenile freshwater residence and generally migrate directly to the ocean upon release. Although fry releases may increase juvenile salmon abundance in streams that are limited by spawning habitat, streams that are limited by rearing habitat may experience no such increase because available habitats were already occupied. In addition, fry that spend several months in the hatchery after hatching, like fish released as smolts, are often larger and therefore have a temporary competitive advantage over natural fish. Nevertheless, they have lower survival in the wild than their wild counterparts, potentially resulting in fewer seaward migrants than if no human intervention had occurred.

SOME COASTAL BASINS, ESPECIALLY THOSE WITH NEWER HATCHERY STOCKS, HAVE CONSIDERABLE OVERLAP IN THE SPAWN TIMING OF HATCHERY AND NATURAL FISH.

Historically, coho salmon fry releases were common along the west coast, including the Oregon coast. In recent years, however, the majority of coho salmon released from Oregon coastal and other hatcheries have been smolts, due largely to concerns about impacts on natural fish and the poor survival of fish released as fry. One exception to this trend has been the Salmon and Trout Enhancement Program, which continues to release large numbers (hundreds of thousands) of hatchbox fry into south coast basins, such as the Coquille, Coos, Tenmile, and Umpqua.

Concurrent with the change in the stage of fish released, there have also been changes in the types of stocks released from Oregon coastal hatcheries. This change is in response to concerns about non-native or domesticated stocks mixing with, and decreasing the fitness and genetic diversity of, native fish. Historically, many hatchery coho salmon released in Oregon coastal basins were not native to the basin they were released into (and occasionally, hatchery fish from the Columbia River or Puget Sound were also released into Oregon coastal basins) or had been cultured for many generations. Recently, however, efforts have been taken to minimize the detrimental genetic effects of hatchery fish on native populations through the development of new hatchery stocks from local stocks, the incorporation of wild fish into older stocks, and the releasing of hatchery fish only into the basins from which they were originally derived.

