

RECLAMATION

Managing Water in the West

Southwestern Willow Flycatcher Studies within the Rio Grande Basin, New Mexico

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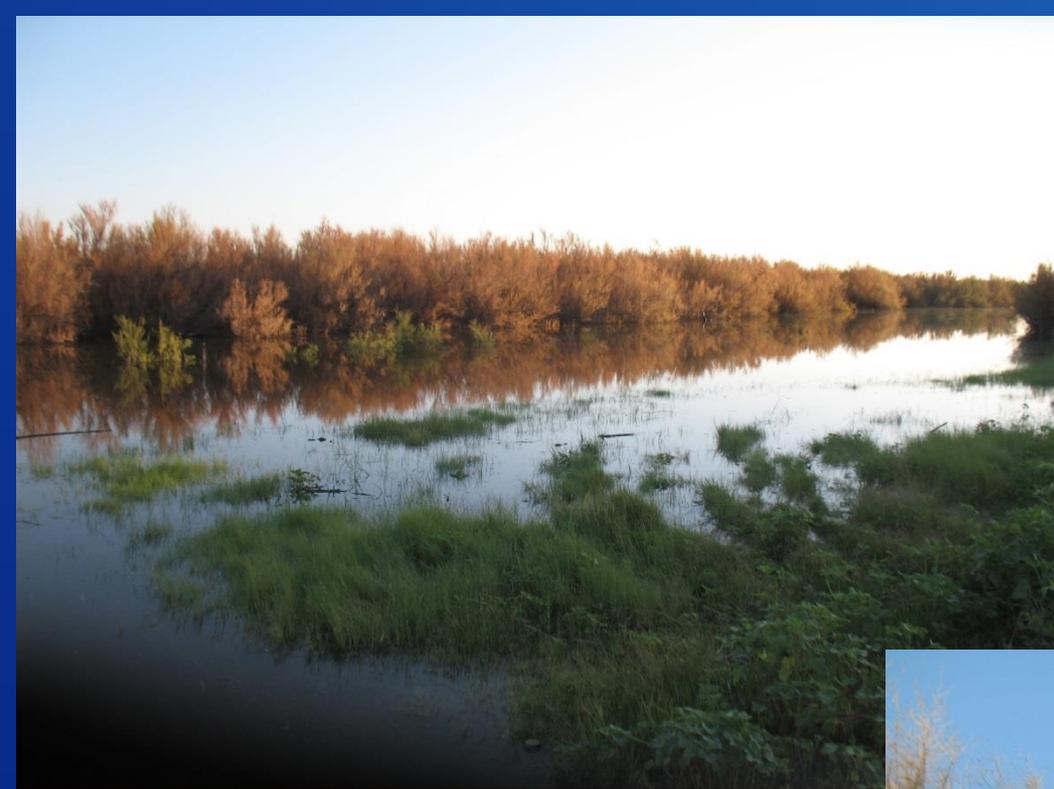


U.S. Department of the Interior
Bureau of Reclamation

2014 Survey Extent – Rio Grande



15 reaches, 176 sites, along approx. 530 km of riparian corridor



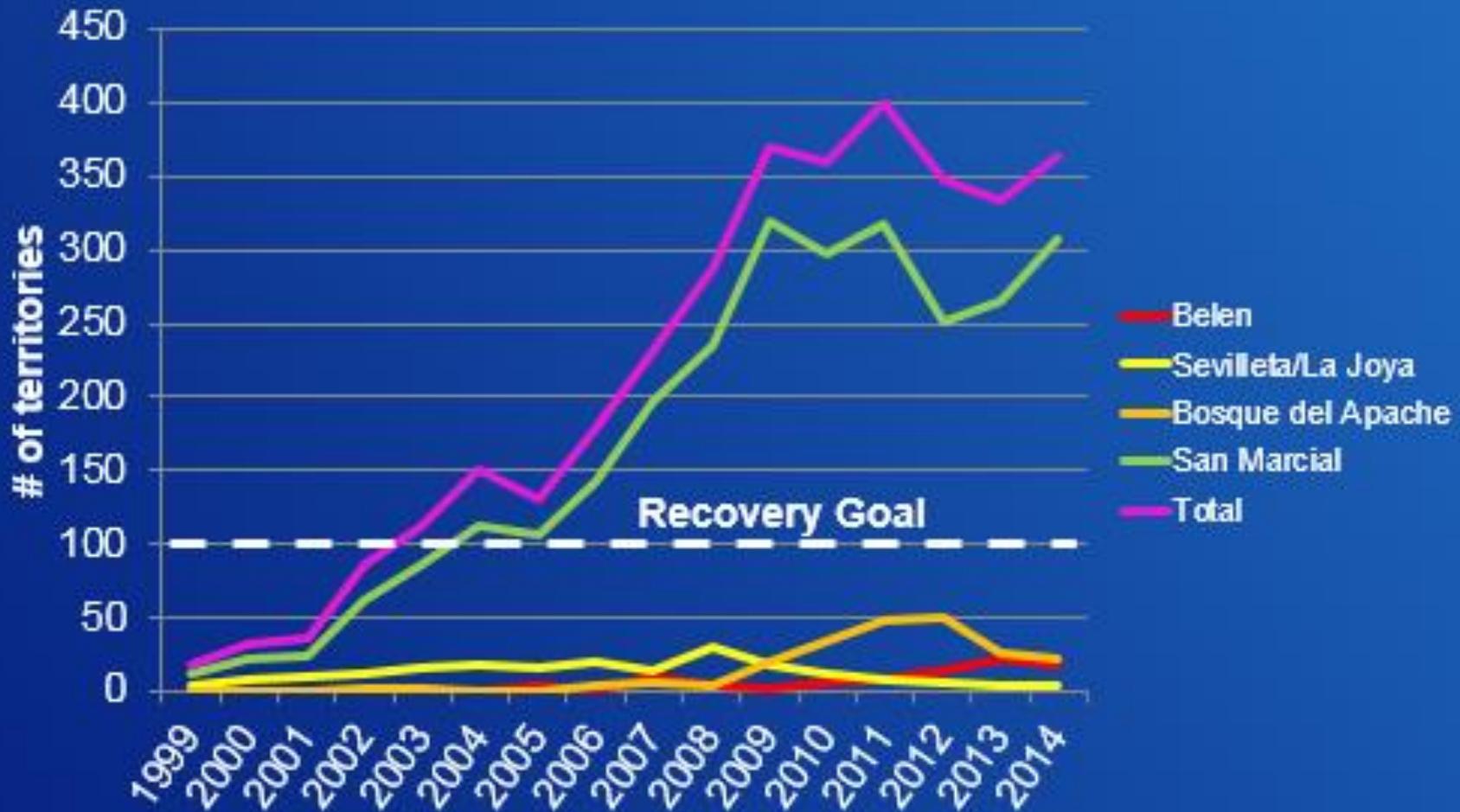
Diorhabda defoliation and resident SWFL at Brantley Lake (Pecos River basin)



