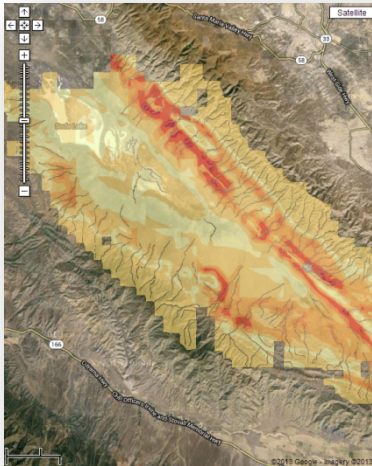


Le Conte's Thrasher Monitoring and Conservation on the Carrizo Plain

Dennis Jongsomjit, Geoffrey Geupel and Jim Tietz



Point Blue Conservation Science

Reducing the impacts of habitat loss, climate change, and other environmental threats while promoting nature-based solutions for wildlife and people.

- Founded in 1965 as Point Reyes Bird Observatory
- 140 seasonal and full time staff
- 2013 budget: \$9.7 million
- Advancing conservation through science, partnerships, outreach



Point Blue

Originally PRBO Conservation Science, founding member of the AKN



Content



Part 1 – Conservation needs of the Le Conte's Thrasher

Part 2 – Project history, goals and objectives

Part 3 – Development of monitoring methods

Part 4 – Results, habitat models, and next steps

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Le Conte's Habitat Needs

Prefers desert flats with saltbush (*Atriplex* spp) or cholla cactus (*Opuntia* spp.)

Low topo relief with open habitat and mid-height shrubs for nesting

Feeds on arthropods found on open ground under leaf litter and shrubs

Fitton, Shuford and Gardali (eds) 2008

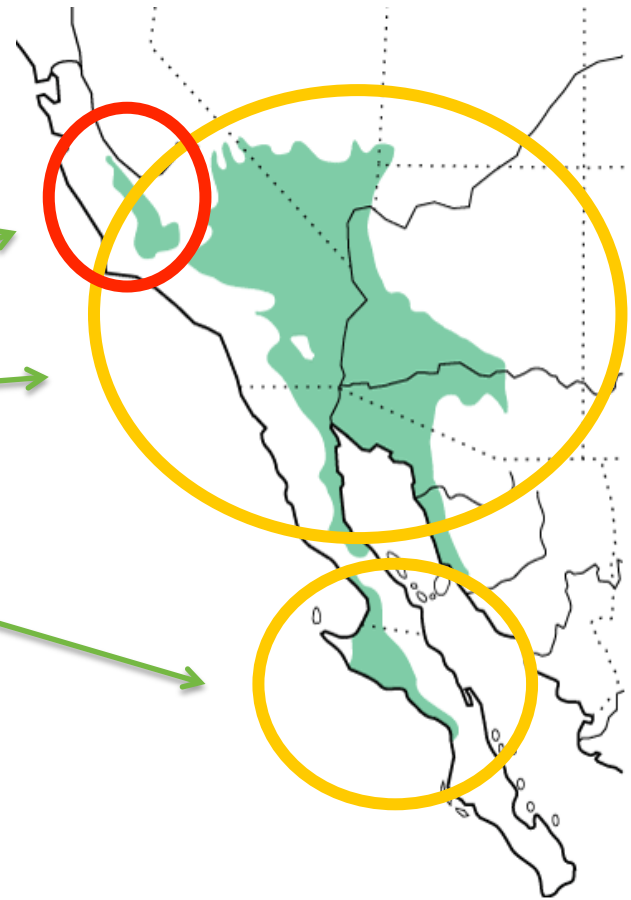


Distribution: *Toxostoma lecontei*

Uncommon resident of the southwestern deserts

2-3 subspecies

- *T.l. macmillanorum*?
- *T.l. lecontei*
- *T.l. arenicola*

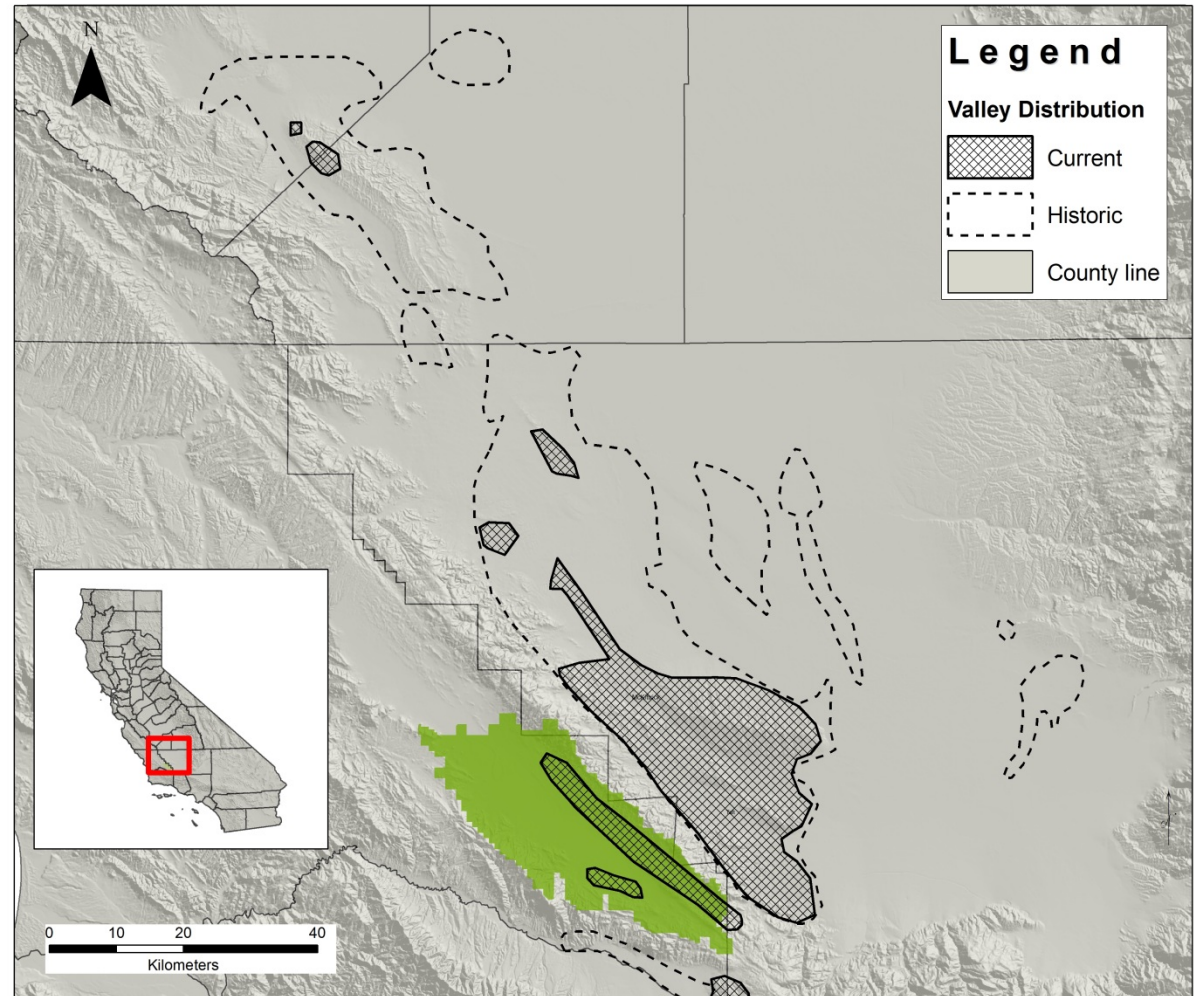


From The Birds of North America Online

Distribution: *Toxostoma lecontei*

- *T.l. macmillanorum*

The Monument is one of the largest intact patches of habitat in the current range



Conservation Challenges

Identified as a Bird Species of Special Concern by CA Dept of Fish and Wildlife

Habitat loss and degradation

High intensity fire – type conversion

Grazing impacts

Climate change – drought



Conservation Challenges

No systematic effort to track populations (surveillance monitoring)

Existing monitoring programs not sufficient for its patchy distribution and early breeding (eBird, BBS, CBC)

Lacking information to guide and target restoration (effectiveness monitoring).

Little information on population



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Project History



- Funded in 2010 BLM NLCS grant. Initial habitat model and monitoring plots developed
- Monitoring methods and habitat model were tested and refined in 2011
- Final area search plots established in 2012
- Surveys continued in 2013

Project Objectives



- Collect baseline population data of the San Joaquin population of Le Conte's Thrasher and inventory breeding songbird.
- Describe and refine knowledge of spatial distribution and habitat associations of Le Conte's throughout the Monument.
- Develop and test appropriate cost effective monitoring protocols
- Develop an online data-entry site to allow for the systematic collection, sharing, and analysis of population data.

