

Real and Artificial Nest Predation Along the LCR

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Rationale

LCRMSCP Goals include:

- recovery of threatened and endangered species
- reduce the likelihood of additional species being listed

Critical Requirement: reproductive rates high enough to maintain populations through time.

For open-cup nesting passerines, nest predation leading cause of nest failure (e.g.Martin 1992, Budnik et al. 2005, Powell and Steidl 2000)

Little known about nest predators along LCR or management practices that could reduce nest predation

Goals:

Compare nest predators and predation rates at multiple sites varying in:

Landscape level

- **Patch Size - 1.4 - 25 ha**
- **Matrix - Agricultural vs Natural**

Site level

- **Dominant vegetation - Native, Native-exotic mix, Exotic-native mix, Exotic**

Nest level

- **Canopy Height**
- **Canopy Cover**
- **Ground Cover**
- **Nest Tree**

Approach:

10 Artificial Nests placed at each site baited with clay eggs.

Why artificial nests?

- **Relatively Rapid Assessment**
- **Increased Replication in Time and Space**
- **Assessment of Areas w/ Low Bird Densities**

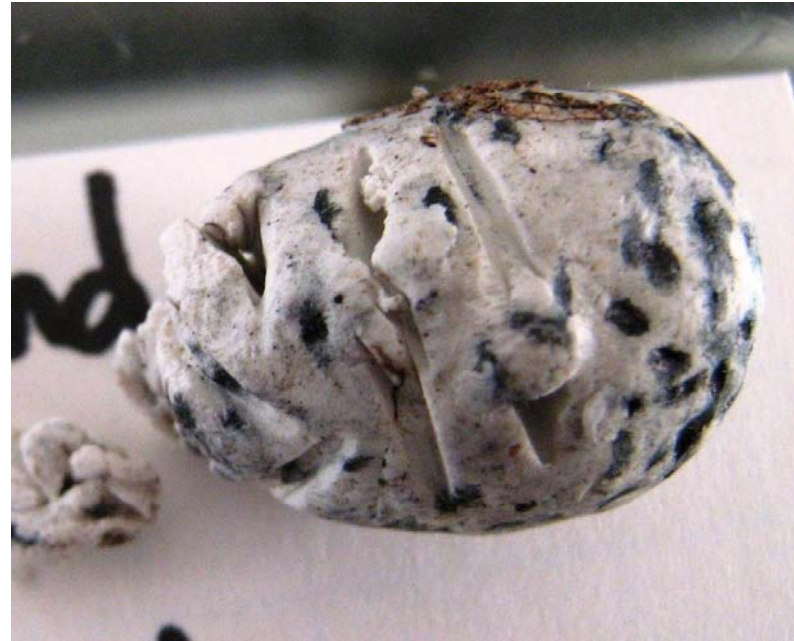


Artificial Nest Predation Monitoring

Still Cameras



Artificial Clay Eggs



**10 nests / site at random UTM's within suitable habitat
Monitored for 14 days, nest checks every 2 days**

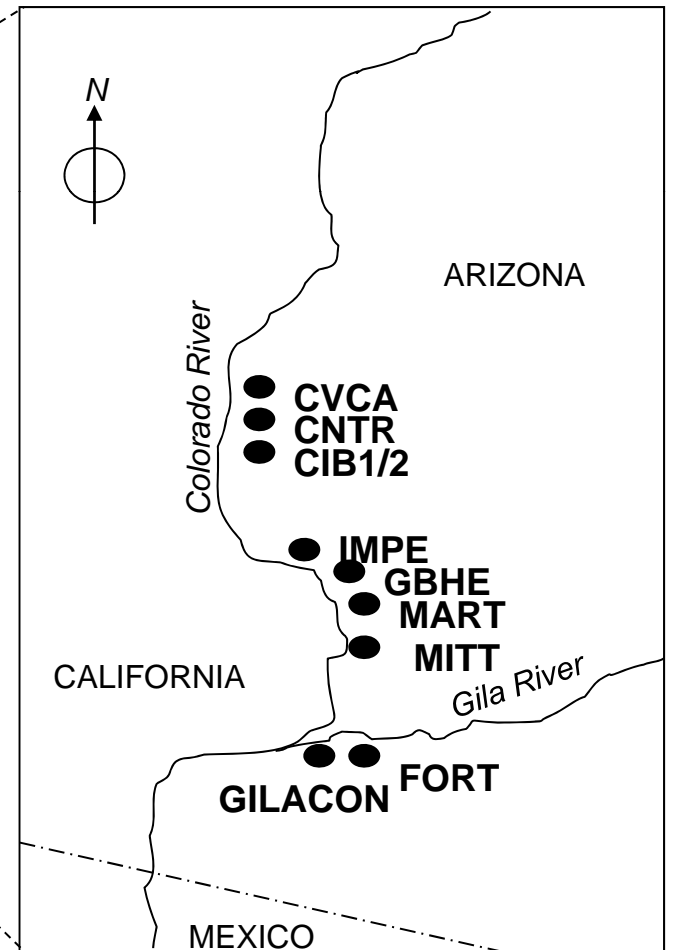
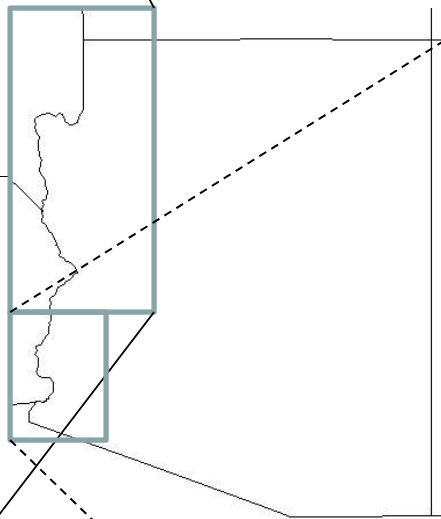
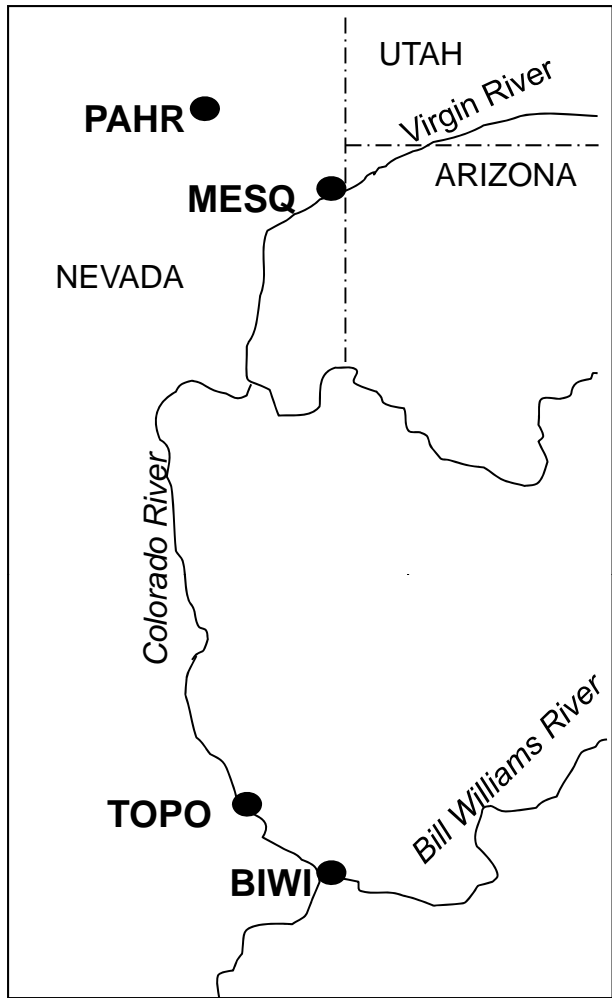
Validity of Artificial Nests

Compare artificial nests to real nests at a subset of sites to assess validity in terms of:

