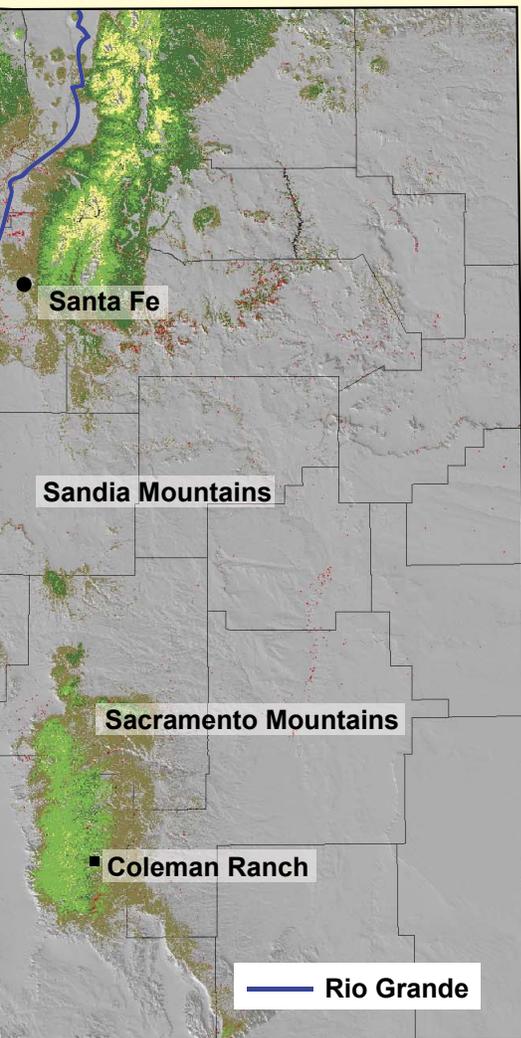


Mexico Watersheds:

The Floodplains

Gina Dello Russo – Bosque del Apache National Wildlife Refuge



Floodplain riparian forests in New Mexico are long, linear, discontinuous tracts that line the bottomlands of the major rivers. The hydrology and geomorphology of these river corridors have been altered to varying extents by natural processes and management activities that have occurred locally as well as higher in the watersheds. Riparian forests also have been and will continue to be affected by the introduction of invasive plant species and human encroachment into the active floodplain.

What Is Riparian Restoration?

The many agencies and interests working to improve riparian forest health have diverse concepts of what floodplain forest restoration is and should be, and how to implement it. Treatments such as invasive species control, bank-line manipulation, channel reconfiguration, and water and sediment management along rivers are becoming more common. But such actions are usually implemented locally without analysis at the larger landscape level to determine their overall contributions to ecosystem benefits. Whether this isolated approach contributes to the long-term sustainability of healthy ecosystems is the subject of much debate among stakeholders. But if the goal of restoration is to make river corridors more resilient to disturbances such as fire, drought, climate change, or anthropogenic activity, then a broader approach is necessary.

Although historic conditions are used to evaluate the potential diversity and dynamics of riparian forests, most river restoration practitioners do not assume that mimicking the recurrence interval of historic river dynamics in terms of flow duration and magnitude is possible. Nevertheless, most efforts to create or protect sustainable river corridors, including riparian forests, are linked to restoring river processes and maintaining

critical connections to the extent feasible. River corridors are all about connections, whether flood waters to floodplain acreage, food resources to resident or migrant wildlife species, upstream to downstream water users, or surface water to groundwater, and the state of these connections defines the health of a river.

Riparian restoration along New Mexico rivers has come a long way from the earliest efforts in the 1960s and 1970s that involved pole planting and seeding of cleared sites (Shafroth and others, 2008). Improved understanding of site characteristics and potential has resulted in more sound application of restoration practices: much has been learned by experience. Local- or regional-scale monitoring has improved our capability to describe individual river segments, but analysis is needed at the river-corridor or watershed scale to allow us to determine the sustainability of the watershed as a whole.

Start At the Landscape Scale

To be effective, efforts to improve riparian forest health must be based on basic information about the river conditions. At the landscape scale, historic and current conditions of the major river systems are important factors for describing forest health, including surface flows and the timing of water deliveries through the system, groundwater fluctuations linked to surface flows, and water quality, including sediment supply and movement. In addition, the historic and current ranges of wildlife and plant species in a watershed (including any sensitive species occurrence and habitat needs) must be considered. Determining the carbon mitigation potential along river corridors is now another aspect of evaluating ecosystem benefits and health.

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watershed basis. A recent example of landscape-scale coordination is the project planning by the U.S. Bureau of Land Management, the New Mexico State Land Office, the New Mexico Forestry Division, New Mexico Game and Fish Department, and private landowners to implement forest and grassland treatments (burning and thinning) over thousands of acres in the Pelona Mountain region near Datil. If passed by Congress, the Forest Landscape Restoration Act, championed by U.S. Sen. Jeff Bingaman, would provide funding for land managers to implement treatments with a minimum project area of 50,000 acres. Combined with regional efforts to address constraints to large-scale treatments in our forests, such as small-diameter wood utilization, these new multijurisdictional and watershed-based planning initiatives are positive developments that will lead to improved forest and watershed health in our upland systems.

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Add in information on current land ownership and use, constraints on water and land management, and opportunities to address important community issues along these rivers, and a landscape-level view of the system begins to emerge.

Once this information is available at the landscape scale, manageable ecological river subdivisions can be defined for further assessment. Trend analyses, models, and other tools that predict land-use changes, plant establishment, growth and succession, and groundwater and surface-water supply can be used to identify opportunities for adapting or restoring floodplain forest health. This analysis can inform strategies for riparian forest improvement, such as adapting plant communities to drier conditions at some sites or determining river-process requirements to promote resiliency of riparian species at others.

Any landscape-level look at opportunities for upland and riparian forest sustainability and watershed health becomes a daunting

task in the face of numerous stakeholders and contentious issues associated with water and land in New Mexico. Many individual agencies struggle to address complex watershed issues at multiple scales. Getting the scientific community and land and water managers to analyze and describe the resiliency potential or adaptation requirements of our rivers is the first step toward coordinated management. At the same time, increasing public knowledge and appreciation about the need for large-scale projects that move us towards the goals of sustainable and healthy riparian forests and watersheds is needed. Both of these steps, recently initiated in New Mexico, will be critical to successfully implementing agreed-upon strategies and fine-tuning our ability to adaptively manage a long-term program.

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Reference
Shafroth, P.B., V.B. Beauchamp, M.K. Briggs, K. Lair, M.L. Scott, and A.A. Sher, 2008. Planning riparian restoration in the context of Tamarix control in Western North America, *Restoration Ecology*, 16: 97-112.



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