Project Long-Term Goals



- Develop a habitat-based Le Conte's Thrasher abundance model and population estimates within the Monument.
- Expand monitoring beyond the Monument using protocols established.
- Develop recommendations to guide restoration and management geared towards recovery .
- Continue monitoring to determine impacts of continuing land use and climate change

Online Data Entry



Carrizo Plain Le Conte's Thrasher

[Home](#) [Maps](#) [Forms](#) [Data Entry](#) [Photos](#)

Le Conte's Thrasher

(San Joaquin population) (*Toxostoma lecontei*) is a Bureau of Land Management sensitive species as well as a California species of special concern. Its historical range was from southern Fresno County to the Transverse Ranges in Kern County, west through the Cuyama Valley (San Luis Obispo County). It is now found only in the Maricopa-McKittrick area, the Carrizo Plain, and possibly the Lost Hills area. The Carrizo Plain National Monument is one of the largest intact parcels of habitat in the thrasher's current range. Current bird monitoring methods and programs do not adequately address censusing and tracking this secretive species, or its present exact distribution and habitat associations. It is a resident, non-migratory species; therefore, the factors that drive its population are local. Habitat loss due to energy development, agriculture, and wildfire may be the largest inhibitors of population growth and habitat reoccupation as Le Conte's Thrashers in the San Joaquin Valley depend on the presence of saltbush (*Atriplex* species) and do not tolerate high levels of human disturbance.



Objectives:

Locally this project will establish a baseline population index of the San Joaquin population of Le Conte's thrashers as well as a songbird inventory of breeding birds within the Carrizo Plain National Monument. This baseline information will assist in the long-term monitoring of population and species changes in suitable habitat and changes in distribution inside the National Monument. The information acquired regarding habitat associations and human disturbance factors in the National Monument can also serve to guide BLM in developing energy elsewhere on the San Joaquin Valley floor and other areas adjacent to the Monument.

Final Report to the BLM

Download the final report to the Bureau of Land Management presenting our findings from the 2010 and 2011 field season surveys conducted within the Carrizo Plain National Monument.

- [Download report PDF](#)

Online Data Entry



Citizen Scientists

[Home](#)

Add a New Visit

Project **Carrizo Plain National Monument Monitoring (CPNMM)**

Form **LeConte's Thrasher Survey Form**

Location **Priority_1_10 (PR1_10)**

Date **2013-10-30**

Time **06:00 to 09:00**

Primary Observer **My own observations**

You are logged in as
djongsomjit@pointblue.org

[log out](#)

[Give Us Your Feedback](#)

[Preferences](#)

Finally, what species did you see at your survey area?

Enter observation information below, and click "next" or hit Enter after entering full observation data. Repeat for as many observations as you have for this visit. Use the Tab to move from field to field. Click on "Save & proof this visit" to save and review your entries. Click on "Save & start a new visit" to save and immediately start entering a new visit, proofing entries later.

*Species Code or Name

*Observation Data

Cues: **C** (Call), **D** (Drumming (e.g., woodpeckers)), **F** (Fly Over), **H** (Wing whir (e.g., hummingbirds, doves)),
J (Juvenile), **S** (Song), **V** (Visual)

Forage ☐ Flock ☐ Copulate ☐ Display ☐ Pair ☐ Material ☐ Food ☐ Nest ☐ Fledge ☐

Behavior ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

Observ. Comments

[next](#)

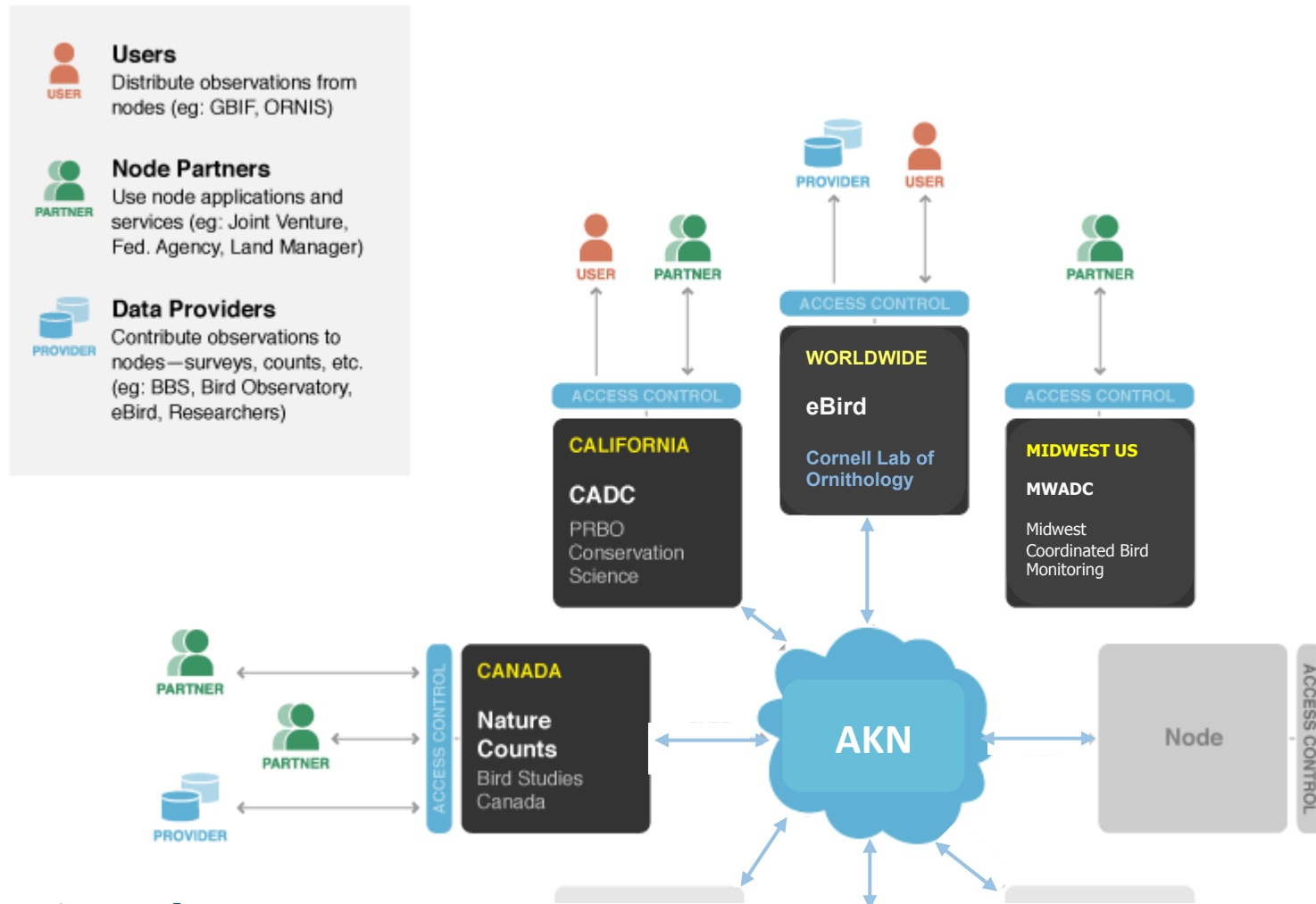
[Save & proof this visit](#)

[Save & start new visit](#)

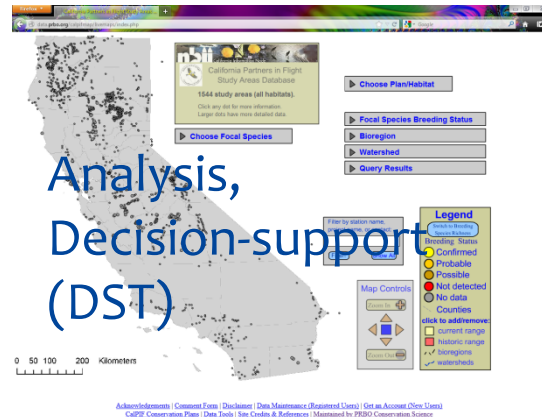
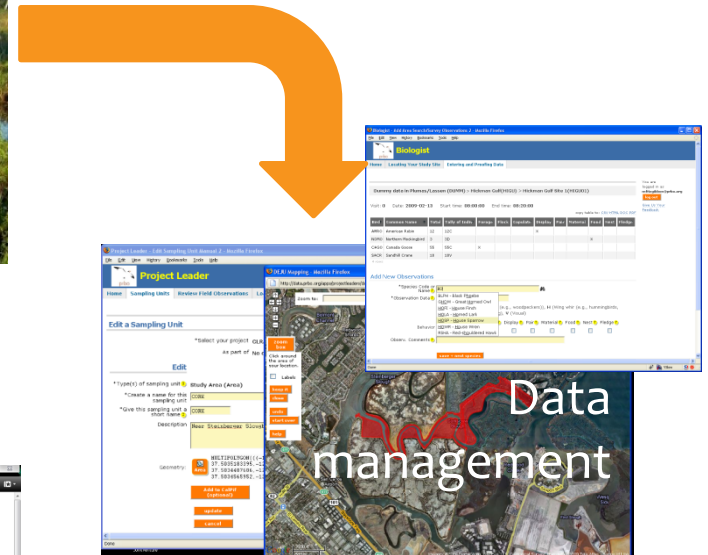
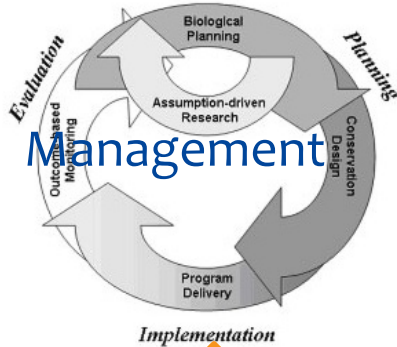
or:

