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The Role of Brown-headed Cowbird Management in Protecting Sensitive Species

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Least Bell's Vireo

Southwestern Willow Flycatcher

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Recovery Oriented Management

1. **Reduce cowbird parasitism**
2. Increase availability of suitable nesting habitat

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Management to Reduce Cowbird Parasitism

Cowbird egg

Cowbird Trapping

- remove cowbirds from breeding habitat

Nest Monitoring

- remove cowbird eggs/young from nests

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Annual Population Monitoring

- abundance, density
- nest success
- parasitism rate
- seasonal productivity

- use as response variables to investigate effects of management

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Cowbird Control Reduces Parasitism

Species	Site	% Parasitism Pre-control	% Parasitism Post-control	P
LBVI	SDO	57 (2)	11 (10)	0.001
	PEN	47 (2)	4 (15)	<0.001
	SLR	63 (2)	32 (9)	<0.001
SWFL	KERN	63 (3)	23 (12)	0.001

Kus, B.E. and M.J. Whitfield. 2005. Parasitism, productivity, and population growth: Response of Least Bell's Vireos (*Vireo bellii pusillus*) and Southwestern Willow Flycatchers (*Empidonax traillii extimus*) to cowbird (*Molothrus* spp.) control. Ornithological Monographs 57: 16-27.

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Cowbird Control Increases Productivity

Species	Site	Fledglings per Pair: Pre-control	Fledglings per Pair: Post-control	P
LBVI	SDO	0.9 (2)	2.9 (10)	0.01
	PEN	1.4 (2)	2.7 (15)	0.003
	SLR	0.6 (2)	1.9 (9)	0.002
SWFL	KERN	0.8 (3)	1.6 (12)	0.01

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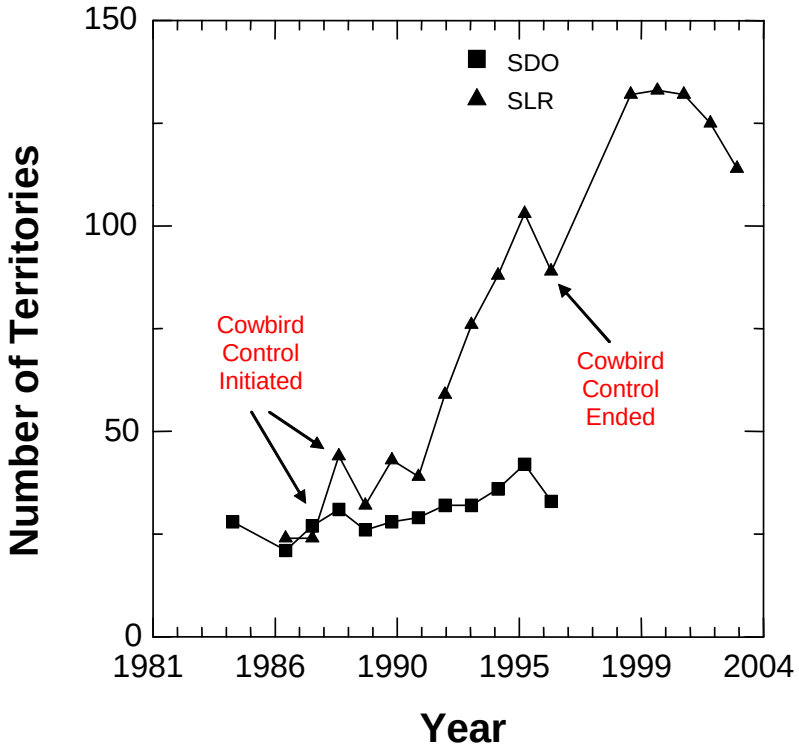
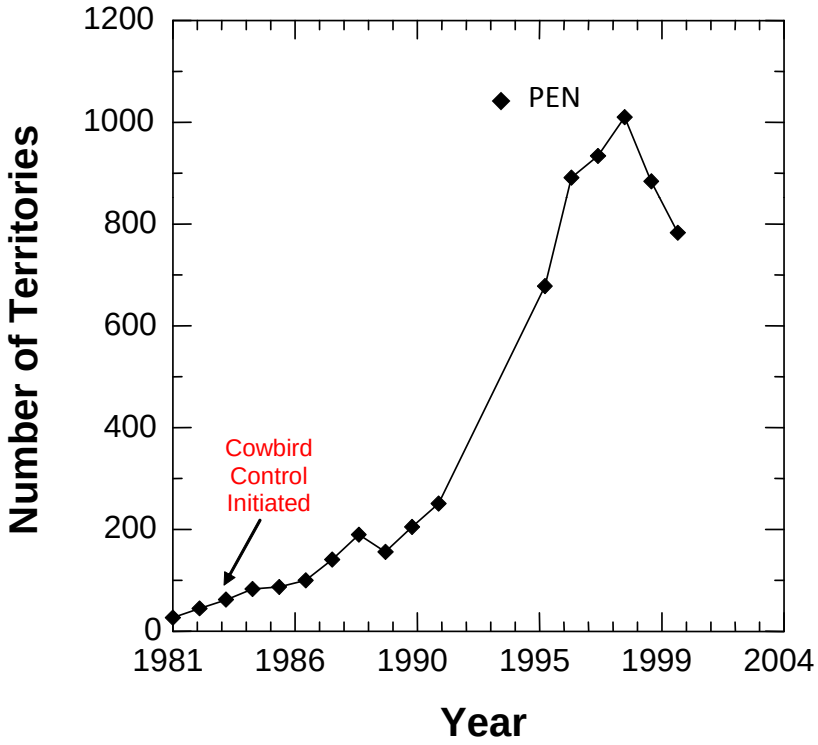
Least Bell's Vireo Population Growth





