Middle Rio Grande Bosque Habitat Restoration Holds Promise for Threatened and Endangered Songbirds

Dana Price¹, Trevor Fetz², Gail Garber², Danielle Galloway¹, Ondrea Hummel³, Hira Walker¹, and Stephanie Jentsch¹



¹US Army Corps of Engineers, Albuquerque, NM, USA ²Hawks Aloft, Inc., Albuquerque, NM, USA ³TetraTech, Albuquerque, NM, USA



ABSTRACT

The Albuquerque District U.S. Army Corps of Engineers (Corps/USACE) designed and constructed the Middle Rio Grande Bosque habitat restoration project at 17 sites along a 22-mile reach of the Rio Grande from 2011 to 2016. Since construction, restoration area habitat has developed and matured at these sites, particularly where plantings are connected to groundwater, and progressed toward the goal of improving habitat for birds, including threatened and endangered songbirds.

Hawks Aloft, Inc. conducted Willow Flycatcher (*Empidonax traillii*) surveys at 16 restoration sites in 2004-2015, 2022, and 2023. Tetra Tech conducted surveys in 2016-2019. Cumulatively, Willow Flycatchers were detected at 12 of the 16 sites. Until 2019, most detections were in May, indicating migrating birds. Since 2020, surveys have detected Willow Flycatchers during the third survey period (June 25 - July 17) at four sites, when only territorial and potentially breeding individuals of the federally endangered southwestern subspecies (*E. t. extimus*) would be expected. Nesting was confirmed at one site in 2020 and a possible family group was observed in 2023. These detections suggest that habitat characteristics at most of the restoration sites provide suitable habitat for migrating Willow Flycatchers and that in some cases are developing into suitable nesting habitat for individuals of the endangered southwestern subspecies.

Starting in 2017, Yellow-billed Cuckoo (*Coccyzus americanus*) surveys were conducted at some restoration sites. In 2023, Hawks Aloft, Inc. conducted cuckoo surveys at 13 restoration sites and documented cuckoos at five sites. At four of those sites, cuckoos were documented during the second (July 1 - 31) or third survey period (July 31 – Aug 15) when birds would be expected to be territorial and potentially breeding. Although we could not confirm any breeding attempts, the 2023 detections suggest that some restoration areas provide habitat that is potentially suitable for both migrant and territorial cuckoos.



Western Yellow-billed Cuckoo (Hawks Aloft, 2023); bank terrace flooded during spring runoff (Tetra Tech); Willow Flycatcher (Hawks Aloft, 2009)

Restoration Projects Background

The Middle Rio Grande Restoration Project (MRG Project) was designed and constructed by the Corps to expand, create, and improve floodplain habitat conditions for fish and wildlife along a 22-mile segment of the Middle Rio Grande between



Planting a willow swale at Site 5B; willow swale at site 1G flooded during spring runoff; mature and young planted cottonwoods at site 5B

the north boundary of the Village of Corrales and the north boundary of the Pueblo of Isleta south of Albuquerque. The Corps constructed other smaller scale restoration projects prior to the MRG Project. The Ecosystem Revitalization @ Route 66 Project and the Bosque Wildfires Project both had limited post-construction monitoring.

MRG Project Goals Included:

- Improve habitat quality and increase the amount of native bosque communities.
- Improve river-floodplain connectivity.
- Protect, extend and enhance areas of potential habitat for listed species.

Create willow stands with "highly suitable" habitat characteristics for breeding Southwestern Willow Flycatchers.
Increase the number of migrating and breeding Southwestern Willow Flycatchers using the MRG Project area.

