



WATERSHED STEWARDSHIP

A LEARNING GUIDE

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Watersheds Are Forever— Seeing the Whole Picture

*Pat Corcoran
and Flaxen D.L. Conway*

The term watershed is very popular these days. It's used in several ways, including as a physical boundary, as a key component in ecosystem management approaches to resource management, and as a metaphor for dramatic change.

As a physical boundary, a watershed is everything within a drainage basin. It includes everything from the ridgetops to the mouth of the largest river. If a drop of water falls on the top of a ridge, it flows down one side or the other, into one watershed or the other. Unfortunately, political and bureaucratic boundaries rarely are based on watersheds.

The ecosystem management approach considers how management decisions for one resource in a watershed affect other resources and the ecological functions of that watershed. While this “consider-everything-at-once” approach is more complicated, it accurately reflects the complexities and interrelationships in a natural system.

As a metaphor for dramatic change, a watershed event is something that signifies an entirely new way of thinking or doing something. It is accurate to say that the adoption of a watershed as the foundation for ecosystem management decisions is a dramatic change in resource management philosophy.

Watershed Stewardship: A Learning Guide is intended to help residents and volunteers be good stewards of their watershed. The driving force for the development of this guide was the 1995–97 Coastal Salmon Restoration Initiative. However, the focus of this guide is all salmonids (salmon, trout, and char) west of the Cascades.

Improved habitat for coastal salmon will benefit more than salmon. Most of the concepts, principles, and elements of this guide are relevant to other salmonid species and regions. Because other regions have watersheds with different ecological characteristics, make sure the projects you pursue are appropriate for your local environment.

HOW DID WE GET WHERE WE ARE TODAY?

Salmon have been an important part of life in the Pacific Northwest for centuries. Essential to the functioning of the ecosystem, salmon also have been important to humans. Native people continue to maintain some of the ancient expressions of their sacred relationship with the salmon.

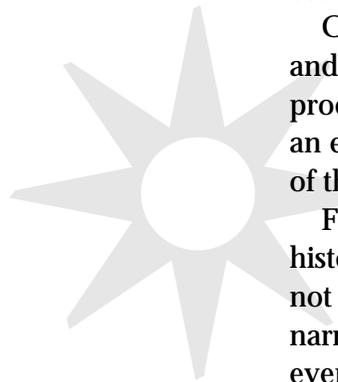
While many newer residents also appreciate and enjoy this magnificent fish, the relationship between salmon and humans has changed fundamentally. The driving forces behind this change are the tools of our own success—industrial technology and development, global markets, and an exponentially growing demand for goods and services.

The decline of salmon and other native species reflects these trends. Until the mid-1800s, harvest technologies were simple, markets were local and regional, and there were few people relative to fish. By the turn of the century, harvest technologies allowed for a greater catch, canning and shipping created a national market, and more people started eating salmon. Since the 1950s, we've continued to increase our ability to catch, share, and consume salmon.

Ongoing developments in timber, agriculture, mining, damming, and urban growth have reduced the ability of natural systems to produce salmon as abundantly as they once did. At the same time, an ever-increasing population has created a greater demand for all of these products.

Fisheries managers have used hatcheries to fill the gap between historical expectations and current returns, but this technology has not countered the significant decline in returning salmon. With narrower margins of return, natural occurrences such as El Niño events and poor ocean conditions become a serious threat to the survival of some species.

As we enter a new century, salmon and the people interested in them are faced with the cumulative effects of humans' increasing ability to catch and eat salmon combined with a decreasing ability of the natural environment and hatcheries to produce salmon. We have done such a good job with our productive technologies that we now face the task of developing our social and cultural technologies. The challenge is to bring our physical needs into alignment with our other values—including the value of having salmon in our rivers.



TAKING ACTION— FROM INDIVIDUALS TO GROUPS

Individuals and fishery-related organizations have been expressing concern about the declining numbers of salmon runs for more than 100 years. Early efforts at recovery were undertaken by those most directly affected—fishermen, cannery owners, fisheries managers, etc. Fishing seasons, limits, licenses, prohibitions, and propagation were used to increase the numbers of returning fish. Non-fishing users of waterways also were asked to help in obvious ways, but by and large fish were the concern of fishermen and fishery managers.

Later efforts to improve water quality in rivers also helped fish. However, these benefits were more incidental than designed. Water quality was improved for human uses, and fish also benefited.

The focus of early water quality efforts was directed at the most obvious sources of pollution such as effluent from industrial and sewage facilities, known as *point sources* of pollution. The basic tools used to improve water quality were government regulations, enforcement, and fines. The players were point sources of pollution, regulatory agencies, and a few watchdog organizations.

