

# Tamarisk Feeding Invertebrates of the Las Vegas Wash

August 15, 2013

Las Vegas Wash  
Coordination  
Committee



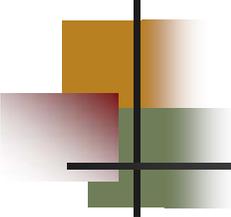
Working to stabilize  
and enhance the  
valuable  
environmental  
resources of the Las



# Tamarisk at the Las Vegas Wash

- Prior to restoration activities beginning in 1999, had over 1500 acres of salt cedar
- Currently there are approximately 142 acres
  - Large portion within construction boundary of future erosion control projects





# Biocontrol

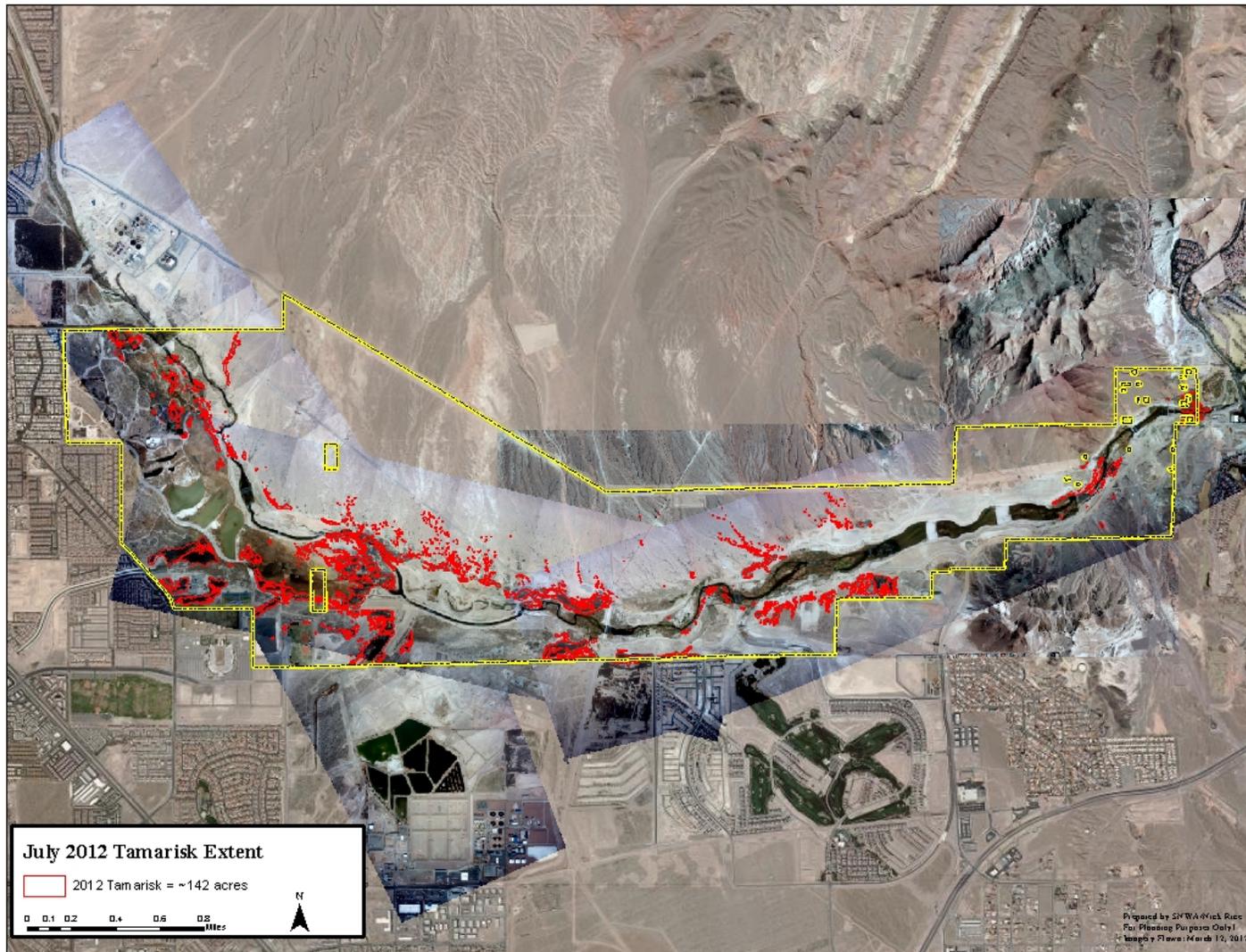
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- Tamarisk Leaf Beetle studied to ensure no harm to non-targets 1992-2001
- Released near St. George in 2006
  - By County agency without USDA approval
- Concern that defoliation impacting native species habitat