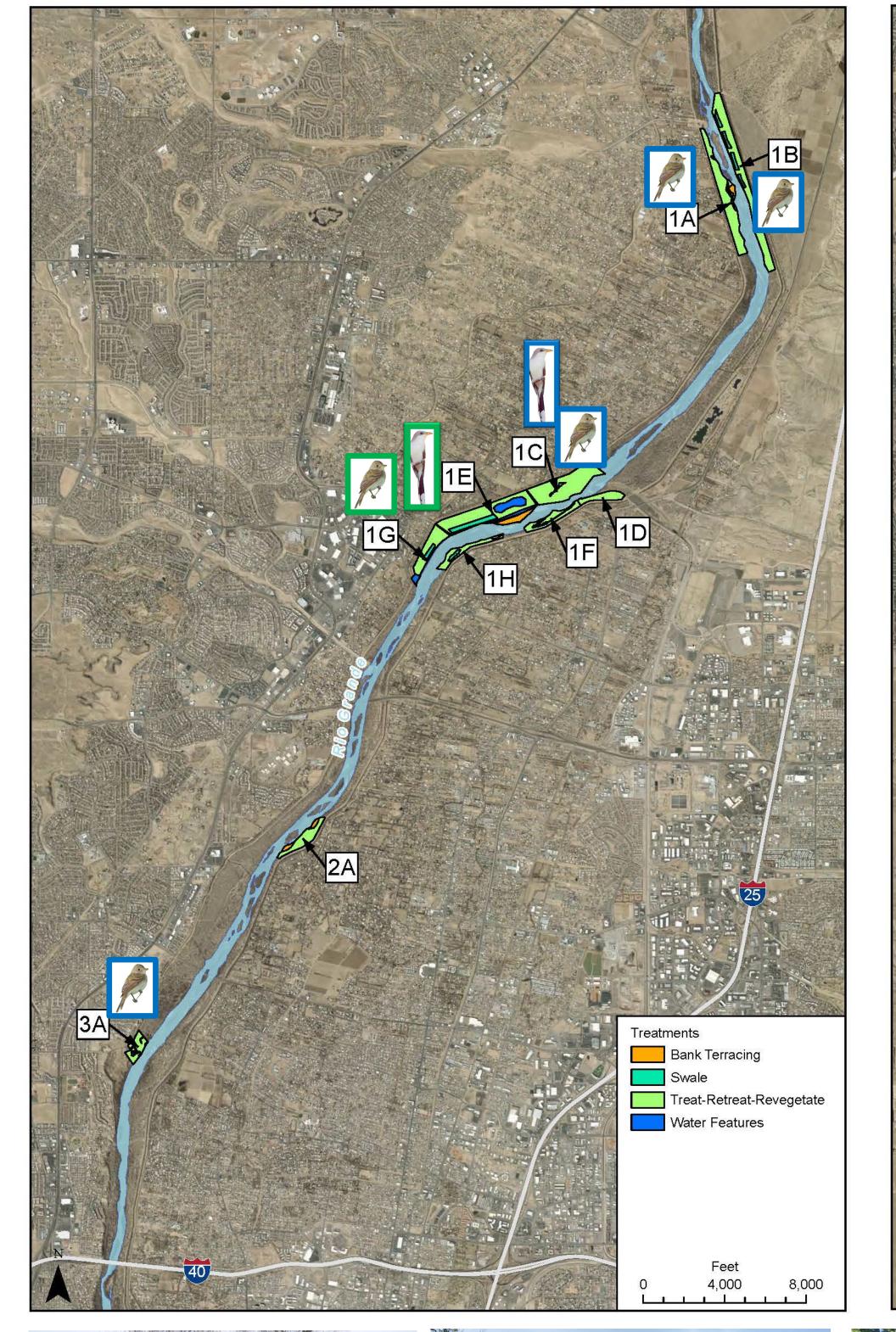
MRG Project Features Included:

