

## Saltcedar Beetles at I-20 Wildlife Preserve

By Steven Schafersman

The common noxious and invasive Saltcedar or Tamarisk (*Tamarix ramosissima*) of the Southwestern United States is found widely in Midland County at I-20 Wildlife Preserve and along local draws. Saltcedar was introduced in the United States in the 1820s for its ornamental characteristics and later used as wind breaks and stream bank stabilization. It is hardy, grows quickly, is relatively fire-resistant, and has deep tap roots that keep it in place and difficult to remove, all of which make it particularly suitable for these tasks. Saltcedar comes from the Mediterranean and Central Asia. The problem with Saltcedar—and why it needs to be killed and permanently removed—is that it is a water glutton. In the American Southwest, it naturally grows in the riparian habitat next to streams and permanent ponds. In these locations, the water table is elevated and the Saltcedar's taproot grows into the aquifer and begins to extract groundwater. Saltcedar has an enormous transpiration rate, the rate at which a plant draws in water for photosynthesis and releases the water by evaporation from its leaves. Saltcedar can extract up to 200 gallons of groundwater a day from water as deep as 100 feet during the growing season, and the tree's mineralized, thin leaves deposit salt and degrade the soil beneath its branches by a form of salinization. Studies showed that removal of Saltcedar in a single stream valley would allow tens of thousands of acre-feet of water to remain in the ground rather than be lost to the atmosphere. Due to these characteristics, saltcedar is classified as a noxious weed and considerable effort has been undertaken to remove it from the land. Photos below show Saltcedar choking stream valleys in the U.S.



So how is Saltcedar removed? Physical removal is difficult, expensive, and doesn't work well. The tree can be cut at ground level and it will grow back quickly. Pulling the stump out by the roots is very difficult and expensive. Using chemical herbicides works well, but is expensive. This method was used for many decades on Southwestern Saltcedar, including along the Pecos River in West Texas, but eventually the saltcedar returns. The saltcedar at I-20 Wildlife Preserve, which was abundant and thick, was chemically treated in 2008 and again while the trails and blinds were being constructed. The saltcedar died but eventually recovered. The third and best method is biological control using Saltcedar Leaf Beetles. Studies show that these beetles feed exclusively on Saltcedar leaves and won't eat anything else even when the saltcedar is gone; in this case, the beetle population just becomes smaller. Both adults and larvae (caterpillars) eat saltcedar leaves. The trees turn brown when they have been defoliated. It takes several years of beetle control, at least five, for the trees to start to decline and die. Even with this method, not all the trees will die. The beetles and the saltcedar reach an equilibrium and the ecosystem becomes stable. Light can penetrate defoliated saltcedar and better native plants can grow and become more abundant. And less water is removed from the ground by evapotranspiration, leaving more for the native riparian habitat vegetation.



Four different species of the beetles were collected in North Africa, Southern Europe, and Central Asia and taken to the United States for research. After careful studies to make sure the beetles wouldn't eat any native vegetation, they were gradually released in controlled situations throughout the Southwestern United States. This includes West Texas. A major release was conducted in 2008 along Beals Creek in Big Spring. At I-20 Wildlife Preserve, Annaliese Scoggin, a wildlife biologist with TPWD, and Nate Knowles, the former executive director of I-20, released saltcedar beetle larvae and a few adults in June 2013. In both cases, the releases were successful. The beetles happily ate the saltcedar leaves and defoliated a great amount of the saltcedar. Since the beetle can't eat the roots, they will remain and the tree will sprout new vegetative suckers each spring. However, gradually the lack of repeated annual accumulation of carbohydrate by photosynthesis will kill most salt cedars. For some unknown reason, the release at I-20 Wildlife Preserve was not publicized. The secrecy was not necessary, and some scientists, including the author, would like to have known about the release to study the progress of the beetles. Photographs below illustrate the result of saltcedar eradication by biological control using Saltcedar Leaf Beetles. The brown trees in the riparian zone alongside the stream beds are saltcedars that have been defoliated. No doubt you have seen this same sight along the Pecos River as you travel in our region, for the beetles were also released along the Pecos River.



The author has prepared a resource page with many links to documents about Saltcedar, the Saltcedar Leaf Beetle, and biological control. The webpage can be found at [http://lanoestacado.org/resources/saltcedar\\_beetles/](http://lanoestacado.org/resources/saltcedar_beetles/). The literature on these topics is extremely large and fascinating, and studies in Texas are well-represented.

