Unlike most other natural resource managers, the Confederated Tribes of the Umatilla Indian Reservation (CTUIR) has adopted a mission based on the First Foods ritualistically served at tribal meals. This framework for natural resource management seeks to reflect the unique tribal values associated with natural resources and to emphasize ecological processes and services that are often undervalued by westernized Euro-American natural resource strategies. Underscoring the importance of Tribal values, in 2007 the CTUIR lead an effort to create a target vision for the Umatilla River. The River Vision describes healthy Umatilla River that is highly dynamic and shaped by not only physical and biological processes but also interactions and interconnections among those processes. Such a vision requires that managers incorporate several attributes of the Umatilla River into management and restoration strategies. We discuss our experiences of nearly 10 years, implementing the Umatilla River Vision across rivers in NE Oregon and SW Washington.

First Floods and the River Vision - Eric Quaempts, Confederated Tribes of the Umatilla Indian Reservation, Pendleton, OR, USA (co-authors: S. O’Daniel, T. Farrow-Ferman)

The Confederated Tribes of the Umatilla Indian Reservation (CTUIR) Department of Natural Resources has organized natural resource functions and goals through a focus on traditionally gathered resources identified by the Tribal community as 'First Foods'. The cultural recognition of the First Foods order is demonstrated in the ritualistic serving order of the native foods in multiple community ceremonial events. The ecological, physical, and temporal organization manifested in the serving ritual is also be observed in the active physical and ecological processes occurring on the landscapes on which the community depends. Because cultural practices are dependent on First Foods, explicitly representing the relevance of the First Foods order in planning and restoration efforts is required to ensure that the appropriate products are returned to the Tribal community. The first two First Foods - Water and Fish - are explicitly addressed the CTUIR’s River Vision, which identifies five touchstones of river health necessary to provide First Foods for the cultural continuity of the Tribal community. We review the First Foods mission and the River Vision touchstones and the interconnections between touchstones as a potential model for managers with management responsibility of water quality and fisheries.

Aquatic Biota Response to Stream Restoration in the Upper Grand Ronde Basin, Oregon, USA - Les Naylor, CTUIR-Fisheries, Pendleton, OR, USA

The Grande Ronde Basin of Eastern Oregon is within the Confederated Tribes of the Umatilla Indian Reservation (CTUIR) Aboriginal Title Lands and is co-managed by CTUIR and Oregon Department of Fish and Wildlife (ODFW). Within this Basin CTUIR conducts restoration of functional floodplain, channel, and watershed processes to aid in the recovery of ESA listed salmonid’s by implementing concepts of the First Foods as well as the principles of the CTUIR River Vision (Jones et al 2015). Monitoring aquatic biota responses to these restoration actions is undertaken by the CTUIR Grande Ronde Research, Monitoring, and Evaluation project in conjunction with the CTUIR Biomonitoring project. The goal of our habitat
monitoring is to provide empirical data to restoration managers on fish responses/use of restoration structures and new channels, and changes in morphological (habitat) features as a function of these restoration actions. Current biological results from ongoing monitoring at two different restoration projects using two different scales will be examined. The two sites include a larger scale effort on the Catherine Creek Southern Cross property that uses channel re-construction and floodplain connectivity, and that of a comparatively smaller stream on private land - the Dark Canyon Creek project, which uses a holistic approach to restoration to meet the needs of the landowner. Monitoring efforts show higher densities of Chinook on the Catherine Creek site immediately post restoration compared to pre-restoration (0.11 fish/m2 post project compared to 0.04 fish/m2 pre-project), as well as an increase in Chinook redds within the restoration reach. For Dark Canyon Creek, we have observed a greater distribution and density of steelhead redds post project compared to pre project (mean 8.9 redd/mile post project and 2.6 redds/mile pre-project), and have recorded presence of rear juvenile Chinook each year post project at a mean density of 1.3 fish/m2 where none were observed pre-project. Through these monitoring efforts, the CTUIR are able to inform habitat biologists, engineers, and co-managers on the immediate and ongoing effectiveness of different types of restoration actions. The physical and biological sampling of habitat enhancement sites enables the CTUIR Habitat program to effectively implement its adaptive management strategies when designing additional restoration projects.

