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Managing Water in the West

Southwestern Willow Flycatcher Habitat Use and the Arrival of the Tamarisk Beetle on the Middle Rio Grande

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Bureau of Reclamation

Southwestern Willow Flycatcher

- Endangered sub-species of Willow Flycatcher
- Breeding season ~ mid-May – late July
- Open cup nests in dense riparian vegetation

Credit: Sogge et al.

Photo: Shannon Caruso

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Tamarisk Beetle (*Diorhabda* spp.)

- Introduced tamarisk biocontrol agent
- 4 beetle species introduced in multiple locations
- Rapid range expansion

Credit: Robert D. Richard

Credit: Eric Coombs

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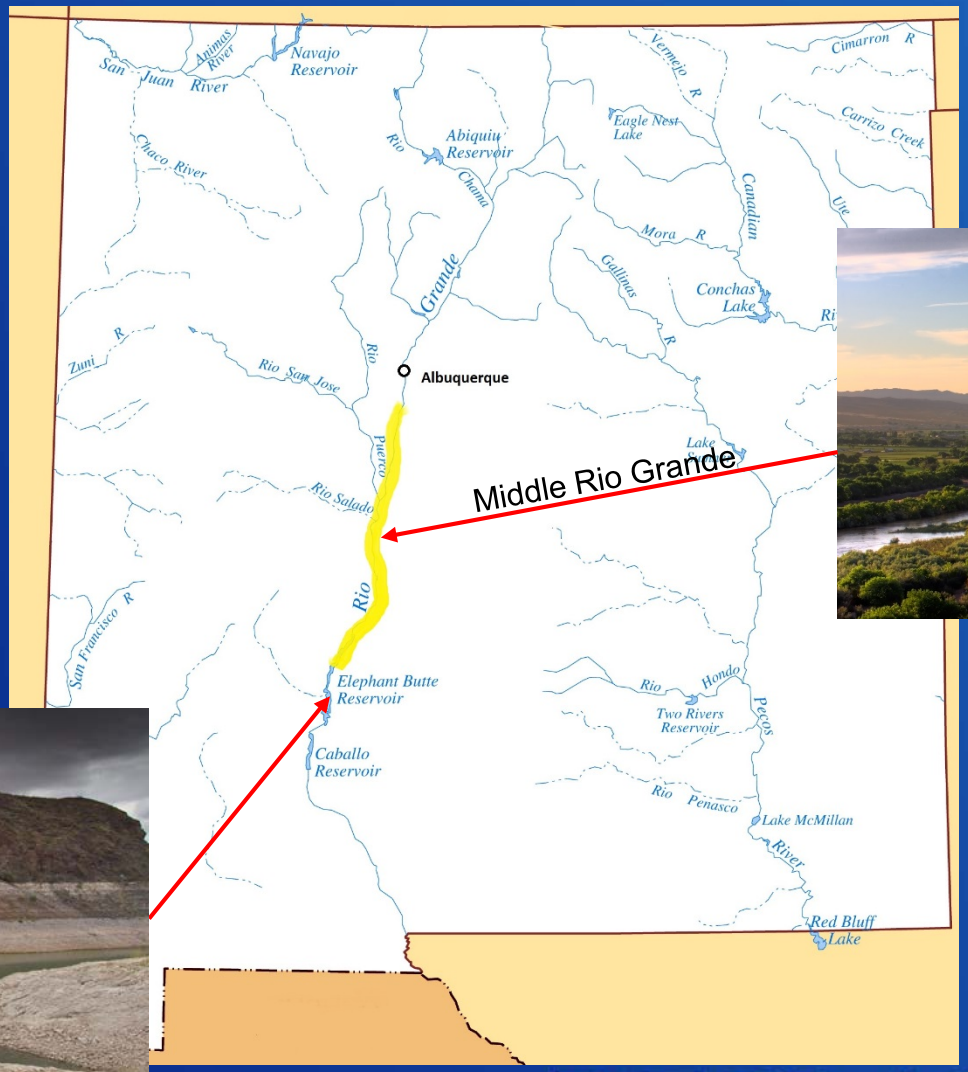
Study System



