



# MIDDLE RIO GRANDE ENDANGERED SPECIES COLLABORATIVE PROGRAM

## August 2023 Newsletter

### Discovering the Hidden Labor in Collaboration

Provided by Catherine Murphy & Debbie Lee, Program Support Team (PST)

When you think about the act of collaborating, what images come to mind? Perhaps the scene is one of a well-orchestrated set of individual actions, each in service of a similar goal. Or do you see a group of like-minded people looking for a solution to a problem, leveraging their combined resources and evaluating ideas synergistically? While the former describes simple coordination (i.e., working separately to achieve a common goal), the latter is more indicative of a true collaboration (i.e., working together to achieve a common goal). One might argue that the difference is merely semantic given that, in either case, the goal is likely to be attained. The collaborative path, however, undoubtedly will be shorter, more innovative, and more easily justified than that of the distinct coordinated efforts. The challenge is that genuine collaboration, while preferable, typically does not come easily, especially for a large group with diverse interests, such as our Collaborative Program. It requires trust, patience, shared purpose, and a commitment to roll up our sleeves and work together. Fortunately, helpful guidance is available for collaborations in natural resource management like ours (see Principles for Collaboration in Box 1; Tallis et al. 2017).

Emerson et al. (2012) defined collaborative governance, generally, as:

*“the processes and structures of public policy decision making and management that engage people constructively across the boundaries of public agencies, levels of government, and/or the public, private and civic spheres in order to carry out a public purpose that could not otherwise be accomplished.”*

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### FEATURED THIS ISSUE:

- ◆ Hidden Labor in Collaboration
- ◆ Intro to Whitfield
- ◆ Climate Poll
- ◆ Photo Contest
- ◆ What’s Happening in the MRG
- ◆ Program Updates
- ◆ New Member
- ◆ Upcoming Dates

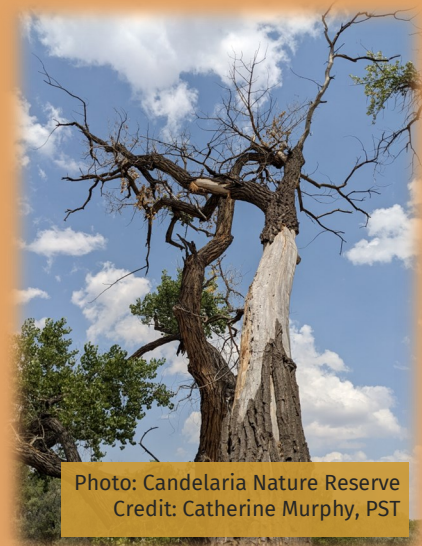


Photo: Candelaria Nature Reserve  
Credit: Catherine Murphy, PST

# HIDDEN LABOR IN COLLABORATION CONT.

## Box 1: Principles for Collaboration (adapted from Tallis et al. 2017)

### Use evidence to inform decisions

*By learning from evidence of what has and has not worked in the past, decision makers can make faster progress, cut costs, and avoid failures and backtracking.*

### Act now and learn by doing

*Acknowledge that progress can be made now even in the absence of complete understanding, evidence, or political or social alignment. Encourage flexibility and intentional learning along the way to improve actions and impact.*

### Seek and respect other perspectives

*Believe and act as if goals for one type of objective (e.g., economic) may be met more effectively, efficiently, or sustainably by embracing ideas, interventions, approaches, or concepts from other areas (e.g., conservation).*

### Be intentional about inclusion

*Use established tools for including and empowering underrepresented groups.*

### Strive to do no harm

*Seek out and circumvent potential harmful outcomes, strive for positive outcomes that do not come at the expense of negative outcomes for other sectors (economic, health, environment), other groups, or future generations. When trade-offs occur, make efforts to minimize and mitigate negative outcomes.*

### Share information

*Share data, frameworks, and concepts quickly, openly, and transparently.*

Emerson et al. (2012) described three interacting components that drive collaboration dynamics: 1) principled engagement (i.e., discovery, definition, deliberation, and determination), 2) shared motivation, and 3) the capacity for joint action. All three of these components can be modeled in the Collaborative Program, as all of our signatories come to the table with a shared mission and goals, coordinate their activities, and often make decisions collectively. However, the first component, that of principled engagement, is the one that is hardest to maintain consistently, and one that we will improve over time.

Rapp (2020) builds on the ideas of Emerson et al. (2012) by identifying three dimensions of a “shared theory of change.” The first dimension is agreement on the nature of the problem, which requires transparency and a shared knowledge base, as well as a shared focus within a well-defined and agreed upon context. Next is

agreement on the actions that can be taken, which demands a clear understanding of the policy environment and the different roles and capacities within the group. Lastly, a shared theory of change requires agreement on well-defined goals (with associated objectives and strategies), as well as a willingness to adjust priorities. In its transition to a science and adaptive management program, the Collaborative Program redefined its guiding principles (i.e., mission, goals, and objectives) and identified important assumptions. An integral part of progress toward collaborative adaptive management was first identifying the boundaries for Program operations, in order to find and capitalize on opportunities for collaboration. Lastly, our commitment to adaptive management means that we will continually reassess and adjust our priorities. The biennial Collaboratory is an opportunity to identify upcoming management and research needs, to which the Collaborative Program can align its work.

*Continued on pg 3*

# HIDDEN LABOR IN COLLABORATION CONT.

Collaborations, especially those that involve complex problems and consequential tradeoffs, benefit from proverbial wisdom, as well, such as the concept of “creative waiting,” from British author and journalist Oliver Burkeman (2022). Of course, patience is always a difficult virtue to maintain when managing for endangered species, for whom time quite literally is running out. Burkeman posits, however, that a “willingness to go more slowly towards a better solution” is one of the ways in which “patience is a superpower.” In the Collaborative Program, as in life, we often want to jump right to the end — to implementation. But acting on that impulse can lead to costly mistakes, such as inefficient digressions or temporary remedies, because the assumptions that informed our actions were flawed in some way. There is a fine line between “paralysis by analysis” and having adequate information to act confidently. Urgency will influence where that line lies, but change, especially behavioral change, does not happen overnight. That’s why we are taking a multi-year planning approach, forecasting future management needs, and working together to address them, while still responding to immediate priorities. In time, we will be able to operate more responsively and efficiently.

The benefits gained from having patience and taking deliberate action do not negate the limited time we have in which to act. This is why we should adopt true collaboration as our default operating mode — working synergistically, we can find optimal solutions more quickly and assemble multi-signatory buy-in at the same time. This approach is our best option to deliver recommendations for adaptive management of our listed species and the Middle Rio Grande (MRG) ecosystem that are both well-founded and implementable. Lastly, while not explicitly called out in the guidance from Rapp (2020) or Emerson et al. (2012), we cannot discount the importance of external partnerships and information sharing. If we want to be innovative and relevant, the Collaborative Program cannot operate in a vacuum. We should seek out lessons learned from other groups, as well as their tools and methodologies. If appropriate, we can incorporate that knowledge into our own practices and learn from others to more efficiently improve the important work we do. You may have noticed we have started hosting more seminars from individuals outside of the Collaborative Program, or even the MRG Basin (Check out all our recent seminars [here](#)). We hope that these talks generate new ideas and partnerships that can benefit us all.