Data Management and Web Communications to Inform Decision Making - Stacy Schumacher, CTUIR, Pendleton, OR, USA

In 2011 there was a convergence of efforts to centralize, standardize and disseminate data. The GIS Program was positioned to help foster and lead the effort to transform data management from single spreadsheets across multiple computers into a system which provided a direct positive organizational impact for the Confederated Tribes of the Umatilla Indian Reservation. The goal was to centralize and standardize data management in order to inform decision making. The process included conducting a needs assessment, applying a maturity model and developing from the ground up, web based software which allows users the ability to QA data and Managers the ability to access summary information as well as fulfills reporting requirements. This effort informs the River Vision by incorporating all touchstones into a database structure aimed at data decision support for the CTUIR.


River channel temperature regimes emerge from the integration of a breadth of physical processes, knitting together several of the CTUIR River Vision Touchstones; hydrology, connectivity and geomorphology. Human alterations of these touchstones have yielded non-normative stream temperature regimes, which are the most geographically wide-spread limitation on populations of native aquatic species in the Columbia River Basin. Over the past decade there has been an increasing interest in understanding how multiple scales of hyporheic exchange may influence stream temperatures. We present a stream temperature simulation model to describe the influence hyporheic exchange relative to the influence of riparian shade on main-channel water temperature at both the daily and annual time scales. Our results provide additional evidence that hyporheic exchange in an important driver of main-channel temperature regimes in western U.S. alluvial rivers. Our efforts also demonstrate how the CTUIR River Vision provides an integrated framework for driving research-based knowledge generation critical for aquatic ecosystem management.
Fish habitat and Floodplain Restoration on Catherine Creek in the Upper Grande Ronde Watershed, Snake River Basin, Oregon, USA - Allen Childs, Confederated Tribes of the Umatilla Indian Reservation, Pendleton, OR, USA

Historic anthropogenic manipulation and management of land, rivers, and floodplains has contributed to degraded spawning and rearing habitat and fishery productivity in the Catherine Creek watershed in northeastern Oregon's Grande Ronde River Basin, a tributary to the Snake River. What once was regarded as a 'fish factory' for spring Chinook salmon and summer steelhead and other native fish is now recognized as a watershed with extensive loss of significant functional habitat, decreased carrying capacity, and imperiled ESA listed Snake River Basin fishery stocks. The Grande Ronde Watershed is part of the Confederated Tribes of the Umatilla Indian Reservation (CTUIR) Aboriginal Titled Lands and CTUIR manages a tributary habitat program in collaboration with federal, state and local stakeholders to restore sustainable habitat and viable fishery resources. Strategic habitat planning, based on identification of biologically significant stream reaches that support core life history requirements of focal fish species, habitat limiting factors, and high intrinsic potential for restoring floodplain process and function, resulted in prioritization of individual reaches along Catherine Creek to target habitat actions that increase habitat suitability and capacity. As part of this prioritization process, the CTUIR and Western Rivers Conservancy, through Bonneville Power Administration and the Northwest Power Planning Council Fish and Wildlife Program purchased a 545 acre conservation property in the central portion of a targeted 4 mile planning reach and initiated fish habitat restoration planning and design which was guided by the CTUIR’s River Vision concept of providing sustainable first foods through dynamic river systems that promote riparian and wetland vegetation, hydrology, floodplain process and function, fluvial geomorphology and the riverine biotic community (Jones et. al., 2015). A highlight of the presentation is the 1 mile reach within the conservation property involving transformation of a 0.8 mile channelized reach into a constructed meandering channel and re-connected floodplain, complete with side channels and swales, alcoves, large wood complexity, riffles, large pool habitats, and riparian and wetland revegetation. Long term project action effectiveness monitoring includes a Before, After, Control, Impact (BACI) design using the Columbia Habitat Monitoring Program (CHaMP) and the Physical Habitat Monitoring Strategy (PHaMS) protocols. Additionally, water temperature, revegetation survival, channel morphology, and biological response is evaluated. We present an overview of our master planning effort, land and easement conservation, construction and first year observations regarding performance. Through land acquisition, conservation easements, and a cohesive multi-agency design team, nearly 4 miles of river have been enhanced and restored to maximize habitat uplift to offset large areas of degradation that persist within the watershed.