

A Strategy for Fisheries Habitat Restoration

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Introduction

Productive fish populations and natural water quality conditions depends on functionally healthy floodplain and channel ecosystems. The Umatilla River Vision (Jones *et.al.*, 2008), developed under guidance of the Umatilla Tribe's First Foods Concept, defines a functional river as a dynamic environment that incorporates and expresses ecological processes that continue the natural production of First Foods used by the Tribal community. The River Vision provides direction for restoration by focusing on the five touchstones of hydrology, geomorphology, connectivity, riparian vegetation, and aquatic biota. Operating under this guidance, CTUIR projects are planned, designed, implemented, and monitored across the usual and accustomed harvesting areas to achieve fish habitat restoration goals.

The following goal and objectives are defined for the CTUIR Fisheries Habitat Program:

Goal Statement

To protect, enhance and restore functional, healthy and sustainable floodplain, channel and watershed processes for the purpose of protecting and restoring fisheries and aquatic species that are important to the Umatilla Tribes.

Objectives

- 1) Develop comprehensive and scientifically defensible restoration strategies based on the most recent and best available scientific information.
(Includes prioritizing actions and geographic areas)
- 2) Maintain and apply an updated knowledge of floodplain, channel and watershed function as it relates to healthy aquatic conditions and fish populations.
- 3) Build and maintain cooperative and coordinated relationships with other key agencies and stakeholders in order to maximize project efficiency, effectiveness and success.

Project Considerations

Fisheries habitat work by the CTUIR is a combination of passive and active approaches in order to 1) protect those areas in functional condition, 2) restore and enhance areas in degraded conditions, and 3) create and maintain management options and situations that provide adequate and functional processes for a healthy aquatic ecosystem. The approach of the CTUIR Fisheries Habitat Program recognizes that natural variability is an inherent

feature of river systems. Geomorphic stability is pursued when designing projects rather than trying to achieve absolutely fixed structure. The restoration of natural riverine processes is also more likely to address causes of degradation than restoring conditions to a fixed endpoint. Functional landscape scales must also be considered and relationships between physical, chemical, and biological processes across time and space must be recognized and understood.

Important needs for developing restoration projects are based on information from Wohl *et.al.*, 2005 and Bernhardt *et.al.*, 2005. It is necessary to conceptualize a model of river ecosystems and understand both physical and biological processes that are occurring. It is also necessary to recognize and consider multiple, interacting temporal and spatial scales of river response. Effective variables for monitoring must be selected that are indicative of ecosystem change and measure success or failure of meeting project objectives. Scientific knowledge is then linked to implementation actions through careful and purposeful planning and design. And finally, restoration methods must be developed within existing constraints.

Riverine Ecosystem Planning Approach

The Fisheries Habitat Program addresses channel and floodplain function and aquatic habitat deficiencies through a systematic, holistic watershed planning approach termed the Riverine Ecosystem Planning Approach (Figure 1). This approach includes the prioritization of focal areas and management practices based on key species limiting factors with a mechanism for adaptive management that utilizes scientifically defensible techniques. The approach includes the 5 basic stages of scoping, assessment, monitoring, implementation, and reporting. Scoping allows for the interface of community needs and issues with resource priorities. The issues and concerns developed from scoping can direct the needs defined for assessment. Using existing and collected data, assessments are developed with the intent to prioritize issues, identify limiting factors, and define project objectives. Monitoring plans that utilize scientific knowledge and accepted methodology are then developed to measure achievement of project objectives. During the implementation stage, project actions are designed to address limiting factors through means that restore natural channel and floodplain processes. The final stage of reporting provides an opportunity to summarize monitoring and project actions and evaluate results. Project changes can be made based on the outcomes or the approach to future project work can be improved.

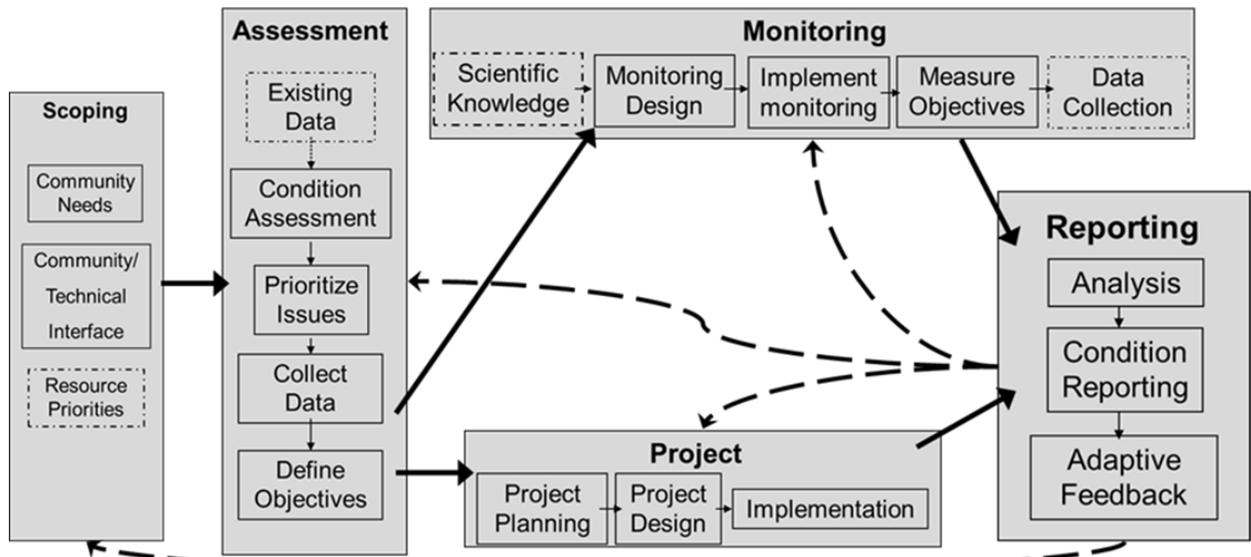


Figure 1. CTUIR Riverine Ecosystem Planning Approach

References

Bernhardt, E.S., M.A. Palmer, J.D. Allan, G. Alexander, K. Barnas, S. Brooks, J. Carr, S. Clayton, C. Dahm, J. Follstad-Shah, D. Galat, S. Gloss, P. Goodwin, D. Hart, B. Hassett, R. Jenkinson, S. Katz, G.M. Kondolf, P.S. Lake, R. Lave, J.L. Meyer, T.K. O'Donnell, L. Pagano, B. Powell, and E. Sudduth. 2005. Synthesizing U.S. river restoration efforts. *Science* **308**:636-637.

Jones, K.L., G.C. Poole, E.J. Quaempts, S.J. O'Daniel, T. Beechie. 2008. Umatilla River Vision. Confederated Tribes of the Umatilla Indian Reservation, Department of Natural Resources. White paper.

Wohl, E.E., P.L. Angermeier, B. Bledsoe, G.M. Kondolf, L. MacDonnel, D.M. Merritt, M.A. Palmer, N.L. Poff, and D. Tarboton. 2005. River restoration. *Water Resources Research* **41**:1-12.