

RESTORATION

Habitat Restoration within the Middle Rio Grande of New Mexico



US Army Corps of Engineers®
Albuquerque District

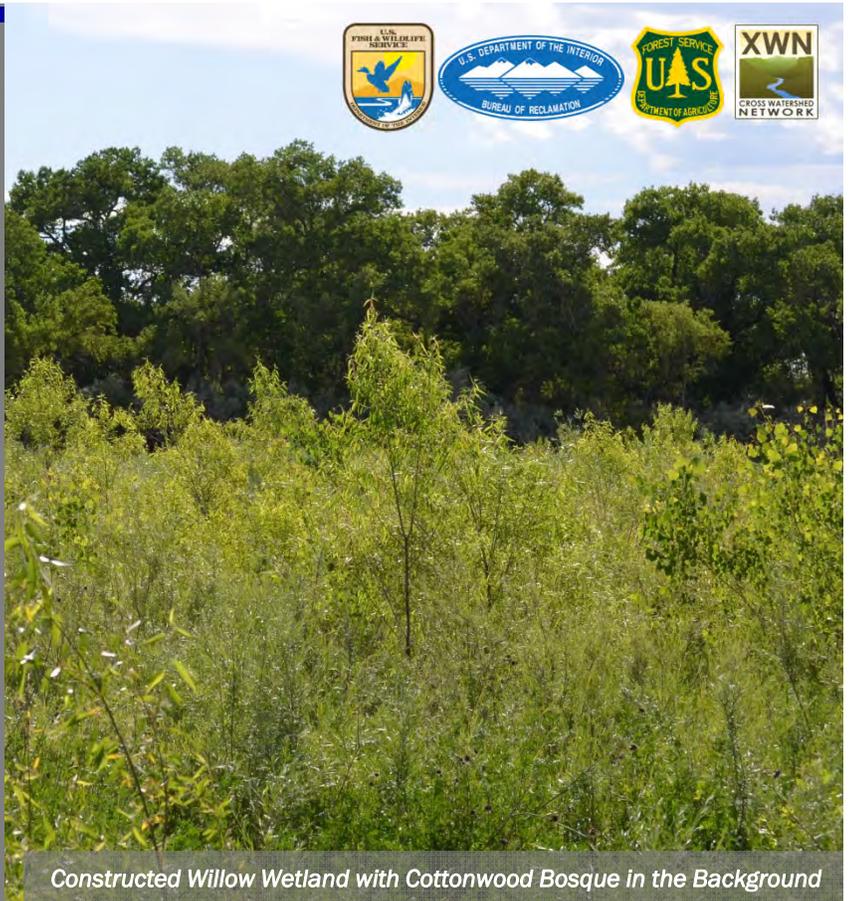


The Middle Rio Grande (MRG) of New Mexico is defined as the 120-mile long reach from Cochiti Dam to Elephant Butte Reservoir. The riparian corridor includes cottonwood-dominated forests, locally referred to as the “bosque.”

The bosque relies on a supply of flowing freshwater and shallow groundwater for survival. These ecosystems support numerous species, including threatened and endangered species such as the southwestern willow flycatcher, western yellow-billed cuckoo, Rio Grande Silvery Minnow, and the New Mexico meadow jumping mouse, and a broad suite of other wildlife guilds and flora.



Project Location



Constructed Willow Wetland with Cottonwood Bosque in the Background

KEY ISSUES ADDRESSED

Water management and diversions have disrupted seasonal overbank flooding and floodplain connectivity throughout the Rio Grande, promoting populations of non-native plants. Along the MRG, floodplain habitat diversity has decreased, and hazardous fuel loads have increased. The loss and degradation of riparian habitat not only decreases habitat quality for native fish and wildlife of the MRG, but also puts human welfare at risk by increasing wildfires in the bosque. Recognizing that these conditions threatened the integrity of the MRG, multiple efforts such as the MRG Restoration Program (MRGRP) have been initiated to reduce non-native species and restore native species and hydrological function.

PROJECT GOALS

- Reduce the cover of non-native vegetation
- Increase the structural diversity of floodplain vegetation communities
- Improve river-floodplain connectivity
- Protect, extend, and enhance areas of potential habitat for listed species
- Reduce the risk of high severity fires in the bosque

WILDLIFE BENEFITS

As one of the largest habitat restoration efforts in the southwestern United States, the MRGRP is creating new aquatic and riparian habitat and promoting ecosystem resilience.



Recently Planted Coyote Willow Poles

PROJECT HIGHLIGHTS

Revegetation: Approximately 127,000 potted shrubs, 9,000 tree poles, and 345,000 willow cuttings were planted. Native grasses were seeded along levees, spoil areas, and reclaimed access roads and herbaceous plugs were installed in wetlands.

Enhanced Hydrology: Nearly 50 moisture-enhancement features were constructed. Excavation was used to reduce depth to groundwater and promote regular, seasonal flood inundation of willows and other wetland plant species.

Ecological Monitoring: Quantitative effectiveness monitoring started in 2016 to drive adaptive management decision-making, assess maintenance needs, document noxious weed invasions, calculate transplant survival rates, and monitor the structural development and diversity of the wetland habitat features in the long-term.

Fuels Reduction: In wetland construction areas, woody invasive species, mainly non-native trees, were pulverized into wood chips via mechanical mastication and chainsaw felling. Herbicide treatments were applied to herbaceous weeds, cut stumps, and root sprouts.

Collaborators

- Middle Rio Grande Conservancy District
- City of Albuquerque Open Space Division
- Corrales Bosque Advisory Committee
- Hawks Aloft

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Photos courtesy of Chad McKenna/GeoSystems Analysis, Inc.

LESSONS LEARNED

After restoration, the vegetation structure is transitioning from an open cottonwood forest to a multi-canopy forest co-dominated by cottonwood galleries interspersed with a diverse assemblage of native understory species.

Restoration did not eliminate non-native plants. Control of certain non-native woody (e.g. tree of heaven) or annual (e.g. kochia) plant species required a multi-step approach. Cover of annual non-native weeds kochia and tumbleweed varied seasonally and was higher than the cover of the seeded grass species at many of the seeded spoil locations. Conversion of annual weed dominated communities into native grasslands is difficult without subsequent irrigation and it takes years to gauge success.

Alkali sacaton was the most abundant seeded grass whereas the most abundant forbs were scarlet globemallow, pale evening primrose, and annual sunflower. Highest seeded plant cover (26%) resulted from drill seeding during monsoon season.

NEXT STEPS

- Optimize planting rates and densities for individual plant species
- Control encroachment of non-native species and annual weeds at local and regional scales to minimize potential for invasion of MRG projects
- Continue monitoring to observe long-term trends and improve adaptive management strategies

PROJECT RESOURCES

For more information on this project, contact Danielle Galloway: danielle.a.galloway@usace.army.mil

For additional project resources and case studies, visit the Collaborative Conservation and Adaptation Strategy Toolbox: WWW.DESERTLCC.ORG/RESOURCE/CCAST



A Willow Bankline Under Construction