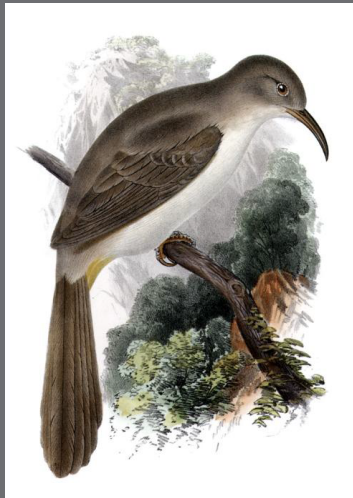


Le Conte's Thrashers

Guiding conservation in the Carrizo Plains

Leo Salas, Dennis Jongsomjit, Jim Tietz, Geoffrey Geupel



Point Blue

Conservation science
for a healthy planet.

Acknowledgments

Bureau of Land Management

MidAmerican Solar

Board and members of
Point Blue conservation Science

Volunteer surveyors: 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.



Overview

- About Point Blue
- About LCTH – why it matters?
- Project History – understanding LCTH needs
 - What we did and how we did it
- Results
- Conservation management implications
- Next steps

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
- 150 seasonal and full time staff
- Advancing conservation through science, partnerships, outreach
- Work throughout the US, Latin America, Antarctica
- Promote climate-smart conservation



About the LeConte's Thrasher



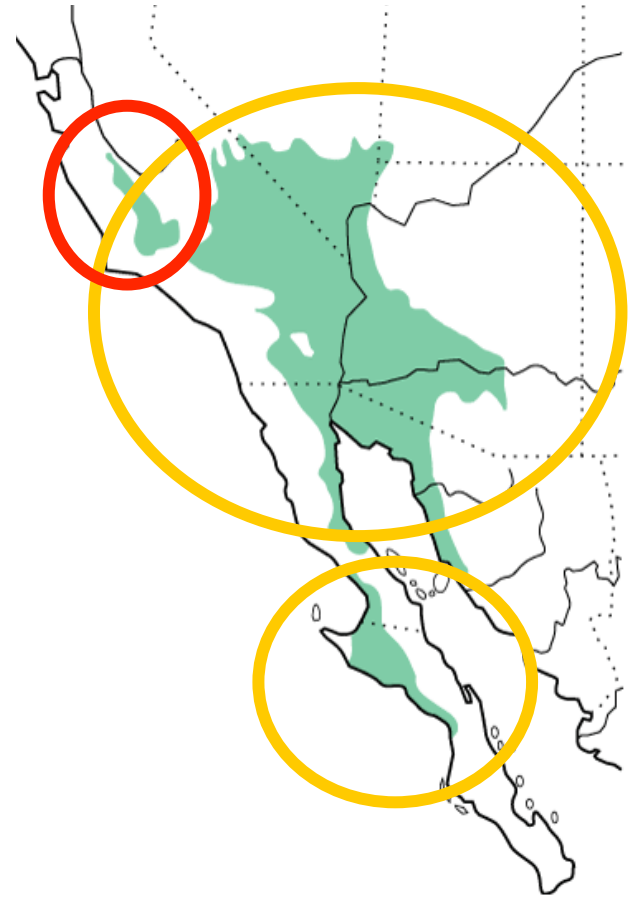
© Alan Harper.  CC BY-NC 4.0. www.alanharper.com

Distribution: *Toxostoma lecontei*

Uncommon resident of the southwestern deserts

2-3 subspecies

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



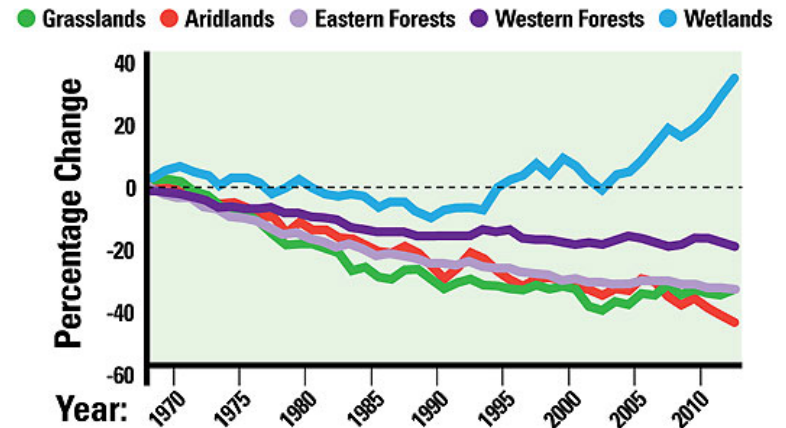
From The Birds of North America Online

State of the Birds Report

- Le Conte's Thrasher is an indicator species of aridlands in the western US
- It is the fastest declining species among 17 aridland obligate indicators
- Why:
 - Habitat loss & fragmentation
 - Energy development
 - Long-term habitat degradation (e.g. non-native plants)
 - Climate change



BIRD POPULATION INDICATORS IN FIVE INLAND HABITATS

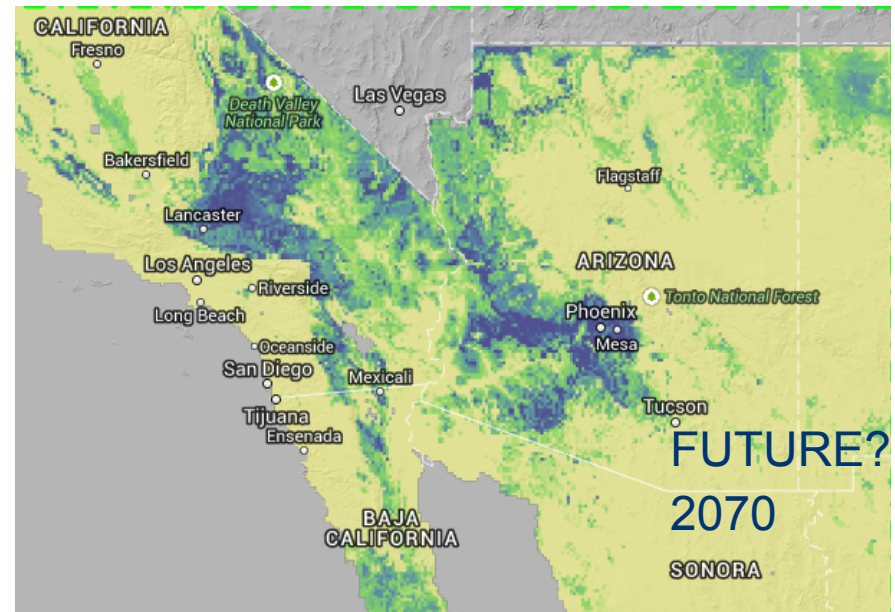
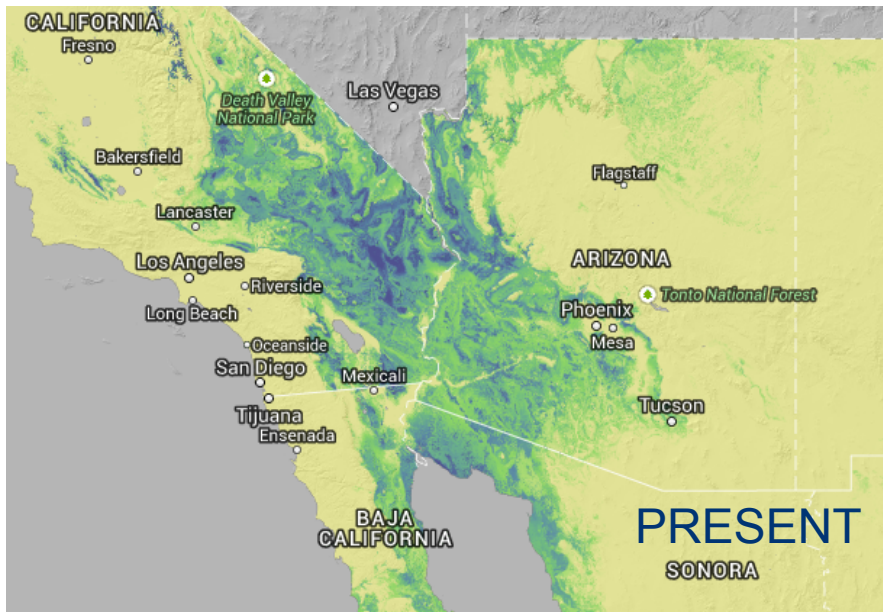


See Our Approach for description of bird population indicators.

