Lowland Leopard Frog and Colorado River Toad Distribution and Habitat Use on the Bill Williams River

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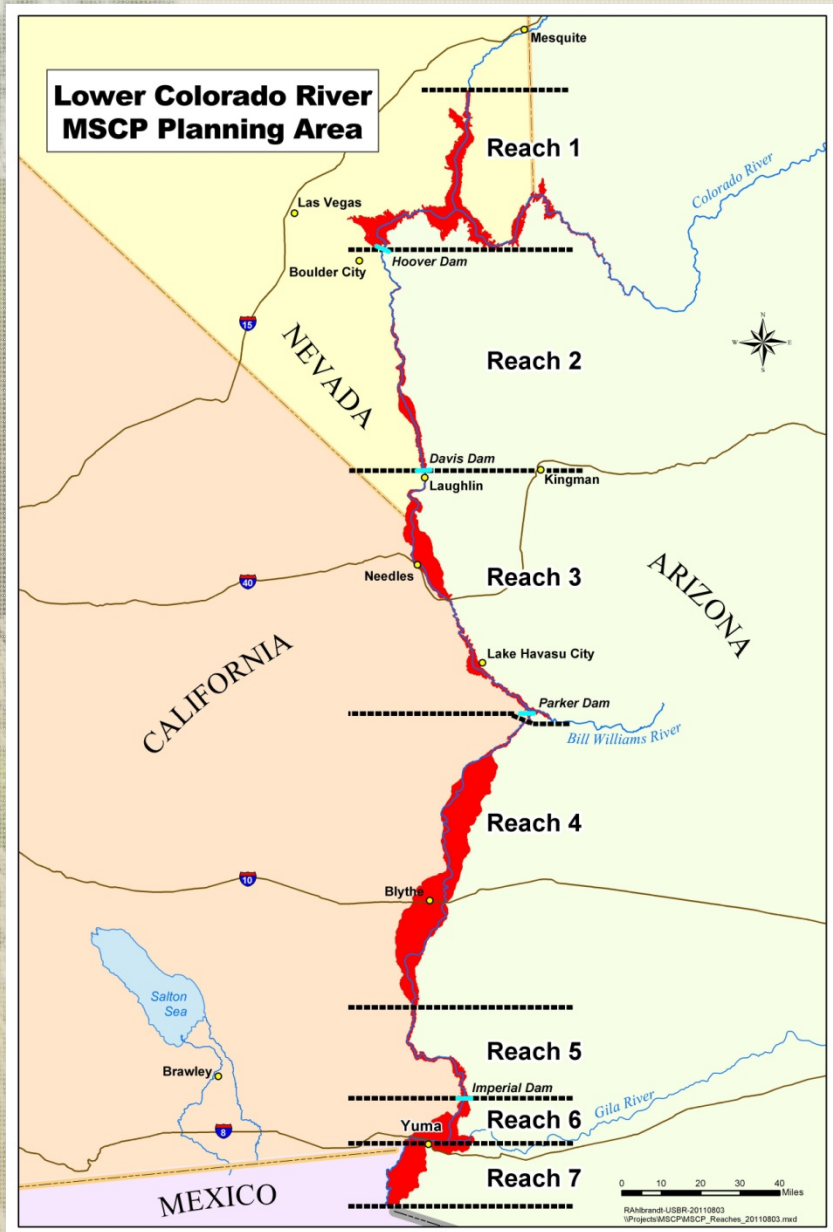
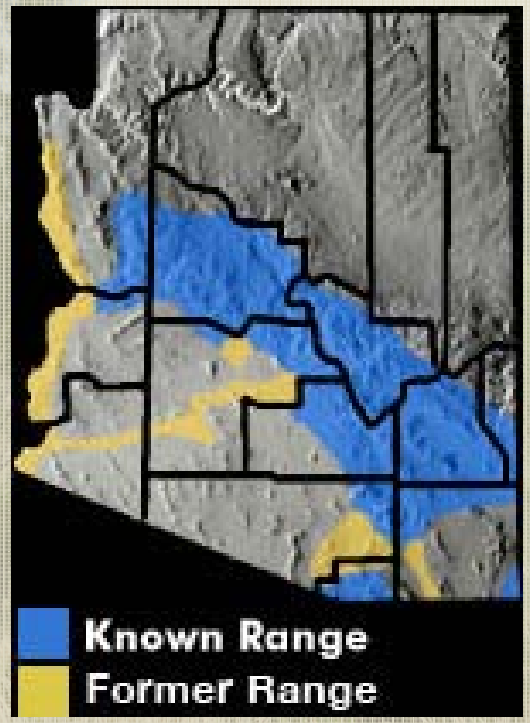


