



# **Wildlife Movement Workshop: Connectivity in the Upper Rio Grande Watershed**

Exploring opportunities, goals, and the state of relevant science at the landscape scale

December 7-8, 2016  
Taos, New Mexico

## **Workshop Summary**<sup>1</sup>

### **Introduction**

There is a growing recognition that wildlife habitat connectivity is key to species conservation by providing for daily and seasonal movements as well as long-range dispersal and genetic interchange. Yet, managing for connectivity in a multi-jurisdictional landscape presents unique challenges to public and private interests seeking to ensure long-term sustainability of wildlife populations. Species do not recognize jurisdictional boundaries as they move through landscapes, and over large multi-jurisdictional areas, the ecological, economic, social, and political issues become more complex with commensurate potential for larger impacts on species. Solutions to these complex problems in wildlife conservation lie beyond isolated owner-by-owner planning and require a broader approach that engages multiple stakeholders in a collaborative framework to address the issues at a landscape scale.

In the Upper Rio Grande watershed in north-central New Mexico and adjoining south-central Colorado, these issues are of keen interest because several federal land management units are currently engaged in land and resource management planning where landscape-scale wildlife movements and connectivity need to be addressed. Accordingly, this multi-stakeholder workshop of federal, state, and private interests was convened as a first step towards building the collaborative framework to address these issues and lay the ground work for multi-jurisdictional communication going forward. Specific workshop objectives were:

- Share and consider relevant science regarding terrestrial and aquatic wildlife movement, landscape permeability, and functional connectivity, with an emphasis on management implications in the Upper Rio Grande Watershed.
- Strengthen a professional network for improved communication and interagency coordination to support shared management objectives across administrative boundaries.
- Develop science-based resources on wildlife movement/connectivity to inform the public of engagement processes now supporting planning efforts on multiple administrative units in the Upper Rio Grande watershed.

This was a two-day workshop with the first day devoted to presentations on the science, planning, and management activities relevant to wildlife movement and connectivity. This was followed by a half day of open discussion and breakout groups on six topical areas relative to implementation across jurisdictional boundaries. A summary follows of the workshop findings beginning with a list

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<sup>1</sup> Natural Heritage New Mexico Report 399 ([https://nhnm.unm.edu/Wildlife\\_Movement\\_Workshop](https://nhnm.unm.edu/Wildlife_Movement_Workshop)).

of the presenters on Day 1 with links to their presentations, then narrative summaries of each the breakout group's closeout comments. Detailed notes from all sessions are provided at [NHNM web page link].

## **Outcomes -- Day 1**

### **Support letters**

The first day opened with messages of support for the workshop from Senator Heinrich and Senator Udall of New Mexico and from Senator Bennet of Colorado reflecting the high-level interest in in the issues of wildlife movement and connectivity across state borders.

### **Wildlife Connectivity Management, Planning, and Science Presentations**

Most of Day 1 was devoted to presentations on current management and planning activities among participating agencies and NGOs along with a series of talks on recent and relevant science on wildlife movement and landscape connectivity. These are listed as follows in the order of their presentation with links to the presentations and notes.

#### **Section 1 – Managing for Wildlife Movement / Habitat Connectivity / Landscape Permeability – Current and Desired States / Available Resources / Pertinent Guidance**

Talk on Colorado wildlife data and planning activities. Brian Magee, Colorado Parks and Wildlife.

[\*Wildlife Movement and Habitat Connectivity: A Perspective from New Mexico Game & Fish.\*](#) Chuck Hayes, New Mexico Department of Game and Fish

[\*Landscape Considerations in BLM Resource Management Planning.\*](#) Molly Cobbs, BLM Land Management and Planning

[\*Connectivity–Planning under the 2012 Planning Rule.\*](#) Jack Triepke and Ernie Taylor, USFS Region 3

[\*Wildlife-vehicle Collision Mitigation in New Mexico.\*](#) Jim Hirsch, NMDOT

[\*Wildlife Corridors and Habitat Connectivity in the San Juan – Rio Chama Watershed.\*](#) Monique DiGiorgio, Chama Peak Land Alliance

#### **Section 2 – Planning Updates from Participating Administrative Units**

[\*Rio Grande National Forest Planning.\*](#) Randy Ghormley and Erin Minks, Rio Grande National Forest

[\*BLM Taos Field Office Rio Grande del Norte Nat'l Monument Planning.\*](#) Justina Thorsen, BLM

[\*Carson National Forest Planning.\*](#) Alyssa Radcliff, Carson National Forest

