

PROJECT REPORT

Name of Project: Reclamation of Upper Colorado River Watershed

Geographic Area of Project: Upper Colorado River Watershed (Lake Ivie and above)

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Project Need

The Upper Colorado River is in a severe water crisis. Above ground aquifers are at all time lows. The current (9/1/2003) water levels of Lakes Thomas, Spence, Ivie, and Powell are 9.5%, 8.7%, 35.8%, and 0%, respectively. Groundwater is also declining to near record levels throughout the watershed. The water crisis is affecting both rural and urban communities, limiting irrigation, invoking strict water rationing, increasing costs to agriculture and business and curtailing growth of cities and communities.

While much of Texas has received significant rainfall during the summers of 2002 and 2003, reservoirs along the Upper Colorado River continually decline. Saltcedar has become the dominant plant along the Colorado River and its streams and tributaries, wasting a significant portion of the limited water available. While little can be done to bring more precipitation to the area, the simple removal of saltcedar from the watershed would result in the savings of tens of thousands of acre feet of water each year.

Saltcedar is a deciduous, facultatively phreatophytic shrub to small tree, from central Asia that has invaded western riparian zones. This plant displaces native vegetation, reduces stream flows, increases water salinity and is resistant to mechanical control, fire and native insects. Past research has documented water use by this plant from 3 to 12 acre feet/year.

In 2001, through the lead of Extension, a Colorado River Saltcedar Management Task Force was developed. Members represent both agencies and water control entities with a vested interest in the Colorado River. This Task Force has taken on the responsibility of developing a comprehensive control plan for salt cedar and is also involved in seeking funding for these efforts. At the very beginning of the process it was realized that an integrated approach was needed to have an effective control and management program. Aerial applications of herbicide to control saltcedar can cost as much as \$200/acre, and treatment life is limited. Individual plant treatment with herbicides and biological control are vital components of a successful saltcedar

management program that integrates initial reclamation treatment with effective maintenance methods to extend treatment life and improve the cost/benefit ratio of control efforts. Working with the Texas Department of Agriculture, using satellite imagery and GIS software, the saltcedar along the Colorado River above Lake Spence has been mapped. The mapping data estimates over 8,000 acres of saltcedar in the Lake Spence basin alone. Based on past water use data, it is projected over 48,000 acre feet of water is lost annually to saltcedar plants within the Lake Spence basin. If control efforts are initiated and only 25% of the water released by control of saltcedar is captured, the cost to produce this water will be less than \$20/acre foot (assuming 6 acre feet/year water use by saltcedar, \$200/acre treatment cost and 7 year treatment life). With an effective maintenance control program this cost can be significantly reduced. This compares to an estimated cost of \$74.63/acre foot for water produced by the North Concho Watershed Project.

To improve maintenance control options following initial treatment, Task Force contact was made with Dr. Jack DeLoach (ARS) to obtain a release site within the upper Colorado River watershed for a potential biological control insect (*Diorhabda elongata*). Dr. DeLoach has been working with this insect and others for over a decade seeking a biological control organism for saltcedar. This particular leaf beetle has shown initial success, reducing saltcedar leaf canopy, and has been approved for release at selected sites by US Fish & Wildlife (USFW). Having an effective biological control option for saltcedar is absolutely necessary for a long-term, cost effective saltcedar control program.

Project Objectives and Results

The objectives of this project were to:

- 1) Provide support to obtain insect release site on the Colorado River for biological control of saltcedar.
- 2) Conduct intensive educational program to increase landowner recognition of this plant and ability to implement appropriate maintenance control practices.

Biological Control

In cooperation with Dr. Jack Deloach (USDA-ARS, Temple, Tx) and the Colorado River Municipal Water District, two release sites were established on the Upper Colorado River for *Diorhabda elongata*. The first was in the southwestern corner of Borden County, in a flood plain within the western part of Lake Thomas. The second was along Beal's creek, a tributary of the Colorado River in Howard County. At both sites, beetles were released in 10 ft. x 10 ft. field cages (purchased with funds from this project).

At Lake Thomas one cage contains a beetle biotype from Crete, Greece and in a second cage a biotype from Turpan, China. At Beals creek, one cage contains Crete beetles and the other a biotype from Uzbekistan. As of this date, the releases are being evaluated. Initial results look excellent. Saltcedar within the cages show significant use by the insects. In a short period of time, the biotypes that show the best adaptation to climate and day length will be released into the field. Approximately 100 adults of each biotype will be retained in the cages to evaluate

winter survival.

Education

A two day saltcedar symposium was held at the San Angelo Convention Center, July 16 and 17, 2003. The planning committee that developed the program included Texas Cooperative Extension (chair), Natural Resources Conservation Service, Fish and Wildlife, New Mexico State University, Texas Parks and Wildlife, Colorado Municipal Water District, Center for Grazing Lands and Ranch Management and Texas Department of Agriculture. Over 200 people participated in the symposium, representing 10 states. The majority of the participants were representatives from various agencies and organizations with an interest in saltcedar management. All participants received a copy of the symposium proceedings, which are still being sold through the Center for Grazing Lands and Ranch Management.

To increase general public awareness of saltcedar, a “Saltcedar Wanted Poster” was developed. Assisting with development of the poster were Fish and Wildlife, Texas Department of Agriculture and the Lady Bird Johnson Wildflower Center. As of this date 10,000 copies of this poster have been distributed state-wide through the Farm Bureau, Natural Resources Conservation Service, Texas Cooperative Extension and Texas Department of Agriculture. The purpose of this simple poster is to teach people how to identify the plant and to explain the harm this plant is causing to our watersheds.

Latest Developments

As a result of the work by the Upper Colorado River Saltcedar Task Force, the ongoing work on biological control within the watershed and the publicity received from the saltcedar symposium (both of which this project supported), \$2.2 million dollars was received in September, 2003 from the Environmental Protection Agency, to initiate saltcedar control efforts within the watershed.