Study Area/Objectives

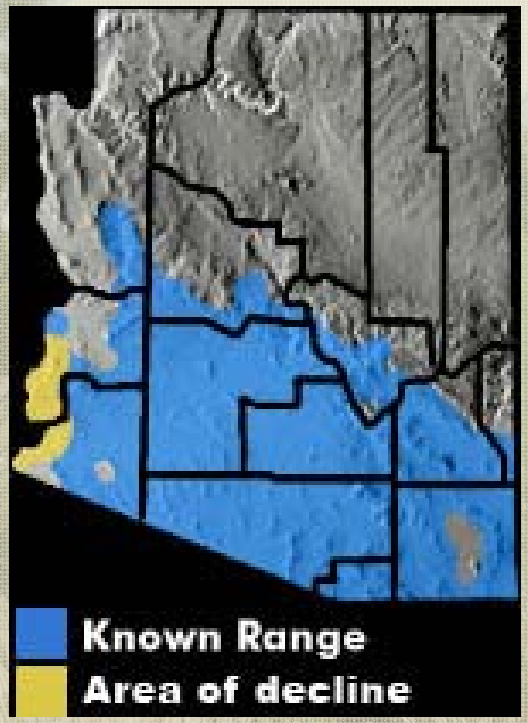
-Two MSCP evaluation species

-Determine current distribution along the LCR and quantify habitat characteristics where individuals are found



Study Organism

- *Lithobates yavapaiensis* (Lowland Leopard Frog)
- Spring Breeder
- Variety of habitats with semi-permanent water
- Do well with periodic flooding



Study Organism

Incilius alvarius
(Colorado River Toad)

-Monsoon Breeders

-Primarily found in arroyos and desert washes.

Background

-Lowland Leopard Frog not observed on main channel of the LCR since 1974

-Colorado River Toad several anecdotal reports, no intensive search efforts in several years.

-Six *I. alvarius* were captured and marked on Planet Ranch in 2011. No *L. yavapaiensis* were observed during the 2011 field season