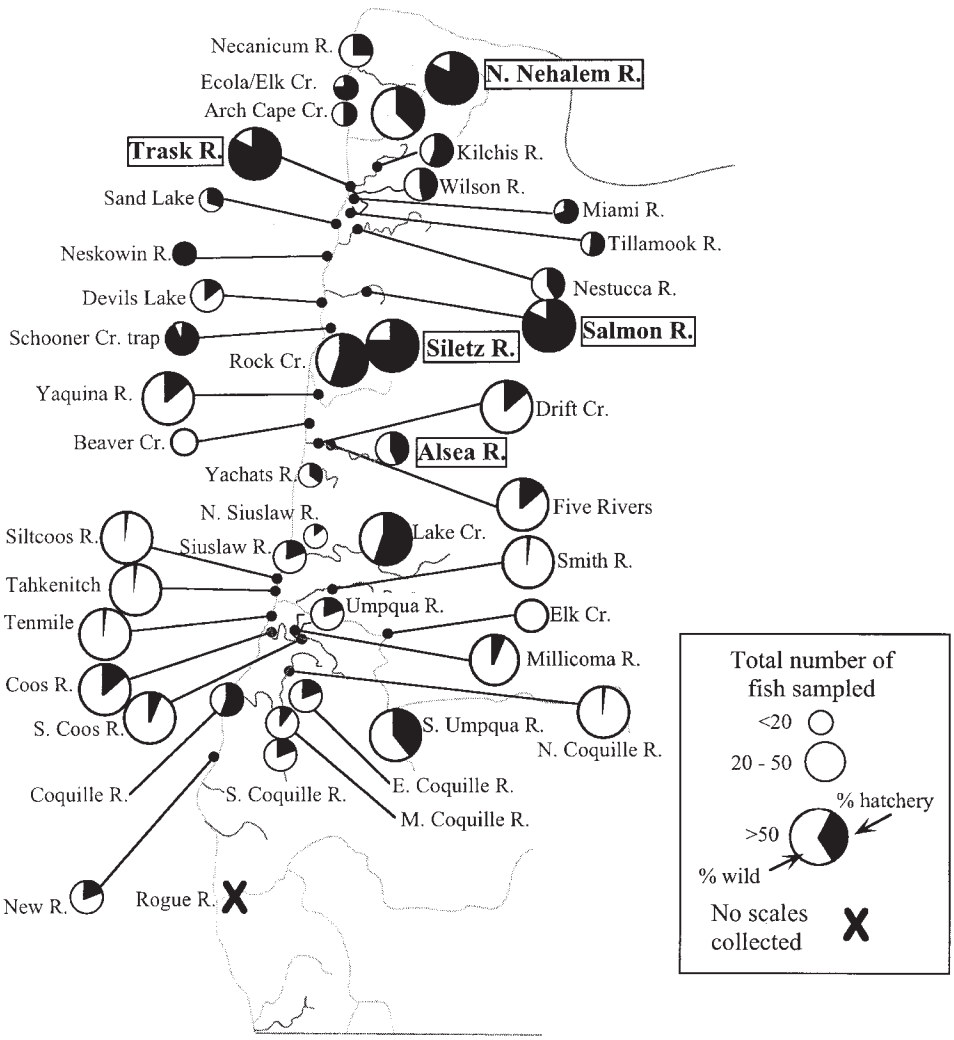

Figure 2. Origin (hatchery or natural), based on scale analysis, of naturally spawning coho salmon sampled in selected Oregon coastal streams between 1989 and 1995. Naturally spawning fish of hatchery origin are represented by the black portion of the circle; those of natural origin are indicated in white. The size of each circle represents the number of fish sampled as shown in the legend. Sampling locations near hatcheries are indicated by boxes surrounding the river name. Although these patterns may not reflect typical conditions along the Oregon coast, they do indicate that there is considerable cause for concern in at least some streams, particularly in the north coast, and that at least a few hatchery fish have been observed spawning naturally in almost all basins examined. Data from Borgerson (1991, 1992, 1994) and ODFW (1996).

Hatchery Fish Spawning Naturally

The occurrence of hatchery fish in natural spawning areas provides an indicator of the potential genetic and demographic risks of hatchery propagation for wild populations. The presence of these fish on spawning grounds indicates that they have the potential to contribute to future generations. In addition, if hatchery fish are counted as natural fish during spawner surveys, it will lead to an overestimate of both the abundance and produc-

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tivity of natural populations and may mask declining trends. The origin (hatchery or natural) of naturally spawning coho salmon can be determined by the presence of marks, by external tags, or by scale analysis. The Oregon Department of Fish and Wildlife (ODFW) collects scales during spawner surveys to determine fish origin. This scale analysis indicates that many natural spawners are of hatchery origin in some areas, especially near hatcheries, and at least a few hatchery fish were spawning naturally in almost all areas sampled (figure 2). Although it is not clear whether the scale data are representative of the overall incidence of hatchery fish on spawning grounds along the Oregon coast, they do indicate that there is reason for serious concern in some basins.

Spawn timing

An additional line of evidence regarding the potential impacts of artificial propagation is the overlap of spawn timing of natural and hatchery fish. The degree of overlap is used to evaluate whether hatchery and natural fish would be able to spawn together. Advancement of hatchery spawn timing is a common practice in coho salmon management to allow extended fishing opportunity by separating the time when hatchery and natural populations return to spawn. It has been suggested by ODFW that earlier returning and spawning hatchery fish would not be ready to spawn at the same time as later natural fish, therefore lessening genetic risk.

To evaluate the degree of spawn timing overlap, we compared dates of peak spawn timing reported from the spawner surveys with the dates when fish were spawned at the hatcheries. Although spawn timing of hatchery and naturally spawning fish was clearly different in some basins, such as Tillamook Bay (figure 3, top), there was considerable overlap in recorded spawn timing in others, such as Salmon River (figure 3, bottom). In general, however, we did not find large timing differences in those Oregon

