AgriLIFE EXTENSION
Texas A&M System

BEETLE - MANIA

BIOLOGICAL CONTROL OF SALTCEDAR IN TEXAS

VOL. 4 NO. 2 SUMMER-FALL 2012

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).

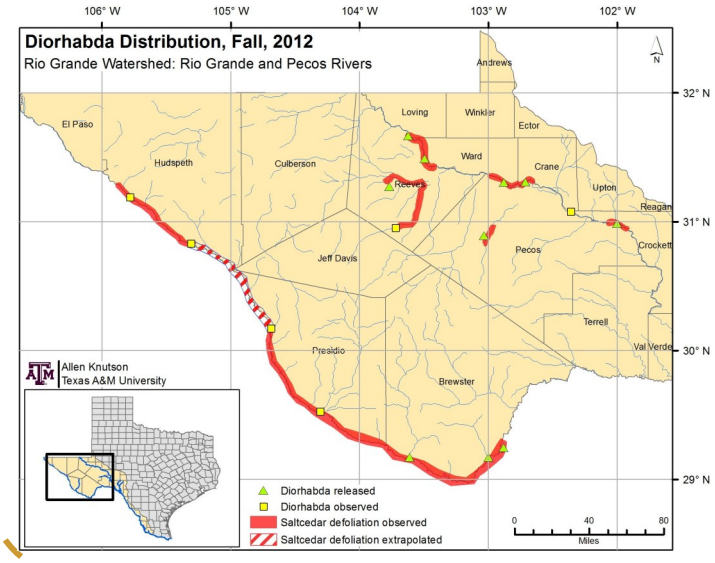
2012. A Very Good Year for Saltcedar Leaf Beetles in Texas !

During 2012, saltcedar leaf beetle populations increased and dispersed at many locations across the state and more saltcedar trees were defoliated than ever before. After the early February 2011 freeze, beetle populations were low or absent at many sites last summer. However, the mild winter of 2011-2012 favored survival of overwintering beetles. This was followed by an early spring and dry summer which allowed beetle numbers to further increase and disperse. Although the 2011 record drought took a heavy toll on farms, ranches and water supplies, these dry conditions seem to favor increase of saltcedar leaf beetles. If the winter of 2012-2013 is again mild, leaf beetles should return in force next year.

There are now three species of leaf beetle established in Texas; the Uzbek beetle in the Panhandle, the Mediterranean (Crete) leaf beetle on the Upper Colorado River, and the subtropical leaf beetle (Tunisian) on the Pecos and Rio Grande Rivers.

Rio Grande, Pecos Rivers. The Mediterranean leaf beetle, originally imported from Crete, was released on the Pecos River in 2006 and defoliated saltcedar trees along 11 river miles. However, following the prolonged freeze, of February 2011, none were found and this species is now believed to be absent from this region. A second species, the subtropical leaf beetle (Tunisian) was released at five sites on the Pecos River in 2010-2011 and quickly established and increased. During 2012, this species, originally collected from Tunisia, defoliated large acreages of saltcedar along the Pecos River and adjacent areas (see map).

The subtropical tamarisk beetles was also released on the Rio Grande River during 2009-2010 and rapidly increased and dispersed. During the past two years, this species has defoliated almost all of the saltcedar along the Rio Grande River from Big Bend National Park upriver to Candelaria, where the road ends. Beetles apparently continued to move upriver during 2012, through the "Forgotten River" section, until mid-August when a rancher reported beetles on the river at Indian Hot Springs in Hudspeth County. By October, beetles were defoliating saltcedar trees within 40 miles of El Paso.

