



Montana State University • Missouri River Watershed Coalition

Treatment and Control



Objective 1: Foster the adoption of innovative conservation approaches to invasive riparian plant management by establishing and monitoring herbicide treatment and control sites infested with Russian olive (*Eleagnus angustifolia*) and saltcedar (*Tamarix* spp.) for short- and long-term ecological changes, riparian systems function, environmental protection, and natural resource enhancement.

Purpose

Russian olive and saltcedar cause many documented ecological problems in riparian areas, and are projected to cause billions of dollars in economic losses over the next 50 years. While numerous removal techniques exist, not all result in the desired long-term effects. The goal of Objective 1 was to foster the adoption of innovative conservation approaches to invasive riparian plant management by establishing and monitoring Russian olive and saltcedar management sites throughout the Missouri River Watershed region.

Methods

Nine sites infested with Russian olive and saltcedar were selected in three states (MT, WY, and SD). The sites were stratified by river geomorphology and land use, and included a range of infestation sizes, ages, and densities. Detailed baseline monitoring was conducted at each site using permanent transects. Data were collected on three groups of resource attributes: vegetation (biotic), soils,

and hydrology.

Round one treatments were conducted in summer 2012, consisting of mechanical cut-stump treatments of Russian olive and immediate follow-up application of triclopyr ester herbicide and a basal oil mixture. Individual saltcedar plants were treated with triclopyr ester or amine herbicide and basal oil mixtures. Follow-up treatments were conducted in 2013 and 2014.

Post-treatment monitoring activities included brief site visits and photo documentation. Information collected allowed the project team to determine short-term changes in each site's vegetation community. Monitoring data also allowed the team to determine which treatment methods provided the best short-term management results, and how those results varied by initial site condition and land use. Monitoring will be repeated in future years by state and federal agency partners to evaluate long-term riparian system function and to document long-term plant community changes in both treated and untreated areas.

Results/Discussion

Monitoring efforts over three years demonstrated the effectiveness of cut-stump and basal bark treatments for Russian olive and saltcedar control. In contrast, mulching treatments without follow-up herbicide treatments were considerably less effective in their control of Russian olive and saltcedar and had high levels of seedling and sapling regeneration or re-establishment. Changes in perennial grass abundance/production and the response of undesirable non-native herbaceous and woody species varied on treatment sites according to their site potential. Site potential factors that had the greatest influence on plant community response were: historical and post-treatment management such as grazing, historical and post-treatment disturbances such as flooding and wildfire, and pre-treatment species composition. Project results illustrate the importance of site specific, adaptive management approaches for noxious weed control.