Developing Habitat Models and Monitoring Techniques for Nine Bird Species of Clark County, 2008 - 2013

(2005-GBBO-581-P)

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Project Objectives

- Establish population baselines for nine species: distribution, abundance
- Model habitats for nine species
- Establish monitoring program for landbirds



Nine MSHCP Priority Species

Covered:

Willow Flycatcher

Vermilion Flycatcher

Phainopepla

Summer Tanager

Bell's Vireo

Blue Grosbeak

Evaluation:

Bendire's Thrasher

Le Conte's Thrasher

Gray Vireo



Vermilion Flycatchers at nest (photo by Jen Ballard)

Clark County MSHCP in 2003

- Where are the birds now and how many?
- How can we prevent extirpation (what do they need, how do we know when they decline and why)?
- We want large-scale monitoring, and we want surveillance monitoring
- We are concerned about riparian birds

Clark County MSHCP in 2012

- Manage species locally, not regionally
- Effectiveness monitoring
- Specific management and restoration techniques emphasized
- Different species emphasized



Bendire's Thrasher (photo by Martin Meyers)

Methods

- Randomly selected point count transects (stratified by habitat)
 - New random scatter deployed in 2012 to refine spatial models and ranges
- Intensive area searches for double-sampling and removal methods for detectability estimation

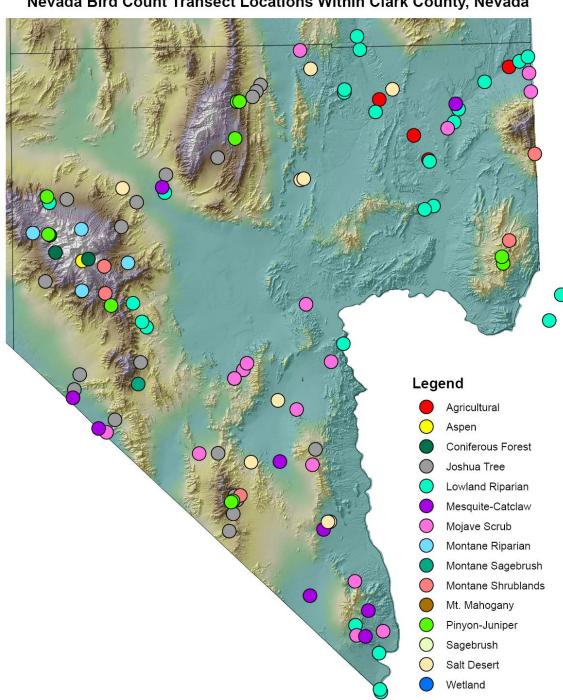
Methods – cont'd

- Conceptual models for species completed
- Habitat models
 - Spatial models completed based on new spatial data and regression models
 - Field habitat assessments will be completed this year to be used in statistical habitat models

Clark County, 2008-12:

194 point count transects 496 surveys

> 30 area search plots 8-10 visits each



Results

For each species (only some reported here):

- Actual Distribution
- Conceptual model
- Actual habitat use
- Predictive model using TNC's model of habitat conditions