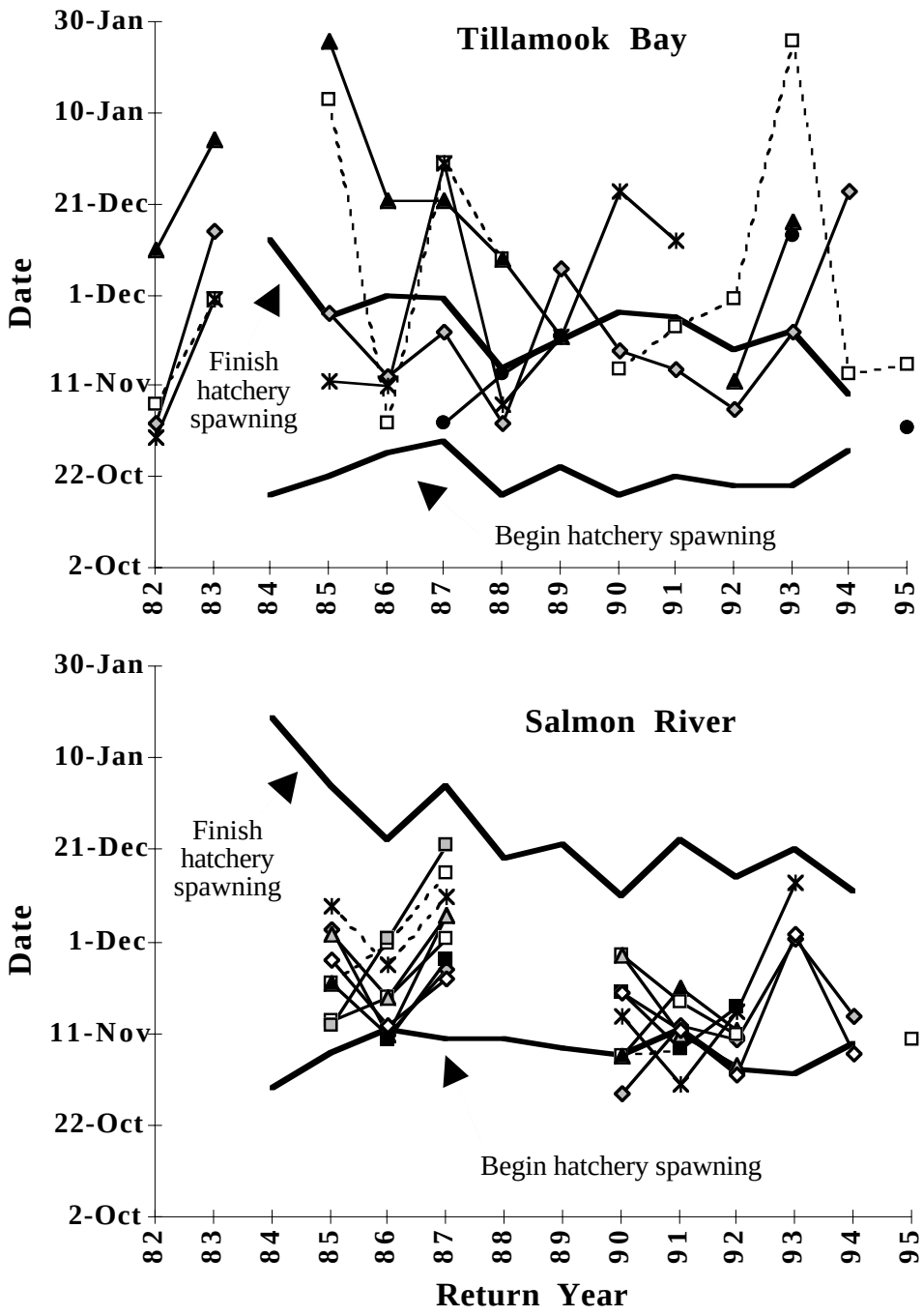

Figure 3. Comparison of the spawn timing of natural and hatchery spawners from Tillamook Bay (top) and Salmon River (bottom) basins. The heavy black lines indicate the first and last date that fish were spawned at the Trask River and Salmon River hatcheries between 1982 and 1995. All other lines represent the date on which the maximum number of fish were observed spawning ("peak" date) during annual spawning surveys in various streams in those basins. Although many of the peaks of natural spawning in Tillamook Bay occurred after spawning was completed at the Trask hatchery, there was considerable overlap in the Salmon River basin. These timing differences suggest that fish that stray from the Trask River hatchery would be less likely to successfully mate with natural fish than would those from the Salmon River hatchery. In other coastal basins, especially those with newer hatchery stocks, there is considerable overlap in the spawn timing of hatchery and natural fish. Data from NRC (1995) and ODFW annual spawning survey reports.

basins for which both hatchery and natural spawn timing data were available. Many of the newer coastal hatchery stocks were recently derived from natural fish and have spawn timings that are very similar to their natural counterparts. In addition, in those basins in which there were apparent differences, fish often returned to the hatchery after spawning was completed, suggesting that the hatchery populations were capable of spawning (and presumably did spawn naturally) later than the spawn times used in the hatchery.

Conclusions

We reviewed several lines of information regarding the potential impacts of coho salmon hatchery production on natural, Oregon coast coho salmon populations. The opportunities for impacts are greatest along the north coast, particularly in those basins with large hatchery programs, such as the Trask, Nehalem, and Salmon River basins, and least in south coast basins with modest hatchery programs and other basins without hatcheries. In northern basins, hatcheries produce and release more hatchery fish than in the south, the incidence of naturally spawning hatchery fish is much higher, and the spawn timing of natural and hatchery fish exhibits considerable overlap.

Our review indicates that current impacts may be relatively low in some basins, and recent changes in hatchery practices should benefit natural fish. However, there is still cause for concern about the long-term effects of hatchery production on natural coho salmon populations throughout the coast. The Oregon coast has a long history of coho salmon hatchery production, nearly all basins have received hatchery fish at some time, and recent scale analysis indicates that hatchery fish have been spawning naturally in essentially every basin sampled. Although habitat degradation, unfavorable ocean conditions, and overharvest undoubtedly played major roles in the current record low abundance of natural coho salmon along the Oregon coast, artificial propagation likely also contributed to the decline and may have played a relatively large role in some basins.

