Bringing Back the Mosaic in the Middle Rio Grande Bosque

Jennifer F. Schuetz[1] and Kim D. Eichhorst[2]

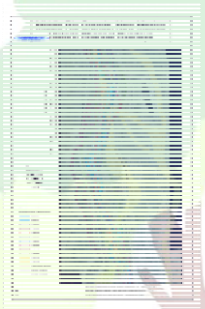
[1] Science Coordinator, [2] Co-Director

Bosque Ecosystem Monitoring Program

BOSQUE SCHOOL

scholarship • community • integrity

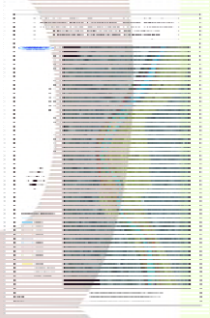
As a result of flood control measures, the Rio Grande has been changed from a wide, shallow, meandering river that frequently flooded the adjacent riparian forest, or bosque, to a straight channel that is incised in the north and aggraded in the south.



From 1935 to 1989

- 42% reduction in wetlands
- 69% reduction in scrub shrub
- 49% reduction in river channel

(Crawford et al. 1993)



Lack of flooding has led to reduced habitat for cottonwood establishment, resulting in aging cottonwood stands with shade-tolerant exotic understory vegetation.

Cottonwood gallery forest with exotic understory

Exotic understory removed, followed by emergence of exotic, herbaceous understory

Dense saltcedar and Russian olive line a deeply incised riverbank

Significantly decreased river flows

Lack of habitat, combined with predicted changes in precipitation, temperature and river flow, suggests a future with far fewer cottonwoods in the Rio Grande bosque.

Senescing cottonwood forest

Cottonwood branches on the ground

Crown dieback

Dry river bed

Recreating the **mosaic** of habitat types would allow the bosque ecosystem a greater range of response and higher tolerance to changes in weather patterns due to drought and climate change.

Sparse cottonwood canopy with native herbaceous understory

Mixed-age cottonwood stand

Willow swale

Saltgrass meadow with Russian olive trees

Instead of the current cottonwood gallery forest, there should be a patchwork of different-aged cottonwood stands, saltgrass meadows, areas of bare soil, wetlands, shrub thickets, and savanna-type landscapes.

Wetland area and associated vegetation

Shrub habitat

Young cottonwoods

Field of yerba mansa

The increased **ecosystem integrity**, **resilience** and health provided by a mosaic would result in increased ecosystem function, increased plant and animal species diversity and allow for less land management maintenance.

Cottonwood canopy with grass understory

Bare soil with tamarisk, cottonwood, grasses and broom dalea

Sandy, open area that is naturally seeded and experiences overbank flooding

http://www.bosqueschool.org/bemp.aspx

Crawford, C.S., A.C. Cully, R. Leutheuser, M.S. Sifuentes, L.H. White and J.P. Wilber. 1993. Middle Rio Grande Ecosystem: Bosque Biological Management Plan. Middle Rio Grande Biological Interagency Team, U.S. Fish and Wildlife Service, Albuquerque, NM.