



BEETLE - MANIA

BIOLOGICAL CONTROL OF SALT CEDAR IN TEXAS

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Texas Biological Control Program Continues to Expand, Despite Some Controversies.

The saltcedar leaf beetle feeds only on saltcedar and relatives in the genus Tamarix.

If saltcedar 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).

Biological control of saltcedar continued to make good progress in Texas during the past summer months, but not without some controversy. First, in early June, the USDA-APHIS (Animal Plant and Health Inspection Service) announced it was discontinuing the federal program to re-distribute saltcedar beetles in the US. While the impact of this decision was being discussed, another issue was brewing on the Rio Grande River. There, populations of the subtropical tamarisk beetle (aka Tunisian beetle) rapidly increased, consumed all of the saltcedar leaves, and then began feeding on athel trees, a species of saltcedar. While athel is known to be a host of the beetles, the extent of the damage to athel trees on both sides of the Rio Grande was unexpected and unfortunate. See more on these events inside.

The summer of 2010 was unusual in the Big Spring area, the first release site in Texas, as beetle populations there remained low throughout the summer. Beetles returned to again defoliate saltcedar along some 25 miles of Beals

Creek, but beetle numbers did not increase later in the summer as they have in past years nor did they disperse much further in 2010. While the reason is unknown, heavy rains in this area in early July may have been detrimental to survival of the pupal stage which occurs on the soil and is subject to flooding.

In other areas of the Colorado River Basin, beetles increased, again defoliated large areas and dispersed. New releases of beetles began defoliating saltcedar on

Lake Spence and Lake Ivie on the Colorado River. Populations of the Mediterranean tamarisk beetle (aka Crete) established in Crosby (Brazos River basin) and King Counties (Red River Basin), representing the most northern populations in Texas. These beetles were also released at new sites on the upper Brazos River in Kent and Garza Counties. Beetles also continued to disperse and defoliate saltcedar trees on the Pecos River, and by September were found along some 45 river miles near Pecos, Tx.



Small saltcedars defoliated by leaf beetles in Martin County, Tx. August, 2010. A few green Baccharis plants remain. Beetles were established on nearby Sulphur Draw in 2009.

Larvae of the saltcedar leaf beetle feeds 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.

Tunisian Beetle Populations Explode on the Rio Grande River near Presidio, TX

The subtropical tamarisk beetle, originally introduced from Tunisia in North Africa, was released at several sites along the Rio Grande River near Presidio, Texas in 2009. Climate matching analysis suggested this species would be well adapted to this hot, arid region. Events in 2010 proved this conclusion correct.

These beetles rapidly increased in numbers in the spring of 2010, began dispersing and by late August had defoliated almost all of the saltcedar along 20 river miles around Presidio, TX. Beetles soon crossed into Mexico and defoliated saltcedar stands along five miles of the Concho River in Mexico.

With almost no saltcedar leaves remaining, the hungry beetles attacked

athel trees, a very closely related species of saltcedar. While it was well known that saltcedar beetles fed on athel (although they prefer saltcedar) the speed and intensity of defoliation of athel in this region was unexpected.

Athel, *Tamarix aphylla*, can grow to a large tree, reaching a height of 60 feet, and it is valued for its shade, wind protection and drought hardiness. It is cold sensitive and as a result its distribution in the US is limited almost exclusively to the Rio Grande River corridor. However, athel is commonly found in urban areas and on ranches in Mexico. A survey in Presidio, Tx, estimated about 20 athel trees were planted in home/farm landscapes. However, many more athel trees are found in and

around nearby Ojinaga, Mexico.

Mexican officials generally recognize the beneficial aspects of the biological control program against saltcedar, but are also concerned about the potential risk to athel. Several state, federal and international agencies are working with Mexican officials and organizations to address this concern. Fortunately, many of the defoliated athel trees are now beginning to grow new leaves, much the same way saltcedar does. Also, as the abundance of saltcedar declines in this area due to beetle feeding, the overall beetle population is expected to decline as well. This suggests that the impact of leaf beetles on athel should decline in years ahead.