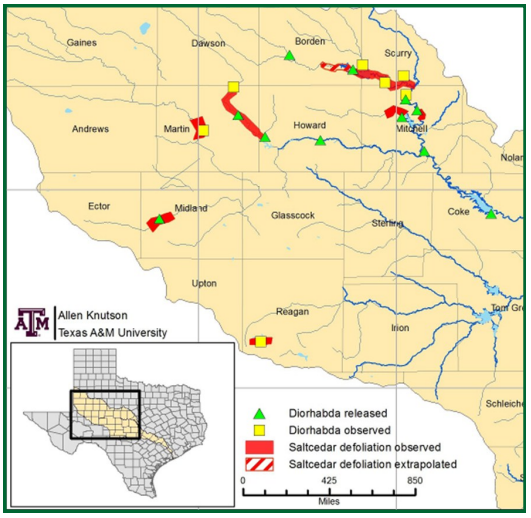


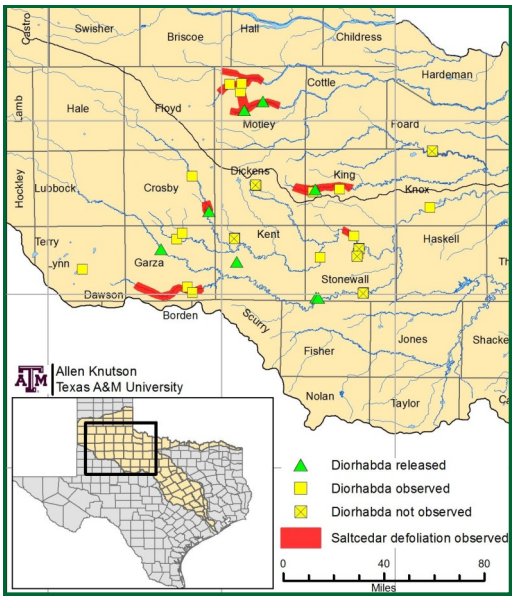
Beetles on the Rio Grande, Pecos, Colorado, Brazos, Red and Canadian Rivers.

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.

Colorado and Concho.

Large populations of the Mediterranean leaf beetle defoliated extensive stands of saltcedar stretching along Sulphur Springs Draw in Martin County and also at Lake Thomas. Beetles also defoliated saltcedar along the Colorado River in Mitchell County. However, this species has been slow to recover in Howard County. Small populations were present at Lake Spence and Lake Ivie but disappeared following the February 2011 freeze. Overall, the Mediterranean has not increased or dispersed as rapidly as has the two other species in Texas. Large numbers of the subtropical tamarisk beetle have been released at Lake Ivie and Lake Spence during 2011-2012, but are not yet established.





Brazos and Red Rivers.

Both the Mediterranean (Crete) and Uzbek species, *D. carinata,* are present in this area. The Uzbek beetle, originally collected from Uzbekistan, defoliated miles of saltcedar along the Pease River in Motely County while the Mediterranean species defoliated trees along most of the Wichita River in King County, saltcedar infestations on White River Lake and along the Double Mountain Fork of the Brazos River n southern Garza County. A few beetles were found at sites in Knox, Stonewall, and as far west as Lynn County. These are early "pioneer" beetles that disperse far and wide from established populations.

Canadian and Red Rivers. The most surprising event in 2012 was the discovery of the Uzbek beetle in the Texas Panhandle and its rapid spread. This species was released at several sites during 2005-2009, but was not seen again until 2012 when it suddenly defoliated large areas of saltcedar on the Prairie Dog Town Fork of the Red River, the Red River and the Canadian River. Surveys by Texas AgriLife Research found *D. carinata* in Hutchinson, Roberts, Hemphill, Gray, Wheeler, Armstrong, Donely, Collingsworth, Childress, Randal, Cottle, Motley, Briscoe and Hall counties. Tom Royer at Oklahoma State University reported beetles defoliating trees in adjacent Oklahoma.

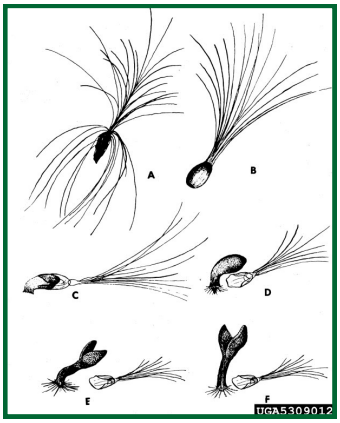
Saltcedar: Seed Production, Dispersal and Survival

Seeds and Seed Production. The invasive ability of saltcedar is due in part to its high reproductive rate and ability to disperse seeds by water and air. Saltcedar trees flower and produce seeds throughout the growing season if soil moisture is adequate. A medium sized tree can produce up to 600,000 seeds while a large tree can yield up to 10 million seeds or more per year. The seeds are extremely small (0.02-0.04 inch long) and contained within a capsule. A tuft of hairs allows the seed to float on the wind and water and seeds are therefor carried long distances. Seeds remain viable for up to 45 days under ideal summer conditions or up to 130 days during the winter. Once seeds come into contact with moisture, they germinate in about 24 hours. The wet soil that appears along the margins of lakes and reservoirs as the water level declines and areas drying out from floods can be quickly invaded by saltcedar seedlings.