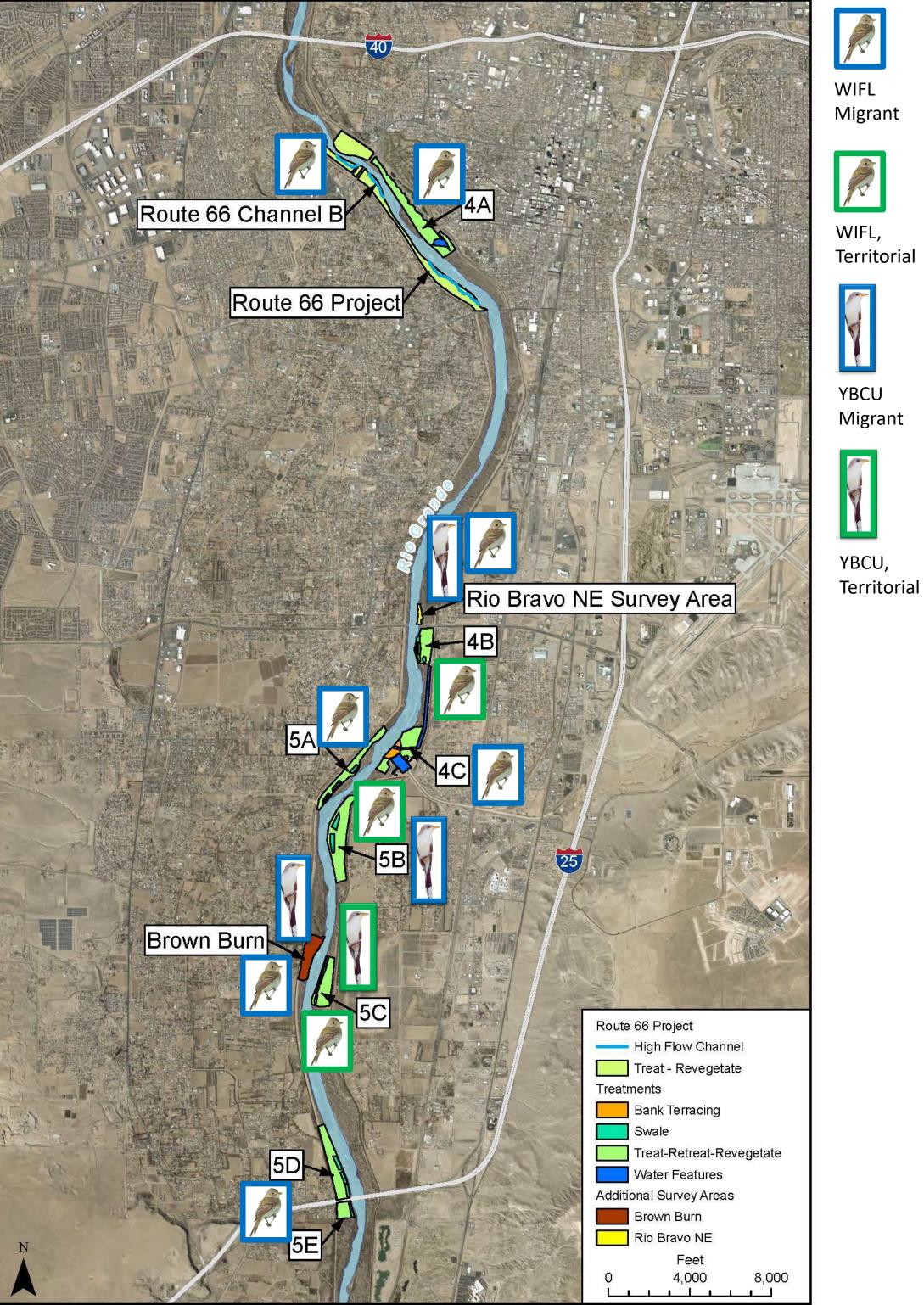
- Water features: Bank scallops, backwaters, high-flow channels
- **Excavated floodplain features:** Bankline terraces, willow swales, moist soil depressions
- Vegetation Management: Fuel reduction, invasive species removal
- **Revegetation** with native tree and shrub species