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Least Bell's Vireo Population Size

1986	2011
300 males	3,000 – 3,500 males

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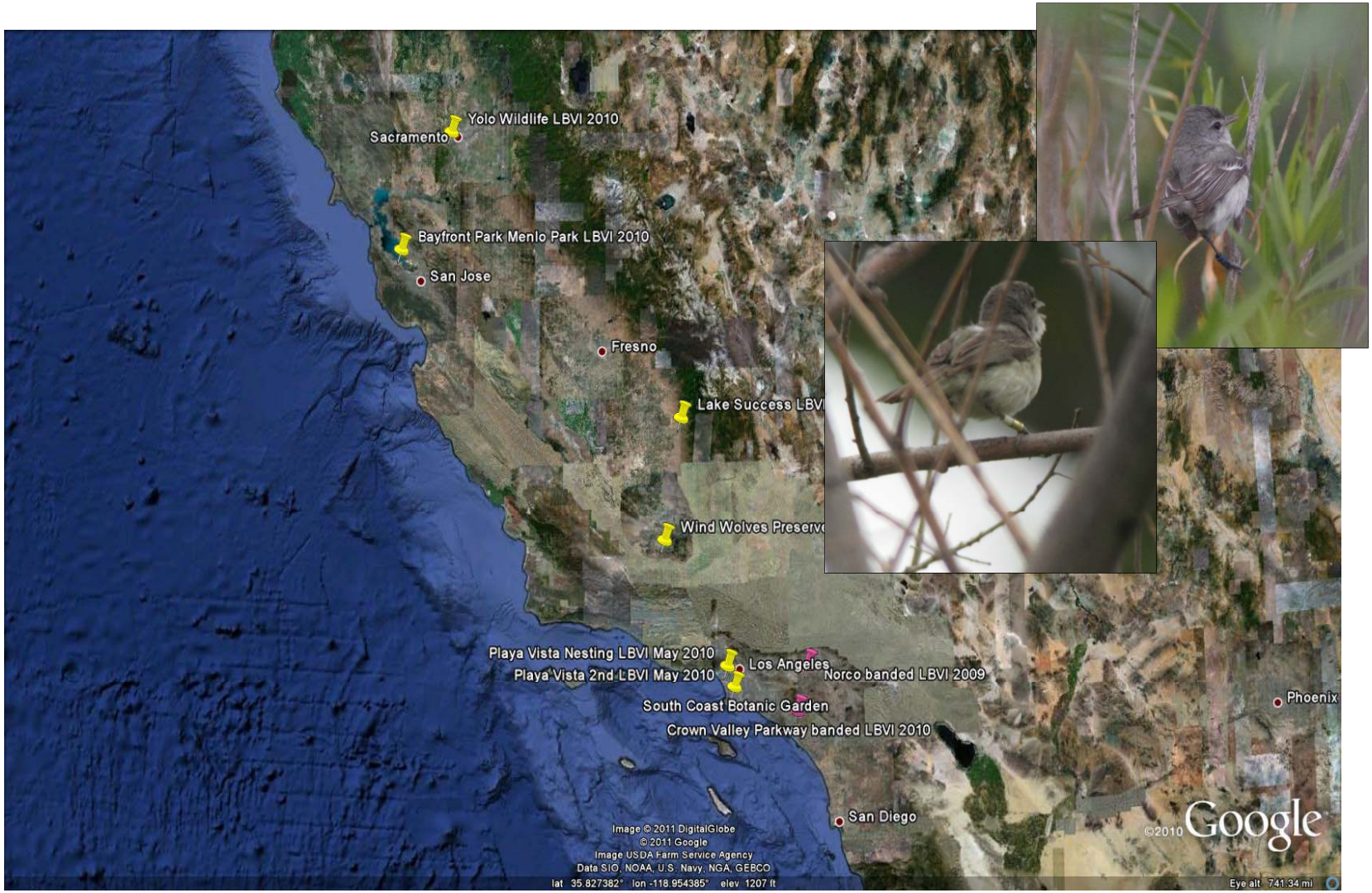
LBVI Range Expansion