Projections into the future

(<http://data.prbo.org/apps/sjv/>)

- The Carrizo Plain may be a climate refuge
- LCTH is projected to persist in the Carrizo Plain



Conservation Challenges in CA

Identified as a Bird Species of Special Concern (CDFW):

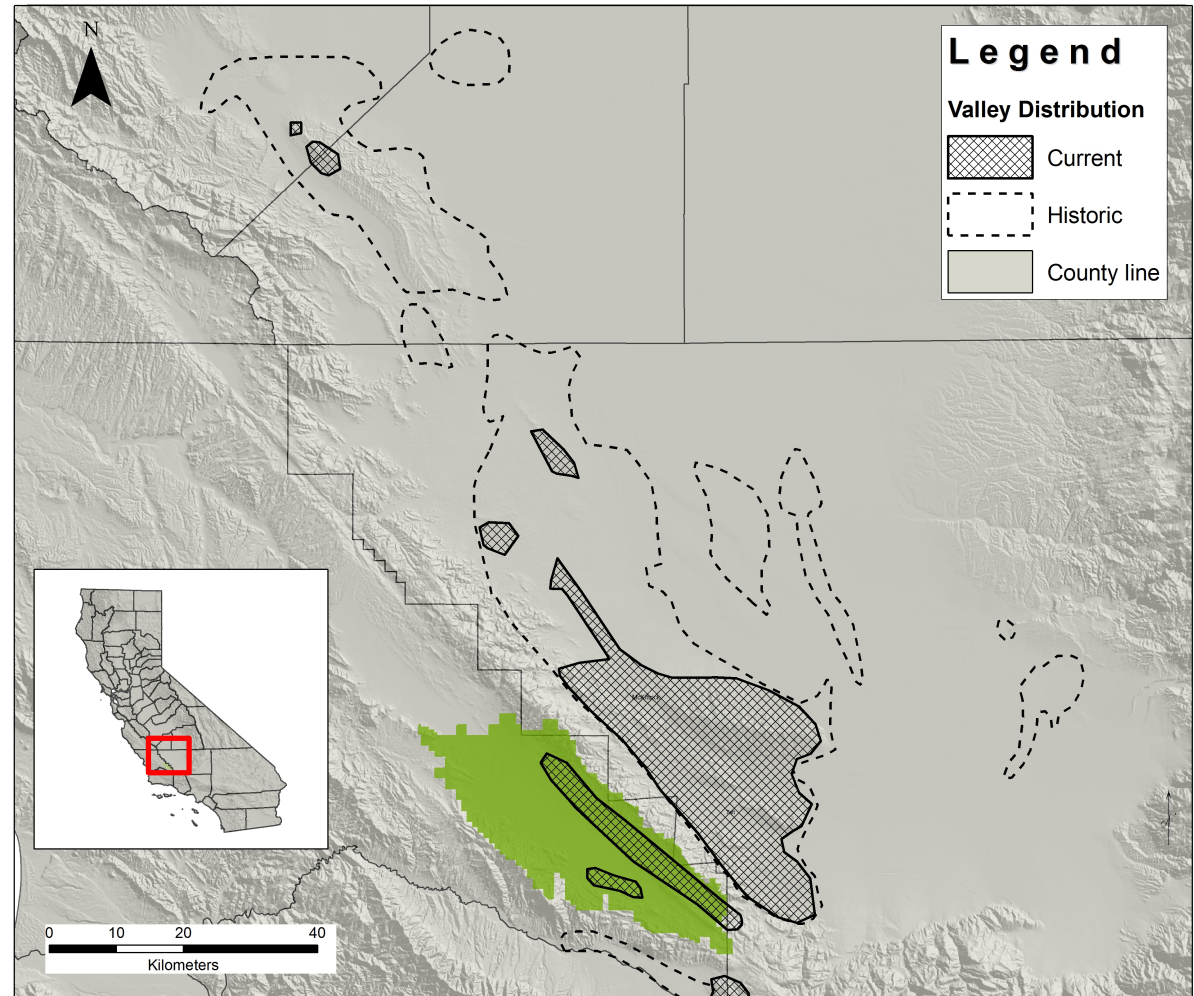
- Habitat loss and degradation
- Low population density (i.e. high sensitivity to disturbance)
- Habitat needs poorly understood (little research done)



Distribution: *Toxostoma lecontei*

- *T.l. macmillanorum*

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



Le Conte's Habitat Needs

what we know

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

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

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



Project history and overview



Project History

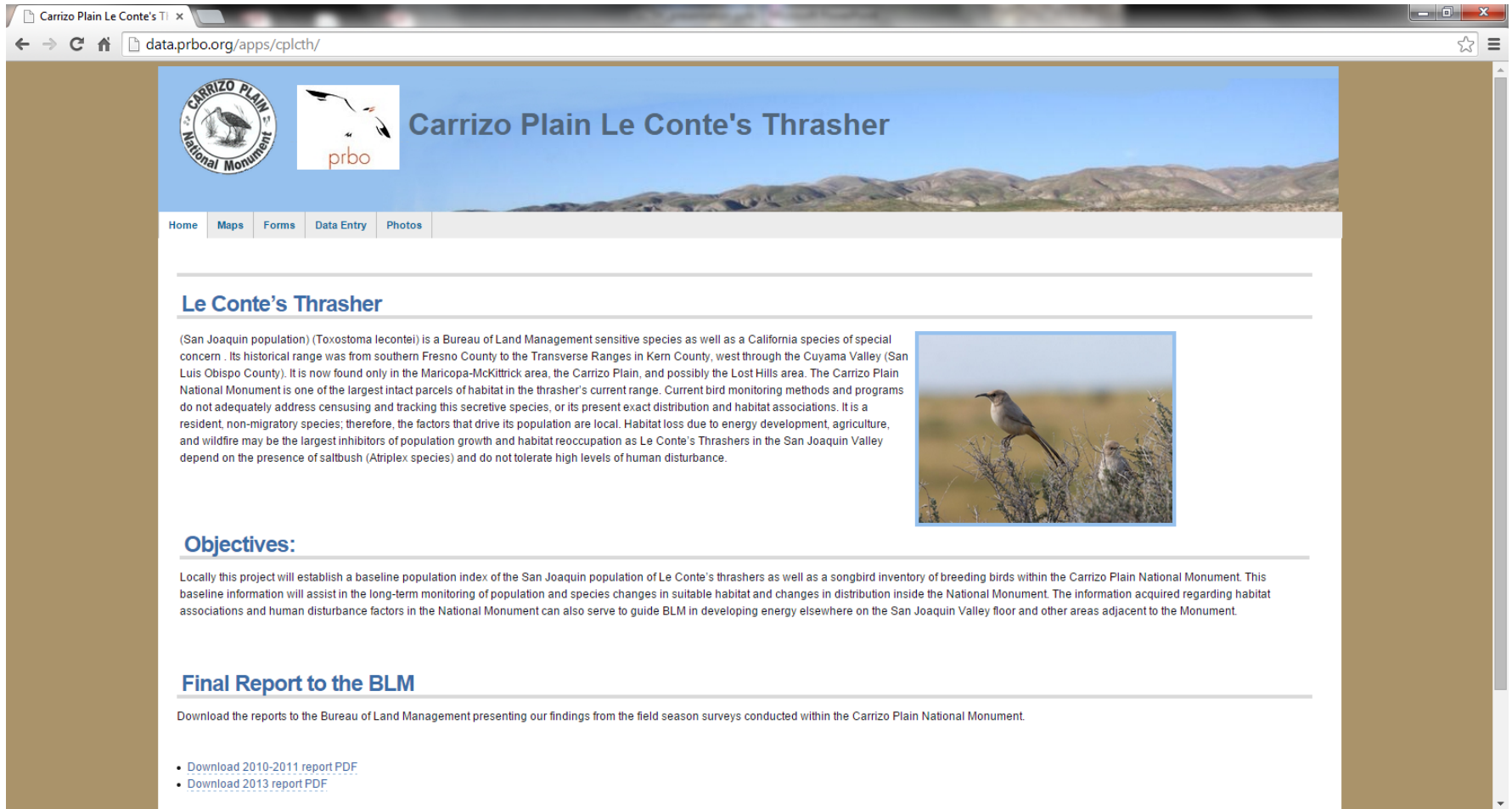


- Funded in 2010 via NLCS grant.
 - First monitoring design, habitat model
- Monitoring methods refined in 2011
- Final area search plots established in 2012
- Surveys continued in 2013
- Small grant to improve models in 2014
- Monitoring for 2015 funded by MidAmerican Solar and the Bureau of Land Management



On-line app

<http://data.prbo.org/apps/cplcth/>




The screenshot shows a web browser window with the address bar displaying data.prbo.org/apps/cplcth/. The page features a header with the Carrizo Plain National Monument logo, a prbo logo, and a title "Carrizo Plain Le Conte's Thrasher" over a landscape image. A navigation menu includes links for Home, Maps, Forms, Data Entry, and Photos. The main content area is titled "Le Conte's Thrasher" and contains a detailed paragraph about the species' status and habitat. To the right of the text is a photograph of two thrashers in a field. Below this, the "Objectives:" section describes the project's goals for population monitoring and habitat assessment. The "Final Report to the BLM" section provides a link to download reports. At the bottom, there are links to download the 2010-2011 and 2013 report PDFs.