Elephant Butte Reservoir

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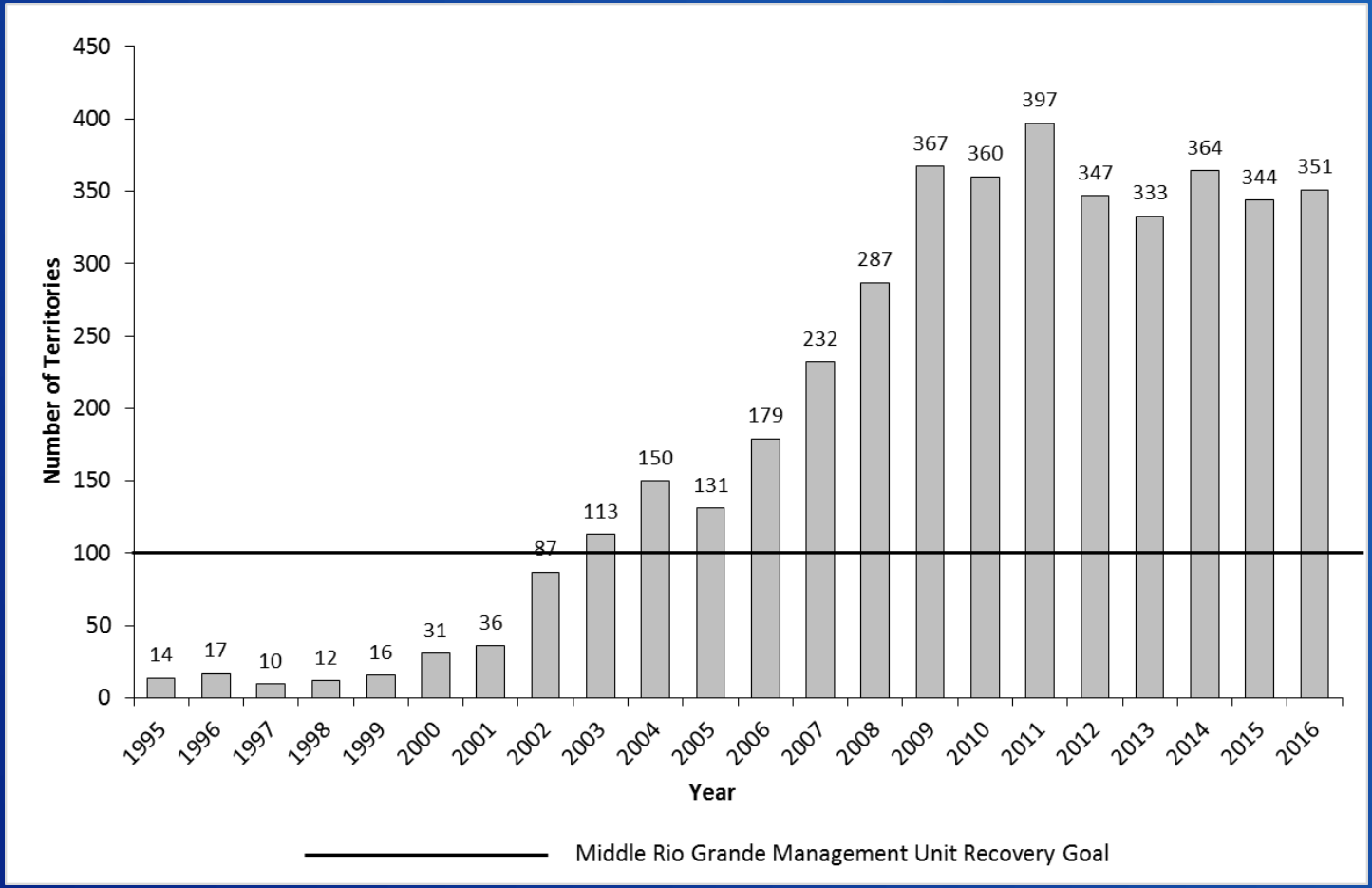
Middle Rio Grande: Among Largest Known SWFL Populations