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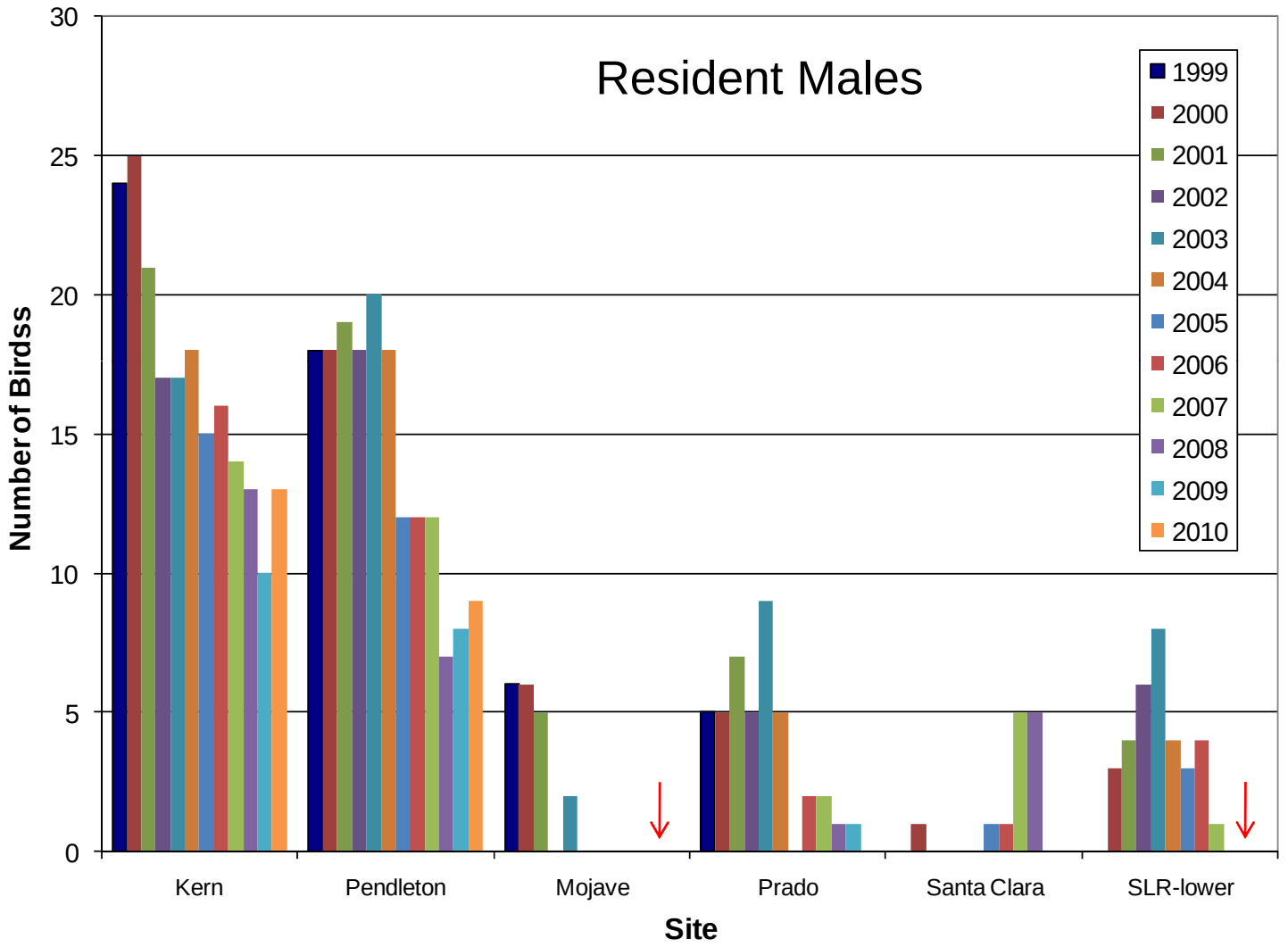
SWFL Population Size: 1999-2010



