

1 Executive Summary

The Willamette Subbasin is a special place. It wholly contains the nation's 13th largest river (by volume) and the largest waterfall in the Northwest. It has one of the richest assemblages of fish and wildlife species in the Northwest: 31 fish, 18 amphibian, 154 bird, and 69 mammalian species are native to the basin. It accounts for 60 percent of all of Oregon's crop sales, while at the same time supporting the largest port and one of the most well-developed industrial and service infrastructures in the region. It is also home to approximately 40 percent of the people living in the Columbia Basin.

Although the natural setting of the Willamette Subbasin draws people here, we must care for it to keep it. The abundance, diversity, and distribution of many native fish and wildlife species in the Willamette Subbasin have decreased significantly from historical estimates. About one-third of the species in the basin are now listed as threatened, endangered, or species of concern by state and federal fish and wildlife management agencies. Furthermore, the basin has lost at least 10 breeding species of wildlife since about 1850. Although there have been cycles of abundance, particularly among salmon and steelhead, overall trends for focal species in this *Willamette Subbasin Plan* are showing decline (PNERC, 2002; WLC TRT, 2003).

The bottom line of the *Willamette Subbasin Plan* is that the ecology of the Willamette Subbasin needs to become more complex. This is not a surprising conclusion, and this plan serves as an encyclopedia of current knowledge about fish and wildlife conditions augmented by a set of strategies, scientifically derived and evaluated, that are intended to make things better.

1.1 Need for Habitat

For 11 months, we have conducted thorough technical assessments that tell us we need more ecological complexity in the Willamette Subbasin because it is complexity that creates and maintains the habitats that produce plants, fish, and animals. Working backwards through this formula, to get more plants, fish, and animals to offset losses over the last half century, we need to get more habitat.

Much of the native habitat upon which the focal species of this plan depend is no longer available, no longer accessible, or heavily degraded. About 80 percent of bottomland forest, 97 percent of natural grassland, and nearly 100 percent of oak-savanna habitats that occurred historically in the basin have been lost (PNERC, 2002). Off-channel habitats such as alcoves and side channels have been reduced by 35 percent and 55 percent, respectively, on the mainstem Willamette River. Much of these habitat changes have occurred because major ecosystem functions and processes such as flow regimes, channel formation, and habitat connectivity have been disrupted (PNERC, 2002).

The primary—though not only—causes of disruption are as follows:

- Major dams
- Channel simplification
- Conversion of lands for urban, agricultural, and silvicultural purposes

A key to getting more habitat is enhancing the role of the natural processes that have been compromised over the last 150 years of settlement. This means we need to rely less on technical “fixes” and more on the inexact art of working with fire, floods, and a web of interconnected channels to encourage these natural processes.

1.2 Focus on Conservation

Although the basin’s ecology has undergone significant degradation, there is still a base of native species (in fact, no aquatic species has yet been extirpated from the Willamette Basin) and a range of existing habitat and potential habitats to build from and manage. The public lands in the basin, including nearly 40,000 acres of natural areas and refuges, can form an important conservation anchor.

For the past several decades, conservation efforts have tended to concentrate on forested uplands. However, lowlands represent an area in special need of conservation focus because most of the change and ecological disruption have occurred in these areas and this is where most of the population live and make a living. Simpler ways are needed for landowners to participate in conservation programs.

A key to lowland conservation efforts is managing the major dams, especially in the Cascade tributaries. While dams are effective and prized water-control devices, they also represent a major ecological disruption. They drastically change flow and temperature regimes (including channel-forming flows) and cut off access of salmon to highly productive habitat. For example, 71 percent of spring Chinook production in the Santiam system used to occur above Detroit Dam. Now there is no Chinook production above the dam. Because dams are essentially machines, they can and should be controlled in a way to better balance benefits and tradeoffs.

Although we may think of major ecological mitigation efforts such as modified dam operations as primarily fish-focused, our assessment shows that what is good for fish is nearly always good for wildlife as well. There is a built-in conservation efficiency, particularly in areas where habitats overlap, such as riparian areas and floodplains. Furthermore, restoring ecological function in an area affects the human residents as well. Recent research suggests that healthy riparian areas and floodplain zones can clean and cool water to help meet growing water demands while decreasing downstream flooding and increasing fish and wildlife habitat.