As point sources of pollution were controlled, the quality of the water near the sources improved significantly. However, the overall quality of water in our waterways remained degraded. Some areas were better off than others, but chronic water-quality problems persisted—even in rural areas away from point sources.

With the advent of the science of ecology, important realizations emerged with regard to fish health. One was that considerable degradation of water quality resulted from the cumulative impacts of runoff from a wide variety of *nonpoint sources* including city streets, lawns, farms, ranches, and timberlands. Another was the critical connection between the quality of salmon rearing habitat and salmon survival.

Thus, salmon recovery efforts shifted from simply plugging pipes to considering the impact across the entire landscape; and from increasing the numbers of fish to improving the ability of returning fish to thrive. This shift from treating specific symptoms to addressing root causes was reflected in the ecosystem management approach.

Along with a wider view of the root causes of salmon decline comes a wider collection of affected individuals. Fish no longer are the sole responsibility of fishermen and fisheries managers; in varying degrees, everyone in the watershed has an effect on fish.

It seems easier to use technology to solve specific problems of production than it is to create social technologies to manage collective actions across a landscape. The development of consensus

among numerous stakeholders is complex and difficult. However, resolving issues through true dialogue and good faith attempts at understanding creates more effective solutions.

One of the first and longest lasting multi-partner efforts at salmon habitat improvement is the Salmon and Trout Enhancement Program (STEP). Since 1981, this group of volunteers has advised the Oregon Department of Fish and Wildlife (ODFW) on salmon enhancement efforts. STEP volunteers work on local habitat improvement projects, learn from their experiences, and share that learning through educational programs in schools.

The Oregon legislature established the Governor's Watershed Enhancement Board (GWEB, now the Oregon Watershed Enhancement Board, or OWEB) in 1977. In 1995, GWEB was given the charge of overseeing funding for habitat improvement projects proposed by emerging local groups called watershed councils. These councils are diverse groups of local residents and technical advisors from related agencies and organizations. They have been busy implementing projects and conducting educational programs with local landowners and residents. Despite the huge scope of the task, they're making progress.

In 1995, the National Marine Fisheries Service (NMFS) proposed to list coastal coho salmon under the Endangered Species Act (ESA). In response, the State of Oregon devised a Coastal Salmon Restoration Initiative (CSRI). This proposal was an attempt to restore and enhance habitat for salmon through *voluntary* actions leading to positive measurable results, rather than through new federal regulations. The National Marine Fisheries Service decided to give the CSRI a chance to work and has deferred the listing of coho salmon in most of coastal Oregon.

Watershed councils are the heart of the CSRI. They are to identify, prioritize, plan, and implement projects through voluntary local efforts that will improve conditions and increase the numbers of fish in the system.

In 1997, the same scenario happened with certain runs of steelhead. The state then combined the steelhead recovery effort, the CSRI, and a related water-quality program (the Healthy Streams Partnership) into one comprehensive effort and renamed it The Oregon Plan. As happened with its predecessor, The Oregon Health Plan, the federal government responded to this innovative approach by allowing the state to achieve agreed-upon outcomes in its own way, rather than imposing solutions.

Watershed councils have taken on added responsibilities with the emergence of the Oregon Plan. The deferred listings by NMFS give some time for local efforts to bear fruit. This does not mean that anything councils do in good faith is good enough. They must meet specific required outcomes established by the federal government.

Councils can get help identifying outcomes for their specific area and measuring the success of their efforts. No one person, publication, or guide (including this one) can be the only source of information and assistance. Two key references are forthcoming from other sources. The *Oregon Aquatic Habitat Restoration Guide* will provide guidelines for projects to enhance habitat. The *Oregon Watershed Assessment Manual* will define monitoring protocols to be used by councils to ensure quality and comparable data across regions.

An area of increasing importance is identifying and managing the workforce to do this important restoration work. Projects of the scope and scale needed to address outcomes adequately and monitor results appropriately require considerable time, effort, and expertise. Most likely, an all-volunteer council won't have all of the resources needed. The benefits of restoration work are multiplied when local residents can build new skills and successfully compete for emerging jobs in environmental restoration.

HOW THIS GUIDE FITS IN

Watershed Stewardship: A Learning Guide was created—planned, written, reviewed, and published—by people who care about our watersheds and the people and businesses that depend upon them. It is a practical learning tool for a varied audience. This guide, like watersheds themselves, is a work in progress. As such, we've tried to keep in mind our vision *and* our realities—to learn, share, and work together; to do what we can now to have positive effects; to evaluate what we've done; and to make appropriate changes for the future.

