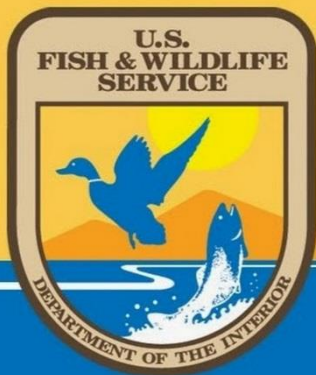


# Southwestern Willow Flycatcher Status, Threats Caused by Beetles, and Restoration

Vicky  
Ryan  
USFWS



Photo source: USGS

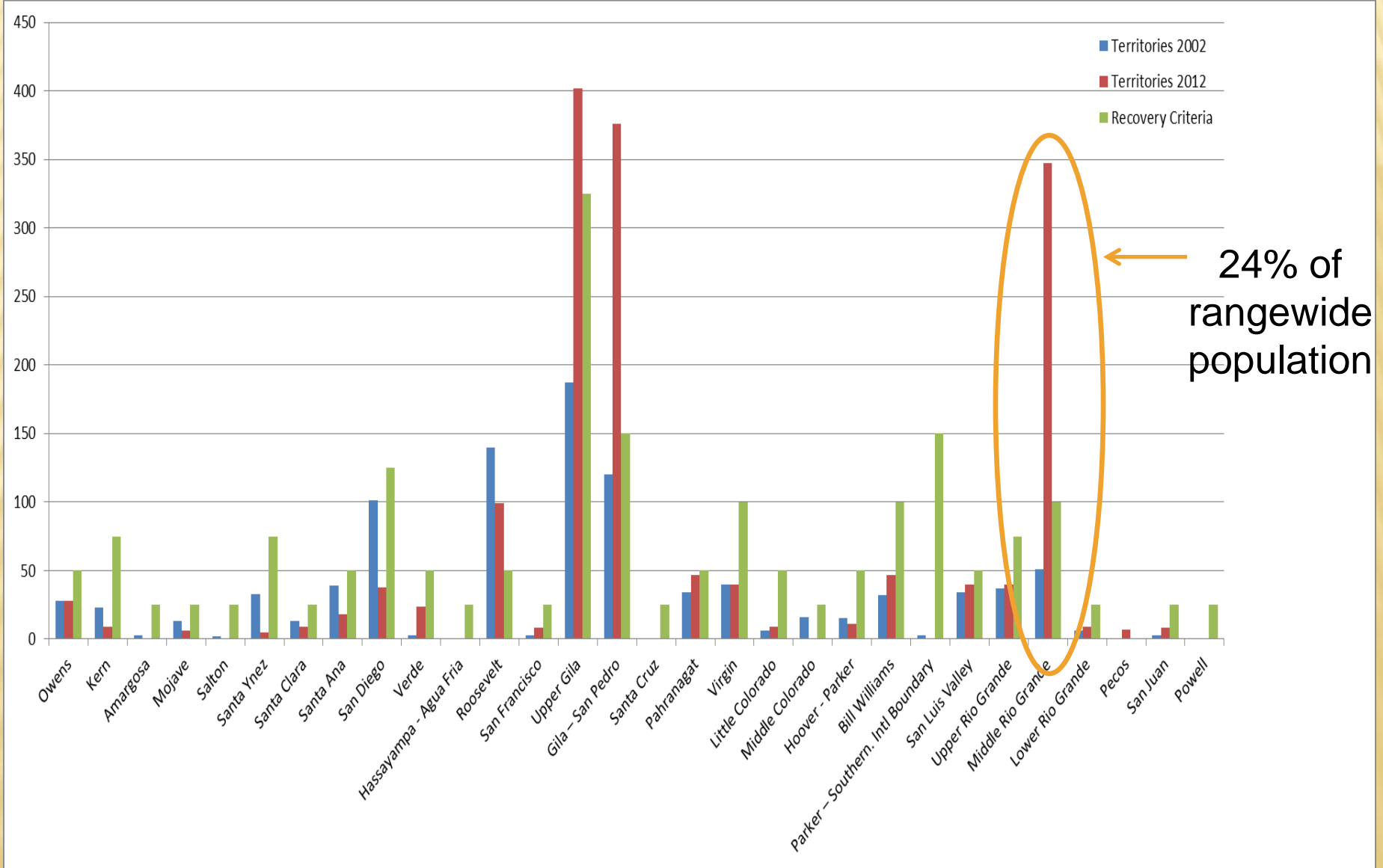


# Status

- Federally listed as endangered February 27, 1995
- Critical habitat designated in 1997, updated in 2013

