

Final Results from LCR MSCP Elf Owl Studies, 2015-2018

John D. Boone

*Great Basin Bird
Observatory*

Aaron D. Flesch

*School of Natural
Resources and the
Environment –*

University of Arizona

David Vander Pluym

*Great Basin Bird
Observatory*



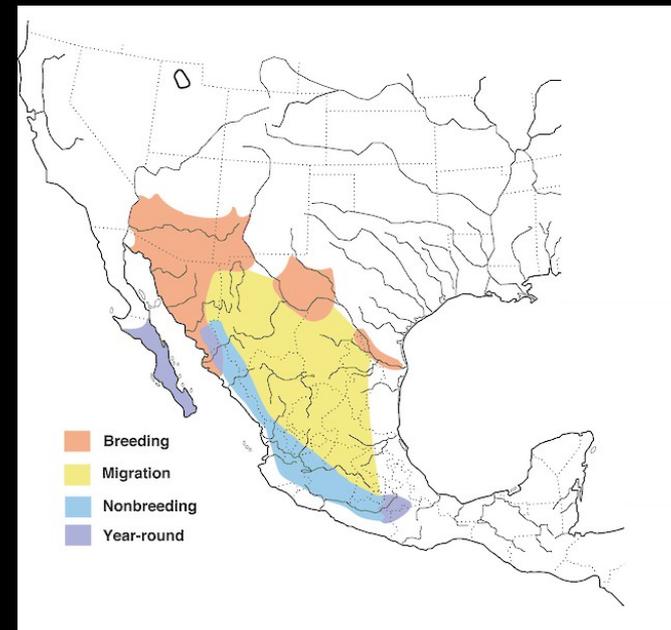
School of Natural Resources
and the Environment



Elf Owl

Micrathene whitneyi

- Nocturnal
- Tiny (13-14 cm, ~40 g)
- Small home range size
- Migratory
- Mostly insectivorous
- Catch insects on wing
- Cavity nester (saguaro)
- Declining regionally, but sometimes locally common
- LCR is NW edge of range



LCR MSCP Elf Owl Project Goals

- Determine patterns of occurrence in riparian and adjacent uplands across a wide area (DISCOVERY SURVEYS)
- Identify and characterize nesting territories (OBSERVATIONAL SURVEYS AND TERRITORY ASSESSMENTS)
- Inform a survey protocol based on detection functions (RESPONSE TESTS)



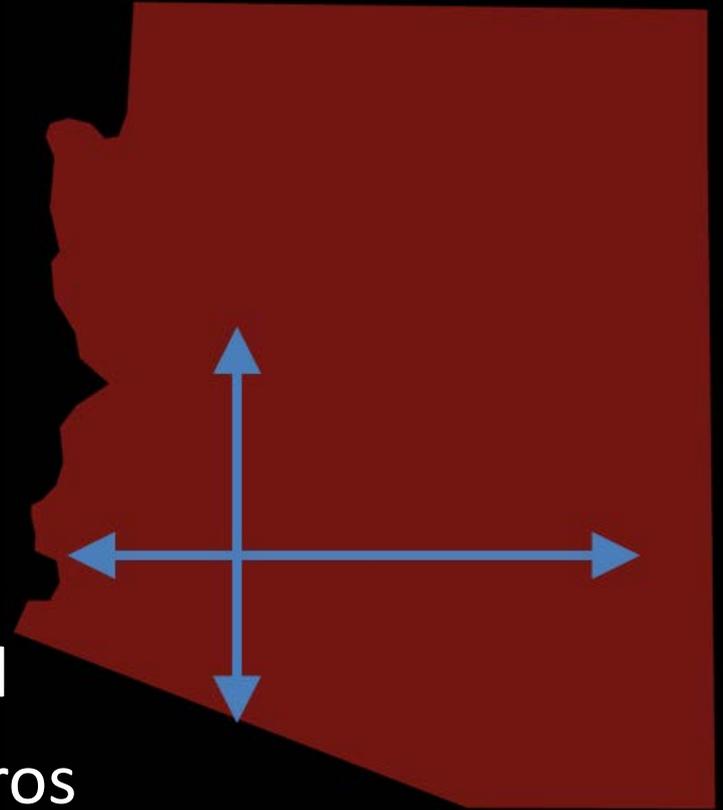
LCR MSCP Elf Owl Project Goals

- Determine patterns of occurrence in riparian and adjacent uplands across a wide area
- **Identify and characterize nesting territories**
- Inform a survey protocol based on detection functions



Discovery Surveys - Gradient Sampling

- Geographical
- Elevational
- Vegetation
 - Riparian-ecotone-upland
 - With and without saguaros



Mesic Riparian



Also

- Xeric Riparian
- Exotic Riparian
- Desert Woodland
- Aborescent Desert Scrub
- Desert Shrubland

Stratification Targets for Discovery Surveys

Saguaro Yes / No	Mesic Riparian	Exotic Riparian	Xeric Riparian
Desert Woodland	11.1%  11.1%	2.8%  2.8%	2.8%  2.8%
Arborescent Desert Scrub	11.1%  11.1%	2.8%  2.8%	2.8%  2.8%
Desert Shrubland	11.1%  11.1%	2.8%  2.8%	2.8%  2.8%

Discovery Surveys

- Point-based call broadcasts after dark, 5 min. / station
- Stations arrayed along transects with 150 m spacing
- Transect layout to vary habitat
- Rapid assessment of all survey stations and estimated owl locations