Survey Methods

-Suitable habitat ID

-Spotlighting and visual surveys

-Auditory surveys

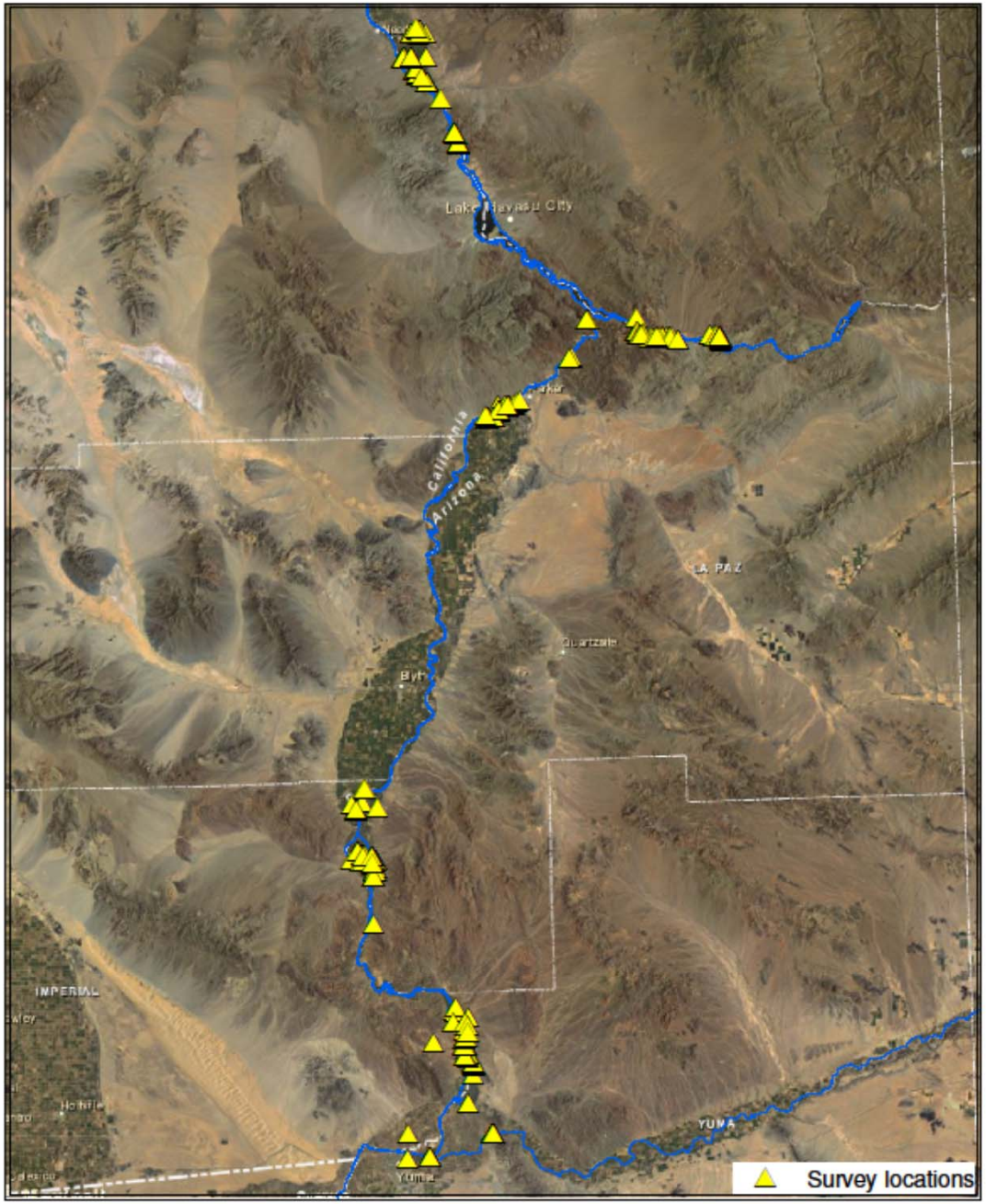
-Dip net and funnel traps targeting tadpoles and aquatic predators

Quantifying Habitat

-Within three days of a sighting quantify ten meter radius around observation point and at least one non-site

-Water characteristics

-Vegetation cover


Lake Havasu City
Parker
California
Arizona
LA PAZ
Quartzsite
Blythe
IMPERIAL
Holtville
YUMA
Yuma
Survey locations