2014 WIFL Survey Results

- 664 resident SWFLs (627 in 2013)
- 405 territories (259 pairs and 146 unpaired males)
 - San Marcial - 205 pairs and 102 unpaired males
 - Bosque del Apache – 13 pairs and 10 unpaired males
 - Belen – 16 pairs and 2 unpaired males
 - Middle Rio Grande total – 364 territories – 234 pairs and 130 unpaired males
 - Hatch - 14 pairs and 8 unpaired males
 - Caballo – 7 pairs and 8 unpaired males
 - Lower Rio Grande total – 41 territories – 25 pairs and 16 unpaired males

SWFL population trends – Middle Rio



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SWFL population trends – Lower Rio



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SWFL nest monitoring - 2014

- 316 nests – 29% success, 60% depredation, 12% cowbird parasitism, 3% abandonment
- Territory dominance (w/in 25 m of nest) - 40% in native vegetation, 17% in saltcedar, 44% in mixed
- Nest substrate – 63% saltcedar, 36% *Salix*, 1% other
- 71% of nests located in Elephant Butte Reservoir conservation pool

SWFL nest monitoring trends

Middle Rio Grande nests

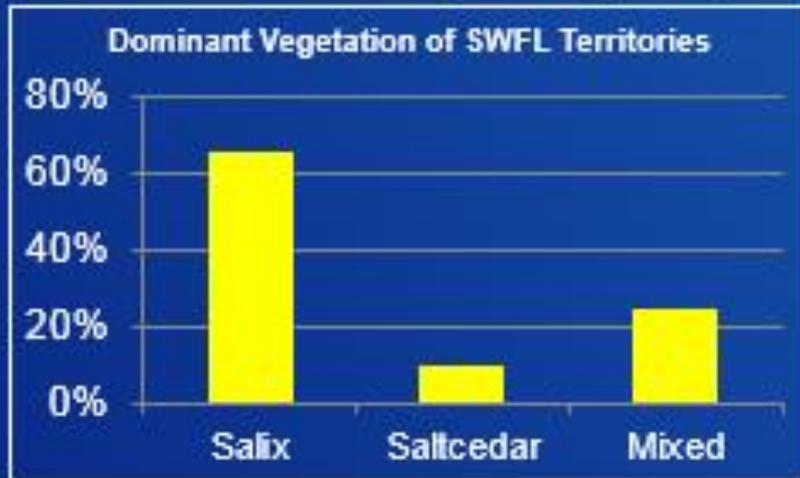


N = 2,597

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SWFL nest habitat data

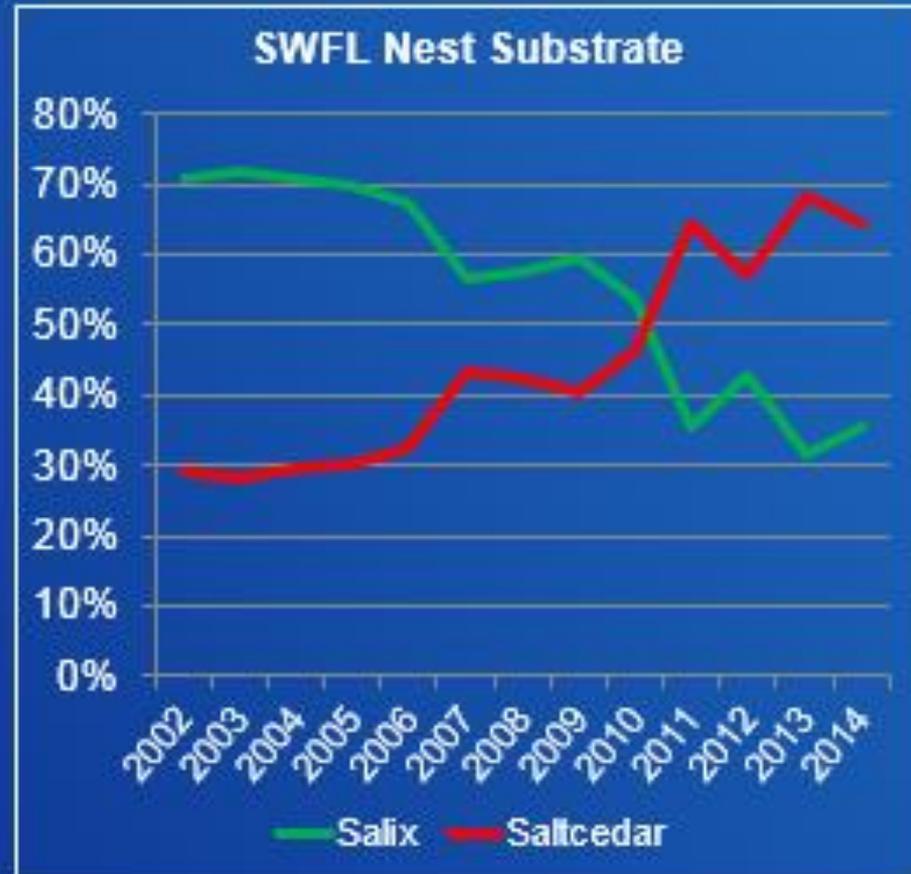
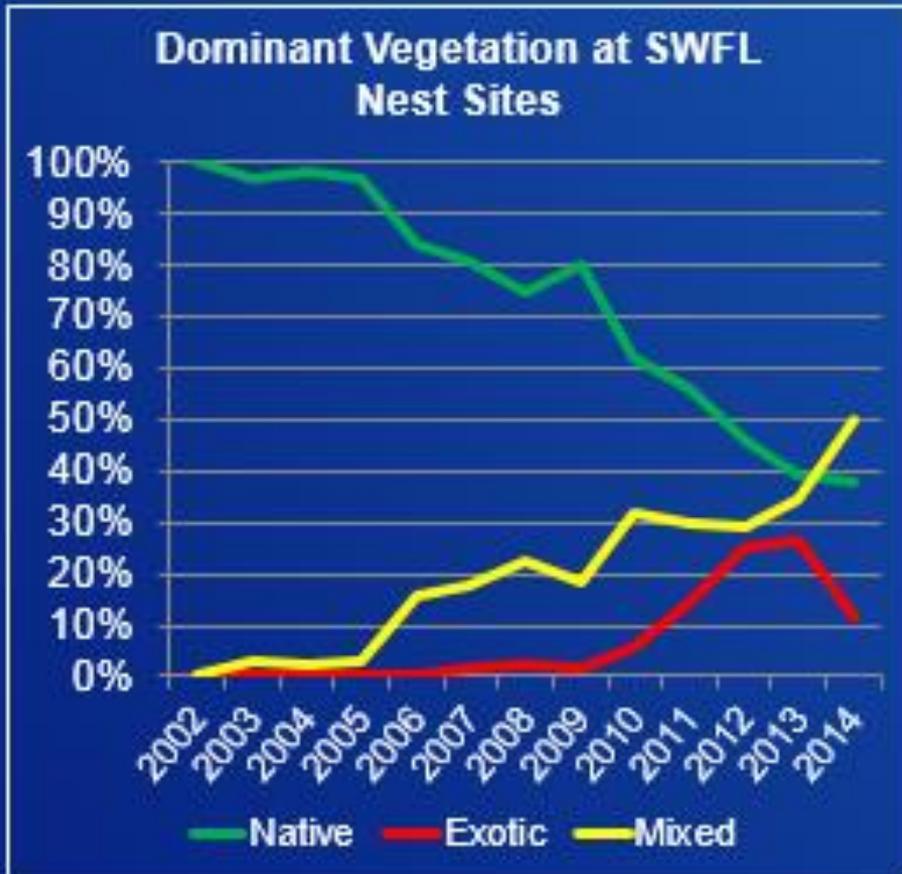
1999 to 2014 (n = 2,670)