[\*Santa Fe National Forest Planning.\*](#) Daryl Ratajczak, Santa Fe National Forest

### **Section 3 – State of Relevant Science: Considerations and Analyses at Landscape Scales**

[\*Foundational Principles of Managing Landscapes for Wildlife Movement and Habitat Connectivity\*](#). Sam Cushman, Research Landscape Ecologist & Director, Center for Landscape Science, Rocky Mountain Research Station

[\*Developing and Implementing Linkage Conservation Plans to Enhance Connectivity between Protected Areas\*](#). Paul Beier, Regents' Professor, School of Forestry, NAU

### **Section 4 – Relevant Data Resources and Knowledge – Upper Rio Grande Watershed**

[\*Factors Influencing Movement of Pronghorn at Multiple Spatial Scales\*](#). Andrew Jakes, Post-Doctoral Researcher, Wildlife Biology Program, College of Forestry & Conservation University of Montana

[\*Wildlife Doorways: Supporting Wildlife Habitat Connectivity across Borders in the Upper Rio Grande Watershed\*](#) - Esteban Muldavin, Res. Assoc. Professor, and Rayo McCollough, Data Manager, Natural Heritage New Mexico, University of New Mexico

### **Section 5 – Applying Science to Management**

[\*Connectivity for Aquatic Organisms in the Southwest\*](#). Yvette Paroz, Southwestern Regional Fisheries Program Leader, USFS

*Identifying and Conserving Ungulate Migration Routes across Administrative Boundaries: Case Studies from the Western U.S.* Hall Sawyer, Research Biologist, Western Ecosystems Technology, Inc.

## **Day 1— Close-out session**

In preparation for the Day 2 working group session, participants submitted written suggestions of topics they felt should be covered. The workshop organizers took the input and organized the ideas into a set of six breakout groups to be presented to the full group the following day.

## ***Outcomes -- Day 2***

Day 2 was devoted to an Opening Discussion among all participants followed by breakout groups as determined by the previous day's close-out session suggestions. Participants chose which group to join but were encouraged to help balance group numbers.

### **Opening Discussion**

The Opening Session was moderated by Karl Malcolm of the USFS and 14 participants provided comments and ideas about wildlife movement and connectivity in the context of multijurisdictional landscape-scale framework (see detailed notes[URL]). There were three main wildlife connectivity-related concepts identified:

1) *Intra and Interagency Cooperation*. There is a need for cooperation *within* and *among* agencies on wildlife management and landscape connectivity: planners and biologists working together at larger scales that will help support more effective and comprehensive planning documents that look beyond borders and also develop management guidance to support implementation across administrative units. Embedded in this concept is the need to identify cross-border species, which demands collaboration and needs to be as broad as possible with respect to species (e.g., aquatics as well as upland species and invasives).

2) *Public Engagement*. There is a need for actively engaging the public in the planning and management processes that lead to broad-based support for wildlife habitat connectivity. This not only includes enhanced agency/NGO collaboration, but the responsibility of NGOs to energize their constituency behind the concept and process being proposed. Overall, the goal is to build trust (if we can agree on 80%; 20% doesn't look so bad). The long view also includes education programs for youth and young adults that leads to long-term sustainability of the project.

3) *Building Partnerships*. There is a need for more formal agreements or a process between agencies themselves and with community partners/NGOs. This could take the form of interagency MOUs but this could be administratively complex and time consuming. Alternatively, an Upper Rio Grande Wildlife Connectivity Coalition non-profit that engages NGOs, private owners, and agencies on equal footing and allows agencies a simpler way to create MOUs to meet the goals of the group was proposed (i.e., would allow agencies to execute only one MOU with the Coalition, rather than individual MOUs with each partner).

### **Breakout Group Reports**

#### **Planning Group**

The planning group explored some of the nuts and bolts in planning at landscape scales in the context of individual planning efforts (see notes URL). Main concepts:

1) May need to create a broader geographic framework such as ecoregions to tie to multi-jurisdictional planning. A corollary is the need to correlate data together across agencies and geographies so we can define what we are connecting (hence a need for data clearinghouses such as Natural Heritage programs). We do not know all the corridors, but we know some. Can we

hybridize where we include places we know in the plan, as well as make a commitment to continue collaborating to identify the rest of them?