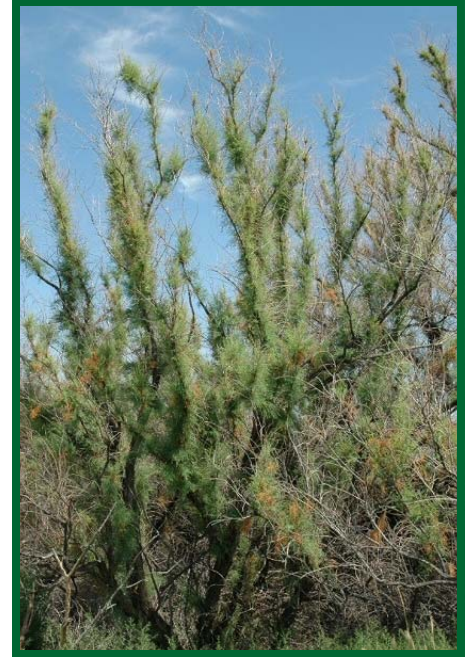


An athel tree, *Tamarix aphylla*, near Candelaria, on the Rio Grande River north of Presidio, Tx. Athel, a close relative of saltcedar, is an introduced, ornamental species that is sometimes invasive in this region.

Leaf Beetle Feeding Results in Bizarre Growth as Trees Suffer Attack

A tour of the saltcedar beetle site on the Pecos River in September found saltcedar trees looking very strange, almost like the boojum trees in Baja California. The large saltcedar trees at this site have been defoliated for 3-4 consecutive years, and as a result have sparse foliage and dead branches in the top canopy. In place of the long, graceful branches full of feathery foliage found on healthy trees, these trees have short, crowded leaf shoots along their branches.

These abnormal leaf and shoot formation are called epicormic growths. They arise from epicormic buds found below the bark on branches. Normally dormant, these buds begin to grow when the upper branches are damaged by insects, disease, fire or are removed by pruning. Epicormic growth on saltcedar is evidence of the stress placed on saltcedar trees due to repeated leaf loss resulting from leaf beetle feeding. This growth form allows more light to reach understory vegetation, encouraging grow of grasses and forbs in saltcedar thickets.



APHIS Moratorium on Saltcedar Biological Control Program



Southwestern Willow Flycatcher.

Photo: Utah Natural Resource Division of Wildlife Resources.

The Southwestern Willow Flycatcher (*Empidonax traillii extimus*) is a small, olive-gray, sparrow-sized bird, 5 3/4 inch in length, that breeds only in the southwestern US and winters in Central America and Mexico. It is one of four subspecies of willow flycatcher, all of which are very difficult to identify by sight. They feed on flies,

mosquitoes, and other insects captured on the wing or picked from leaves.

The abundance and distribution of this subspecies has declined during the 20th century, primarily due to loss of habitat resulting from dam construction, ground-water pumping, water diversions, and flood control. Nest parasitism by cowbirds is also important. According to the US Geological Survey, there are an estimated 900-1000 breeding pairs. Most are found in California, Arizona and New Mexico.

Due to the decline in populations, the SWWF was placed on the Endangered Species list in 1995.

This subspecies commonly nests in dense thickets of willow overhanging water or near open water. Because saltcedar has a similar branching structure as willow and is found in the same

habitats as willow, SWWF sometimes nest in saltcedar trees at some locations.

Saltcedar trees defoliated by leaf beetles during the nesting period can expose these nests to high temperatures and predators. Because of this risk, the release of leaf beetles in nesting habitat designated as Critical Habitat is not been permitted and is a violation of the Endangered Species Act.

In June, USDA-APHIS announced a moratorium on releasing saltcedar leaf beetles because of concerns about the potential effects on the endangered SWWF. Actions included 1) discontinuing the APHIS program to re-distribute leaf beetles in 13 western states and 2) terminating issuance of permits for interstate movement of beetles and release of beetles outside of containment facilities. The ref-

erence to 13 western states does not include Texas.

These actions did not impact the Texas AgriLife Saltcedar Biological control program in Texas as leaf beetles are already present in the state and the beetle distribution program is limited to sites only in Texas, thus no new permits are needed for interstate movement. The SWWF is not know to nest in Texas. However, as part of an earlier agreement with US Fish and Wildlife, leaf beetles can not be released in Texas within 200 miles of the nearest nesting sites of the SWWF, which are in New Mexico.

US Fish and Wildlife and other agencies are now developing management activities for Critical Habitats to minimize the impact of saltcedar leaf beetles on recovery of SWWF populations.



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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