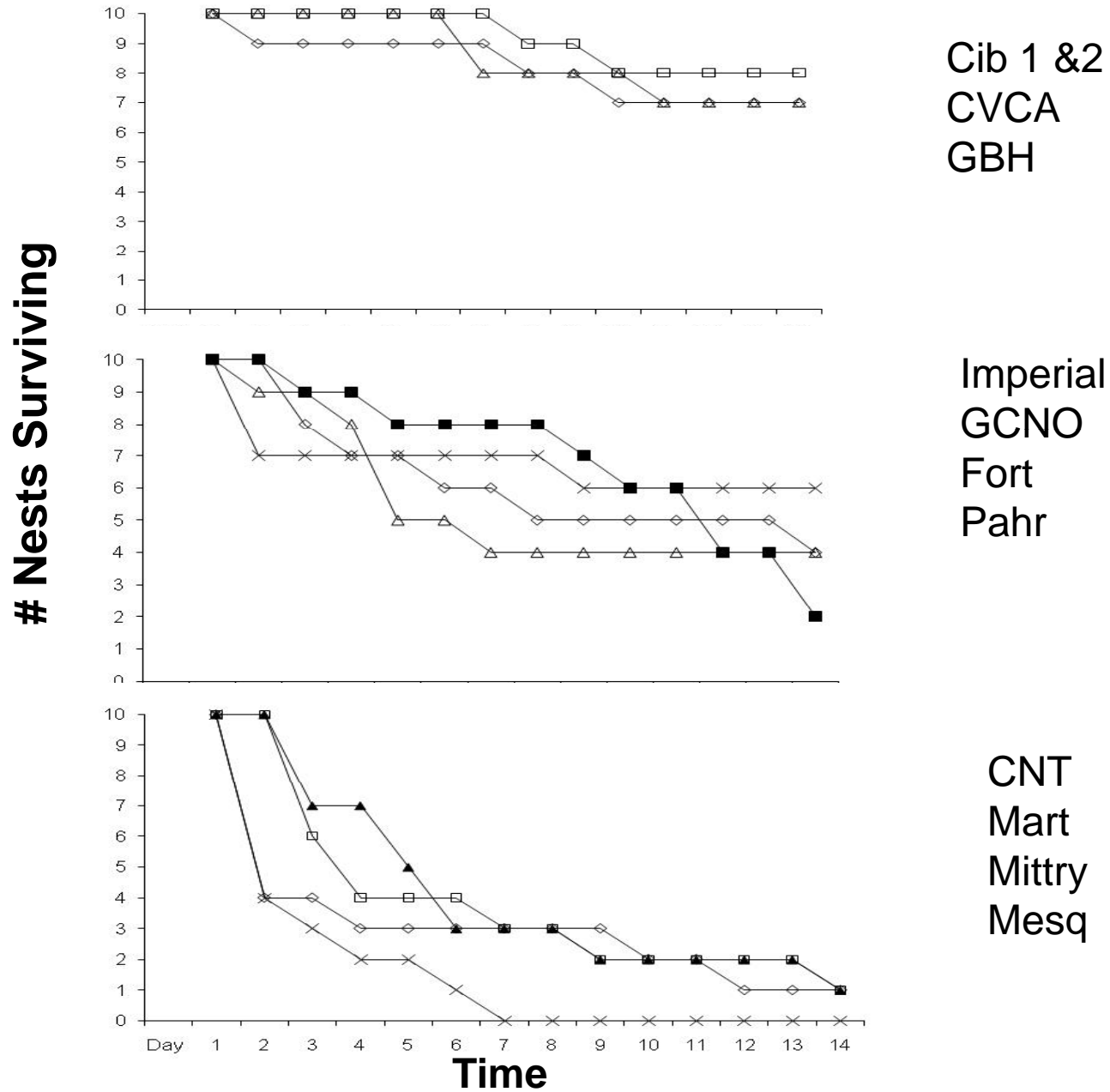
- Nest predators
- Rate of nest loss

Using video cameras

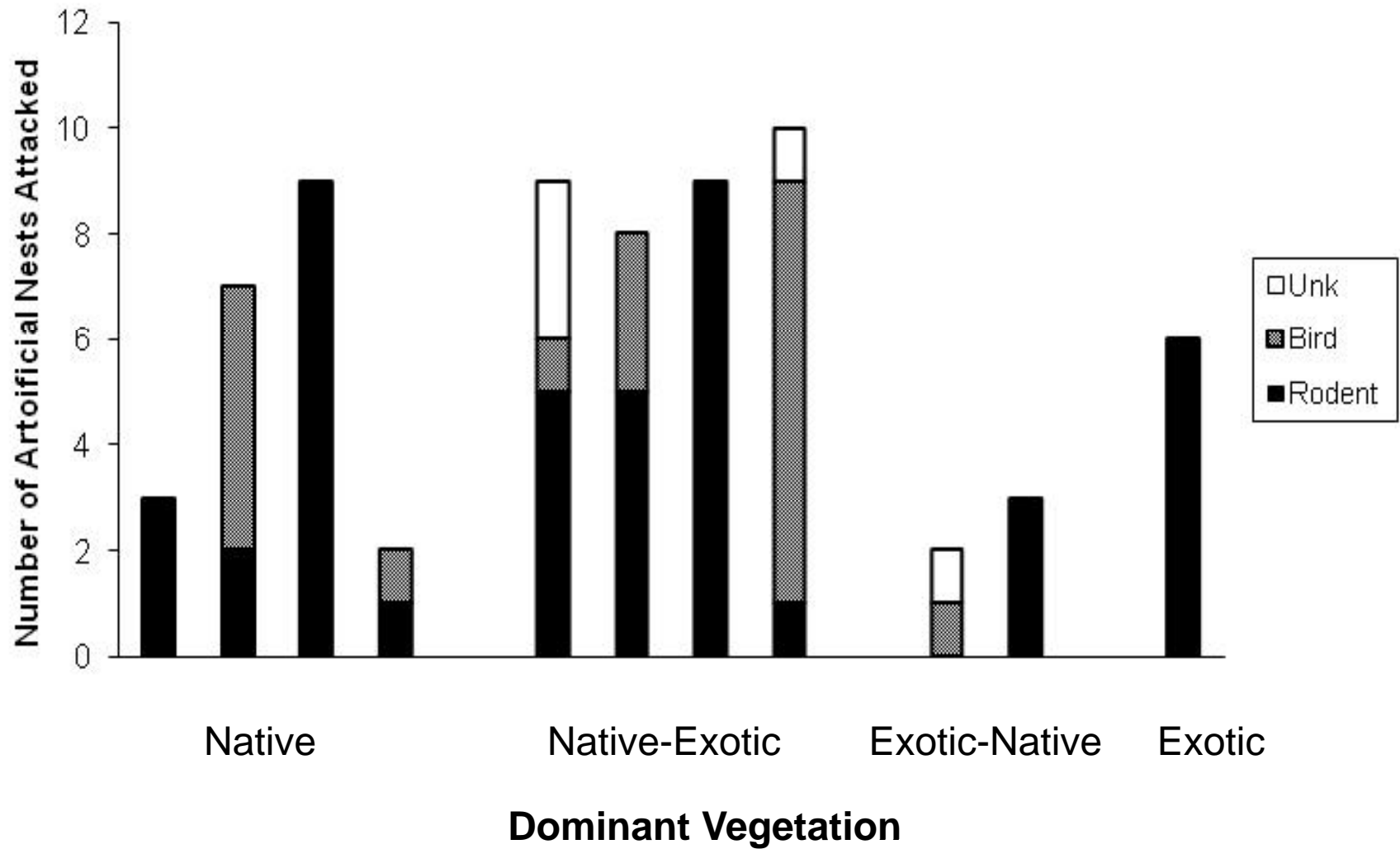