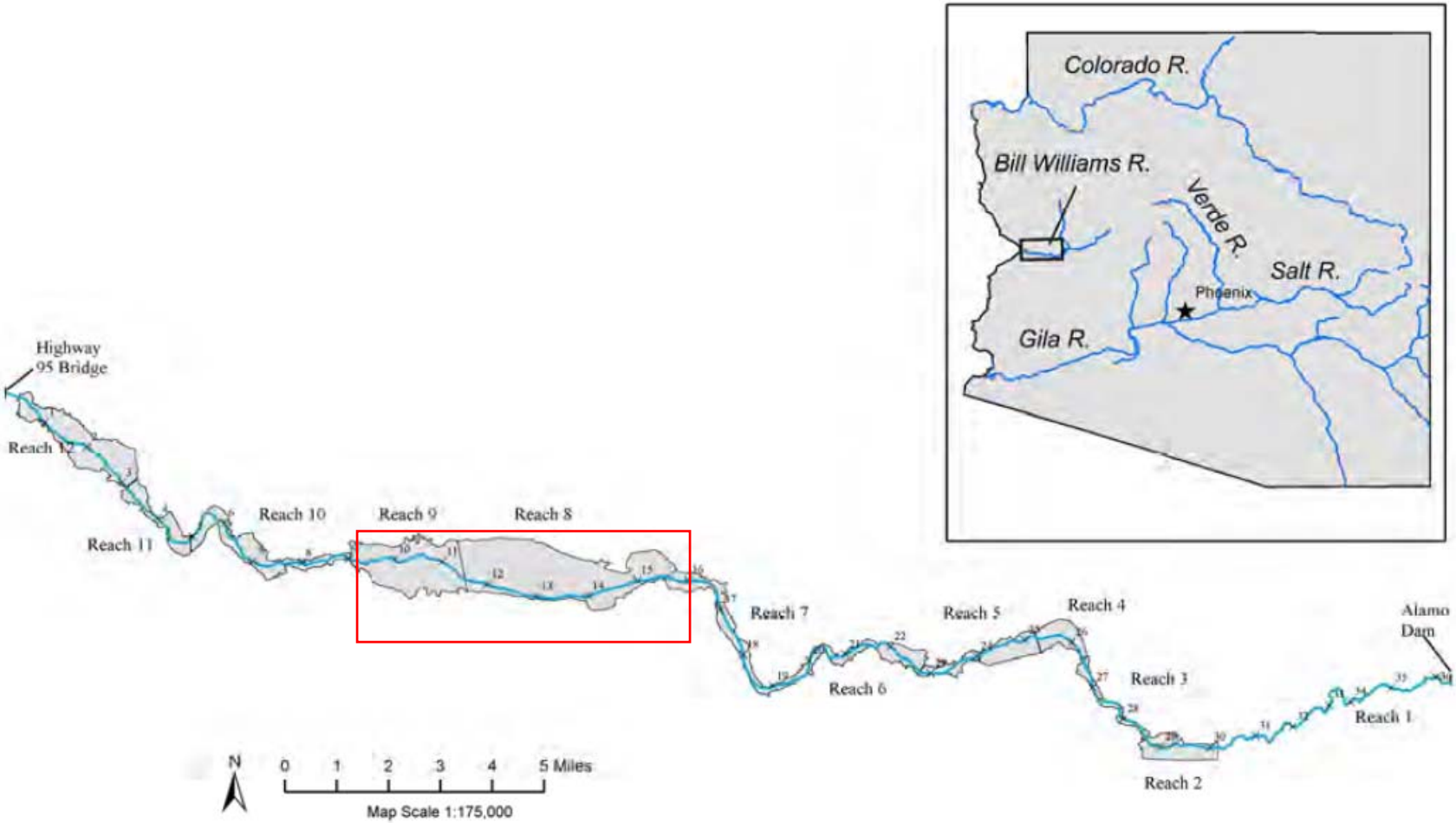
N
W
E
S
0
15
30
60
90
Kilometers

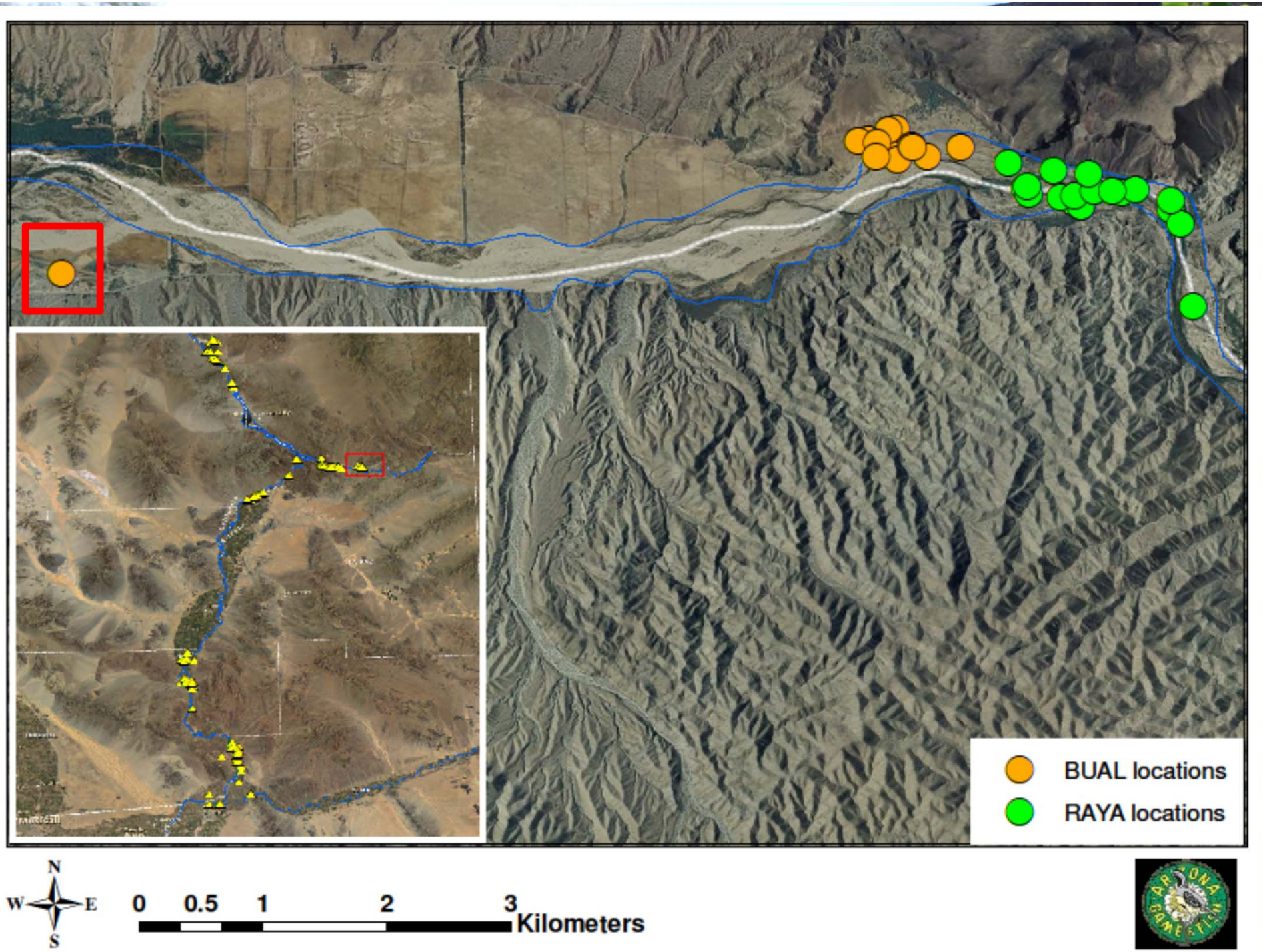
Results

-Over 200 hours of nocturnal surveys conducted

-Funnel trap clusters were deployed at over 180 different locations, and logged over 90,000 trap hours

- Populations of *L. yavapaiensis* and *I. alvarius* persist around Planet Ranch and the upper section of the Bill Williams River.


Colorado R.
Bill Williams R.
Verde R.
Salt R.
Phoenix
Gila R.
Highway 95 Bridge
Reach 12
Reach 11
Reach 10
Reach 9
Reach 8
Reach 7
Reach 6
Reach 5
Reach 4
Reach 3
Reach 2
Reach 1
Alamo Dam
N
0 1 2 3 4 5 Miles
Map Scale 1:175,000