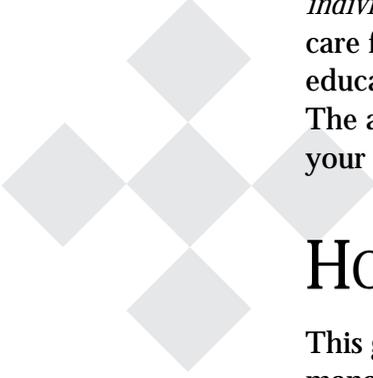
We recognize that watersheds are complex systems, and the connectedness of all of the parts—from the mountaintops to the shoreline and beyond—cannot and should not be ignored. In this first edition of the guide, we purposefully limited our focus to the area from the mountaintops to the shoreline.

We also recognize that watershed stewards know a lot about some things, but no one knows everything about everything. This also was true of the writing team. We recognize that there are differences of opinion in materials presented. The intent was to present a broad brush of material that is factually correct.

Ultimately, this guide was created to help individuals and groups build a mutual foundation of basic knowledge about watersheds and what it takes to work together to enhance them. You can build upon this basic foundation through continued learning, sharing, and advanced training. In that vein, the guide also will encourage

you to search for and obtain appropriate information to help you make the best decisions for your watershed.

In short, this guide is *not* the Sistine Chapel of curricula, an encyclopedia, or a bible for all of watershed stewardship. Rather, it *is* a practical, useful, and resourceful *tool for watershed stewards*—for *individuals* (landowners, land managers, workers, and others who care for the watershed) and for *groups* (watershed councils, educators, affinity groups, etc.). This guide is a work in progress. The authors (listed at the end of this chapter) want and need to hear your ideas for improving the guide.



HOW TO USE THE GUIDE

This guide was written for watershed stewards—people who own, manage, work, volunteer, or in some other way care for or depend upon a watershed. It also provides guidance for groups of people who have come together formally or informally to be guardians of the watershed.

The guide is intended to be an easy-to-use collection of information. It can be the core component for training new group members or others who want to learn about the complexity of watersheds. It is a resource that provides core knowledge about resolving problems or making sound decisions and serves as a conduit to other resources about specific problems or decisions.

You can use the guide individually or as a group to the degree, speed, and depth that fits you personally. You can read the guide from cover to cover to get the full picture. The chapters in each section complement each other and provide information to better understand the complexity of watersheds and working together as watershed stewards.

You can enhance learning further by coordinating the use of the guide with training based on local needs and wishes. The chapters are written with the idea that they can be used as part of workshops along with other materials (slides, videos, etc.).

But you also can use the guide a chapter at a time, either alone or with other chapters in the same section or other sections. Each chapter is meant to stand alone if necessary, although a chapter may refer to information presented in other chapters or other sections. However, if you use the chapters individually, you'll still have the opportunity to gain some basic understanding of the topic, albeit in a limited context. In other words, you won't necessarily get the big picture.

Each chapter in the guide follows the same outline:

- *Introduction* to the topic and what you'll learn in the chapter
- *The core subjects*—the things you really need to know
- *A summary/self review*
- *Exercises* to give you the opportunity to practice what you've learned
- *Resources* for further training and information
- *Three next steps to put this into practice*—a place for you to fill in (in your own words) steps, actions, thoughts, contacts, etc. you plan to take to move yourself, your farm, land management agency, community, group, etc. ahead.

The Resources section of each chapter is a reminder that this guide is only one of many available resources on this topic. OWEB, NMFS, For the Sake of the Salmon (4SOS), Pacific Rivers Council (PRC), and many other groups, agencies, and universities are continually increasing the knowledge and resource base for this exciting area. In some cases, the funding or success of a restoration project may lie in following certain steps or procedures listed in technical manuals. This guide is a starting place. *The key is to know—and stay current with—what's out there and how to get it.*

AUTHORS AND REVIEWERS

Many people helped create this guide. A multi-disciplinary team of authors from the OSU Extension Service worked for several months to gather and present in a helpful, useful format the information in each section. But it didn't stop there. Drafts were reviewed internally by team members and their OSU colleagues. Then the guide underwent a rigorous external review—more than 60 individuals representing *groups or agencies* (U.S. Fish and Wildlife Service, Oregon Department of Fish and Wildlife, OWEB, Natural Resources Conservation Service, Soil and Water Conservation Districts, Pacific States Marine Fisheries Commission, 4SOS, Oregon Forest Resources Institute, etc.), *industry* (consultants, landowners, etc.), *watershed councils, academia*, etc.—to help assure that the guide is the best it can be for this first edition. A heartfelt thanks to the authors and reviewers. Special thanks to Teresa Welch, project editor; Karen Skjei and Rick Cooper, layout and design; and Tom Weeks, cover design. We also thank the Oregon Forest Resources Institute and the OSU Extension Service for financial support.

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