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Southwestern Willow Flycatcher Population

1995	2011
70 males	≤ 70 males

What is limiting this species??

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Cowbird Control:

- is effective in reducing parasitism and increasing annual productivity in LBVI and SWFL
- produces population increases in LBVI but not SWFL
- is effective only as long as suitable habitat is available

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NOW WHAT?

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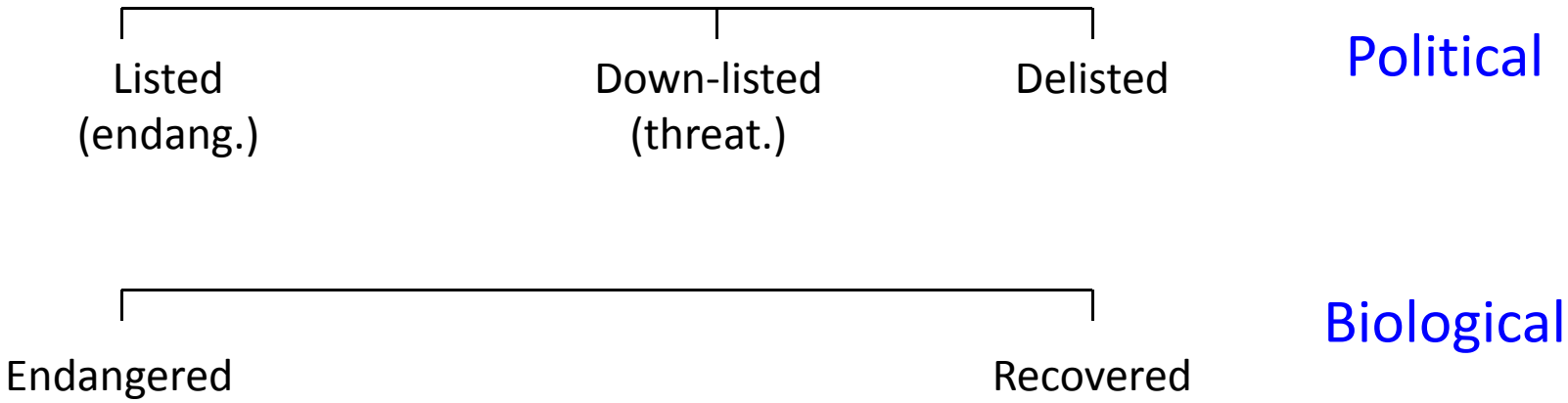
Progress towards Recovery



Recovery: *Ability of species to persist without human intervention*

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Cowbird Control

Long-term consequences:

- economic, political, ethical
- biological: interference with evolutionary processes enhancing natural host defenses

