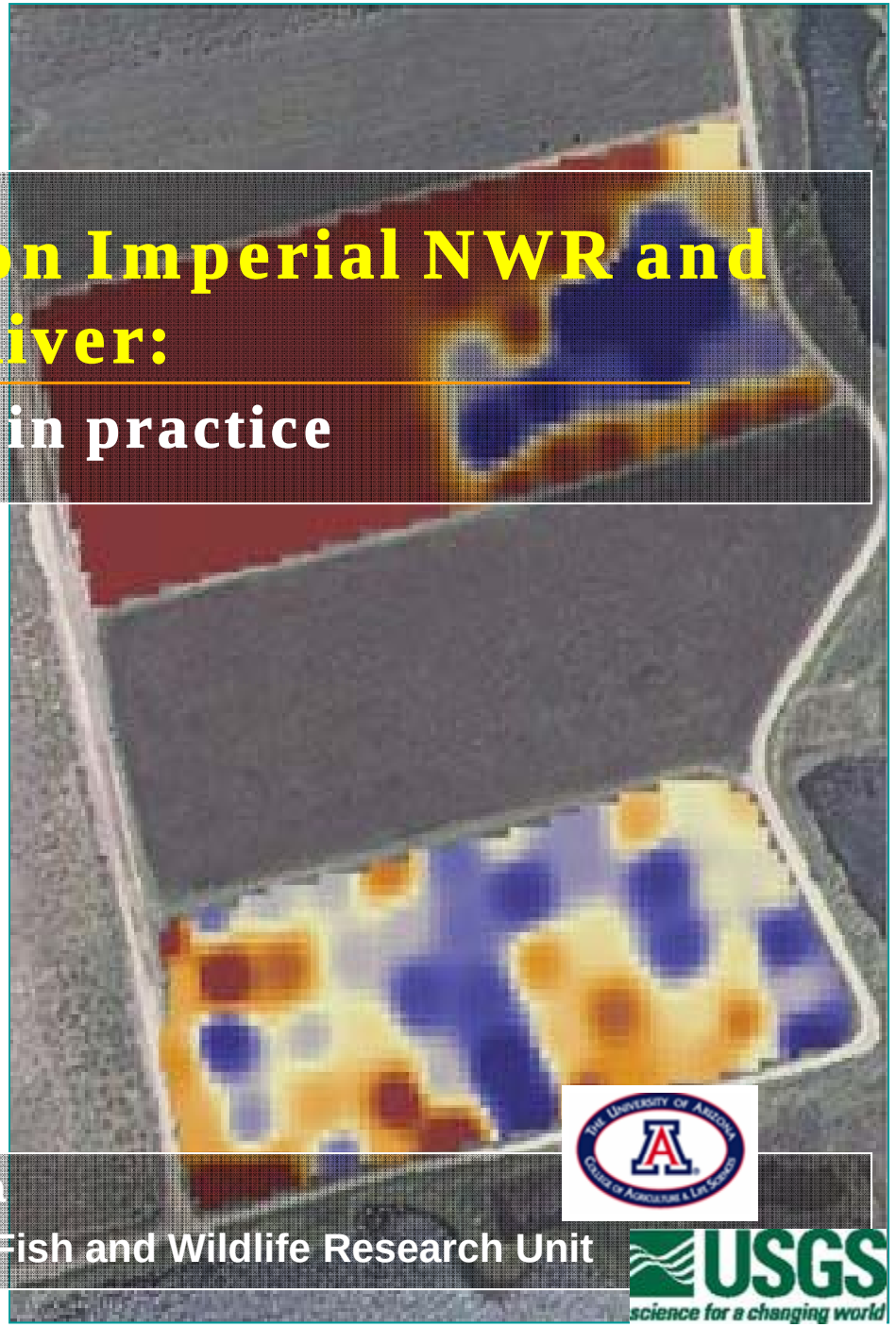


Marsh bird research on Imperial NWR and the Lower Colorado River:

adaptive management in practice

Christopher P. Nadeau, University of Arizona
Courtney J. Conway, USGS AZ Cooperative Fish and Wildlife Research Unit