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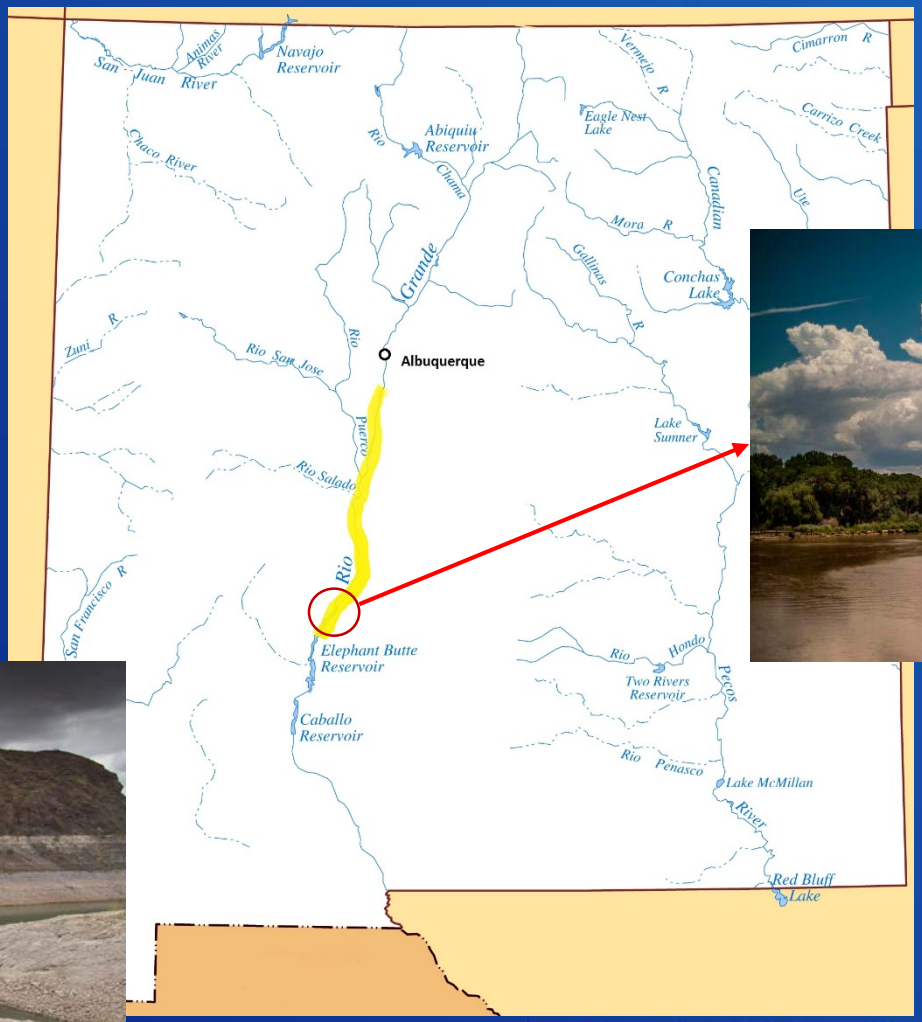
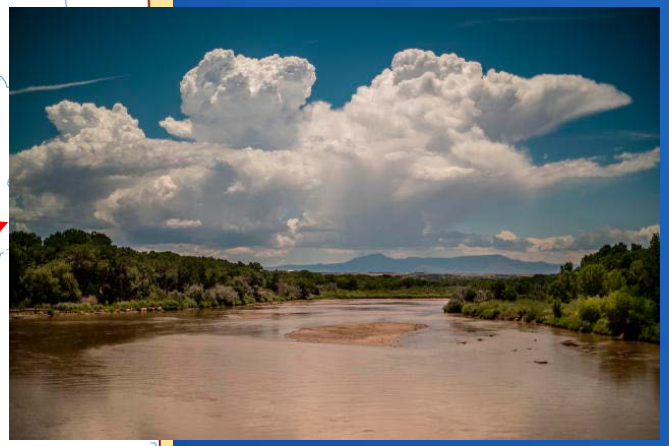
Receded Elephant Butte Reservoir Supports Highest SWFL Concentration





Elephant Butte Reservoir

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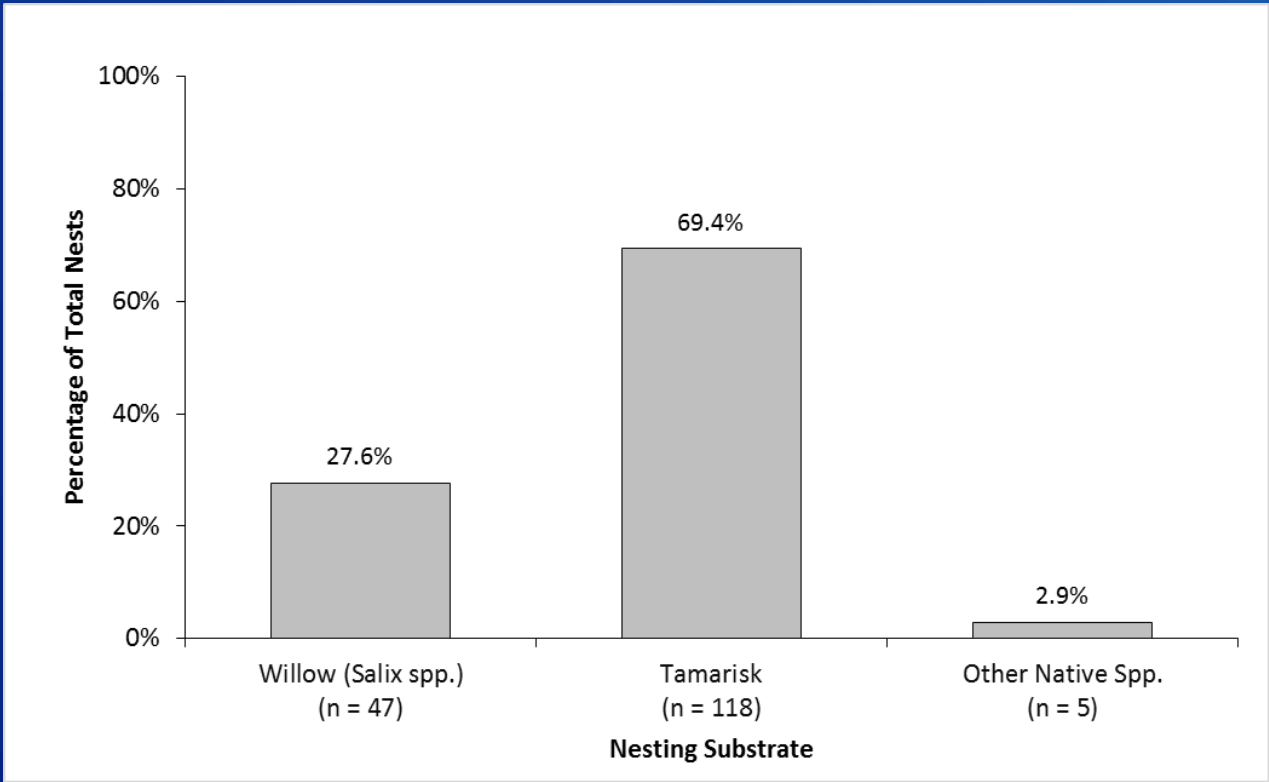
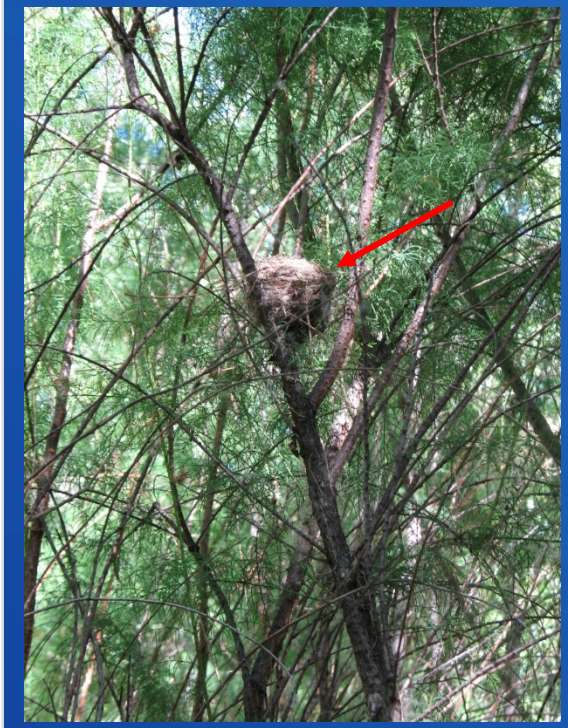
Majority of Elephant Butte SWFLs Nest in Tamarisk (2016)





