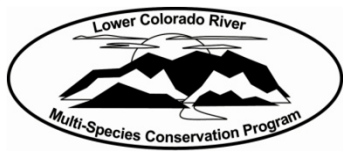


# Elf Owl (*Micrathene whitneyi*) Detectability

**AMERICAN RECOVERY AND REINVESTMENT  
ACT OF 2009 ELF OWL STUDIES - LOWER  
COLORADO RIVER MULTI-SPECIES  
CONSERVATION PROGRAM**



John D. Boone, Great Basin Bird Observatory



# Elf Owl (photo John Stanek)



# Purpose of Study

- Systematically test, evaluate, and refine call broadcast survey protocol
  - ❖ Distance
  - ❖ Time of Night
  - ❖ Obstruction
  - ❖ Illumination
  - ❖ Season
- Improve knowledge of habitat use and area requirements

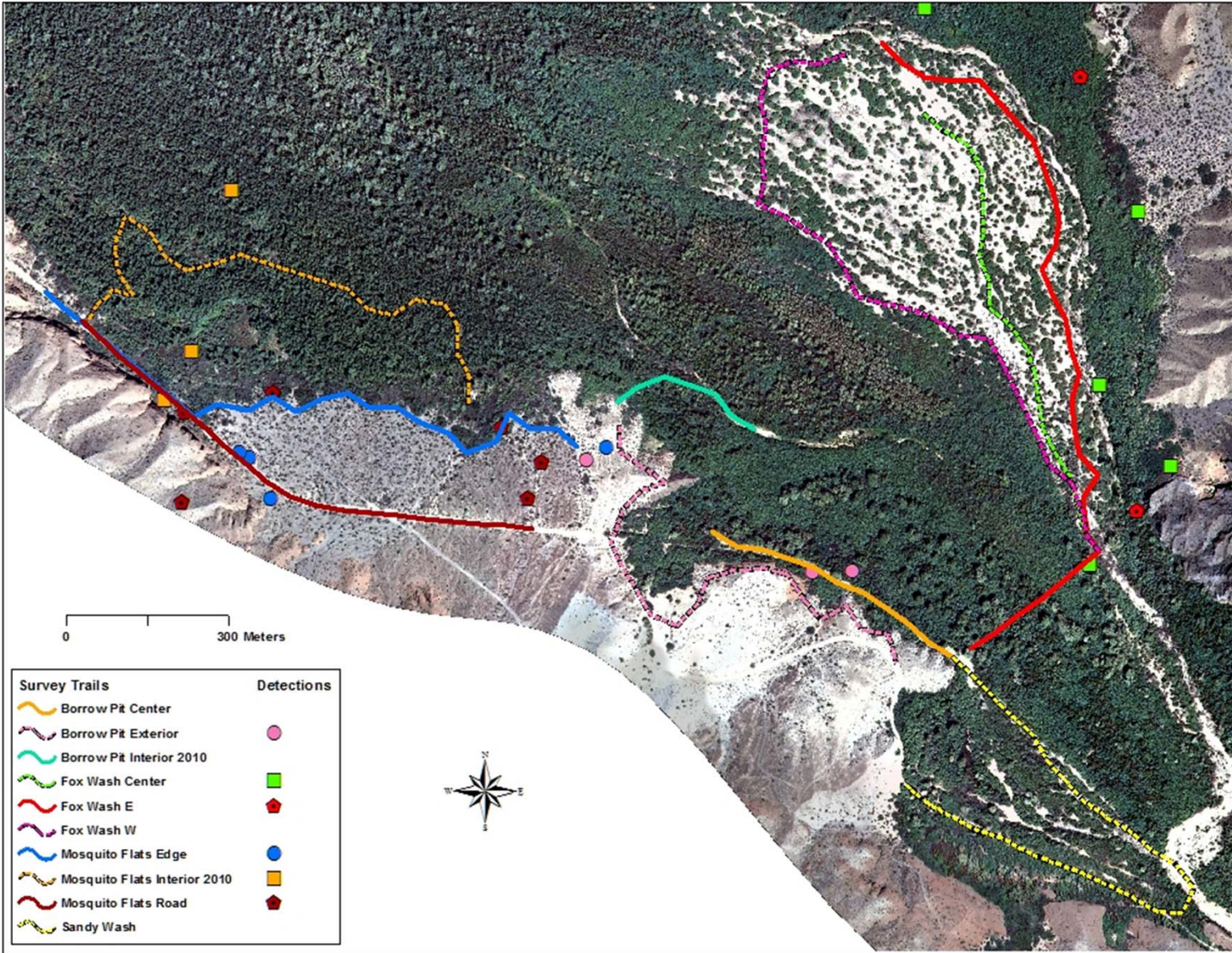
# Study Area (Photo Bureau of Reclamation)