## References

- Burkeman, O. 2022. Why Patience is a Superpower [Video]. TEDxManchester. [https://www.ted.com/talks/oliver\\_burkeman\\_why\\_patience\\_is\\_a\\_superpower](https://www.ted.com/talks/oliver_burkeman_why_patience_is_a_superpower).
- Emerson, K., Nabatchi, T., Balogh, S. 2012. An integrative framework for collaborative governance. *Journal of Public Administration Research and Theory* 22, 1–29. DOI:10.1093/jopart/mur011.
- Rapp, C. 2020. Hypothesis and Theory: Collaborative Governance, Natural Resource Management, and the Trust Environment. *Frontiers in Communication* 5. DOI:10.3389/fcomm.2020.00028.
- Tallis, H., Kreis, K., Olander, L., Ringler, C., et al. 2017. *Bridge Collaborative Practitioner’s Guide: Principles and Guidance for Cross-sector Action Planning and Evidence Evaluation*. Washington DC: The Nature Conservancy. [https://nicholasinstitute.duke.edu/sites/default/files/publications/Practitioners\\_Guide\\_Final\\_2.pdf](https://nicholasinstitute.duke.edu/sites/default/files/publications/Practitioners_Guide_Final_2.pdf).

# INTRO TO WHITFIELD

Provided by Angela Medina Garcia, PST

The **Whitfield Wildlife Conservation Area (Whitfield)** is a cooperative conservation project by the Valencia Soil and Water Conservation District, located in Valencia county, adjacent to the Isleta Reach of the MRG and approximately 3 miles east of the city of Belen (Figure 1). More information on Whitfield is available [here](#).

Whitfield (and its surrounding areas) is an ideal focal area for the upcoming **Climate Futures Planning Workshop** on **October 24-25, 2023**, as it is centrally located and representative of the larger MRG ecosystem given its vegetation types, access to water, and projected climate futures. Additionally, Whitfield is actively seeking input from the Collaborative Program on fire- and climate-adapted restoration strategies to recover from the 2022 Big Hole Fire.

Whitfield and its surroundings offer a unique opportunity for managers and researchers to explore and implement science-based adaptive management for the following reasons:

- A wide range of habitats are represented in the area (e.g., cottonwood, marsh, open water,

coyote willow), which have the potential to support all five focal species of the Collaborative Program

- The area has been the focus of habitat restoration projects in the MRG
- The area includes: 1) A Rio Grande silvery minnow population monitoring site, 2) a University of New Mexico (UNM) water quality monitoring station, and 3) a Bosque Ecosystem Monitoring Program (BEMP) long-term monitoring site

By focusing on Whitfield and its surroundings, workshop participants will have the opportunity to discuss and brainstorm management and research recommendations for potential collaborative adaptive management in this area. The potential for implementing the resulting recommendations from the workshop at a specific location will ultimately increase climate resilience in support of listed species and their habitats in the MRG.

To better familiarize Collaborative Program participants and interested parties with the area, the Collaborative Program will host a **field trip** to Whitfield on **September 26, 2023**. Register for the Whitfield Field Trip [here](#) by **September 20, 2023**. Registration is free.

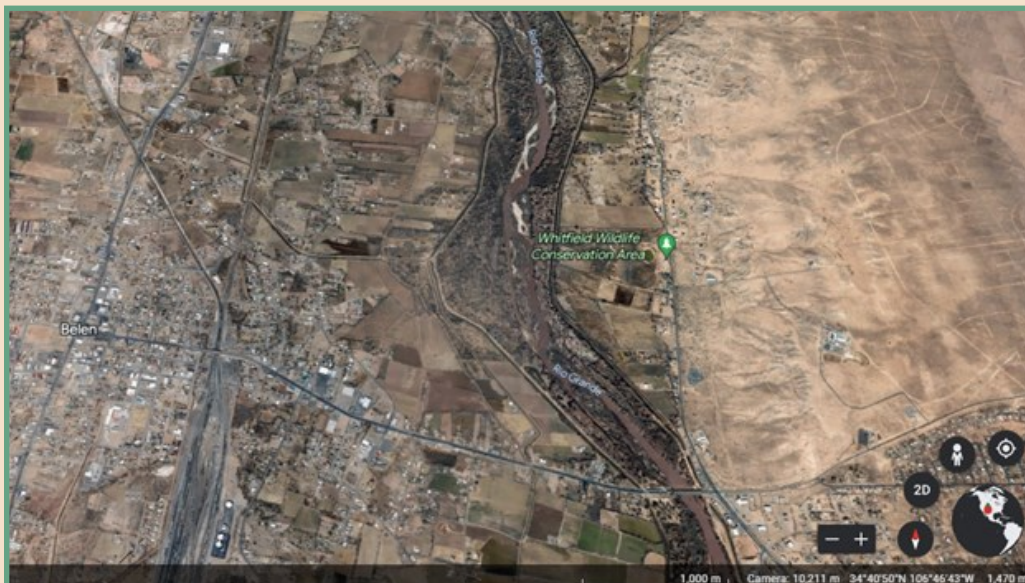


Figure 1: Location of the Whitfield Wildlife Conservation Area in relation to the city of Belen (map generated with Google Earth).

# RESULTS FROM THE CLIMATE POLL

Collaborative Program participants and interested members of the public were invited to participate in an anonymous **Climate Planning Poll** regarding their familiarity with and use of climate projections in endangered species management in the MRG.

The poll received **25 responses across 14 organizations**, including federal agencies, non-federal agencies, consulting firms, and tribes. Results are summarized below.

The key findings from the poll are as follows:

- Climate change ranked as the least important factor organizations take into account when considering endangered species management in the MRG, while ecosystem function ranked as the most important factor (Figure 2).
- 23/25 respondents indicated that they somewhat understand how to apply climate projections, and only one respondent answered that they fully understand how to apply climate projections (Figure 3).