Drought and Floods Favor New Infestations. Both flooding and drought favor new infestations of saltcedar. As an example, saltcedar has quickly invaded the mud flats exposed at Lake Ivie as water levels have sharply declined there due to the 2011 and ongoing drought. On the other extreme, heavy rains in 2010 flooded the Lower Rio Grande Valley Wildlife Refuge, killing native vegetation submerged under 12-25 ft of water. Saltcedar seedling, carried on the wind and flood waters, quickly germinated and grew rapidly in the wet soil with no competition from other vegetation. Saltcedar thickets are now a major concern over some 18,000 acres of refuge land.

Tolerance to Inundation. According to USDA-NRCS (see citation) seedling saltcedars can withstand total inundation by water for up to four weeks. Mature trees can survive up to 98 days of total inundation. Hopefully, rains will return and begin to fill reservoirs with enough water that much of the area recently invaded by saltcedar will be under water long enough to drown the saltcedars.

Reference: Ecology and Management of Saltcedar. USDA-NRCS Invasive Species Technical Note No. MT-13. 2007.



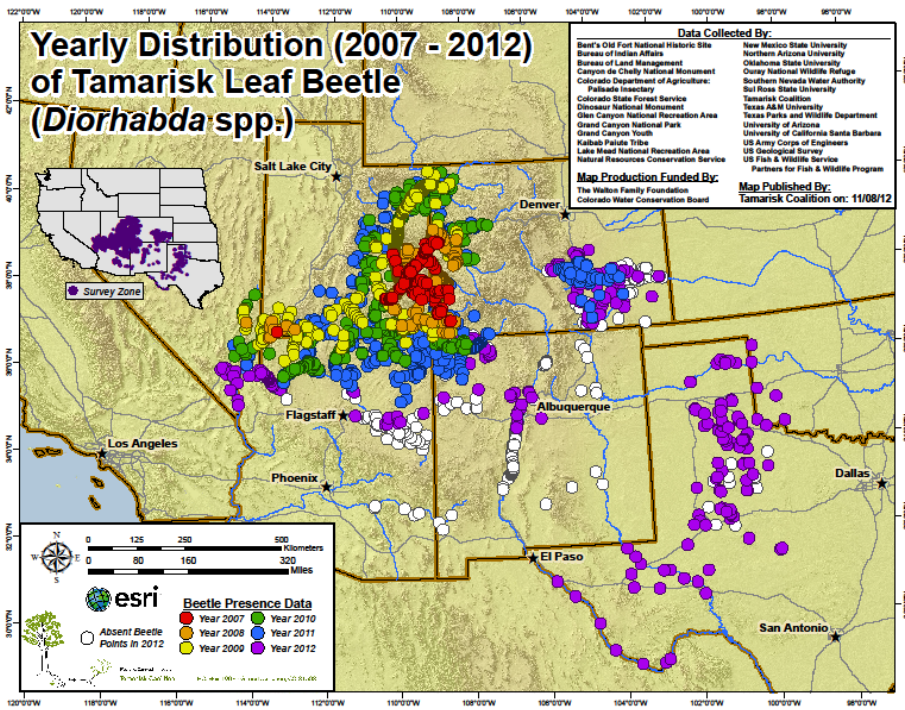
Saltcedar Seed. Seeds are about 0.02 to 0.04 inch long

USDA PLANTS Database, USDA NRCS PLANTS Database, Bugwood.org

Distribution of Saltcedar Leaf Beetles in the US.

The Tamarisk Coalition is a regional non-profit organization in Grand Junction, CO working to help people restore riverside habitats in the American West with a focus on invasive plant species. The Tamarisk Coalition recently completed this map showing how the Northern Tamarisk leaf beetle, *D. carinulata*, has dispersed through Nevada, Utah and Colorado during 2007-2012 and then into New Mexico in 2010. The map also shows the distribution of the three beetle species in Texas in 2012 and the movement of the Uzbek beetle into western Oklahoma.

Thanks to Jesse Lanci and the Tamarisk Coalition for providing this map. For more information on the TC, go to:
http://www.tamariskcoalition.org



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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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