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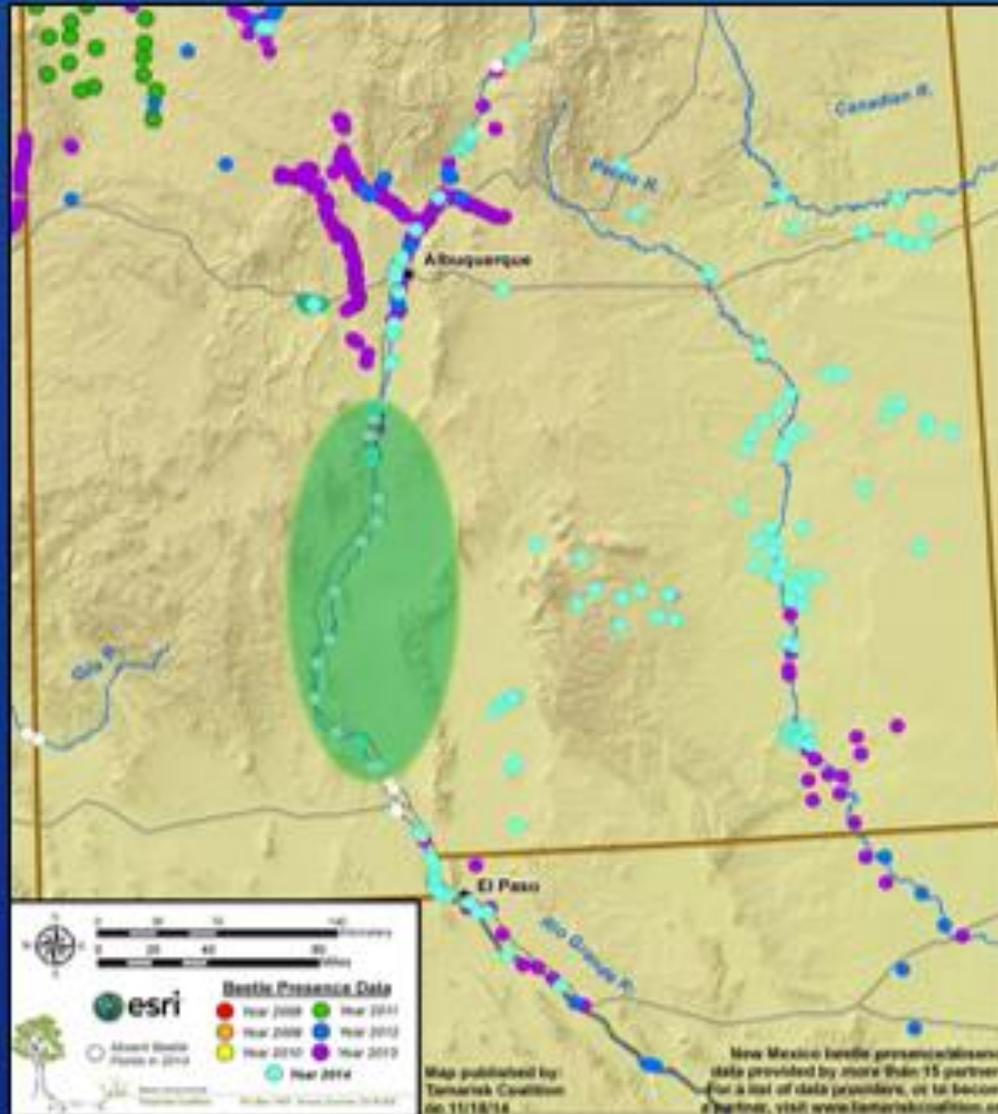
SWFL nest habitat data (cont'd)

1999 to 2014 (n = 2,670)



