



Full Stream Ahead

May/June 2007

News and Highlights of Creeks and Communities: A Continuing Strategy for Accelerating Cooperative Riparian Restoration

Oregon's John Day River Proper Functioning Condition Assessment on a Large River

The BLM Prineville District decided to use Proper Functioning Condition (PFC) assessments on riparian areas of the Wild and Scenic John Day River as part of updating the Resource Management Plan. Since PFC is not generally used on large rivers, assistance was requested to determine if a PFC assessment would work on such a large river system (see Table 1 for flow information). BLM manages approximately 456,000 acres of public land scattered over one hundred plus river miles in the over 8,000 square mile basin.

Table 1. Flood Frequency and Stage Rating Relationship

Recurrence Interval	Instantaneous Peak flows Annual Exceedence Probability	Service Creek* Flow (cfs)	Stage in ft at Service Creek (Rating ID 19.0 2004-08-24)	McDonald Ferry** Flow (cfs)	Stage in ft at McDonald Ferry (Rating ID 13.0 2004-08-24)
Average Discharge		1,941	4.41	2,103	3.71
1.5 year	67%	9,500	8.72	9,900	7.46
10 year	10%	24,600	13.69	24,200	11.58
50 year	2%	36,300	16.74	35,200	13.82
100 year	1%	41,400	17.95	40,100	14.70

An interdisciplinary team made up of District employees and their contractors, the National Riparian Service Team (NRST), and BLM National Science & Technology Center (NSTC) spent 1 day in April 2006 going over files in the office, and 3 days in July 2006 looking at several reaches from river mile 198 to river mile 35. The conclusion was yes, PFC assessment would work well for planning purposes on *this particular* large river. A major factor in making this determination was the flow record shown in Table 1 and its correlation to the existing vegetation communities.

PFC Assessment Procedure

Review Existing Documents

Prineville BLM has gathered a lot of information about the John Day River including 1982 low level (1:2000) color infrared aerial photography, historic information (some from 1905), allotment management plans, and the personal knowledge of their experienced interdisciplinary team. We utilized all that we could, as well as information derived from a literature search on attributes and processes of large rivers (over 30 articles). This review told us that the main stem John Day River was a different river 150 years ago. However, this review also revealed there has been a tremendous increase in coyote willow in the last 25 + years. The increase roughly correlates with changed livestock management practices along the river.

PFC Assessment - John Day River continued

In the late 1800s and early 1900s, as with most rivers in the arid and semi-arid west, the John Day experienced heavy use from high numbers of livestock. Shaniko, Oregon to the west of the river was at one time the largest rail head in the United States for shipping sheep to markets back east. There was also farming, mining, large cattle numbers, and many feral horses turned loose after the Depression. All of these took their toll on the condition of the land.

Analyze the Definition of PFC

The lower John Day River flows through repeating areas of narrow and wide valley bottoms. There is the real possibility that a large canyon river's dimension, pattern, and profile are controlled by the landform through which it flows. When we looked at the lower John Day River, even through canyon reaches, we found that while the landform does play a role, so does riparian vegetation. Large wood undoubtedly played an important role prior to exploration and development. In the narrowest canyon reaches, tributary confluences are "hot spots" for riparian areas. If a tributary delta or canyon-wall rock fall is large enough (i.e., both in terms of quantity and size of particles delivered to the John Day River), the deposit will produce a constriction of the main-stem channel at high flows, creating backwater conditions of greater depth and slower velocities, inducing deposition of finer sediments upstream from the constriction. As high flows work down through the constriction, finer particles in the tributary sediment deposit may be transported downstream, producing a slender point bar on the side of the initial tributary input (see Figure 1). In the wider valley bottom reaches, riparian vegetation and large woody material is necessary for energy dissipation, point bar and floodplain development, etc.