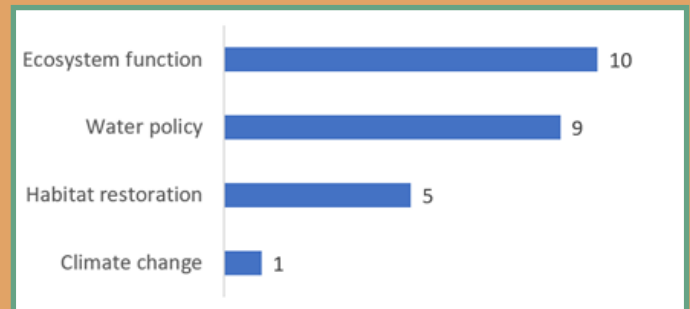
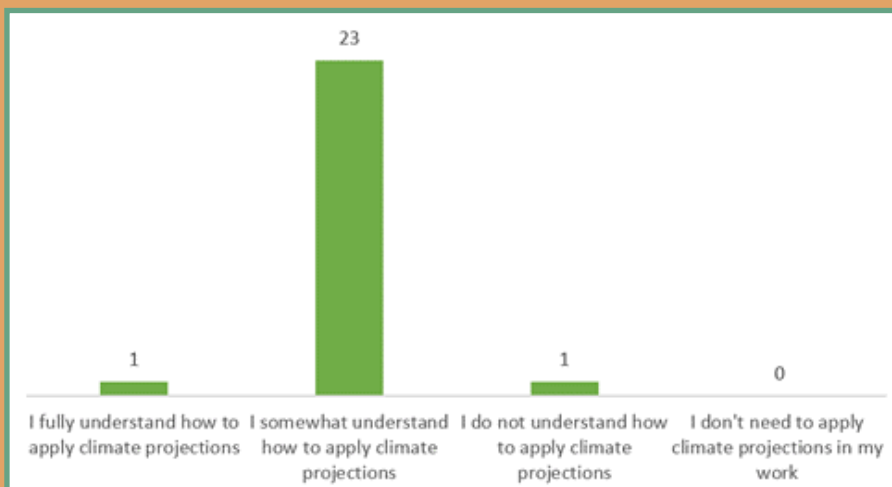


Figure 2 [above]. Survey participant ranking of the most important factors for endangered species management in the MRG (n = 25).

Figure 3 [left]: Survey participant level of understanding regarding the application of climate projections to their work (n = 25)



When asked, “How do you think climate projections will affect your future (next 30 years) planning for management of water and natural resources in the Middle Rio Grande?,” 40% of participants described how they think climate future projections will affect future planning for management of water and natural resources in the MRG, including:

- Innovative approaches to deal with changes in water quantity, quality, and timing for restoration
- Science-based collaborative adaptive management of natural resources

Whereas 60% of respondents indicated that they are aware of the impacts of climate change on water and natural resources in the MRG, but did not describe how this would affect their planning for management of these resources.

When asked, “How have climate projections influenced your current management of water and/or natural resources in the Middle Rio Grande?,” 40% of respondents indicated that climate projections influence their current management of water and/or natural resources in the MRG in a variety of ways, including:

- Restoration project design, suitability, and risk
- Risk evaluation for tribal community assets
- Threat assessment for New Mexico Species of Greatest Conservation Need

Whereas 52% of respondents acknowledged the importance of climate projections but are not currently incorporating climate projections into their management of water and/or natural resources in the MRG.

# PHOTO CONTEST WINNER

Collaborative Program photographers were invited to join in a photo contest with the theme of “**Water, Water, Everywhere.**” Photographers were tasked with sending in their best photos showing the high flows this year. We received 11 entries (a Collaborative Program record!), and a winner has been chosen! The winning photo was taken by **Jennifer Faler** from the U.S. Bureau of Reclamation. The photo depicts a group of kayakers on the Rio Grande with storm clouds on the horizon. The photo will be featured on the front page of the [Program Portal](#) and at the 2023 Science Symposium. Three Photo Contest honorable mentions are featured on pg 7.

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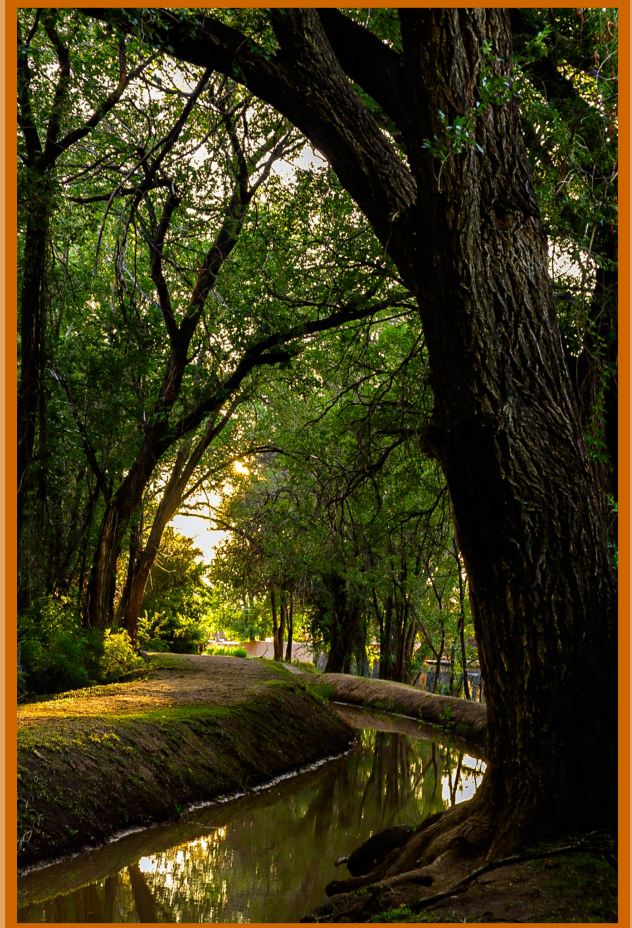


# PHOTO CONTEST HONORABLE MENTIONS



The photo on the left (outlined in blue) was taken by **Paul Tashjian** from Audubon Southwest via drone, and depicts the Rio Grande just south of the Highway 346 crossing. The image was taken May 6, 2023 with flows hovering around 4,000 cubic-feet/second.

The photo below (outlined in grey) was taken by **Ondrea Hummel** from Tetra Tech, Inc. and depicts a view of the Rio Grande during the southwestern willow flycatcher survey on May, 17, 2023.



The photo above (outlined in orange) was taken by **Codie Winn** from the South Central Climate Adaptation Science Center and depicts the Griegos Acequia running through a neighborhood in Albuquerque, shaded by trees, as the sun is setting.

# WHAT'S HAPPENING IN THE MRG

- Environmental Fair
- MRG Announcements
- Recent Publications
- Funding Announcements

## PUEBLO OF SANTA ANA ENVIRONMENTAL FAIR

**Pueblo of Santa Ana** held its annual **Environmental Fair** on **August 26, 2023** at the Tamaya Wellness Center. The Program Support Team (PST) tabled the event representing the Collaborative Program. Other organizations present included Pueblo of Isleta, U.S. Forest Service, Sandoval County Master Gardeners, and many more. There were lots of crafts stations, including a make-your-own succulent fairy garden and pine cone bird feeder.

The Collaborative Program's table included a Bosque Trivia game with prizes including animal flash drives, wooden animal puzzles, and a pick-your-critter basket with animal and insect figurines. Children and adults answered questions such as "Why is the bosque important?" to win a prize. Their responses were always highly enjoyable! An interesting parallel was both an adult and child saying the bosque was calming and offered a quiet place for them to think.

