



Full Stream Ahead

Spring/Summer 2011

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



Dear Colleagues and friends,

Welcome to another edition of Full Stream ahead! What a year it has been thus far for those of us in the riparian world. Given the severe and widespread flooding we have experienced, this year provides a good opportunity for us to learn just how functional our streams truly are and how well we have been managing them. Although I know you are all very busy, please take a moment to look the articles in this issue.

Over the past few years, Crook County High School here in Prineville has asked the team to help prepare students for the future by exposing them to activities of the Creeks and Communities Strategy. The article below outlines what was a very successful Consensus Institute held at the high school this last winter.

Many of you are probably aware by now that we recently finished the MIM Technical Reference (TR 1737-23 – Monitoring Stream Channels and Streamside Vegetation); you will find additional details on how to obtain copies of the TR and data modules in this issue.

Also included in this issue is an interesting and informative article on how the Creeks & Communities Strategy relates to riparian resilience and climate change (a timely topic considering the kind of year we are experiencing). An updated list of this year's training opportunities is also included in this edition of FSA. Please don't forget to share your ideas and accomplishments with the network by submitting articles to us for publication in future issues of Full Stream Ahead.

Thanks for all you do and if any of you ever need us to provide letters of support or telephone calls on your behalf for your work in Creeks and Communities, please let us know. I can be reached at 541-416-6703 or stevensmith@blm.gov.

Sincerely,

Steve

Creeks & Communities Strategy – Addressing Climate Change by Facilitating Riparian Resilience

Implementing the Creeks & Communities Strategy is helping achieve the strategic goals of the sponsoring agencies and other organizations responding to climate change through improvement of watershed and riparian resiliency. The U.S. Department of Agriculture's strategic goals for 2010-2015 includes *"ensure our National Forests and private working lands are conserved, restored, and made more resilient to climate change, while enhancing our water resources"* (<http://www.ocfo.usda.gov/usdasp/usdasp.htm>). To meet this goal, the Forest Service has embarked on an ambitious effort to ascertain the condition of their watersheds in support of developing prioritized restoration strategies. The U.S. Department of Interior has a coordinated climate change strategy that includes Regional Climate Science Centers and a network of Landscape Conservation Cooperatives. Climate Science Centers will provide the science needed to help the agencies make decisions and will train students on climate change related issues to prepare them to work in the agencies. The Landscape Conservation Cooperatives engage Interior and other federal agencies, local and state partners, and the public to craft practical, landscape-level strategies for managing climate-change impacts within eight regions (see sidebar). The BLM is conducting a number of Regional Ecosystem Assessments addressing upland and riparian condition (<http://www.doi.gov/whatwedo/climate/index.cfm>).

Creeks & Communities Strategic Goal - The goal of the Creeks & Communities Strategy is *"to develop a new critical mass of people who interact with and manage riparian-wetland resources based on shared knowledge of the attributes and processes that constitute sustainability."* Since 1996, to meet this goal, the National Riparian Service Team, State Riparian Teams, and Agency Coordinators in the western United States have been conducting briefings, workshops and training courses aimed at building awareness and understanding of riparian-wetland resources and their relationship to producing many societal values. In addition, problem-solving assistance is offered to agencies and communities to help develop capacity to address complex and often contentious issues inherent in managing riparian-wetland resources. Because streams pass through or are shared by numerous landowners, the Creeks & Communities Network advocates for collaborative approaches applied at the ground level, in a "catchment" context, for successful restoration and management (see sidebar).

USDI Strategic Plan 2011-2016

GOAL #1 - Protect America's Landscapes: We will ensure that America's natural endowment – America's Great Outdoors – is protected for the benefit and enjoyment of current and future generations. We will maintain the condition of lands and waters that are healthy, and we will restore the integrity of natural areas that have been damaged. We will strive to retain abundant and sustainable habitat for our diverse fish and wildlife resources, and we will reduce or eliminate threats to at-risk plant and animal species.

PRIORITY GOAL- Climate Change: By the end of 2012, for 50 percent of the Nation, the Department will identify resources that are particularly vulnerable to climate change and implement coordinated adaptation response actions.

