



FACT SHEET

Cottonwoods and River Health

Cottonwoods tell us the story behind our rivers

With ever increasing demands on our limited water supply, we must support healthy *naturally flowing* Colorado rivers. Our rivers support dynamic ecological and economical values. Cottonwood forest health can reveal the hidden story of our rivers.



Cottonwood Canopy, Rifle CO

Cottonwoods provide critical habitat.

Healthy rivers and riparian areas are dynamic! Rivers rely on flowing water. High and low water seasons are essential for river health. Annual spring runoff and high water flows are critical for flooding the riparian (riverside) vegetation, flushing sediment in riverbeds, mobilizing the riverbed, and recharging alluvial aquifers.

Rivers and riparian habitat need proper timing, quantity, and quality of water to be resilient.

Healthy cottonwood stands are an indicator of robust riparian systems. The structure of native riparian woodlands supports broad ecosystem benefits, including providing habitat for a range of wildlife including riparian obligate bird species.

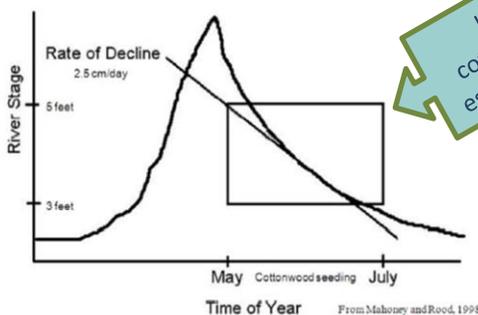
COTTONWOOD FLOW-ECOLOGY

Cottonwood forests are declining across the West. They are aging without younger generations to replace them. Cottonwood initiation (1st season –seedlings that are alive throughout summer and fall) and recruitment of new cottonwoods (establishing new trees that will reach adulthood) is important for maintaining cottonwood stands as older trees die. The recruitment process is most sensitive during seedling establishment -first 2-3 years.

One major population limitation for cottonwoods is seedling desiccation. Seedling recruitment is dependent on floods (1 in 5 year event) and the availability of moist, open seedbeds, combined with an appropriate river flow recession (2.5 cm/day) that enables growing seedling roots to maintain contact with soil moisture (*Colorado River Basin Evaluation of Decision Support Platforms and Tools Report 2013*).

Threats to Cottonwoods: Protection of riparian cottonwood forest depends upon maintaining the local historical magnitude, frequency, and duration of floods (*Scott 1997*). River damming and flow regulation can alter necessary disturbance regimes that structure riparian ecosystems (*Shafroth 2002*). **Riparian habitats are significantly impaired below diversion structures, Colorado has 55,000 diversion structures (CWCB).**

Recruitment Box Concept



Ideal cottonwood establishment

Consider These Facts About Colorado Freshwater Ecosystems:

Wetlands and waterbodies represent 3% of the total land area in CO. (CNHP, 2014 NWI Mapping Report)

Birds are often cited among the most visible indicators of a wetland's total productivity (Weller 1999).

Only 1% of the land in Colorado is riparian (CO Division of Wildlife Riparian and Wetland Mapping)

Approximately 75% of the wildlife species known or likely to occur in Colorado are dependent on riparian areas during all or a portion of their life cycle. (CO Division of Wildlife, Riparian and Wetland Mapping).

Over 90% of Colorado bird species rely on riparian zones for part of their annual life cycle for nesting, hunting, roosting, and/or resting during migration.

The older large cottonwoods make excellent nest platforms for a variety of predatory birds. Eagles and ospreys commonly select large branches or broken-top cottonwoods as platforms for nest construction. Eagles frequently use cottonwoods for night roosts and for hunting perches.

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Belted Kingfisher

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“While quantitative riparian flow-ecology relationships are available only for cottonwood, basic ecological principles suggest **that the flow regime necessary to sustain cottonwood and willow is also expected to sustain the physical biological processes that support the broader riparian ecosystem, including processes of disturbance, nutrient cycling, and water flows. Cottonwood are therefore offered as an indicator of flow adequacy for riparian ecosystem** as they are pervasive in the Colorado River basin and good data exist to describe the flow-ecology relationship.*”

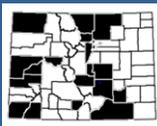
*RIPARIAN VEGETATION METHODS FOR THE WATERSHED FLOW EVALUATION TOOL. A report to the Non-Consumptive Needs Committee of the Colorado Basin Roundtable December 2010, Colorado State University, The Nature Conservancy.

Colorado Native Cottonwoods

Populus × acuminata

Lanceleaf cottonwood

CO Elevation: 4,800–8,500 ft.



Populus angustifolia

Narrowleaf cottonwood

CO Elevation: 4,920–10,400 ft



Populus deltoides

(synonyms *P. fremontii* S. Watson var. *wislizeni*)

Plains or Rio Grande Cottonwood

CO Elevation 3,500-9,500 ft.

(*Populus deltoides* ssp. *monilifera*

–**Eastern Slope, Plains**)

(*Populus deltoides* ssp. *wislizeni*

– **Western Slope, Rio Grande**)