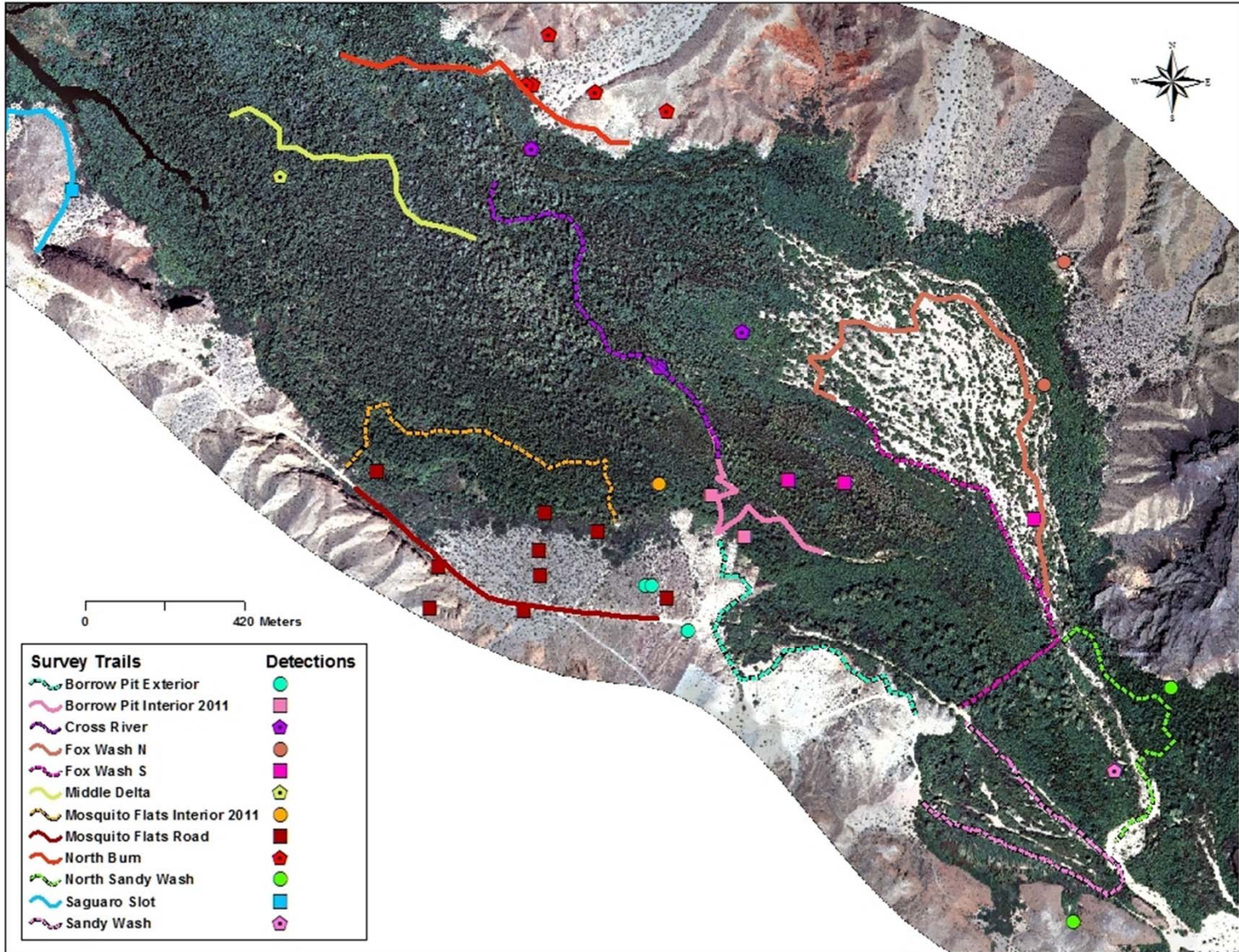
# Study Design

- Identify and delineate territories using passive surveys, call broadcast surveys, and emergence observations
- Conduct call broadcast responsiveness tests on birds with known locations, using different permutations of survey parameters
- Record responses from perspective of 1) surveyor and 2) observer
- Mist net / radio telemetry