USGS science for a changing world

A glimpse at our studies

1. Restoring managed marsh units to benefit California black rails

2. Managing rail habitat with fire

3. Estimating the detection probability of Yuma clapper rails

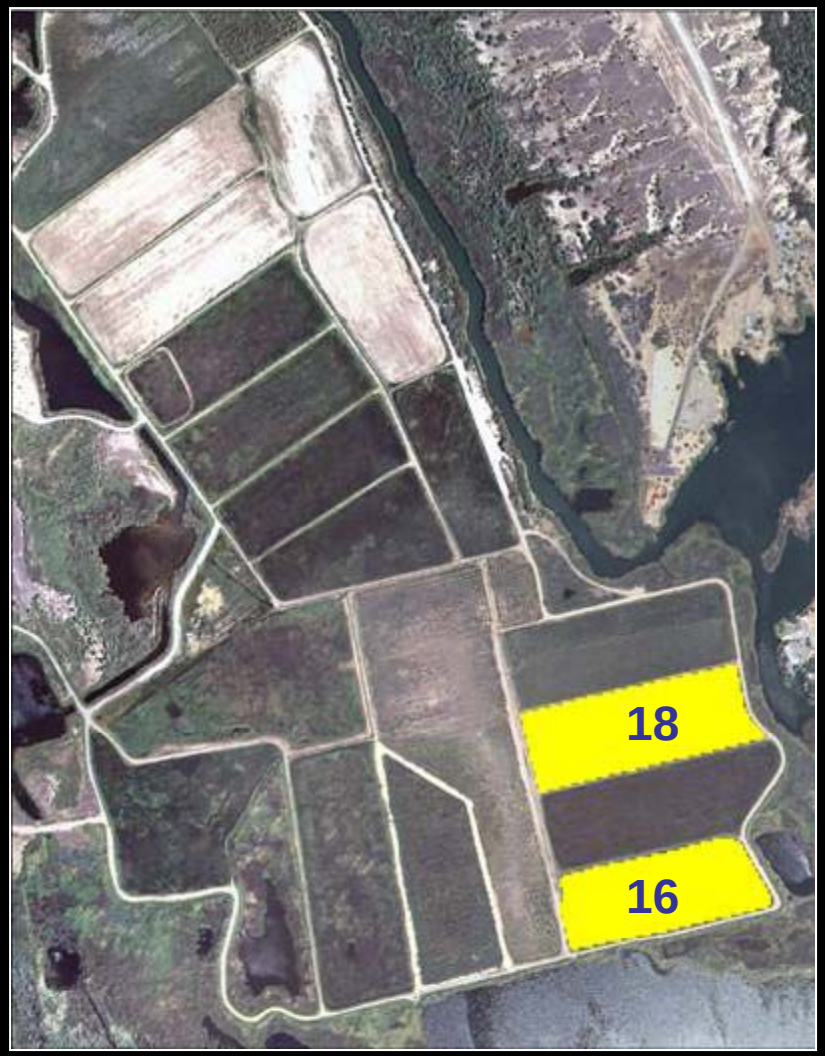
4. Determining the patch size requirements of Yuma clapper rails

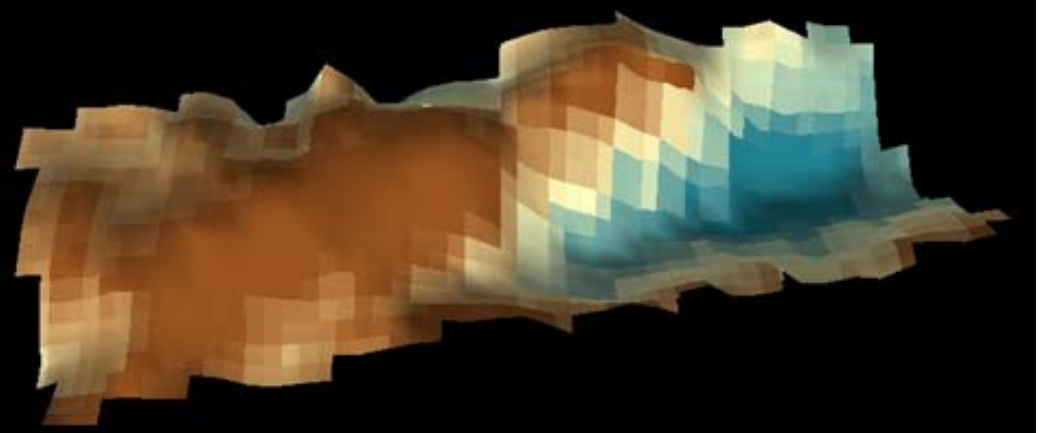
Restoring managed marsh units for California black rails

Determine the habitat requirements of California black rails (and other marsh birds).

Provide detailed recommendations on the hydrologic and vegetative requirements of black rails to inform management and restoration.