The word 'catchment' is used instead of 'watershed' throughout this article to emphasize 'catch' in hopes that people will begin to think of the capture, storage, and slow release of water to stream channels that a healthy catchment provides, and not the shedding of water due to lack of infiltration. The word "shed" also has two meanings, and hopefully when anyone reads watershed, they think of a storage structure, and not of repelling without allowing penetration.

¹Creeks & Communities Riparian Teams are located in AZ, CA, CO, ID, MT, NM, NV, OR, TX, UT, WY, and BC Canada.

²Agency coordinators are from the Bureau of Land Management, Forest Service, and Natural Resources Conservation Service.

The outreach and assistance provided by the National Riparian Service Team and the Creeks & Communities Network is helping communities identify ways in which their riparian-wetland areas are vulnerable to climate change, and develop options to increase riparian resiliency where needed. Assistance is typically a combination of training and place-based problem solving efforts designed to address the technical dimensions of riparian-wetland related issues while at the same time recognizing and addressing the social context within which these issues exist. For example:

<i>Natural Resources Context</i>	<i>Social Context</i>
Proper functioning condition is a state of resilience that will allow a riparian-wetland area to hold together during high flow events with a high degree of reliability. This resiliency allows an area to then produce desired values, such as fish habitat, neotropical bird habitat, or forage, over time. Riparian-wetland areas that are not functioning properly cannot sustain those values (Prichard et al. 1998).	A key component in Network activities is developing a common purpose, or vision for riparian-wetland areas, while considering the range of social factors that influence management decision and therefore the health of these systems. The human and social dimensions of riparian-wetland conflicts are purposefully addressed rather than simply recognizing that they exist (adapted from National Riparian Service Team 2008). If change is transformational, with many changes involved, with high risk, and where the amount of information available is low, or not even known yet [i.e., climate change], then collaborative groups need time to develop and foster new beliefs and behaviors as well as strategies and actions (adapted from Chadwick 2003). If behavioral changes are needed for catchment improvement, people need to believe their choices are consequential, positive, and have purpose to their specific location (Furniss et al. 2010).

Projected Climate Change and Effects - A suggested reference for learning more about projected climate changes and effects is Furniss et al. 2010. It provides a summary of regional trends and projections of changing climatic conditions for the United States, as well as hydrologic effects, and potential consequences to ecosystem services. Anticipated watershed responses such as altered timing and volume of runoff; altered channel forms reflecting changes in runoff, peak flows, and sediment loads; changes in upland vegetation with associated altered erosion rates; and changes in groundwater recharge and corresponding changes in stream baseflow, can all have consequences for riparian-wetland areas and the values they produce. http://www.fs.fed.us/pnw/pubs/pnw_qtr812.pdf.

The threats posed by climate change provide added incentive to restore the function of catchments and riparian areas so that the ecological services society depends on can continue into the foreseeable future.

Riparian Resilience - Ecological resilience is the amount of disturbance a system can withstand before changing state, the rate at which a system recovers after disturbance, and the way in which a system responds to gradual changes. Another aspect of ecological resilience is the idea of “precariousness” which refers to how close the current state of the system is to a limit or “threshold.” Resilience and precariousness fit well with the Proper Functioning Condition riparian assessment functional ratings of Proper Functioning Condition (PFC), Functional-At Risk, and Nonfunctional. Riparian-wetland systems at PFC have greater strength in terms of the critical attributes and processes needed to resist change because, in part, they are further from the state where change is imminent (i.e., Functional-At Risk) or the state where a threshold may have been crossed (i.e. Nonfunctional) (see sidebar).

When riparian areas are in PFC, their capacity to mitigate adverse impacts of climate change is greatest. The ecological resilience of properly functioning riparian-wetland areas provides a cushion between current conditions and the stressors that could lead to channel instability, loss of riparian vegetation, or diminished hydrologic function. In contrast, riparian areas that are functioning at-risk especially those with a downward trend (away from PFC), are closer to the state where riparian function can be substantially altered or lost. These riparian areas are in a more precarious and vulnerable condition and can more easily cross into a nonfunctional state. Even minor changes in climate, lower-magnitude floods, or less severe droughts can trigger damaging responses when riparian condition is compromised.