2) Desire to have NGO-led effort to develop spatially explicit connectivity strategy at landscape scale with identified linkages. How do we take Este Muldavin's Wildlife Doorways report and turn it into something like Paul Bier's California Missing Linkages project on a timeline that can be useful for current planning efforts? That is, convene a group, invite all the local knowledge, and identify focal species: e.g., habitat specialists, area sensitives, barrier sensitives. Federal perspective would add special-status species as well. Also, draw on previous work such as the Southern Rockies Ecosystem Plan 2001 least-cost-path document (their wildlands plan) and the WGA border analysis with NM & CO.

3) Is there enough time to inform the plans? Develop language for plans to meet regulations but allow agencies flexibility to move on connectivity as new deliverables are produced. Begin by addressing connectivity in plan components up front while the coalition group comes up with a framework that could mesh well with plan components.

### **Best Management Practices (BMP) Group**

The BMP group grappled with the questions of scale and implementation across large landscapes. Main concepts:

1) Cross-boundary BMPs were very important but the challenge was how to maintain consistency across units and large landscapes. One suggestion might be for states to take the lead on watershed or state-wide guidelines rather than an individual federal agency unit. Is there a role for WAFWA in providing more uniform standards? As a first step, assess existing BMPs across administrative units to see similarities & differences. Assess why the BMPs are written the way they are. In the process, consider how to make BMPs scalable from the site-specific to the landscape to support coordination across jurisdictional boundaries.

2) To maintain flexibility, management plans should reference sets of BMPs that can be updated more efficiently than the plans themselves. Also, identify data needs to inform BMPs.

3) There is a need for additional input on BMPs from a broader audience (NRCS, soil conservation districts, NGOs, Tribes). Convene an upper Rio Grande Coalition regularly to discuss wildlife management issues in the watershed.

### **Aquatics & Riparian group**

The Aquatics and Riparian Group addressed a set of questions relative to maintaining connectivity that supports healthy aquatic/riparian ecosystems that are robust, resilient, functional and resistant to aquatic invasives. Main concepts:

1) We need to work across boundaries and scales (local and regional) to promote aquatic connectivity. Accordingly, we need to identify key cross-boundary linkage areas for aquatic species in the URGW and, specifically, the next "special management area" of multi-agency interest along with best management practices that apply across jurisdictions. Establish mutual goals at the beginning of connectivity projects so that we know when we are done and can move on to other areas (e.g., in-stream flow guidelines, mutual desired future conditions). Where possible, integrate outcomes into management plans.

2) Research and monitoring needs. As a first step, we should pool and share data across agencies and jurisdictions. Additional work is needed to identify movement corridors and connectivity needs for birds and fish. From there, develop an understanding of current conditions and how species are using habitats across the landscape in the context of desired future conditions. Based on the data, assess riparian areas, wetlands and streams across broad landscapes in terms of development pressure and climate stress to identify “triage areas” and then prioritize management for those areas (protection and restoration). Finally, expand monitoring, and to help “speak the same language” use existing monitoring techniques (e.g., BLM’s Assessment, Inventory, Monitoring (AIM), Multiple Indicator Monitoring (MIMS)).

3) Outreach to meet goals. Form working groups around focal management aquatic species to enhance and promote connectivity. This includes working with local governments and private partners to maintain instream flows and to develop a set of ‘best development practices’ to mitigate impacts to aquatic and riparian systems. Work with various interest groups (including sportsman’s groups) to address conflicts between fishing opportunities and connectivity restoration. Negotiation and collaboration leads to success.

4) Aquatic Invasive Species (AIS) present a special case with respect to landscape connectivity. Specifically, we need to develop strategies to deal with what might be conflicting outcomes of connectivity related to invasive species (e.g., barriers to movements and restricting connectivity to prevent invasion). An identified best practice: provide barriers to aquatic invasive species / non-natives as far down stream as possible while prioritizing restoration in upper reaches.

5) Certain species require cold water so it’s important to retain cold water characteristics when connecting cold water habitats.

### **Climate Group**

The Climate Group asked “how do we operationalize and respond to the potential climate impacts given a high degree of certainty on increasing temperature and variable precipitation patterns. Main concepts:

1) Understanding change in the URG. We need predictions about what corridors/habitat patches might look like – will it be the same in the future or will it be different? Accordingly, we need to develop niche and distribution models for species and habitats along with corridor models for migrating species that incorporate climate change. Target species for the URG are elk, deer, pronghorn, big horn sheep, lynx, pine marten, mountain lion, black bear, snowshoe hare, pinyon jay, and other species that may be at risk and require connectivity. Model planning time frame for Rio Grande Valley of 2060 will not see much difference between various carbon emission scenarios, thus we could use an RCP 8.5, with approximately four scenarios that represent variable temperature and precipitation ranges.