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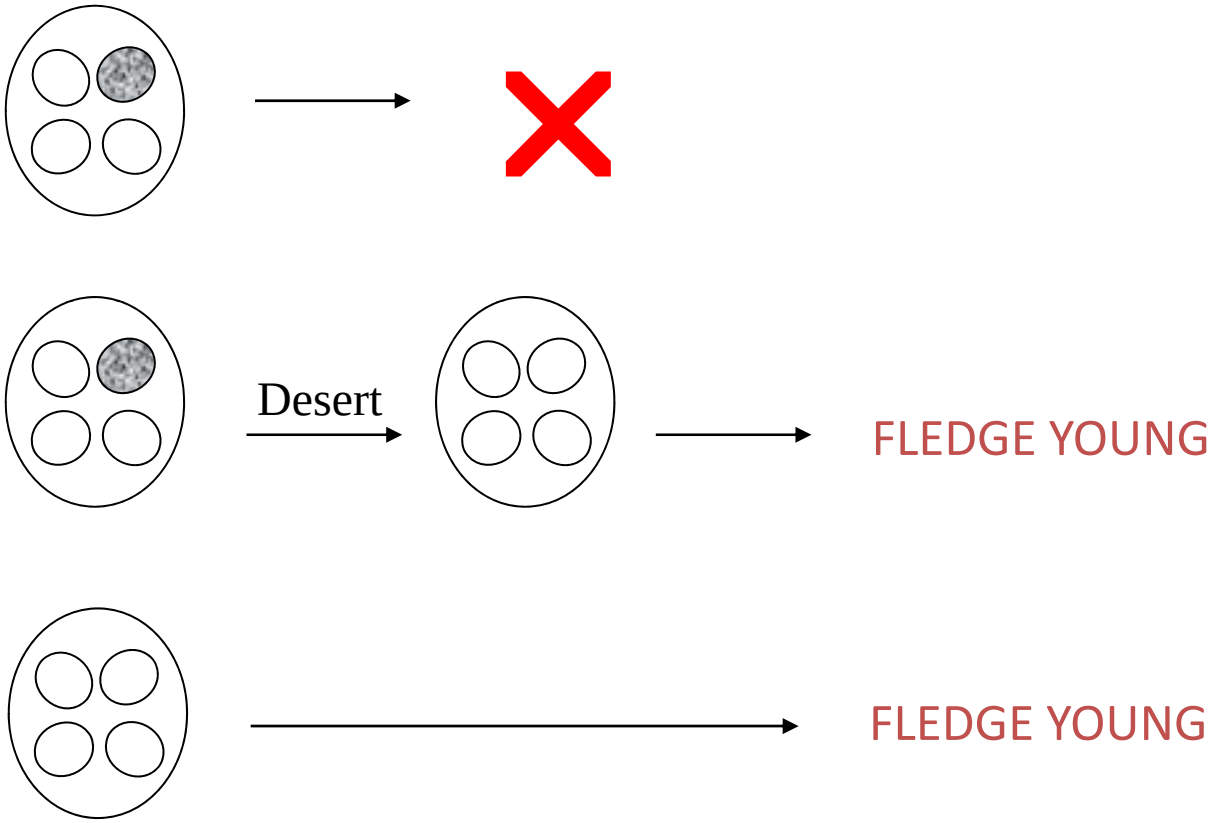
Nest Desertion



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Nest Desertion in LBVI

- desertion rate in other subspecies: 43-75% of nests
- desertion rate in LBV: 29% of nests
- re-nests likely to be parasitized
- deserters fledge half as many young as unparasitized pairs and "rescued" pairs

BUT:

- deserters fledge more young than non-deserters

Effective cowbird trapping removes selective pressure of parasitism necessary to promote increased host defense

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Nest Manipulation

> rescue nests by removing cowbird eggs

> seasonal productivity of rescued pairs comparable to that of unparasitized pairs (= “management success”)

Nest manipulation reduces the selective costs of not deserting parasitized nests

Nest manipulation reduces the selective costs of behaviors making nests vulnerable to parasitism

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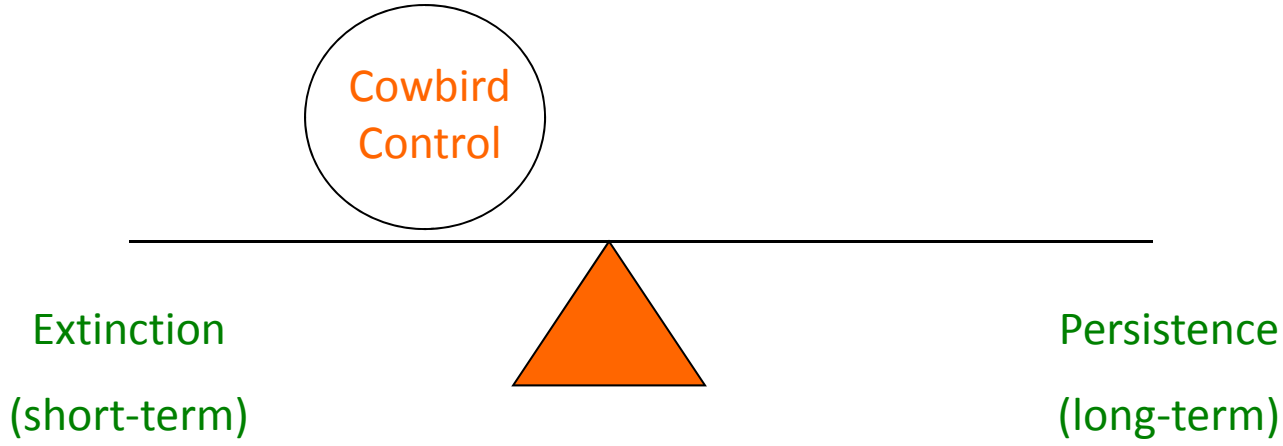
What Next?