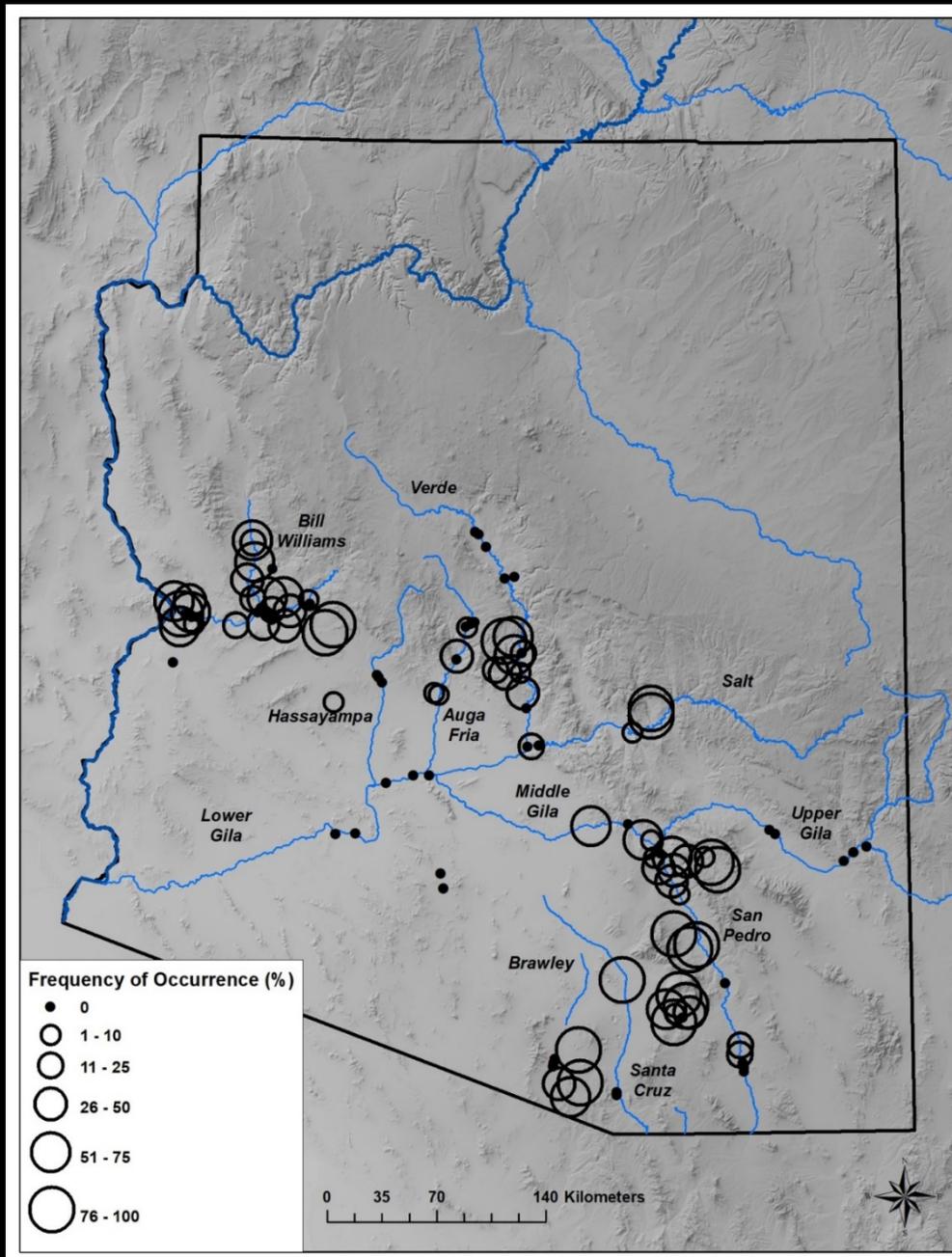


Discovery Survey Transect Layout

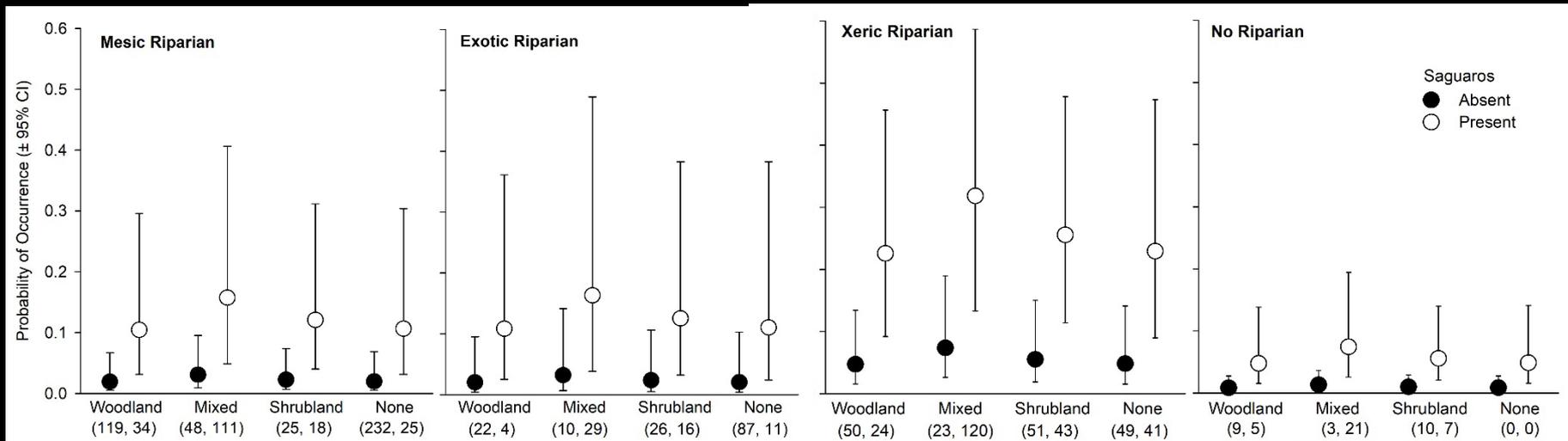
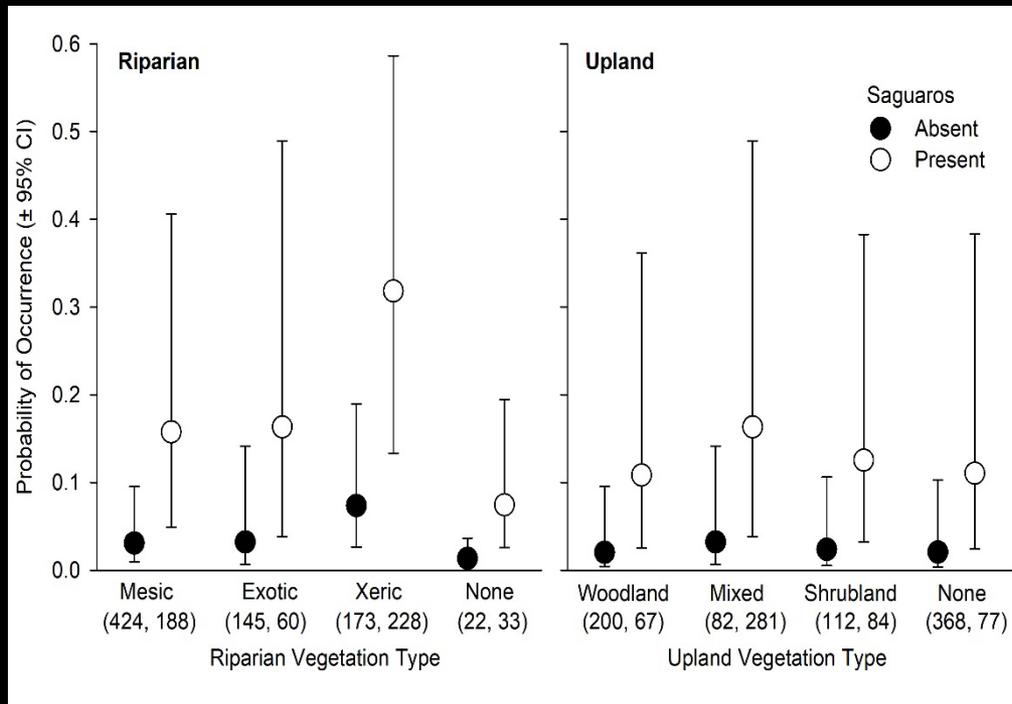


Discovery Survey Summary

- 121 unique transects (more overall)
- 1,149 “unique” owl detections at unique stations (more overall)