[No species observed
Save & proof this visit](#)

Avian Knowledge Network



Decision Support Systems



Statewide Models ~200 Species

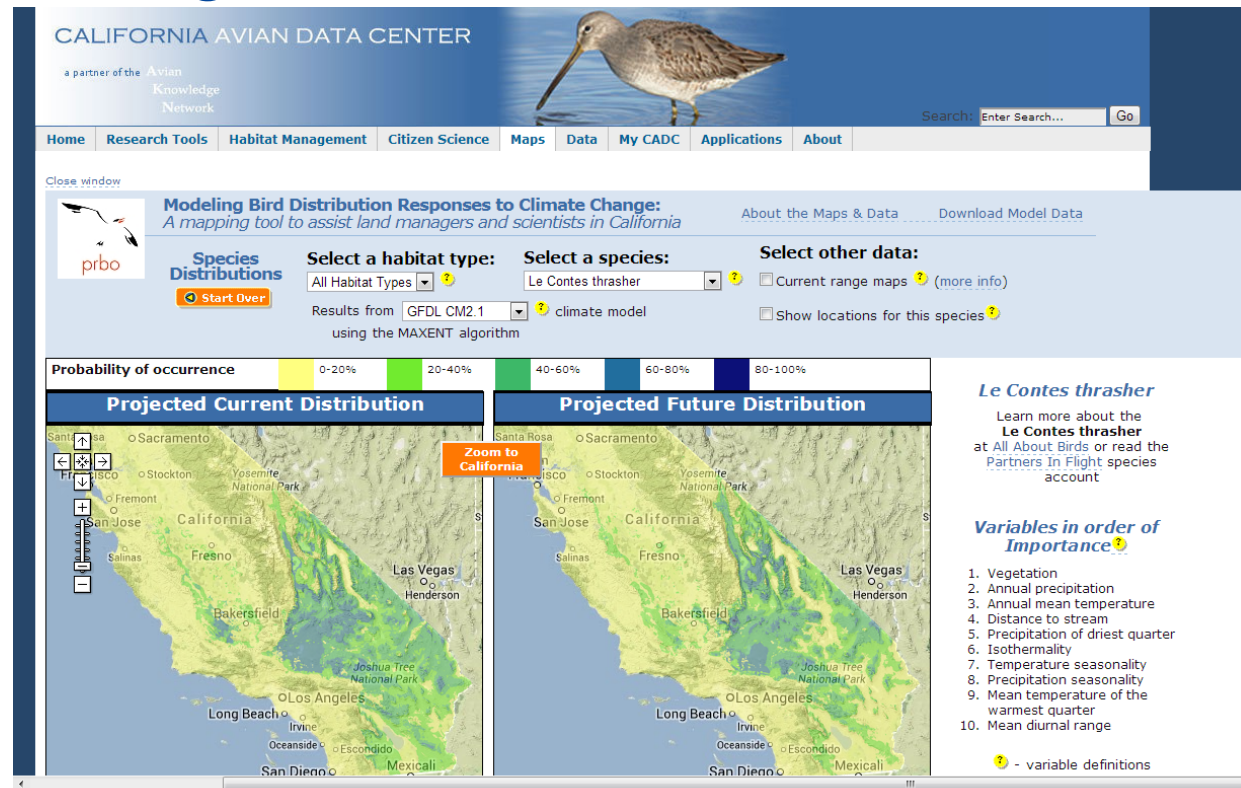
www.data.prbo.org/cadc

GIS maps

Model results summary

Location/count data

Analysis tools



Le Conte's Current and Future models
Focused on climate change impacts

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Projecting Across the Landscape

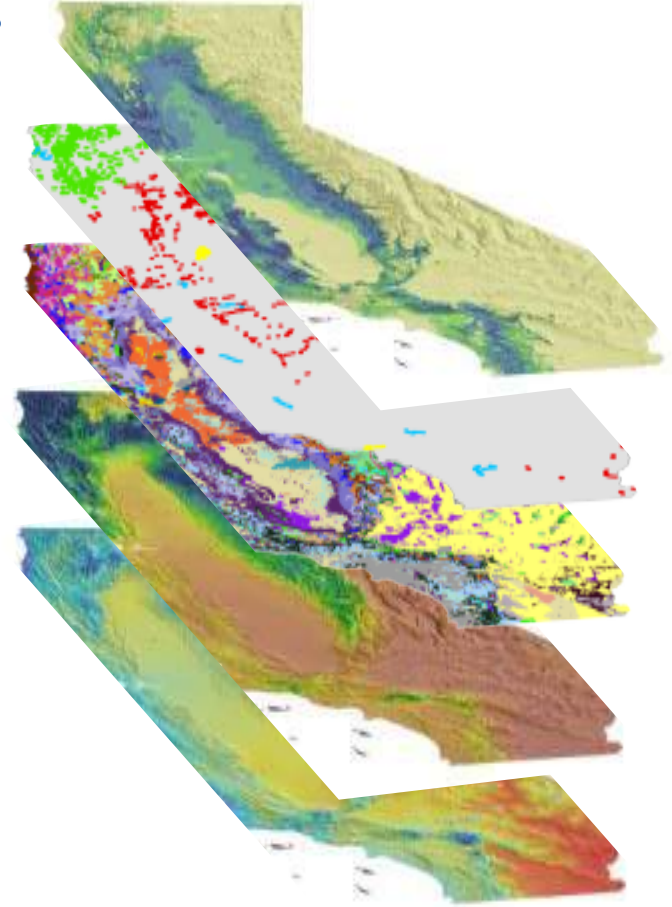
Spatial Predictions



Observations



Environmental
variables



Projecting Across the Landscape

Vegetation type

Percent saltbush types
within 1km (allscale
and spiny)