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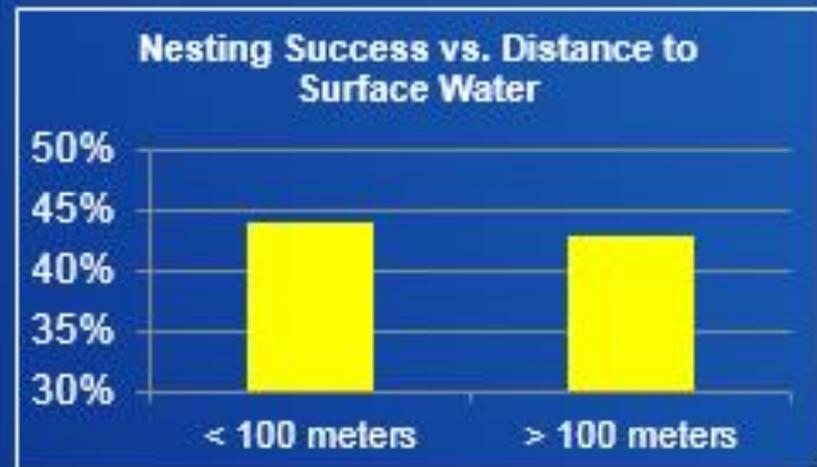
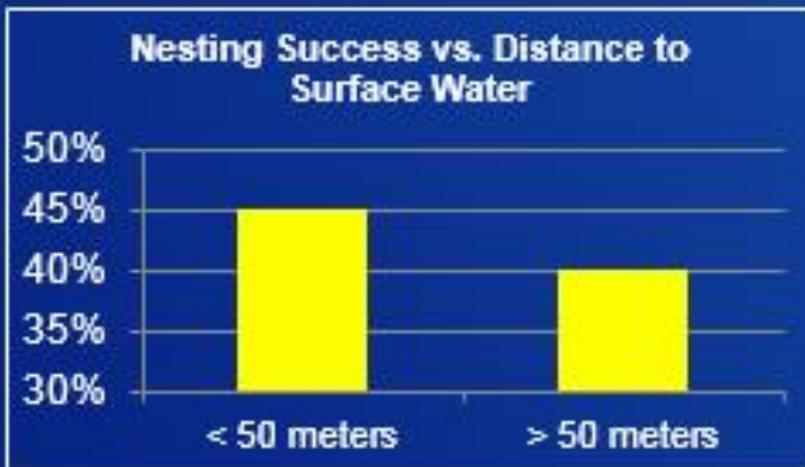
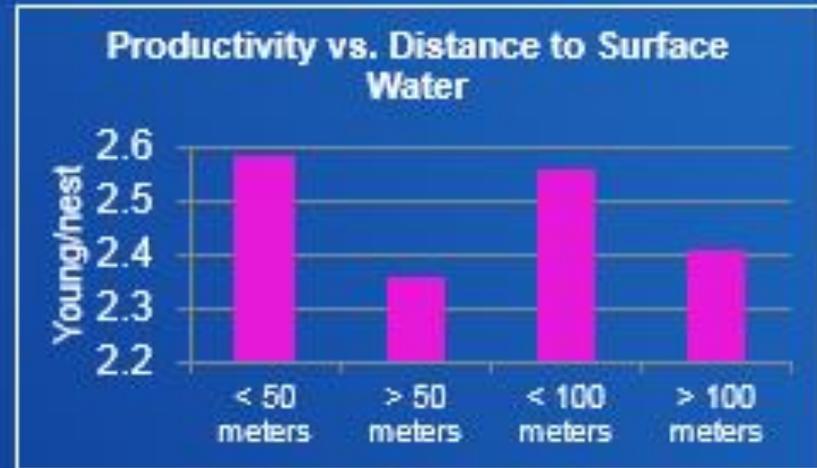
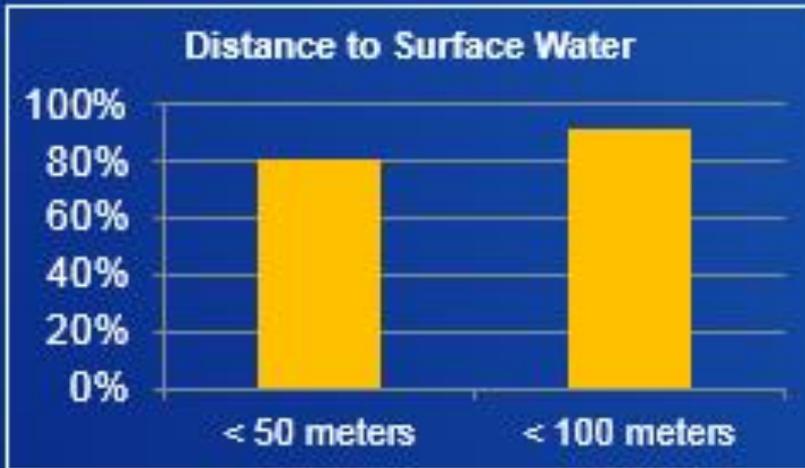
Tamarisk Beetle locations in NM



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SWFL nest hydrology data

2004 to 2014 (n = 2,409)