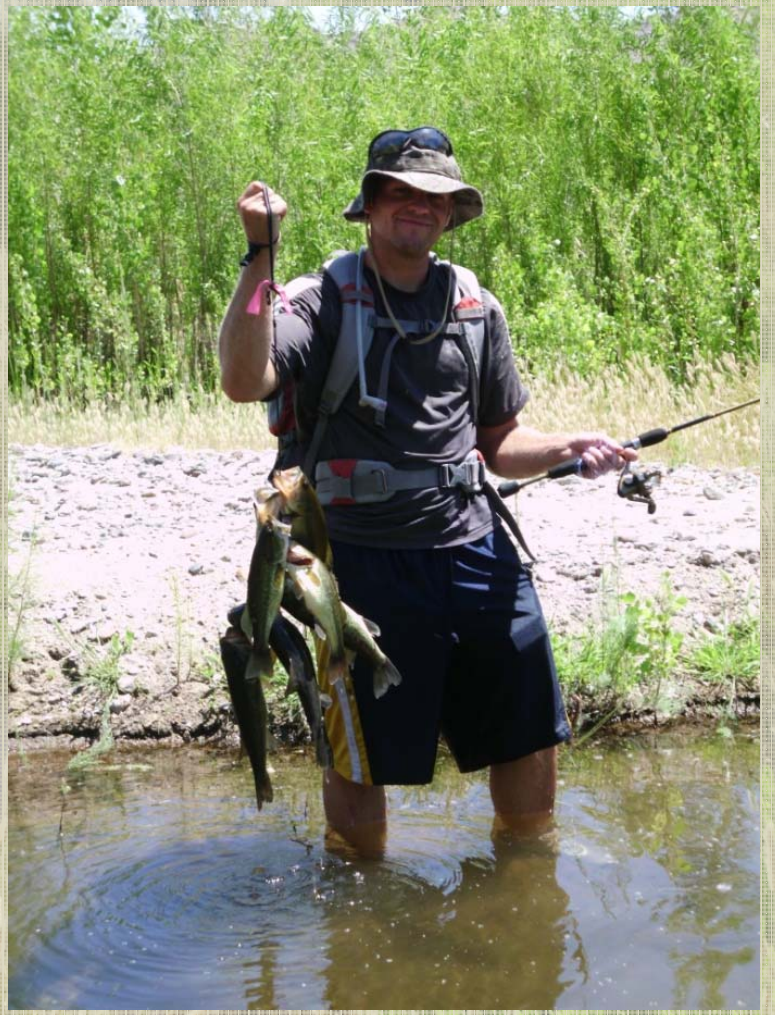

BUAL locations
RAYA locations
N
W
E
S
0
0.5
1
2
3
Kilometers

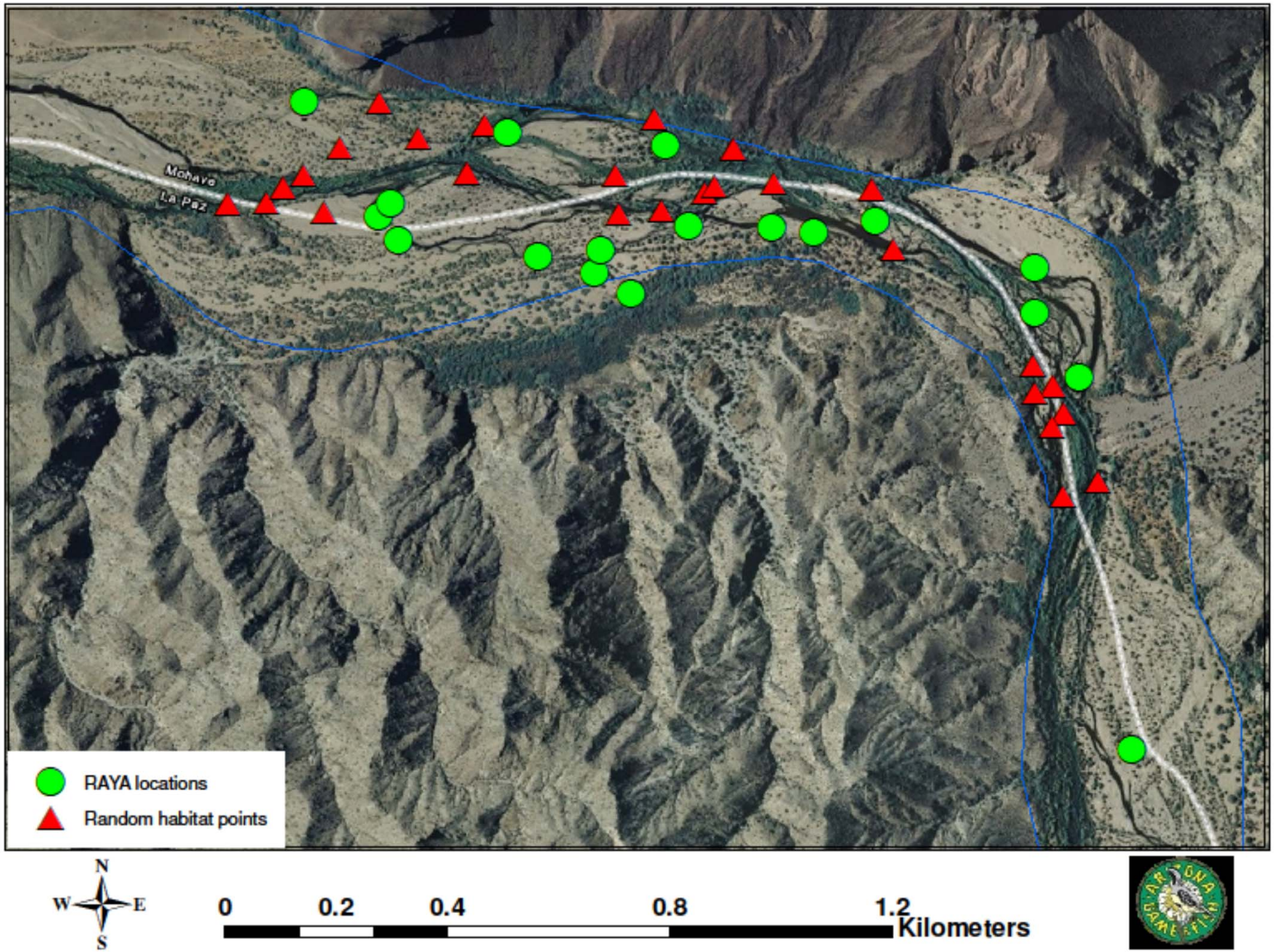
Results Continued…

L. yavapaiensis

	RAYA	BUAL	RABE	BUWO	BUCO	BUPU	BUMI	SCCO	PSRE	RACA
Bill Williams River National Wildlife refuge					X	X	X			
Havasu NWR				X	X				X	X
Cibola NWR				X	X					X
Ahakhav				X	X					X
Mittry/Imperial NWR			X							X
Gila River			X	X						X
Planet Ranch and Bill Williams River east of refuge	X	X			X	X	X	X		

Why the upper Bill Williams River?




Mohave
La Paz
RAYA locations
Random habitat points
N
W
E
S
0
0.2
0.4
0.8
1.2
Kilometers

Local models

Parameter	Unconditional Parameter Estimate	Unconditional Standard Error	Odds ratio	95% LCL	95%UCL
Maximum.Depth	-0.0978	0.0415	0.91	0.836	0.984
Minimum.Depth	-0.3492	0.2337	0.71	0.446	1.115
Em	-0.0776	0.0337	0.93	0.866	0.989
Grass	-0.059	0.0526	0.94	0.85	1.045
Cambarids	-0.7232	1.5464	0.49	0.023	10.052

Regional model

Model #50					
Parameter	**Estimate**	**Standard Error**	**Odds Ratio**	**95% LCL**	**95%UCL**
Maximum.Depth	-0.1041	0.04025	0.90	0.833	0.975
Discharge	-1.08458	0.64609	0.34	0.095	1.199
Forb	0.71265	0.41603	2.04	0.902	4.609
Open.Terr.	0.02346	0.03084	1.02	0.964	1.088

Incilius alvarius

	Mean	Stnd. Deviation
Dist to Water	219.92m	16.71m
Open Terr.	78.59	8.75
Tot. Open	81.45	7.29
Em	2.5	1.75
Shrub	8.52	3.19
Forb	0.1	0.06
Tree	0.07	0.07
Grass	7.95	7.09

Habitat!

-Braided side channels with shallow water

-open areas, relatively less invasive plant species

-Beaver activity and periodic flooding…

Other surprises?

2013 Plans

Nested habitat analysis

Vegetation species composition

eDNA evaluation

Continue surveys at potential habitat

Questions

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