

Riparian Forests of the Upper Missouri Wild and Scenic River

by Greg Kudray*

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Montana Natural Heritage Program (MTNHP) ecologists and zoologists have just completed a two-year study on the Upper Missouri Wild and Scenic River. Unlike the rest of the Missouri and most other large western rivers, this 150-mile stretch is free from dams and retains a more natural hydrologic regime with the sizable floods so important to maintaining a riparian ecosystem. The gallery forests of plains cottonwood (*Populus deltoides*) along the river can only successfully establish when floods deposit sediments high enough above the river level to isolate cottonwood regeneration from the destruction of ice movement.

These riparian forests offer virtually the only forest environment in the prairie landscape and provide the richest wildlife habitat in the region. A high percentage of animal species in arid regions like central Montana need riparian habitats for part of their life cycle and riparian areas may comprise the only suitable habitat for some amphibians and invertebrates. The highest densities of nesting breeding birds found in North America have been reported in cottonwood riparian forests. Three amphibian species, two reptile species, and eight bird species on the Montana Animal Species of Concern list are closely associated with riparian habitats in prairie regions, and at least three additional reptile species, 11 bird species and ten mammal species on the Species of Concern list regularly use riparian cottonwood habitats.

Since riparian areas are the most productive and possibly the most sensitive of North American habitats, it has been proposed that they be viewed as an endangered habitat, especially appropriate in our case since cottonwood forests

have been in decline throughout the west and in the Wild and Scenic River corridor.

The causes of cottonwood forest decline are many: altered hydrology is the most basic, but improper grazing and nonnative plant invasion are more important in our study area. The Bureau of Land Management (BLM) has started to alter grazing regimes along the corridor but many species of nonnative plants are well established; we recorded 39 species of nonnatives and 5 category 1 noxious weeds on 154 plots. No plot had less than 5% of its total herbaceous cover as exotic species, 36% of plots had over 95% cover in exotics, and 5% of the plots had only nonnatives in the herb layer! Nonnative smooth brome (*Bromus inermis*), which is not categorized as a noxious weed in Montana, was the typical dominant under the cottonwood canopy with suffocating effects on native species. As exotic cover went up, native species richness declined.

While 38 of the 39 nonnative species were herbs, the one woody nonnative, Russian olive, may pose the greatest threat and offer the most potential for management. Russian olive has invaded many western riparian areas and can totally dominate as a dense monoculture. While a few species may benefit (which provides the motivation for continued domestic planting in some areas), research is clear that habitat is degraded for many native birds and probably also bats, several of which are Species of Concern. The impact seems to be most direct on insectivores and cavity-dependent species. Russian olive hosts fewer insects than natives and lacks the cavities found in older cottonwoods.

The Wild and Scenic Missouri River can be viewed as two halves. The western half has much more private land, with the potential for domestic plantings of Russian olive to serve as the necessary seed source for a riparian infestation. The eastern half is mostly BLM managed, isolated from seed sources, and presently free from Russian olive. All of the 15 plots with Russian olive were in the western half and at low cover values, presenting an opportunity to control this ecologically devastating invasive. Since few stretches of large western rivers still maintain enough natural hydrology to regenerate cottonwood forests, and have

the combination of public ownership and seed-source isolation necessary to exclude Russian olive, the Upper Missouri Wild and Scenic River may represent an almost unique opportunity to retain these magnificent cottonwood gallery forests.

The complete report on this project will be available soon from the Montana Natural Heritage Program website: www.mtnhp.org. The report also includes information on the amphibian, reptile, bat, and small mammal species found, four of which (one in each group) are on the Montana Animal Species of Concern list. There is also additional information on many other aspects of the Wild and Scenic River corridor ecology.

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