

## Asymmetric Interspecific Competition Between Specialist Herbivores That Feed on Tamarisk in Western Colorado

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The tamarisk leaf beetle (*Diorhabda* spp.; Coleoptera:Chrysomelidae) was purposely introduced into the western United States as a biocontrol agent for the invasive Eurasian shrub tamarisk (*Tamarix* spp.; Violales: Tamaricaceae). Another exotic insect, the tamarisk leafhopper (*Opsiurus stactogalus*, Fieber; Hemiptera: Cicadellidae), previously became established in North America following an accidental introduction and now shares tamarisk as a host plant with the beetle. To assess more carefully the potential for interactions between the leafhopper and the beetle as well as their potential to cause synergistic damage to tamarisk, field censuses and cage studies were conducted to determine the phenologies and potential interactions of *O. stactogalus* and *D. carinulata* in western Colorado.

The leafhopper was shown to undergo development through at least three generations per season, whereas the beetle was shown to develop through two generations per season. Variation in *D. carinulata* abundances were not shown to correlate in response to varying *O. stactogalus* abundances and subsequent damage, however individual trees with greatest *D. carinulata* abundances and subsequent defoliation had significantly reduced *O. stactogalus* abundances thereafter. In contrast, *D. carinulata* abundance was not shown to differ strongly in response to *O. stactogalus* damage in the field or in cage experiments. The weak response of the beetle to previous herbivory by the leafhopper may result in synergistic damage to tamarisk. Early analysis of 2010 field data indicates that there may be a correlation between the percent of dead biomass per tree and the amount of damage by leafhoppers previous to defoliation by the beetle.