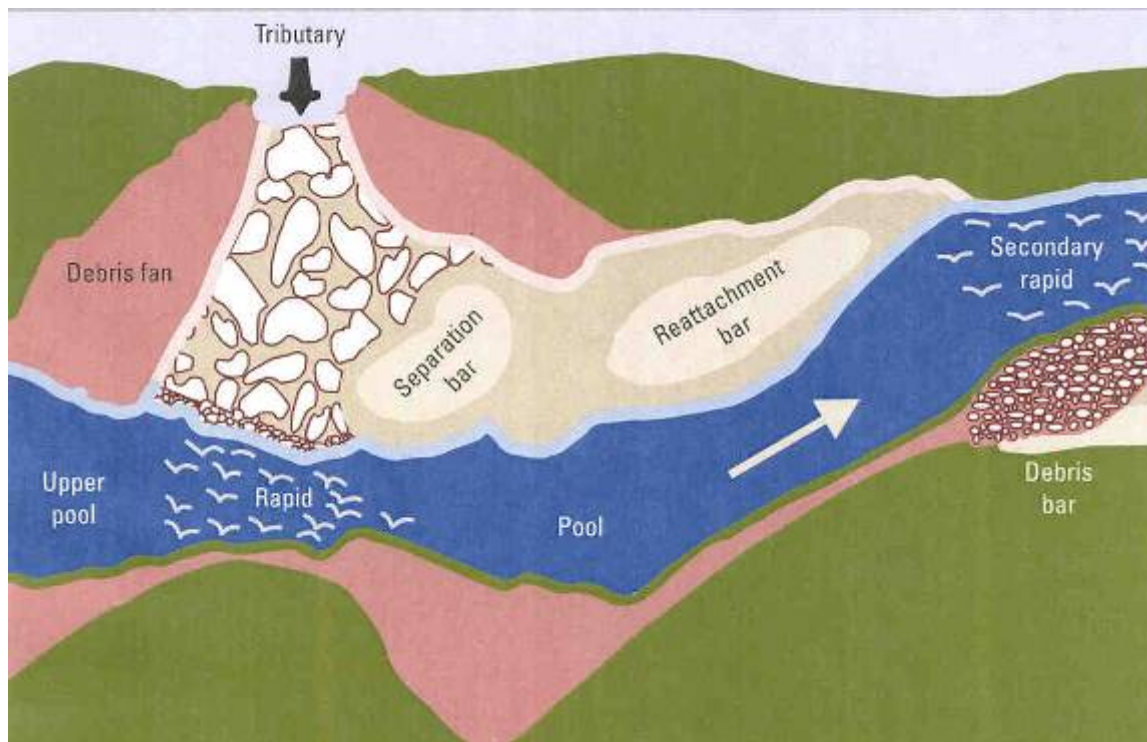


Figure 1. Diagram showing a fan-eddy complex in Grand Canyon on the Colorado River. The same process is occurring in the John Day River system. Debris flows from tributary canyons carry coarse sediment that is deposited at the juncture with the river, forming deposits called debris fans. Debris fans constrict the river and raise its bed elevation, creating rapids. Especially during floods, the river entrains the sediment on the debris fan and transports it downstream through the pool, where the larger particles become lodged on debris bars that form secondary rapids. Between the constrictions of the primary and secondary rapids, pools and eddies form, creating a depositional setting (adapted from Gloss, S.P., Lovich, J.E., and Melis, T.S., eds. 2005. The state of the Colorado River ecosystem in Grand Canyon: U.S. Geological Survey Circular 1282, 220 p.).

PFC Assessment - John Day River continued

Assess Functionality

During July 2006, the interdisciplinary team looked at many different reaches, and in doing so the determination was made that the concepts of physical function would work well to understand the functional processes of the system. They felt the PFC process would help them understand some of the reasons why current habitat conditions exist. It was concluded the information collected in PFC assessments would be crucial in the development of the Resource Management Plan especially because of current river issues. The potential and capability of five large complexes were developed by the field team. In the following months, the contractors and District interdisciplinary team completed PFC assessments on 200 miles of the river and its tributaries.

The potential riparian vegetation includes riparian tree (such as cottonwood), shrub, and herbaceous community types. An item of interest from the assessments is a new understanding of how riparian recovery is occurring in this large river system. Torrent sedge (*Carex nudata*), an obligate wetland clump sedge, threesquare bulrush (*Scirpus americanus*), an obligate wetland indicator, and coyote willow (*Salix exigua*), a facultative wetland indicator, are growing in the active channel and up to bankfull, and are just now approaching a big enough size class and extent that they affect flow velocity and sediment movement in the river. They are capturing sediments that are leading to the formation of floodplains. Reed canarygrass (*Phalaris arundinacea*) which is at least weakly rhizomatous and can range from obligate wetland to facultative wetland, is colonizing these sediment deposits and increasing both stability and sediment filtering; particularly along the slower-flowing sections.