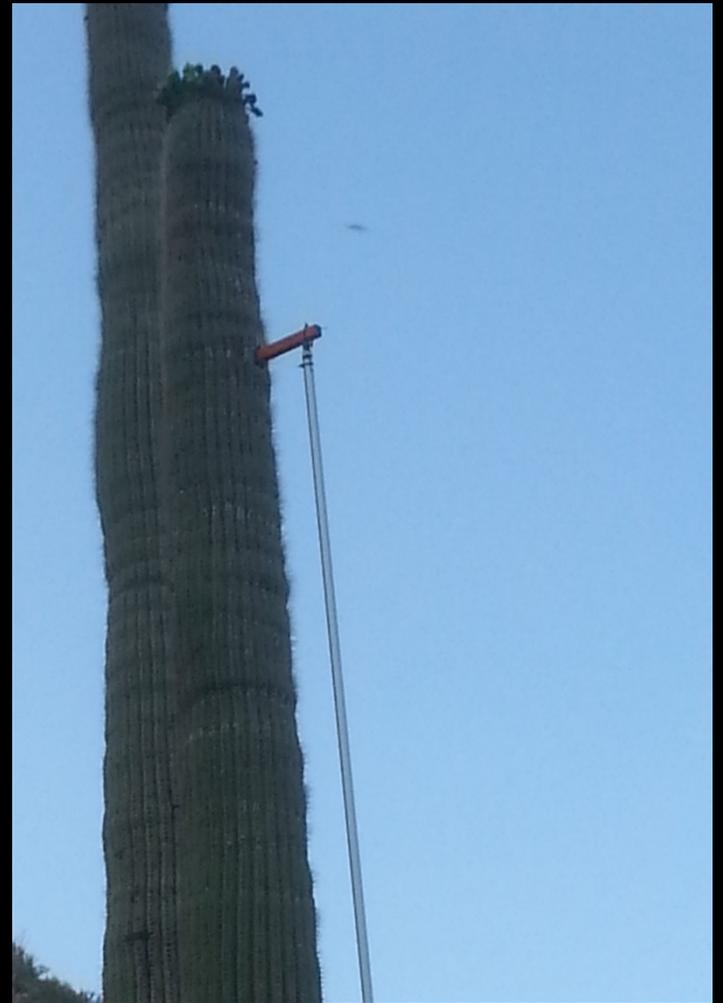


Occurrence Analysis Results



Territories and Nests

- Subset of discovery transect sites
- Territory confirmation
- Nests or activity centers
- Locations (observation)
- Assessments and patch mapping in 75 m circles and 95% MCP (where possible)

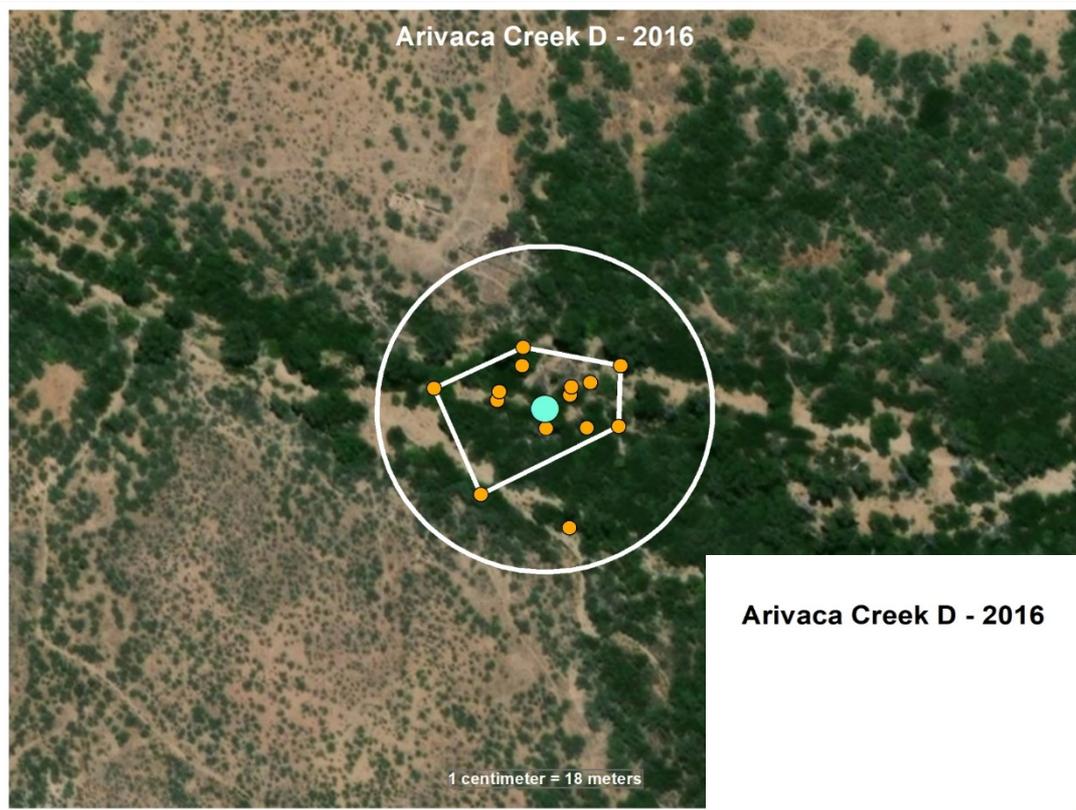


Territories and Nests Summary

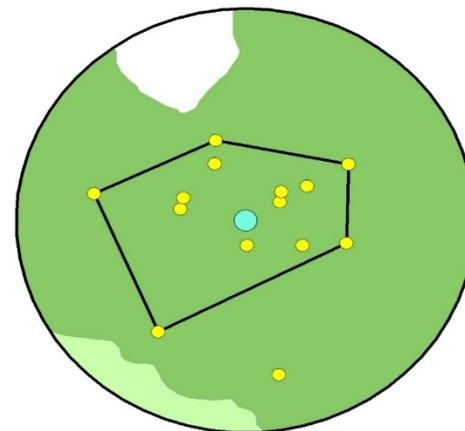
- 202 territories investigated, 151 confirmed
- 5,230 locations
- 106 nests
- 148 75-m circle assessments
- 90 MCP assessments