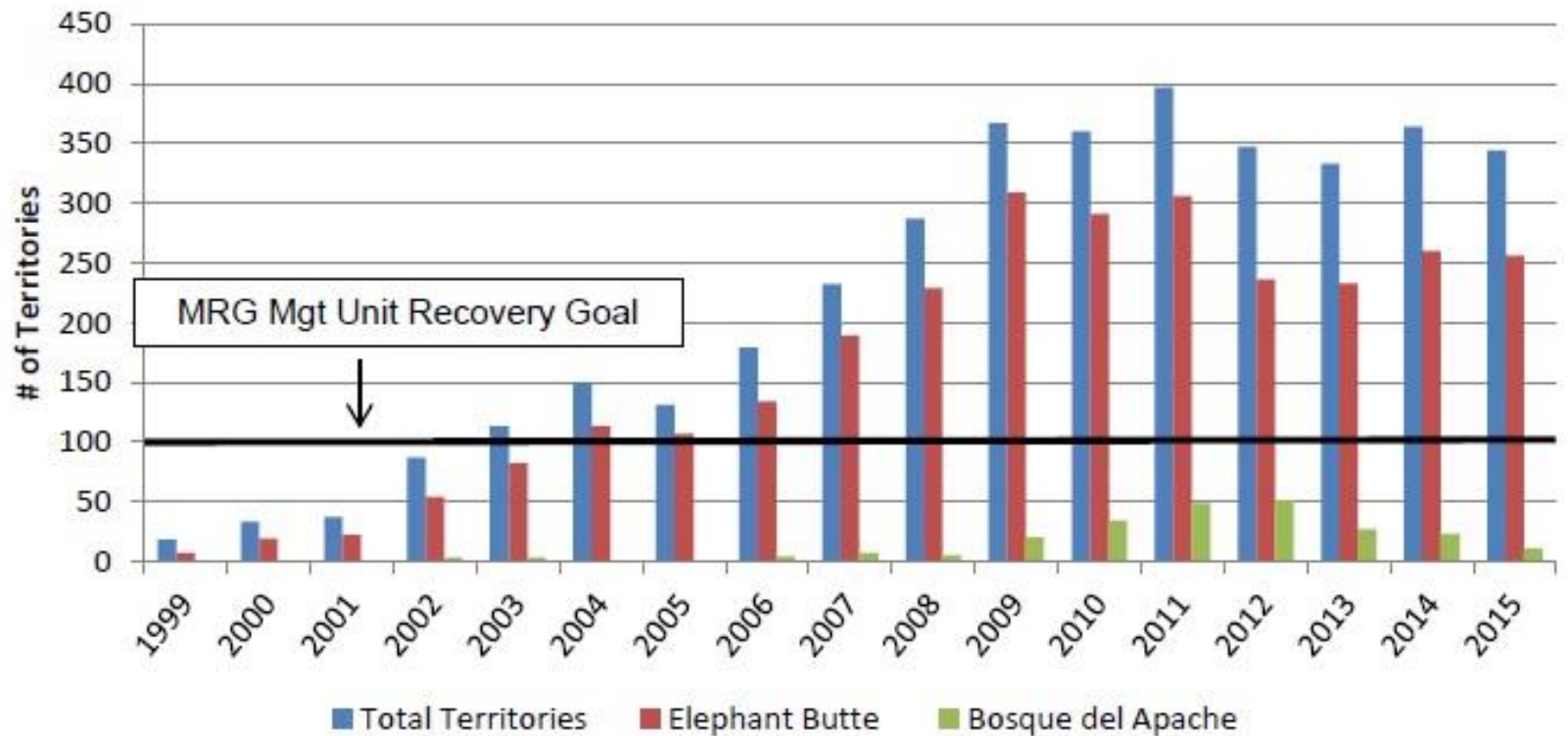


# Status – Rangewide Population



# Flycatcher Population in MRG

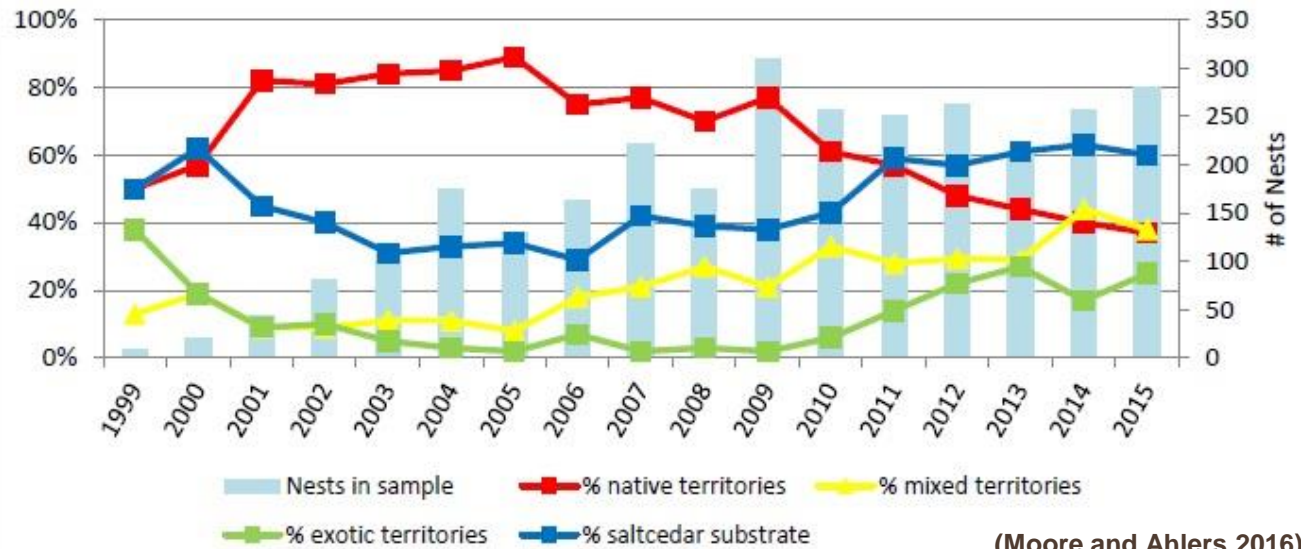