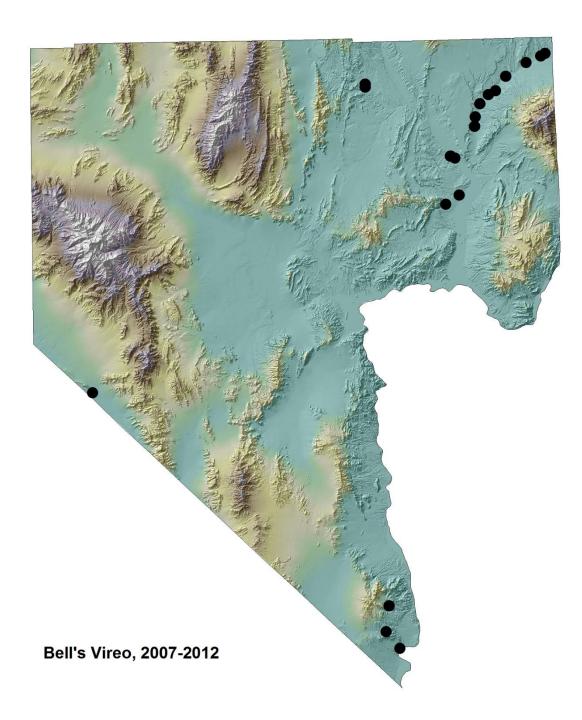
Bell's Vireo

Clark County Distribution

N = 145



Photo by Martin Meyers



Bell's Vireo Conceptual Model

Ecological Stressors

Important Habitat Effects



Expected Bell's Vireo Responses

Structural Change

- Habitat conversion: urbanization, energy development, transportation corridors, catastrophic fires
- River channelization, impoundment, floodplain conversion to agriculture
- Recreational facilities

Change in Processes

- Introduced weeds
- Climate change
- Drought
- Change in fire regime
- Ungulate grazing
- Change in river flow regimes and groundwater tables

Habitat Loss

- Fragmentation and loss of riparian woodlands
- Loss of riparian shrub cover
- Loss of floodplain wetlands

Habitat Degradation

- Water stress/mortality in canopy trees
- Reduced riparian tree recruitment
- Decreased tree age class diversity
- Loss of native shrub and wetland covers
- Decreased water availability in soils and floodplain wetlands
- Decreased wetland invertebrate populations

Recommendations for the Development of Indicators of Bell's Vireo Population Effects:

Baseline data on territory sizes, locations, nests (and nest success, if possible) in randomly selected occupied sites in Clark County. Research on prey use and availability to develop a simple indicator prey species monitoring plan. Long-term population monitoring of Bell's Vireos.

Nesting

- Loss of suitable nest sites
- Increased territory sizes
- Increased nest failure rate
- Decreased reproductive output

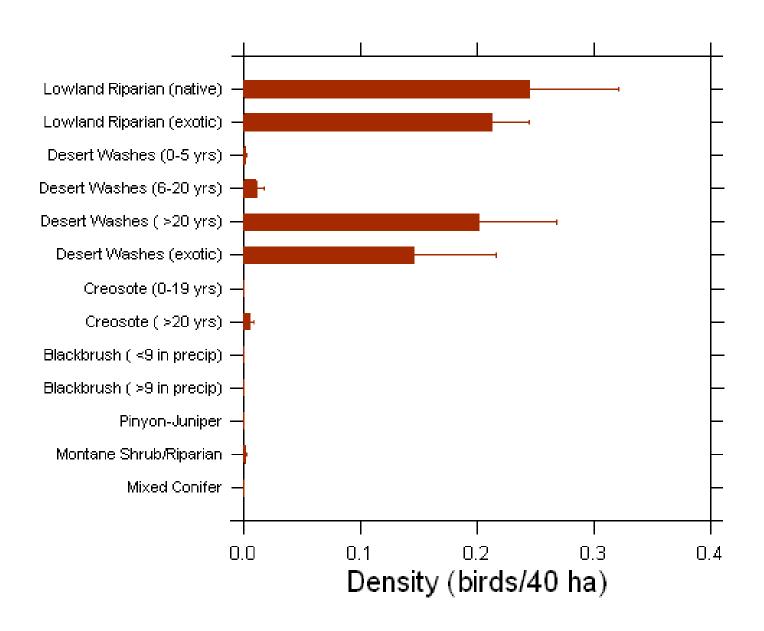
Survival

- Longer travel for foraging
- Reduced foraging success
- Increased unpredictability of prey
- Stress response to loss of water and thermal shelters