Restoration Sites and Treatments

Site	Date restored	Restoration Conducted
1A	2015	2 bankline terraces (total 6ac); 2 backwaters (total 0.6 ac); 68.5 ac fuel reduction, invasives removal, reveg native spp
1B (Sandia Pueblo)	2012	0.4 ac backwater, 0.5 ac bank scallop 3 bankline terraces totaling 4.2 ac 93 ac fuel reduction, invasives removal, reveg native spp
1C	2015	willow swale (1.8 ac) 40 ac native trees and shrubs planting
1E	2012	willow bankline; 6.1 ac willow swales 40 ac fuel reduction 50 ac native plantings
		4.3 ac willow swale 0.2 ac backwater
1G	2012	19.6 ac fuel reduction, reveg native spp 11.6 ac fuel reduction and revegetation 3 backwater (0.38), 1.2 ac pond
3A (oxbow)	2016	0.26 ac bank scallop
4A (Tingley)		3 moist soil depressions (0.33 ac) 103 ac fuel reduction, reveg native spp
4B	2012	swale construction
4C	2012	swale construction
Route 66 Rio Bravo NE	2008-2010	high flow channel and connected swale (5 ac); invasives removal, reveg native spp Small restoration feature
	early 2000s 2012	
5A/ Durand Brown Burn	mid 2000s	
5B	2012	post-fire revegetation, willow swale, oxbow swale and bank terrace construction
50 5C	2012	
	2012	9.2 ac willow swale
5D	2012	
5E	2012	8.1 ac willow swale connected to river 9.1 ac fuel reduction

Restoration Sites and Treatments Map with Willow Flycatcher and Yellow-billed Cuckoo Detections





Discussion

- Surveys were not conducted consistently at all sites over the years based on inconsistent project funding and changing priorities.
- WIFLs were present at most sites during migration in at least some years, indicating stopover habitat use.
- Since 2020, WIFLs have been detected during the third survey period (June 25 July 17), when only territorial and potentially breeding individuals of the federally endangered southwestern subspecies (*E. t. extimus*) would be expected. A nest was discovered in 2020.
- Although Yellow-billed Cuckoo surveys have been limited, prior to 2019 they were rarely detected. In 2023 Yellow-billed Cuckoos were detected at
- three sites during in the second or third survey period (July 1 31, July 31-Aug 15) when birds are expected to be territorial and potentially breeding.
- Habitat at these sites has matured, especially where plantings can readily access groundwater. Years with more favorable spring runoff conditions have also had better plant growth and more WIFL detections.
- Collaboration in monitoring and adaptive management of these sites has been very helpful in understanding what contributes to restoration success.



Yellow-billed Cuckoo Surveys

Willow Flycatcher Surveys														
Site	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022*	2023
Site 1A														
Site 1B (Sandia Pueblo)														
Site 1C														
Site 1E & G (South Corrales)											nest			
Site 3A (Oxbow)														
Route 66 Channel B														
Site 4A (Tingley Bar)														
Rio Bravo NE														
Site 4B (Rio Bravo SE)														
Site 4C														
Site 5A /Durand Outfall														
Brown Burn														
Site 5B														
Site 5C														
Site 5 D & E (I-25 West)														

Willow Flycatcher Survey detections key						
	WIFL Migrants					
	Potential SWFL territories (3rd					
	period detections)					
No Survey Conducted						
	Surveyed, no WIFL detected					
*Only	the 3rd period survey was					
condu	icted in 2022					
Valler	, hilled Cuskes Cumunu data stiene kau					
reliov	v-billed Cuckoo Survey detections key					
reliov	YBCU Migrants					
YEIIOV						
YEIIOV	YBCU Migrants					
YEIIOV	YBCU Migrants Potential YBCU territories (2 nd - 3 rd					
	YBCU Migrants Potential YBCU territories (2 nd - 3 rd period detections)					
	YBCU Migrants Potential YBCU territories (2 nd - 3 rd period detections) No Survey Conducted					

Site	2014	2015	2016	2017	2018	2019	2020	2021	2022*	2023
Site 1A										
Site 1B (Sandia Pueblo)										
Site 1C										
Site 1E & G (South Corrales)										
Montano SW										
Site 3A (Oxbow)										
Route 66 Channel B										
Site 4A (Tingley Bar)										
Rio Bravo NE										
Site 4B (Rio Bravo SE)										
Site 4C										
Durand Outfall (Site 5A)										
Brown Burn (WIFL survey)										
Site 5B										
Site 5C										
Site 5 D & E (I-25 West)										