
HABITAT SHIFTS IN MONTANE RIPARIAN AREAS IN THE CENTENNIAL MOUNTAINS OF SOUTHWEST MONTANA

Nathan Korb*, The Nature Conservancy, Montana Chapter, Helena, Montana 59601

Brad Bauer, The Nature Conservancy, Montana Chapter, Helena, Montana 59601

Deciduous riparian communities (DRC) are functionally and biologically unique habitats that influence ecosystems at local and watershed scales. Since Euro-American settlement, fire exclusion has shifted montane forests in the Centennial Mountains of the Greater Yellowstone Ecosystem from mosaics with variable stand structure and composition, including deciduous communities, to more homogeneous, closed-canopy coniferous forests. Deciduous riparian communities differ from coniferous riparian habitats many ways: fire behavior, post-fire recovery, insect and bird diversity, contributions to aquatic detritus, light regimes of aquatic ecosystems, and habitat suitability for beaver. To characterize the extent of current and historic deciduous riparian communities, we sampled riparian communities along three priority montane streams in the Centennial Mountains, mapped willow and aspen skeletons, and dated dominant conifers. We found widespread shifts in the dominant vegetation at mid-elevation montane sites upstream of the sagebrush-forest ecotone, though less evidence of vegetation change at higher elevation montane sites. The shifts we documented have only occurred in recent decades due to the decomposition of our primary evidence: dead wood. The lower primary productivity associated with these shifts affects native westslope cutthroat trout, birds, bats, and ungulates. Shifts from deciduous shrubs and trees to closed-canopy conifer forest also increases likelihood of local high-intensity fires and increases recovery times after those disturbances. Promoting deciduous riparian communities through prescribed fire and mechanical removal of conifers can increase the productivity of riparian and aquatic systems, while also reducing threats to these systems from climate change, including uncharacteristically severe fire and water shortages.