Research to inform political decisions re: delisting

Evaluate alternatives to current management that will achieve balance between short- and long-term goals



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HOW?

Set goals for cowbird control; evaluate management needs

> maintain stable population

> facilitate population growth

Experiment

> trapping frequency

> trapping duration

> number of traps

Model

> selection models analyzing host defenses

> evaluate heritability of traits influencing vulnerability to parasitism

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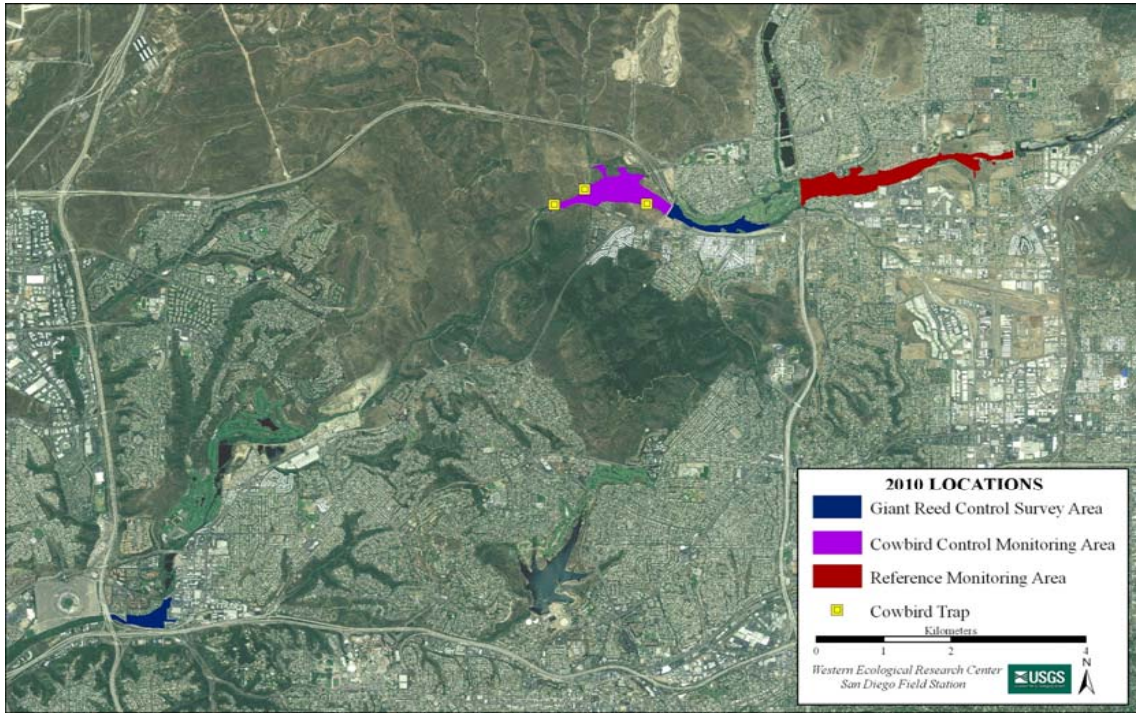
San Diego River Cowbird Management Experiment



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Study Design

		Trapping?		
Year	Date	Treatment	Reference	Response
1	2008	No	No	Baseline: no management
2	2009	Apr 25 – Jul 30	No	Trapped vs not trapped
3	2010	Apr 1 – May 30	No	Shortened trapping period
4	2011	Apr 1 – May 30	Apr 1 – May 30	Site-wide trapping, shortened period
5	2012	No	No	Trapping in alternate years