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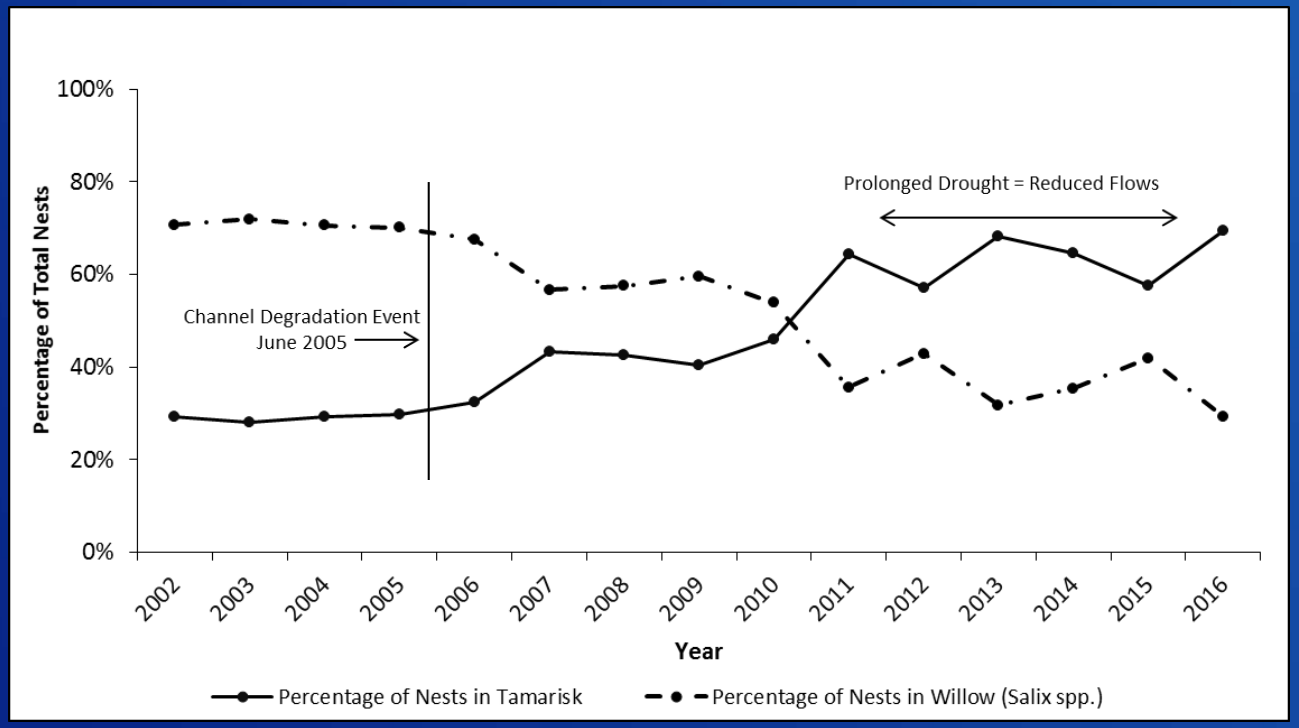
Use of Tamarisk for Nesting Has Increased Over Time