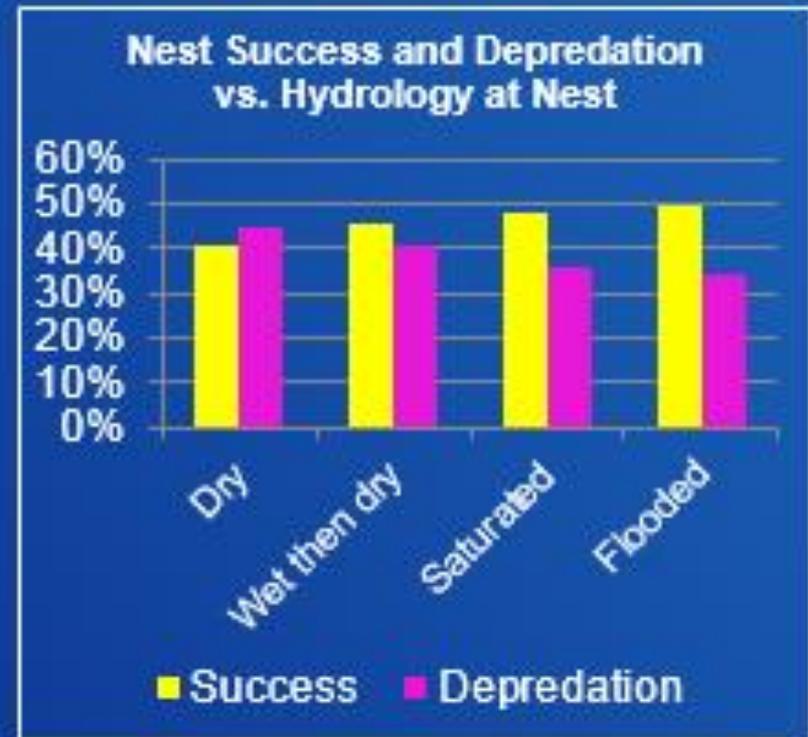
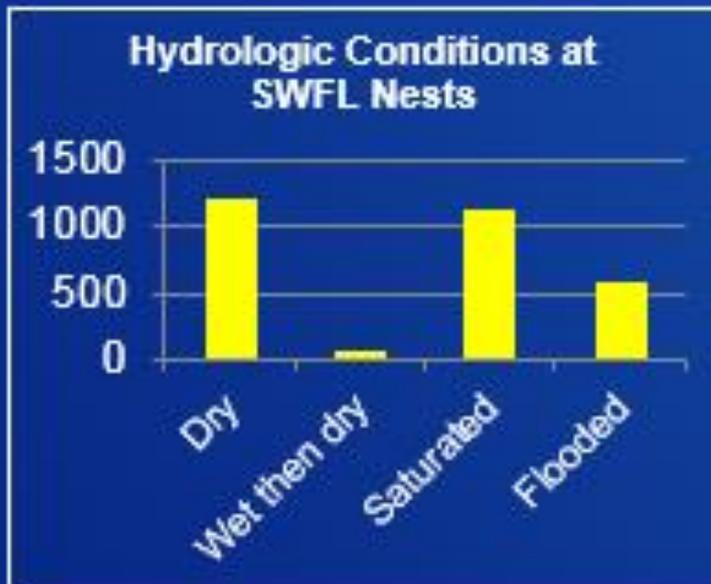


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SWFL nest hydrology data (cont'd)

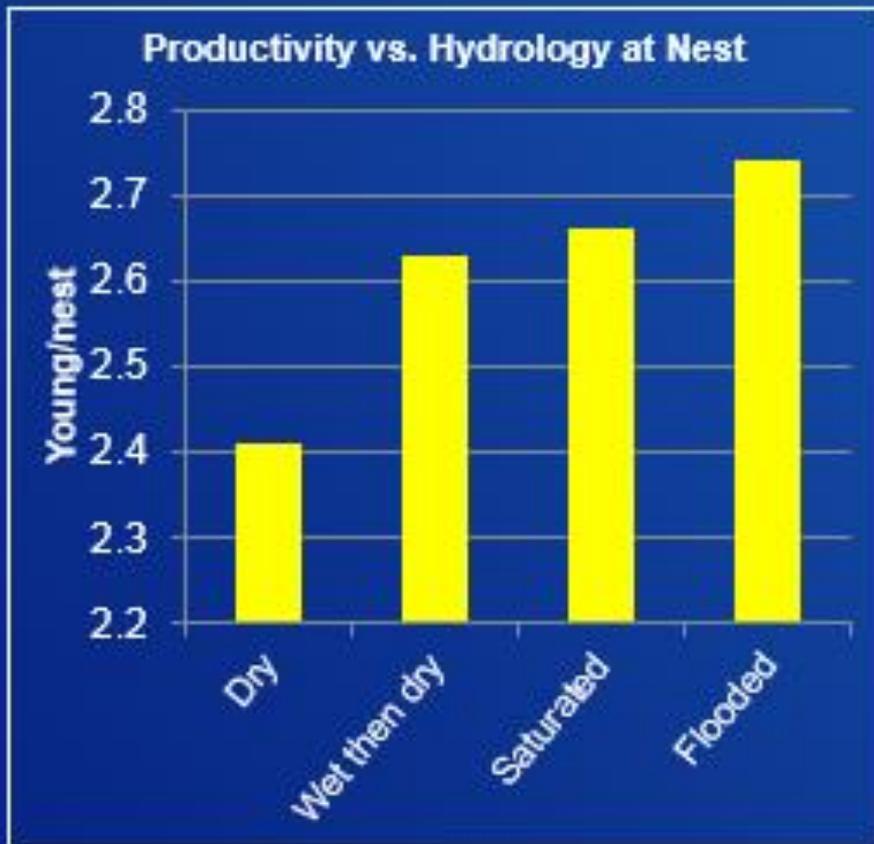
2004 to 2014 (n = 2,409)

Hydrology at nest – 4 options – Dry, Wet then dry, Saturated, Flooded



SWFL nest hydrology data (cont'd)

2004 to 2014 (n = 2,409)



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Related Studies

- Habitat suitability mapping
- Territory vegetation quantification
- Sediment plug habitat monitoring



