



BEETLE - MANIA

BIOLOGICAL CONTROL OF SALT CEDAR IN TEXAS

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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*).

2013. Another Good Year for Saltcedar Leaf Beetles in Texas !

Saltcedar leaf beetles returned again in large numbers in many areas of west Texas in 2013, further weakening trees defoliated in 2012. The year did not start off well as several late spring freezes, the last in early May, raised concern that beetle and larvae would be killed by the frost. Although these cold temperatures may have delayed beetle reproduction, populations in most areas increased by early summer and again defoliated large areas of saltcedar. There are now three species of saltcedar leaf beetles established in Texas.

Rio Grande, Pecos Rivers. The subtropical tamarisk beetles defoliated large areas of

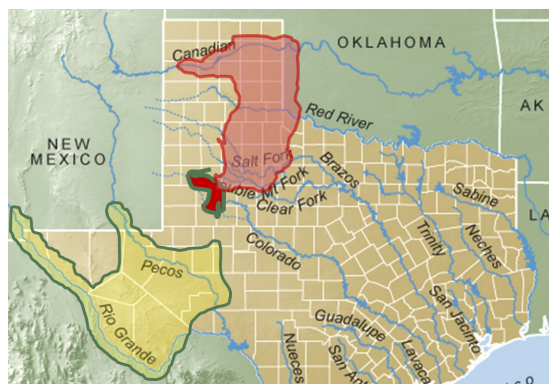
saltcedar on the Pecos and Rio Grande Rivers. Saltcedar trees in this area have been defoliated for three consecutive years, and many trees now have large dead limbs with only a few green branches. In 2013, beetles dispersed through El Paso and into New Mexico following saltcedar along the Rio Grande and by late August were found about 17 miles south of Las Cruces, NM. Beetles also dispersed along the Pecos River into New Mexico and by late summer were found near Artesia, NM. A small population of Mediterranean leaf beetle was found at Artesia, apparently a remnant population of earlier releases made at that site several years ago.

Upper Colorado River.

The Mediterranean leaf beetle is found in this region and again defoliated stands of saltcedar stretching along Sulphur Springs Draw and at some sites on Mustang Draw in Howard and Martin Counties and at Lake Thomas. However, this species has been slow to recover following the February 2011 freeze. Overall, the Mediterranean has not increased or dispersed as rapidly as has the two other species in Texas. This species was released at Lake Spence and Lake Ivie but did not establish. In 2012 and 2013, large numbers of the subtropical and larger tamarisk beetle were released at Lake Ivie but there is no evidence to date that any of these populations have established on these reservoirs. Red imported fire ants are common at Lake Ivie and Lake Spence and may be feeding on the beetle larvae and pupae.

Brazos River and Tributaries.

The larger tamarisk beetle, originally collected from Uzbekistan, defoliated saltcedar trees on many of the tributaries of the upper Brazos River that drain the Rolling Plains Region in 2013. Areas defoliated by leaf beetles increased again in Garza County and



Approximate distribution of the Subtropical leaf beetle in the Trans Pecos region, the Mediterranean leaf beetle in the upper Colorado River (red area), and the Larger leaf beetle in the Rolling Plains and Panhandle of Texas. Beetles are not present throughout the shaded regions, but if not present, are likely to disperse in the future to new sites within the shaded region.

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 bunch grasses.

Beetles on West Texas River Systems.

beetles dispersed into the Lake Allen Henry area in 2013. Widespread defoliation was also seen for the first time in southeastern Lynn County and a few beetles were found in adjacent Terry County. It is not yet known if the beetles in Lynn County are Mediterranean leaf beetles from the populations to the south or are the larger species that moved along the Double Mountain Fork of the Brazos from Garza County.

Canadian River, Red River and its Tributaries. The larger tamarisk beetle and tree defoliation were again widespread in the Lake Meredith area and east along the Canadian River. Beetles also returned again and defoliated much of the saltcedar along the tributaries of the Red River throughout the eastern Texas Panhandle and adjacent counties in western Oklahoma. Beetles gain defoliated saltcedar along the Pease River in Motley and Cottle Coun-

ties and along the South Wichita in King County. Beetles moved south into northern and western Stonewall County and tree defoliation was widespread here for the first time in 2013.

Beetles Arrive in Kansas. Saltcedar leaf beetles were found for the first time in October, 2013 in three counties in southwest Kansas. Beetles are believed to have moved north from beetle populations along the Texas/Oklahoma border, crossed the Oklahoma Panhandle and entered Kansas this past summer. Saltcedar is considered a quarantine pest by the Kansas Department of Agriculture.