Study Sites on Imperial NWR



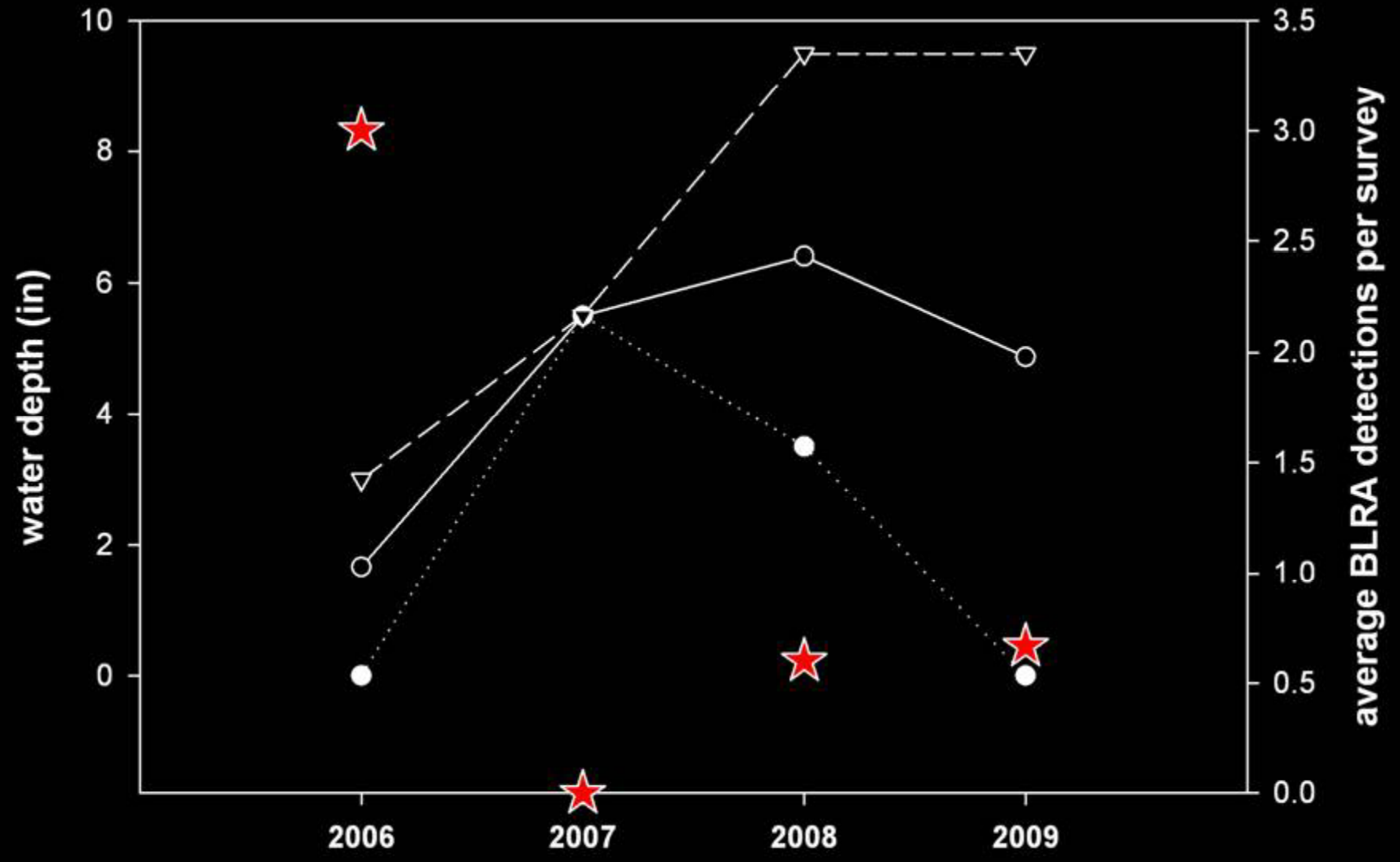


Water and Vegetation Monitoring

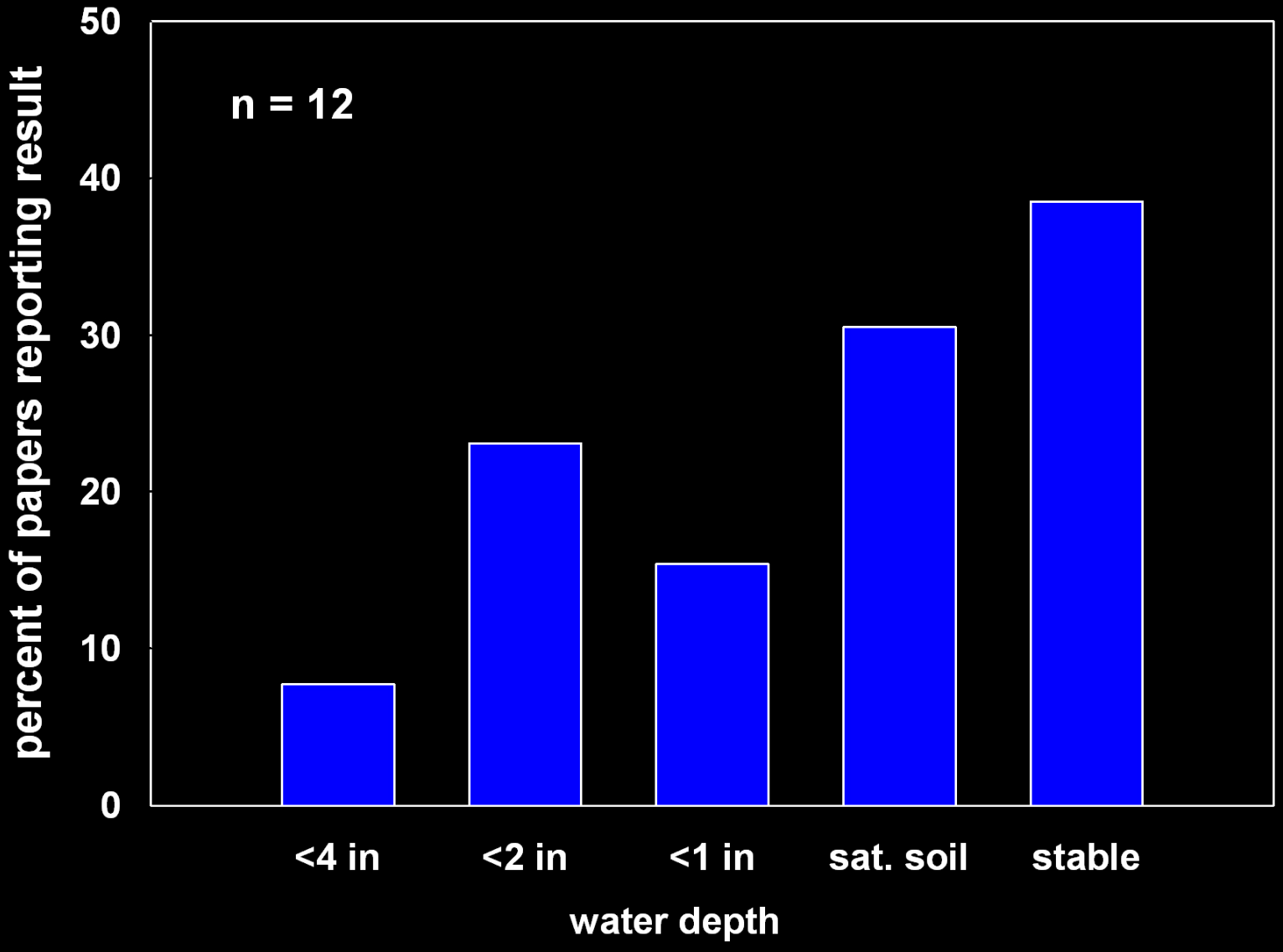
Learning from the BLRA detections in field 16