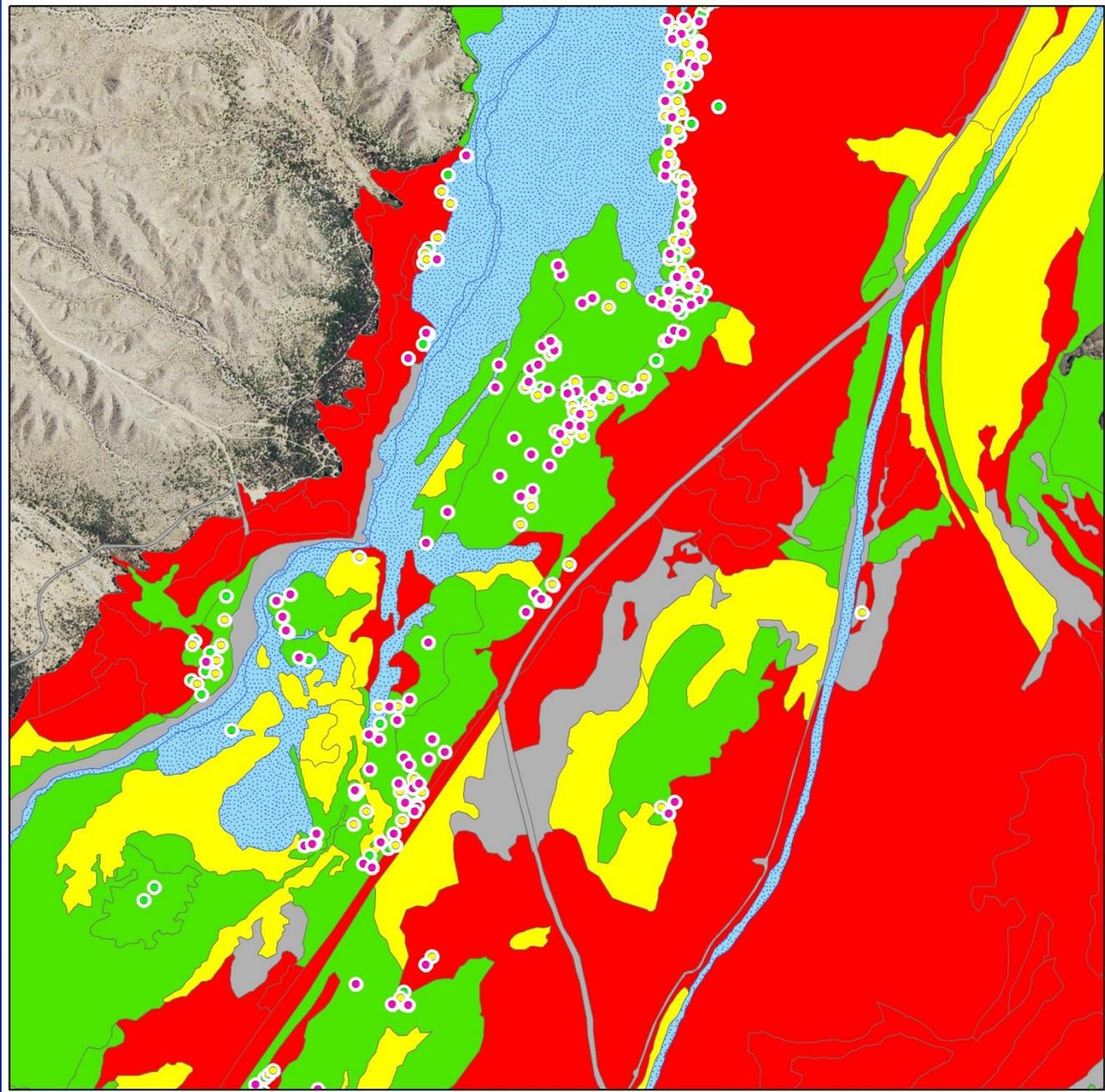
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Habitat suitability mapping

- **Conducted in 1998, 2004, 2008 and 2012**
- **Used modified Hink and Ohmart (1984) methods**
 - **Aerial photo delineation and ground truthing**
 - **Polygons (min 1 acre) based on woody vegetation species and canopy class with or without understory**
- **Incorporated surface water buffer**
- **Suitability then determined based on SWFL territory locations and habitat requirements**
- **Polygons classified as Suitable, Moderately suitable, or Unsuitable**

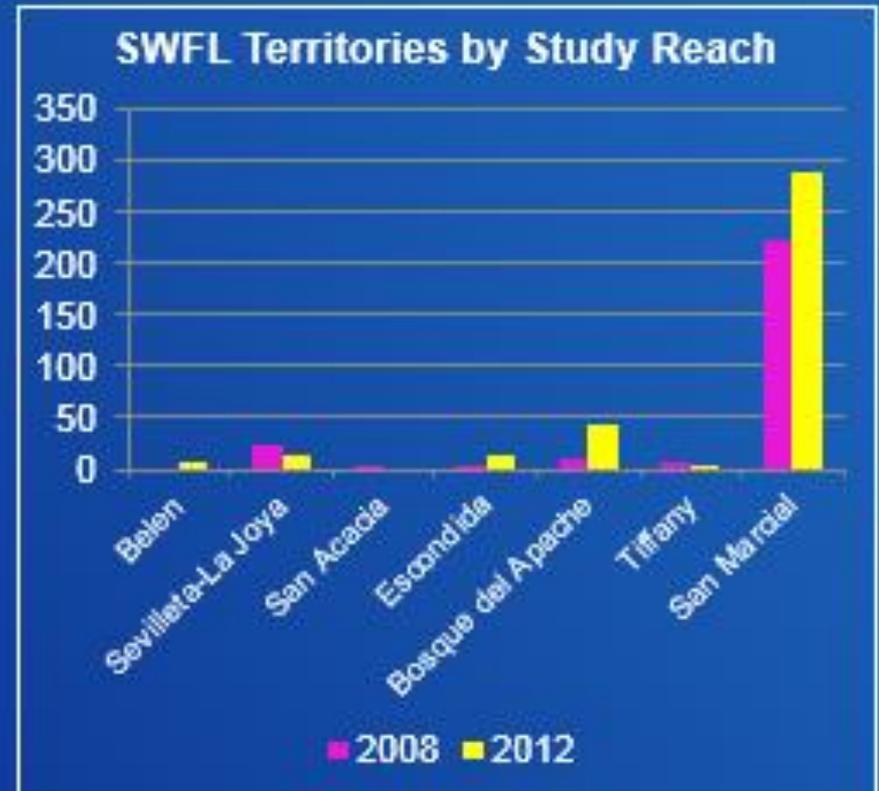
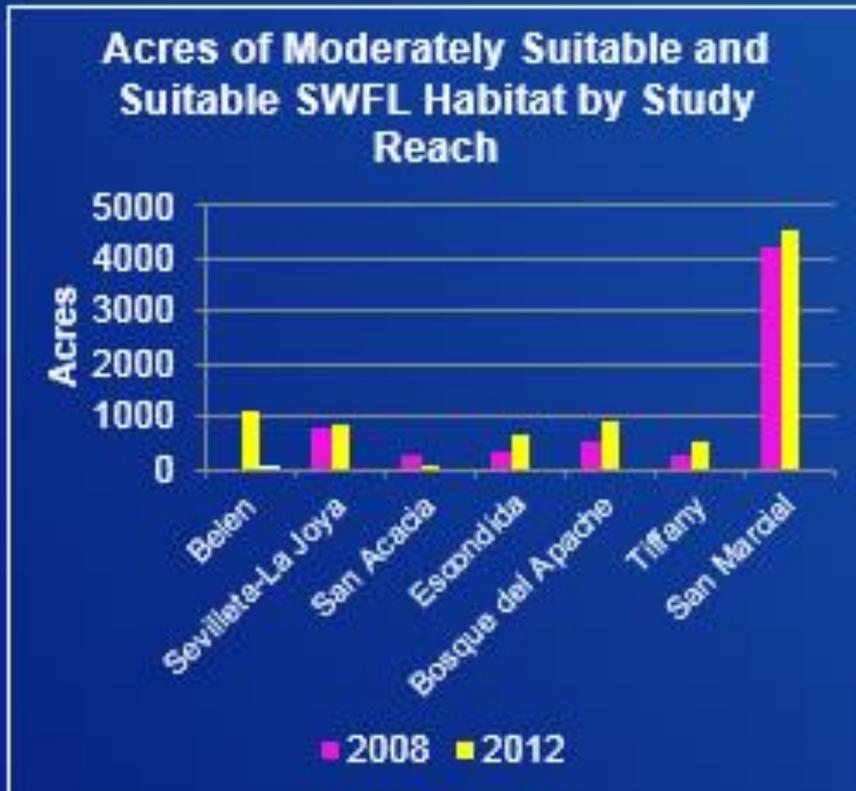