Virgin River Valley 2010 -  
Before Biocontrol (June 1)  
and After (June 20)



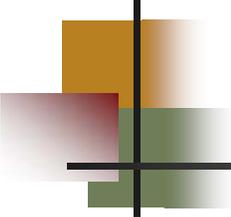
# Tamarisk along Las Vegas Wash - July 2012



# Invertebrates of LV Wash

- Very few studies
  - Benthic macroinvertebrates sampled annually since 2000
  - Wiesenborn 2005
    - First survey of terrestrial invertebrates
  - Nelson 2009
    - Compared restored areas to non-native
  - Eckberg and Foster 2011
    - Annual inventory report





# Known Tamarisk Feeders

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- Armored scale (*Chionaspis* sp.)
- Tamarisk leafhopper (*Opsius stactogalus*)
- Splendid tamarisk weevil (*Coniatus splendidulus*)
- Tamarisk leaf beetle (*Diorhabda carinulata*)

# Armored Scale (*Chionaspis* sp.)



# Tamarisk Leafhopper (*Opsius stactogalus*)



WEEVIL

(*Coniatus  
splendidulus*)



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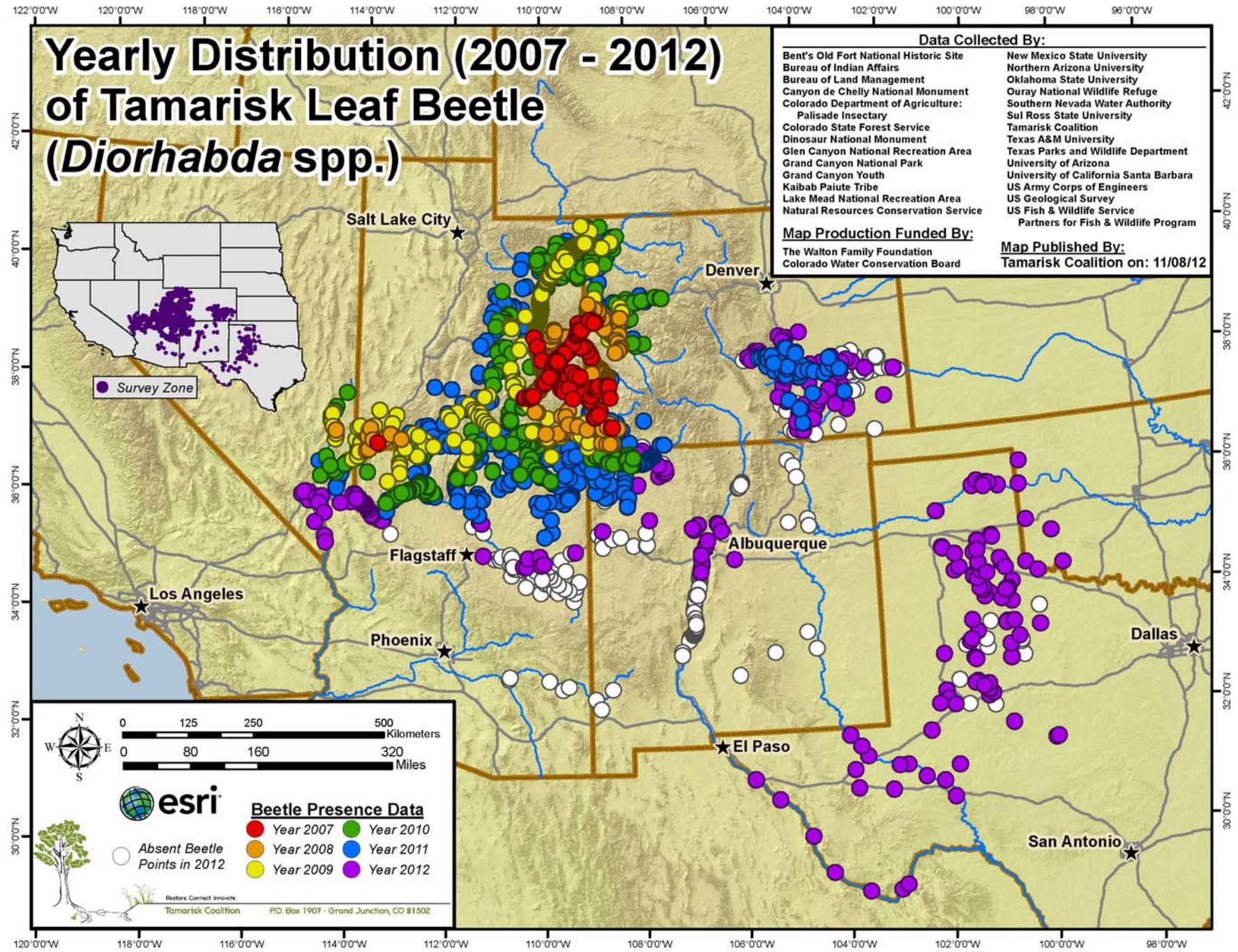
TAMARISK LEAF BEETLE  
(*Diorhabda carinulata*)



