A Collaborative Process for Determining Environmental Flow Recommendations for the Rio Grande in New Mexico

***Paul Tashjian*[1], *Tricia Snyder*[2], *Enrique Prunes*[3], *Brian Richter*[3], *and Mark Briggs*[4]**

[1]Audubon Southwest, Albuquerque, NM, USA
[2]New Mexico Wild, Albuquerque, NM, USA
[3]Wold Wildlife Fund, Washington, D.C., USA
[4]New River/ New World Consulting, Tucson, AZ, USA

A scientifically defensible framework for setting environmental flow targets in the Rio Grande of New Mexico is long overdue. Aridification is increasing across the American West, exacerbating existing water management challenges, and increasing conflict between competing water uses as water availability diminishes. The Rio Grande Basin Study in New Mexico (Basin Study) was initiated on January 24, 2023. The Basin Study is a WaterSMART-funded initiative led by the US Bureau of Reclamation and the Middle Rio Grande Conservancy District, with the participation of 36 signatories representing multiple sectors, that aims to develop management resiliency strategies for the Rio Grande in New Mexico under climate warming scenarios. As part of this effort, water-use "sectors" are quantifying water needs that will be placed into tradeoff models and tools. The Non-Governmental Organizations Sectoral Committee of the Basin Study, comprised of 12 national, regional and statewide environmental organizations as well as associated partners, is embracing this opportunity to establish critically important environmental flow needs and associated feasible targets for the Basin.

The NGO Sectoral Committee effort is a reach-scale quantification process largely focused on aquatic and aquatic-dependent species within the Basin. The reaches include segments of the mainstem Rio Grande and the Rio Chama (a primary tributary) within central and northern New Mexico, all upstream of Elephant Butte Reservoir. Within each of the 6 main reaches being analyzed, indicator species are used to define environmental flow needs during all components of the hydrograph. For instance, the Southwestern Willow Flycatcher is a species found in all of our reaches and is dependent upon spring run-off 'pulses' and connected wetland habitats. Similarly, cottonwood trees and the endangered Rio Grande Silvery Minow are dependent on the timing and peak of spring pulses for regeneration as well as minimum flows for survival. The species needs, grounded by local hydrologic and geomorphic information, are being quantified and synthesized into reach-specific flow targets. Flow recommendations will include both low flow needs, monsoon peak flows and spring runoff peak-timing-duration needs for dry, moderate and wet years.

Quantifying reach-specific environmental water needs for the Rio Grande in New Mexico has multiple benefits including: 1) information for the Basin Study's trade off analysis that will identify management actions to improve environmental flows in the Rio Grande; 2) information for New Mexico's Strategic Water Reserve (a State-run water bank for endangered species and Rio Grande Compact water needs); and 3) information for many other projects that are trying to understand the environmental flow deficits in the Rio Grande of New Mexico and how these can be improved and protected. The initial recommendations by the Sectoral Committee are being compiled into a draft directory that collects and summarizes all relevant citations alongside the initial flow hypotheses for each reach. These draft hypotheses will be vetted through a peer-review workshop-- scheduled for the spring of 2024 – and will be memorialized into a final document that will both serve as a primary chapter in the Basin Study as well as a stand-alone directory that will serve multiple benefits.

Contact Information: Paul Tashjian. Audubon Southwest, 400 Gold SW Suite 660, Albuquerque, NM, USA 87102, Phone: 505-217-4531, Email: paul.tashjian@audubon.org