Oregon Dept. of Fish and Wildlife historic photo

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Courts Deconstructing the ESA

By Carrie E. Dahlstrom and Richard Hildreth

Marbled murrelets, suckers, and salmon have all become national celebrities in an ecological and legal battle for their own survival. Each of these dwindling species has taken center stage during the last year in three controversial court cases focusing on the federal Endangered Species Act (ESA).

The marbled murrelets won their battle in the Ninth Circuit case *Marbled Murrelet v. Babbitt*, but the suckers and the salmon have not been so lucky: the U.S. Supreme Court's newest ESA decision (*Bennett v. Spear*) and an even more recent Oregon decision (*American Rivers v. National Marine Fisheries Service*) show courts eroding the ESA's power and setting the stage for a potentially grim future for all threatened or endangered species.

The marbled murrelet, a "secretive sea bird" with extraordinary procreative habits, was listed as a threatened species under the ESA on September 28, 1992 and was the focus of the 9th Circuit case *Marbled Murrelet v. Babbitt*. This eccentric bird mates late in life, flies great distances inland to breed, and returns to its particular stand of old growth trees, where it lays its eggs in mossy tree limbs.

In the late 1980s, the Pacific Lumber Company planned a timber sale in the Owl Creek area of Humbolt County, California, 22 miles inland from the Pacific Coast. This 440-acre stand of contiguous old-growth redwood and Douglas-fir is prime breeding territory for the marbled murrelet. The company disregarded the California Endangered Species Act, manipulated required scientific monitoring plans to study marbled murrelet breeding patterns, and ignored warnings from the United States Fish and Wildlife Service that any further prohibited logging in the Owl Creek area would likely result in a take of the species, a violation of the ESA.

The plaintiffs (the Environmental Protection Information Center) won their suit in the lower court and the company appealed the decision to the Ninth Circuit. The company's argument had three major steps. (1) They had not actually harmed the marbled murrelets. (2) To violate the ESA, a party must have to have already harmed the threatened or endangered species—"the harm must have already occurred." (3) Since the Pacific Lumber Company hadn't harmed the marbled murrelets, they couldn't have violated the ESA and therefore should not be prevented from harvesting timber in the Owl Creek area.

However, the Ninth Circuit Court disagreed adamantly, ruling that if there is a "reasonably certain threat of imminent harm to a protected species," a party can be enjoined (or stopped) from doing the harmful activity—like logging the Owl Creek area. This decision added to the ESA an aspect of "preventative measure" ; even when the harm to a threatened or endangered species looms in the future, citizens can go to court to stop the harmful activity before a "take" of the species occurs.

JUDGE MARSH FOUND THAT THE DEFENDANT'S MANAGEMENT DECISIONS, WHICH INCLUDED RISKING HIGH MORTALITY RATES THROUGHOUT THE SOCKEYE AND CHINOOK SALMON LIFE CYCLES, WERE ACCEPTABLE.

This preventive approach could be used to stop further logging in the controversial China Left timber sale, given the threatenened listing of coho salmon in southern Oregon and northern California.

While the U.S. Supreme Court declined

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Dead salmon lifted on a pitchfork: an invitation to metaphor.

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to review *Marbled Murrelet*, it did accept an appeal from the Ninth Circuit's decision in *Bennett v. Spear*. Supreme Court Justice Scalia's riveting *Bennett* opinion focused on the Klamath Project, a water management plan run by the Bureau of Reclamation, that involved a series of lakes, rivers, dams, and irrigation canals in northern California and southern Oregon and two unassuming creatures: the Lost River sucker and the shortnose sucker.

Essentially, the *Bennett* plaintiffs (irrigation districts and ranchers operating within those districts) argued that their "recreational, aesthetic and commercial" interests and irrigation interests in the Klamath Project water would be "irreparably damaged" if the water levels were adjusted to protect the suckers. They "claim[ed] a competing interest in the water the Biological Opinion declar[ed] necessary for the preservation of the suckers."

Previously, plaintiffs who sought to protect some sort of economic interest were not allowed to bring suits under the ESA; the ESA was designed to protect endangered and threatened species, rather than economic interests. But the *Bennett* decision allows parties with economic interests to sue under the ESA —a *major* setback for environmental protection and conservation efforts. Anyone (ranchers, developers, miners, logging companies, etc.) who suffers economic loss when steps are taken to protect endangered and threatened species can challenge those protective steps in court.