Proper functioning riparian-wetland areas are resilient because of characteristics such as streamside or shoreline vegetation that consists of plant species with root systems capable of buffering the forces of water and holding soil. Many riparian plants are adapted to disturbances (floods, droughts, inundation, and sedimentation), so soil/bank-stabilizing plants can become established from seed, stolons, or rhizomes (roots) at new locations depending on wetting or drying of those sites over time. Increased diversity of riparian-wetland plants provides a greater chance that some of those plants will have the traits necessary to adapt to new rainfall and weather patterns. Floodplain and channel connection also affect a

riparian-wetland area’s ability to capture and store water in soils or aquifers. In areas where it is expected that more precipitation will fall as rain instead of snow, or where there will be less precipitation, promotion of water infiltration into streambanks and floodplains during floods will become increasingly important to sustain late season flows (Seavy et al. 2009). With climate change, channel forms may alter due to changes in runoff, peak flows, and sediment loads, but properly functioning riparian conditions provide the attributes for recovery under a new flow regime. Relative to climate change, proper management of riparian areas is vital to buffer many possible or probable effects, and to promote resilience to future floods and droughts.

Proper Functioning Condition: When adequate vegetation, landform, or large woody material is present to:

- Dissipate stream energy associated with high water flow, thereby reducing erosion and improving water quality;
- Filter sediment, capture bedload, and aid floodplain development;
- Improve flood-water retention and ground-water recharge;
- Develop root masses that stabilize streambanks against cutting action;
- Develop diverse ponding and channel characteristics to provide the habitat and the water depth, duration, and temperature necessary for fish production, waterfowl breeding, and other uses;
- Support greater biodiversity.

Functional-at Risk: Riparian-wetland areas that are in functional condition, but an existing soil, water, or vegetation attribute makes them susceptible to degradation.

Nonfunctional: Riparian-wetland areas that clearly are not providing adequate vegetation, landform, or large woody material to dissipate stream energy associated with high flows, and thus are not reducing erosion, improving water quality, etc.,

Landscape Scale Considerations – Ecologists and climatologists are calling for land managers to assess, plan, and manage for climate change at multiple scales. They stress increasing resilience at large spatial scales and promote connected landscapes such as continuous healthy riparian areas to better help species accommodate climate and habitat changes (Forest Service 2009). Rieman and Issak (2010) concluded that conserving and creating larger networks of healthy streams will likely be a fundamental step in managing for climate change. Maintaining proper functioning condition and biological diversity are important to ensure the greatest possible capacity for natural physical and biological adaptation to take place. By maintaining floodplain and channel characteristics for water infiltration, and by providing well shaded riparian areas, water temperature increases in streams can be minimized. Microclimates and thermal refugia will be increasingly important habitat for plants and animals as air temperatures rise. Streams provide connectivity between habitats and along elevational zones, thus providing avenues for species movements in response to climate change, which provides access to habitats that may be disconnected by changes in flow regime (Seavy et al. 2009).

Triage can be a helpful approach for priority setting relative to addressing climate change in resource management, especially when there is more urgency than capacity to respond (Forest Service 2009). Through triage, situations can be sorted based on type and level of need. An understanding of riparian physical functions and values can be applied in a triage process to prioritize riparian restoration activities so limited resources can be focused where they will provide the most benefit. PFC assessment results can be also used to prioritize restoration activities. By concentrating on the sensitive, at-risk areas that may be near the threshold of rapidly degrading into nonfunctional condition, restoration activities can halt decline and begin the recovery process at a much lower investment required to address systems that are already nonfunctional (Prichard et al. 1998). For lentic (standing water) systems, Smith (2008) provides a framework that uses both function (including PFC) and values to guide priority setting for management and restoration (http://www.blm.gov/id/st/en/info/publications/technical_bulletins/TB_07-2.html).

Ecological services have direct economic value, and as climate change continues, the effects will likely mean that costs rise for such things as providing clean and adequate water for municipal use, availability and delivery of water for agriculture, managing storm water, and processing waste. Preparing for these eventualities supports the need to find more ways to work with the processes and results of the changes occurring. An important shift in thinking about natural resource management and climate change is a focus on developing desired processes at the catchment scale along with desired conditions at the stream-reach scale. The definition of PFC shown above includes the components of riparian processes necessary for function. With these in mind, the best thing that can be done to prepare for the future is to manage for resilient catchments and riparian-wetland areas. This will require partnerships and the application of both natural resource and social science.