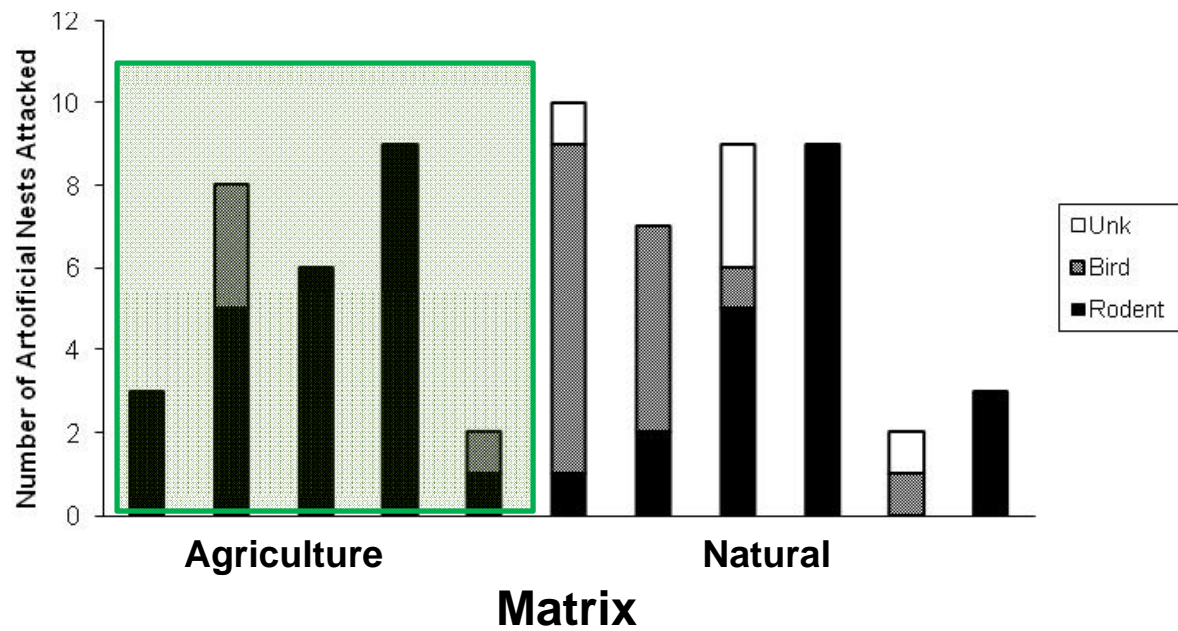
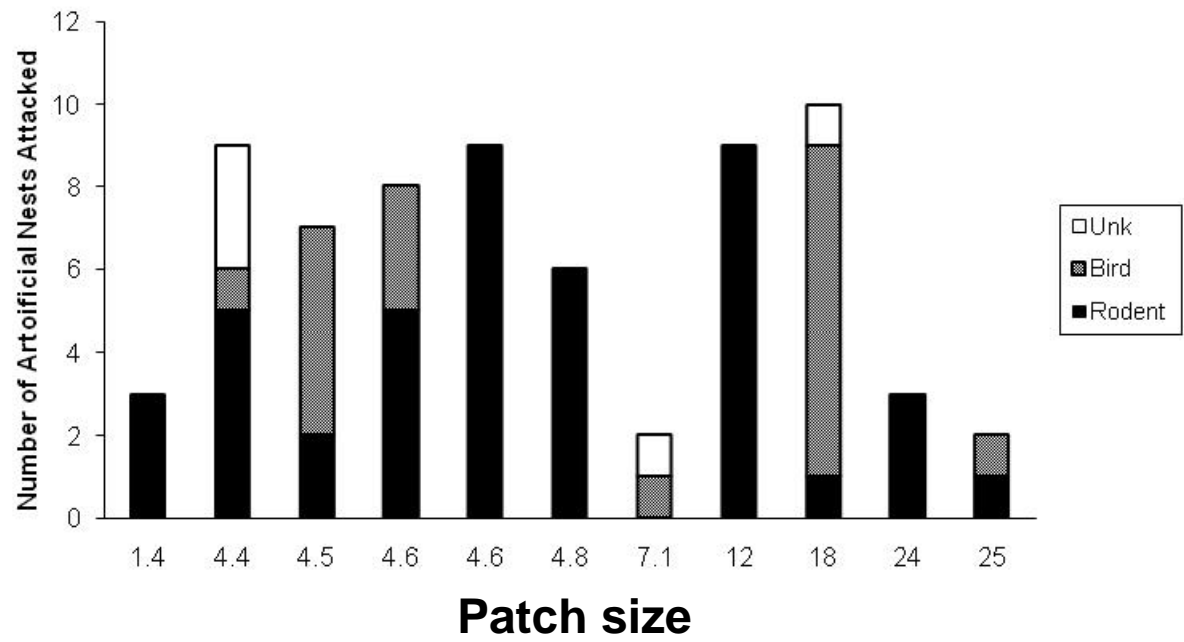


Artificial Nest Predation (110 nests at 11 sites in 2009)