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.

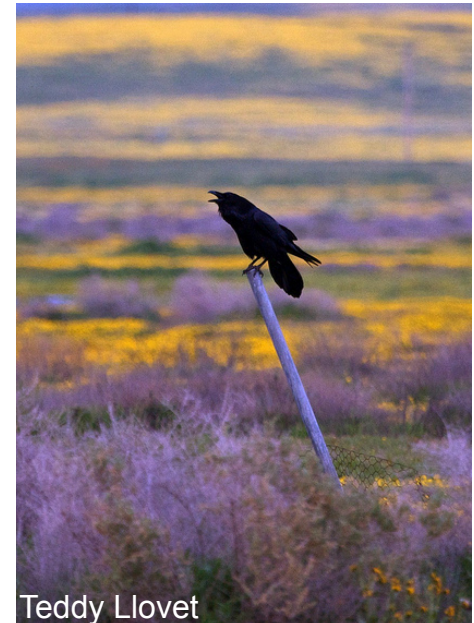
Final Report to the BLM

Download the reports to the Bureau of Land Management presenting our findings from the field season surveys conducted within the Carrizo Plain National Monument.

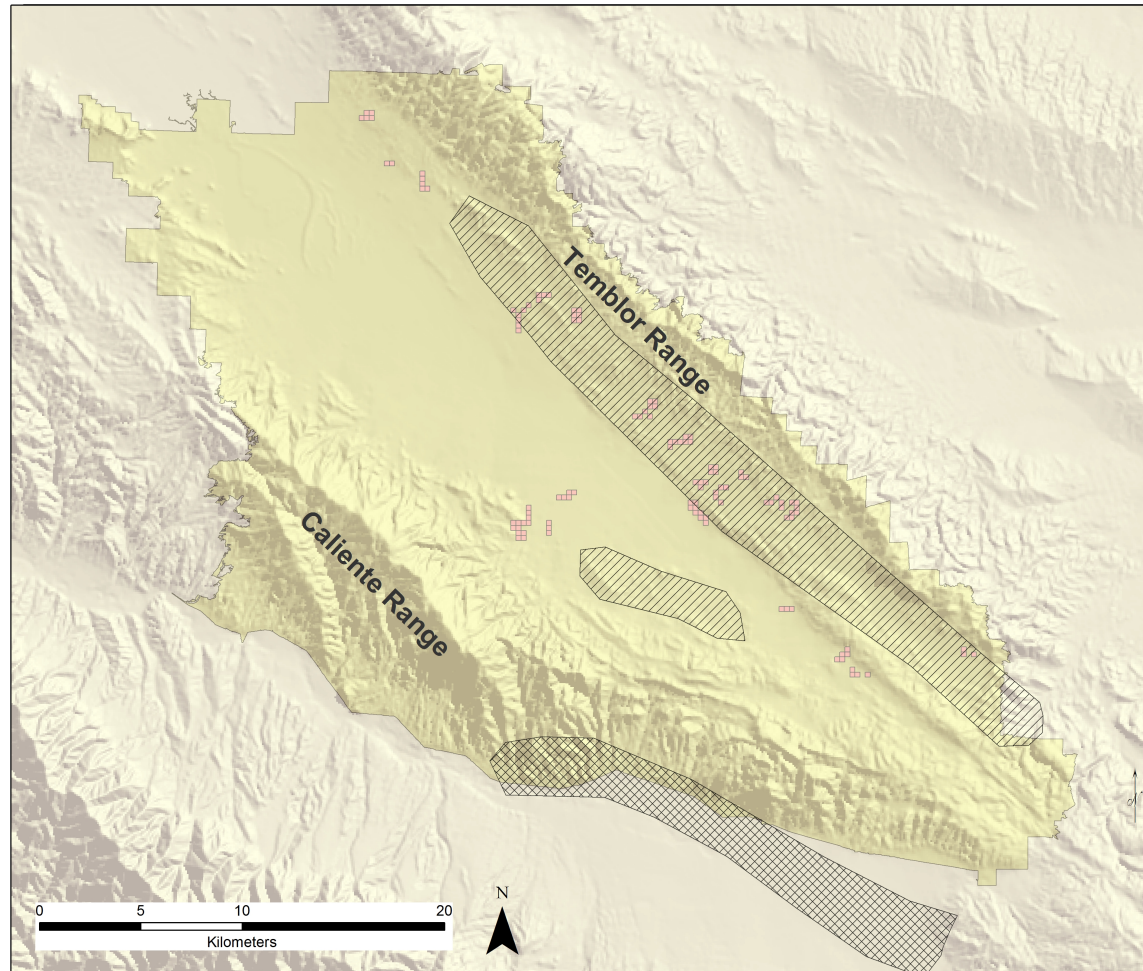
- [Download 2010-2011 report PDF](#)
- [Download 2013 report PDF](#)

Project's current objectives

- Understand LCTH habitat needs and guide management
- Understand LCTH density distribution in the landscape
- Identify priority areas for conservation of LCTH populations in the Central Valley
- Provide density targets in the Carrizo Plain