1.3 Plan Objectives

The problems facing fish and wildlife are as interwoven as the disrupted natural processes from which they flow. These processes make the Willamette Basin a chain of interconnected habitats. There is no single cause for disruption; rather, multiple causes act in concert to disrupt these processes. Therefore, this *Willamette Subbasin Plan* does not attempt to isolate, elevate, or pre-select a single, most important strategy or sequence of ranked strategies. There are no simple priorities.

However, there are simple objectives. This plan’s overall objective is to increase fish and wildlife population trajectories. To accomplish this, we need to do many things

simultaneously for a long time. The plan identifies more than 35 strategies needed to meet its identified objectives. This means that all concerned parties need to be on the same page in terms of conservation outcomes, commitment of resources to efficiently produce those outcomes, and tracking whether these efforts are working. This strategy calls for vastly improved coordination, program integration, targeted budgeting, and public communication. The current institutional setup does not currently facilitate these activities.

Although there are no simple priorities, there are clear conservation themes that will deliver important benefits to Willamette Subbasin fish and wildlife in the next 10 to 15 years. These themes can be viewed as “funds” or “accounts” in a Willamette Basin conservation investment portfolio. This plan recommends balanced investments to ensure protection of life, property, and economy, as shown in Figure 1-1 and described more fully in the Management Plan (see Section 5.2).

- *Deal with the dams—change flow regimes and establish fish passage.*
- *Fix culverts and diversions to allow fish passage.*
- *Focus on valley and foothills wildlife.*
- *Restore lowland riparian areas.*
- *Restore low-cost, high-return areas of the Willamette River floodplain.*
- *Let the river cool itself by seeping through streamside gravels, alcoves, and islands.*
- *Ensure that all priority themes above are taken up and supported in an organized way at the local level.*

Figure 1-1: Recommended Priority Conservation Themes for the Willamette Subbasin

The recommendation to ensure that all priority themes are taken up and supported in an organized way at the local level cannot be overemphasized. This plan cannot succeed unless local interests take ownership of it, agree with the identification of system-level needs, and identify how local contributions can help meet those needs. This plan is intended to provide useful and credentialed information—as well as new tools—for use by conservation practitioners. It is also intended to encourage local use of common analytical frameworks such as the Ecosystem Diagnostic Treatment (EDT) Method and the “terrestrial habitat utility” developed for this plan (see Management Plan, Section 5.6.1.2) to identify conservation opportunities.

The Willamette Basin has an active base of local and regional governments, watershed councils, soil and water conservation districts, nonprofit conservation organizations, and local, state, and federal agency staff who are well equipped to identify how local action can harmonize with basinwide needs.

The strategies identified in this plan are sound and needed—and likely to remain a list unless and until they are hooked up to well-considered local efforts. The plan is not a conservation cookbook. It requires actual work to implement it. Simply leaving the plan as a well-documented and, we hope, compelling identification of things to do is not sufficient for a place as special as the Willamette Subbasin. Therefore, the plan also includes some recommended approaches for implementation to move it from the identification of basinwide

needs into local action (see Management Plan, Section 5.6). We are particularly hopeful that the EDT products and the new terrestrial utility will simplify this process.

1.4 Additional Information Needs

The Willamette Subbasin may be one of the more-studied places on Earth, especially in the last decade. There have been intensive water quality studies, a ground-breaking “alternatives future” habitat study, and detailed studies of at-risk wildlife and fish (particularly salmon and steelhead). The combined information and its widespread availability are a boon to conservation efforts. Yet still more needs to be known. For example, the data and tools to directly link the biological performance of focal species in the Willamette Basin with specific habitat modifications are inadequately developed. The state of the science and of the data are simply insufficient at a basinwide scale to say with confidence what the return will be for proposed habitat actions.

Many other areas need additional information as well, including better species surveys, an improved understanding of site-specific behavior of flood flows and streamside gravel (hyporheic) flows, and improved use of environmental indicators to track progress (or lack thereof). The *Willamette Subbasin Plan's* Research, Monitoring and Evaluation section (Section 5.7) lays out a design for a comprehensive program of ordered information gathering, sharing, and analysis.

1.5 Looking Ahead

This *Willamette Subbasin Plan* structures and deepens our collective understanding of basinwide needs. We hope it can lead to a new Willamette Subbasin where science-based identification of ecosystem needs and clearly articulated strategies lay an enduring foundation for effective local conservation actions.

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May 2004