White alder (*Alnus rhombafolia*) and mountain alder (*Alnus incana*), both facultative wetland indicators, are present on the lower river but are having a difficult time establishing because of flow patterns and competition from reed canarygrass and coyote willow. Both have nut-like seeds that are dropped in late fall or winter and generally picked up by high flows and commonly establish at bankfull. Young plants were present but definitely not common. Chinese elm (*Ulmus parvifolia*) is currently acting as the ecological equivalent of alder, and at maturity, the equivalent of cottonwood. It is establishing more readily at bankfull and capturing large material and sediments. Over time, it will also provide an important large wood component.

The brunt of the recovery is being carried by these few species with other willows, sedges, rushes, and bulrush filling in where smaller sites can accommodate them. The current flow conditions and substrate variety requires this flexibility in species composition. In this recovery, plants are needed that can stay totally submerged for up to 6-8 months like torrent sedge and threesquare bulrush, to plants that can be wet and then dry for several months but still have root masses that can withstand high flows such as coyote willow (see figure 2). The John Day River is dictating the conditions needed to recover and the group of plants that meet those requirements are the ones present today, facilitating the evolution from its current state and moving it toward the higher identified potential. Some of these species are ones we don't particularly relish like reed canarygrass, but at this point in recovery it is doing the job and we feel that through succession it may have a reduced extent (see figure 3).



Figure 2. The red stems of coyote willow clearly show the extent of colonization of rocky banks below Clarno Rapids. This photo was taken in early December 2006, with river flows about 400 cubic feet per second. A few days later, nearly all the willows were inundated and remained so until June 2007.

PFC Assessment - John Day River continued



Figure 3. Wide, slow-flowing section of the upper river where both banks are completely covered by a combination of torrent sedge at the lowest level and reed canarygrass higher on the banks. This is a repeating pattern in this type environment throughout the river.

Using the PFC assessment process of identifying potential and capability, and thinking through each checklist item on each reach has led to a better understanding of the potential, current condition and trend. It has also allowed us to establish, with a high degree of certainty that the John Day River is improving. Maybe not the way we thought it would or with the plants we currently desire, but it is getting better, it will just take a long time.

Institute the Process

Recovery is occurring, but the ability to get cottonwoods growing on the Lower John Day River and contributing root strength and large wood for recovery can be hundreds of years away, yet management plans are being developed for the next 10-20 years. Completing the PFC assessment helped provide the rationale about the expected recovery time and sequence. The District interdisciplinary team found that the common language used in the Creeks and Communities Strategy and PFC assessment transferred well into the Resource Management Plan.

Recovery will be measured in centuries; desired trend is key.

2008 Creeks & Communities Network Conference

The 2008 biennial Creeks & Communities Network Meeting dates have been changed to **March 4-6, 2008**. This date change is due to the new Bureau approval requirements. We anticipate that approval may not come until early September, which would not have given us adequate time to arrange facilities, speakers, and travel for the November 2007 dates. The location will be determined based on the approval. This will be a working meeting designed to increase and enhance the ability of the Creeks & Communities Network to effectively implement the Creeks & Communities strategy. A portion of the meeting will be set aside for finalizing FY2008-2009 state work plans. For more information, contact Carol Connolly at carol_connolly@or.blm.gov or (541) 416-6892.

Lentic PFC Session in Meridian, Idaho

The Idaho State Riparian Team, with the assistance of Don Prichard, Desi Zamudio, and Sandy Wyman, sponsored a lentic PFC training session June 12-14 in Meridian, ID. The group of 35 trainees from BLM, Idaho Department of Game & Fish, and the local Soil & Water Conservation District had an opportunity to discuss the attributes and processes needed for a variety of lentic types including lacustrine and palustrine wetlands. The different types of wetlands can be found in:

Cowardin, L. M., V. Carter, F. C. Golet, E. T. LaRoe. 1979. *Classification of wetlands and deepwater habitats of the United States*. U. S. Department of the Interior, Fish and Wildlife Service, Washington, D.C. Jamestown, ND: Northern Prairie Wildlife Research Center Home Page. The Classification can be downloaded at <http://www.chartiff.com/pub/WetlandMaps/Cowardin.pdf>.

Steve Smith, Idaho State BLM Rangeland Specialist, also discussed the *Lentic Area Prioritization Guide – A process for evaluating management and restoration priorities for non-riverine systems* in Idaho that was developed by Steve and Tim Burton, Fisheries Biologist, to help field offices prioritize restoration activities on lentic sites.