## SWFL Territories in Reclamation Surveyed Sites 1999 to 2015



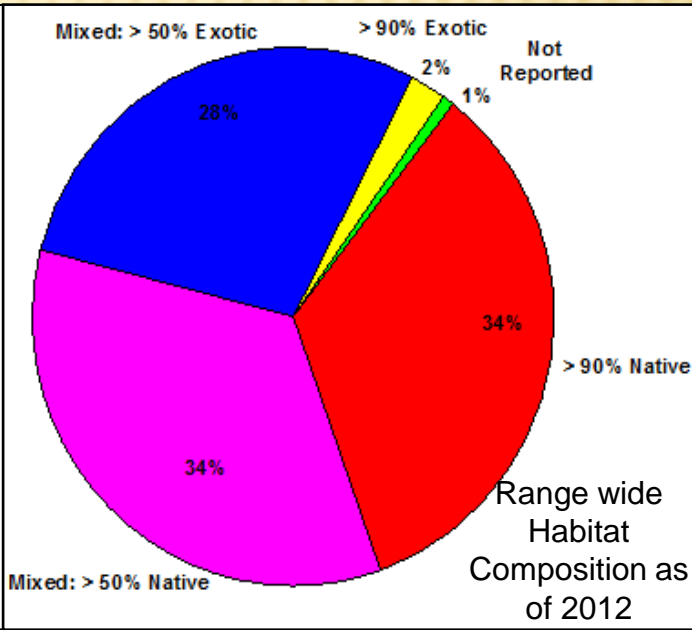
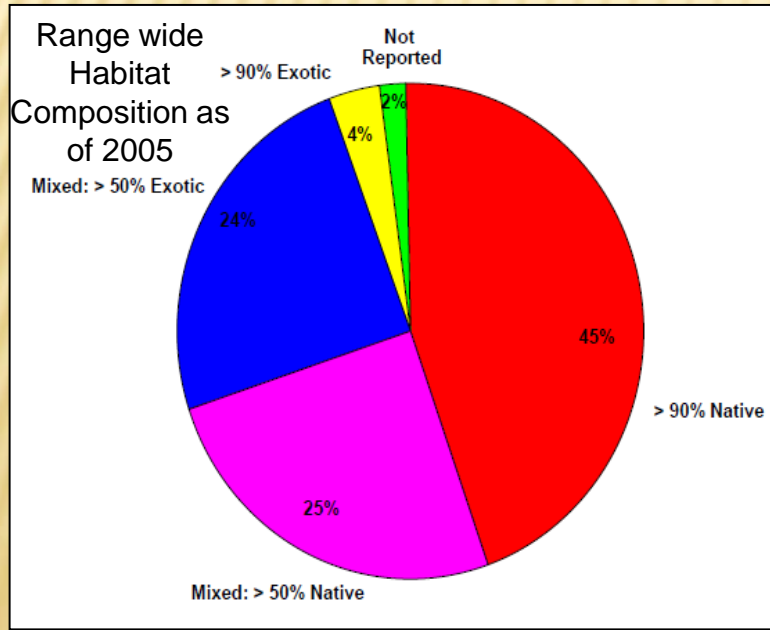
(Moore and Ahlers 2016)