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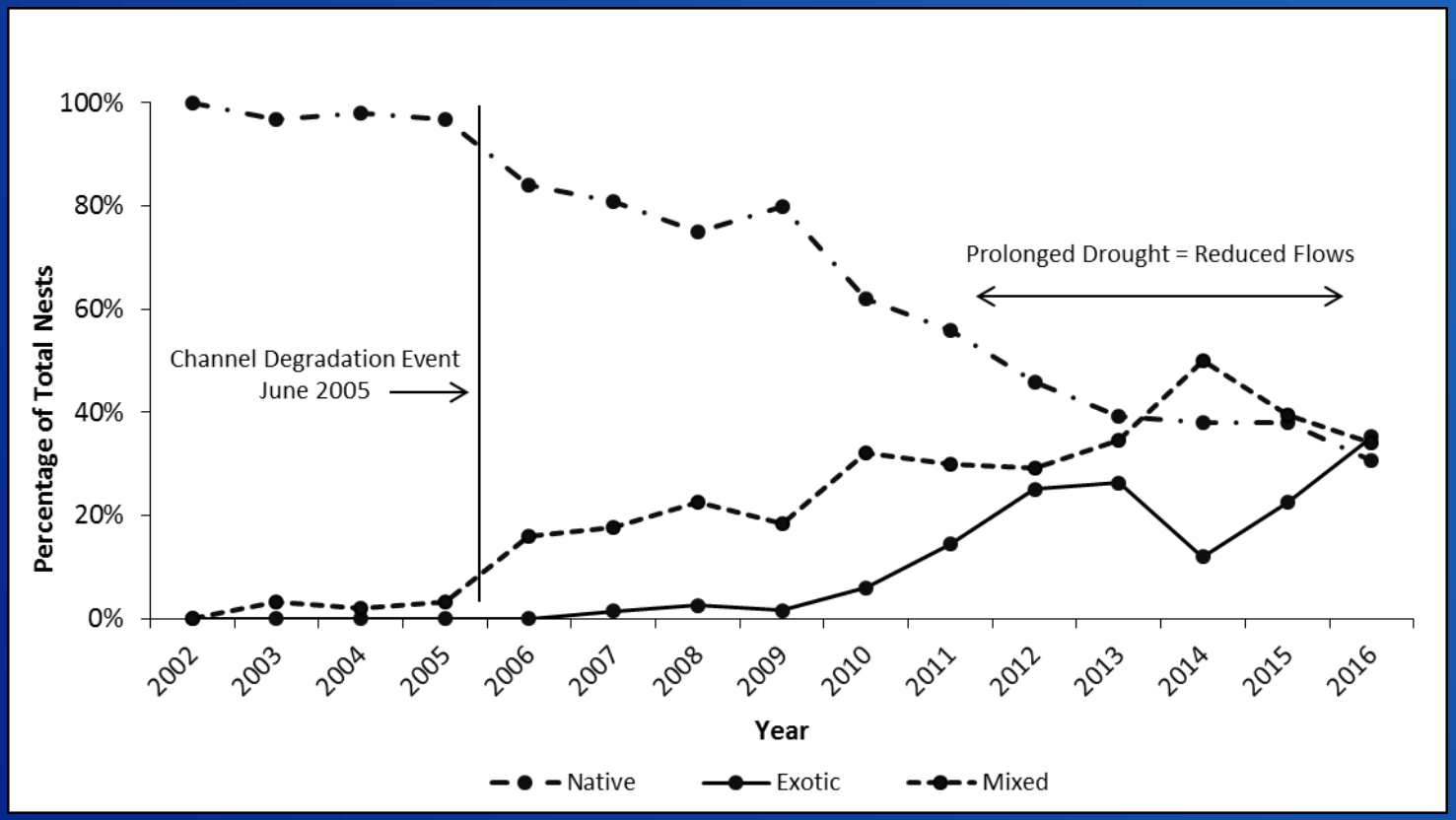
Tamarisk Dominance of Breeding Territories Has Increased Over Time