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Insects on Saltcedar Trees That May Be Confused with Leaf Beetles.

Scale insects feeding on saltcedar trees can cause foliage to turn yellow and brown in late summer and this damage, especially from a distance, may be confused with feeding by saltcedar leaf beetles. Scales are tiny insects that suck sap and cause saltcedar leaves to turn yellow. Scales appear as white, waxy specks and large numbers can create a white, crusty layer on saltcedar leaves. Infested leaves remain firmly attached to the branches while leaves damaged by leaf beetles turn brown and are easily pulled and fall from branches.

Feeding by leafhoppers can also cause saltcedar leaves to turn yellow to brown in late summer. Leafhoppers are about 1/8 inch long, bright green and wedge shaped insects which quickly jump and fly when disturbed.

Twice-stabbed lady beetles do not feed on saltcedar but feed on the scale insects discussed above. These lady beetles can be very common when scale insects are abundant. Lady beetles are black with two red dots (hence twice-stabbed) and are oval shaped, thus easily distinguished from the saltcedar leaf beetles.



Can Saltcedar Biological Control Help Preserve Habitat for Rare Minnows in the Brazos River ?

Dense thickets of saltcedar growing along and in streams and waterways can change natural stream flow patterns and alter the habitat of native plants and animals. The saltcedar invasion of the upper Brazos River, along with impoundments, drought and groundwater withdrawal, are believed to have played a part in degrading the habitat requirements of two small native fish, the sharpnose shiner and the smalleye shiner. The U.S. Fish and Wildlife Service is proposing to protect these two shiners under the Endangered Species Act (ESA). These fish, about 2 inches long, are currently restricted almost entirely to the contiguous river segments of the upper Brazos River basin in north-central Texas. The U.S. Fish and Wildlife Service is also proposing to designate approximately 623 miles of the upper Brazos River basin and the upland areas extending beyond the river channel by 30 meters on each

side as critical habitat. These actions are proposed at this time. A decision is expected in August, 2014.

The sharpnose shiner and smalleye shiner are native to arid prairie streams of Texas. Both species require wide, shallow, flowing waters generally less than about 1.6 feet deep with a sandy bottom. It is estimated that shiners require approximately 170 miles of unobstructed, flowing water during the breeding season to support survival of the eggs and larva. This length of stream allows the eggs and larvae to remain suspended in the water column and survive until they mature sufficiently to swim on their own. Historically, these shiners existed throughout the Brazos River and several of its major tributaries and were also present in the Colorado River and the Wichita River in Texas.

The two primary factors affecting these shiners are river fragmentation by impoundments and alterations of the

natural streamflow regime by impoundments, drought, groundwater withdrawal, and saltcedar encroachment. Other secondary factors, such as water pollution and golden alga and commercial harvesting for fish bait, are also likely impacting the shiners. For more information, see:

http://www.texasahead.org/texasfirst/species/fact_sheets/



Sharpnose and Smalleye Shiners

Photographs courtesy of Chad Thomas/Texas State University - San Marcos

Prescribed Burns and Leaf Beetles on the Pecos River.

As part of the Pecos River Watershed Protection Plan, saltcedar trees along the Pecos River have been treated either by herbicides or heavily defoliated by leaf beetles. As a result, large areas of dead trees or trees with mostly dead canopies remain. Prescribed burns have been used recently to remove this dead wood which poses a risk to bridges and other structures should this debris be carried by flood waters. Also, burning prepares a good seedbed for re-establishment of vegetation.

But how does burning impact leaf beetles? No formal studies have been done, but Amy Porter, with the Upper Pecos Soil and Water Conservation District, reported that beetles quickly returned to a burned area this spring to feed on the saltcedar regrowth emerging from the root crown of burned trees. As her photos show, the upper portion of the regrowth has turned brown as a result of the feeding by beetle larvae. In the lower photo, all of the green shoot has been fed upon by larvae and have turned brown. While beetles can presumably escape fire by flying away, eggs and larvae on trees with green foliage would be destroyed. Fire during the late fall, winter and early spring, before beetles emerge from overwintering beneath leaf litter and in bunch grasses, could kill overwintering adults. Beetles could fly into burned areas from surrounding unburned trees and thus re-populate a burned area. These observations suggest fire and beetles might be a good combination once beetles are well established in an area. Studies are needed to define when prescribed burns would have the least impact on beetles while still providing the benefit of reducing dead wood.





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

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