# Changes in Composition of Flycatcher Nesting Habitat

## Habitat Associations and Nest Substrate of Breeding SWFLs within the Middle Rio Grande - 1999 to 2015



(Moore and Ahlers 2016)



# Saltcedar Persists Largely Due To Landscape Changes

Water and Land Management Actions such as:

- ✘ Damming
- ✘ Water storage
- ✘ Timing of water/dam releases
- ✘ Levees
- ✘ Groundwater pumping
- ✘ River diversion
- ✘ Grazing in riparian areas
- ✘ Waste water and ag. return
- ✘ Climate change/drought



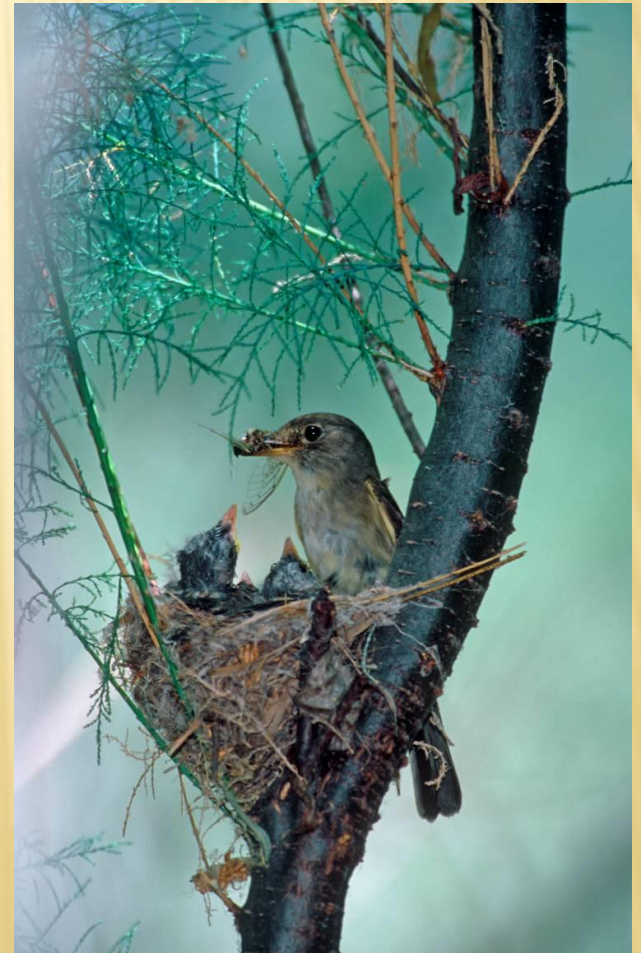
# Flycatcher Comparative Study

In central Arizona, there was no difference comparing flycatcher

- a. Breeding success
- b. Survival
- c. Physiological condition
- d. Prey abundance

Nesting in native v. tamarisk habitats

(Sogge et al. 2006)