Distance to stream

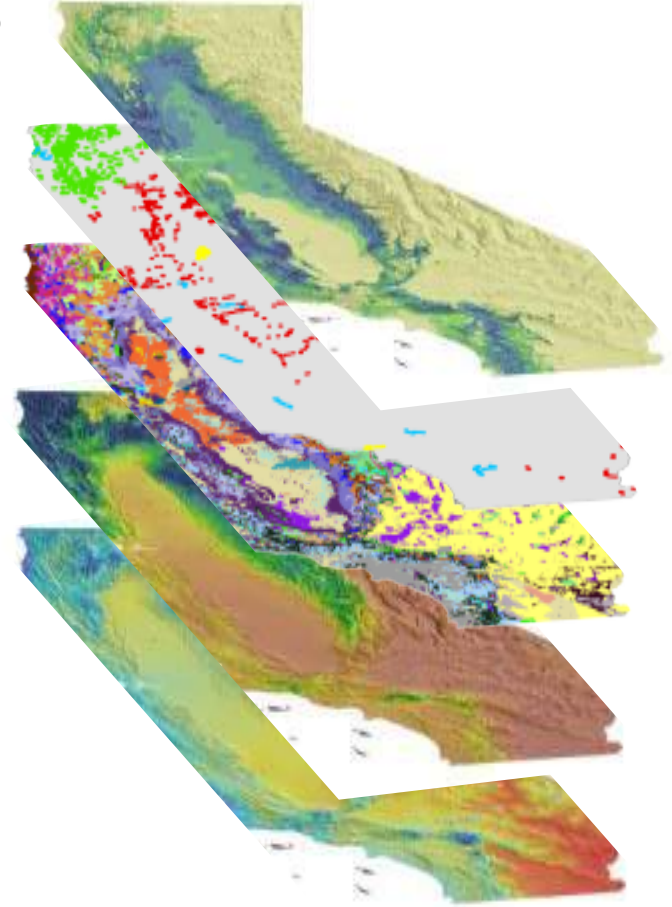
Mean Slope

Elevation

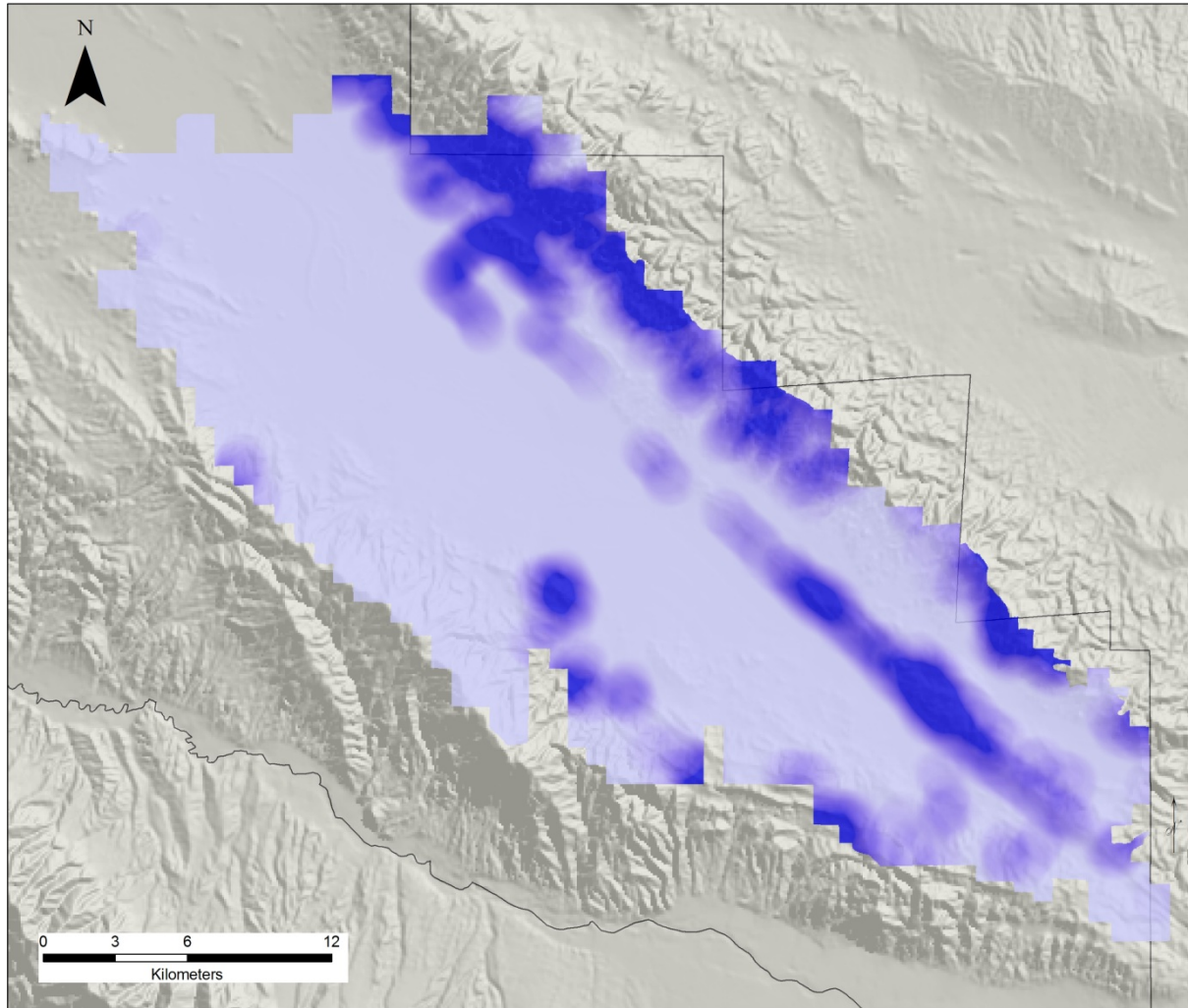
Spatial Predictions

Observations

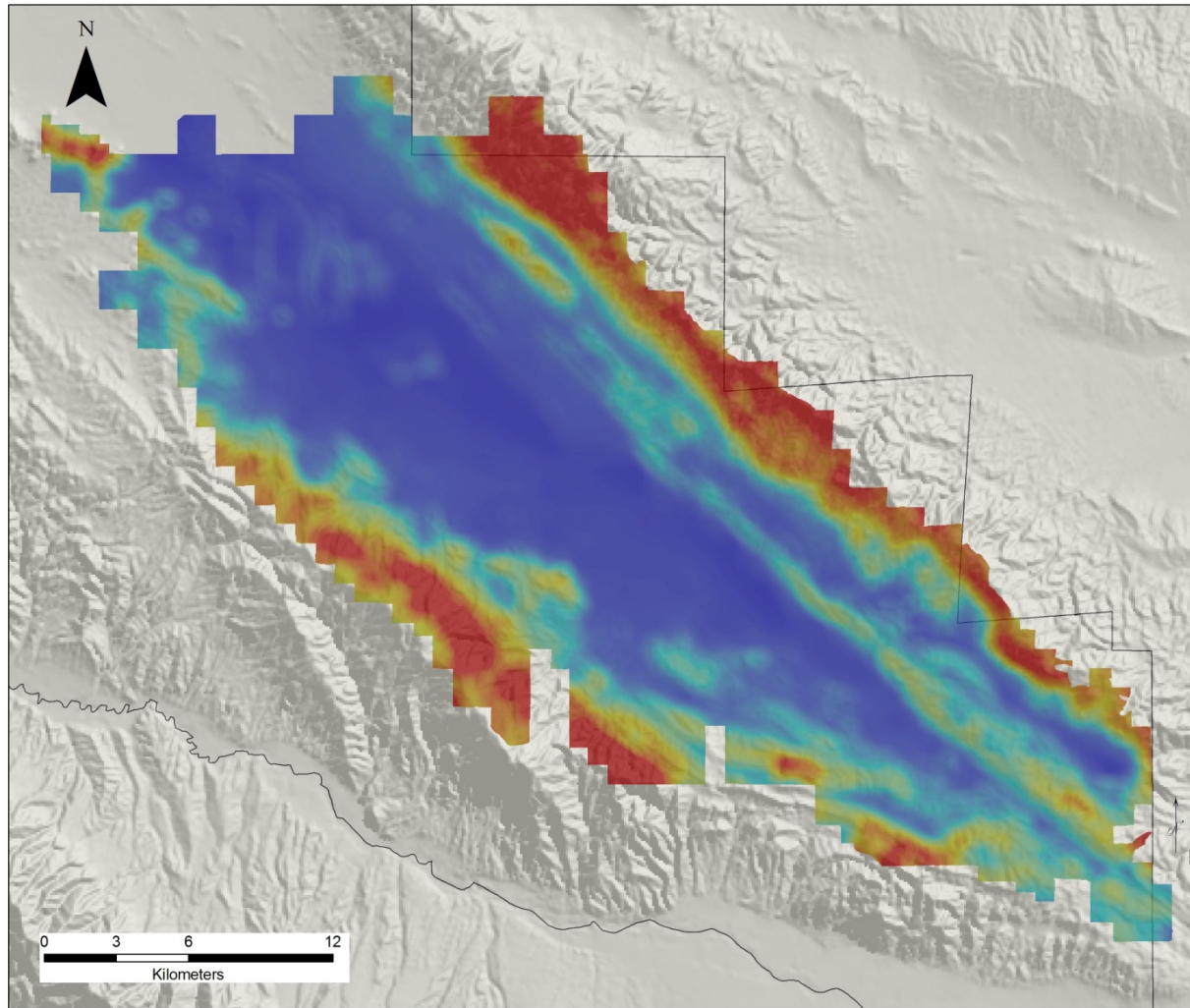
Environmental
variables



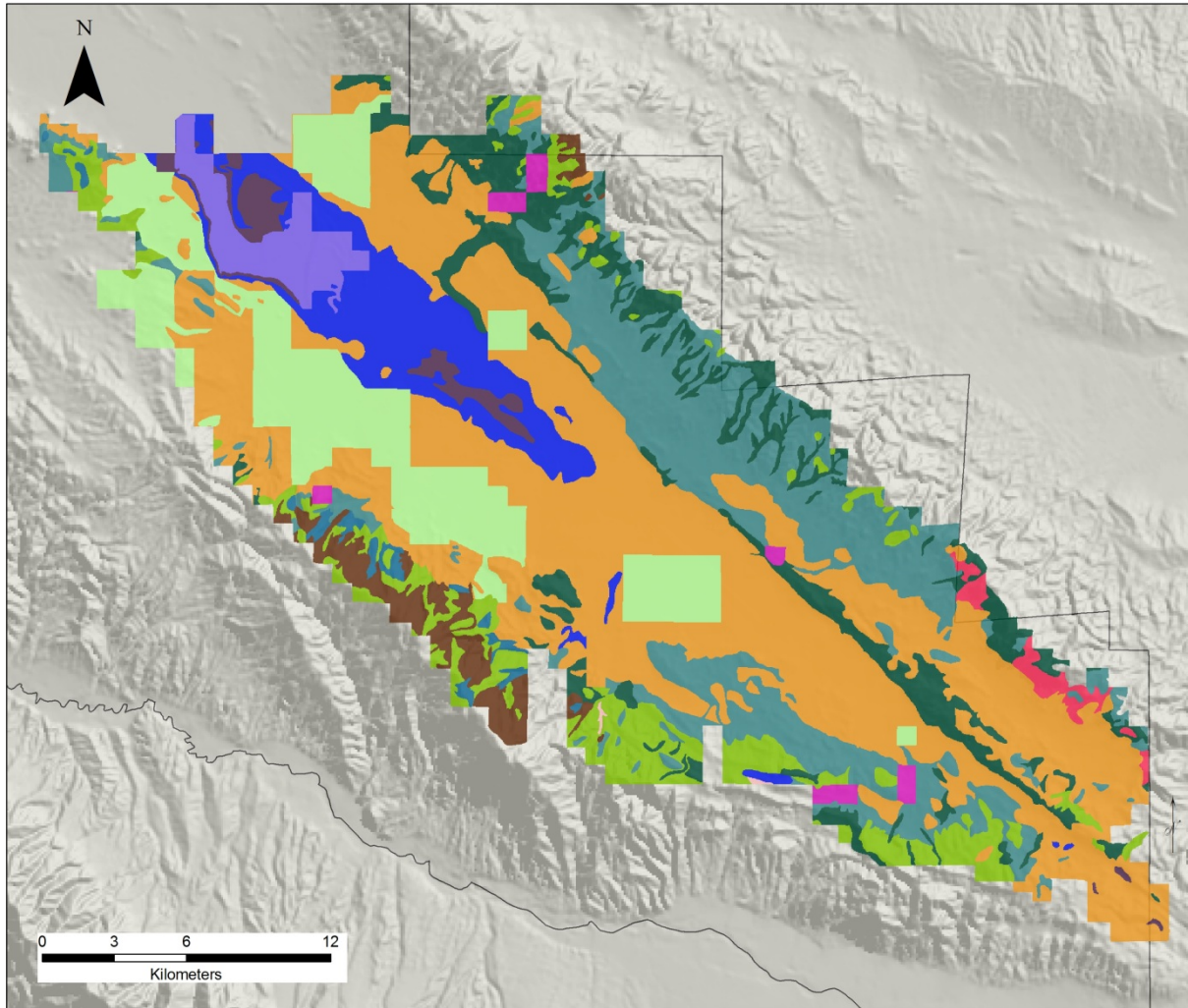
Percent Allscale Saltbush



Mean Slope



Vegetation Type



Projecting Across the Landscape