Study Area – Survey Plots



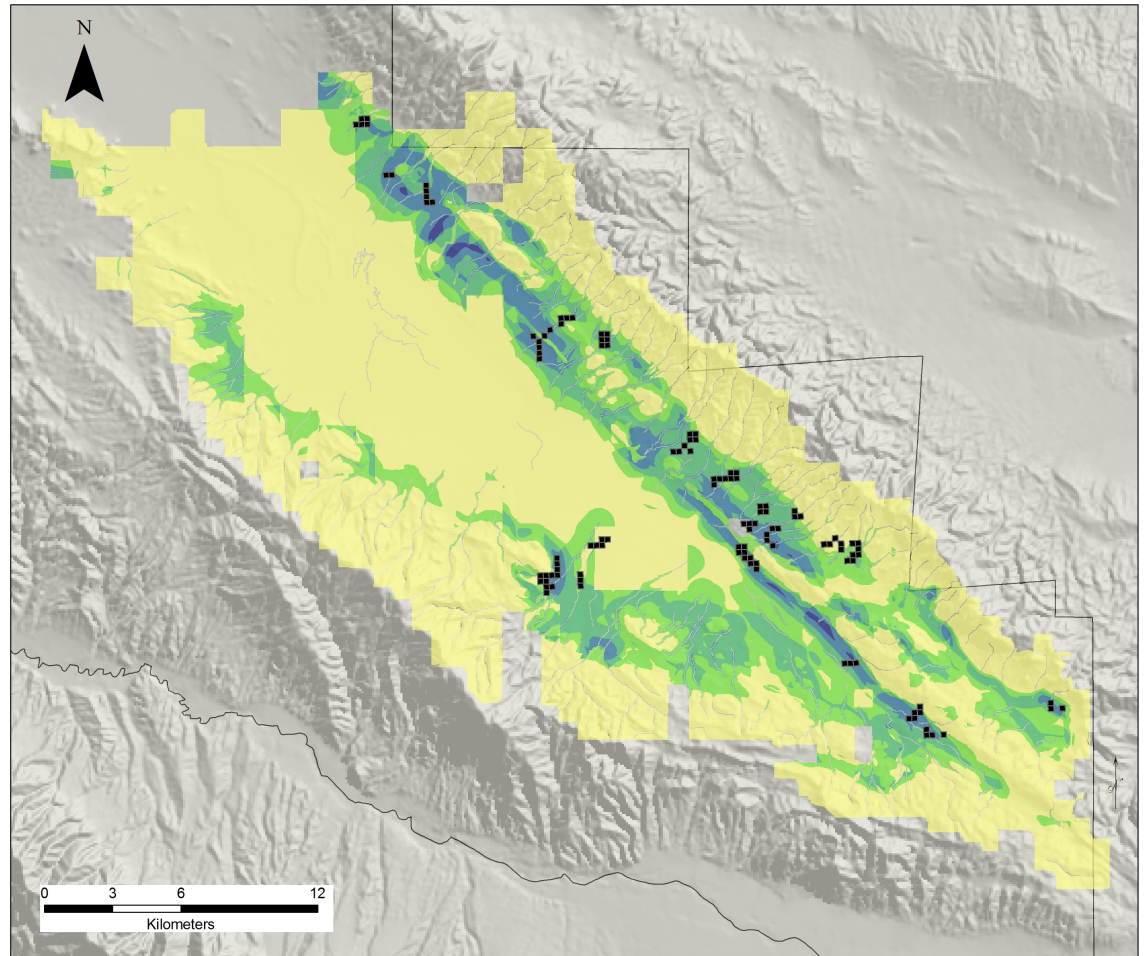
Plot Selection

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

Plots are 250m² – approx. size of a LCTH territory

117 plots established

Each plot sampled 1 to 3 times per year



Vegetation Relevés

- 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



Leo's disclaimer

Never been to the Carrizo Plain

Never seen a LCTH

But there is a reason....

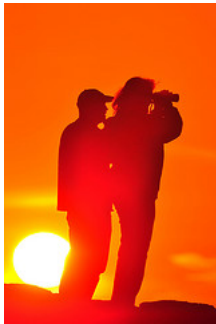
...how do you say “go to hell!” in Venezuela?

Imperfect-detection model

Why and how

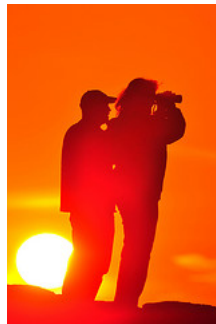
- Rare/difficult to find species = surveys with low counts (many 0's too). What is the true density?
- Repeated counts example

Visit 1



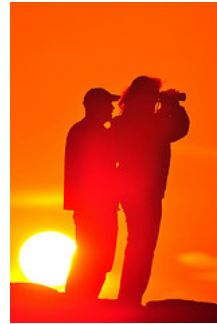
0 birds

Visit 2



2 birds

Visit 3



0 birds

+

+

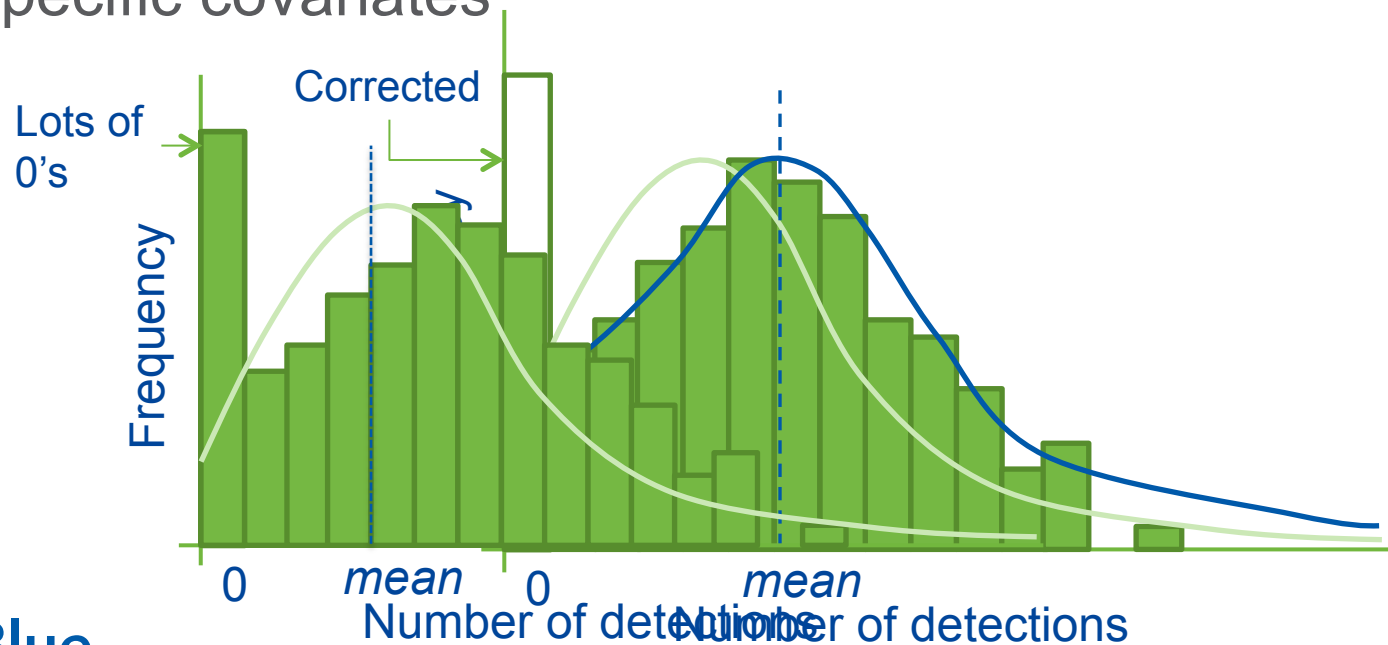
= ?

At least 2 birds, but surely more

Imperfect-detection model

Why and how

- Probability of detecting each bird each visit $\ll 1$
- Estimates must correct for imperfect detection
- Imperfect detection models use repeated count data, site-specific covariates



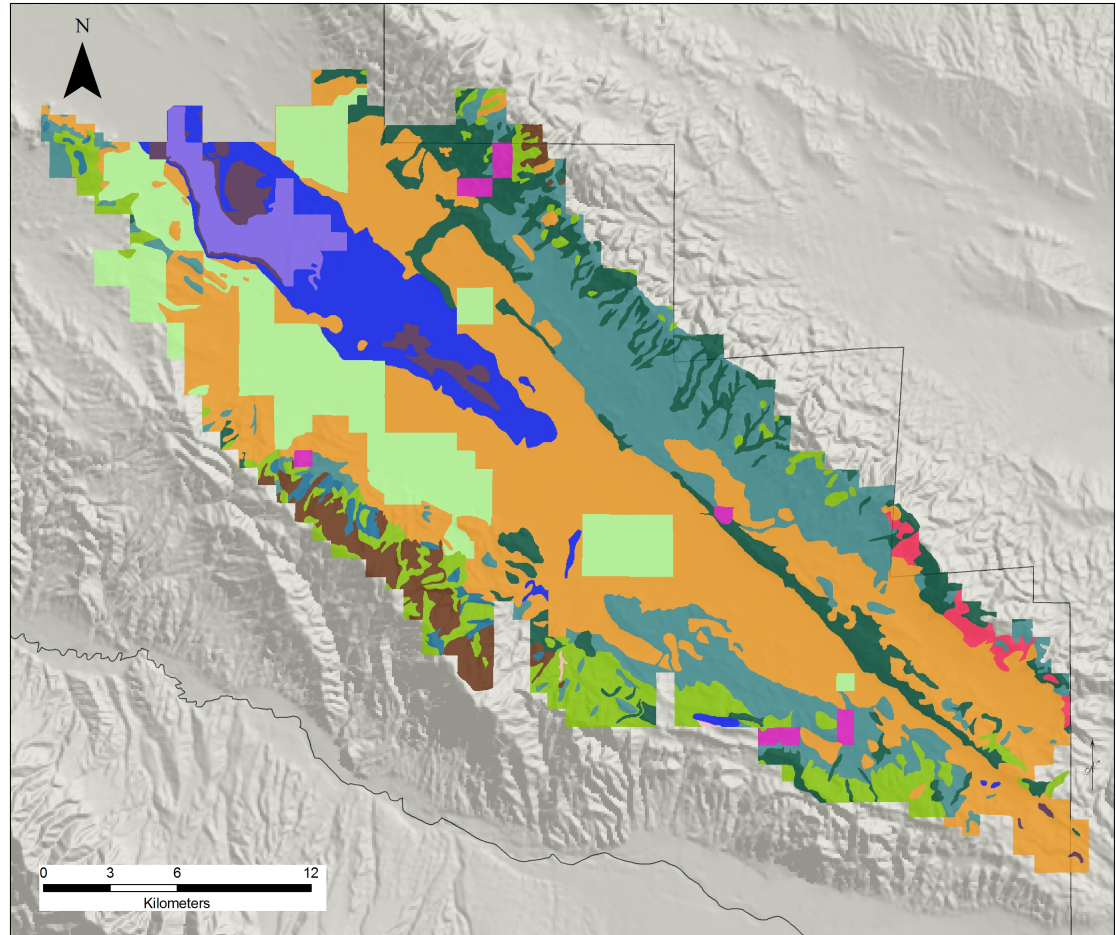
From density estimates to landscape model