The bright display and prizes made the Collaborative Program table quite popular, and we were visited many times, sometimes multiple times by participants coming back with others or asking to answer another trivia question.

The event provided a perfect forum for sharing a bit of information about the Collaborative Program, while engaging an interested audience. The PST invites others to join in the fun at future events!



Photos: Collaborative Program Table at the 2023 Pueblo of Santa Ana Environmental Fair  
Credit: Catherine Murphy, PST





# WHAT'S HAPPENING IN THE MRG

## MRG ANNOUNCEMENTS

### ASPIREational Talks & Social Hour

There will be an ASPIREational Talk and Social Hour on **September 12, 2023 from 4PM-5PM** at Draft and Table in the UNM Student Union Building (SUB), featuring a short research talk from ASPIRE faculty Dr. Alex Webster titled **"Integrating catchment expansion-contraction dynamics into cross-continental hydro-biogeochemical predictions."** For more information, contact Jeng Hann Chong at [chongjh11@unm.edu](mailto:chongjh11@unm.edu). Mark your calendar for all upcoming ASPIREational Talks, which will take place on the following Tuesdays from 4PM-5PM at Draft & Table in the UNM SUB: **Sep 12, Oct 3, Oct 24, Nov 14, and Dec 5.**

### Trees and Water in Santa Fe Event

Reese Baker, an expert on Green Stormwater Infrastructure and creating sustainable landscapes through nature-based solutions, is hosting a **Tree New Mexico Event** on **September 15, 2023 from 9AM-12PM**. Participants will tour two different locations in Santa Fe and see real-world examples of effective rainwater catchment systems that utilize trees, including greywater applications, constructed wetlands, and an established permaculture based urban food forest with a roof garden. For more information, contact Shannon Horst at [ShannonHorst@treenm.org](mailto:ShannonHorst@treenm.org).

### Think Water: Act Now Workshop and Speaker Series

Middle Rio Grande Advocates is holding events as part of the **Think Water: Act Now Workshop and Speaker Series**. To watch past events and see a full list of upcoming events, click [here](#). The next events will be the following:

**Sept 21, 2023 — Water Management and Planning for Water Resilience in the Middle Rio Grande**  
State Engineer Mike Hamman and Office of the State Engineer General Counsel Nat Chakeres.

**Oct. 19, 2023 — What is the Public Interest in Middle Rio Grande Water Management?**

Barbara Baca, Chair, Bernalillo County Commission and MRGCD Board Member, and Eric Olivas, Chair, Albuquerque Bernalillo County Water Utility Authority and Bernalillo County Commissioner

### SWFL Habitat Viewer 2023 Update with YBCU Modeling Results

The updated **Southwestern Willow Flycatcher (SWFL) Habitat Viewer** is now available. Check it out [here](#). It also contains the yellow-billed cuckoo (YBCU) modeling results for all locations that fall within the SWFL's range. The habitat viewer is in the public domain, so anyone can distribute or interact with it.

### Call for Climate-Smart Commodities Concept Papers

The National Association of Conservation Districts (NACD) is seeking projects that foster private-public partnerships, scale implementation of climate-smart practices, advance Measurement, Monitoring, Reporting, and Verification (MMRV), and support producer participation in resulting markets. NACD will select projects via a multi-phase process:

- Phase 1: **Call for Concept Papers** (Due **October 13, 2023**)
- Phase 2: Partner Matchmaking (Est. October – December 2023)
- Phase 3: Final Proposals (Anticipated Due Date in March 2024)

To submit a concept paper and get more information, visit [here](#).

# WHAT'S HAPPENING IN THE MRG

## RECENT PUBLICATIONS

### **Demographic consequences of phenological asynchrony for North American songbirds**

Youngflesh, C., Montgomery, G.A., Saracco, J.F., Miller, D.A.W., Guralnick, R.P., Hurlbert, A.H., Siegel, R.B., LaFrance, R., Tingley, M.W. *Proceedings of the National Academy of Sciences* (2023), 120 (28), e2221961120. <https://doi.org/10.1073/pnas.2221961120>.

#### **ABSTRACT**

Changes in phenology in response to ongoing climate change have been observed in numerous taxa around the world. Differing rates of phenological shifts across trophic levels have led to concerns that ecological interactions may become increasingly decoupled in time, with potential negative consequences for populations. Despite widespread evidence of phenological change and a broad body of supporting theory, large-scale multitaxa evidence for demographic consequences of phenological asynchrony remains elusive. Using data from a continental-scale bird-banding program, we assess the impact of phenological dynamics on avian breeding productivity in 41 species of migratory and resident North American birds breeding in and around forested areas. We find strong evidence for a phenological optimum where breeding productivity decreases in years with both particularly early or late phenology and when breeding occurs early or late relative to local vegetation phenology. Moreover, we demonstrate that landbird breeding phenology did not keep pace with shifts in the timing of vegetation green-up over a recent 18-y period, even though avian breeding phenology has tracked green-up with greater sensitivity than arrival for migratory species. Species whose breeding phenology more closely tracked green-up tend to migrate shorter distances (or are resident over the entire year) and breed earlier in the season. These results showcase the broadest-scale evidence yet of the demographic impacts of phenological change. Future climate change-associated phenological shifts will likely result in a decrease in breeding productivity for most species, given that bird breeding phenology is failing to keep pace with climate change.

### **Genetic erosion in an endangered desert fish during a multidecadal megadrought despite long-term supportive breeding**

Osborne, M.J., Archdeacon, T.P., Yackulic, C.B., Dudley, R.K., Caeiro-Dias, G., Turner, T.F. *Conservation Biology* (2023). <https://doi.org/10.1111/cobi.14154>

#### **ABSTRACT**

Human water use combined with a recent megadrought have reduced river and stream flow through the Southwestern United States and led to periodic drying of formerly perennial river segments. Reductions in snowmelt runoff and increased extent of drying collectively threaten short-lived, obligate aquatic species, including the endangered Rio Grande silvery minnow. This species experiences 'boom-and-bust' population dynamics where large fluctuations in abundance are expected to lower estimates of effective population size and erode genetic diversity over time. Rates of diversity loss are also affected by additions of hatchery-origin fish used to supplement the wild population. We leveraged demographic and genetic data from wild and hatchery individuals to understand the relationship of genetic diversity and effective population size to abundance over the last two decades. Genetic diversity was low during the early 2000s, but diversity and demographic metrics stabilized after the hatchery program was initiated and environmental conditions improved. Yet, from 2017 onward, allelic diversity declined (Cohen's  $d = 1.34$ ) and remains low despite hatchery stocking and brief wild population recovery. Across the time series, single-sample estimates of effective population size (NeD) were positively associated ( $r = 0.53$ ) with wild/total abundance, but as the proportion of hatchery-origin spawners increased, NeD was reduced ( $r = -0.55$ ). Megadrought limits wild spawner abundance and precludes refreshment of hatchery brood stocks with wild fish, hence we predict a riverine population increasingly dominated by hatchery-origin individuals and accelerated loss of genetic diversity despite supplementation. We recommend an adaptive and accelerated management plan that integrates river flow management and hatchery operations to slow the pace of genetic diversity loss exacerbated by megadrought.