Population

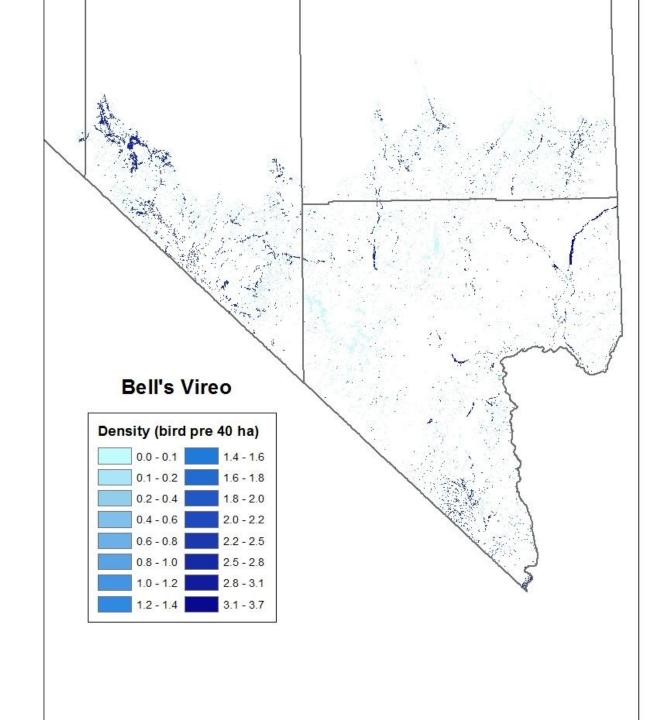
- Reduced recruitment of young
- Reduced site fidelity
- Decreased population size
- Fragmented population
 - Increased population fluctuations