1 AMARISK LEAF BEETLE  
(*Diorhabda carinulata*)



# Yearly Distribution (2007 - 2012) of Tamarisk Leaf Beetle (*Diorhabda* spp.)



**Data Collected By:**

Bent's Old Fort National Historic Site	New Mexico State University
Bureau of Indian Affairs	Northern Arizona University
Bureau of Land Management	Oklahoma State University
Canyon de Chelly National Monument	Ouray National Wildlife Refuge
Colorado Department of Agriculture:	Southern Nevada Water Authority
Palisade Insectary	Sul Ross State University
Colorado State Forest Service	Tamarisk Coalition
Dinosaur National Monument	Texas A&M University
Glen Canyon National Recreation Area	Texas Parks and Wildlife Department
Grand Canyon National Park	University of Arizona
Grand Canyon Youth	University of California Santa Barbara
Kaibab Paiute Tribe	US Army Corps of Engineers
Lake Mead National Recreation Area	US Geological Survey
Natural Resources Conservation Service	US Fish & Wildlife Service
	Partners for Fish & Wildlife Program

**Map Production Funded By:**  
The Walton Family Foundation  
Colorado Water Conservation Board

**Map Published By:**  
Tamarisk Coalition on: 11/08/12

0 125 250 500 Kilometers  
0 80 160 320 Miles

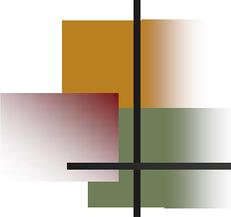
**esri**

**Beetle Presence Data**

● Year 2007	● Year 2010
● Year 2008	● Year 2011
● Year 2009	● Year 2012

○ Absent Beetle Points in 2012

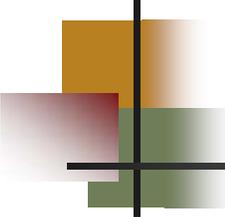
Restore Connect Innovate  
Tamarisk Coalition P.O. Box 1907 - Grand Junction, CO 81502



# Research Questions

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- What is the current distribution of known tamarisk feeders along the Wash?
- Is their population increasing or decreasing?
- What impact will the arrival of the tamarisk leaf beetle have on existing species?