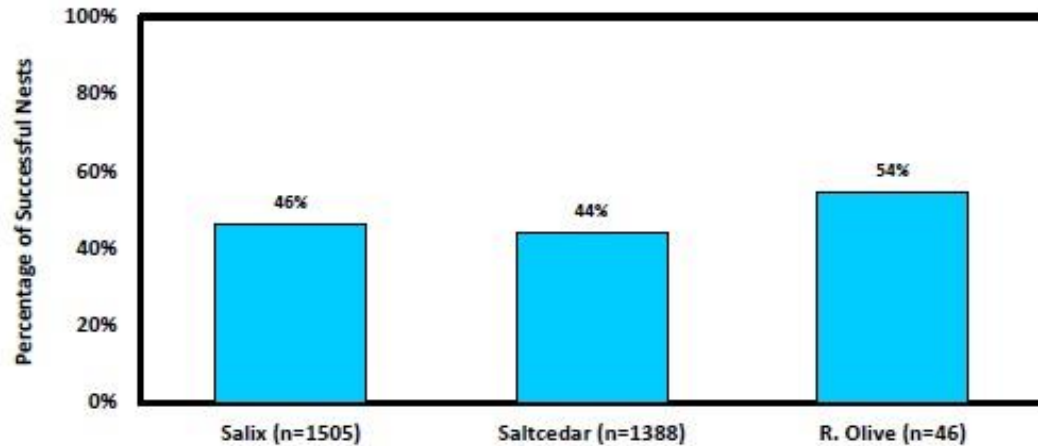
Paul Zimmerman

# Flycatcher Native vs Exotic Comparison MRG

Nest Success vs. Nest Substrate

1999-2015

(n=2950)

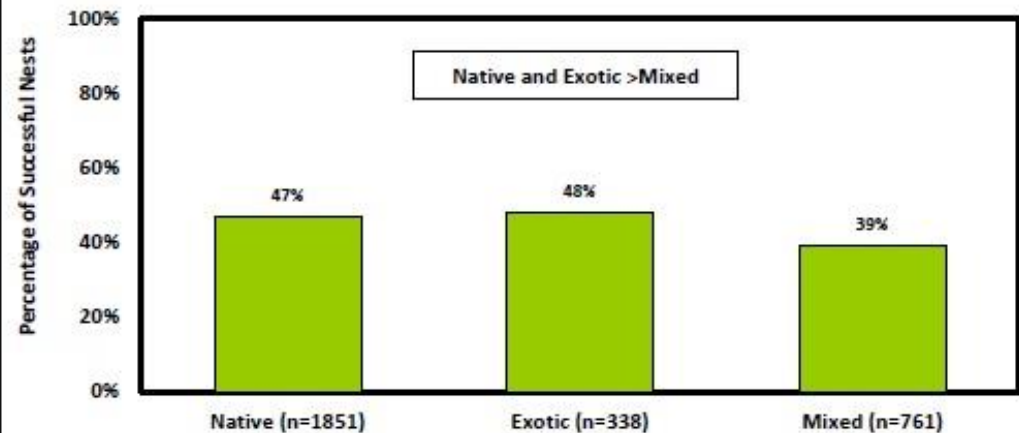


Chi-square, alpha=0.05, P=0.18, Df=2,  $\chi^2=3.43$

Nest Success vs. Territory Dominance

1999-2015

(n=2950)



Chi-square, alpha=0.05, P<0.01, Df=2,  $\chi^2=15.76$



# Habitat Restoration is more Complicated than one would think...

- ✘ Rivers have been dramatically altered
- ✘ Tamarisk is better adapted to changes
- ✘ Water management is not likely going to change
- ✘ Rivers are a dynamic system and can remove plantings overnight
- ✘ Groundwater elevation and soils are critical
- ✘ Measures to counter existing landscape conditions are costly and may have to persist indefinitely.
- ✘ Mixture of native and exotic may be best to hope...  
eliminating tamarisk unreasonable
- ✘ Few documented restoration projects since listing  
that have resulted in creating nesting flycatcher habitat



# HR is Complicated Cont....

Tamarisk dominated woodlands are important to riparian dependent wildlife where native habitat can no longer thrive.

Tamarisk control and restoration projects that do not produce higher quality native riparian woodland habitat are likely to result in a net loss for riparian dependent wildlife.



# ....and now for even more complications!

- ✘ Beetles may take 5+ years to lead to mortality of tamarisk, but mortality rate varies widely.
- ✘ Tamarisk defoliation cycles are increased, occurring during nesting season for many birds.
- ✘ Belief that the more frequent defoliation cycles may exacerbate fire risk (at least in the short term) by increasing leaf litter, and change soil chemistry to favor other exotics.



