

# Managing Saltcedar After a Summer Wildfire in the Texas Rolling Plains

Russell Fox  
Rob Mitchell  
Mike Davin

**Abstract**—Saltcedar (*Tamarix* spp) has invaded nearly one million acres of riparian ecosystems in the southwestern U.S., displacing many native species. The objectives of this study were to estimate saltcedar mortality to summer wildfire, summer wildfire followed by rollerchopping, and dormant season treatment with 25 percent triclopyr to regrowth following a summer wildfire at Lake Meredith National Recreation Area. In July 1998, more than 100 acres of saltcedar-infested riparian area were burned. In February and March of 1999, regrowth of 200 dormant saltcedar trees were treated with 25 percent triclopyr in JLB oil using the basal bark treatment method. Rollerchopping was conducted in June 1999. Trees that were sprayed had multiple stems and were an average of 4 feet tall. Saltcedar mortality following the summer wildfire was 60.6 percent. Rollerchopping burned areas resulted in 85.1 percent mortality. Saltcedar mortality was 89.9 percent following the February herbicide treatment and 94.5 percent following treatment in March. Preliminary results indicate that dormant season individual plant treatment with 25 percent triclopyr following burning is an effective method for managing saltcedar infestations. However, rollerchopping burned areas may be the most economical in large, alluvial flood plains.

## Introduction

In Texas, six species of *Tamarix* are found: (1) *T. africana*; (2) *T. aphylla*; (3) *T. chinensis*; (4) *T. gallica*; (5) *T. parviflora*; and (6) *T. ramosissima* (Correll and Johnston 1970). Saltcedar was introduced into the eastern U.S. in the early 1800s, escaped cultivation by late that century, and became established throughout the U.S. (Duncan 1997). Escapes from cultivation were first reported in the 1870s and were rapidly spreading from one watershed to another (Brotherson and Field 1987). During these early years of introduction, saltcedar was planted to create windbreaks, provide shade, stabilize eroding stream banks, and grown as ornamentals (Neill 1985). Estimates in 1961 indicated that saltcedar infestations occupied more than 900,000 acres in the U.S. (Robinson 1965). Deloach (1991) estimated one million acres of prime bottomland have been infested with saltcedar and

that very little understory vegetation is present. Consequently, restoring native vegetation in saltcedar-dominated riparian areas is an important concern in the southwestern U.S. Our objectives were to estimate saltcedar mortality to summer wildfire, summer wildfire followed by rollerchopping, and dormant season treatment with 25 percent triclopyr to regrowth following a summer wildfire at Lake Meredith National Recreation Area (LMNRA).

## Methods

This study was conducted in 1999 in a saltcedar-dominated riparian area at LMNRA near Fritch, Texas. The site was burned by a wildfire in July 1998. Daily maximum temperatures exceeded 100 °F during the wildfire. Many saltcedar were completely consumed by the wildfire. Regrowth of surviving plants exceeded 6 ft at the conclusion of the 1998 growing season. Five randomly located 10 m x 10 m plots in adjacent nonburned areas were used as estimates of pre-fire saltcedar density. Five randomly located 10 m x 10 m plots were used to estimate saltcedar density in burned areas. Saltcedar mortality due to the wildfire was estimated as the difference between saltcedar density in the nonburned and burned areas. In June 1999, about 50 acres of burned saltcedar was rollerchopped. Five randomly located burned and rollerchopped 10 m x 10 m plots were used to estimate saltcedar mortality from the combination of burning and rollerchopping. Two dormant season applications of 25 percent triclopyr (Garlon 4) in JLB oil (vegetable oil carrier) were applied during February and March 1999. Herbicide treatments were applied as individual plant basal treatments to 100 fire-generated resprouts each month. Herbicide efficacy on saltcedar regrowth was evaluated 12 months after treatment. Mortality was defined as lack of green material or failure to produce buds 12 months after treatment.

## Results

Burning resulted in 60.6 percent saltcedar mortality 12 months after the summer wildfire when comparing saltcedar density in burned areas to adjacent nonburned areas. The combined effect of the summer wildfire and rollerchopping resulted in 85.1 percent saltcedar mortality as compared to the nonburned areas. Rollerchopping fire-induced regrowth uprooted many plants, and provided an excellent method for increasing saltcedar mortality following the summer wildfire. The moist, sandy, alluvial soils at LMNRA provided ideal conditions for uprooting the sprouting collar, and exposing root material to desiccation. Additionally, rollerchopping facilitated follow-up herbicide treatments by

---

In: McArthur, E. Durant; Fairbanks, Daniel J., comps. 2001. Shrubland ecosystem genetics and biodiversity: proceedings; 2000 June 13–15; Provo, UT. Proc. RMRS-P-21. Ogden, UT: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station.

Russell Fox is Graduate Assistant and Rob Mitchell is Fire Ecologist, Range, Wildlife, and Fisheries Management, Texas Tech University, Lubbock, TX 79409. Mike Davin is Resource Specialist, National Park Service, Lake Meredith National Recreation Area, Fritch, TX 79036.

knocking down the standing dead trunks, increasing the accessibility of remaining resprouts. An added benefit of rollerchopping was soil disturbance, which encouraged the establishment of early seral species in the burned and rollerchopped areas. February and March basal stem treatments to post-fire saltcedar regrowth with 25 percent triclopyr in JLB oil resulted in 89.9 and 94.5 percent mortality, respectively, 12 months after treatment. Preliminary results indicate that dormant season individual plant treatment with 25 percent triclopyr following burning is an effective method for managing saltcedar infestations.

## Conclusions

Fire effectively reduced saltcedar density. Rollerchopping standing dead and regrowth 11 months after burning further reduced saltcedar density, and stimulated forb growth. The application of 25 percent triclopyr in JLB oil during the dormant season effectively controlled saltcedar regrowth

following burning. Preliminary results indicate combining fire, rollerchopping, and individual plant treatments with triclopyr is an effective approach for saltcedar management.

## References

- Brotherson, J. D.; Field, D. 1987. Tamarix: impacts of a successful weed. *Rangelands*. 9(3): 110–112.
- Correll, D. S.; Johnston, M. C. 1970. *Manual of the vascular plants of Texas*. Austin: University of Texas Printing.
- Deloach, C. J. 1991. Saltcedar, an exotic weed of western North American riparian areas: a review of its taxonomy, biology, harmful, and beneficial values, and its potential for biological control. Final Rep. USDI, Bureau of Reclamation, Lower Colorado Region, Boulder City, NV.
- Duncan, K. W. 1997. A case study in *Tamarix ramosissima* control: Spring Lake, New Mexico. In: Brock, J. H.; Wade, M.; Pysek, P.; Green, D., eds. *Plant invasions: studies from North America and Europe*. Leiden, Backhuys Publishers: 115–121.
- Neill, W. M. 1985. Tamarisk. *Fremontia*. 12: 22–23.
- Robinson, T. W. 1965. Introduction, spread, and areal extent of saltcedar (*Tamarix*) in the Western United States. U.S. Geological Survey Professional Paper 491-A.