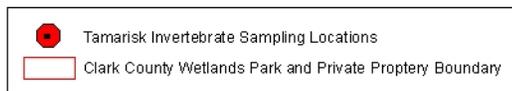
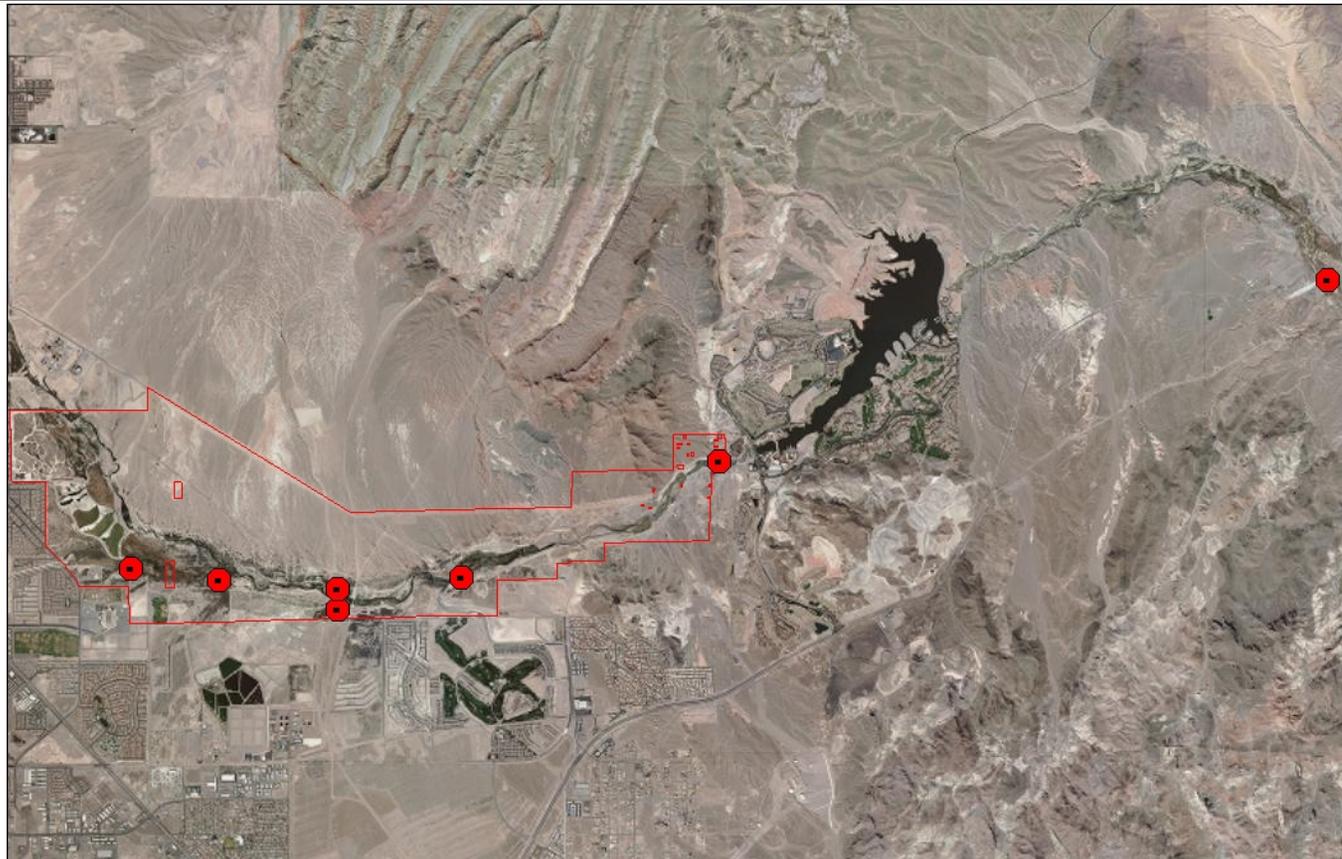
# Methods

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- Follow current Tamarisk Coalition procedures for sampling
  - Allows for data sharing
- Seven locations along the Wash
  - 25 sweeps per location - 5 sweeps spaced 5 m apart with 38 cm sweep net
- Sampling Schedule
  - May, July, September - 2011



# Sampling Locations



For planning purposes only  
Prepared by the Southern Nevada Water Authority  
Aerial Image taken July, 2010