Less than one month after *Bennett*, Oregon District Court Judge Malcolm F. Marsh decided the *American Rivers* case, a particularly complicated one. The court had to examine not only the arguments of the official plaintiffs (American Rivers and the State of Oregon), but also the arguments and issues of other groups, including the State of Idaho, the Colville Nation and the Spokane Tribe, the Yakima, Umatilla, Nez Perce, and Warm Springs Tribes, and the States of Montana, Alaska, and Washington.

The plaintiffs (American Rivers and the State of Oregon) attacked the defendants' (NMFS, the U.S. Army Corps of Engineers, and the Bureau of Reclamation) Biological Opinion and Reasonable and Prudent Alternatives for management of the Federal Columbia River Power System Operations (such as Hungry Horse and Grand Coulee projects). The problematic species in this case were the Snake River spring/summer and fall chinook and the Snake River sockeye salmon. However, other species with completely different ecological needs, such as the Kootenai white sturgeon and species of the Snake River aquatic snail, were affected, too. So, the court was faced with evaluating and balancing the competing interests of the nine or more human groups involved in the case with the varying ecological needs of the threatened or endangered species involved in the Federal Columbia River Power System Operations projects.

The court supported the findings and management decisions chosen by the defendants in their Biological Opinion. Judge Marsh stated that his power to evaluate the defendants' decisions was limited to whether or not they "articulated a rational connection between the facts found and the choice made" and whether or not they "conducted a reasoned evaluation"—a standard allowing a lot of deference (or discretion) to the defendants.

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How the ESA Works: A Brief Review

The U.S. Congress designed a system to conserve endangered or threatened plant and animal species by preserving their ecosystems and habitat through the Endangered Species Act. Congress defined an "endangered species" as one "in danger of extinction throughout all or a significant portion of its range" and a "threatened species" as one "which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range."

The principal government agencies that actually make the ESA work are the Fish and Wildlife Service (FWS), which concentrates on terrestrial species, and the National Marine Fisheries Service (NMFS), which concentrates on anadromous fisheries and marine mammals.

Under section [§] 4, the Secretary of the Interior creates regulations to determine whether a particular species is endangered or threatened and designates that species' "critical habitat." Geographical areas that have "those physical or biological features (I) essential to the conservation of the species and (II) which may require special management considerations or protections" compose a species' "critical habitat."

Second, under § 7, federal agencies "shall . . . insure that any action authorized, funded, or carried out . . . is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of" that species' critical habitat. A federal agency makes the initial decision of whether its proposed action may put an endangered or threatened species in jeopardy. If the agency decides its action does jeopardize a threatened or endangered species, the agency must officially consult with FWS or NMFS. This results in a Biological Opinion, explaining "how the agency action will affect the species or its critical habitat" and provides a "summary of the information on which the opinion is based."

If the FWS or NMFS makes their own determination that the proposing agency's action will jeopardize endangered or threatened species, the Biological Opinion must provide a range of "reasonable and prudent alternatives" for the agency to follow to avoid jeopardizing the endangered species. On the other hand, if the FWS or NMFS determines that the agency's action will *not* jeopardize the endangered or threatened species, or if reasonable and prudent alternatives are provided, the FWS or NMFS must issue an "Incidental Take Statement" that outlines terms and conditions under which the agency may "take" the species. "Take" means "to harass, harm, pursue, hunt, shoot, wound, kill, trap, or collect, or to attempt to engage in any such conduct."

OPINION

Trust Critical for Salmon Restoration

By Courtland Smith and Jennifer Gilden

The Oregon Coastal Salmon Restoration Initiative (CSRI) builds on a new ecosystem-oriented science. Many people are enthusiastic about helping to restore salmon. However, public enthusiasm for salmon restoration will quickly sour if volunteer efforts fail to meet scientists' evaluation criteria. Coastal salmon recovery planners and independent scientific evaluators should begin now to explain the criteria for successful salmon restoration.

The CSRI plan seeks to restore the complex and interconnected habitats on which salmon depend. Restoration involves much more than numbers of salmon. The measures for restoring habitat complexity require evaluating diversity in salmon life history, genetics, and population structure. Complexity and diversity require new measures that are not commonly discussed and reported.

A top priority is for scientists and the public to agree on the most important five or six criteria for judging complexity and diversity. Scientists will need to show how these criteria will be measured and explain why they are important. Absent such understanding, if the hard work of restoration volunteers were judged harshly by scientists, this would only add to public distrust of scientists and fishery managers rather than demonstrate the value of independent scientific review.

A survey we conducted recently (see *Restoration*, Spring 1997) shows that most coastal residents see the salmon decline as a production problem. For example, while scientists call for more restricted use of hatcheries and less harvest, half the respondents to our survey said that it is "not at all important" or "not very important" to reduce hatchery production.[1] Most of the public sees restoration success as more fish. This view is reflected in comments like, "More hatcheries, not less—if the wild population is depleted."