- Landscape-level factors affect distribution and abundance in the landscape
- Use geospatial covariates (e.g. veg cover layers) + density estimates across landscape
- Machine-learning models as landscape models (trade bias over variance to predict exceptionally accurately)



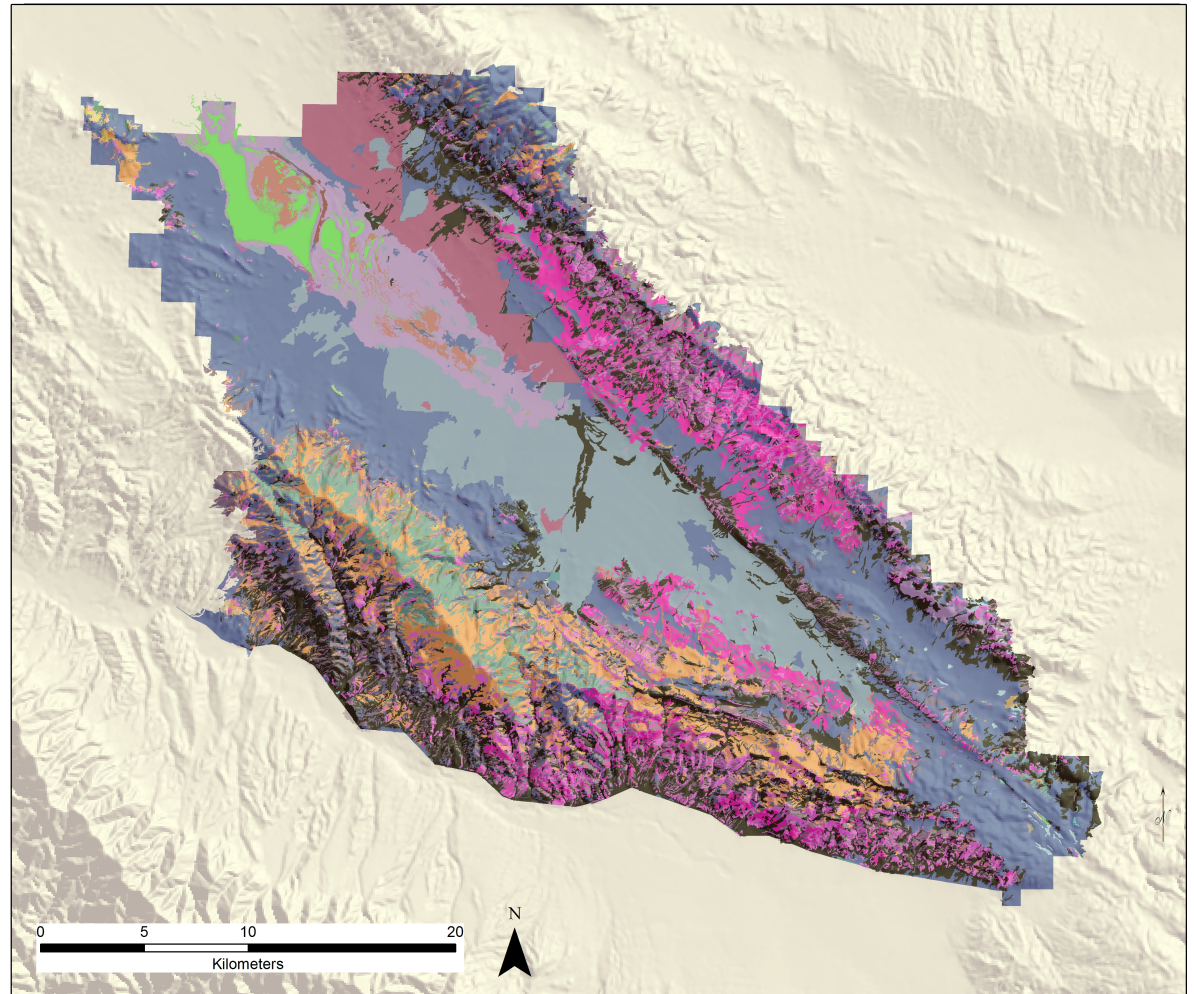
Vegetation Type – Old Data Layer

- Relatively low resolution
- Broad vegetation classes



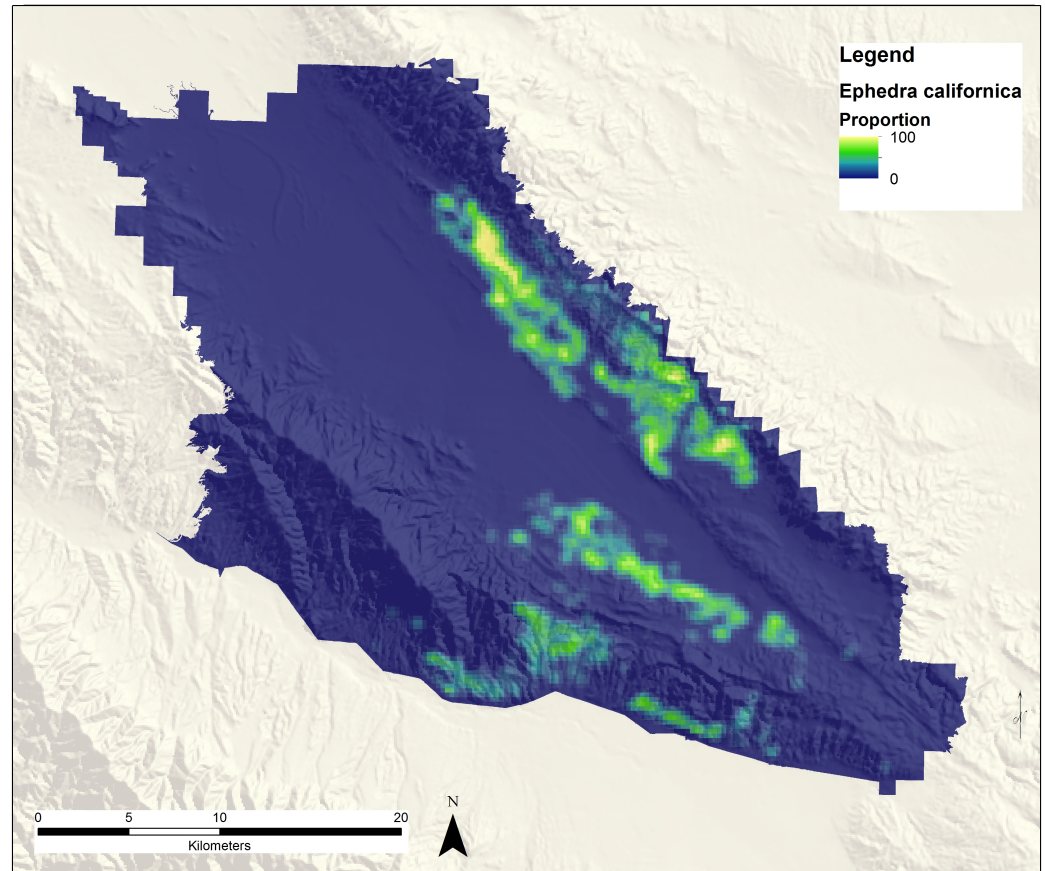
New Vegetation Layer

- NEW! California Native Plant Society layer
- High resolution
- Precise vegetation classes
- Ground cover, shrub cover