Artificial Nest Predators





Rodent Artificial Nest Predators



Peromyscus

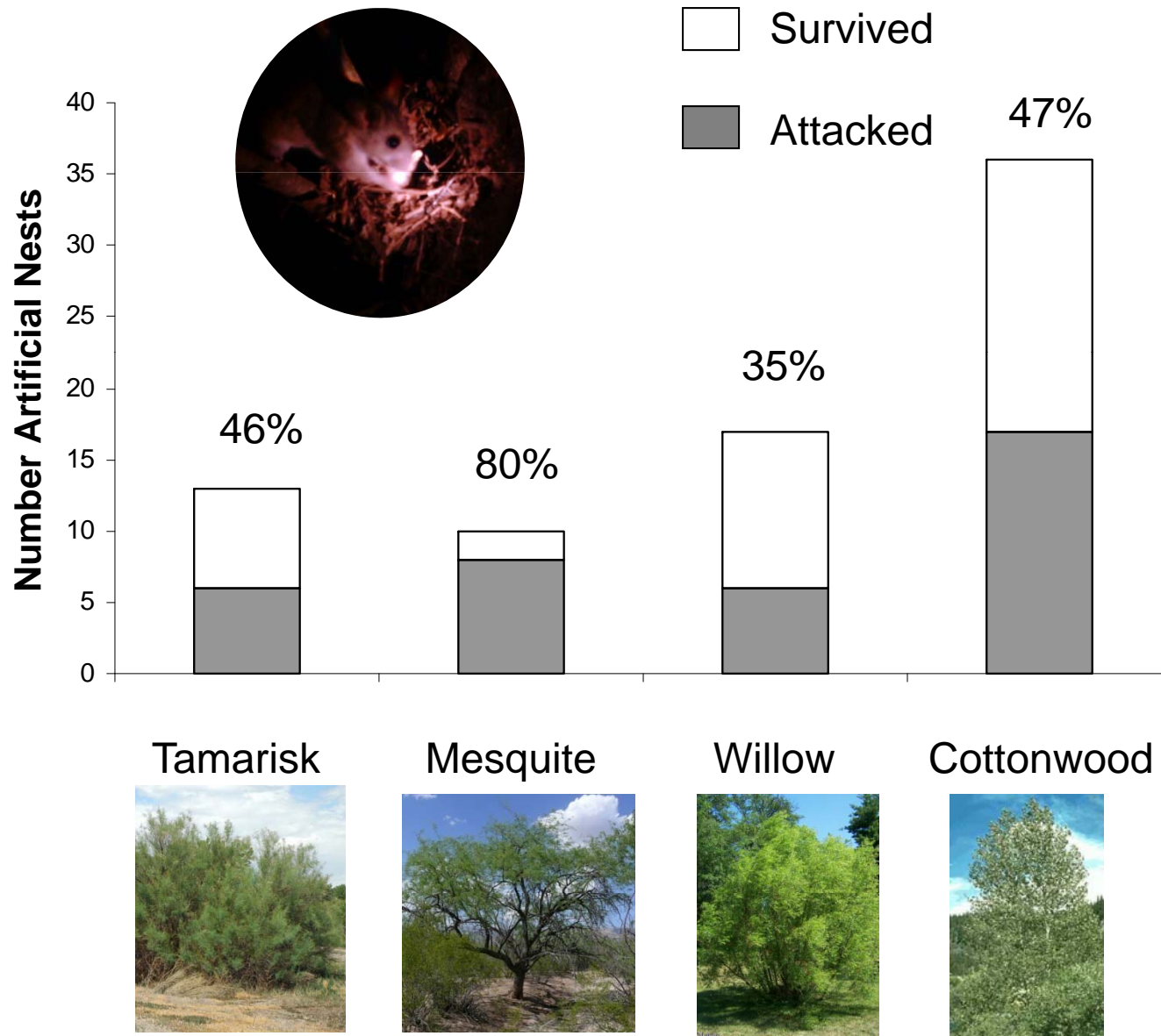
Neotoma



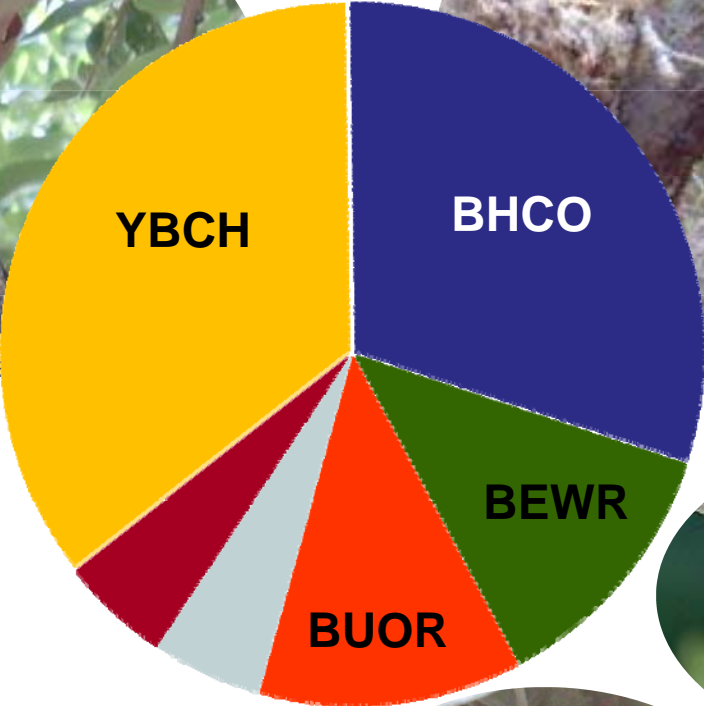
Rate of Rodent Nest Predation Significantly Associated with Tree Species