Creeks & Communities Strategy Implementation - The mission of the Creeks & Communities Network is “Achieving healthy streams through bringing people together.” From the beginning, activities have been aimed at affecting the improvement of riparian-wetland condition on a large geographic scale. While progress has been made, it is time once again to be innovative in expanding outreach and creating awareness of the importance of riparian function and resilience. Working in and with local communities may be the best opportunity to build an effective understanding of the ecological values that riparian-wetland systems provide, and to foster support for the actions and tradeoffs that inevitably must be addressed (Rieman and Isaak 2010).

Objective 2 in the Creeks & Communities Strategy is to *provide individuals and groups of diverse interests and backgrounds with the tools to develop a shared understanding of riparian-wetland function, and assist in developing solutions to management challenges stemming from issues in both the resource and human dimensions*. The services provided by the Creeks & Communities Network can be applied more extensively, strategically, and in new ways that include messages about resilience and climate change. Below are some ideas to consider:

- Empower people with the knowledge that improving riparian function can reduce the severity of climate change threats (Seavy et al. 2009). Help them learn about and accomplish riparian assessments so they have information for prioritization.
- Promote and collaborate on the design of management strategies and measures to **keep water on and in the land longer** (Furniss et al. 2010).
- Discuss the importance of groundwater recharge areas and best management practices that encourage groundwater recharge from impervious and disturbed areas. For example, demonstrate how disconnecting road drainage from stream networks restores natural patterns of flow and can lead to more infiltration and groundwater recharge (Furniss et al. 2010), attenuating discharge peaks during intense storms.
- Discuss the importance of matching the engineering of infrastructure to expected future conditions (culverts, bridges, etc.) (Forest Service 2009).
- Build riparian awareness with youth. Introduce BLM's Holding onto the Green Zone leader guide and youth action guide to science teachers and work with them as visiting instructors (BLM et al. 2008a, BLM et al. 2008b; http://www.blm.gov/wo/st/en/res/Education_in_BLM/riparian_module.html).
- Knowledge of past and current ecosystem dynamics, current and desired conditions, climate change projections, and human uses are fundamental to planning restoration activities (Forest Service 2010). Work with the communities to synthesize existing riparian-wetland information to aid in the interpretation of assessment, inventory, and monitoring information, and use the results to set management goals and objectives.
- Focus on what we can control, not what we can't (Forest Service 2009).

The Creeks & Communities Network is committed to addressing strategic goals concerning land health and climate change through working with multiple land owners, land managers, and diverse interests to help communities develop options to improve riparian resilience.

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Rieman, B.E. and D.J. Isaak. 2010. Climate change, aquatic ecosystems, and fishes in the Rocky Mountain West: Implications and alternatives for management. USDA Forest Service. Rocky Mountain Research Station. Gen. Tech. Report RMRS-GTR-250. 47 p. http://www.fs.fed.us/rm/pubs/rmrs_gtr250.pdf.

Seavy, N.E., T. Gardali, G.H. Golet, F.T. Griggs, C.A. Howell, R. Kelsey, S.L. Small, J.H. Viers, and J.F. Weigand. 2009. Why climate change makes riparian restoration more important than ever: recommendations for practice and research. Ecological Restoration. Vol. 27, No. 3. <http://er.uwpress.org/cgi/reprint/27/3/330>.

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Multiple Indicator Monitoring (MIM) TR 1737-23 – Now Available

TR 1737-23 Multiple Indicator Monitoring (MIM) of Stream Channels and Streamside Vegetation, the most recent technical reference in the Bureau of Land Management's (BLM) 1737 series, is now available. The MIM protocol was developed to provide a consistent approach for collecting information necessary for managers, landowners, and others to adaptively manage riparian resources. Designed to be objective, efficient and effective for monitoring streambanks, stream channels and streamside riparian vegetation, the indicators and procedures in this protocol were selected and developed primarily to monitor impacts of livestock and other large herbivores on wadable streams (usually less than 10 m wide). The MIM protocol integrates annual grazing use and long-term trend indicators allowing for evaluation of livestock grazing management; however, because it includes procedures for documenting stream condition and trend, the long-term indicators described are also useful for monitoring changes that occur as a result of management activities other than grazing.