# How Beetles Impact Birds

Beetles and associated defoliation can impact birds by altering:

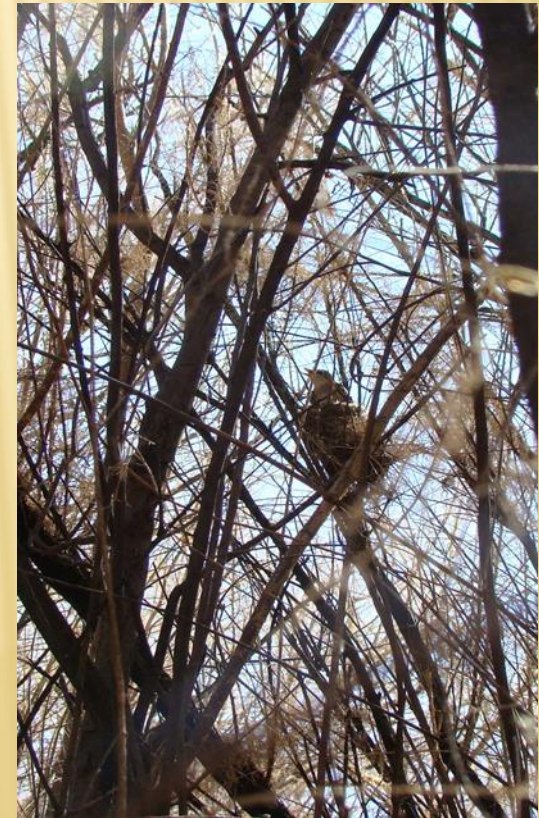
- Arthropod prey availability;
- Reproduction; and
- Suitable habitat availability.



# Alteration of Reproduction

Beetles are most abundant and defoliation of tamarisk trees is typically most prevalent in midsummer (when birds are nesting)

- Loss of foliar cover can reduce nest success by:
  - Increasing nest abandonment;
  - Increasing nest predation; and
  - Decreasing ability of eggs and young to effectively thermoregulate.

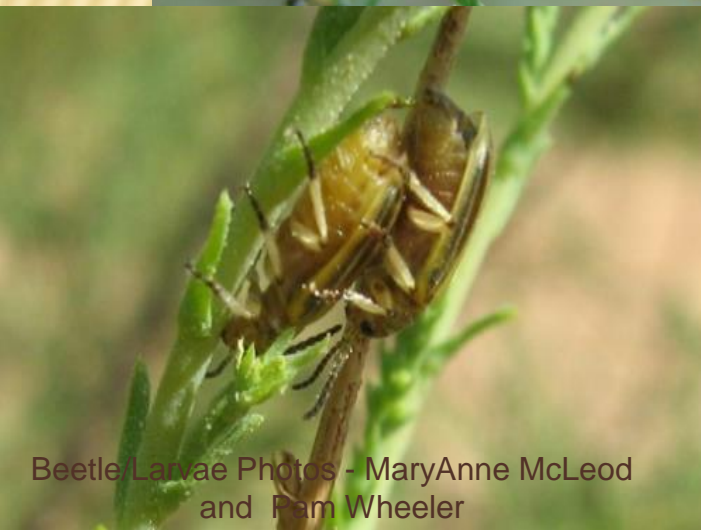


# Alteration of Habitat

Beetle-infested tamarisk vegetation acts as an ecological trap:

- Birds find thick tamarisk vegetation which appears suitable for nesting, establish territories, and nesting activity
  - By mid-summer, the beetle-infested tamarisk vegetation is no longer suitable resulting in decreased nesting success by birds
  - Tamarisk recovers from defoliation for several years, appearing suitable to nesting bird each year they refoliate, resulting in multiple years of reduced nest success (especially birds like flycatchers with site fidelity)
- 
- Ecological traps = could result in extirpation of locally breeding birds
  - Large expanses of beetle-infested tamarisk could make portions or entire drainages unsuitable.