	<u>B</u>	<u>SE</u>	<u>Wald</u>	<u>df</u>	<u>Sig.</u>	<u>Exp(B)</u>
Nest Tree			5.506	3	0.138	
tree(1)	.503	.680	0.547	1	0.459	1.653
tree(2)	.286	.530	0.292	1	0.589	1.332
tree(3)	1.340	.613	4.782	1	0.029	3.817
Nest Height	-.272	.429	0.403	1	0.526	.762
Canopy Height	-.017	.036	0.209	1	0.648	.983
Canopy Cover	.011	.009	1.356	1	0.244	1.011
Ground Cover	.080	.260	0.095	1	0.758	1.083
Patch size	-.016	.028	0.308	1	0.579	.984
Matrix	-.231	.489	0.224	1	0.636	.794
Veg Type			2.899	3	0.408	

Rodent Artificial Nest Predation Higher When Nests Placed in Mesquite



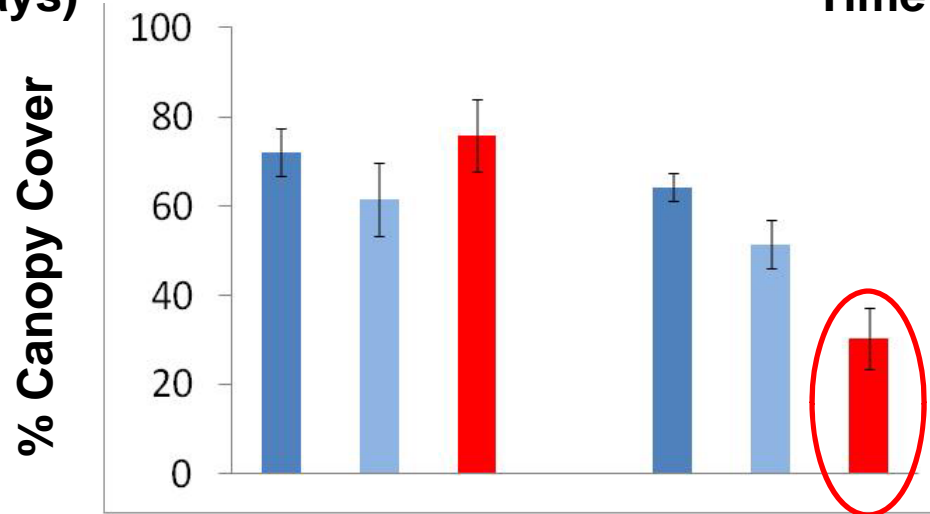
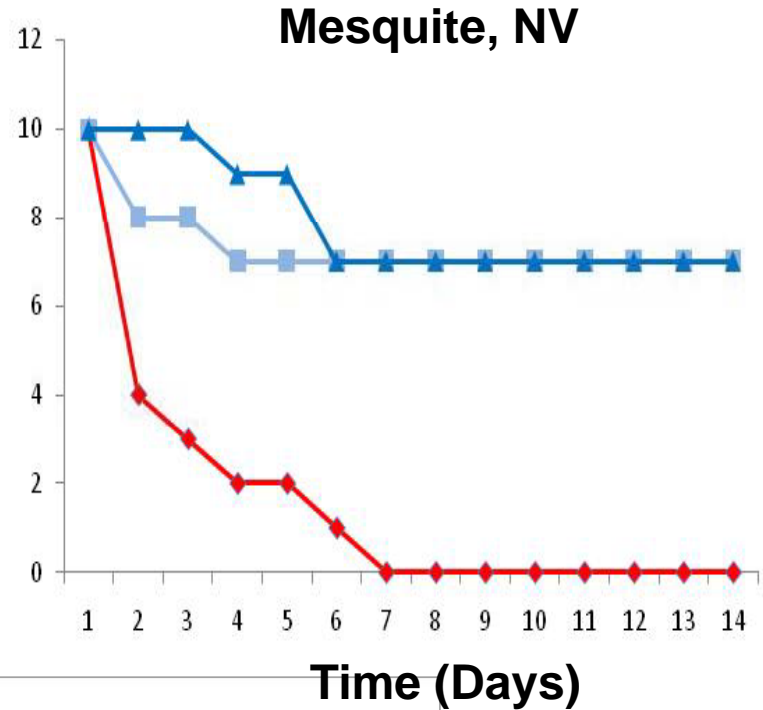
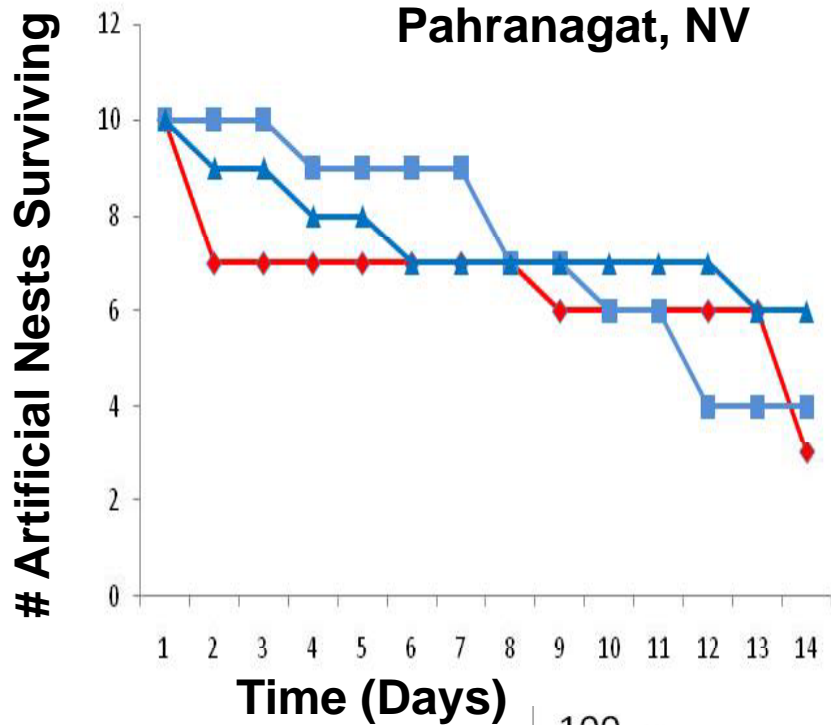
Avian Artificial Nest Predators