# Las Vegas Bay



# Bostick Weir

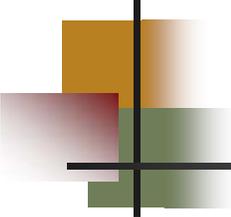


# Pabco Road Weir



# Results - start counting!



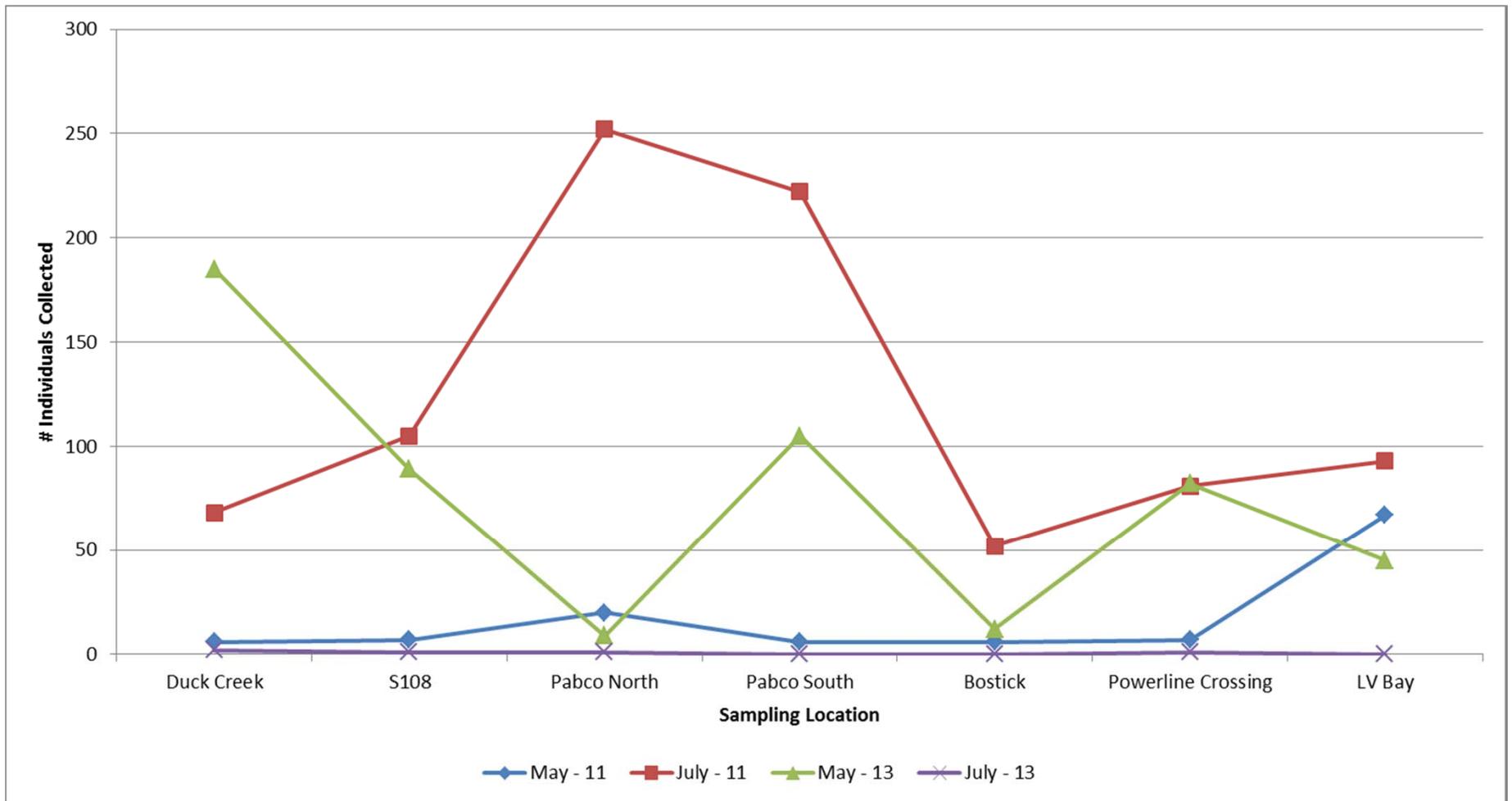


# Results

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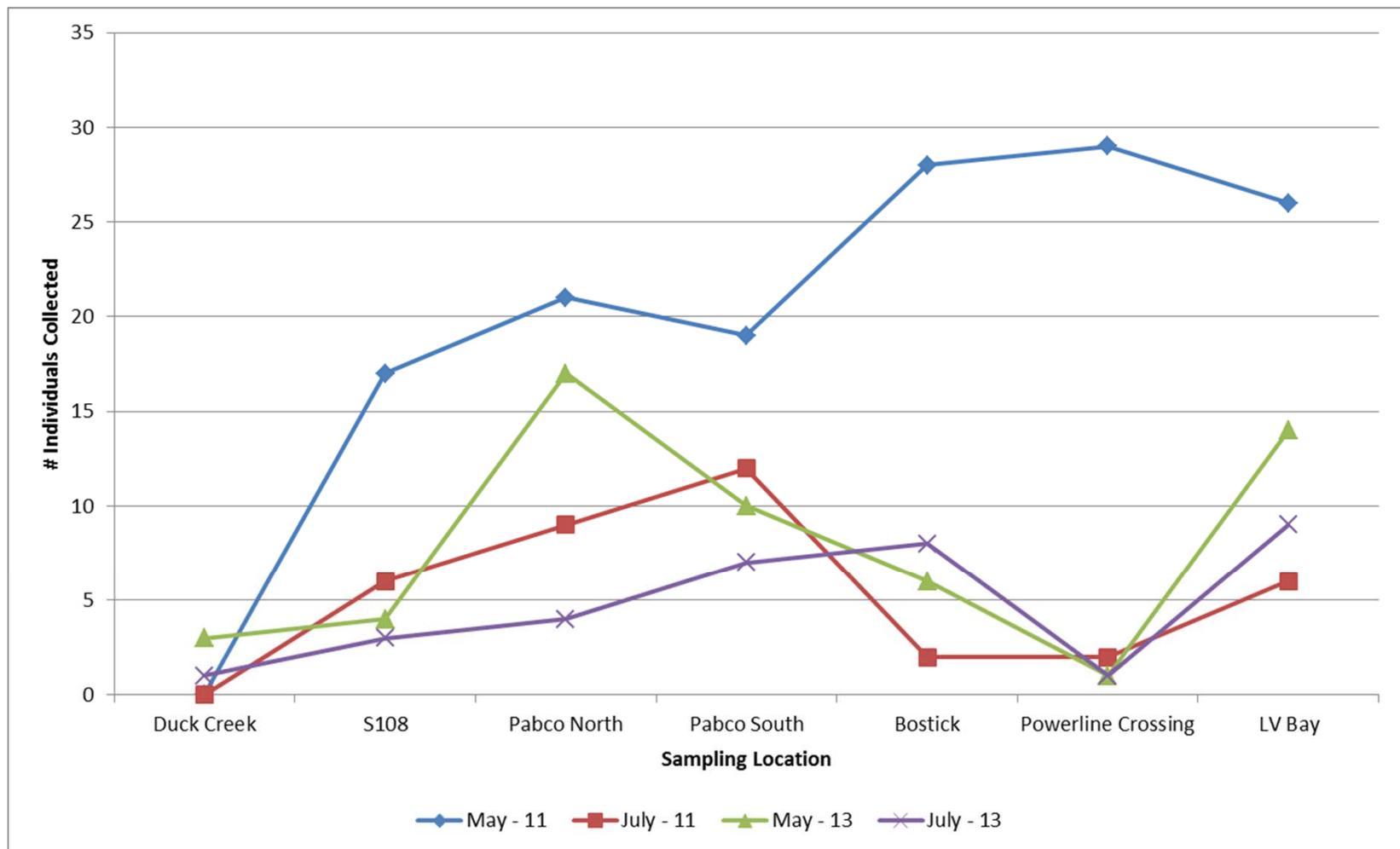
- Tamarisk leaf beetle
  - First detected June 2012
- Leafhopper and Weevil found in all sampling locations
  - Potential seasonal and geographical patterns
- Defoliation
  - Less than 10% at any point in 2011