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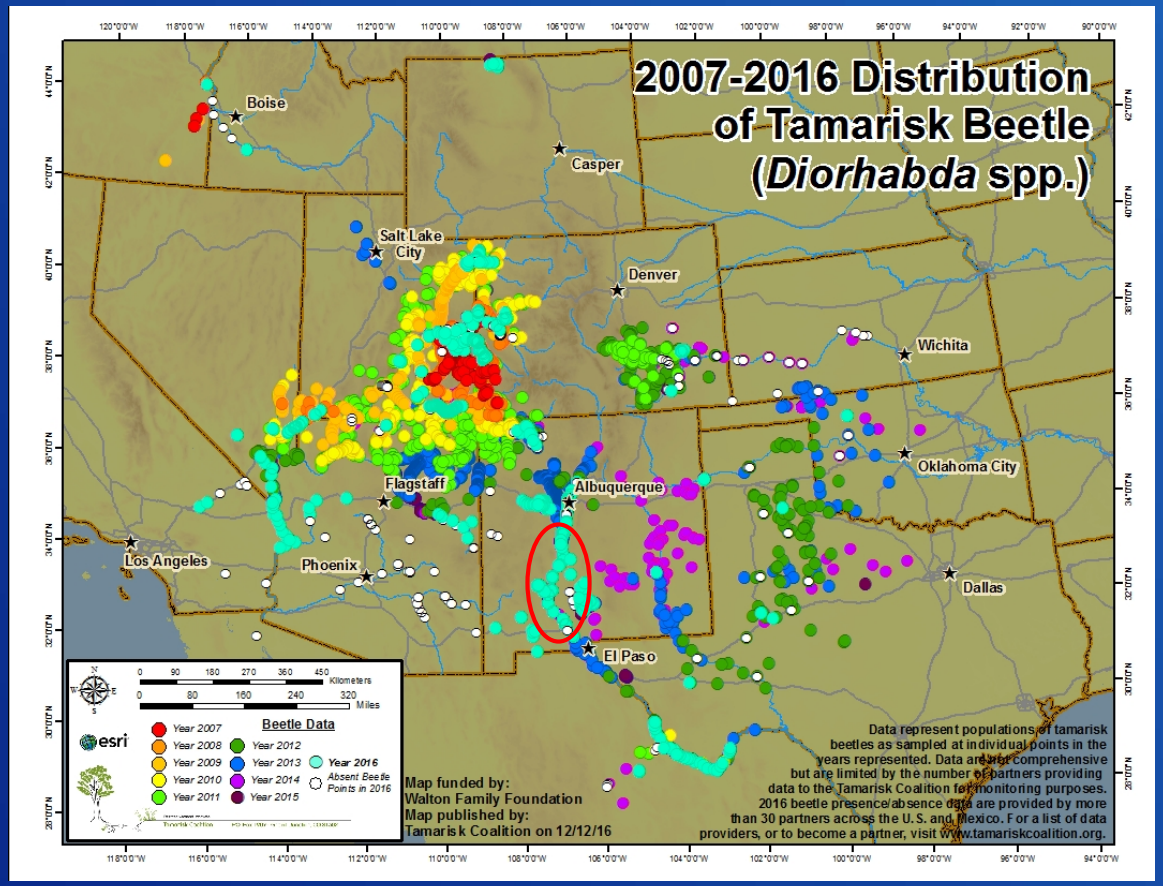
Tamarisk Beetle Expanded Throughout Rio Grande From 2014 - 2016



Map Credit: Tamarisk Coalition

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Photographic Monitoring of Tamarisk Defoliation

- **Goal: Quantify beetle-induced changes in canopy cover and vegetation community composition in SWFL territories**

- **Canopy Cover: Hemispherical photos**
- **Vegetation Composition: Landscape photos**

*****Only detected tamarisk beetle at 1 location**

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Landscape Photography

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Hemispherical Photography

22 June 2015

8 June 2016

30 July 2016

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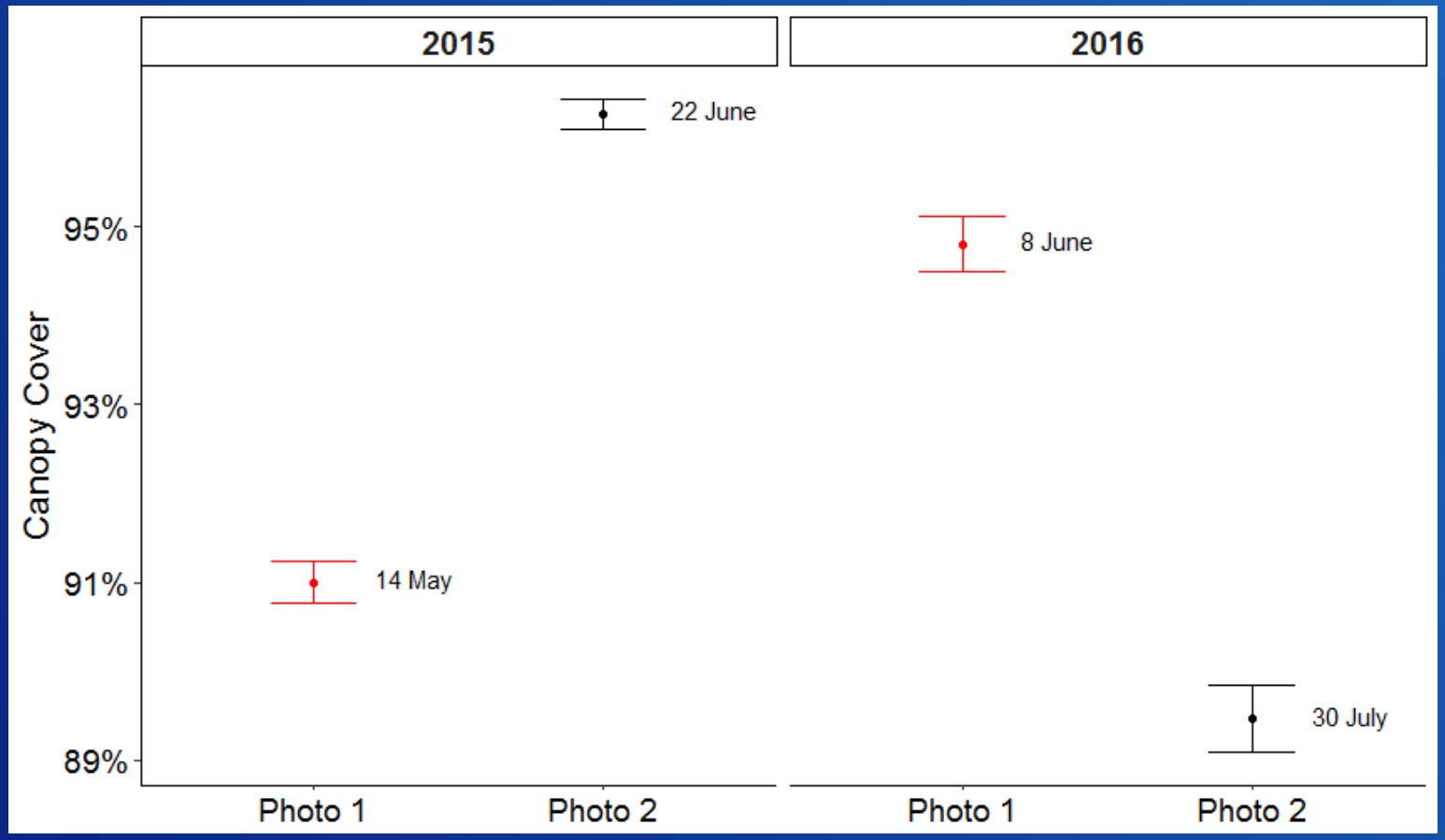
Canopy Cover Declined by Late July Where Tamarisk Beetle Present



