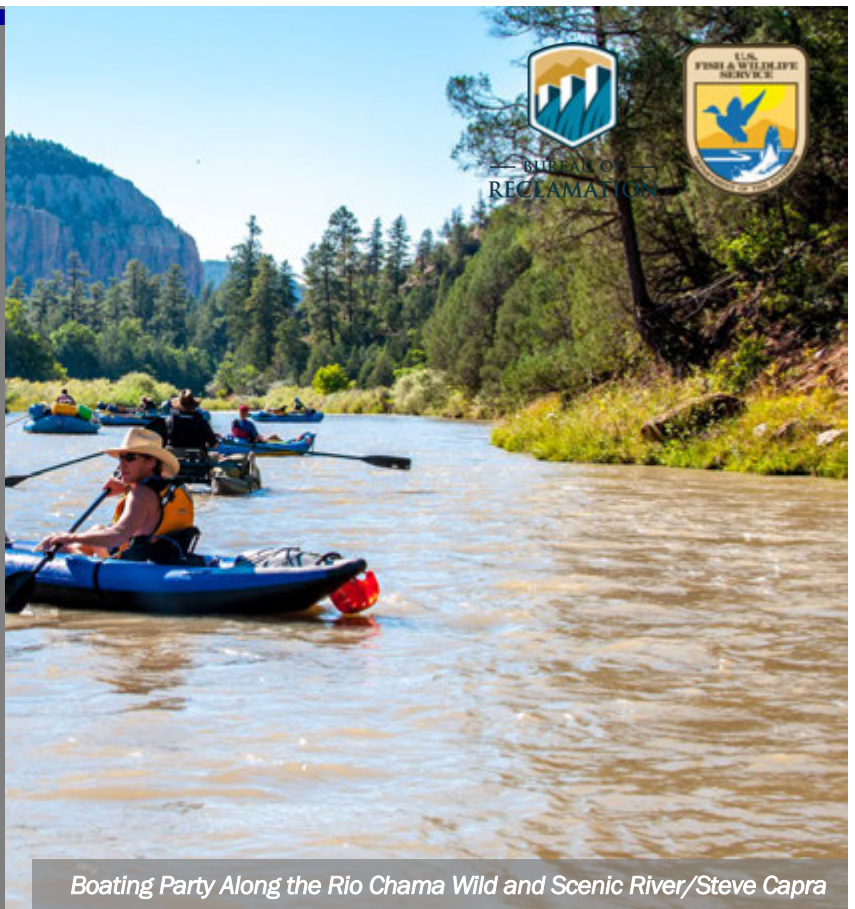
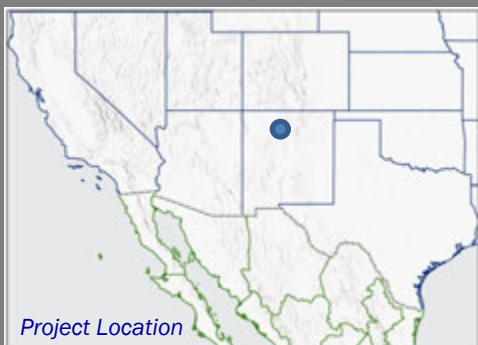


ACTIONABLE SCIENCE

Experimental Flow Releases from El Vado Reservoir in the Rio Chama



In 2009, the Bureau of Reclamation released a large pulse flow from the El Vado Reservoir into the Rio Chama in New Mexico. Stakeholders recognized the ecological benefits of this release and created the informal Rio Chama Flow Project in 2011 to provide suggestions for how the river could be managed for provision of human water needs while also improving the river's ecology. With additional water from the 1972 San Juan-Chama Project, the Project team was able to release experimental flows to assess how the timing and magnitude of future flows could improve the geomorphology (how Earth surface processes shape landscapes) and ecology of the river.



Boating Party Along the Rio Chama Wild and Scenic River/Steve Capra

KEY ISSUES ADDRESSED

Building El Vado Reservoir in 1935 permanently altered the Rio Chama's natural flow regime and ecology. Current management impounds and releases a large amount of water in late fall, a time misaligned with the phenology of native species. This management regime has provided less diverse habitats and fewer niches, significantly reducing the river's biodiversity. Further, many local communities have been unaware of these ecosystem impacts. Geomorphologists and engineers conducted experimental flow releases to evaluate how the magnitude and duration of flows affected the downstream movement of sediment, a key building block of the river system, as in-stream and riparian habitat are a function of a river's geomorphology.

PROJECT GOALS

- Increase community awareness of the importance of improving the Rio Chama's riparian ecosystem
- Conduct experimental flow releases to determine how they impact downstream sediment movement in the Rio Chama
- Develop suggestions for the timing and magnitude of future flow releases

HELPING HANDS

The team increased community engagement through water quality monitoring projects with high schoolers that helped students develop a sense of responsibility for the health of the river.



Campsite Flooded by Release from El Vado Reservoir/Paul Bauer

PROJECT HIGHLIGHTS

Prime Study Site: The Rio Chama is a prime test site for studying natural flow of the river because it holds more water than it did historically due to inputs from the San Juan-Chama Project. Additionally, no substantial water is consumed for human use in the Wild and Scenic stretch of the river. These two factors provide the management flexibility to release water for ecological benefit when it is available.

Workshops: The Project team convened to establish scientifically backed hypotheses about the required timing and magnitude of flow releases to support natural geomorphological processes in the river.

Experimental Flows: Two releases occurred in April 2014 and May 2016 to see if 2,500 cubic feet/second (cfs) of water would inundate the post-dam floodplain and if 4,000 cfs of water would redistribute sediment. These real-world experiments confirmed their hypotheses.

Graduate Student Work: Graduate students at the University of New Mexico (UNM) devoted time and effort to collecting data on the Rio Chama that has been invaluable to the success of the Project.

Collaborators

- New Mexico Interstate Stream Commission
- Middle Rio Grande Conservancy District
- University of New Mexico
- Albuquerque-Bernalillo Water Utilities Authority
- See online for full list of collaborators

CCAST Author: Audrey Wilfong, University of California-Riverside, August 2022.

For more information on CCAST, contact Genevieve Johnson (gjohnson@usbr.gov) or Matt Grabau (matthew_grabau@fws.gov).

Visit CCAST:



LESSONS LEARNED

The Project is focused on long-term management of the river, so establishing trust is important. Stakeholders have legal and professional responsibilities to their own agencies, influencing their decision making. Success has depended on personal relationships, which is both a strength and weakness. By building rapport, everyone involved is upfront about their priorities, which has contributed to forming strong, lasting relationships. The current group has been able to rely on long-term social capacity-building to ensure people stay engaged.

Scientists were able to determine if geomorphic objectives were met but lacked data to show explicitly that experimental flow releases benefited species. Collecting ecological data along the river was more difficult than collecting geomorphic data because it can be more labor intensive and time consuming. Additionally, ecological data must be collected for longer periods of time (i.e., multiple years) for ecological benefits to be realized and detectable.

The Project would have benefited from more funding to establish more study sites. However, the team made do with what resources they had to make sound geomorphic conclusions.

NEXT STEPS

- Develop a plan with the local Bureau of Land Management science coordinator, U.S. Forest Service, Project team, and UNM to prioritize data collection over the next five years
- Study the effects of current flow releases on the ecology of the Rio Chama, such as the effects of flow releases on macroinvertebrate diversity

For more information on this project, contact Mike Harvey:

Mike.Harvey@comcast.net



Wild and Scenic Reach of the Rio Chama/Bureau of Land Management