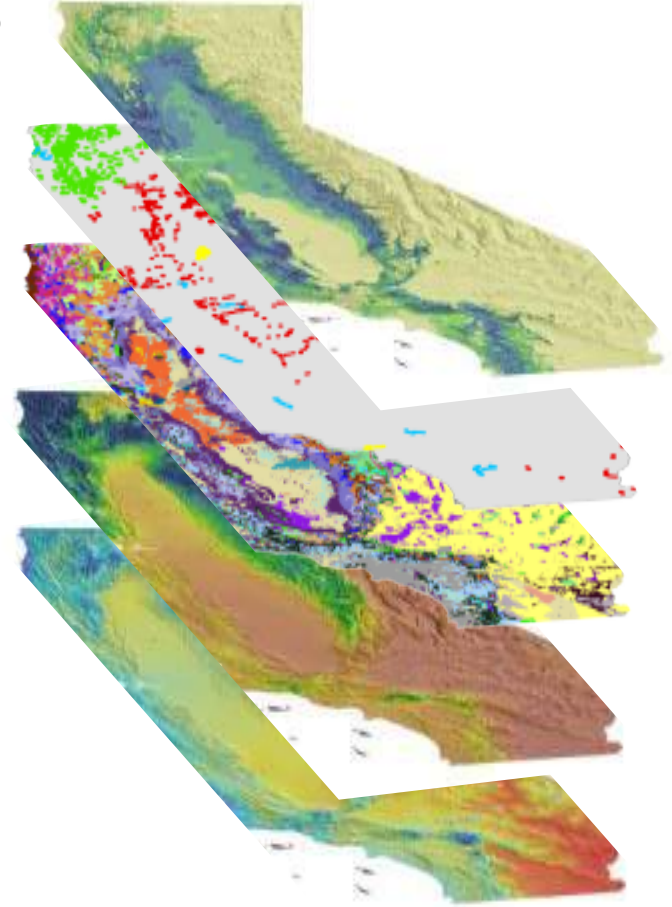
Historic sightings
provided by the BLM
and birders

42 initial locations

Spatial Predictions

Observations

Environmental
variables



Projecting Across the Landscape

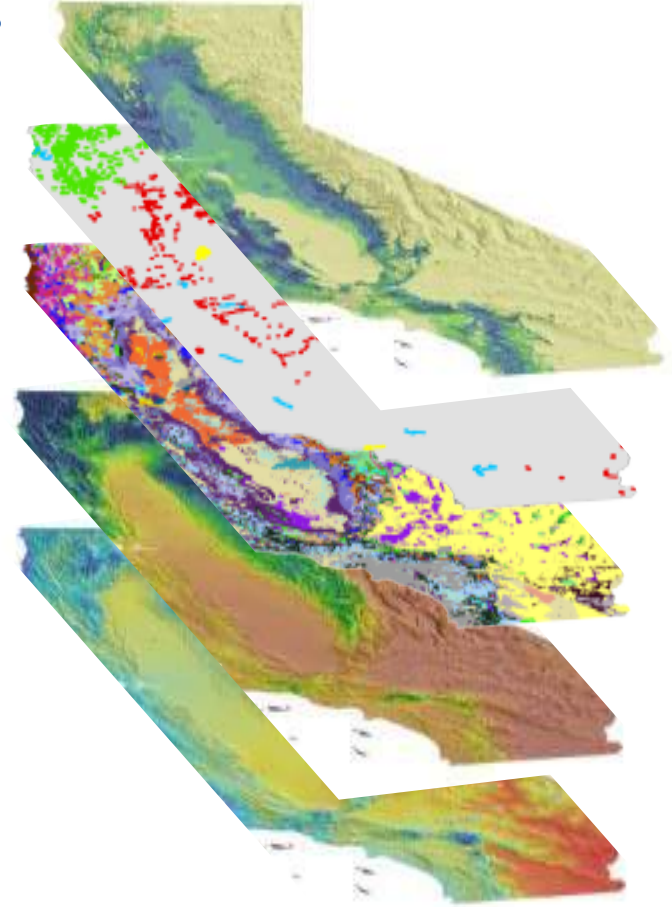
Model projected across the Monument

New data collected in 2010 used to test and refine the model.