Bell's Vireo Actual Habitat Use



Bell's Vireo

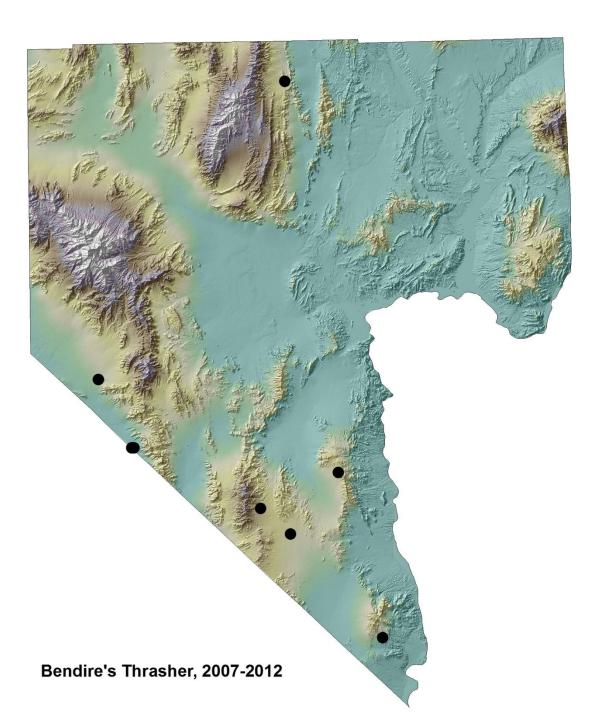
Predicted Density Distribution



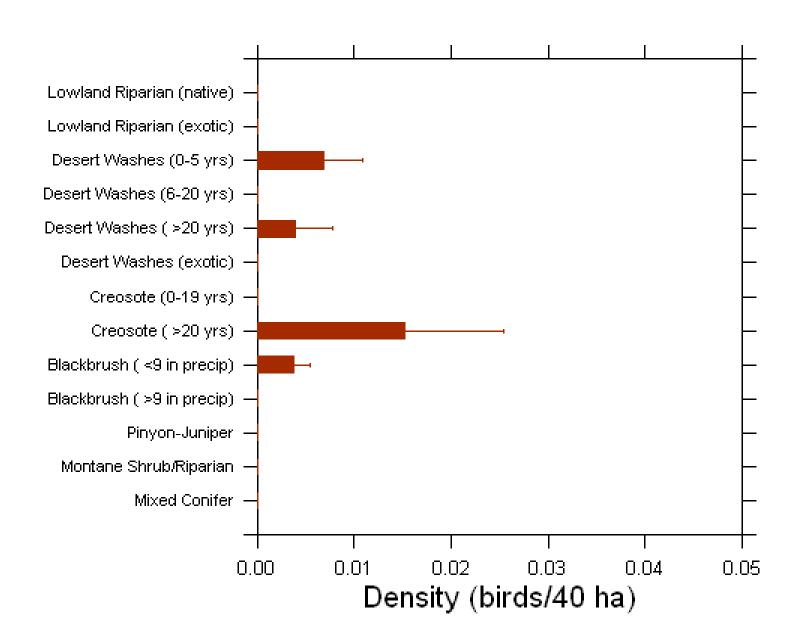
Bendire's Thrasher

Clark County Distribution

N = 10

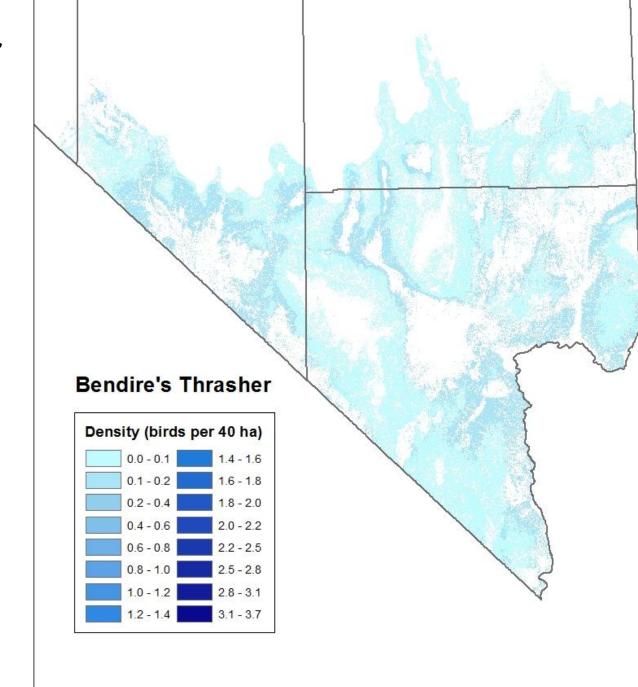