*Continued on pg 11*

# WHAT'S HAPPENING IN THE MRG

## RECENT PUBLICATIONS CONT.

### Limited evidence for extensive genetic differentiation between X and Y chromosomes in *Hybognathus amarus* (Cypriniformes: Leuciscidae)

Caeiro-Dias, G., Osborne, M.J., Waterman, H.M., Krabbenhoft, T.J., Turner, T.F. *Journal of Heredity* (2023), esad039. <https://doi.org/10.1093/jhered/esad039>

#### ABSTRACT

Sex determination systems and genetic sex differentiation across fishes are highly diverse but are unknown for most Cypriniformes, including Rio Grande silvery minnow (*Hybognathus amarus*). In this study, we aimed to detect and validate sex-linked markers to infer sex determination system and to demonstrate the utility of combining several methods for sex-linked marker detection in nonmodel organisms. To identify potential sex-linked markers, Nextera-tagmented reductively amplified DNA (nextRAD) libraries were generated from 66 females, 64 males, and 60 larvae of unknown sex. These data were combined with female and male de novo genomes from Nanopore long-read sequences. We identified five potential unique male nextRAD-tags and one potential unique male contig, suggesting an XY sex determination system. We also identified two single-nucleotide polymorphisms (SNPs) in the same contig with values of  $F_{ST}$ , allele frequencies, and heterozygosity conforming with expectations of an XY system. Through PCR we validated the marker containing the sex-linked SNPs and a single nextRAD-tag sex-associated marker but it was not male specific. Instead, more copies of this locus in the male genome were suggested by enhanced amplification in males. Results are consistent with an XY system with low differentiation between sex-determining regions. Further research is needed to confirm the level of differentiation between the sex chromosomes. Nonetheless, this study highlighted the power of combining reduced representation and whole-genome sequencing for identifying sex-linked markers, especially when reduced representation sequencing does not include extensive variation between sexes, either because such variation is not present or not captured.

### Rio Grande Silvery Minnow Population Monitoring During June 2023

Dudley, R.K., Platania, S.P., White, G.C. (2023) Prepared for U.S. Bureau of Reclamation, Albuquerque Area Office. [Link](#)

### Rio Grande Silvery Minnow Population Monitoring During July 2023

Dudley, R.K., Platania, S.P., White, G.C. (2023). Prepared for U.S. Bureau of Reclamation, Albuquerque Area Office. [Link](#)



Photo: Candelaria Nature Reserve  
Credit: Catherine Murphy, PST

# WHAT'S HAPPENING IN THE MRG



Photo: Candelaria Nature Reserve  
Credit: Catherine Murphy, PST

## FUNDING ANNOUNCEMENTS

### **Department of the Interior Fish and Wildlife Service (FWS) Refuges Enhancement/ Infrastructure Grant – Applications due September 15, 2023**

The goals of the initiative are to enable local communities to play a more active role in increasing outdoor recreation opportunities on refuge lands and waters, to be more focused and deliberate in using partnerships to help FWS address infrastructure repair and improvement needs such as proactive maintenance and the maintenance backlog and to enhance wildlife habitat. State or local government entity, the governing body of any Indian Tribe, a nonprofit organization or an accredited institution of higher education are eligible to apply for this grant with an award floor of \$5,000. To learn more about this grant, click [here](#).

### **Bureau of Reclamation WaterSMART Planning and Project Design Grants – Applications due October 17, 2023**

Bureau of Reclamation is providing funding for collaborative planning and design projects to support water management improvement through Planning and Project Design Grants. Planning and Project Design Grants can fund planning activities to improve water supplies, project-specific design for projects to improve water management and comprehensive Drought Contingency Plans. The award ceiling is \$400,000. To learn more about eligibility, click [here](#).

### **U.S. Army Corps of Engineers Section 165(a) Pilot Program for Water Resources Projects for Small or Disadvantaged Communities – Applications due October 20, 2023**

The U.S. Army Corps of Engineers is launching a pilot program to fully fund small water resources projects for economically disadvantaged communities. Project proposals under this pilot program are for projects under the Continuing Authorities Program (CAP). Under CAP, the Corps can plan, design, and implement certain types of water resources projects without additional project specific congressional authorization. The purpose of the CAP is to plan and implement projects of limited size, cost, scope and complexity. While CAP projects typically require a cost share with a non-Federal sponsor, this pilot program will fully fund the selected project projects. To learn more and apply, click [here](#).

### **Bureau of Reclamation WaterSMART Drought Response Program: Drought Resiliency Projects Notice of Funding Opportunity – Applications due October 31, 2023**

This Notice of Funding Opportunity for the WaterSMART Drought Response Program invites eligible applicants to submit proposals for projects that can increase water management flexibility as part of preparing for and addressing the impacts of drought and water supply shortages. Projects that will be funded under this NOFO are divided into four task areas. The award floor is \$25,000 and the ceiling is \$5 million. To learn more about eligibility and the application process, click [here](#).

# PROGRAM UPDATES

- HR Field Trip
- Collaborative Seminars
- Announcements
- Calls for Action
- USACE Program Manager

## HR FIELD TRIP

The Collaborative Program facilitates coordination between habitat restoration (HR) practitioners through quarterly HR Coordination meetings. Every other meeting takes place in the field, so participants can see on-the-ground restoration activities. The goal of the HR Coordination meetings is to share information about planned or ongoing restoration projects in the MRG, elicit feedback and input to help in planning or implementing projects, form partnerships, and identify areas for further learning or coordination.

On the morning of **August 22nd**, **Cameron Weber**, Rio Grande Return, and **Dustin Chavez-Davis**, City of Albuquerque Open Space, led a **field tour** of the **[Candelaria Nature Preserve \(Preserve\)](#)**, a 167-acre area adjacent to the Rio Grande Nature Center that is being restored for wildlife. Notably, State **Senator Antonio “Moe” Maestas** attended the tour as a special guest. Participants viewed a wetlands expansion project that would tie existing ponds to remnant wildlife habitat and discussed approaches to managing invasive plants and planting native species. Kim Eichhorst, BEMP, summarized the results of BEMP’s baseline rapid assessment of the site from 2021, noting that the field sites were dominated by exotic species and bare ground, with the wetlands having the highest plant diversity and richness.

Cameron explained how Rio Grande Return is controlling invasive plants in fields that are not actively being restored by using seed mixes of teff, German millet, and other grain plants. These plants provide habitat and food for birds, while keeping weed plants from being established. Cameron also showed field trip participants the on-site plant nursery, explaining that the Preserve sources native plants from areas either south or from a lower elevation to try and build climate resiliency into the restoration efforts.