Arivaca Creek D - 2016



Arivaca Creek D - 2016

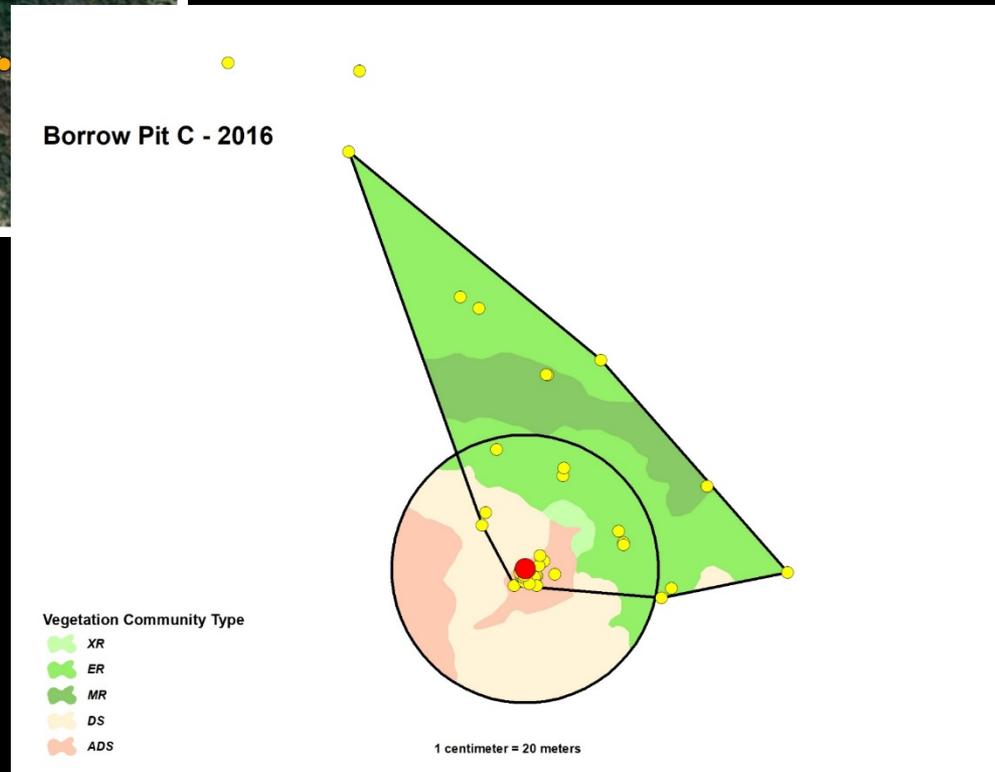
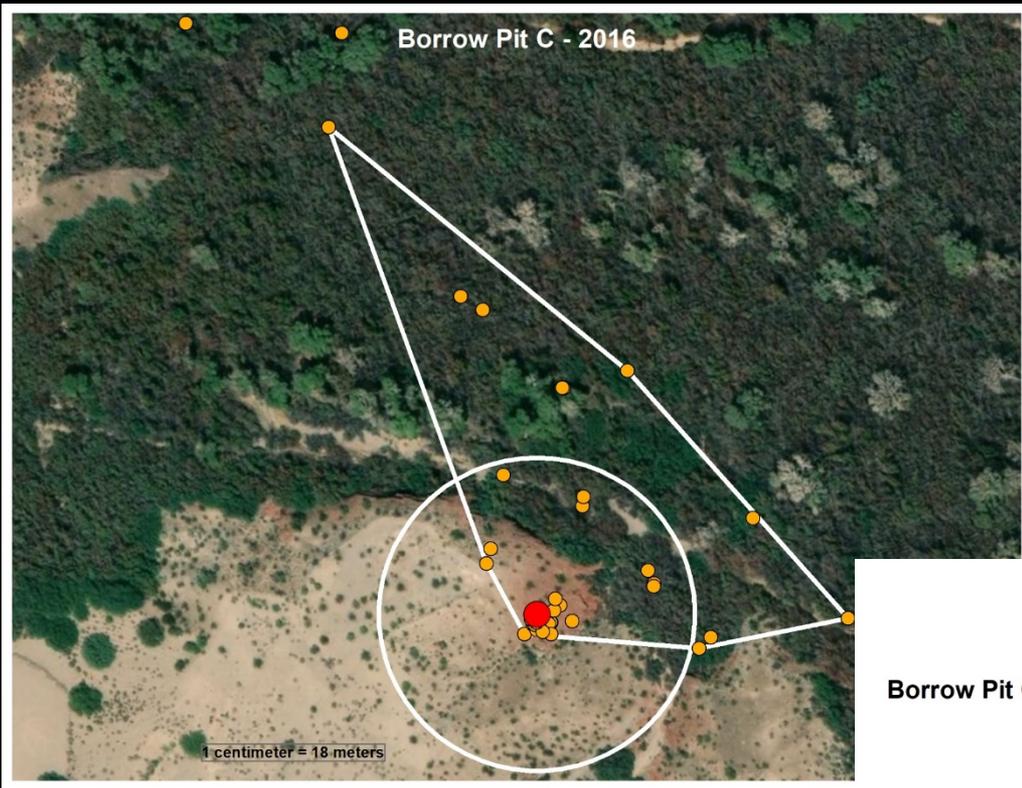