2) Planning documents need to incorporate model forecasts and adaptation strategies (resistance, resilience, and transformation opportunities) for wildlife connectivity that help with “what do we do and when do we need to act?” This includes providing goals and objectives that lead to monitoring guidelines for assessing trends and identifying tipping points at multiple scales, but particularly at large landscapes scales relevant to wildlife movement.

3) Collaboration between research and development, planners, and managers is key as we incorporate climate change into management plans. This group is very interested in working on incorporating climate change into planning processes and documents.

### **Data Gaps & Species Group**

The Data & Species Group dove into the data needs for building a further understanding of wildlife connectivity in the URG watershed. Main concepts:

1) Value of the coarse filter approach. Given that ecological integrity is a foundation element in planning, develop and use ecosystem-scale data reflective of landscape integrity then work down to fine-filter scale of species. This coarse-filter approach allows for broader application across administrative units since individual units may have different focal species. Use comparative classifications and identify what is dominant vegetation at jurisdictional boundaries where needs may be different than the core of a management unit.

2) Using the fine filter of species at broad scales. There is a need to come to a consensus on key focal species across large landscapes for both game and non-game species (neighboring land owners share their management needs/focal species lists to identify opportunities for coordination). Then work to normalize it going forward for cooperating agencies that are managing the same species for existing data (identify consistent data collection and analysis platforms, and database management opportunities, e.g., Natural Heritage Programs, Southern Rockies LCC).

3) Connectivity, corridors and planning. There is enough data now, fine and coarse, to insert language and guidance about connectivity and corridors in plans. Define what is needed to designate a corridor then assess with existing data via workshops (a follow-up to Wildlife Doorways effort). Also, identify species-specific problem areas during migration/movement that will potentially require multi-jurisdictional attention and funding. Identify geographic areas where there might be conflicts between development and management of connectivity and landscape integrity.

### **Outreach & Public Involvement Group**

This group of agency and NGO participants delved into the current status of the public perception of wildlife connectivity as well as the best approaches to building positive agency and public interactions on the issue. Main concepts:

1) There is a need for better and expanded communication on wildlife connectivity, the science and its goals in the watershed, that reaches out to a broader set of constituencies (e.g., stock growers, Trout Unlimited, counties, NRCS, Tribes, etc.) in the URG. The goal is not only to inform but to build trust within and among constituencies – let NGOs help build bridges and frame communications.

2) There is a request of agencies to expand their outreach on the science and our current understanding of wildlife connectivity. Stewards and biologists to take the science and deliver it directly to private and local government groups. They need to know the data so they can be advocates.

3) Establish a public-private partnership such as a URG Wildlife Coalition that would serve to identify and prioritize key issues in the wildlife connectivity of the basin at large (and identify

research and data needs at landscape scales); formulate actions to meet the goals in a multi-jurisdictional framework, and develop resources and mechanisms for implementation. The partnership should be led by a community group or NGO (e.g., NM Wildlife Federation).

## **Day 2 — Close-out session**

After the reports from the breakout groups, the group met as whole to discuss outcomes and next steps after the workshop. Both agencies and NGOs agreed that this had been a very productive workshop both in terms of science delivery and communication, and that the effort on understanding wildlife movements and connectivity in a multijurisdictional, landscape-scale framework was of ongoing value in planning and management and should be carried forward. Accordingly, and per the recommendations of several of the breakout groups, the formation of a multi-partner Upper Rio Grande Wildlife [Connectivity] Coalition group lead by an NGO or community group was suggested that would look to bridge planning, management, and community engagement on the issues at hand. Twenty participants from across the spectrum responded that they would be willing to participate, and New Mexico Wildlife Federation offered to take a leadership role. Natural Heritage New Mexico volunteered to facilitate the organizational meeting along with the Southern Rockies Landscape Conservation Cooperative (SRLCC) using the outcomes of this workshop as the springboard for discussion.

Ron Harper from the USFS National Office offered that the workshop revealed an opportunity to collaborate at a bigger scale than single planning units. The scale of the Upper Rio Grande is goldilocks – not too big, not too small. No good alternative to not be planning at this scale. Units & budgets really struggling, yet new planning rules challenge thinking at much bigger scale. We can't continue business as usual. Commendations for starting the process...no good alternative to not continuing.

## **Acknowledgements**

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