Bendire's Thrasher Actual Habitat Use



Bendire's Thrasher

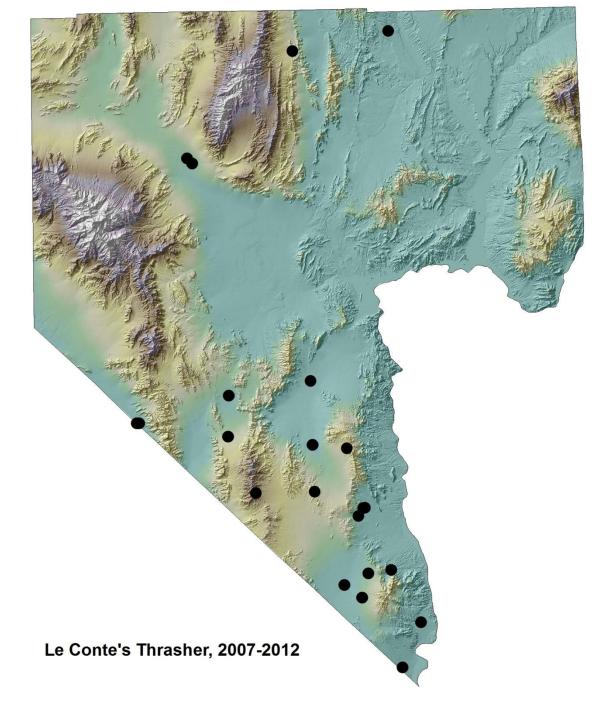
Predicted Density Distribution



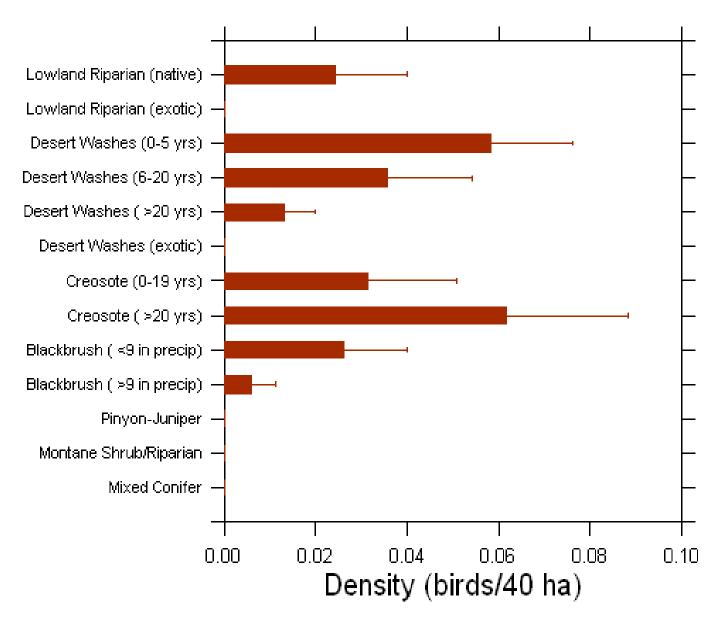
Le Conte's Thrasher

Clark County Distribution

N = 62

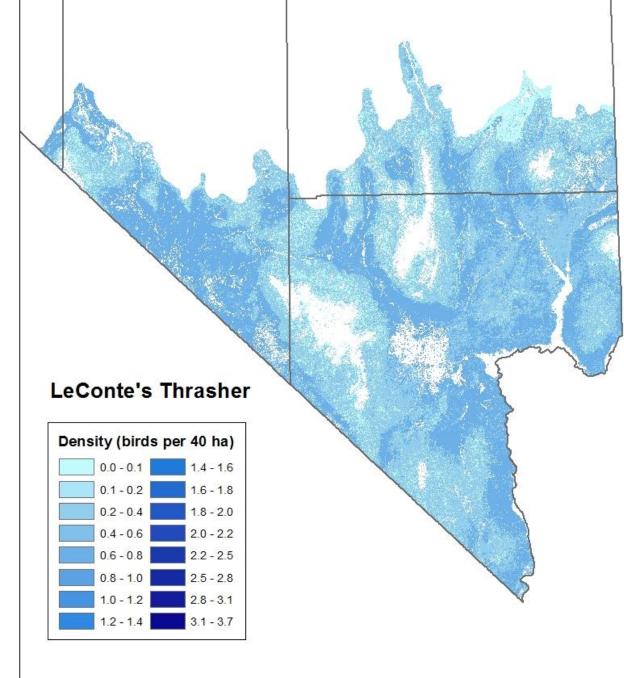


Le Conte's Thrasher Actual Habitat Use