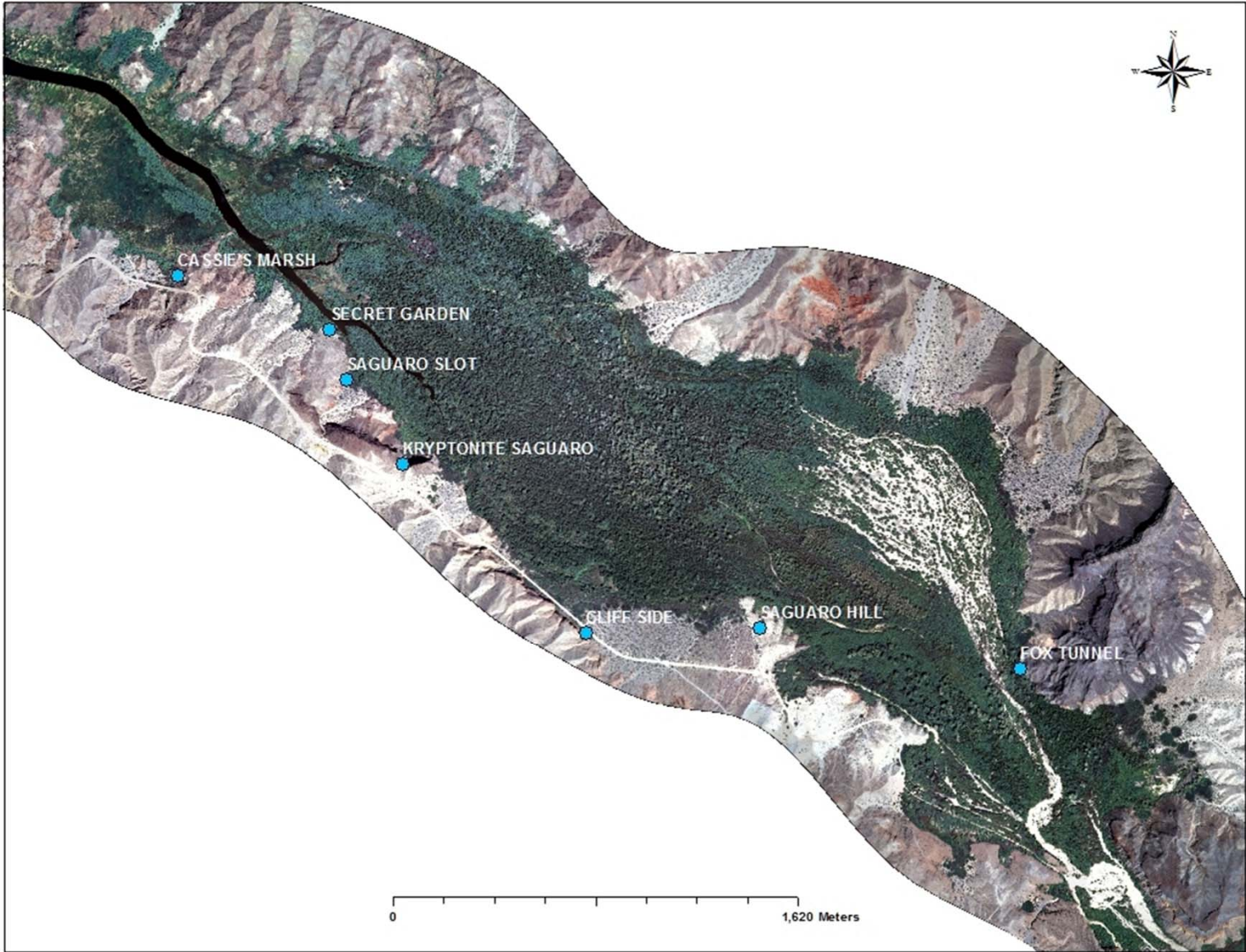




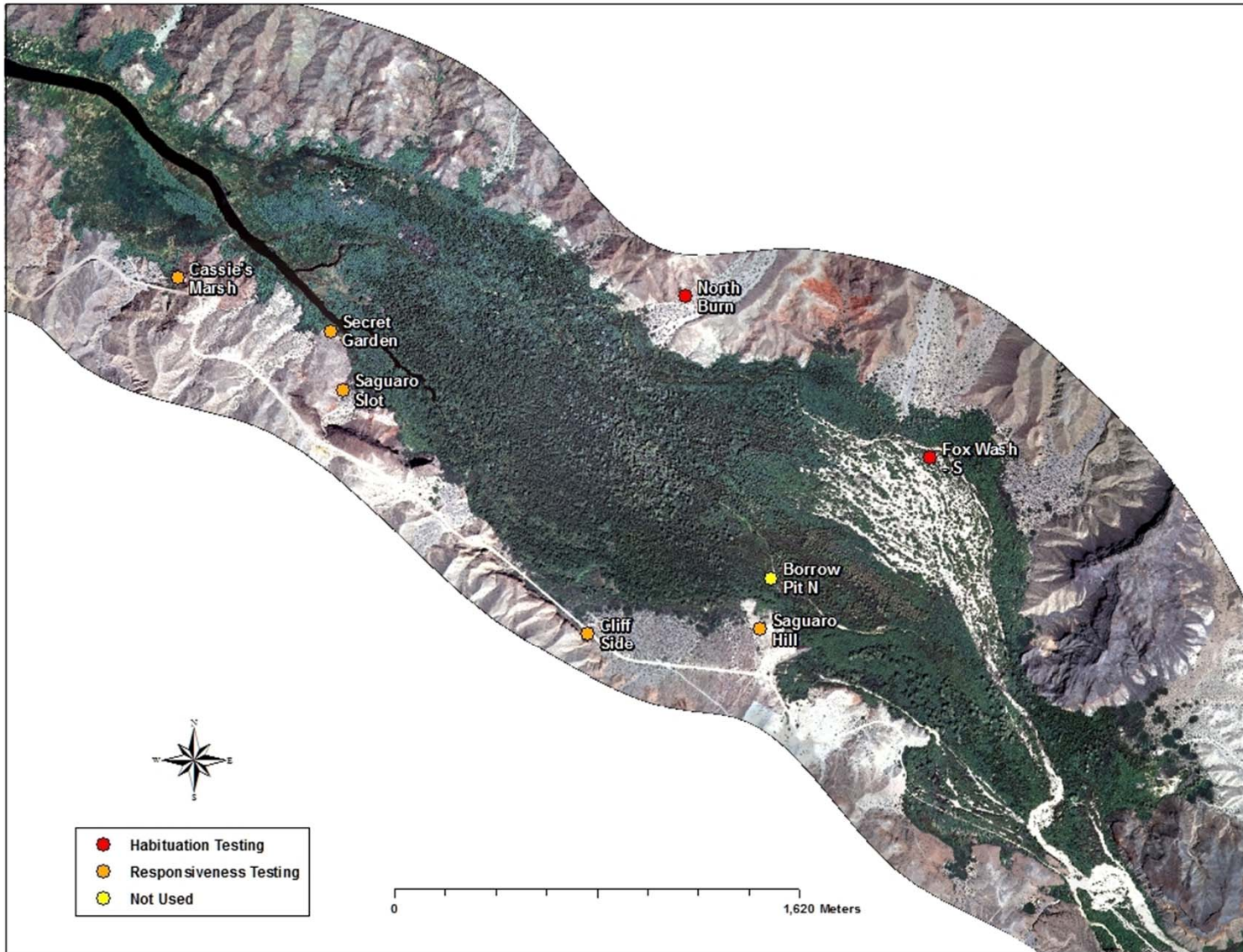








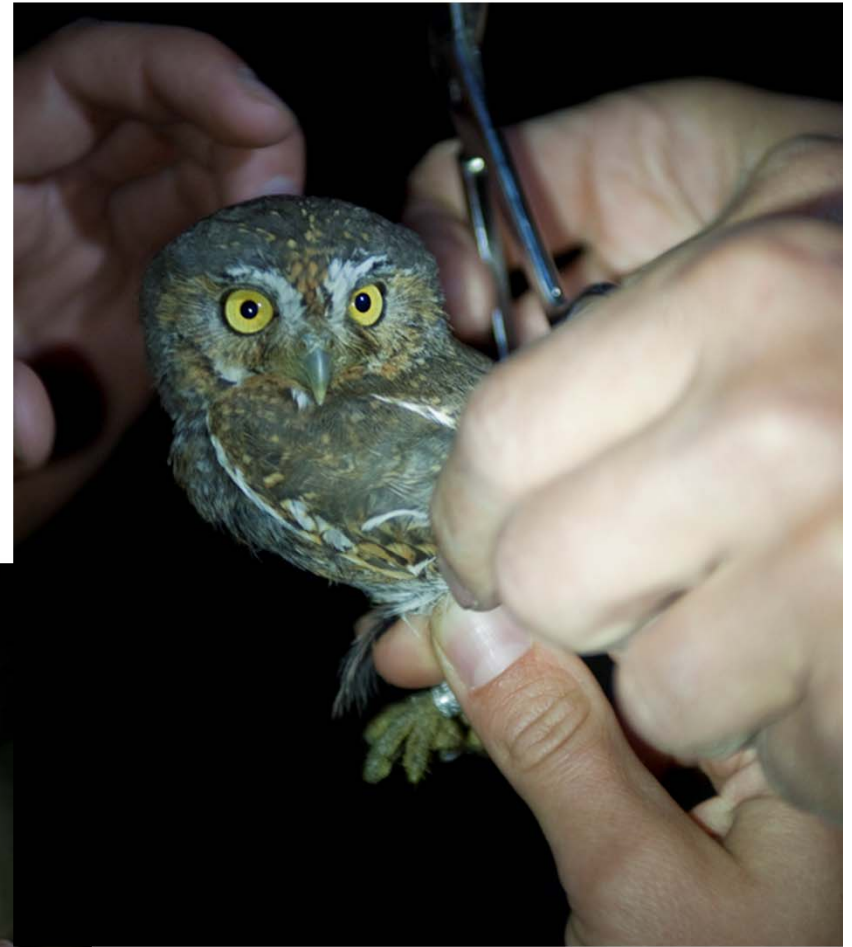










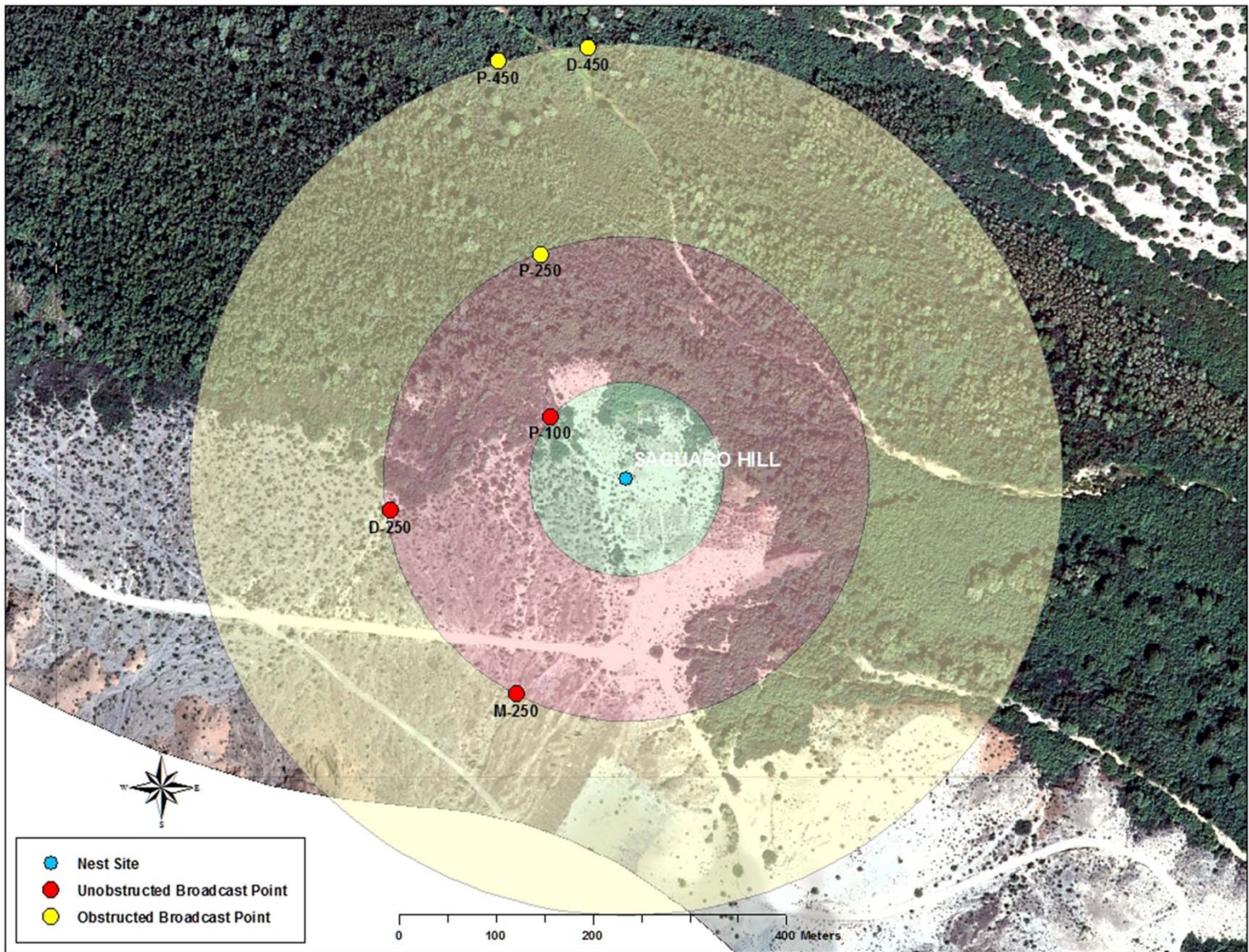


Photos by Bureau of Reclamation



<i>Pair</i>	<i>Dusk</i>	<i>Dusk</i>	<i>Dusk</i>	<i>Mid-</i>	<i>Mid-</i>	<i>Mid-</i>	<i>Preda</i>	<i>Preda</i>	<i>Preda</i>
	<i>100m</i>	<i>250m</i>	<i>450m</i>	<i>Night</i>	<i>Night</i>	<i>Night</i>	<i>wn</i>	<i>wn</i>	<i>wn</i>