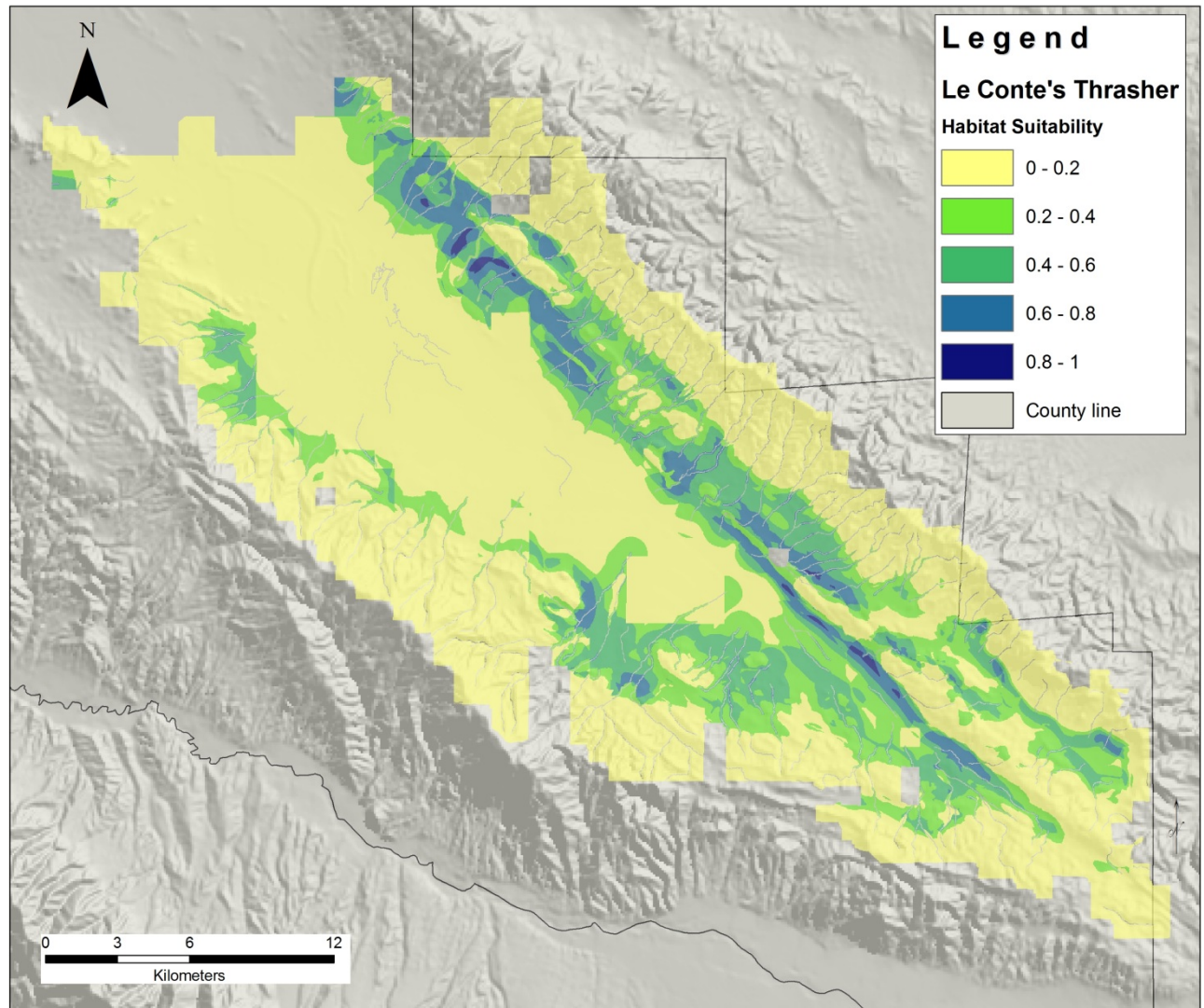
Spatial Predictions

Observations

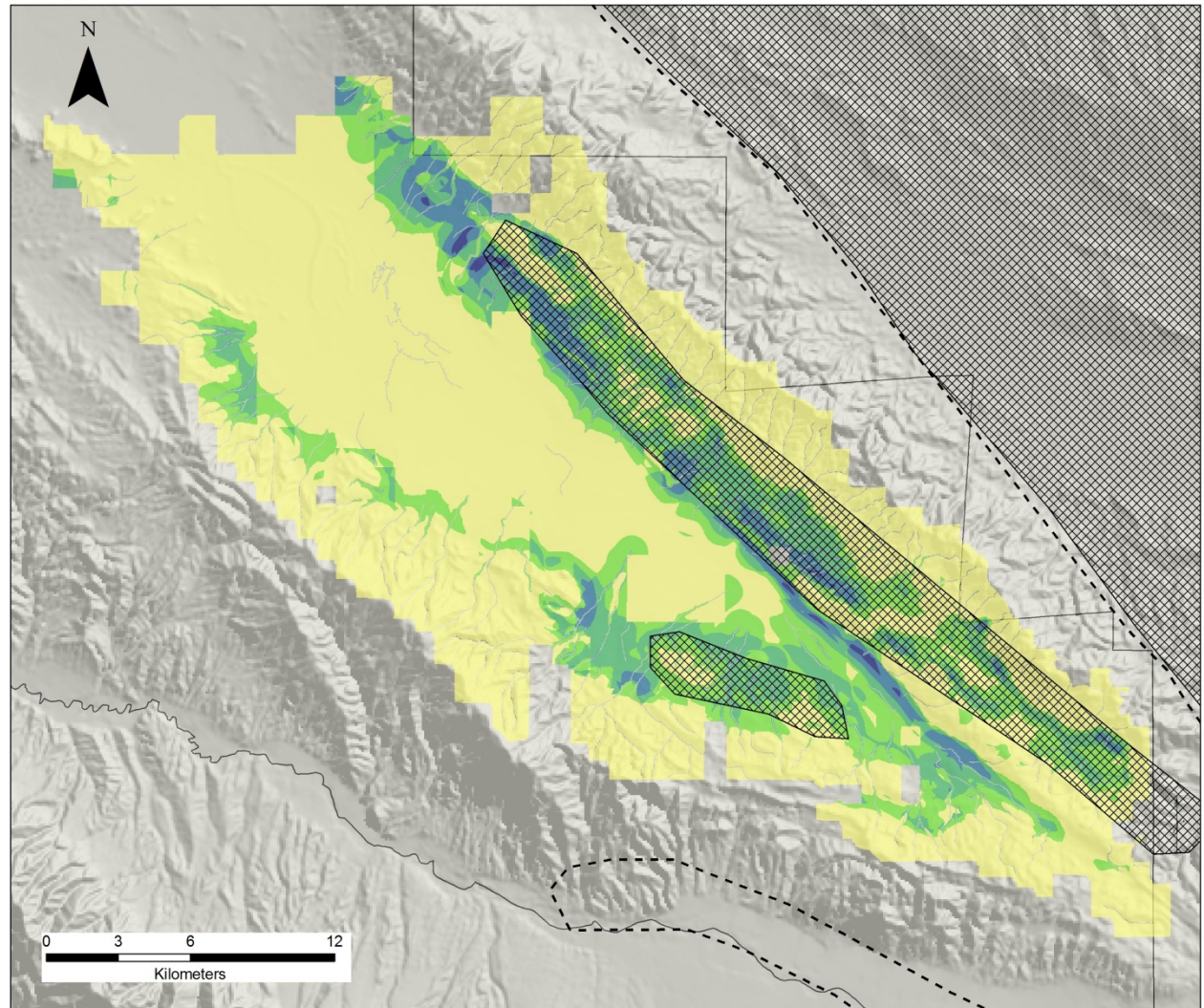
Environmental variables



Habitat Suitability Model



Comparison With Known Range

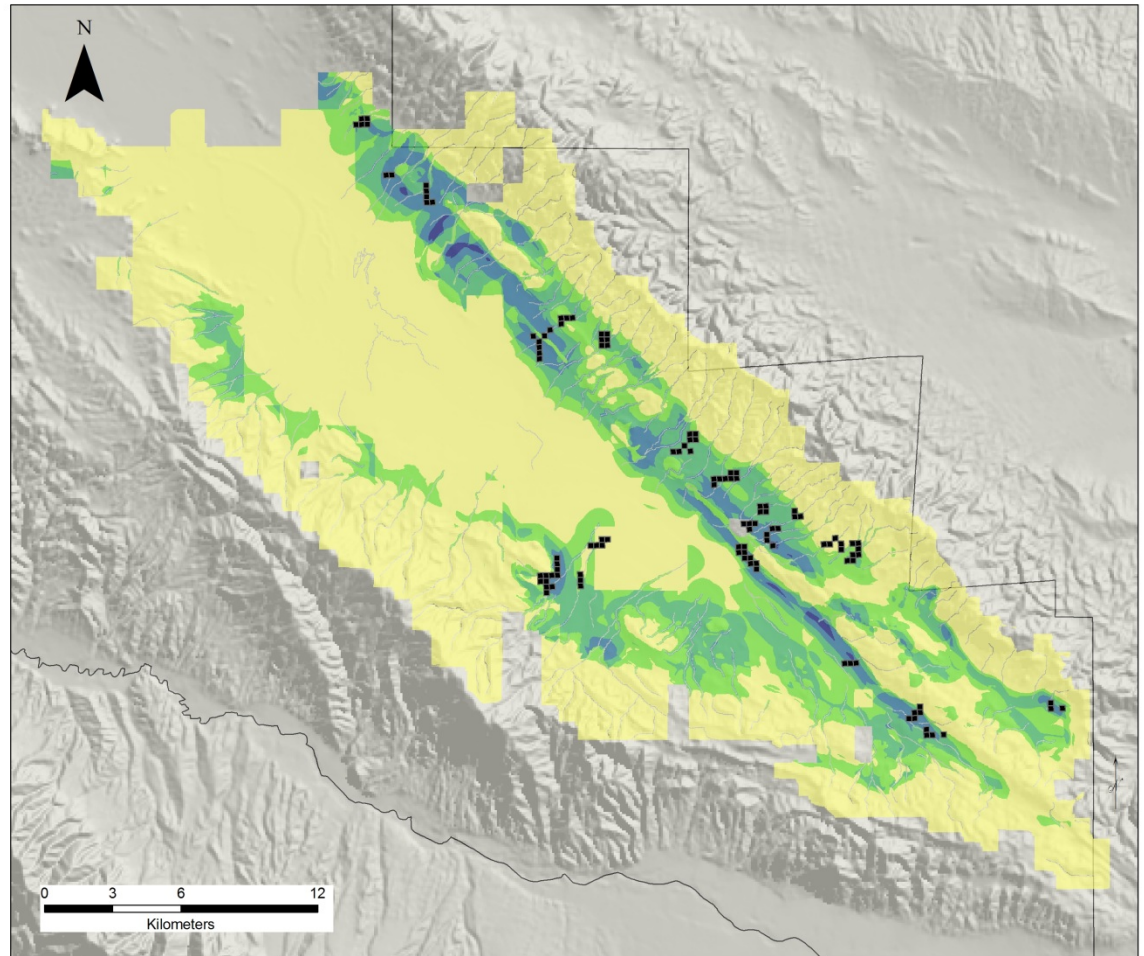


Plot Selection

Plots were established based on the habitat model, vegetation maps, and historic sightings

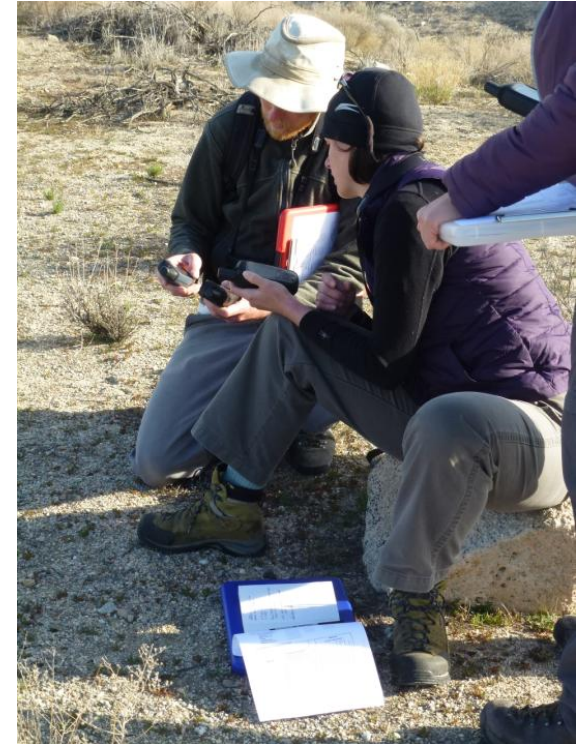
Plots are 250m² — approximate size of a thrasher territory