Vegetation Community Type

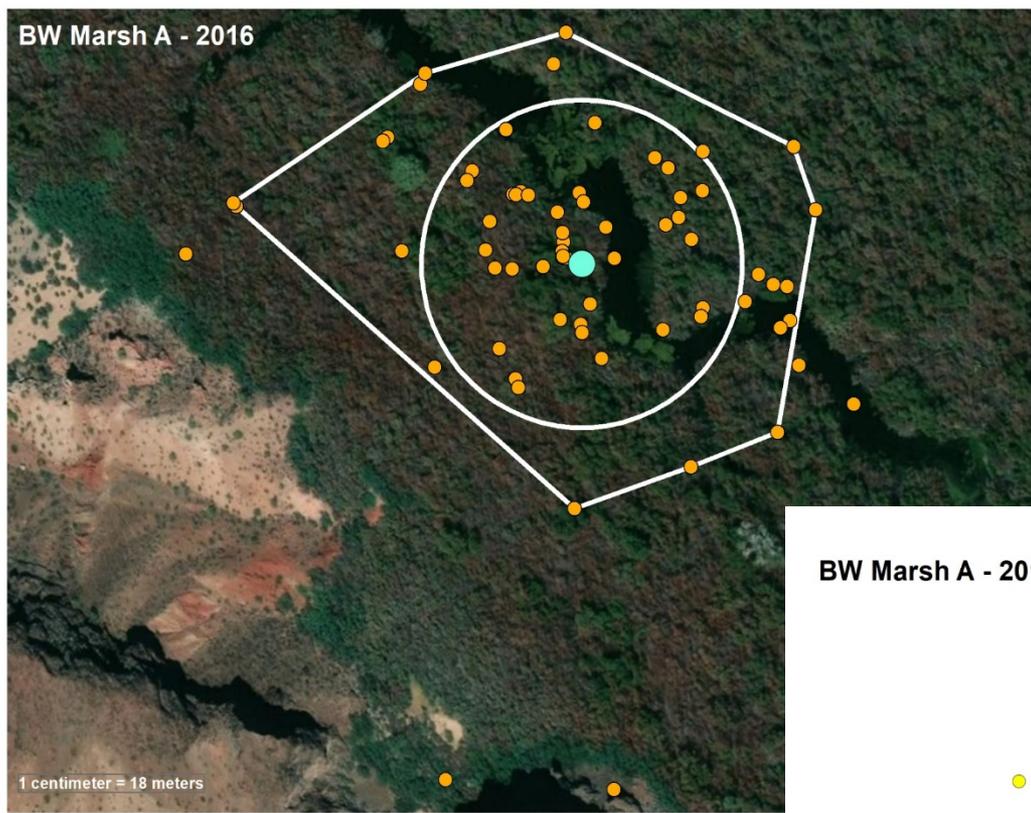
XR

MR

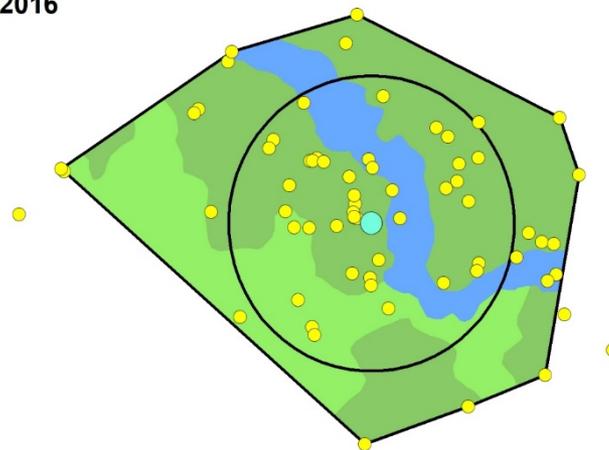
1 centimeter = 13 meters



BW Marsh A - 2016



BW Marsh A - 2016



Vegetation Community Type

ER

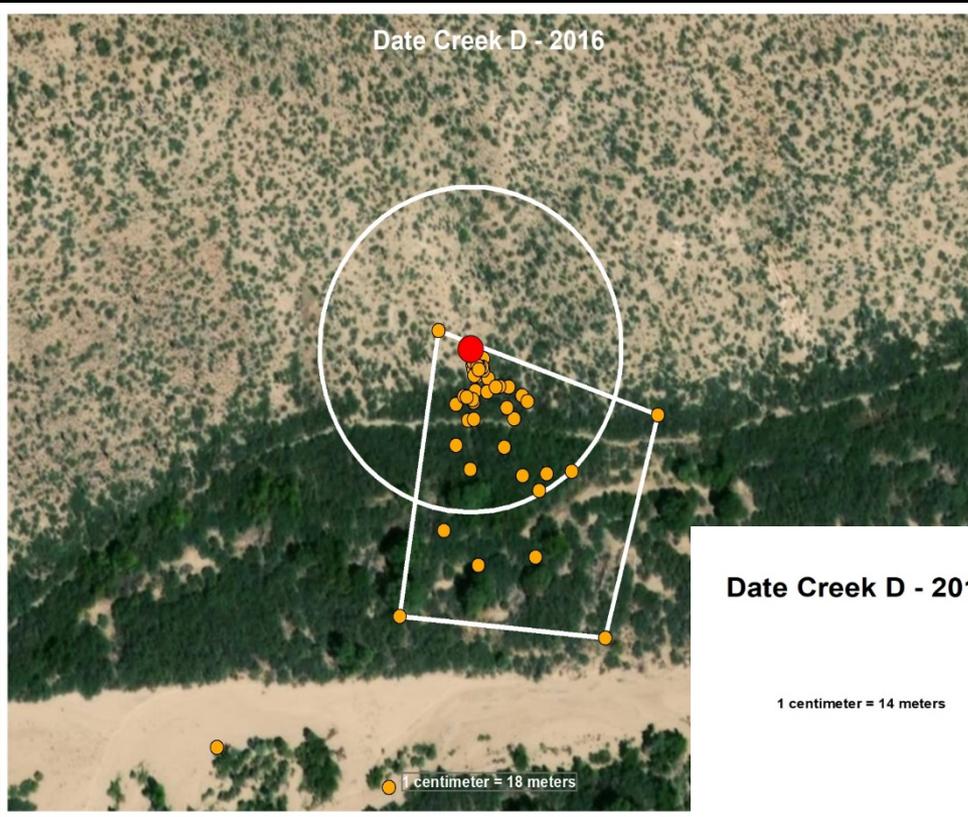
MR

Water



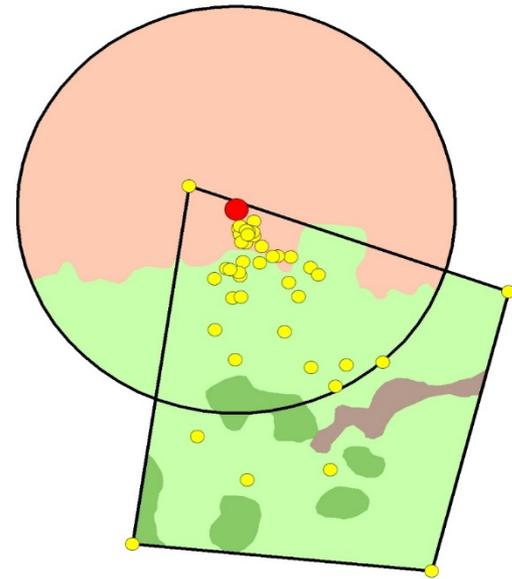