- 6 total BLRA detections
- 0 detections on 66% of our surveys

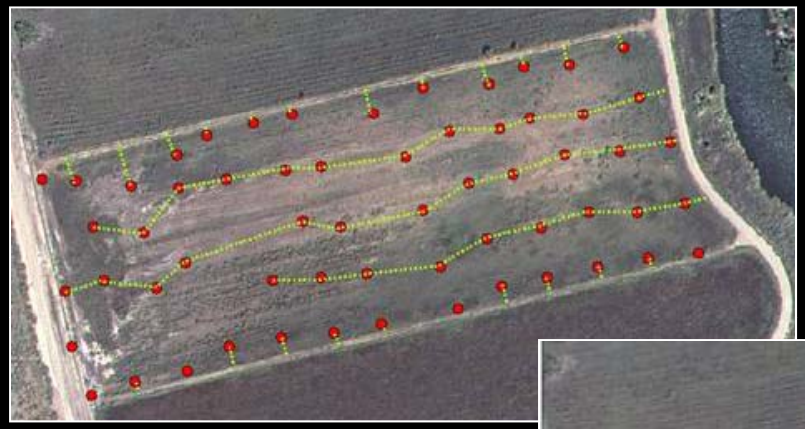
Where Have All the Black Rails Gone???

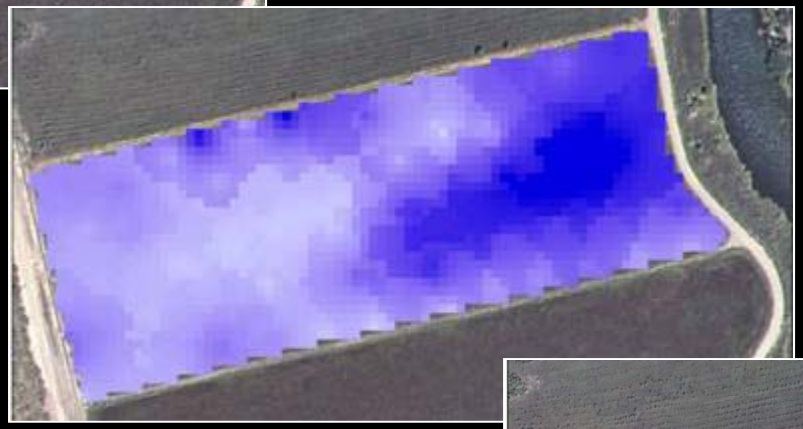


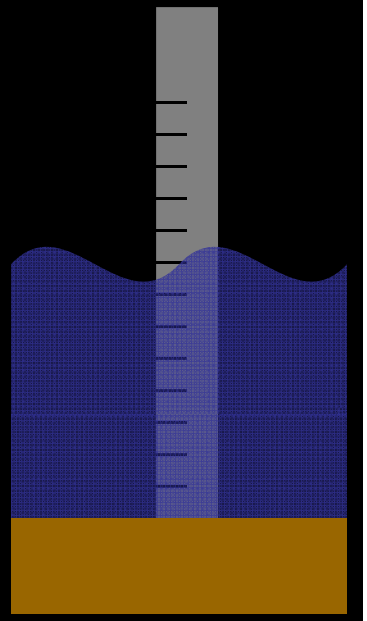
What do we know about Black Rail habitat???