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Habitat suitability mapping



SWFL territory veg quantification

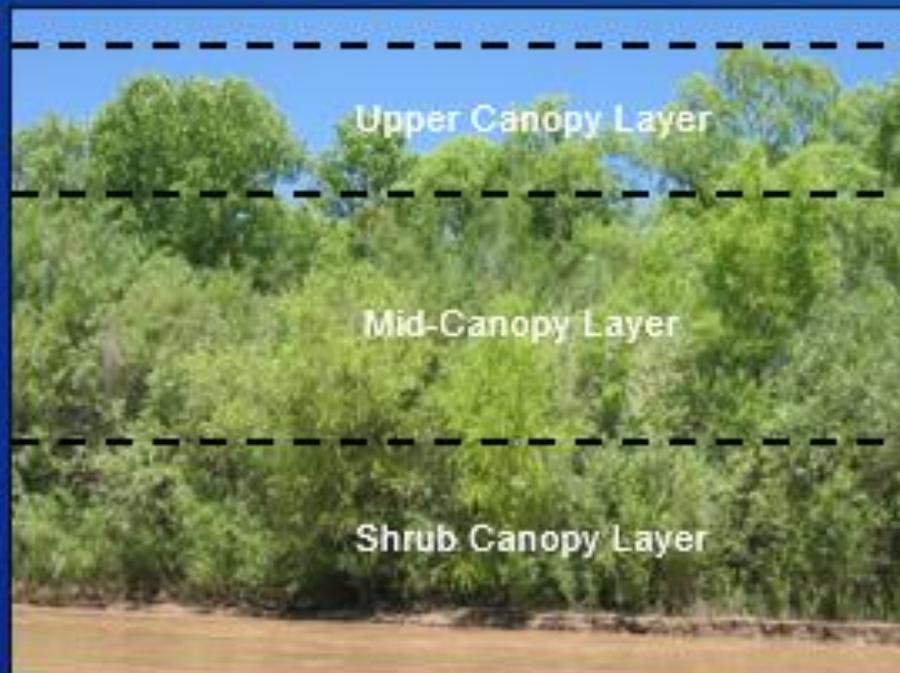
Vegetation data recorded at 112 SWFL nest sites between 2004 and 2006

- Interagency work group developed protocol – BOR, USFWS, NMNHP, UNM
- 11.35 m radius (0.04 ha) plot centered below nest and at random distance and direction between 50 and 100 m
 - Shrub and tree densities calculated by stem counts and PCQ
 - Canopy cover via visual estimate in 3 layers
 - Nest-centered data (nest height, substrate height, substrate species, distance to water, etc.) recorded

SWFL territory veg quantification

Results – Nest versus random plots

- Tree stem density higher in nest plots (2,829/ha)
- Higher composition of Class 2 trees (10 to 20 cm DBH) in nest plots
- Tree density greater in mid-canopy layer in nest plots
- Canopy cover greater in 3 to 6m and >6m classes in nest plots