117 plots established



Area search surveys (20 minutes)

- Allows thorough and repeatable survey of an area
- Works well for elusive species
- Flexible – allows for multiple observers and pauses to search and locate individuals and nests birds
- Provides information on abundance
- Provides information on habitat relationships via vegetation relevés





Jim Tietz and volunteer

Le Conte's Thrasher Survey Form - Carrizo Plain

Observer Information		Survey Information	
First name _____	Last name _____	Date _____	Visit # (if known) _____
Email address _____		Start time _____	End time _____
Phone # _____		Plot ID _____	

Temp _____ F or C (circle one) Cloud Cover _____ % Wind speed _____ Wind direction _____ Rain _____

Plot Boundaries East _____ North _____ West _____ South _____

Vegetation (entire plot)	% Cover	High ht (0.1 m)	Low ht (0.1 m)
Common Saltbush	_____	_____	_____
Spiny Saltbush	_____	_____	_____
Ephedra	_____	_____	_____
Other shrubs	_____	_____	_____
Trees	_____	_____	_____
Grass	_____	_____	_____
Barren Ground	_____	_____	_____

Bird & Mammal Species Within Plot

Species	Tally of Individuals (Song, Visual, Call, one letter per individual)	T O T A L	Behavior (check if applicable)*										
			f l o o p l i n g	f l o o p l i n g	c o o p l i n g	d i p l i n g	p a t e r n l i n g	m a t e r n l i n g	f o o p l i n g	n e e d l i n g	f l e e d l i n g		

Additional notes/obs _____

Vegetation Relevés

(By plot and LETH sighting)

- Focused on dominant plant types thought to be important for thrashers
 - Saltbush types
 - Other shrubs
- Height and cover
- Ground cover (grass, open ground)
- Slope and aspect



Content



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Le Conte's Thrasher Detections

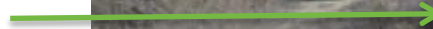
2010 – 18 detections over 234 plot visits

2011 – 47 detections over 170 plot visits

2012 – 46 detections over 152 plot visits

2013 - 48 detections over 201 plot visits

Actual nest site



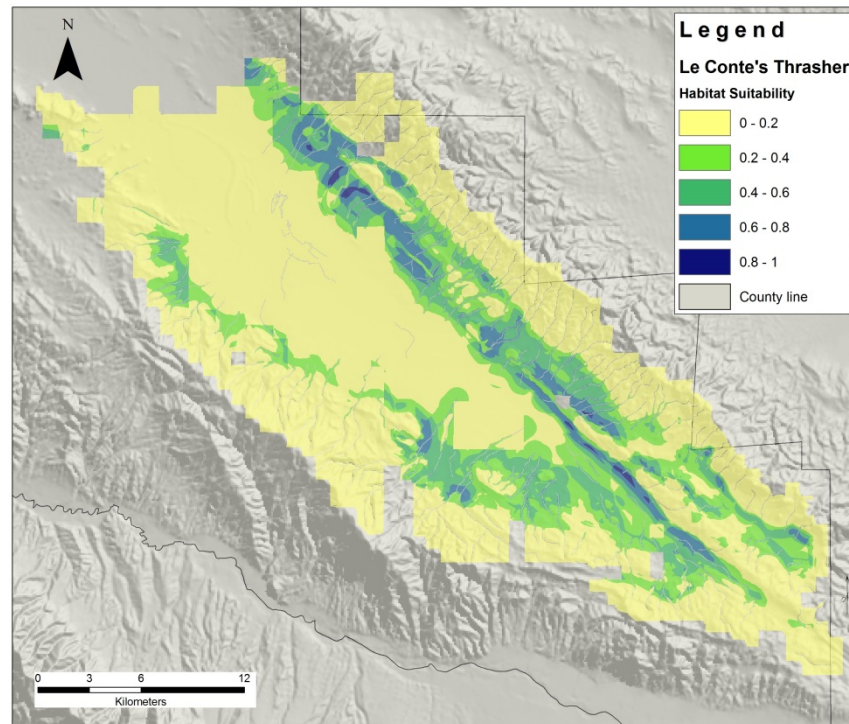
Total Species Detected

53 avian species and 5 mammals detected during surveys

American Pipit	Horned Lark	Savannah Sparrow	California Towhee	Merlin	Western Meadowlark
Bewick's Wren	House Finch	Say's Phoebe	Common Raven	Mountain Bluebird	
Brewer's Blackbird	Lark Sparrow	Sharp-shinned Hawk		White-crowned Sparrow	
Burrowing Owl	Le Conte's Thrasher		Cooper's Hawk	Mourning Dove	
Spotted Towhee			Eurasian Collared-Dove	Northern Mockingbird	European
California Quail			Starling	Peregrine Falcon	Ferruginous Hawk
Loggerhead Shrike	Tree Swallow		Wren	Golden Eagle	Rock
California Thrasher	Long-billed Curlew	Vesper Sparrow		Sage Sparrow	
California Towhee	Merlin			Hermit Thrush	Sage Thrasher
	Western Meadowlark		Mammals	Black Tailed Jackrabbit	
			California Ground Squirrel		
			Desert Cottontail	San Joaquin Antelope Squirrel	
			San Joaquin Kit Fox		

Habitat Model Test

Model testing was good – with a high ability to discriminate between presence location and a random location



Habitat Associations

Only two species of shrub associated with thrasher sightings: allscale saltbush (*Atriplex polycarpa*) and desert tea (*Ephedra californica*)

Highest densities in areas with large shrubs

Largest shrubs found on flat or gently sloping open habitat

- ~15% shrub cover and 14% bare ground



Habitat Associations

Thrasher detection where allscale saltbush was absent tended to have more desert tea (*Ephedra*)

- ~12% cover of desert tea when allscale absent



Habitat Associations

Little association with spiny saltbush (*Atriplex spinifera*)



Habitat Associations - Nests

Nests located each year – approx 20 nests total

Most nests located in Allscale Saltbush but also in Desert Tea (*Ephedra*)