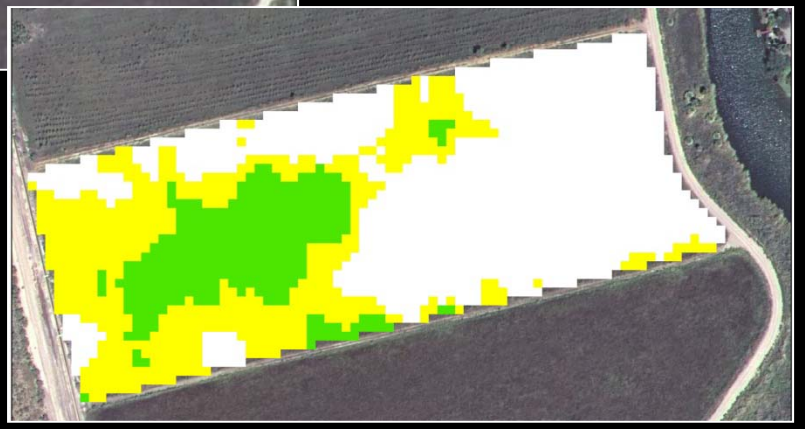


Building Spatial Models to Determine Optimal Water Depth





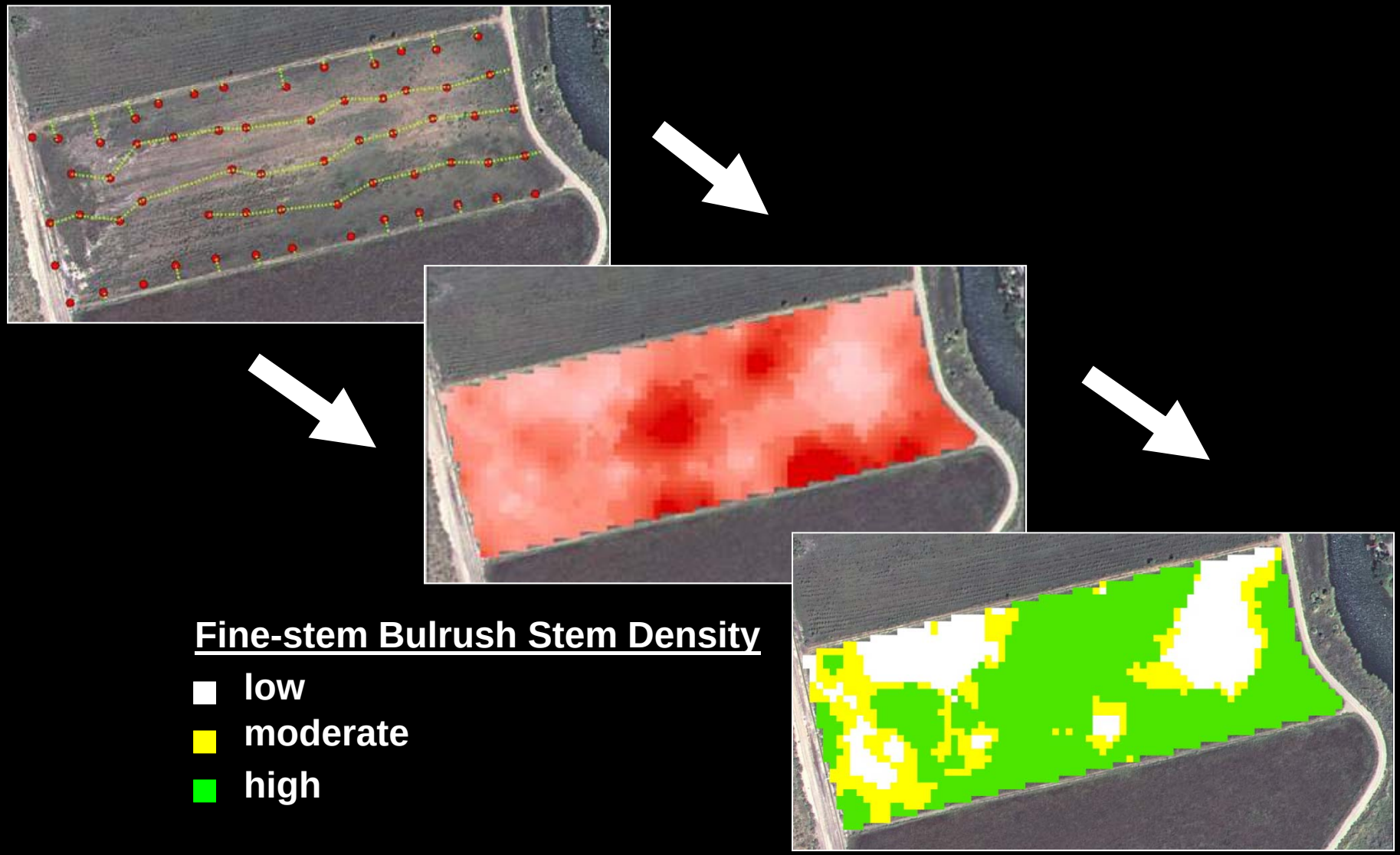




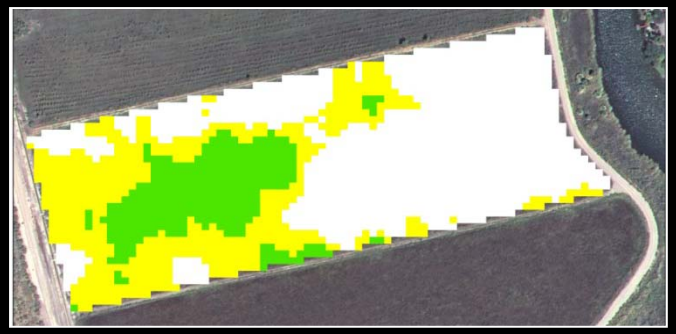
Water Depth

- <-2 inches OR >4 inches
- 2 – 4 inches
- -2 – 2 inches

Building Spatial Models to Determine Optimal Water Depth

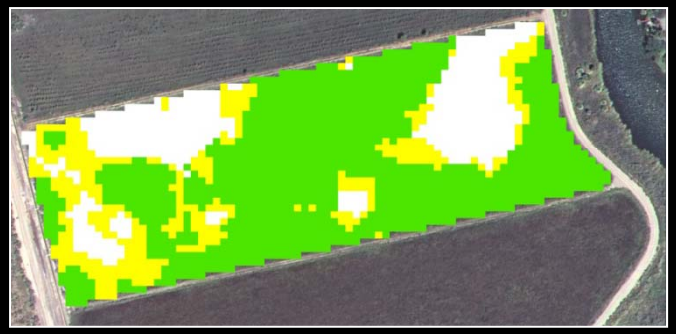


Building Spatial Models to Determine Optimal Water Depth



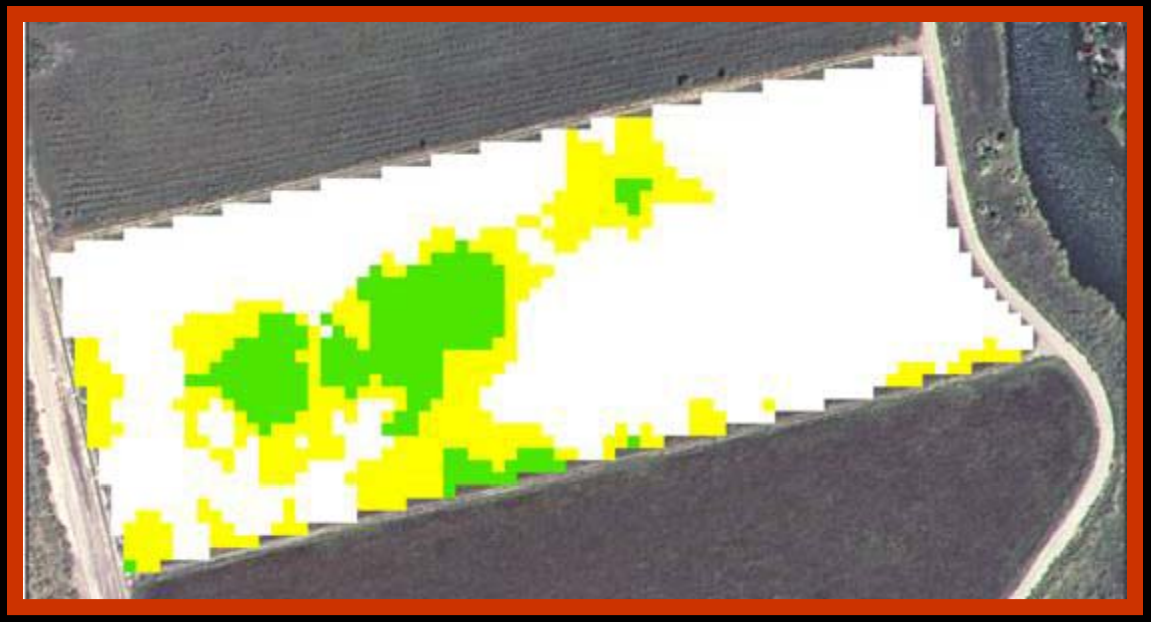
water depth

+



stem density

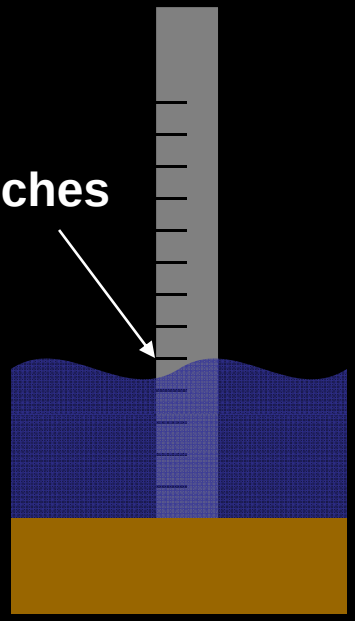
=



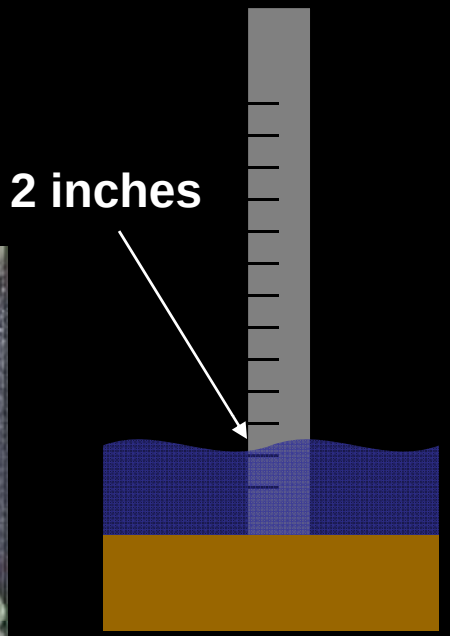
