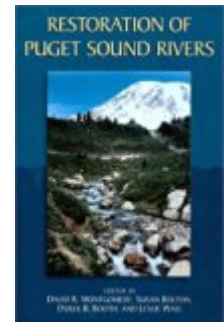


David R. Montgomery, Susan Bolton, Derek B. Booth, Leslie Wall, eds.. *Restoration of Puget Sound Rivers*. Seattle and London: University of Washington Press, 2003. 512 pp. \$30.00, paper, ISBN 978-0-295-98295-3.



Reviewed by Jeff Crane

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Bringing Science Into River Restoration

River and stream rehabilitation and restoration has become popular throughout the United States as well as in the Pacific Northwest in recent years. Numerous groups have made important strides in rehabilitating degraded rivers and streams, into functional ecosystems with healthy fisheries. *Restoration of Puget Sound Rivers* is an effort to inject a greater use of science into these efforts. Produced by the Center of Water and Watershed Studies at the University of Washington, this book is the result of a spring 2000 meeting of the Society for Ecological Restoration's Northwest Chapter. The articles in this collection present multiple aspects of river rehabilitation and restoration including geology, engineering, public policy, urban planning, and riparian ecology, among many others. While this leads to a certain amount of repetition it also assures a remarkably complete and complex study of the issues and problems involved in rehabilitating and restoring rivers.

River rehabilitation and restoration efforts are not always driven by an accurate understand-

ing of a river's natural dynamics but rather by a pastoral view of a river, an idealized portrait of a pristine river running through riffles, pools, and glides, draped by cedars and oaks while also being easily accessible to the fishermen, hiker, or romantic. Therefore restoration of a river may more closely resemble a reconstruction effort to make a degraded river resemble an idealized river in the restorationists' mind rather than the actual conditions of the original river. As the authors of "Fluvial Processes in Puget Sound Rivers" suggest, rivers differ in flow, bedrock, sediment load, etc. as well as containing a great deal of variability within the river themselves. Therefore, "recognition of the characteristic range of channel conditions associated with each channel type is critical for successful restoration" (p. 59). In fact, there are many factors within a river that may not be obvious to restorationists and may not appear obvious in a river targeted for rehabilitation or restoration. This is where analysis and historical research enter the picture.

The importance of understanding the historical river is stressed repeatedly throughout this

book, particularly in the article, "Reconstructing the Historical Riverine Landscape of the Puget Lowland." Archival research is integral to this effort and plays a critical role in understanding a river and designing a restoration plan. Of course a historical approach is important to environmental historians as well as river restorationists. As Donald Worster wrote in his essay "Doing Environmental History," "together, the natural sciences are indispensable aids for the environmental historian, who must begin by reconstructing past landscapes, learning what they were and how they functioned before human societies entered and rearranged them." [1] This article shows that river restoration advocates in the Puget Sound region are particularly fortunate due to the maps and field notes prepared by the General Land Office (GLO) between 1850 and 1890 in the early stages of settlement in the region and that document the corresponding dramatic transformation of the landscape. Another useful resource is the annual report on Western Washington rivers filed every year by the U.S. Army Corps of Engineers beginning in 1876. As "Reconstructing the Historical Riverine Landscape" points out, "their river descriptions highlighted wood because it created hazards for, or often completely blocked rivers to, steamboat navigation" (p. 88). As it turns out, woody debris is often an important ingredient in salmonid habitat. This article provides an effective guide to the research strategies and other resources available for those seeking to understand the historical river.

The central theme that emerges in this collection is the inherent conflict between a growing human population and the appropriate way to restore a river, which would require the restructuring of human communities. No more housing in flood plains; limited farming or restructured farming in flood plains; protection of key watershed forests on tributaries and headwaters; removal of levees to restore key wetlands; reduction of chemical, petroleum, and stormwater runoff; larger forest buffers along streams, where appro-

priate; the construction of appropriate forests for long-term restoration, etc. The contributing authors make it clear that these are some of the major issues that must be considered for a truly effective program of river restoration.

How will this be done? Should we do as John Wesley Powell and, recently, historian Donald Worster have recommended, and create watershed democracies--societies that are centered on the watershed they occupy and are dependent on? Will this lead to better preservation and restoration of watersheds themselves? Whatever the approach, it is clear that those concerned with this issue must attack the pastoral ideal in America. As Patricia Nelson Limerick suggests in *Something in the Soil*, we have to get over the American and environmentalist aversion to cities and find ways to encourage city living and urban development. Celebrate the city and get people out of the country. High-density urban development is essential to any river restoration effort in a region--what many call Pugetopolis--that is expected to double in population in the next fifty years. "The Politics of Salmon Recovery in Lake Washington," broaches an important related topic. With so many groups and individuals trying to rehabilitate and restore rivers and creeks in limited ways even while major structural changes in the habitat continue, money is being wasted on efforts that may not be effective in the long run. Should limited funds be distributed across a multitude of small projects with varying potential for success or, in fact, is it crucial for Puget Sound citizens and their governments--ideally organized and united as a comprehensive ecosystem management institution--to focus on important rivers in reasonably healthy condition? This article suggests that rivers such as the Snoqualmie and the Stillaguamish might be better candidates for restoration over the long-term than the numerous streams draining into Lake Washington. Nobody wants to suggest writing off particular rivers and streams, especially those in one's own neighborhood, but it is certainly hard to imagine restoring the Duwamish

waterway and river with its heavy industrial use. It is more pragmatic to direct the resources for restoration on particular rivers and their watersheds. Fisheries biologist and author Jim Lichatowich says in his fine study, *Salmon Without Rivers* (1999), that we have to be ready to give habitat back to the salmon while creating a sustainable model of naturally-reproducing river restoration. This dovetails well with the suggestions of the authors in *Restoration of Puget Sound Rivers* (2003) that restoring rivers will require a lot of money, effective education of the citizenry, and bold political will on the part of governments in the region. A grand vision emphasizing watershed restoration rather than limited rehabilitation and restoration is the key to long-term success.

The conclusion of the collection, albeit brief, provides a nice summary of the pressing issues of river restoration. Specifically, the authors state the need to move away from a focus on salmon and to emphasize the reconstruction of river ecosystems. Any watershed that is effectively restored in the Puget Sound region will benefit salmon, steelhead, and trout as well as ravens, bears, martens, raccoons, and smaller benthic organisms. Furthermore, the conclusion clarifies the collection's central points by delineating the key questions each restorationist or group should ask and answer before proceeding with restoration or while designing a project.

This is not a book for the casual reader, but it is an essential tool for those embarking on river rehabilitation and even restoration in the Pacific Northwest and I would suggest its usefulness to restoration advocates in other regions as well. Models for long-term restoration are provided in the book, as are other guides such as how to conduct research on the historic river and watershed, and how to assess the value of a river for restoration. What is stressed throughout the articles is the need to found river restoration on complete scientific understanding and analysis, planning

and restoring for the long-term, and finally, restoring the river in such a way that restoration will become a self-sustaining process. For example, converting floodplain agricultural lands to particular types of forests that, many years down the road, will dependably contribute important wood detritus to rivers. Furthermore, Restoration of Puget Sound Rivers would also be useful for classes in regional studies, Pacific Northwest history, or environmental studies focused on the Puget Sound region.

Note:

[1]. Donald Worster, *The Ends of the Earth: Perspectives on Modern Environmental History* (New York: Cambridge University Press, 1988), p. 294.

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