1 centimeter = 20 meters

Date Creek D - 2016



Date Creek D - 2016

1 centimeter = 14 meters



Vegetation Community Type

XR

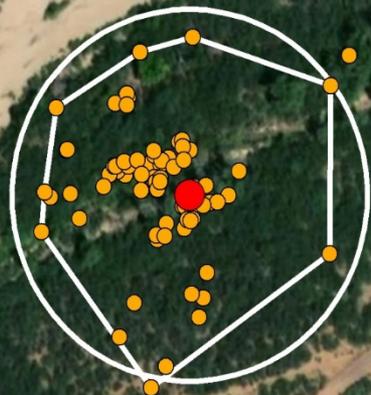
MR

ADS

Bare Ground

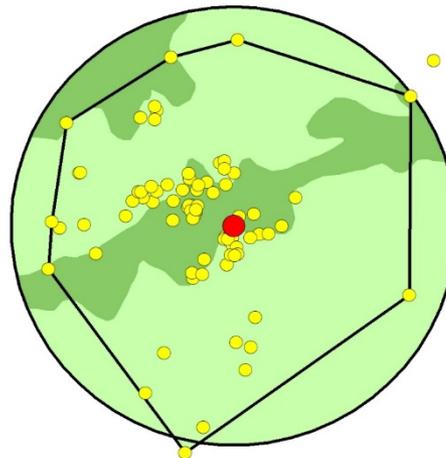


Date Creek G - 2016



1 centimeter = 18 meters