Habitat Suitability

- low
- moderate
- high

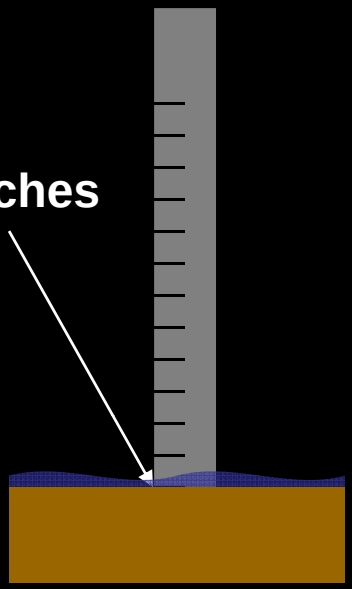
Field 16: 20 Apr 09 BLRA Detections



Field 16: 24 Apr 09 BLRA Detections



Field 16: 6 Jul 09 BLRA Detections



Field 16: Optimal Water Depth

water depth (in)				percent suitable habitat		
staff gauge	min	max	avg	moderate	high	moderate + high
9.25	0.58	14.05	5.94	3%	0%	3%
7.25	-1.42	12.05	3.94	29%	3%	32%
6.25	-2.42	11.05	2.94	52%	11%	62%
5.25	-3.42	10.05	1.94	47%	31%	78%
3.25	-5.42	8.05	-0.06	17%	65%	82%
2.25	-6.42	7.05	-1.06	13%	59%	72%
1.25	-7.42	6.05	-2.06	8%	39%	46%
-0.75	-9.42	4.05	-4.06	0%	2%	2%