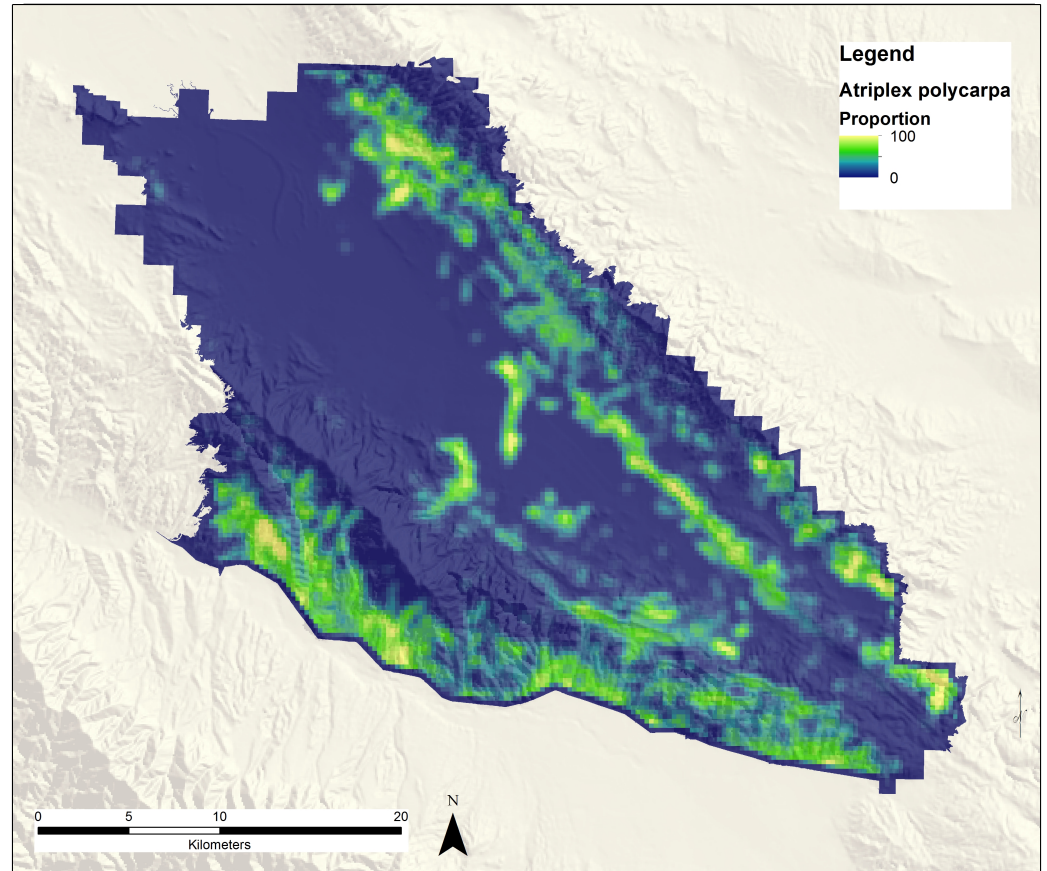
Covariate: Proportion *Ephedra californica*

- Important veg class
- From CNPS layer!



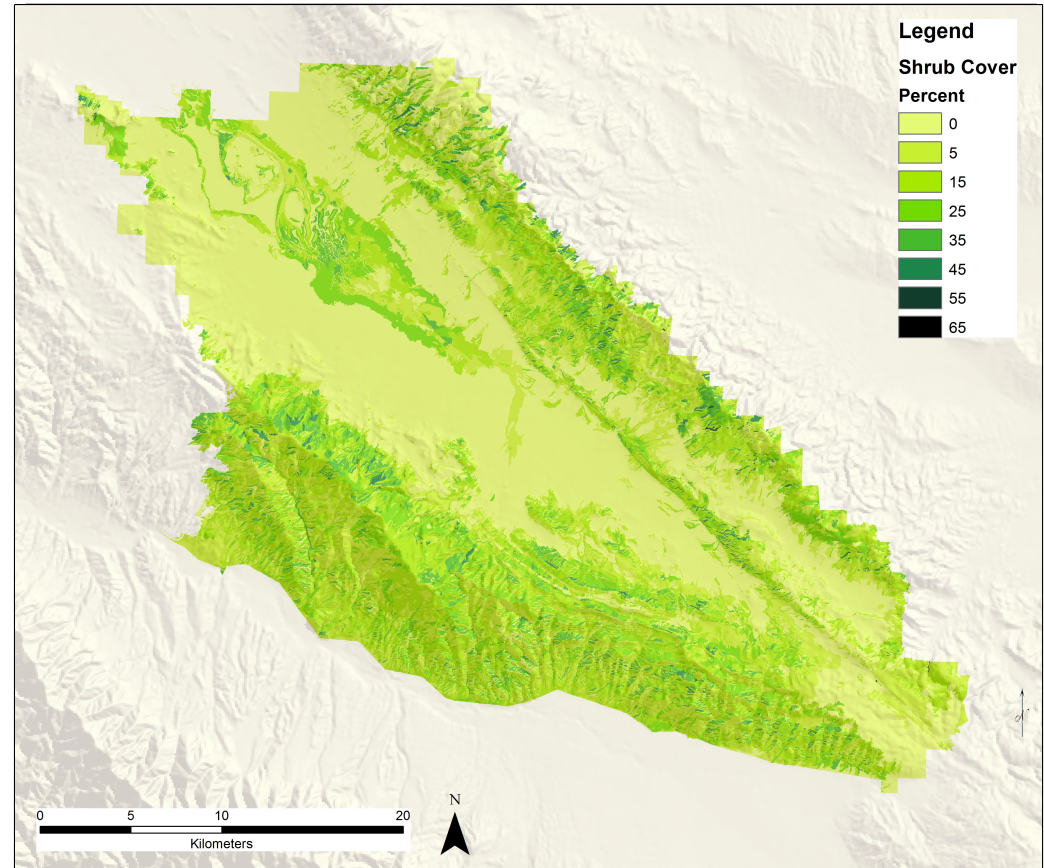
Covariate: Proportion *Atriplex polycarpa*

- Important veg class
- From CNPS layer!



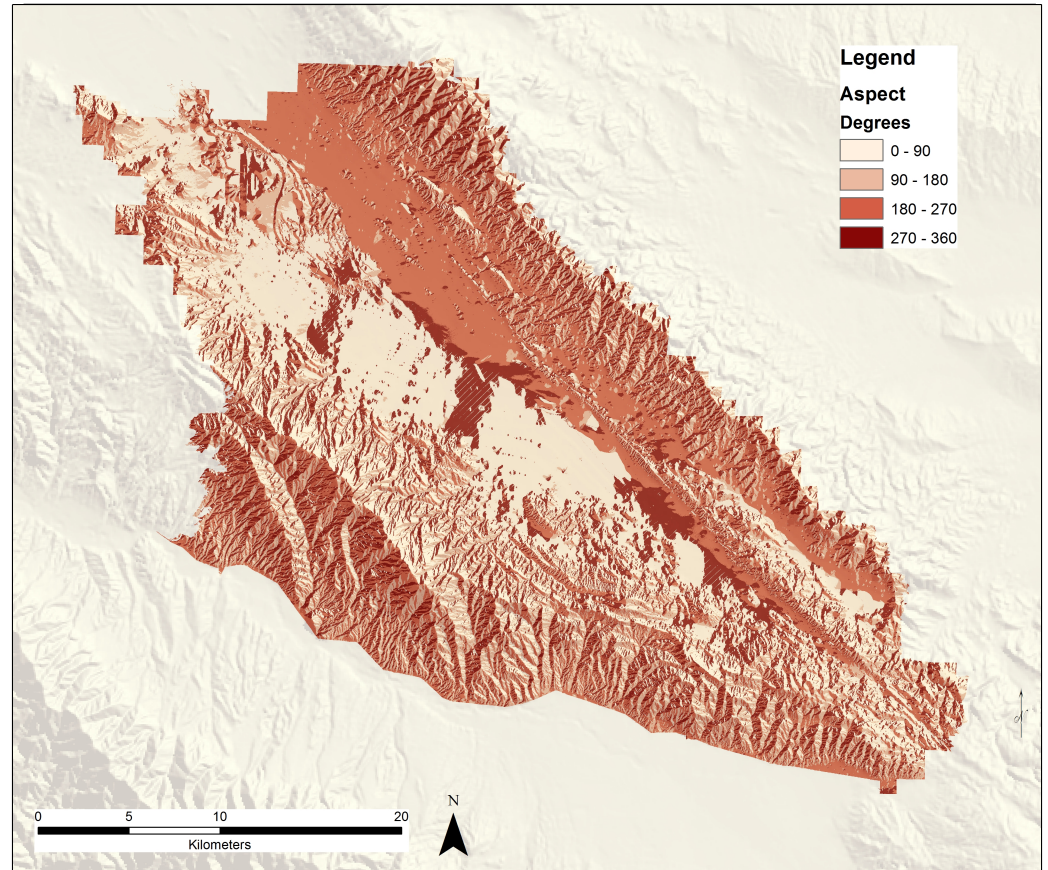
Covariate: Percent Shrub Cover

- Important veg class
- From CNPS layer!