PEOPLE BELIEVE PLANNING SHOULD TAKE PLACE AT A LOCAL LEVEL WHILE FINANCING SHOULD BE SPREAD MORE BROADLY.

The scientists who conduct reviews of the success of the CSRI will have to establish credibility with the public on the evaluation measures they adopt. Our survey showed that the average confidence level among coastal residents for institutions and organizations who might be involved with salmon is only moderate (3.0 on a scale of 1–5). The confidence level is comparable to ratings for other surveys conducted during the last several years. Many respondents feel that scientists are distant and ignorant of coastal problems. The public associates scientists with controversial policies regarding streams, forests, fisheries, and land use.

The survey also revealed that coastal residents prefer state planning for coastal salmon restoration, and yet they have low regard for govern-

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Oregon Sea Grant photo

"If the hard work of restoration volunteers were judged harshly by scientists, this would only add to public distrust of scientists and fishery managers."

Courtland Smith is a professor in the Oregon State University Department of Anthropology and Department of Fisheries and Wildlife; Jennifer Gilden is a faculty research assistant at OSU. Joseph Cone, editor of Restoration*, and Brent Steele, a professor of political science at Washington State University, also contributed to this essay and to the survey referenced here.*

Legislative Wrap-up

Coho, Money, and Politics

by John Weber

The 1997 legislative session was notable for its bickering and gridlock. A major feat of the legislature, though, was the adoption and funding of the Coastal Salmon Restoration Initiative/Healthy Streams Partnership (CSRI/HSP). To underscore the magnitude of the CSRI, one 20-year veteran of the legislature said it was the biggest issue he'd seen the coast face. A CSRI/HSP implementation measure (SB 924), an appropriations bill (HB 5042), and timber tax (HB 3700) were enacted by the legislature.

The HSP builds on 1993's SB 1010, allowing Oregon to develop and implement water quality improvement plans as mandated by the federal Clean Water Act. Under the HSP, the Oregon Department of Environmental Quality (DEQ) is responsible for developing water quality management plans. The Oregon Department of Agriculture will assist DEQ by working on the plan's agricultural components. DEQ plans to first focus on the Tillamook, Rogue, and Umpqua basins to assist with coho restoration. The bulk of coho recovery efforts through the CSRI are in the hands of coastal watershed councils, with funding from the Governor's Watershed Enhancement Board (GWEB) for on-the-ground projects. The CSRI also calls for extensive monitoring and assessment of coho populations and habitat conditions by the Oregon Department of Fish and Wildlife, DEQ, and the Oregon Department of Forestry.

Of the $30 million in total funding for the CSRI/HSP, $20 million will be directed to on-the-ground projects. The remaining $10 million will be spent for biologists, data technicians, and other staff in state agencies. HB 5042 allocates $15 million from the state general fund; the rest of the support will come from the timber tax (HB 3700), an increase in fishing license fees, and money from the concrete and aggregate industry.

The driving force in the legislature for approval of the CSRI/HSP was fear of federal control of salmon recovery. State control, stream health improvement, and the promise that the CSRI contained no new regulations were other key selling points in the Capitol. Not surprisingly, the legislature wanted oversight of the CSRI/HSP. SB 924 creates a Joint Legislative Committee on Salmon and Stream Enhancement to "recommend implementation principles, priorities, and guidance" for the CSRI/HSP.

Although not a piece of legislation, a memorandum of agreement (MOA) between the National Marine Fisheries Service (NMFS) and Oregon is a key component of the CSRI. The MOA outlines the terms of the working relationship between the state and NMFS. An important feature of the MOA is that it allows NMFS to list coho if NMFS does not feel recovery is progressing.

What's the Current Picture?

The Joint Legislative Committee is chaired by Representative Ken Messerle and Senator Ted Ferrioli and consists of Representatives Terry Thompson and Jeff Kruse and Senators Veral Tarno, Joan Dukes, and Bob Kintigh. Representative Messerle was an author of SB 924 in his role as chair of the House Water Policy Committee. Senator Ferrioli was a member of the Senate Agriculture and Natural Resources Committee who directed the most pointed questions at NMFS Pacific Region Director Will Stelle during Stelle's appearance before the legislature.

As of early July, this committee has spent most of their meetings discussing the CSRI and MOA, extensively questioning both the governor's staff and GWEB. Clearly, the "no new regulations" part of the CSRI is a major sticking point, as the MOA allows for changes to state law, including the Forest Practices Act. Many in the legislature were upset that the MOA opened that door.

The governor's office has continued exploring the working relationship with NMFS. The governor has much at stake in this effort, politically and otherwise, and will remain a key participant in the CSRI/HSP. One critical, unanswered question is the level of NMFS regulation over activities south of Cape Blanco where coho were listed.