Participants also saw an experimental Chihuahuan field site, which features plants from the Chihuahuan Desert, and the newly constructed wildlife viewing blind accessible from the Paseo del Bosque Multi-Use Trail west of the Preserve. Another viewing blind on the east side of the Preserve off the Duranes Lateral is still under construction.

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Photo: Candelaria Nature Reserve  
Credit: Catherine Murphy, PST

# PROGRAM UPDATES

## HR FIELD TRIP PHOTOS



Photos: Candelaria Nature Reserve field trip  
Credit: Catherine Murphy, PST

# PROGRAM UPDATES

## COLLABORATIVE SEMINARS

### INTRODUCTION TO NASA'S WESTERN WATER APPLICATIONS OFFICE (WWAO)

**Stephanie Granger, Program Director for the WWAO – August 10, 2023**

[Link](#) (PDF and recording to be posted soon)

Stephanie Granger, Program Manager and Technical Group Supervisor at the National Aeronautics and Space Administration's (NASA) Jet Propulsion Laboratory in Pasadena, CA, introduced the Collaborative Program to the [WWAO](#). WWAO aims to put satellite data to work for water management in the Western United States by working closely with private and public entities at the local, state, regional and national levels. WWAO equips western water managers and decision-makers with NASA data, technology, and tools to address their most pressing water resource issues.

Research scientists study the Earth's water cycle using satellites, aircraft, and computer models to provide remote sensing data at sampling intervals that are useful for water resource management. However, water management agencies and organizations may not have the time or expertise to access, process, or analyze NASA information for decision-making, and NASA scientists and technologists are sometimes unaware of water management challenges and needs. WWAO can bridge this gap by engaging the water management community to understand the decisions that are being made to identify data and monitoring needs, to co-develop projects that address those needs, and to assist in transitioning successful projects for operational use. Stephanie gave a description of these WWAO activities and provided highlights of current projects and tools. One of the ways that WWAO connects water managers to data and tools is by funding projects to address management needs directly. They also use impact assessments to develop pathways from research to operations, devising innovative ways to make certain non-trivial tasks feasible.

Stephanie then discussed additional NASA resources with relevance to the Collaborative Program's work. One is the Ecological Conservation Program, which promotes the use of NASA Earth observations to monitor, analyze and forecast changes in climate, extreme weather conditions and human activities to develop resource management strategies that benefit society. NASA's Biological Diversity and Ecological Conservation programs support basic and applied research through various funding opportunities and joint workshops, solicitations and announcements of which are updated regularly on their [web portal](#).

To provide suggestions or requests for collaboration opportunities to Stephanie, contact Catherine Murphy at [cmurphy@west-inc.com](mailto:cmurphy@west-inc.com) or connect with the WWAO directly at [water.applications@jpl.nasa.gov](mailto:water.applications@jpl.nasa.gov).

*Continued on pg 16*

# PROGRAM UPDATES

## COLLABORATIVE SEMINARS CONT.

### 2022 RGSM POPULATION MONITORING

**Robert K. Dudley, American Southwest Ichthyological Researchers (ASIR) and Museum of Southwestern Biology, UNM – August 15, 2023**

[Link](#)

Dr. Rob Dudley with ASIR and UNM's Museum of Southwestern Biology shared an analysis of Rio Grande silvery minnow (*Hybognathus amarus*; RGSM) population monitoring during 2022. The primary research objective of the RGSM Population Monitoring Program is to evaluate how seasonal and annual changes in river flows affect the distribution and abundance of RGSM throughout its current range over time (1993–2022). These findings are critical for RGSM research and for the conservation and recovery efforts of the Collaborative Program's signatories.

The recent monitoring efforts revealed an 88.8% decrease in RGSM density (fish/100 m<sup>2</sup>) from 2019 (2.10) to 2020 (0.23), and density declined further in 2022 (0.08). While RGSM represented 8.61% of the fish community in 2019, by 2022, it had decreased to only 0.68%. Site occupancy models, based on repeated sampling during November (2005–2022), revealed that RGSM occupancy probabilities decreased from 2019 (1.00) to 2020 (0.65), increased modestly in 2021 (0.81), but decreased markedly in 2022 (0.49). RGSM has been lost periodically from >85% of its occupied sites over time. Occupancy, extinction, and colonization probabilities for RGSM (i.e., conservation status) improved slightly from 2020 to 2021 but again declined in 2022. Prolonged low flows during summer were most predictive of decreased RGSM occurrence, while prolonged high flows during spring were most predictive of increased density over time. Pronounced changes in the occurrence and density of RGSM over the past three decades were closely related to the timing, duration, and magnitude of river flows during spring and summer.

Findings indicate that the current sampling protocols are generating a reliable level of sampling precision and population trend consistency, especially when considering the substantial changes in the occurrence and density of RGSM over time. These population metrics were more closely related to seasonal flow conditions across years than to local/regional sampling conditions (i.e., sampling occasions, mesohabitats, or reaches). RGSM was consistently most abundant in downstream reaches (i.e., Isleta and San Acacia) of the MRG. Seasonally elevated flows, combined with habitat restoration, should lead to increased recruitment success, but the utility and permanence of those efforts will depend on restoring dynamic river flows, reconnecting fragmented reaches, and reestablishing a functional floodplain. Providing reasonable spring spawning and summer survival conditions will be essential for securing a self-sustaining wild population of this species in the MRG. Furthermore, reestablishing resilient populations at other locations within the historical range of the RGSM should be investigated to help ensure its long-term persistence in the wild. More research is needed on the factors that regulate this complex aquatic ecosystem to develop and implement successful strategies for the long-term recovery of RGSM.

*Continued on pg 17*



# PROGRAM UPDATES

## COLLABORATIVE SEMINARS CONT.

### IMPACTS OF SOIL FUNGAL COMMUNITY SHIFTS ON COTTONWOODS

**Rich Wagner, Bosque Ecosystem Monitoring Program – August 24, 2023**

[Link](#)

Rich Wagner, BEMP, presented on the MRG bosque mycorrhizal fungal community's response to disturbance, and the impact this could have on cottonwoods. He also discussed how monitoring mycorrhizal fungi could be used as a tool to support riparian restoration in the MRG.

Rich first discussed the human-induced transition of the bosque from a dynamic, flood-driven ecosystem to a system that is highly regulated. Factors such as climate change and the increase of exotic fauna exacerbate the stress on the bosque's cottonwood gallery. Importantly, the MRG bosque is not fire-adapted, and, therefore, the fungal community within the bosque is not fire-adapted. Although many organizations conduct restoration and monitoring to help mitigate the issues in the bosque, little is known about the role that fungal communities play in these efforts.