Desi Zamudio showing group hydric soil features on a lentic site.



ID Team discusses the lentic PFC assessment on a spring fed wetland.

Full Stream Ahead

Is there something you would like to see in a future issue of *Full Stream Ahead*? If so, send an email to nrst@or.blm.gov. The NRST utilizes this newsletter to share highlights, news and hot topics that pertain to the Creeks and Communities Strategy. This newsletter is for the entire network and we encourage you to send in ideas, questions and articles for us to publicize. The deadline for submission for the September/October issue is November 2.

“Healthy Streams Through Bringing People Together”

Thomas Creek, Lake County, Oregon

In the September/October 2006 issue of Full Stream Ahead, we reported on a service trip of the Oregon State Riparian Team and the NRST to Lake County, located in the south central part of the state. We shared that the communities there are proactive in addressing natural resource issues and their successes can be attributed to effective working relationships established through the years.

In this case, a diverse group representing the Lake County SWCD, Fremont-Winema National Forest, J-Spear and other ranches, SE OR Resource Advisory Council, several Watershed Councils, Lake County Resources Initiative, Ducks Unlimited and the Oregon Watershed Enhancement Board had asked for advice in developing a common vision for stream restoration supported by options designed to minimize risk and maximize investment. The final field day last fall was spent looking at restoration options on a section of Thomas Creek that originates on the National Forest and runs through the valley near the town of Lakeview, finally entering into Goose Lake where Ducks Unlimited has been working to improve habitat conditions. One of the recommendations that came out of the discussion was for the Watershed Council to reach out to all the landowners/managers on Thomas Creek to gauge their interest in moving from a project by project approach, toward restoration based more on a systems approach.

In February of 2007, the NRST, as a member of the Working Landscapes Alliance (a partnership of government, non-profit and for profit entities) helped facilitate a meeting of stakeholders convened by the Watershed Council Coordinators. The meeting resulted in a commitment to move forward with a follow-up workshop and field trip that would begin at the headwaters with various stops along the way, ending at Goose Lake. On May 29-30, members of the Working Landscapes Alliance again assisted the group, first in reviewing riparian function and the kind of recovery possible with different types of restoration techniques and then as they proceeded on to the field sites for the opportunity for everyone to get a sense of Thomas Creek as a whole. The group found that restoration efforts at either end of Thomas Creek have been proceeding through some successful partnerships and landowner commitment. However, much of the system through the flat valley bottom has been substantially altered, with many straightened stretches and diversions. While some improvement projects have been undertaken here, conditions are confounded by the number and tenure of landowners. Both of these create a very complex situation that will require some difficult decisions for restoration. Although there were no concrete next steps determined at this time, there was some support expressed for a watershed analysis. There was also the recognition of the importance of involving all landowners in every step of the process, right from the first conversation of restoration through all the decision points. We will be following up with the Watershed Council as they continue their efforts on Thomas Creek.



“Healthy Streams Through Bringing People Together”

Reardan, WA Riparian Grazing Course

The Lincoln County Soil & Water Conservation District and WA Dept. of Ecology (DOE) sponsored a riparian grazing course for landowners and agencies in Reardan, WA, May 15-17. The session was conducted by members of the Creeks & Communities instructor team who provided management tools, techniques, and strategies to graze riparian areas particularly with low pollutant input in mind so that landowners can choose from those that fit their operation and also meet riparian/aquatic objectives. The options range widely from rotational strategies or riparian pastures to exclusion fencing. Forty people attended, including 15 cattlemen, to learn proactive approaches to managing their riparian resources that receive a fair amount of public and regulatory scrutiny. Working in interdisciplinary and interagency/landowner teams, the group assessed two actual riparian grazing situations and developed plans to protect the riparian system while using riparian forage for grazing. Collaborative techniques were used to garner discussion within the groups where all opinions were expressed and listened to in a respectful manner. The following comments reflect some participant's feelings about their experience:

"I think attending this course was time well spent, since it brought many different types of people together to discuss riparian grazing and water issues."

"It was a worthwhile expenditure of time, effort, and money. I learned a lot, and think most other people learned a lot too."



ID teams discussing the attributes and processes of the riparian area.



One of the teams evaluating a riparian area grazed in late winter and spring.

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