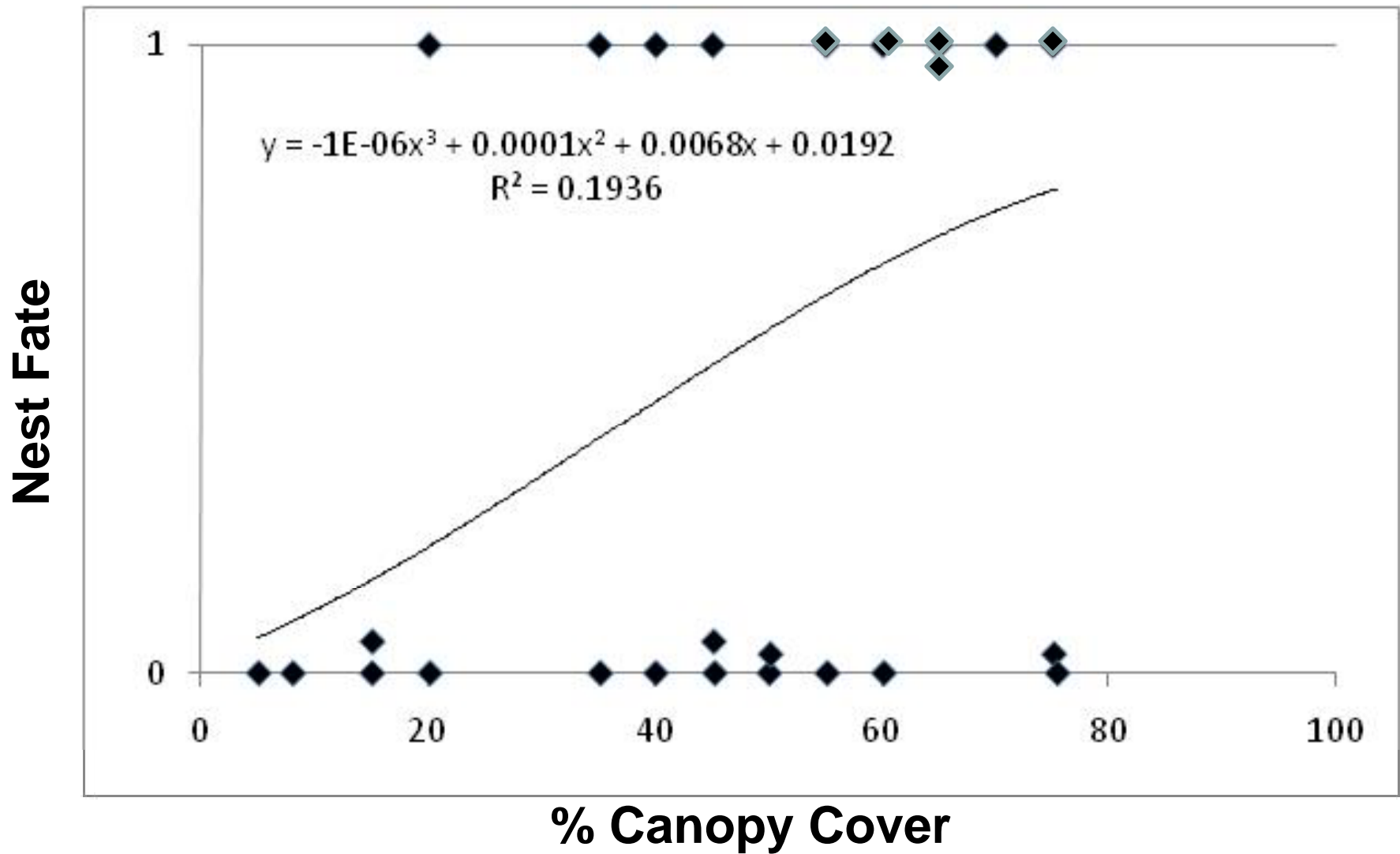
Rate of Avian Nest Predation Not Significantly Associated with Any Variable

	<u>B</u>	<u>SE</u>	<u>Wald</u>	<u>df</u>	<u>Sig.</u>	<u>Exp(B)</u>
Nest Tree			1.089	3	0.780	
Nest height	-0.497	0.883	0.317	1	0.574	0.608
Canopy height	0.009	0.065	0.019	1	0.889	1.009
Canopy cover	-0.004	0.012	0.097	1	0.755	0.996
Ground Cover	-0.621	0.387	2.572	1	0.109	0.537
Matrix	0.501	0.833	0.362	1	0.548	1.650
Veg Type			5.624	3	0.131	
Patch size	0.067	0.053	1.574	1	0.210	1.069

Seasonal and Annual Variation 2008 and 2009 at PAHR and MESQ



At Mesquite, artificial nests with higher canopy cover were more likely to survive