				<i>100m</i>	<i>250m</i>	<i>450m</i>	<i>100m</i>	<i>250m</i>	<i>450m</i>
CM	O	6/2	5/28	O	5/5	5/8	5/2	5/12	5/19
SG	4/26	5/13	5/28	5/31	5/18	5/10	O	5/1	5/6
SS	4/9	5/4	5/20	4/19	5/8	5/27	4/12	5/18	5/12
KS	5/19	5/12	X	5/5	5/28	X	5/1	5/9	X
CS	4/26	5/29	5/7	O	5/11	5/4	5/2	5/19	5/23
SH	O	5/13	5/20	5/31	5/10	5/27	5/1	5/18	5/6
FT	5/6	5/30	6/2	O	5/11	5/19	O	5/23	5/28

<i>Pair</i>	<i>Dusk</i>	<i>Dusk</i>	<i>Dusk</i>	<i>Mid-</i>	<i>Mid-</i>	<i>Mid-</i>	<i>Predawn</i>	<i>Predawn</i>	<i>Predawn</i>
	<i>100m</i>	<i>250m</i>	<i>450m</i>	<i>Night</i>	<i>Night</i>	<i>Night</i>	<i>100m</i>	<i>250m</i>	<i>450m</i>
CM	4/28	O	5/13	O	5/6	5/21	5/17	5/2	5/27
SG	O	5/5	5/16	O	6/1	5/25	5/1	5/10	5/22
SS	4/28	5/16	5/11	O	5/2	5/22	O	6/1	5/27
CS	4/24	5/10	5/30	O	5/6	5/1	O	5/17	5/24
SH	O	6/1	5/5	O	5/1	O	5/28	5/13	5/24



	<i>Unobstructed</i>	<i>Obstructed</i>
All tests	41/64 (64%)	4/23 (17%)
Confirmed owls only	41/59 (69%)	4/20 (20%)