Optimal Staff Gauge Depth = 2 – 5 in

Field 18: Optimal Water Depth

water depth (in)				percent suitable habitat		
staff gauge	min	max	avg	moderate	high	moderate + high
8.5	0.13	15.61	5.75	20%	11%	31%
7.5	-0.87	14.61	4.75	22%	18%	41%
6.5	-1.87	13.61	3.75	20%	27%	47%
4.5	-3.87	11.61	1.75	18%	26%	44%
3.5	-4.87	10.61	0.75	14%	23%	37%
2.5	-5.87	9.61	-0.3	9%	19%	28%
0.5	-7.87	7.61	-2.3	7%	15%	22%
0	-9.87	5.61	-4.3	5%	12%	16%

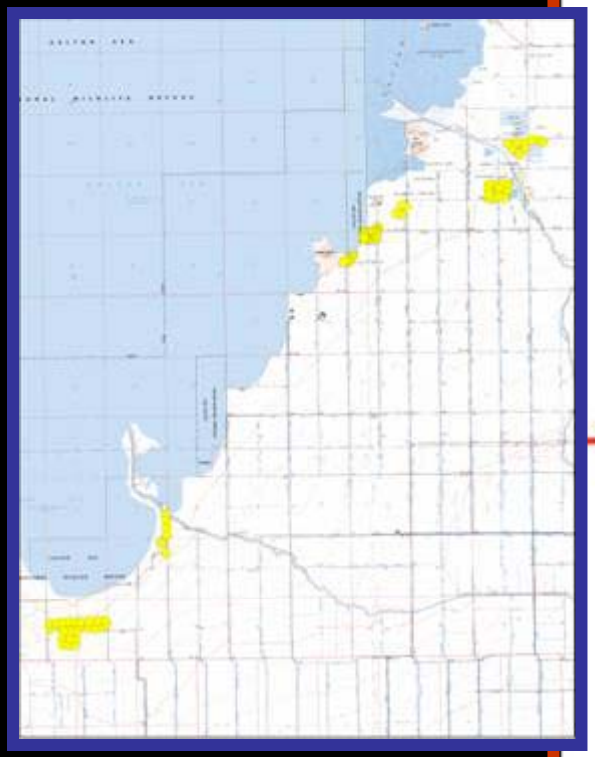
Optimal Staff Gauge Depth = 4 – 7 in

Upcoming Work

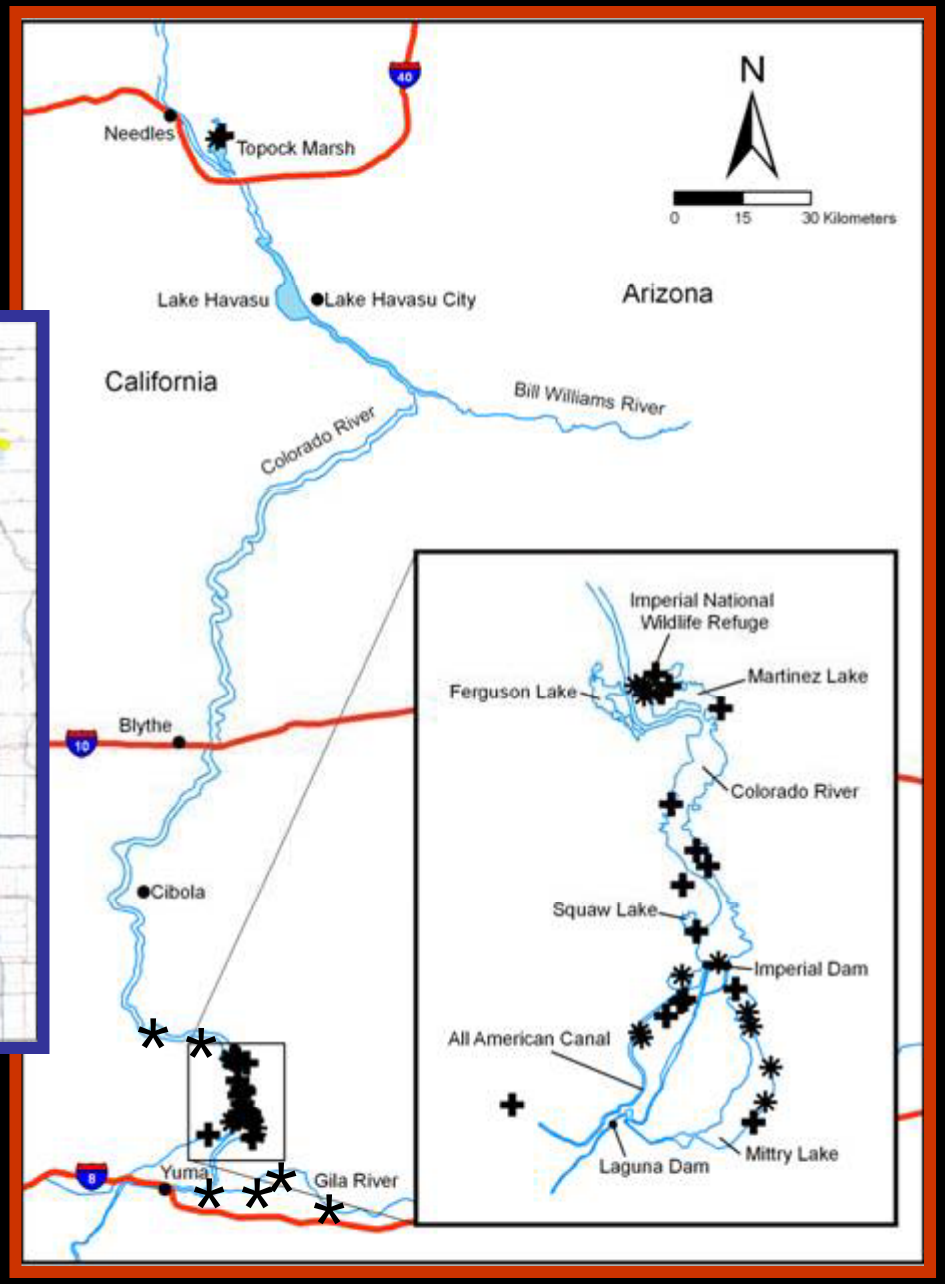
- Work with Imperial NWR to maintain optimal water depths
- Modify models as vegetation changes in Field 18 and to model water depth variation
- Build more statistically based models as BLRA detections increase in field 16