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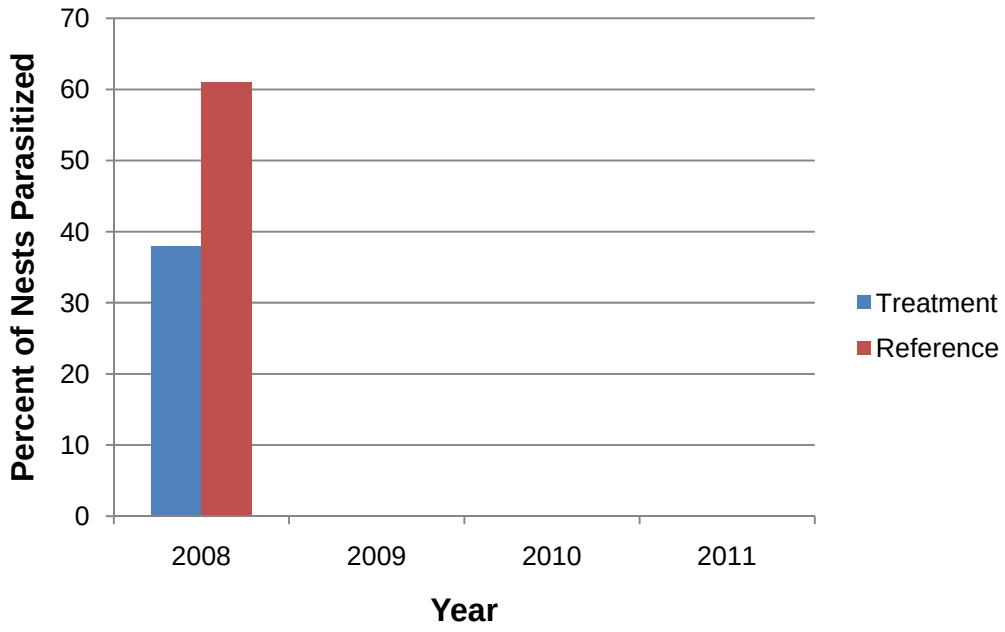
Year 1: No Trapping



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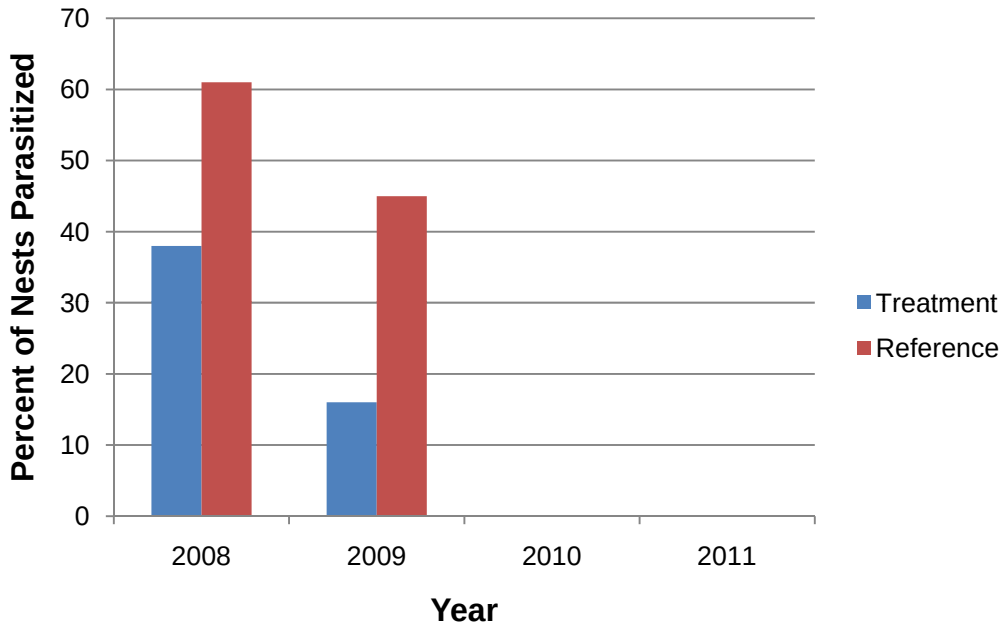
Year 2: Trap Treatment Site