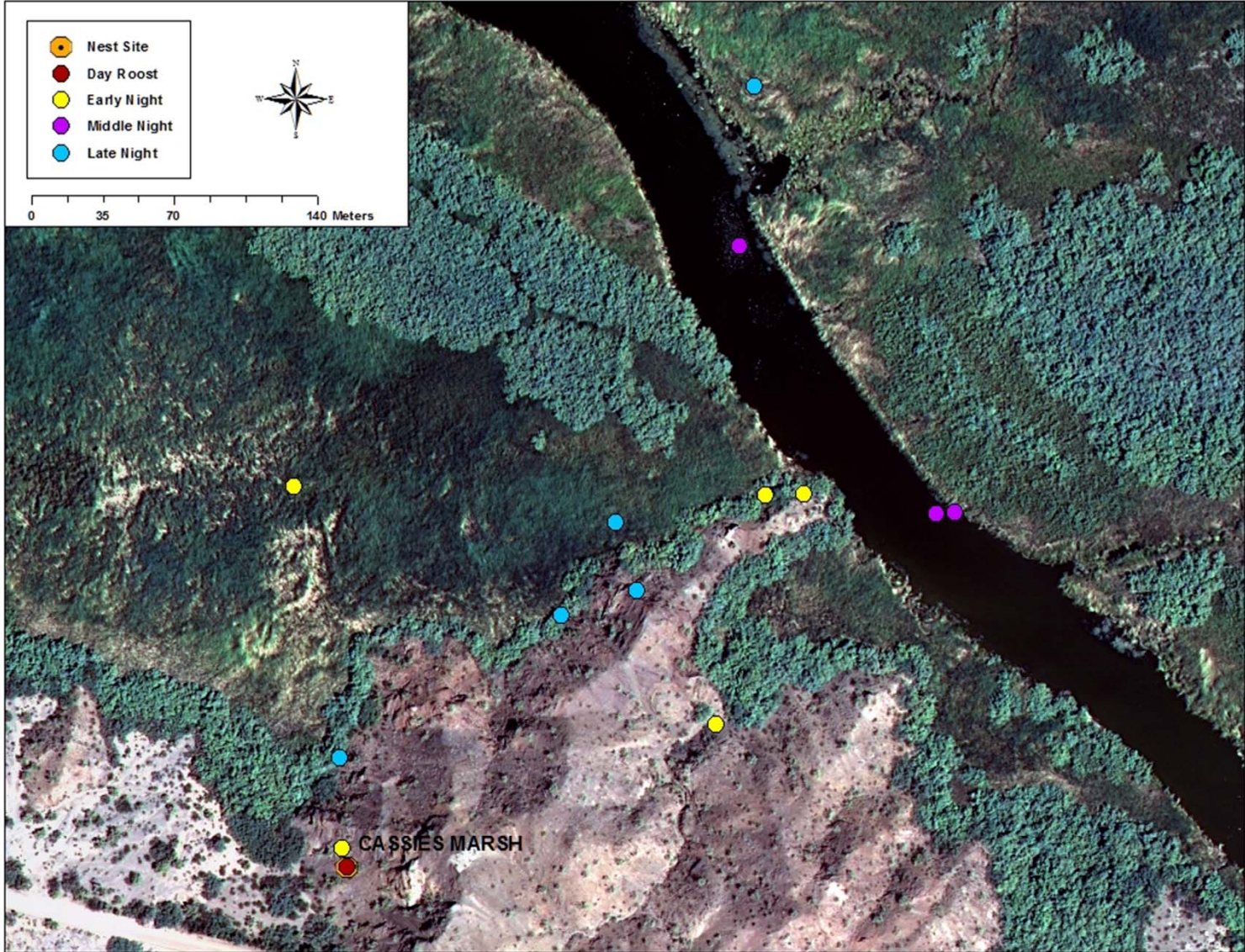
	<i>100 m</i>	<i>250 m</i>	<i>450 m</i>
Unobstructed, all tests	15/18 (83%)	15/25 (60%)	11/21 (52%)
Unobstructed, confirmed owls only	15/16 (94%)	15/24 (63%)	11/19 (58%)
	1/ 2 (50%)	2/10 (20%)	1/11 (9%)
Obstructed, all tests	1/ 2 (50%)	2/9 (22%)	1/9 (11%)
Obstructed, confirmed owls only			

	<i>Unobstructed</i>	<i>Obstructed</i>
Confirmed response	7 (3 at 250m, 4 at 450m)	6 (1 at 100 m, 3 at 250m, 2 at 450m)
Probable / possible response	3 (3 at 450m)	
No response	8 (1 at 100m, 6 at 250m, 1 at 450m)	6 (2 at 250m, 4 at 450m)
		4 (2 at 250m, 2 at 450m)
Proportion of non-responses (from the surveyor's perspective) with confirmed, probable, or possible responses from observer's perspective	10/18 (56%)	12/16 (75%)