Average 1.5 meters in height

Allscale or Ephedra cover average 15%

Bare ground average 26%

Grass cover average 56%

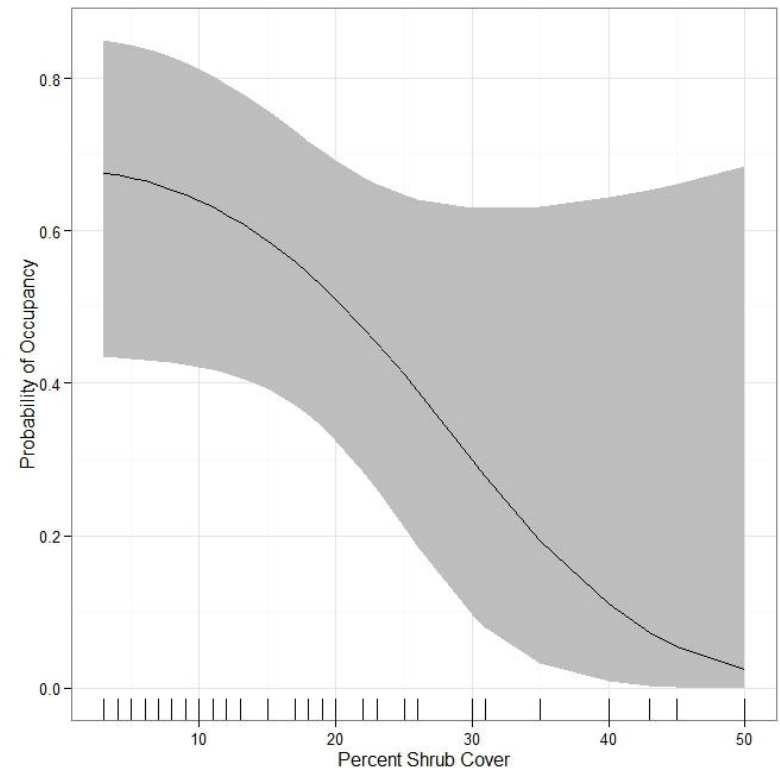
Occupancy Modeling

Allow us to explore occupancy in relation to habitat characteristics

Corrected for detection probability

As shrub cover increases, occupancy decreases

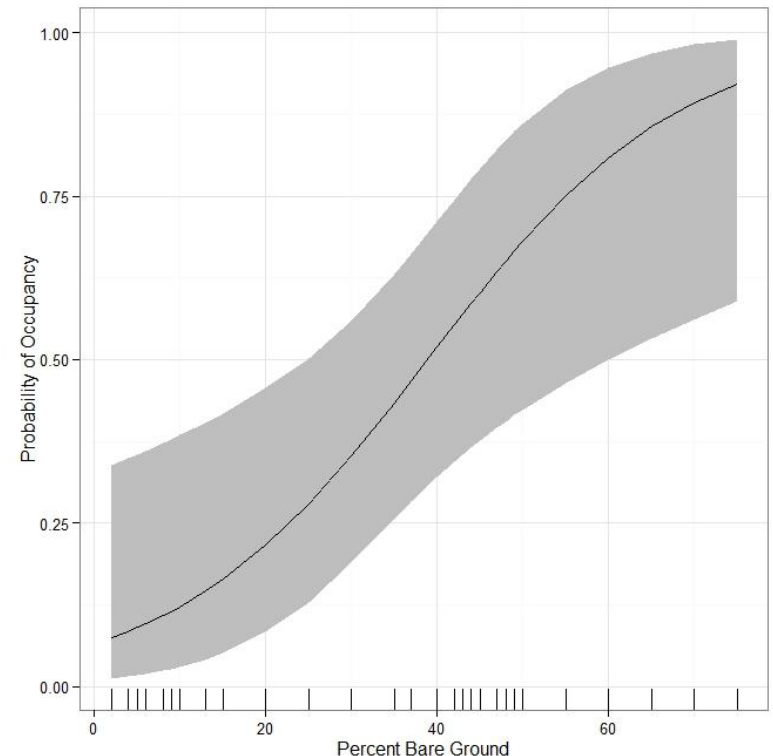
In line with previous studies
Tall sparse shrubs needed for nesting and foraging



Occupancy Modeling

As bare ground increases,
occupancy increases

Also in line with previous studies
Bare ground needed for foraging



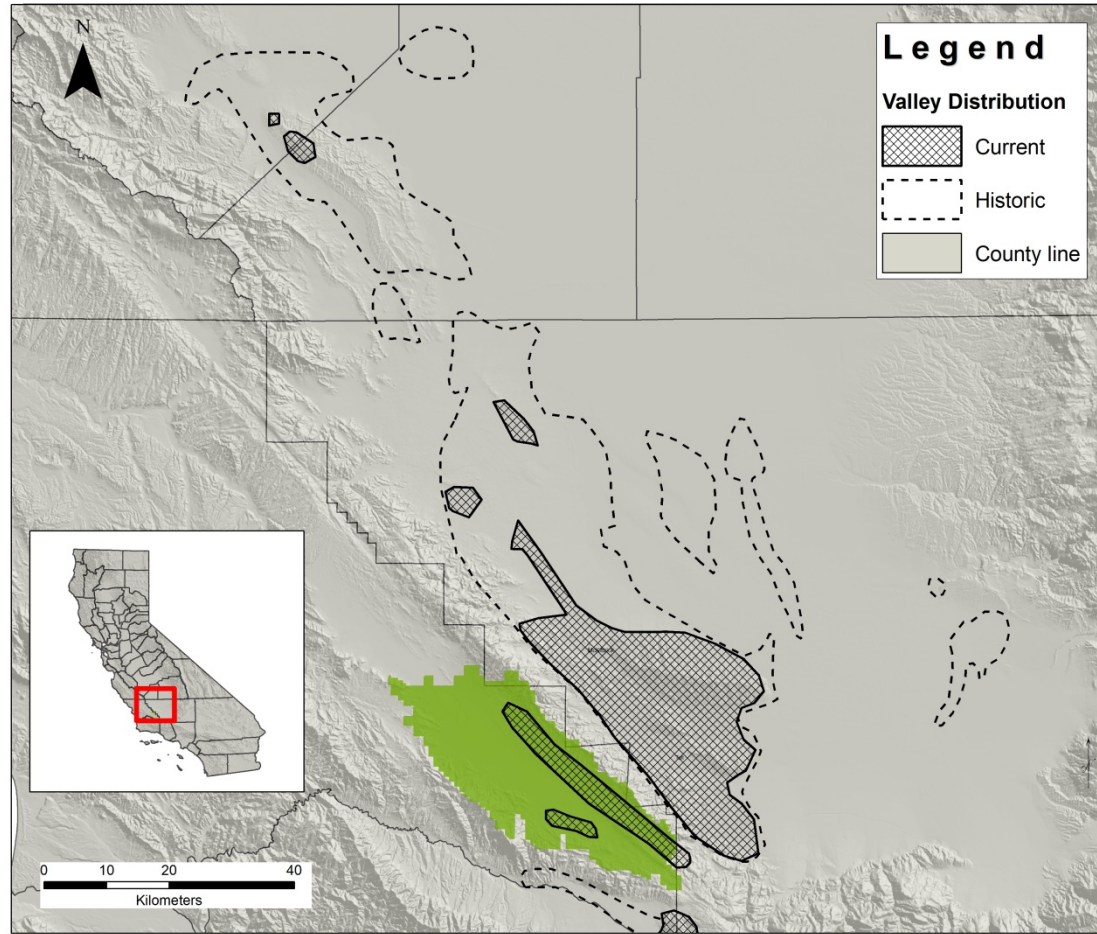
Other Findings

Some areas of the Monument appeared to have unhealthy allscale saltbush – unknown causes

Areas along the western edge of the valley had few or no thrasher detections, despite habitat model. These areas appeared to have more moisture and denser shrub and ground cover.



Next Steps: Expand Surveys?



Needs and Recommendations

Continue to collect population and habitat data over time

- Refine habitat association models

Needs and Recommendations

Continue to collect population and habitat data over time

- Refine habitat association models

Use newly created vegetation layers to create abundance models across the landscape

- Establish population goals and restoration targets
- Identify potential habitat

Needs and Recommendations

Continue to collect population and habitat data over time

- Refine habitat association models

Use newly created vegetation layers to create abundance models across the landscape

- Establish population goals and restoration targets
- Identify potential habitat

Connect or expand monitoring to other areas where San Joaquin population occurs

- Determine health of overall population
- Establish habitat connections between subpopulations (models and surveys/eBird?)

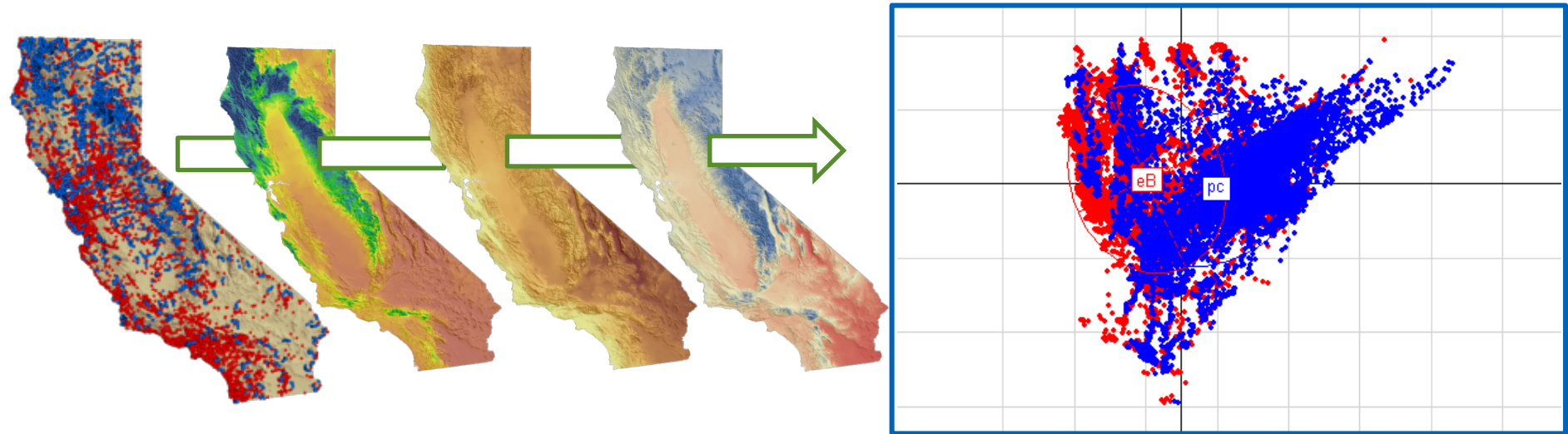
Acknowledgments

- **BLM** for financial support
- **BLM** biologists and ecologists **Kathy Sharum, James Weigand, and Geoff Walsh**
- The **volunteer surveyors** who donated their time: Matt Brady, Brent Campos, Ryan DiGaudio, Tom Edell, Geoff Geupel, Michelle Gilbert, Oliver James, Nora Livingston, Alex Metea, Adam Searcy, Kristin Sesser, Kathy Sharum, Maggie Smith, and Khara Strum,



Thank you!

Sampling Climate Space



- Points represent **eBird** and **point counts** in principal components space for environmental data

Principal Components For a Single Species

- Red = eBird
- Blue = point counts
- Yellow warbler