# Tamarisk Leafhopper May/July - 2011-2013

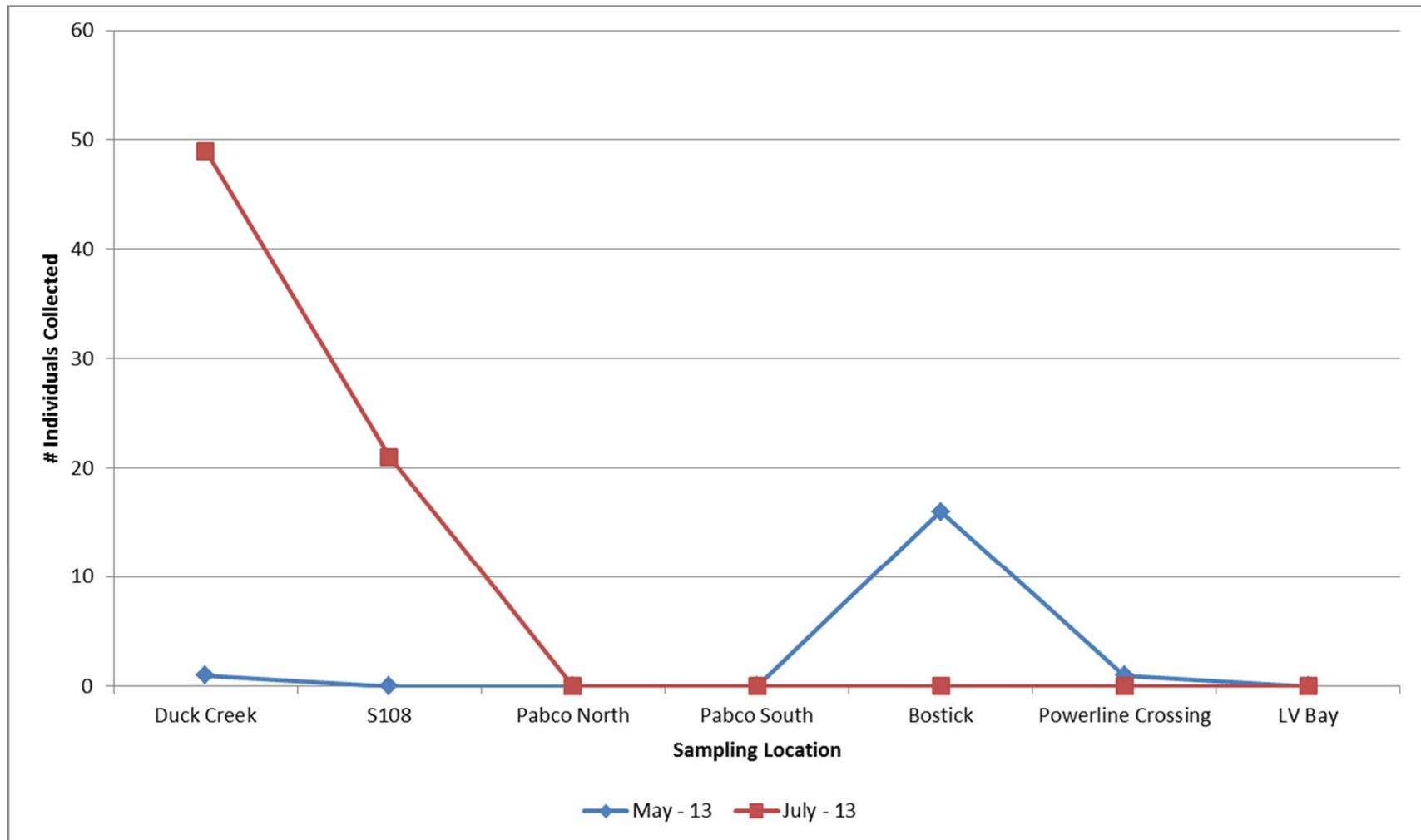


# Splendid Tamarisk Weevil

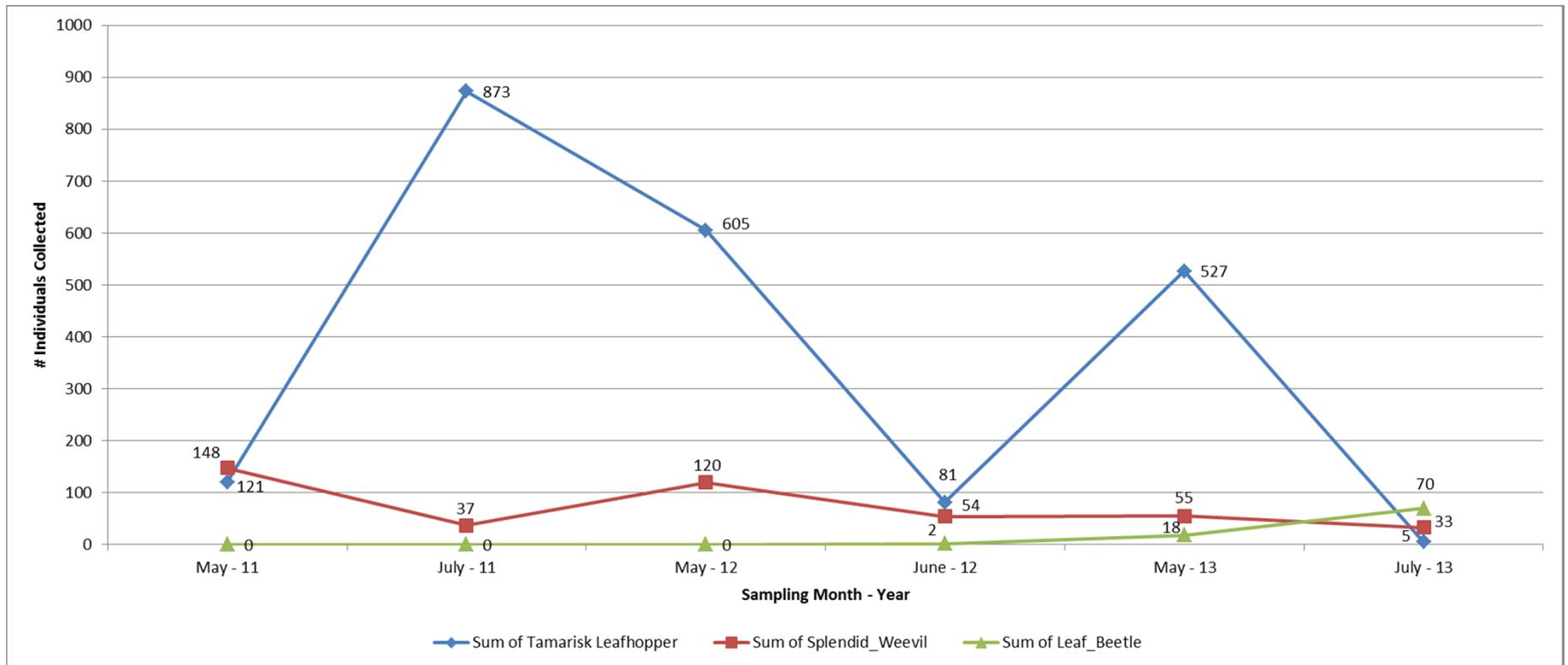
## May/July 2011-2013



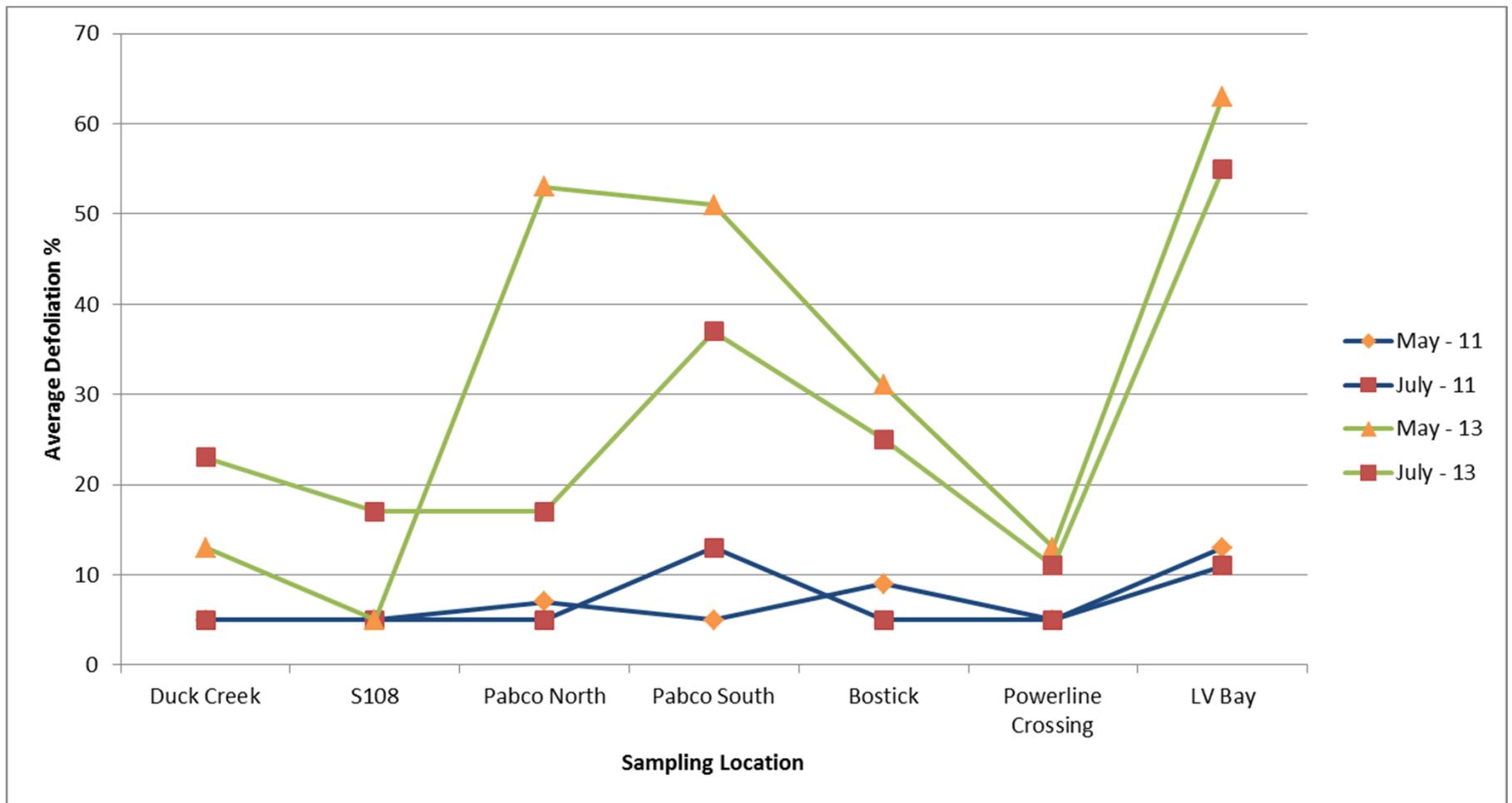
# Tamarisk Leaf Beetle May/July 2013



# Abundance All Species May/July 2011-2013



# Defoliation May/July 2011-2013



**20-30%  
Defoliated  
Tamarisk**

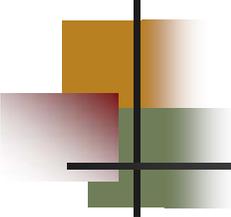


**60-70%  
Defoliated  
Tamarisk**



# Preliminary Conclusions

- Weevil arrived at Wash between 2004 and 2010
  - Currently at high numbers and impacting tamarisk
- Potential temperature/seasonal pattern to leafhopper and weevil abundance
- First leaf beetle larvae identified May 2013



# Upcoming...

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- Follow-up surveys should indicate how species interact
  - What will be the ultimate impact on tamarisk
  - As beetle abundance increase will other tamarisk feeders decrease?
- Annual surveys will inform us on how defoliation/revegetation

# Questions?



Las Vegas Wash  
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[www.lvwash.org](http://www.lvwash.org)

[TomMyersPhoto.com](http://TomMyersPhoto.com)