



# BEETLE - MANIA

BIOLOGICAL CONTROL OF SALT CEDAR IN TEXAS

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## The Beetles Are Back !

### From Big Bend to the Texas Panhandle

*The saltcedar leaf beetle feeds only on saltcedar and athel. Athel is a closely related species that grows along the Rio Grande River in Texas.*

*If saltcedar or athel trees are not present, the larvae starve to death.*

*Saltcedar beetles were first established in Texas in 2004 at Big Spring, TX. Since then, there have been no reports of beetles or larvae feeding on any other plant except saltcedar and its close relative athel (Tamarix aphylla).*

Saltcedar leaf beetle numbers and impact are increasing at many locations across the state this year. Populations of the Crete species, devastated by the late-winter freeze of February, 2011, have recovered at some sites. The Tunisian species has defoliated large areas of saltcedar in West Texas and a new population of leaf beetle was unexpectedly discovered in the Texas Panhandle. From the Red River in the north to the Rio Grande of west Texas, saltcedar leaf beetles are defoliating more saltcedar than ever before. The mild winter and warm early spring is the most likely explanation for the rebound in beetle populations this year.

**Pecos/Rio Grande River Basin.** The Crete species of leaf beetle was released at several sites on the Pecos River beginning in 2006. In 2010, a population north of Pecos, TX defoliated all of the saltcedar along 11 river miles. However, this species appears to have died out in this region following the 2011 freeze. The Tunisian species, also known as the subtropical tamarisk beetle,

has since been released and is now well established and dispersing at many locations on the upper and middle Pecos. Much of the saltcedar along drainages in southern Reeves County was entirely defoliated this year, including some 125 acres on the Balmorhea Reservoir. In adjacent Pecos County, Tunisian beetles defoliated saltcedar at Leon Lake and dispersed widely. On the Pecos River at Iraan, beetles defoliated saltcedar for about 5 river miles this year and have dispersed along the Pecos for at least 35 miles. Overall, Tunisian beetle populations are present at sites along about 150 river miles of the Pecos River. The Tunisian species appears to be more effective at increasing and defoliating saltcedar than the Crete species in this region. Barring another unusually cold winter or late spring freeze, it's likely that the Tunisian beetle will be distributed throughout the upper and middle Pecos River within 2-3 years.

Further south, the Tunisian beetles again defoliated essentially all of the saltcedar along more than 150 miles of the Rio Grande River from

north of Presidio to the eastern side of Big Bend National Park. Some of the largest stands of saltcedar in Texas are found on this section of the Rio Grande.

**Colorado River Basin.** The Crete species was well established in the upper Colorado River basin (Howard, Martin, Borden, Mitchell Counties) until the February 2011 freeze. Few beetles were found here last year but following the mild winter of 2012, populations have recovered in some areas. This year, beetles again defoliated large stands of saltcedar along Sulfur Draw in Martin County. Saltcedar trees appear to be dying in this area from beetle defoliation and possible drought stress. Beetle numbers in Howard County are still low in many areas. Much of the saltcedar infesting the western edge of Lake Thomas and adjacent Colorado River is also defoliated again and beetles are present on the Colorado River from Lake Thomas to south of Colorado City in Mitchell County. Motorists crossing the I-20 bridge at Colorado City can view a large expanse of defoliated saltcedars on the Colorado River below. >>>>

## Long Lost Uzbek Species Discovered in Texas Panhandle

Larvae of the saltcedar leaf beetle feed on saltcedar leaves and tender bark. Larvae feed for about 12-14 days during the summer. Full grown larvae are about 1/3 inch long. Several generations are completed per year. The adult stage overwinters on the ground under leaf litter and in clump grasses.

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**Upper Brazos River Basin.** The Crete species survived the 2011 freeze on White River Lake in Crosby County and continues to defoliate trees there, but Crete populations in Swisher, Kent and Garza Counties have not increased as expected and are undetectable at some locations. Recently, the Tunisian species was released at two sites on the Double Mountain Fork of the Brazos River to see if this beetle might be better adapted than the Crete beetle to this area.

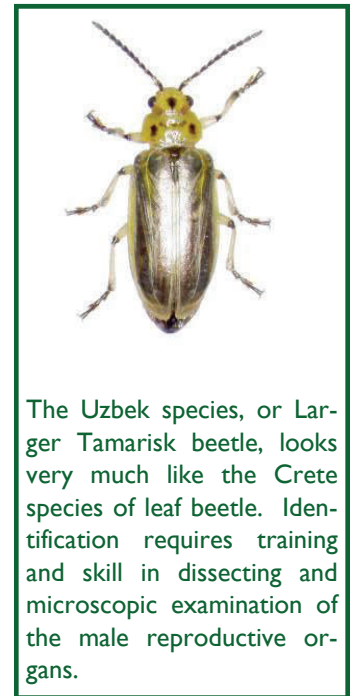
**Red River Basin.** After releasing beetles for three years at a site on the South Wichita River in King County, a population of Crete beetles dramatically increased there this year. These beetles defoliated all of the trees in dense stands along about two river miles and were found along 12 miles of river. Beetles were well established here in 2010, but could not be found in 2011 following the earlier freeze. The great increase in population and damage to saltcedar trees in 2012 at this site was a surprise

