Tamarisk Beetle Update

Chris Dodge
Introduction

• What is the expansion of the beetle over the last two years

• There is large increase in research and information recently published on the beetle

• What are the effects of the beetle on the LCR and its tributaries so far
The Tamarisk Beetle

Eggs – hatch in 7 days

1<sup>st</sup> and 2<sup>nd</sup> instar larvae
8-13 days

3<sup>rd</sup> instar larvae
feeds for 3-7 days and then enters leaf litter and is inactive for 3-7 days and then is in a pupal stage for 7-10 days

Adult
Live 2-4 weeks after emerging
Tamarisk Beetle

- Adults feed and mate immediately upon emerging in spring or summer
- Adults secrete pheromones to promote mating and grouping
- Females lay eggs every day
- Beetles enter diapause in the fall and burrow into the leaf litter to pass through the winter.
Other Species

• Splendid Tamarisk Weevil (Coniatus splendidula)

• Elm leaf beetle and virbunum leaf beetle are very similar in appearance to the tamarisk beetle.

The Tamarisk Beetle

• There are two species of beetle that are currently of main concern in the western U.S.

• *Diorhabda carinulata*
  – Released in St. George and other parts of Utah and Colorado
  – Spreading into the LCR down from the Virgin River

• *Diorhabda sublimeata*
  – Released in Texas and spreading
Yearly Distribution (2007 - 2014) of Tamarisk Beetle (Diorhabda spp.)

Map funded by: Walton Family Foundation

Beetle Presence Data
- Year 2007
- Year 2008
- Year 2009
- Year 2010
- Year 2011
- Year 2012
- Year 2013
- Year 2014

Beetle presence/absence data provided by more than 50 partners across North America. For a list of data contributors, please visit our website.
How does the beetle affect Tamarisk?

• There is usually a full defoliation event in the first or second year beetles arrive. (Depending on arrival of beetles in first year).

• In subsequent years defoliation and lasting effects have shown variability

• Some trees foliate again and show “poodling”, others show apparent mortality
Beetles effects so far in our region

• In St. George the defoliation pattern is somewhat patchy and variable between years, but is not complete.

• At Mormon Mesa defoliation is mostly complete and lasting with large areas remaining mostly defoliated.
Google Image of the Mormon Mesa Area
Recent Research


- *D. carinulata* has adapted to delay their induction of diapause to allow them to exploit tamarisk habitat further south than originally anticipated.


- Tamarisk stands became drier and hotter after defoliation occurred on the Virgin River. Satellite imagery can be used to track beetle defoliation.

- This book provides a wealth of information about the tamarisk plant

- Articles by Pamela Nagler, Edward Glenn, and James Cleverly discuss and summarize the known research on water use by Tamarisk
  - There is no published results that support increased water use by tamarisk as compared to native riparian vegetation.
  - Water use by all riparian plants can be highly variable and therefore difficult to measure or compare based on one daily value
Wildlife (Quigley 2013)

• Wildlife use of tamarisk is mixed benefiting some species and not others
  – The Arizona Breeding Bird Atlas (Corman and Wise-Gervais 2005) found 76% of low to mid-elevation riparian birds breeding in tamarisk
  – Greater abundance of herpetofauna in mixed stands of tamarisk than in monotypic stands (Bateman et al. 2008, 2009)
  – Small mammals found in tamarisk tend to be generalist species and species richness is generally lower.
Wildlife

• Not all tamarisk stands are the same

• On site conditions can influence the suitability and quality of the habitat provided by salt cedar
Questions?