The MIM protocol was developed and tested on relatively low-gradient (less than 4 percent) perennial snowmelt-dominated and spring-fed streams in the Western United States, and is most applicable to those systems. Streamside riparian and wetland vegetation is a critical component within those systems for the functional processes that influence streambank stability and channel geometry. Using adaptations of existing procedures, the MIM protocol combines observations of up to 10 indicators, along the same stream reach, facilitating the development of relationships between grazing effects and stream conditions. In addition, the collection of more than one indicator, at one location, with one protocol, is cost effective and efficient. However, training is strongly recommended to ensure the appropriate and successful application of this protocol.

To facilitate data recording and analysis, two Microsoft Excel applications were developed as part of the MIM protocol. The Data Entry Module is for entering data into handheld computers using Windows Mobile in the field. The Data Analysis Module provides calculations of various metrics and permits analysis of the data. The electronic data entry and analysis formats are included within the MIM TR. An electronic version of the technical reference and both of the data modules are available at the BLM Library Website (<http://www.blm.gov/techreferences>).

Hard copies can be obtained from Melissa Dickard, Bureau of Land Management, National Operations Center, Denver Federal Center Building 50, P.O. Box 25047, Denver, CO 80225-0047, phone (303) 236-0473, fax (303) 236-3508, email mdickard@blm.gov.

“Healthy Streams Through Bringing People Together”

Crook County High School Consensus Institute

Over the past two years, the NRST has served as invitational instructors to Brian Wach's natural resources education classes at Crook County High School. In 2009, Janice Staats and Sandy Wyman introduced the basics of riparian-wetland areas and the foundational concepts of how these systems function and the societal values that come from this relatively small portion of the landscape. In spring 2010, Tim Burton and Erv Cowley provided instruction on riparian Proper Functioning Condition (PFC) assessment method and the Multiple Indicator Monitoring (MIM) protocol (see March/April 2010 issue). Later that summer, Tim and Erv led members of the class in MIM implementation on the Lower Crooked River Wild & Scenic River where data was collected for the BLM.

In 2011, Brian requested a Consensus Institute for his students to focus on environmental conflict resolution through an experiential process. The economy of Crook County is heavily dependent on natural resources and the culture is shaped from this relationship. Many of the community's youth are aware, and have experienced the results of resource centered conflict, including its effect on the social fabric. The NRST asked Bob Chadwick, Consensus Associates, and Diane Seehawer, Four C's Associates, to work with Brian's students. Bob developed many of the processes the NRST employs when working with people in conflict and Diane has worked with the team implementing the Creeks and Communities strategy.

The session Bob and Diane developed had the students go through an experiential and adaptive learning process that integrates thinking, feeling and sensing - all attributes used in consensus building. Students participated in a 'grounding' that gives each person a turn to speak and be listened to with respect. They were then given insights about this important initial step. They also felt the anxiety of the 'greeting circle' and how it really does help open communication. Learning a bit about the human brain and Maslow's hierarchy of needs helped explain why people tend to first imagine 'worst possible outcomes' when facing a situation. Several situations were posed to give them a chance to experience this response within themselves. The students then identified worst possible outcomes of dealing with the water allocation issues in their community followed by a process to develop 'best possible outcomes' and move to 'possibility thinking' where problem solving begins to occur as 'strategies and actions' are identified.

Role play activities were used where student's self-selected into the following categories; agriculture, fisheries, recreation, municipality, and Bureau of Reclamation to address the issue of water allocation from the Bowman Dam. Using a summary of an actual situation assessment report, they broke into small groups and practiced the various steps they had learned including facilitation, recording, and creating collective statements. Bob and Diane provided a workshop report that included the steps and insights of the consensus process and captured all of the student's work. Below are some of the responses received when students were asked what they had learned:

- I learned how to be a better leader and also how to help with problems and questions.
- How to establish what the issues are and listening to the problem.
- Not to allow side conversations and to stay on track as much as possible.
- I learned that the water around my hometown is very valuable and is needed. I learned all about the water and all the different sides that there are trying to go about solving something like this where needs are met for each individual.
- Make sure everyone has a chance to speak, listening and good communication.
- Have an open mind and not judging at first before knowing who people are. Listen to everyone before making assumptions.
- Get the worst possible outcomes out on the table so that they don't end up stalling the progress.
- I learned to listen.