However, the greatest surprise this summer was the discovery of the Uzbek

species of leaf beetle in the Texas Panhandle. The Uzbek species, *Diorhabda carinata*, was released at Lake Meredith beginning in 2005 and at Palo Duro State Park in 2007, but did not establish there. Releases of this species in 2008 and 2009 in Borden, Motley and Swisher County and at Lake Kemp also failed to establish. Thus, it was exciting when an observant rancher reported finding beetles on his ranch near Clarendon in early July of this year. These beetles proved to be the long lost Uzbek beetles. This species was found defoliating large areas of saltcedar along the Prairie Dog Town Fork of the Red River and the Canadian River near Oklahoma. Subsequent surveys found the Uzbek beetle in Donley, Motley, Armstrong, Hall and Cottle Counties.

Apparently, beetles from the initial releases dispersed from the release sites and populations persisted at undetectable numbers for several years until the recent mild winter, or possibly time alone, allowed their numbers to increase sufficiently to defoliate trees and attract notice.

Climate matching models suggested that the Uzbek beetle (originally collected from Uzbekistan) is best adapted to the Texas Pan-



The Uzbek species, or Larger Tamarisk beetle, looks very much like the Crete species of leaf beetle. Identification requires training and skill in dissecting and microscopic examination of the male reproductive organs.

handle and areas north into Colorado and this beetle seems to be proving the model correct. With this discovery, Texas is now home to three species of saltcedar leaf beetles: the Uzbek beetle in the Panhandle, the Crete beetle in the Brazos and Colorado River Basins and the Tunisian species in the Pecos/Rio Grande River Basin.

Thanks to the following for contributing information on leaf beetle distribution and activity: Ed Bynum and Mark Muegge, Texas AgriLife Extension, Jerry Michels, Texas AgriLife Research, and James Tracy, Entomology Dept., Texas A&M.

## Exotic Weevil Found Feeding on Saltcedar

A new and exotic insect, a small weevil in the genus *Coniatus*, has been found throughout much of Texas feeding on saltcedar. The native home of the *Coniatus* weevil is the Mediterranean region and areas east as far as Iraq. Although studied as a potential candidate for importation into the US for biological control of saltcedar, there is no known record of any intentional or unintentional releases of any *Coniatus* species in North America. How it came to be in the US is a mystery.

The *Coniatus* weevil was first reported in the US in 2006 from specimens, identified as *C. splendidulus*, collected near Phoenix, AZ. It is now widespread in Arizona, New Mexico, Nevada and Utah. The *Coniatus* weevil was first found in Texas near Big Spring, TX in 2010 and it is now widely distributed in west TX. This year *Coniatus* weevils are commonly found on the Pecos River, Upper Colorado River and as far north as the Texas Panhandle.

Adult weevils are very small, about 0.18 inch (4-5 mm) long, and are brightly colored with metallic areas of dark brown, bright green and shades of pink. Adults quickly drop off branches when disturbed. Adults and larvae feed on saltcedar leaves. The larvae spin a net-like cocoon that is fastened to saltcedar leaves. The larva pupates inside the cocoon and the adult later emerges from the cocoon. These cocoons persist on the foliage, are more easily seen than the adults and are often the first evidence that *Coniatus* is present.

Little is known about the biology of *C. splendidulus*, but like other species within this genus, it is believed to feed only on saltcedars (*Tamarix* species). The adults of a related species in France feeds on saltcedar leaf buds in the spring and this feeding slows the growth of new stems. Once leaves are available, adults prefer to feed on the tips of branches and often cut off the tips while feeding. Larvae also feed on the tender

young leaves at the end of branches. In Texas, significant leaf or branch feeding has not yet been observed.



The *Coniatus* weevil is very small, 4-5 mm long, and brightly colored.

Photo by K.V. Makarov. <http://www.zin.ru/Animalia/Coleoptera/eng/consplkm.htm>

## Tunisian Beetle Released at Lake Ivie and Lake Spence

Water levels in Lake Ivie and Lake Spence have receded due to the ongoing drought, exposing mud banks which have been quickly invaded by saltcedar. In 2010, an estimated 9,000 acres infested the Lake Ivie basin. Following the 2011 drought, the infested area has continued to increase.

In 2010, about 113,000 Crete beetles were released at Lake Ivie and 80,000 at Lake Spence. Following the 2011 late winter freeze, no Crete beetles could be found last year at either site. In hopes that the Tunisian beetle would be more effective than the Crete species, 8,000 Tunisian beetles were released at Lake Ivie in 2011. These beetles overwintered and defoliated a small area in 2012. This year, 23,000 and 49,000 Tunisian beetles have been released at Lake Spence and Lake Ivie, respectively. Given a series of mild winters, these beetles will hopefully begin to have an impact.



Saltcedar trees defoliated by the Tunisian leaf beetle and larvae feeding on the few green branches remaining. Balmorhea Reservoir, Reeves Co, TX. July, 2012.



**BEETLE-MANIA** is a newsletter on biological control of saltcedar in Texas, and is written and produced by Allen Knutson, Texas AgriLife Extension. To be included on the mailing list, please contact Allen Knutson.

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