



Forest Service
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Rocky Mountain Research Station

Science You Can Use *(in 5 minutes)*

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Growing Consensus: Diverse stakeholders collaborate on easy-to-use guide for restoring riparian forests

Evolutionary niches are great for species survival, but when humans get stuck arguing from viewpoint niches, it can mean bad news for ecosystem resilience. The Utah Forest Restoration Working Group, a collaborative partnership of agencies and stakeholders, operates beyond niches and uses group consensus. Their approach has resulted in a big first: agreement among divergent stakeholders on a step-by-step protocol for deciding how to restore and protect riparian forests in Utah.

The new Rocky Mountain Research Station (RMRS) Gen. Tech. Rep. RMRS-GTR-430 “[Guidelines for riparian forest restoration in Utah](#)” presents this process. Thirty people contributed to the report, representing Federal and State resource management agencies, county governments, nonprofit conservation groups, sporting groups, industry associations, and professional societies.

In this report, riparian forests are defined as ecosystems occurring along streams that support native trees at least 16 feet (5 meters) tall. Such forests occupy a fraction of the landscape in Utah, but they are disproportionately important because they serve so many ecological and social functions. Riparian forests signal the presence of precious water in an arid landscape. Thus, many competing pressures around water (human, animal, and ecological) converge in a small area—a recipe for tension.

According to report coauthor and prior RMRS biologist Sara Goeking, the most important

outcome of this work is a framework that the team calls “the matrix.” Deceptively simple, this 17 x 17 table distills volumes of expert knowledge about riparian forest systems into an efficient aid to decision-making. The user is guided through a protocol for applying the matrix.



Members of the Utah Forest Restoration Working Group and collaborators view effects of recent ephemeral water flow (flattened vegetation underfoot) in a typical low-elevation riparian forest. Restoration efforts that involve planting vegetation must take ephemeral flooding into account to avoid having plantings washed away. USDA Forest Service photo by Sara Goeking.



KEY MANAGEMENT CONSIDERATIONS

- New guidelines allow managers to identify, describe, diagnose, manage, and treat riparian forest ecosystems and evaluate the effectiveness of interventions.
- An easy-to-use matrix helps managers identify a comprehensive set of appropriate management options that correspond to the observed conditions.
- Concise summaries of the science behind assessing the structure, composition, and ecological integrity of riparian forests; detecting causes of degradation; and selecting appropriate methods for restoration have been prepared for a land management audience.

“The matrix sets this document apart from other restoration guides. It is a novel way to get a big-picture look at signs of riparian forest degradation, causes of degradation, and restoration options. Sometimes a restoration approach is chosen because it looks impressive or is simply feasible. This method emphasizes putting diagnosis first,” Goeking says.

Although the protocol was developed in Utah, it applies broadly to riparian forests throughout the Intermountain West of North America. “Anyone making decisions about such lands should find it useful,” says coauthor and Forest Service regional ecologist Marisa Anderson.

The matrix identifies 17 symptoms (signs of degradation), 17 stressors (causes of degradation), and 13 management options—including doing nothing. For each symptom–stressor combination, appropriate management options are listed in order of increasing complexity. The science behind each matrix element is discussed in the remainder of the report, and the reader is directed to additional technical resources. The report also discusses methods for monitoring the effectiveness of treatments.

Getting the big picture improves the chances for successful restoration. Goeking says, “The combination of symptoms might help pin down what the ultimate stressors are, and then that determines what the best restoration options will be.”

The matrix represents years of site visits and discussions with land managers and follow-up observations. All descriptions in the report reflect a consensus among the contributors. As Goeking explains, “The fact that diverse stakeholders agreed on the words to use for stressors, symptoms, and options should (we hope) increase acceptance and use of these guidelines among riparian managers with diverse values and objectives.”

PROJECT LEADS

[Marisa Anderson](#) is an ecologist with the USDA Forest Service, Intermountain Region, Ogden, Utah. Her work focuses on a variety of vegetation types, classification and mapping, and disturbance ecology.

[Sara A. Goeking](#) was a supervisory biological scientist with the USDA Forest Service, Rocky Mountain Research Station, Riverdale, Utah. Her work focused on forest monitoring, hydrology, and ecohydrology. Sara is now the Forest Inventory and Analysis National Program Manager for Inventory, Monitoring, and Assessment Research with the USDA Forest Service, Research & Development, Washington, DC.

FURTHER READING

Anderson, M.; Goeking, S.A.; Gragg, J.; Green, S.A.; Jones, A.; O'Brien, M.; Tart, D. 2024. [Guidelines for riparian forest restoration in Utah](#). Gen. Tech. Rep. RMRS-GTR-430. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station.

[Riparian assessments for intermountain forests provide a detailed look at the condition and stressors of riparian ecosystems in National Forests to inform management and planning](#). 2020 April 16. Science Spotlights. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station.

Bateman, H.L.; Merritt, D.M.; Johnson, J.B. 2012. [Riparian forest restoration: conflicting goals, trade-offs, and measures of success](#). Sustainability. 4: 2334–2347.

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