Rich's research, a part of his Masters Thesis, focused on mycorrhizal fungi, or the associations between a fungus and a plant root. Mycorrhizal fungi provide many benefits to the plants they associate with, and the dominance of ectomycorrhizal fungi in particular may reduce the abundance of soil fungal pathogens. Rich collected soil samples from different habitat types along a disturbance gradient. As disturbance increased, fungal diversity also appears to increase; however, the abundance of ectomycorrhizal fungi decreased and the presence of pathogenic fungi increased under more disturbed conditions. Rich identified certain ectomycorrhizal "indicator" species that drove the differences between habitat types. The most significant of these is known to be associated with the Rio Grande cottonwood, and was found primarily in undisturbed, mature cottonwood habitat. Groundwater variability also significantly influenced fungal community composition between sites.

Ectomycorrhizal fungi may play an important role in cottonwood restoration. Disturbances such as fire and clearing tend to have legacy effects on soil fungal communities, which means that clearing exotics for restoration can actually lead to a reduction in beneficial ectomycorrhizal fungi and an increase in pathogenic fungi. However, restoration efforts such as bank-lowering and swale creation could help to restore the historic baseline fungal community.

Finally, Rich introduced monitoring the mycorrhizal fungal community as a new tool for restoration, where restoration efforts could be supported by identifying those areas where the fungal community is best suited to support native riparian plants, and by monitoring long-term fungal community trends to help determine restoration project success. These methods could be realistic and cost-effective in the MRG. In the future, this tool could be used to study other habitat types in the MRG, such as willow swales or vegetated islands and bars.

*Continued on pg 18*

# PROGRAM UPDATES

## COLLABORATIVE SEMINARS CONT.

### POST-FIRE FLOODING AND RECOVERY IN THE UPPER ARKANSAS RIVER BASIN

**Jonathan Paklaian, Arkansas River Watershed Collaborative (ARWC) – August 29, 2023**

#### [Link](#)

Jonathan Paklaian, Executive Director of the ARWC, presented on post-fire flooding and recovery in the upper Arkansas River Basin. ARWC is a nonprofit collaborative based in the mountains of central Colorado. It was formed in 2017 in response to wildfires and their effects on water and communities and serves the entire Arkansas Basin in Colorado. Four main focus areas of ARWC include Wildfire Mitigation, Post-fire Recovery, Water Quality/Quantity, and Collaborative Development of subgroups in the region.

Jonathan provided a brief overview of the dangers of post-fire flooding and the costs associated with fires. He noted that proactive fire mitigation through fuels removal is much cheaper than post-fire recovery activities. He then presented a case study of the 2016 Hayden Pass Fire, which was caused by a lightning strike in the Sangre de Cristo Wilderness. The fire burned a total 16,700 acres of forest, which was dominated by beetle-killed trees. Monsoonal storms brought the first flash floods and debris flows to the burn scar area in the months following the fire. Ash flushed into the Arkansas River from Hayden and Big Cottonwood Creeks and generated large debris dams in the rugged, steep upper reaches of those drainages located on United States Forest Service land. Storms continued this process on the burn scar in 2017 and 2018. The heaviest post-fire impacts were seen downstream by the small, rural community of Coaldale, CO.

Jonathan summarized post-fire activities by ARWC and its partners to mitigate flooding, and noted that wide-scale implementation was hampered by challenges in coordination with landowners, agencies, and local government. Momentum was also stalled due to concerns about post-fire threats dwindling with no significant floods the first two years post fire. Then, in July 2018, Coaldale experienced its first major post-fire flood, which initiated a call to action and the creation of the Hayden Pass Fire Recovery Team.

There were obstacles to Recovery Plan implementation, mostly focused on needing to build trust and relationships with the local community. Jonathan shared lessons learned and how the trust was built by finding developing a deeper understanding of the community, finding local ambassadors, and created opportunities for community action. The group also focused on fuels mitigation, using forest management to change how fire behaves. They took the approach of “Forest Health for Watershed Health.” Jonathan talked about the Monarch Pass Forest and Watershed Health Project, which was implemented using the Wildlife Ready Watersheds Action Plan framework.

Jonathan also shared work from Luke Javernick of River Science, who used drone surveys to map out post-fire flooding and recovery at Big Cottonwood Creek. Using maps created from the drone footage, River Science highlighted existing and future hazards under flooding conditions for removal. Many of the remaining issues are significant bank erosion, depleting water table, channelization, disconnected floodplain, and lack of habitat. Jonathan then discussed opportunities to address those issues using Process-Based Restoration and highlighted the use of Post Assisted Logs (PALs) to lift the channel vertically and attempt to reconnect the floodplain.

# PROGRAM UPDATES

## ANNOUNCEMENTS

### WHITFIELD FIELD TRIP

The **Whitfield Wildlife Conservation Area (Whitfield)**, run by Valencia Soil & Water Conservation District, and surrounding areas will be a focal point of the **Climate Futures Planning Workshop** in October 2023. To better familiarize Collaborative Program participants and interested parties with the area, the Collaborative Program will host a **field trip to Whitfield** on **September 26, 2023**. Register for the field trip [here](#) by **September 20, 2023**.

### CLIMATE FUTURES PLANNING WORKSHOP

The Collaborative Program will host a **Climate Futures Planning Workshop** on **October 24-25, 2023** with the goal of establishing a framework for collaborative adaptive management to increase climate resilience in support of listed species and their habitats in the MRG. The workshop will be held in person at the Tamaya Wellness Center, Pueblo of Santa Ana. The workshop will be limited to 80 participants. Register for the event [here](#). Get information on the workshop as it becomes available here.

### COLLABORATIVE SEMINAR: RICHARD STRAIT

**Richard Strait**, Natural Resources Conservation Service (NRCS), will present an **Intro to the NRCS Plant Materials Program** on **September 15, 2023 from 10AM-11AM MT**. For more information on the seminar, including a video recording and PDF version, when they become available, visit [here](#). For more information on joining the event, contact Michelle Tuineau at [mtuineau@west-inc.com](mailto:mtuineau@west-inc.com) here.

### FALL FARM FESTIVAL

The Collaborative Program will be tabling at the **Fall Farm Festival** at the Gutierrez-Hubbell House on **October 21, 2023**. If you have any materials you would like to make available, please contact Michelle Tuineau at [mtuineau@west-inc.com](mailto:mtuineau@west-inc.com) . For more information on the event, visit [here](#).



Photos: Propagated plants for restoration at the Candelaria Nature Preserve  
Credit: Catherine Murphy, PST



# PROGRAM UPDATES

## CALLS FOR ACTION

### CALL FOR HABITAT RESTORATION AD HOC GROUP MEMBERS

The Collaborative Program is starting up two new **restoration-focused ad hoc groups**. The **SER Recovery Wheel Ad Hoc Group** and the **Restoration Compendium Ad Hoc Group** will run concurrently. These groups have distinct charges and goals but will inform each other. The Restoration Compendium developed will compile and organize existing restoration and monitoring resources at the project level, while the SER Recovery Wheel developed will establish ecosystem-level attributes to target for restoration. Together, these two groups will help inform standardized restoration monitoring guidance for the MRG Basin. Please review the document [here](#) to help you decide which group most aligns with your expertise.