Covariate: Aspect

- Additional covariate
- Others: slope, distance to wash

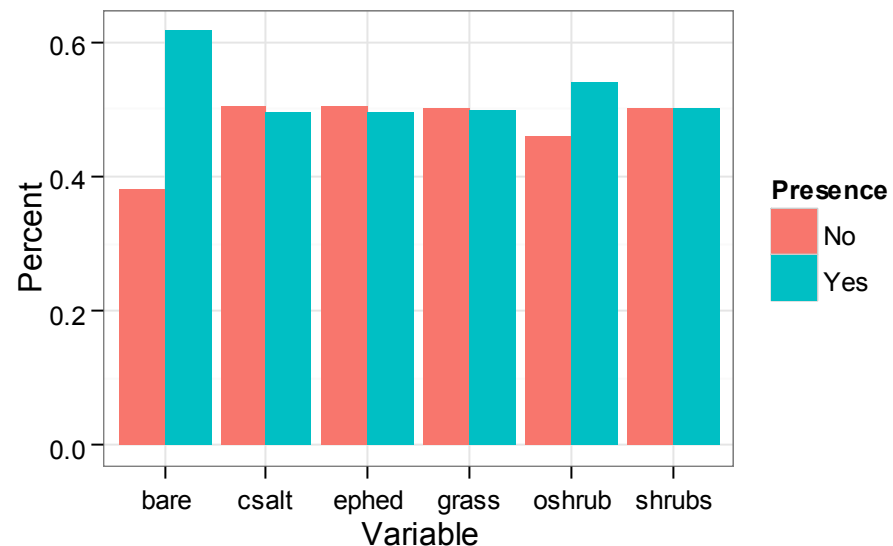


Project results

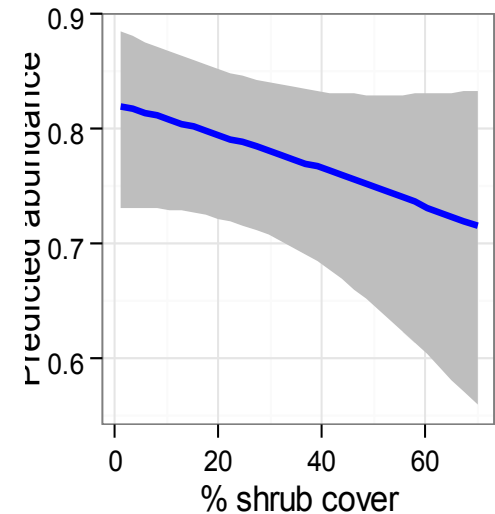
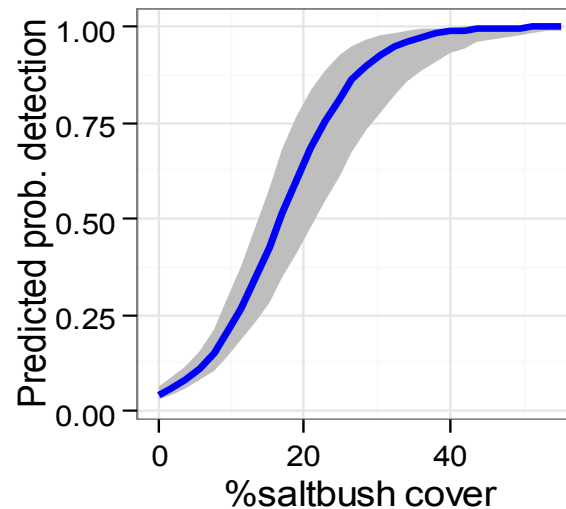
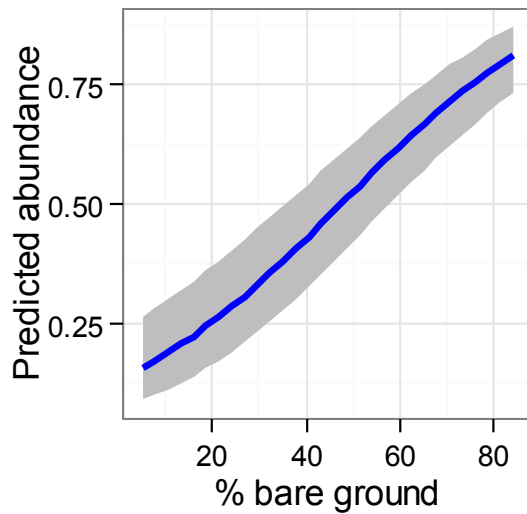


Data summary

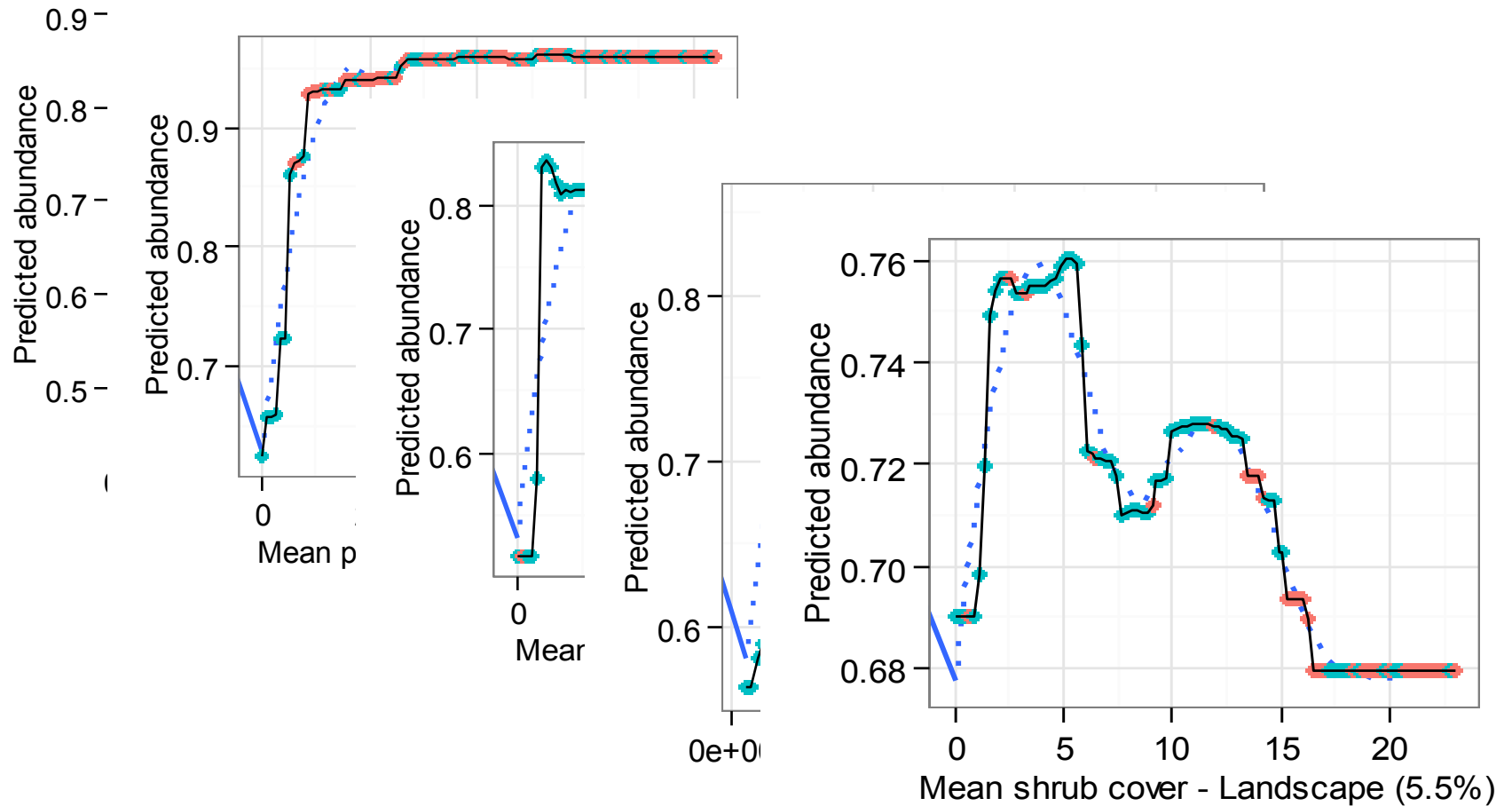
- 152 plots over 4 years
- 67 detections in 41 plots
- Complex, subtle differences between sites with and without LCTH