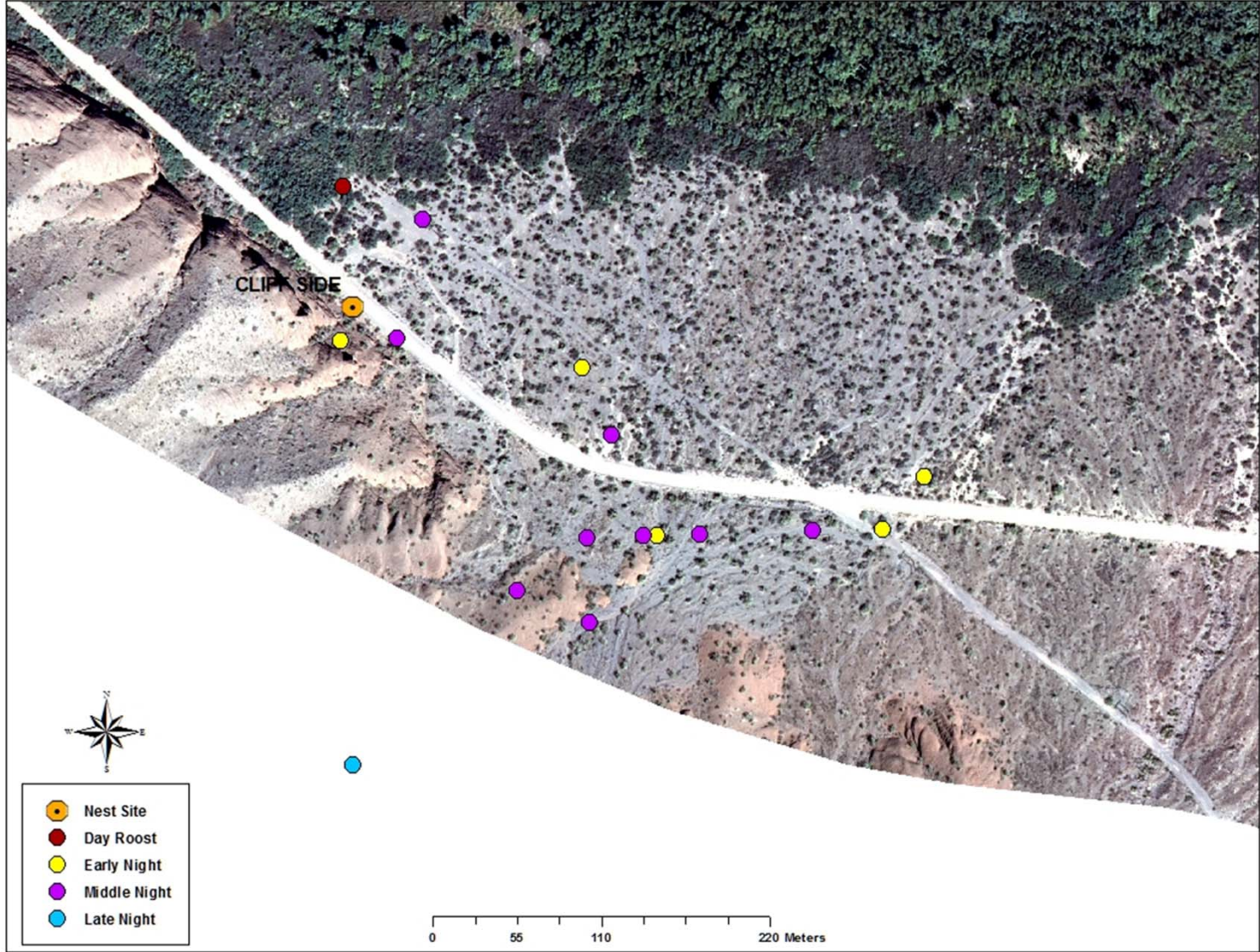


	<i>Semi-ideal</i>	<i>Not semi-ideal</i>
All tests	13/14 (93%)	28/50 (56%)
Confirmed owls only	13/14 (93%)	28/45 (62%)

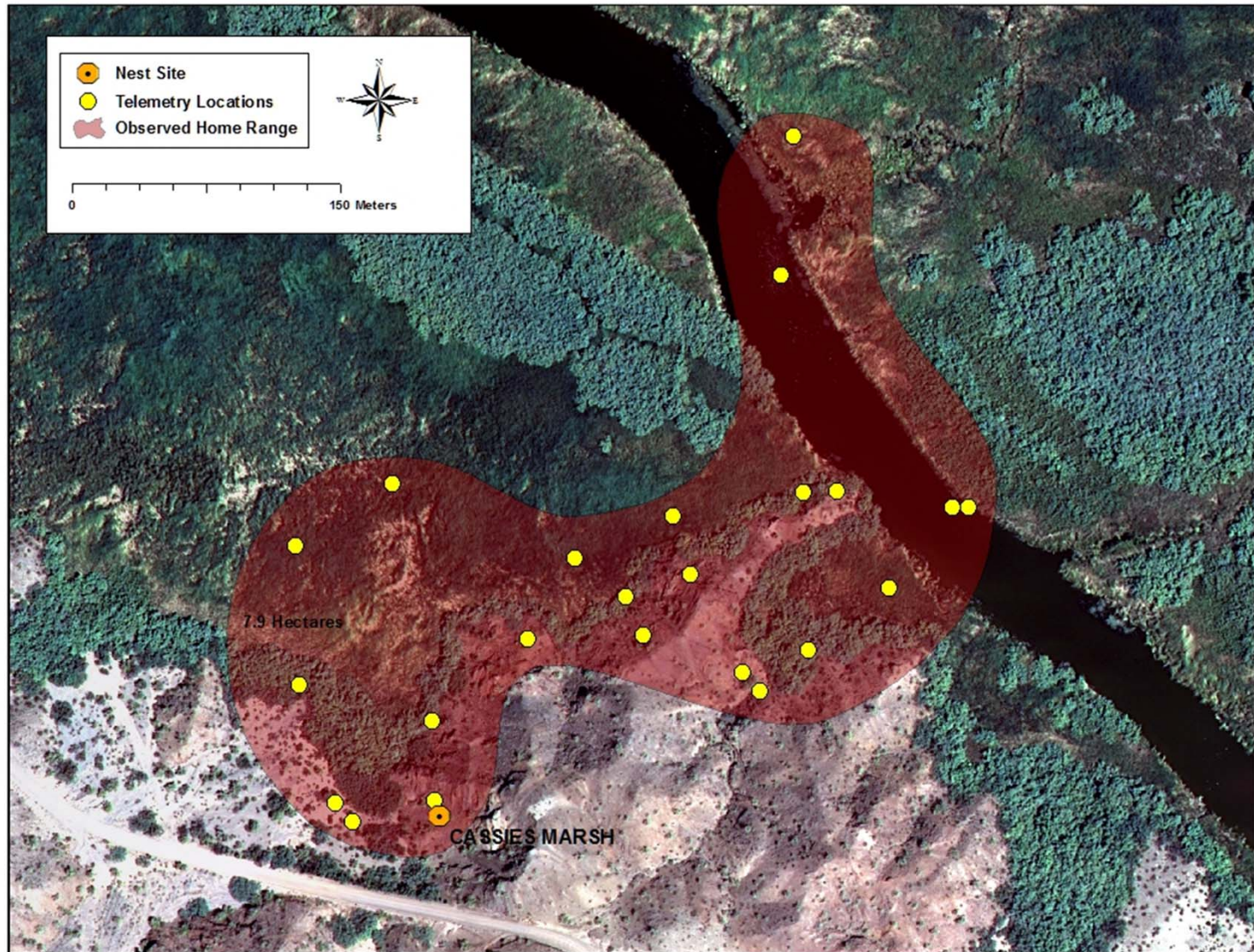
	<i>1 iteration</i>	<i>2 iterations</i>	<i>3 iterations</i>	<i>4 iterations</i>
Unobstructed, 100 m	8 cases	6 cases	0 cases	0 cases
Unobstructed, 250 m	6 cases	7 cases	2 cases	0 cases
Unobstructed, 450 m	5 cases	3 cases	1 case	2 cases
Obstructed, 100 m	1 case	0 cases	0 cases	0 cases
Obstructed, 250 m	1 case	1 case	0 cases	0 cases
Obstructed, 450 m	0 cases	0 cases	1 case	0 cases



