

California Alliance for Tamarisk Biocontrol

Tamarisk is a serious invasive plant across the western North America and is found in many California rivers and wetlands, particularly in arid and semi-arid regions.

By 2010 *Diorhabda* beetles were well established in the Great Basin, and the intermountain West south to Texas. The range of the beetles will continue to expand as it encounters new stands of tamarisk; most recently the beetle has colonized along the lower Colorado River and the Mojave River in southern California.

The California Alliance for Tamarisk Biocontrol was formed with support from Cal-EPA Dept. of Pesticide Regulation to provide education and resources on the biocontrol program, implement new beetle releases in areas where biocontrol would be useful, and to monitor movements of *Diorhabda* and ecosystem responses in California. The Alliance also provides resources and guidance on relevant restoration methods to enhance recovery of native riparian ecosystems across the state.

The Alliance includes members from regional resource management groups, conservation organizations and researchers with experience in biocontrol, invasive species management, endangered species protection, and ecosystem restoration.

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Resources

For more information and downloadable resources, please see our website

<http://rivrlab.msi.ucsb.edu/projects/california-alliance-tamarisk-biocontrol>

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Biological Control with the
Tamarisk Leaf Beetle
Diorhabda spp.

Tamarisk Invasion

Tamarisk, or saltcedar (genus *Tamarix*), is native to Eurasia and Africa. Introduced in the 1800's for horticulture and erosion control, tamarisk has infested many western rivers.



Tamarisk – Virgin River

Impacts

- Displaces native vegetation
- Poor habitat for birds and other wildlife
- Poor forage for livestock
- Channel erosion & sediment deposition
- Restricts recreational access
- Soil salinization
- Promotes wildfire (even when green) - native trees are killed but tamarisk resprouts from its base

Solutions

Conventional Control uses mechanical cutting and clearing, and herbicide applications. However, these methods are limited by their expensive cost and limited access to some sites.

Biological Control, or Biocontrol, is an alternative weed management method used successfully against Tamarisk in other western states.

What is Biocontrol?

Plants come from other parts of the world without the herbivores that controlled them at home, allowing them to spread unchecked to become invasive weeds.

Biocontrol is the importation of specialist organisms, usually insects, that feed ONLY on the target plant to suppress the weeds and enable recovery of native plants and wildlife

Tamarisk Leaf Beetles

The **northern tamarisk beetle (*Diorhabda carinulata*)** was approved for release after 10 years of overseas and quarantine testing in the US to ensure the beetle would be effective and not feed on other plants.

Larvae and adults feed by scraping tamarisk foliage, causing it to dry out. Large groups of beetles can defoliate trees in a few weeks.



Diorhabda adult and larvae

This beetle is now present along the Colorado River on the California border, and in the Owens Valley and along the Mojave River. Three other *Diorhabda* species were later released in North America, one of which, *Diorhabda elongata* (Mediterranean), is present in northern California.



Tamarisk defoliation – Needles, CA

Ecosystem Responses

When tamarisk is defoliated, water loss to the atmosphere is halted and instead is retained in the groundwater. Annual water savings over 65% have been measured.

Tamarisk initially re-grows after defoliation, but gradually dies back and in 2 to 4 years some plants may be killed. Thus it is not eradicated but is suppressed, allowing native riparian plants like willows and cottonwoods to re-colonize the ecosystem.

As tamarisk declines, space is opened and other plants can re-establish. This process can be slow where years of environmental degradation makes recovery difficult, but active re-vegetation is being applied in some areas to jump-start the process.



Tamarisk defoliation – Bill Williams Wildlife Refuge; the light green foliage is native bulrush

Risks

While disruption of bird nesting IS possible, researchers from universities and public agencies that have closely monitored the biocontrol agents and ecosystem responses in other states have shown the effect to be temporary. It is also key to initiate restoration activities early to jump-start native plant recovery and create conditions that favor a return to the natural ecosystem.