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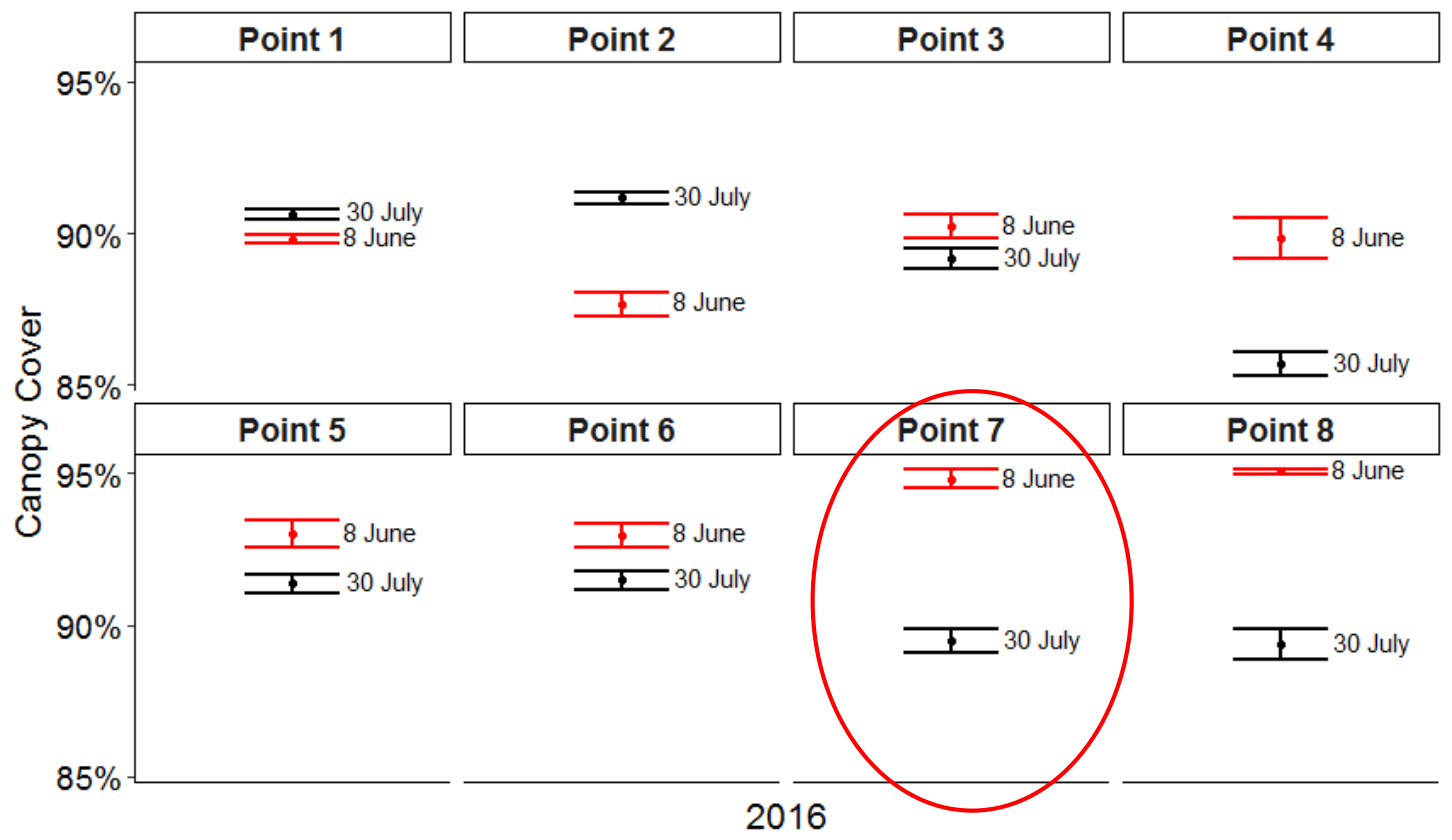
But….Canopy Cover Declined by Late July At Most Locations