What's Next?

When NMFS decided not to list coho north of Cape Blanco, many in the Capitol declared victory. However, NMFS, the EPA, and others are closely watching to see if coho recovers and stream health improves, and will intervene if not satisfied. The courts will be involved too; lawsuits against NMFS for not listing all coho are imminent.

Because the CSRI has been portrayed to take a carrot rather than a stick approach, any perceived heavy-handedness from state agencies will meet with strong, likely loud protest from the legislature. The next six months could prove interesting as NMFS reviews forest practice regulations with the governor's office. Strengthening of timber regulations would not be widely popular in the legislature.

Related to the CSRI, the governor's office is developing a steelhead recovery plan. Steelhead ESA listings could affect a wider geographic expanse than coho. However, the steelhead issue currently lacks visibility in the Capitol. Because the steelhead plan is not finalized, the legislature took no action on it; interim efforts, particularly for funding, are certain. Implementing a steelhead recovery plan will likely cost millions.

Regarding the HSP, the water temperature standard of Oregon's water quality laws is intensely disliked by many legislators and

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Courts Deconstructing the ESA

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Judge Marsh found that the defendants' management decisions, which included risking high mortality rates throughout the sockeye and chinook salmon life cycles, were acceptable. He stated "[a]s a long-time observer and examiner of this process, I cannot help but question the soundness of the selected level of risk acceptance, but the ESA says nothing about risk tolerance, and the limits of judicial review dictate that I not interfere with a federal agency's exercise of professional judgement in their reasoned decisions."

The *American Rivers* decision (emphasizing that courts should defer to agency decisions as long as there are rational connections between facts and choices and reasoned evaluations), combined with the *Bennett* decision (stating that parties can bring suits to preserve economic interests under the ESA) portend a grim future for endangered and threatened species in the United States. The *Bennett* case can be overturned only by another Supreme Court case or by Congressional amendments to the ESA reversing the decision, an unlikely prospect at this time. However, *American Rivers* is only a district court case and has yet to be appealed to the same court that decided *Marbled Murrelet*. How will the Ninth Circuit apply the *Bennett* case? What will the Ninth Circuit do if *American Rivers* is appealed? The implications for salmon recovery are significant.

Sources

Marbled Murrelet v. Babbitt, 83 F.3d 1060 (9th Cir. 1996), *cert. denied*, 117 S. Ct. 942 (1997).

Bennett v. Spear, 65 USLW 4201 (U.S. March 19, 1997).

American Rivers v. National Marine Fisheries Service, 1997 U.S. Dist. LEXIS 5337 (Or. Dist. Ct. April 3, 1997).

The Endangered Species Act, 16 U.S.C.A § 1531 et seq. (1985).

Trust Critical for Salmon Restoration

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ment. How can this be explained? Coastal respondents express a preference for more local control in planning for salmon restoration, but they also recognize that the task is beyond local capabilities. People believe planning should take place at a local level while financing should be spread more broadly. They think they know what needs to be done; all they need is the resources. A typical comment is, "Listen to the fishermen for their ideas and don't rely on 'experts' with no practical knowledge or understanding of an individual stream!"

The quickest way to sour volunteer spirit is to begin restoration efforts with ambiguous and ill-defined measures of success. Review criteria need to be established soon; projects are already underway. And reviewers need to have the resources to not only clearly communicate the monitoring criteria but also make their deliberations public.

[1]*Courtland L. Smith et al. 1997.* Oregon Coastal Salmon Restoration: Views of Coastal Residents *(Corvallis: Oregon Sea Grant). You can obtain copies from Oregon Sea Grant Communications, Oregon State University, 402 Kerr Administration Building, Corvallis OR 97331-2134.*

Coho, Money, and Politics

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agricultural interests. A late-session bill (HB 3720) introduced by Speaker of the House Lynn Lundquist and passed by the legislature calls for the DEQ to re-examine streams with only drought year data. The original version of HB 3720 directed DEQ to develop alternative water quality standards to re-evaluate streams that failed the temperature standard. Expect the next legislature to revisit the issue.

In some respects, the CSRI/HSP is a big risk. If coho populations do not recover and stream health does not improve, the federal government has made it clear that it will intervene. While absolutely impossible to predict what future legislatures will think, a "why did we bother funding these programs anyway" sentiment in the next legislature is possible if NMFS or the EPA is seen to swing the federal hammer. To safely ensure Oregon's continued investment in its natural resources, the governor's office and state agencies must walk a fine line between the watchful eyes of NMFS and the EPA and the suspicions of the legislature.

Media Received, Noted, and Dipped Into

Restoration recently received the following publications that may be of interest to our readers.