Density model results



Landscape model results

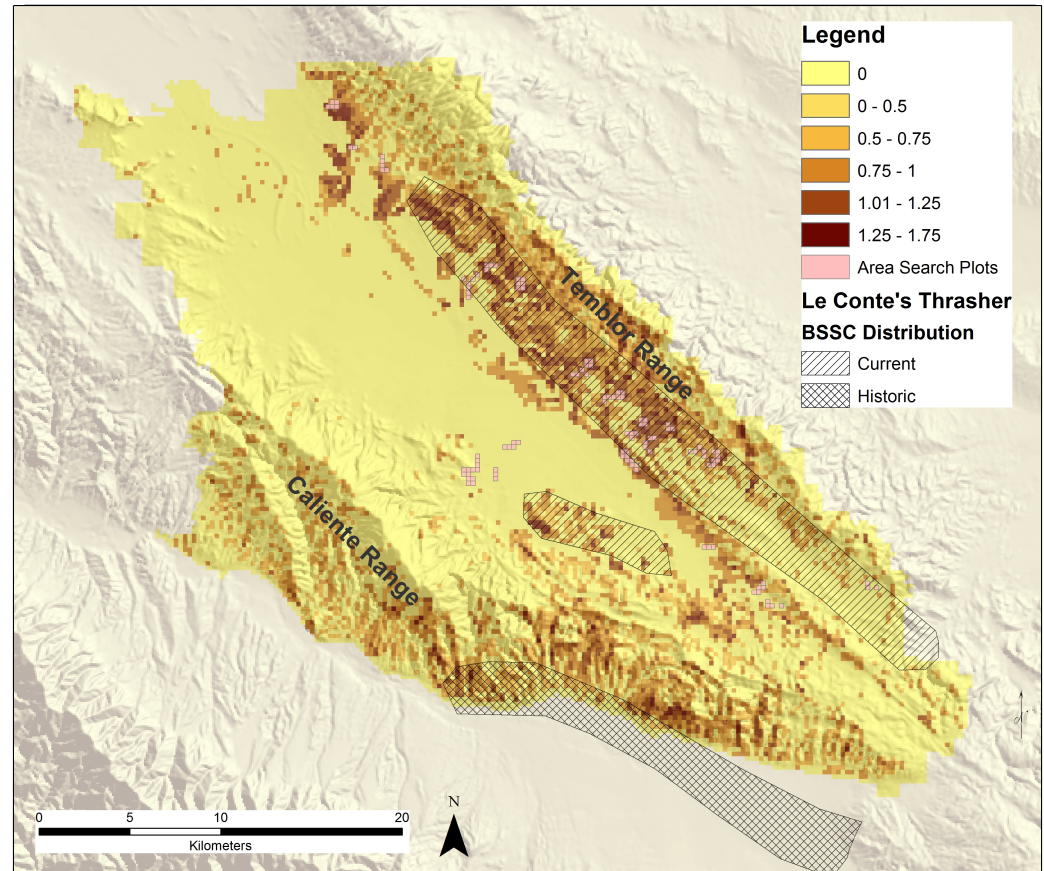


Results – landscape model

Where?

Model predicts density in all locations

Set threshold for 0 abundance (< 2 pairs/km²), conservative

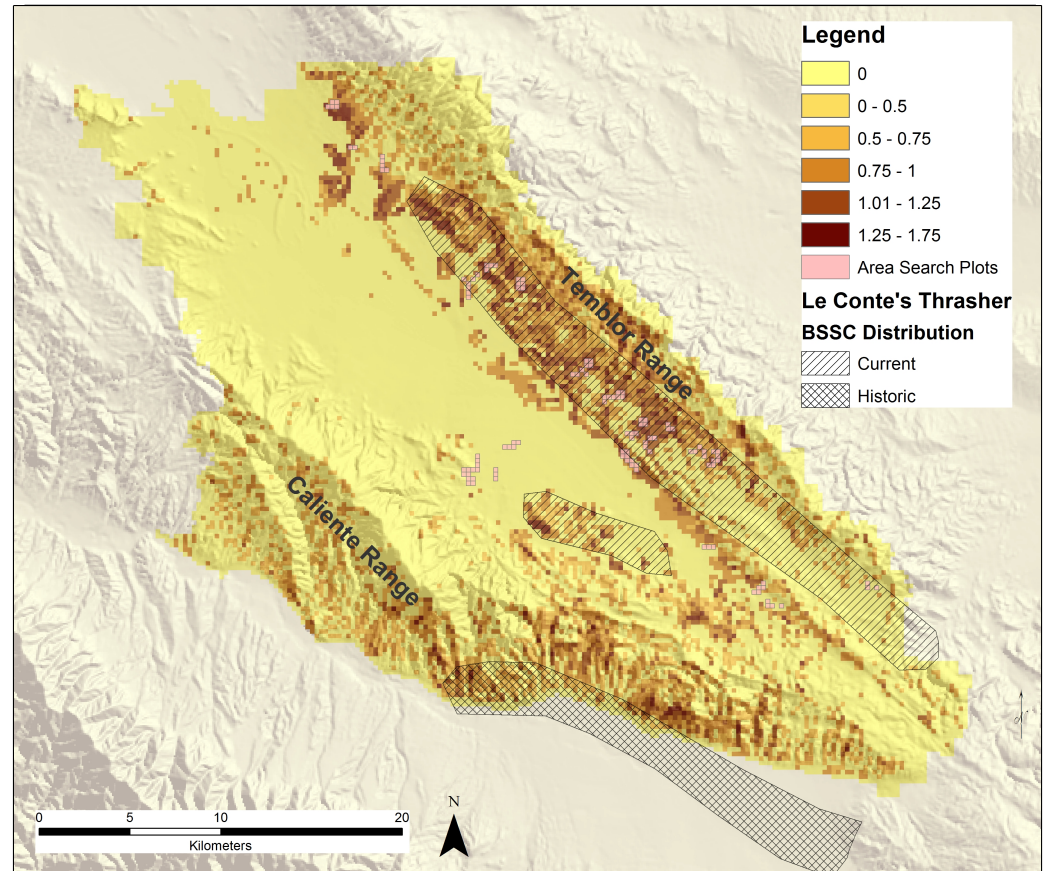


Results – landscape model

How many LCTH?

High LCTH density locations
are independent of threshold

How many LCTH? Threshold
dependent (BIG caveat)



Management recommendations

- Target priority areas for conservation based on high density models (improvement over occupancy models)
- Manage for LCTH-friendly habitat (features identified in this project):
 - % ground cover (~80%?)
 - % shrub cover in general (~10-20%)
 - % saltbush cover (part of the shrub cover)

Management recommendations

- Manage areas with 0.5-1 bird/hectare to target >1 bird/hectare
- Validate the model: survey predicted new high-density areas
- Use model results to conserve areas outside the CPNM
- Improve area search survey to estimate trends and set management targets based on trends

Next steps



Improving model

- Survey (again) fully randomized wrt relevant density, detection covariates
- Survey fully randomized wrt relevant landscape-level covariates
- Evaluate models at different plot sizes



THANK YOU!



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Point Blue

Conservation science
for a healthy planet.

Color Palette Reference Guide

Please use this page as a visual reference only for choosing colors from your custom color palette. This page is not editable.

Primary Palette



Bright Blue

Green

Dark Blue

Bright Blue, Green, and Dark Blue are the primary colors and take priority over the secondary palette.

Secondary Palette



Lichen

Poppy

Light Grey

Dark Grey

Lichen, Poppy, Light Grey, and Dark Grey are used minimally and when you need more colors than the Blues and Green.