During the week following the session, Brian had the students write about how Bob and Diane made an impact on them – a number of themes emerged. Individuals wrote about overcoming the fear of speaking out and the effect that the process had on their relationships within the class. Some stated they felt more self-confident and others relayed how they had tried the process in their other classes, with family, and their intent to continue in the future as they faced issues in their lives. Many wrote about becoming aware of the importance of listening to understand others and the situation, and to not make assumptions or judgments but rather focus on understanding. Overall, awareness was expressed that conflict really can be addressed with tolerance and civility.

FY2011-12 Riparian Training Schedule (as of August 2011)

Below is a list of training opportunities for 2011. This list will be updated throughout the season as the schedule changes. It is important to know that formats and content vary depending on the objectives of each session. To learn more, please contact the individual course coordinators.

California

PFC – Bishop August 24-25, 2011

Contact: Dick McCleery, 209-256-4280, back40@volvano.net

Colorado

MIM – Delta September 12-16, 2011

Contact: Jay Thompson, 303-239-3724, jmthomps@blm.gov

Idaho

MIM – Meridian TBD

MIM – Twin Falls TBD

Contact: Bryce Bohn, 208-373-3829, bbohn@blm.gov

Nevada

PFC – Gerlach TBD

PFC – Caliente TBD

Contact: Sherm Swanson, 775-784-4057, sswanson@cabnr.unr.edu

RGM – Enterprise September 13-15, 2011

Contact: Sandy Wyman, 541-416-6886, swyman@blm.gov

Utah

MIM – Rich County September 6-9, 2011

PFC – Salt Lake City September 20-21, 2011

Contact: Justin Jimenez, 801-539-4073, jjimenez@blm.gov or Mark Petersen, 801-233-3014, mmpetersen@fbfs.com

Washington

RGM – Colfax October 17-18

RGM – Ellensburg October 20-21

Contact: Tip Hudson, 509-962-7507, hudsont@wsu.edu)

PFC = Proper Functioning Condition Assessment

MIM = Multiple Indicator Monitoring of Stream Channels and Streamside Vegetation

RGM = Riparian Grazing Management

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@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.

Documents Available from National Riparian Service Team

We have a few documents, pamphlets, and CDs that would serve you better if they were in your hands instead of our warehouse. If interested in any of these documents, please email janice_staats@blm.gov with which documents you are requesting, how many, and provide your phone number and mailing address:

Eubanks, E. 2004. **Riparian restoration**. USDA Forest Service Technology & Development Program. 2300 Recreation Mgmt. 0423 1201-SDTDC.

Federal Interagency Stream Restoration Working Group. **Stream corridor restoration: principles, processes, and practices (CD)**. National Technical Information Service.

Trout Unlimited and National Park Service. **Restoring streams to reduce flood loss (brochure)**.

USDA Forest Service. 2000. **Managing for enhancement of riparian and wetland areas of the western United States: an annotated bibliography (CD)**. Rocky Mountain Research Station Gen. Tech. Report RMRS-GTR-54-CD.

USDA Forest Service. 2001. **Unified federal policy for a watershed approach to federal land and resource management (brochure)**.

From Watershed News, March 2011: Watershed Academy Web

EPA's Watershed Academy's Distance Learning Program is called Watershed Academy Web. The Web site offers a variety of self-paced training modules that represent a basic and broad introduction to the watershed management field. The modules are organized by six themes: watershed ecology, watershed change, analysis and planning, management practices, and community/social/water law. Modules vary in the time they take to complete, from ½ hour to 2 hours. By completing fifteen of the modules individuals qualify for the Watershed Academy Certificate Program. The website address is <http://cfpub.epa.gov/watertrain/index.cfm>.



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"Healthy Streams Through Bringing People Together"