A Handbook on CRMP and The Deadwood Creek Watershed Example. Deadwood, OR: Siuslaw Institute, 1997. This short booklet on coordinated resource management planning (CRMP) is, according to Johnny Sundstrom, of the Siuslaw SWCD, intended to "further the movement for effective resolution of the conflicts over natural resource allocation, protection and production, and to expand the application of these tested techniques to improved management of our landscapes and watersheds." Copies are available for $2 each from the Siuslaw Institute, 93246 Bassonett Rd., Deadwood, OR 97430.

River Future: Seven Steps to Saving Salmon. Portland, OR: Northwest Power Planning Council, 1997. This free, multifold brochure from the Columbia Basin's regional fish and hydropower council highlights their activities and tells how to "sign up for more information" from them. Call the Council at 800/222-5161 or e-mail them at comments@nwppc.org.

Other Media: Noted

Task Force Digital Studios/ CyberLearning Collection (http://www.cyberlearn.com), 1997. Information about this two-volume CD-ROM series and web site devoted to the ecology and the conflict over restoring salmon in the Pacific Northwest can be had at http://www.cyberlearn.com or (800) 499-3322. The Web site has feature articles, technical reports, opposing viewpoints, and news updates.

The CD-ROM series is available in Researcher and Educator editions (with college level and secondary level versions).

Watersheds on the Web

The Internet's World Wide Web is rapidly evolving from an amusing novelty to a useful resource as increasing numbers of organizations add real content to their "pages" on natural resource subjects.

As recently as six months ago, a search for the word "watershed" produced few results—a scattering of scholarly papers and a handful of "Welcome to . . . " sites that offered little in the way of solid information. That has changed, as a visit to the following sites will show:

The Watershed Times (www.4sos.org/council/counclpg.html)

Based at an increasingly rich site sponsored by the nonprofit For the Sake of the Salmon, the Watershed Times is part of that group's effort to serve and support local watershed councils in Oregon, Washington, and California. The site offers councils a chance to share news through their own free Internet "newsletters," using a template created by 4SOS. Other resources available through the 4SOS site include a growing watershed restoration bibliography and an on-line form where Web surfers can join in on discussions of subjects from how to fund watersheds to how to organize and run a council.

Surf Your Watershed (www.epa.gov/surf/)

An attractive, interactive site sponsored by the U.S. Environmental Protection Agency. Easy-to-navigate, clickable maps lead you from a view of the planet down to the watershed in your own back yard. Once you get there, find out more about environmental, economic, and demographic conditions and trends, local watershed partnerships, available assistance programs, and a wealth of additional information. The site provides quick access to some of the vast data resources collected and maintained by federal agencies, in a format easy enough for laypeople (and even school children) to use.

Watershed Tools Directory (www.epa.gov/OWOW/watershed/tools/)

On a more technical level, the EPA also maintains a detailed list of "several hundred methods, models, data sources, and other approaches that states and communities can use in managing watersheds to improve or maintain water quality for human health and ecological purposes." Includes a brief description of each tool and where to get it.

Know Your Watershed—Conservation Technology Information Center (www.ctic.purdue.edu/cgi-bin/KYW.exe)

Extensive links to national and state watershed resources, including training opportunities, watershed management guides, books and videos, and an on-line version of the popular CTIC catalog. Test your "Watershed IQ" via a brief, interactive quiz.

U.S. Geological Service—Water Resources of the United States (http://water.usgs.gov/)

Links to real-time and historical data on water quality and conditions, GIS data, and a host of fact sheets, publications and posters produced by federal water quality agencies. The data has been mapped by region to make it easier for users to find information that's relevant to their own regions and watersheds.

Regularly updated inks to these and other watershed and salmon-related sites can be found on Oregon Sea Grant's Web site, at:

http://seagrant.orst.edu/salmsites.html

—Pat Kight

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Calendar

Organizations involved in coastal watershed work are encouraged to send the editor calendar items and announcements of broad interest. Deadline for the next issue is September 15, covering the period July 1 through September 30.

Tsalila: A Watershed Experience

The Tsalila Partnership of Reedsport, Oregon, is seeking exhibitors for an educational festival that will "focus on salmon as a link to the watershed process, watershed restoration, and fisheries enhancement projets." The festival, September 12–14, in Reedsport, will have educational programs, tours, hand-on projects, and a traditional Indian village. For further information, contact Heather Bell at Umpqua Discovery Center, 541/271-4816.

Invitation to receive announcements of Sea Grant publications

Oregon Sea Grant distributes brief descriptions (abstracts) of publications and other media funded by Sea Grant. To request being added to the mailing list for these abstracts, contact Sea Grant at the return address on this page or via e-mail: seagrant@ccmail.orst.edu.

Restoration

Recycled Paper

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