Date Creek G - 2016

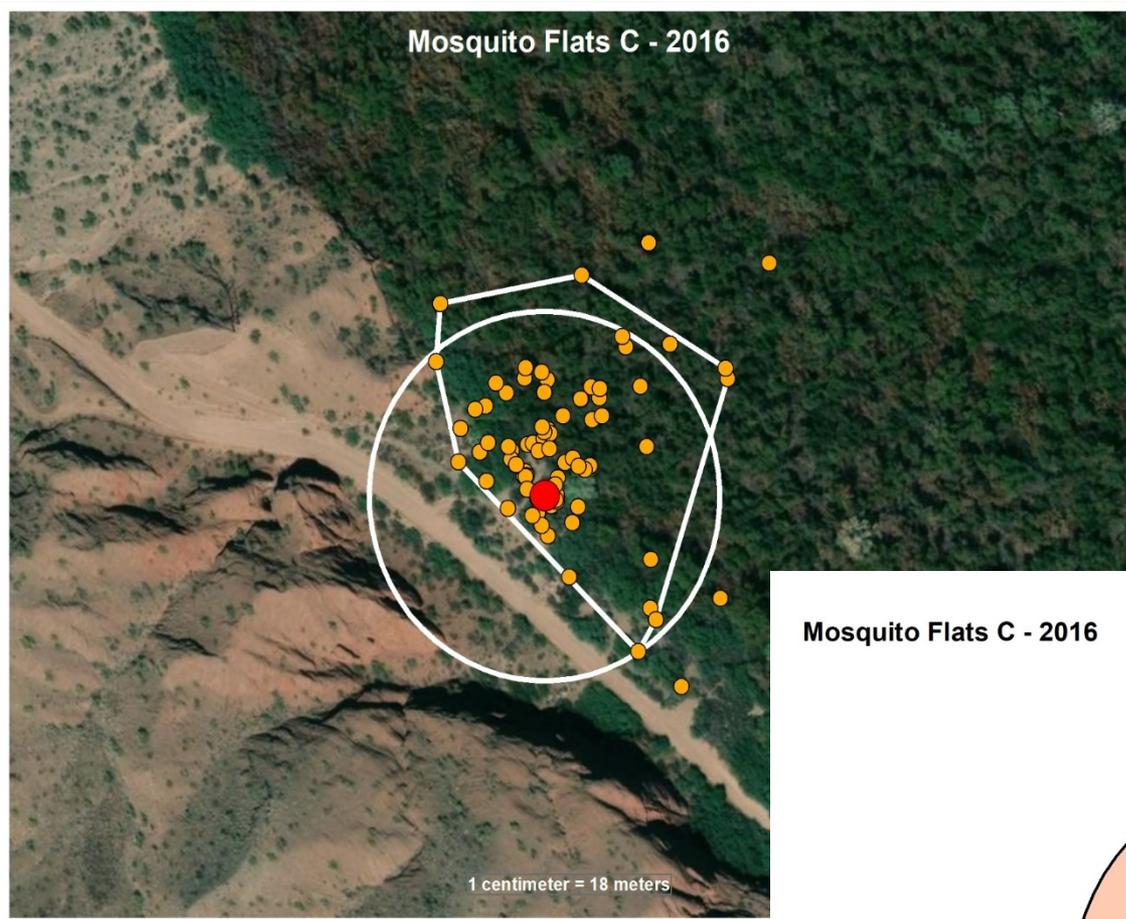


Vegetation Community Type

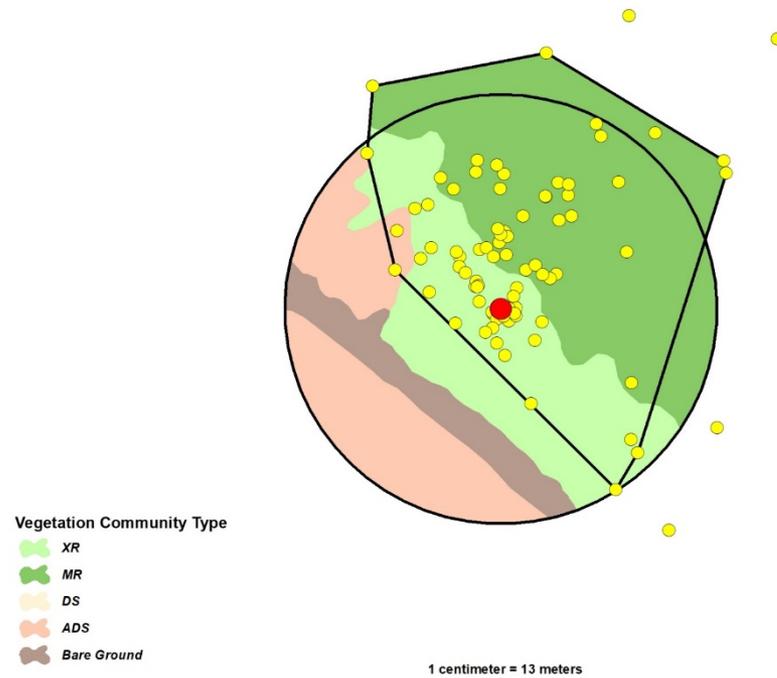
- XR
- MR

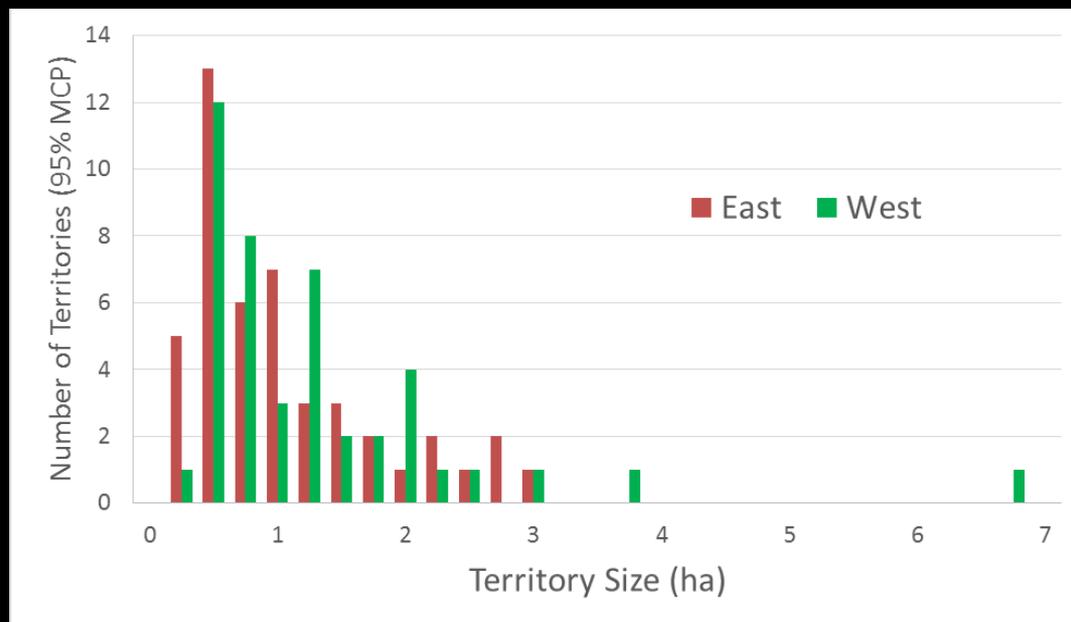
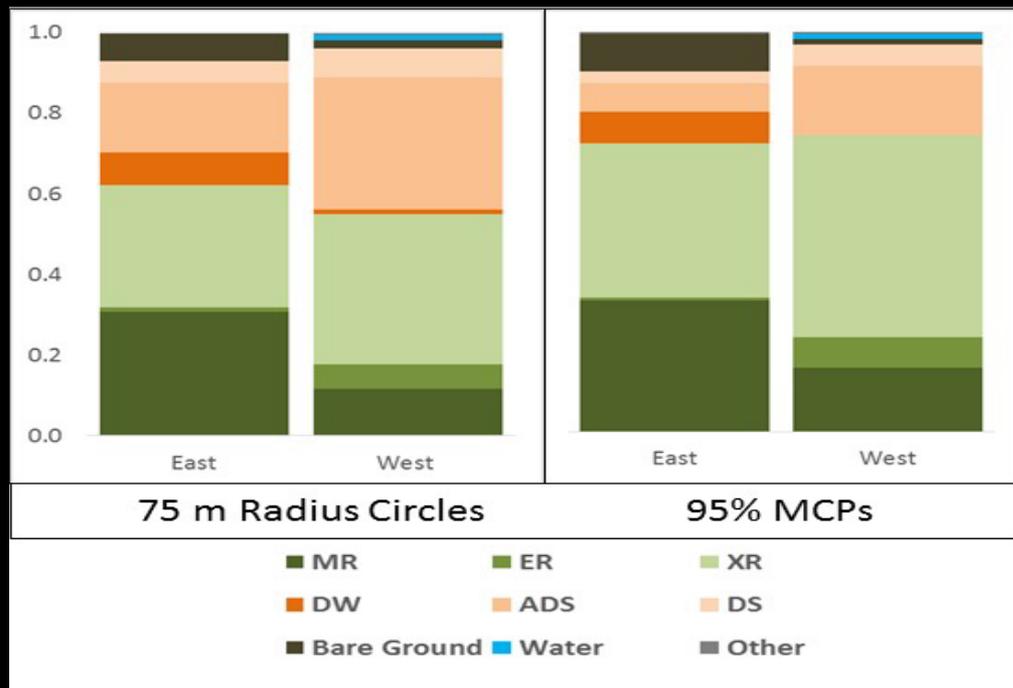
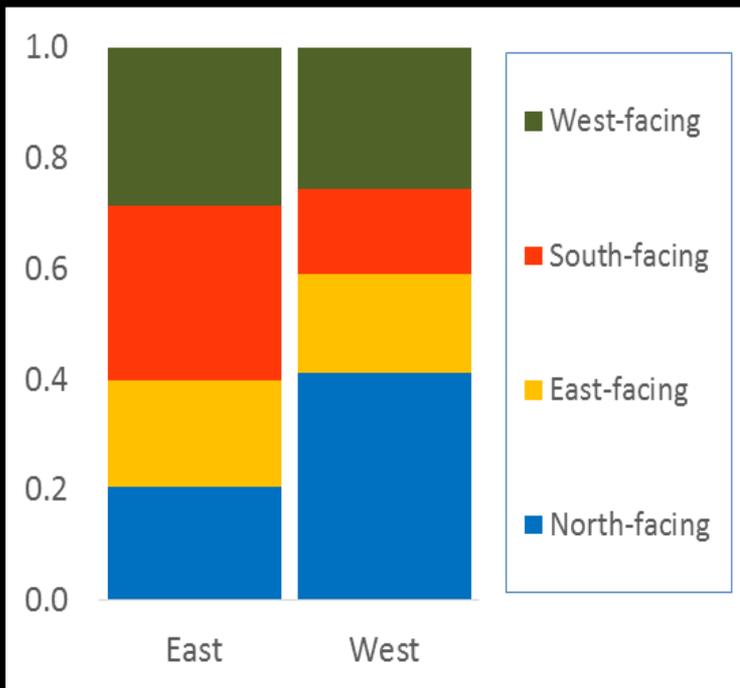
1 centimeter = 13 meters