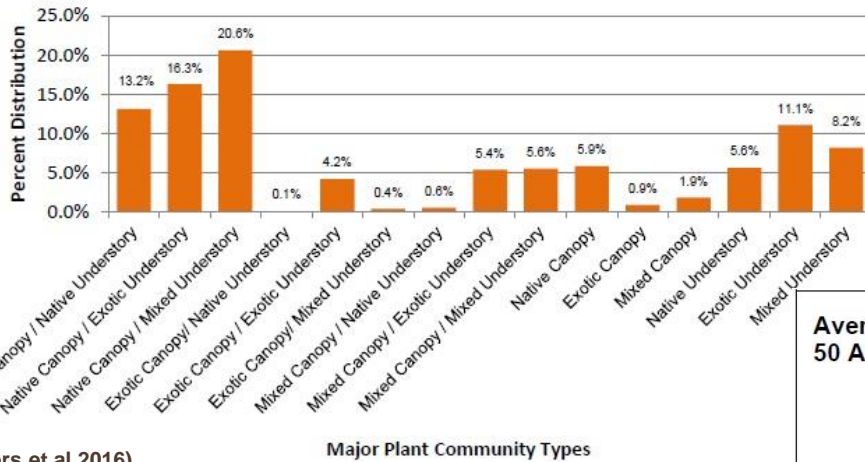
# Tamarisk Leaf Beetles – Solution to: Restoring Native Trees, Reducing Tamarisk, Both, Neither, or....?



# Added Bonus Round of Complication: Cuckoos!

## YBCU Detection Distribution

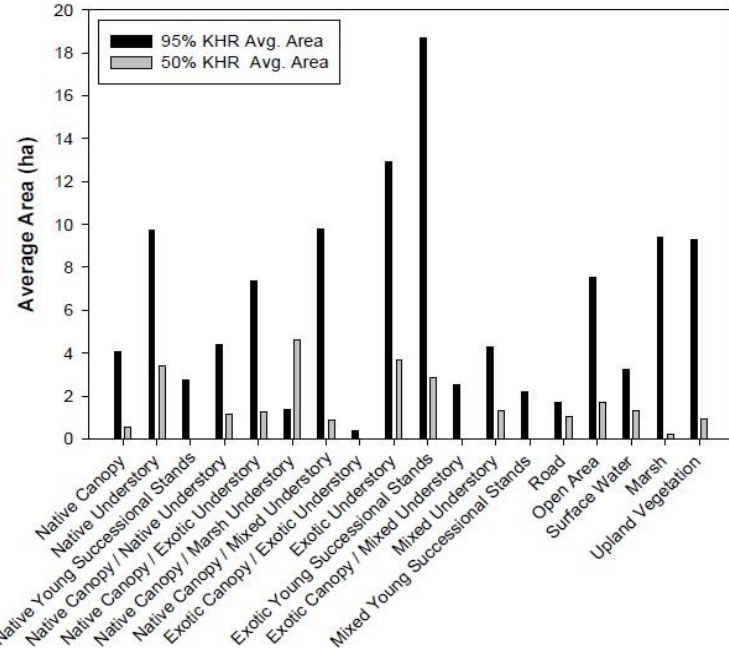
2009-2015  
(n = 2304)



(Ahlers et al 2016)

Major Plant Community Types

## Average Area and Prevalence Of All H & O Vegetation Classification Types Identified: 50 And 95% KHR Home Range Estimates (n=10)



H & O Vegetation Classification Types

(Sechrist et al 2009)





# Summary and Main Message

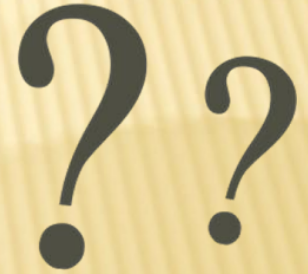
The Service will encourage land owners and agencies to conduct, restoration work before the beetle defoliates the saltcedar. What the Service does not want to encourage is the removal of salt cedar without a plan of replacement.

## **Ask Yourself:**

- What is your end goal?
- Do soils, geomorphology, hydrology present allow for your goal to succeed?
- Do you have funding to complete what you would like to do? Have you checked to see if endangered spp. present?
- Long term plan, can you go back and fix if doesn't pan out like you had hoped? How are you going to monitor?
- Landscape level: Who else is working in the area and how can your projects compliment each other?

If occupied, the area to be removed would require formal consultation and RPM's, regardless of native or exotic vegetation.

# Questions/Contact Info:



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