2008-2009:	
Treatment Site	P = 0.12
Reference Site	NS

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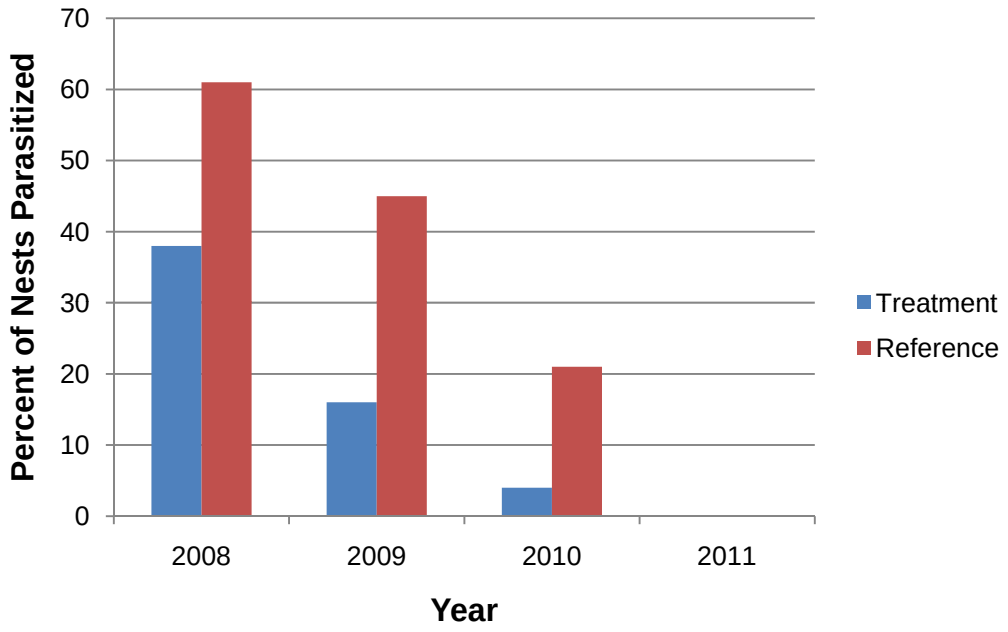
Year 3: Shorter Trapping Duration – Treatment Site



2009-2010:	
Treatment Site	NS
Reference Site	P = 0.10

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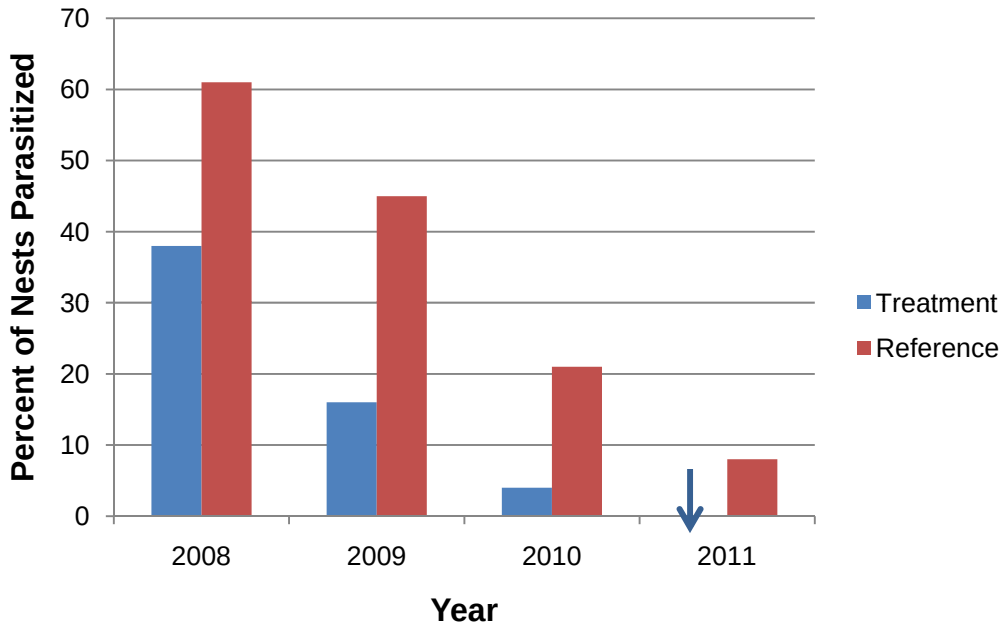
Year 4: Shorter Trapping Duration – Both Sites



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