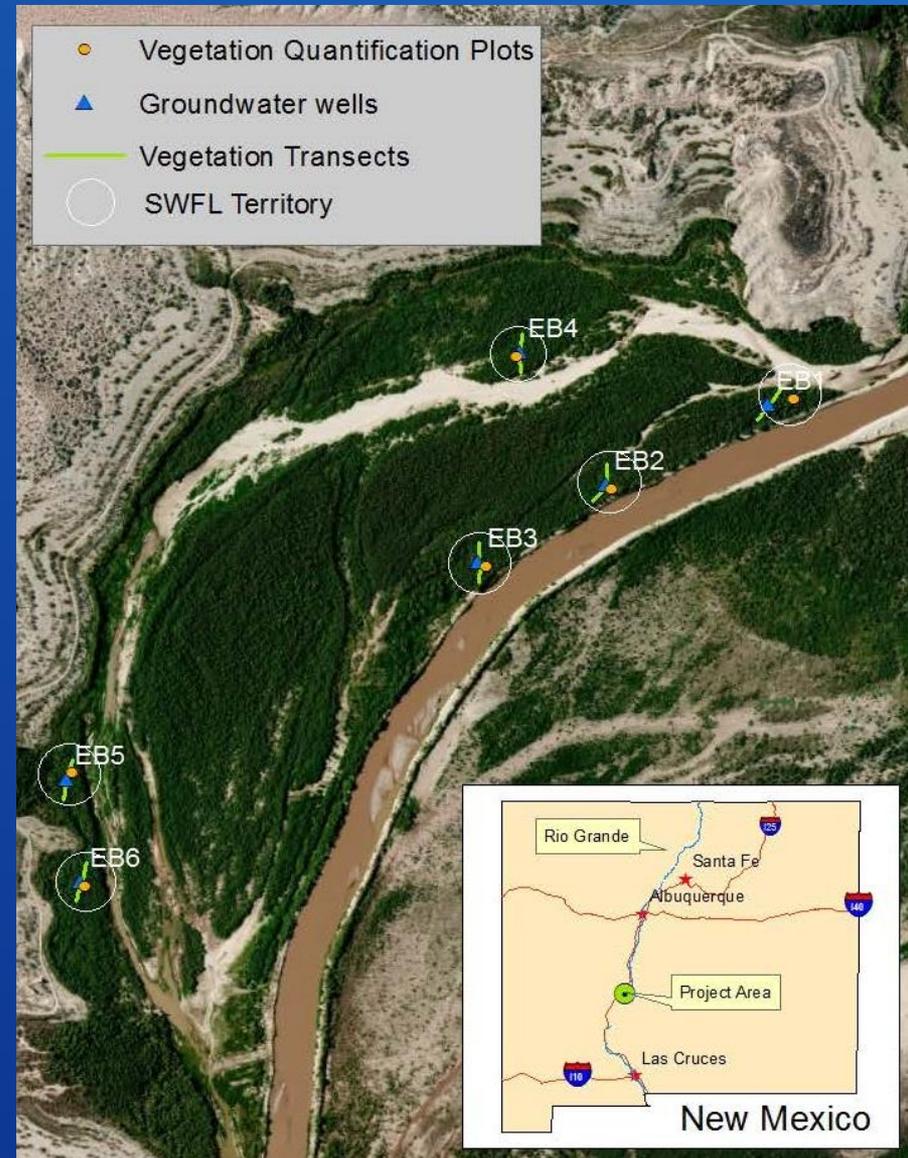
Sediment plug habitat monitoring

- 2 sites – Bosque del Apache NWR and Elephant Butte Reservoir delta
- Both resulted in suitable SWFL habitat



Sediment plug habitat monitoring

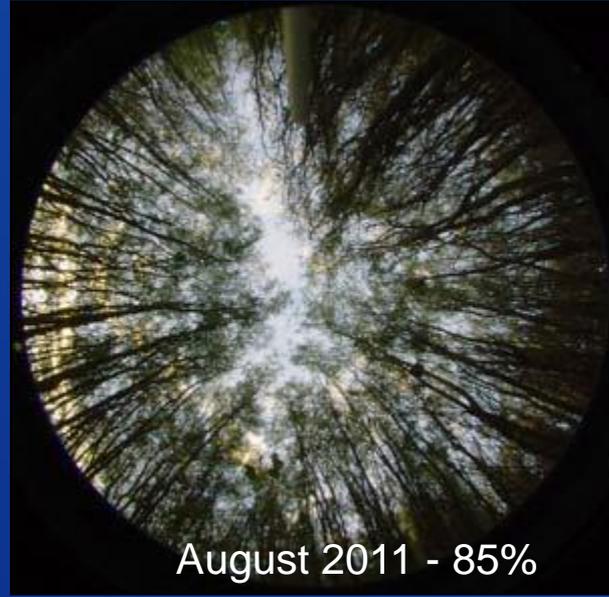
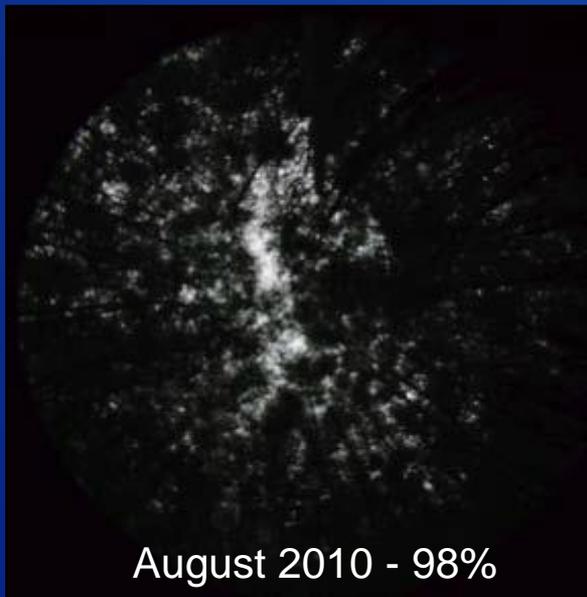
- Monitoring via veg quantification plots, veg transects, groundwater wells, and hemispheric photography



Sediment plug habitat monitoring

Results

- Bosque del Apache – only impact = drought
- Reduction in veg cover



- Decrease in natives in tree and shrub layers
- Increase in dead stems

Sediment plug habitat monitoring

Results

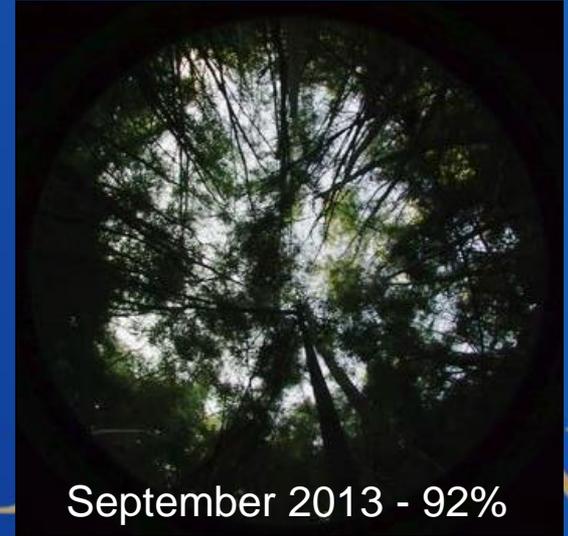
- Elephant Butte delta – less pronounced impacts
- Site irrigated by both river and groundwater
- Increasing bare ground and overstory
- Increasing canopy height
- Increasing dead stems
- All indicative of maturing riparian forest



August 2011 - 87%



August 2012 - 72%



September 2013 - 92%