Real Nest Predation

Nests video monitored:



PAHRANAGAT

6 WIFL

1 YEWA

1 YBCH

3 Predation 3 Fledge

1 Fledge

1 Predation

MESQUITE

3 WIFL

3 YEWA

3 Predation (1 missed)

3 Fledge

Real nest predation - Pahranaqat

Hawk on
SW Willow Flycatcher Nestlings



Common Crow
on YBCH nestlings



Real nest predation

**Bewick's Wren
on SWIFL egg**



**Yellow-Breasted Chat
on SWIFL egg**



Real nest predation - Mesquite

Brown-headed Cowbird Predation on SW Willow Flycatcher Nestlings





Brown-headed Cowbird at SW Willow Flycatcher Nest



2009/06/21 14:40:29



2009/06/21 14:40:35

Do Artificial Nests Reflect Real Nest Predators?

Artificial Nest Predators

Greater Roadrunner



Screech Owl



Bullock's Oriole



YB Chat



BH Cowbird



Bewick's Wren



Peromyscus Neotoma



YB Chat



BH Cowbird



Bewick's Wren



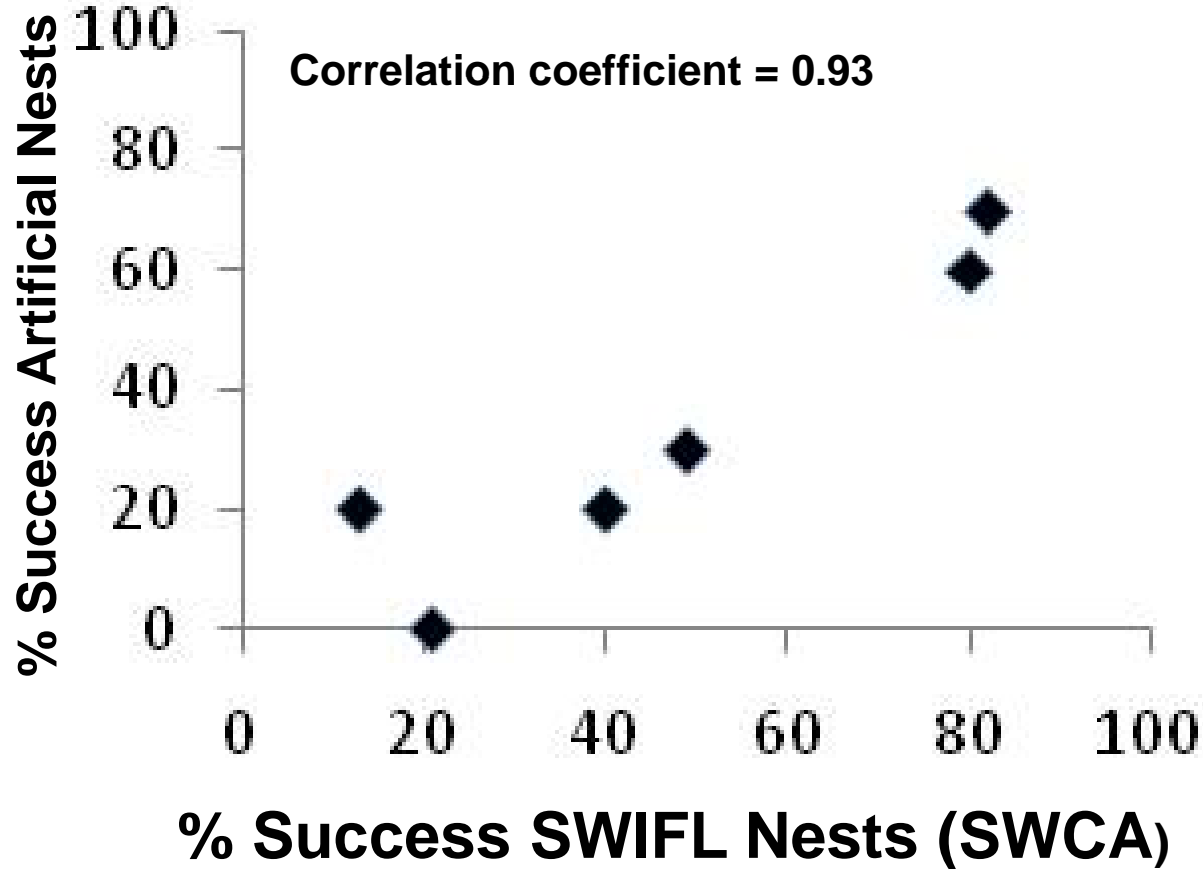
Common Crow



Red-shouldered Hawk

Real Nest Predators

Does artificial nest loss reflect real nest loss?



TOPO, BIWI in 2008, PAHR and MESQ in 2008 and 2009

Management Implications:

- **Artificial nests can reflect potential nest predators and perhaps rate**
- **Nest predators and rate likely site specific**
- **Successful restoration = diverse avian community = nest predation due to diverse nest predators associated with riparian habitat**
- **Rodent control may decrease nest predation but rodent effect on real nests unknown**
- **Standing water could maintain canopy cover and exclude rodents**
- **Of avian nest predators, managing BHCO best option**

Thanks to the Field Crews!

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Emma DeLeon, Gina Robinson**

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Alana Demko, Dayna LeClair**

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My apologies to anyone I inadvertently left off!