Mosquito Flats C - 2016



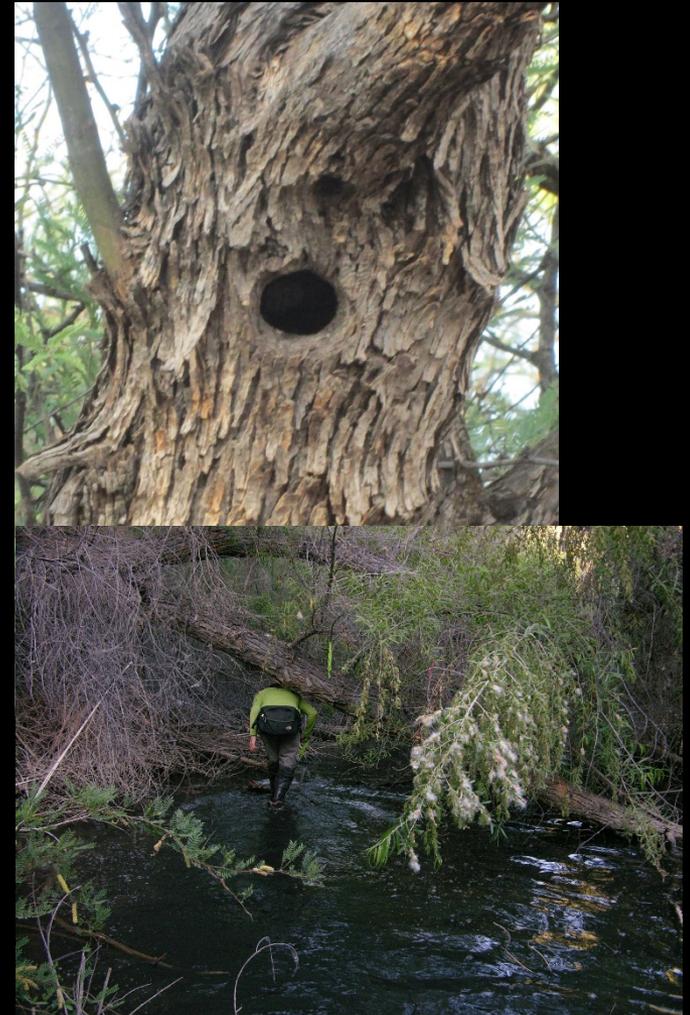
Mosquito Flats C - 2016

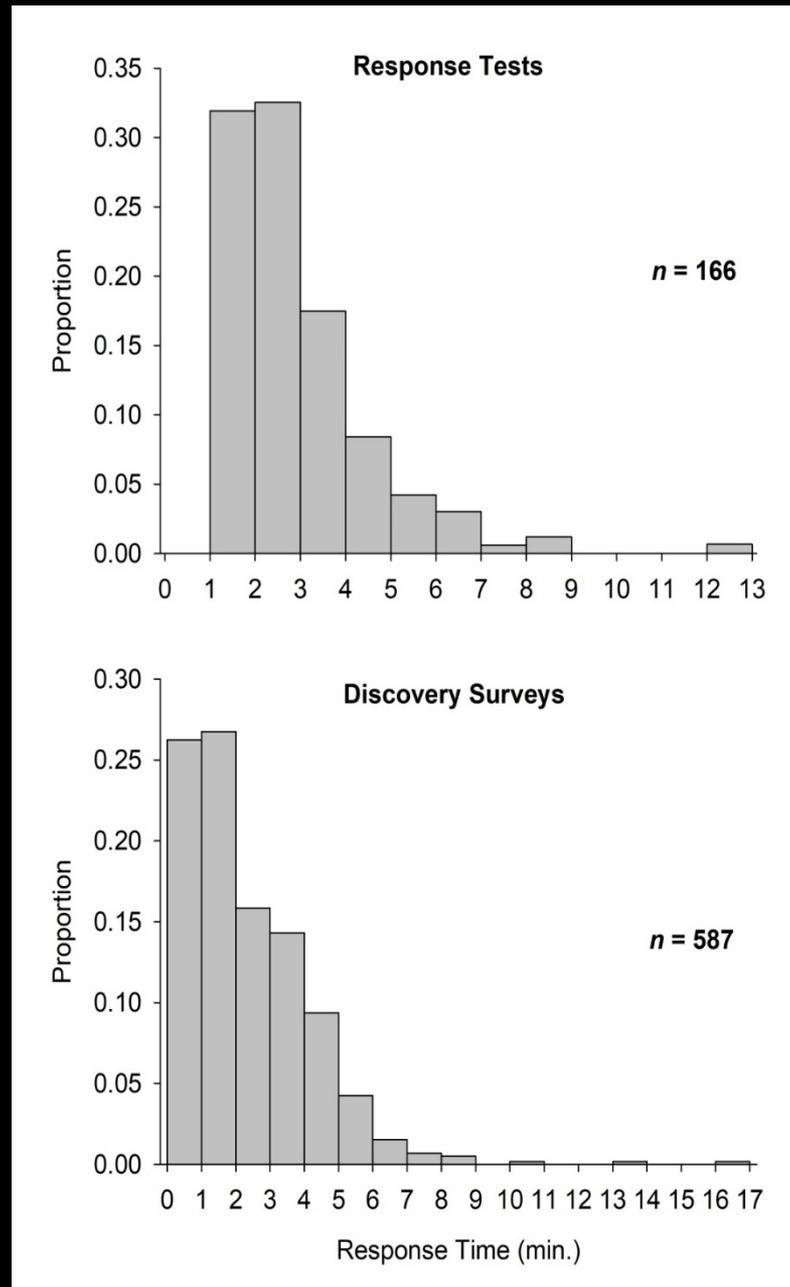
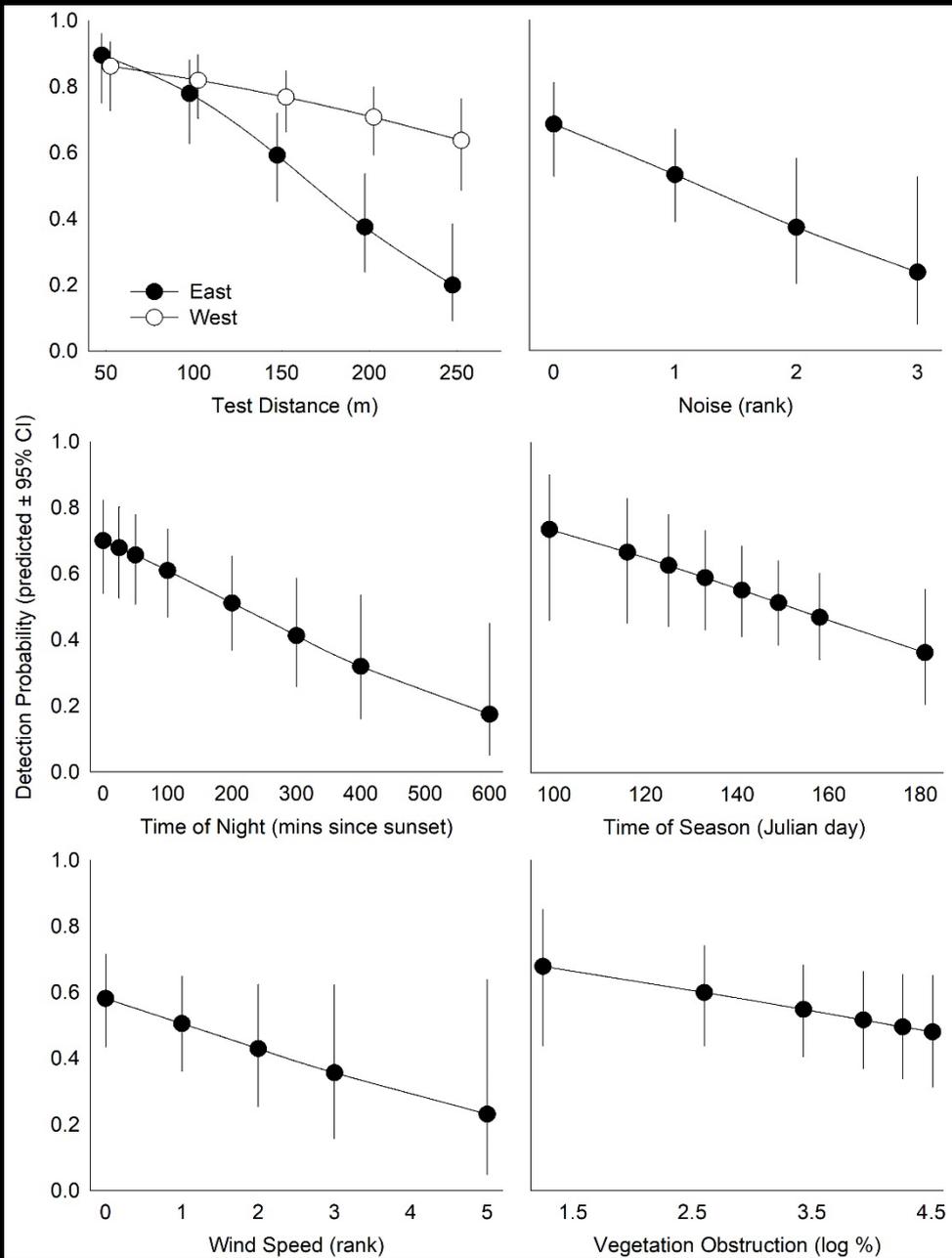




Response Tests

- Controlled call broadcast experiments on known pairs
- Fixed test distances (50 – 250 m in 50-m increments)
- Covariates: obstruction, time, illumination, season, etc.
- Surveyor and Observer
- 255 valid tests at 49 pair-locations, combined with selected 2010-2011 data





Conclusions

- Within our sampling frame, riparian + saguaro is the strongest predictor of occurrence
- Of riparian woodland types, xeric riparian is most associated with ELOW, but mesic riparian also important
- Typical territories has nests in the ecotone in a saguaro and home range predominantly in riparian
- Home ranges ~ 1 ha
- Detection probability has strong relationships with obstruction, conditions, time of night, season, time to response, etc.; ramifications for survey protocol



Acknowledgements

Sponsors:

U.S. BOR: Beth Sabin, Carolyn Ronning, Michelle Reilly, Steve Farinella, Todd Baribault, James Knowles, Sonya Kokos, Nathan Rudd

Administration :

Susan Meredith, GBBO
School of Natural Resources and the Environment, UAZ

Field Work: David Vander Pluym, Alicia Arcidiacono, Keith Brennan, Carlos Gonzalez Sanchez, Vince Murphy, Robert Villa, Kelly Urban, Geoff Bland, Diane Wong-Kong

Field Support: TNC, BLM, USFS, USFWS, NPS, Pima County.

Other Support: Elisabeth Ammon, Ralph Phenix



Lower Colorado River Multi-Species Conservation Program



Balancing Resource Use and Conservation