900 Survey Points

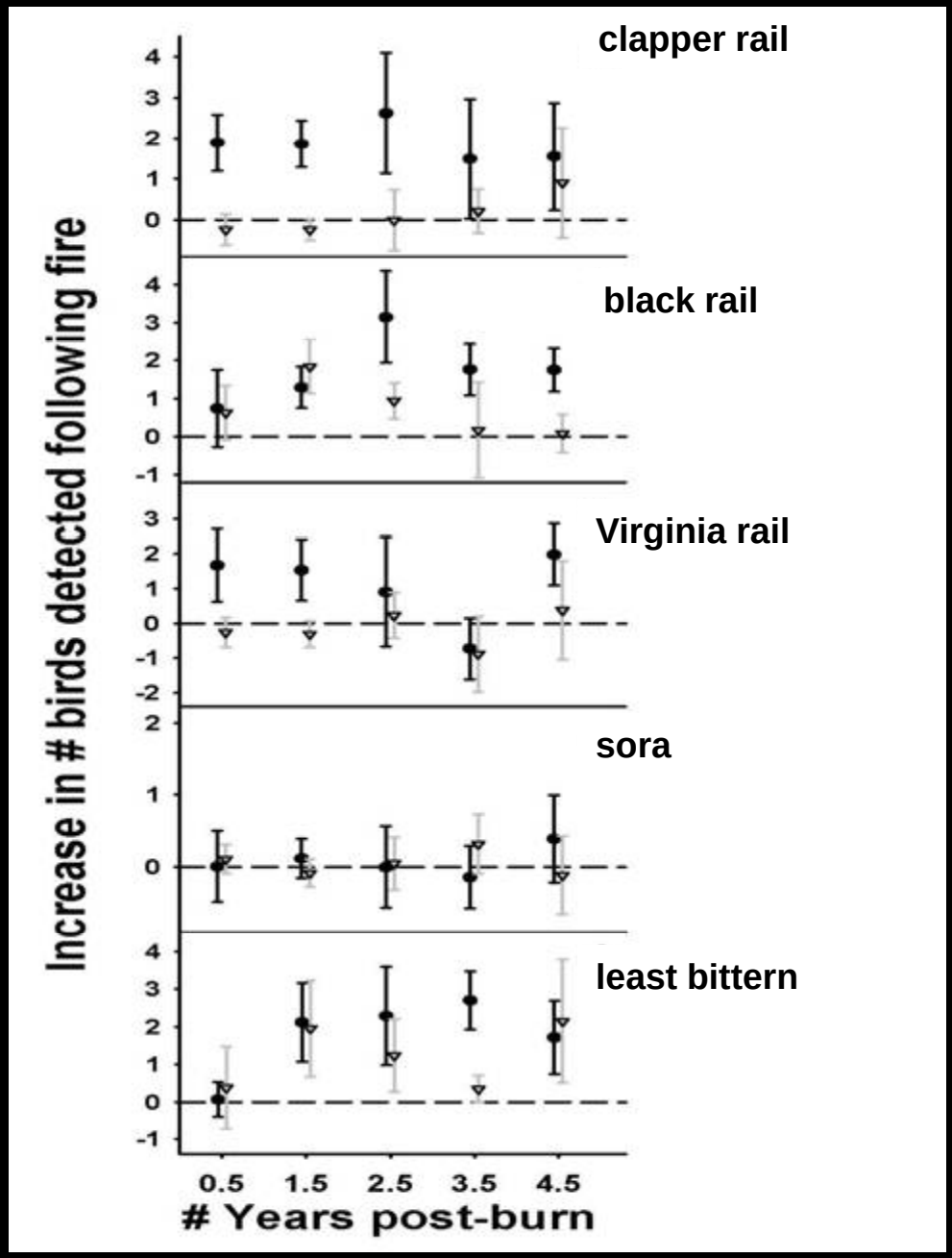
Salton Sea NWR



LCR and Gila River



Managing Rails With Prescribed Fire



- CLRA numbers increased post fire
- All other species not affected by fire
- Detection probability did not differ between pre- and post-burn surveys

Estimating the Detection Probability of Yuma Clapper Rails

- tracked **14** clapper rails:
  - 3 at Imperial NWR
  - 11 at Salton Sea NWR
- conducted **84** detection trials
- detected focal bird on only **27%** (23) of the trials

Determining the Patch Size Requirements of Yuma Clapper Rails

- Mapping emergent marsh patches throughout the LCR basin
- What is the minimum patch size a CLRA will use?

Marsh Bird Training Workshop

16 – 18 March 2010
Yuma, AZ

to register email
cnadeau@email.arizona.edu