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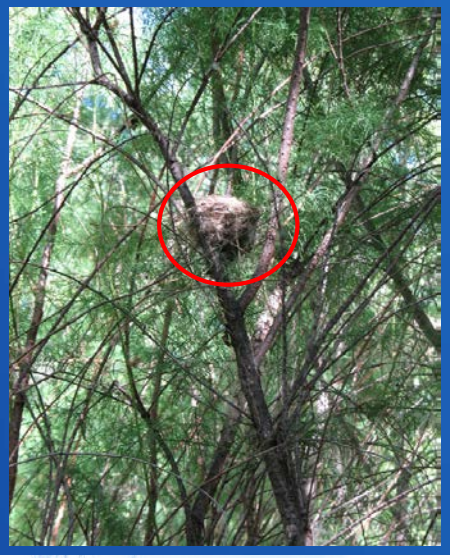
Is the Tamarisk Beetle Impacting Vegetation or Not?

- **Seasonal decline in canopy cover is natural**



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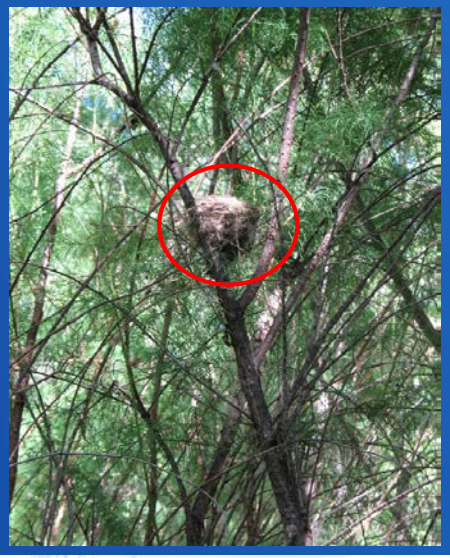
Is the Tamarisk Beetle Impacting Vegetation or Not?

- Seasonal decline in canopy cover is natural
- Severity of defoliation will likely increase



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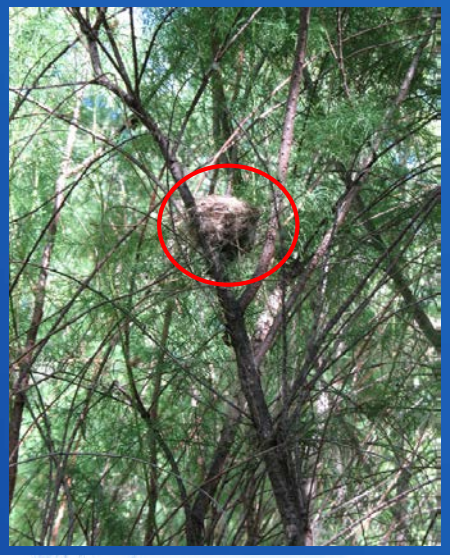
Is the Tamarisk Beetle Impacting Vegetation or Not?

- Seasonal decline in canopy cover is natural
- Severity of defoliation will likely increase
- **Changes in canopy cover vs. vegetation composition**



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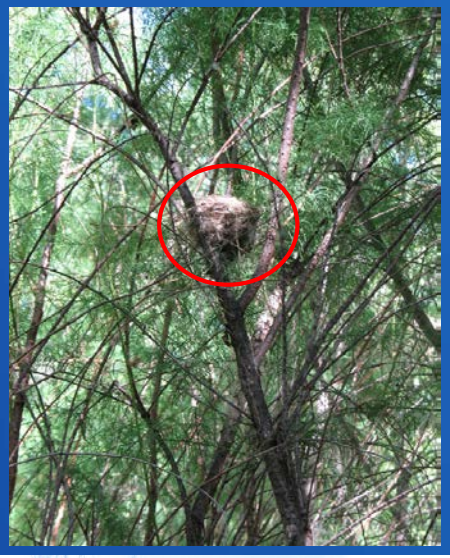

- Seasonal decline in canopy cover is natural
- Severity of defoliation will likely increase
- Changes in canopy cover vs. vegetation composition

***Even a small decrease in canopy cover can drastically impact SWFLs

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Summary

- 1st year of defoliation
- Severe defoliation late in breeding season
- Increased tamarisk dominance
- Speed of beetle spread & defoliation matters

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