Please contact Catherine Murphy at [cmurphy@west-inc.com](mailto:cmurphy@west-inc.com) or Zoë Rossman at [zrossman@west-inc.com](mailto:zrossman@west-inc.com) by **September 15, 2023** to volunteer for either group, or if you have questions regarding which group to volunteer for.

### 2023 SCIENCE SYMPOSIUM CALL FOR ABSTRACTS

The Collaborative Program is hosting the **2023 Science Symposium** in person in or near Albuquerque, New Mexico during the **first week of December (exact dates and location TBD)**. The event will take place over two full days. This year's theme is **"Scaling Up: Adaptive Species Management for a Changing Ecosystem."**

The Collaborative Program invites the **submission of abstracts for oral or poster presentations** during the 2023 Science Symposium. This is an opportunity to share your research with colleagues who are actively working at the nexus of science, management, and policy. Participants from all disciplinary backgrounds are welcome to submit abstracts related to the MRG's federally-listed species (the Rio Grande silvery minnow, southwestern willow flycatcher, yellow-billed cuckoo, New Mexico meadow jumping mouse, and Pecos sunflower) and the MRG ecosystem. Investigators at all career stages (including high school through PhD students) are encouraged to submit abstracts.

We especially encourage abstract submissions in the following areas:

- Fire risk mitigation / post-fire restoration
- Fluvial geomorphology of the MRG
- Habitat restoration and habitat connectivity
- Vegetated islands and bank-attached bars
- Climate-adapted management strategies

Visit the [2023 Call for Abstracts page](#) on the Program Portal for more information on submitting an abstract. All abstracts must be received by **11:59 PM MT on Friday, October 27, 2023**.

# PROGRAM UPDATES

## WELCOME HIRA WALKER

**Hira Walker** was announced as U.S. Army Corps of Engineers' (USACE) new **Program Manager for its work with the Collaborative Program**.

Dr. Hira Walker has over 3 decades of experience developing, promoting, coordinating, and implementing scientific and conservation efforts to protect wildlife – particularly bird species of conservation concern – and their habitats across a wide range of ecosystems. Since moving to New Mexico in 1997, Hira's work has focused on studying, managing, and conserving many of the State's nongame bird species and their habitats, with an emphasis on riparian-dependent species found along the Rio Grande and the Jemez, Gila, San Francisco, and Pecos rivers. She conducted her doctoral research at UNM on the effects of exotic *Tamarix* establishment in native riparian woodlands on birds stopping over along the Rio Grande during migration.

While working for tribes, and federal (e.g., as a Wildlife Biologist for the U.S. Department of Agriculture Forest Service Rocky Mountain Research Station) and state (as the Non-game and Endangered Species Ornithologist for the New Mexico Department of Game and Fish) agencies, she has conducted research projects in all reaches of the MRG. While a Lead Wildlife Ecologist for Geosystems Analysis, Inc., Hira authored the Southwestern Willow Flycatcher and Yellow-billed Cuckoo chapters in a 2018 adaptive management framework for USACE prepared on behalf of the Collaborative Program.

Furthermore, as a contractor, she worked for The Nature Conservancy on an interdisciplinary team funded in part from the U.S. Bureau of Reclamation's WaterSMART program to prepare the 2014 Gila River Flow Needs Assessment, which examined the potential impacts of water diversion and climate change on the Gila River's riparian and aquatic ecosystems. Most recently, she has been volunteering as the Coordinator for the Western Yellow-billed Cuckoo Working Group.

Hira is excited to bring her passion for actionable science that supports adaptive management and conservation to her position with USACE as the Collaborative Program Manager. Below is Hira's contact information.

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# UPCOMING DATES

## PROGRAM DATES

Collaborative Seminar: Rick Strait  
(pg 19)

**September 15, 2023**  
**10:00 AM—11:00 AM MT**

Call for HR Ad Hoc Group  
Members (pg 20)  
**September 15, 2023**

Whitfield Field Trip (pg 19)  
**September 26, 2023**  
**9:00 AM—12:00 PM MT**

Executive Committee Meeting  
**September 28, 2023**  
**1:00 PM—4:00 PM MT**

Climate Futures Planning  
Workshop (pg 19)  
**October 24-25, 2023**  
**9:00 AM—5:00 PM MT (tentative)**

2023 Science Symposium Call for  
Abstracts (pg 20)  
**October 27, 2023**

The information in this newsletter should not be attributed to the Collaborative Program or its Executive Committee, but to the organization from which it was submitted.

For comments and inquiries, contact:  
Program Support Team | (505) 414-3507 |  
mtuineau@west-inc.com

## MRG DATES

ASPIREational Talk: Dr. Alex Webster  
(pg 9)

**September 12, 2023**

Trees and Water in Santa Fe Event  
(pg 9)

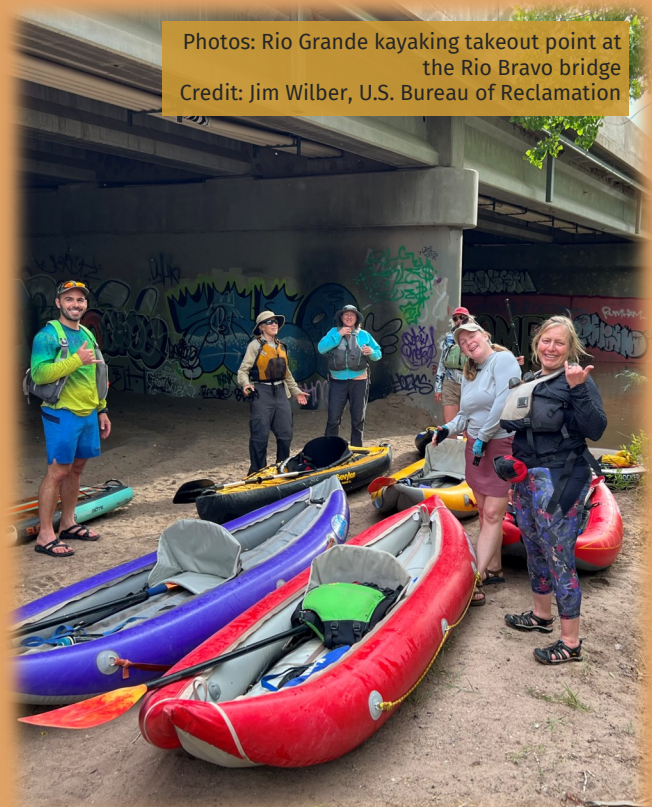
**September 15, 2023**

Think Water: Act Now Speakers  
(pg 9)

**September 21 & October 19, 2023**

Call for Climate-Smart Concept Papers  
(pg 9)

**October 13, 2023**



Photos: Rio Grande kayaking takeout point at the Rio Bravo bridge  
Credit: Jim Wilber, U.S. Bureau of Reclamation