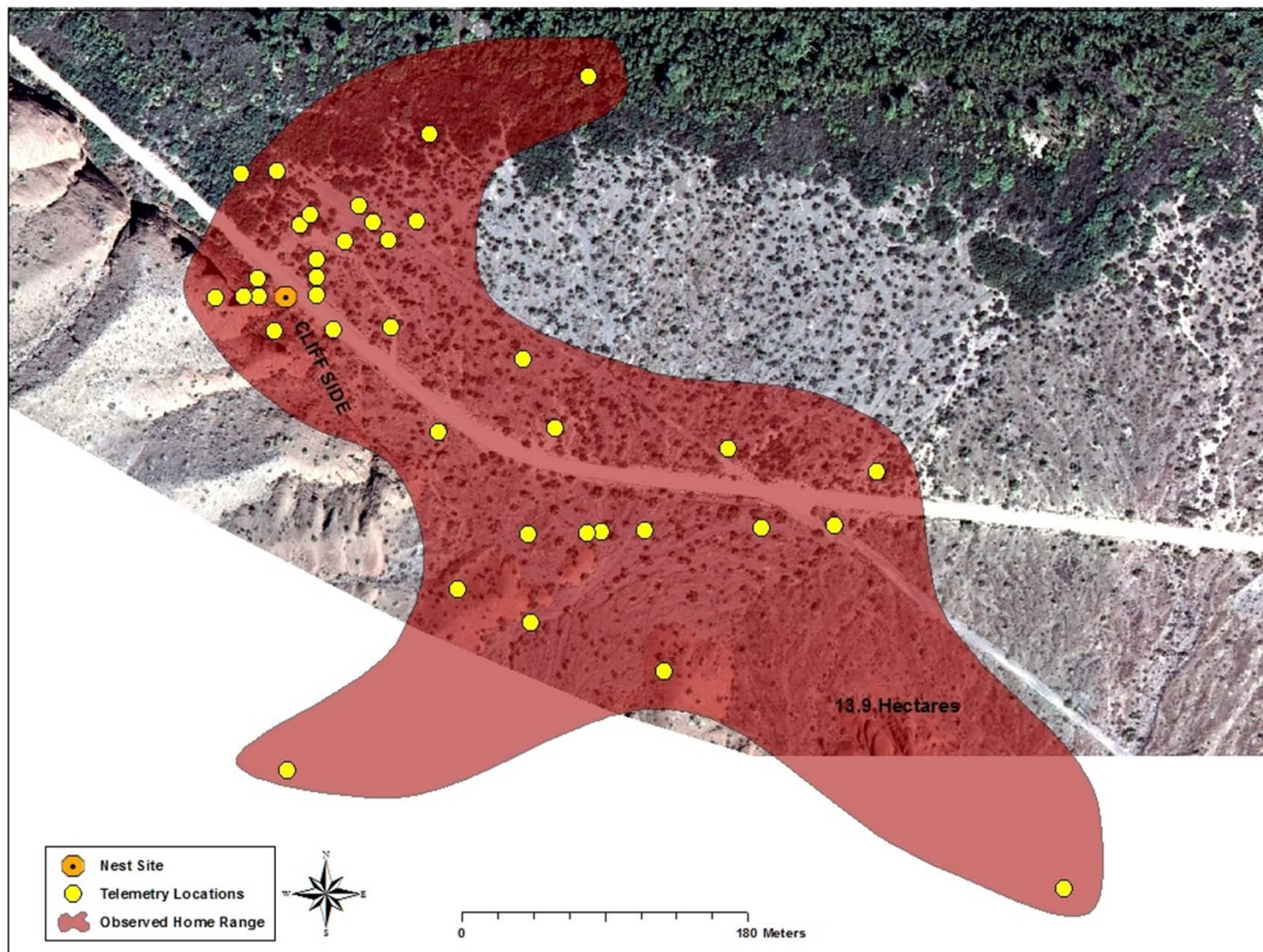












# Recommended Survey Protocol

- **Best information for unobstructed conditions**
- **Protocol modified to be applicable to discovery surveys with unknown nesting habitat**
- **Highlights**
  - 150 m effective distance
  - Replication (two nights) and staggering
  - Standardize to dusk period
  - 2<sup>nd</sup>, 3<sup>rd</sup>, and 4<sup>th</sup> week of April (based on BWRNWR)



# Additional Recommended Work

- **Discovery surveys**
- **Work on riparian nesting owls, or more obstructed tests at shorter distances**
- **Nest boxes to investigate cavity density requirements and encourage colonization**

# Thanks to:

- Sarah Green
- Lindsey Smith
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