Le Conte's Thrasher

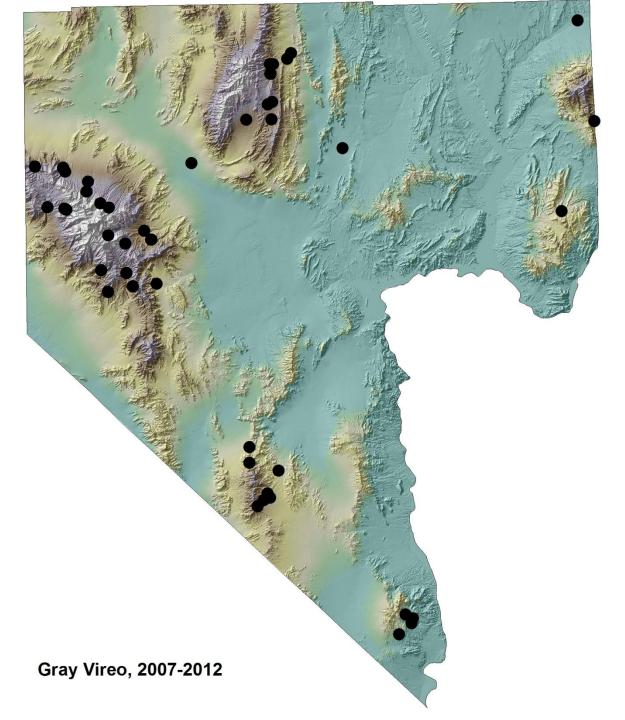
Predicted Density Distribution



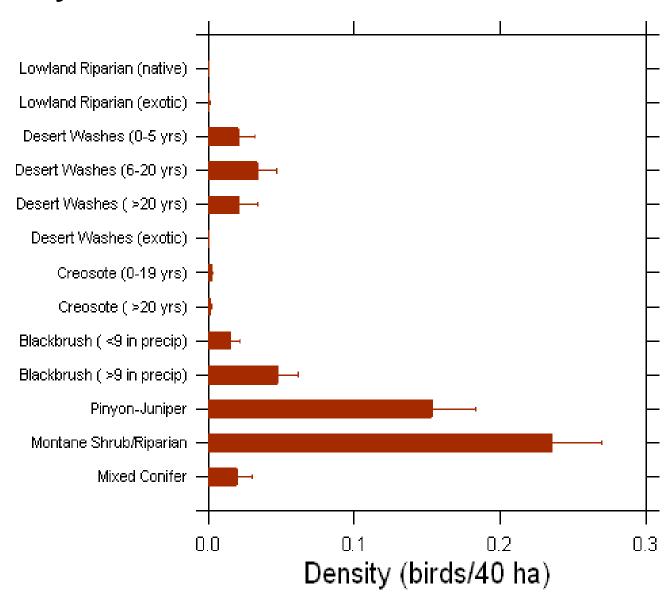
Gray Vireo

Clark County Distribution

N = 208

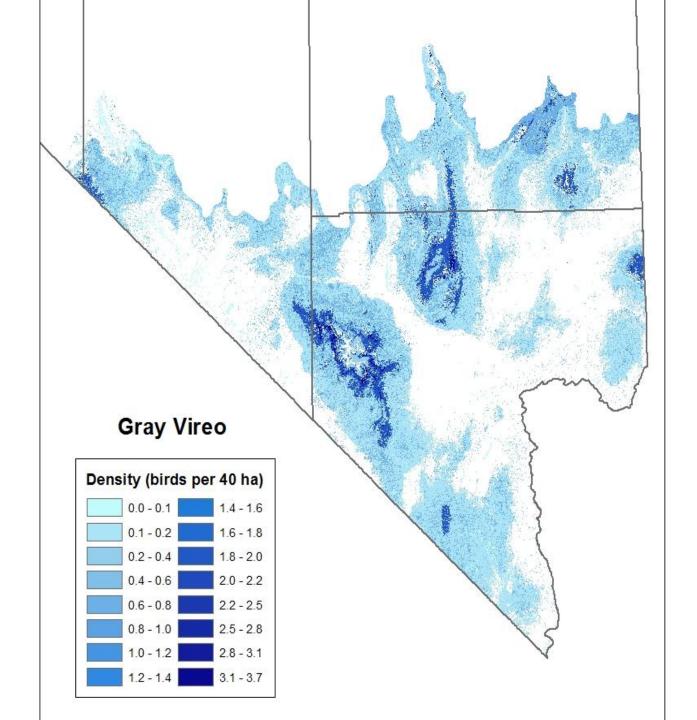


Gray Vireo Actual Habitat Use



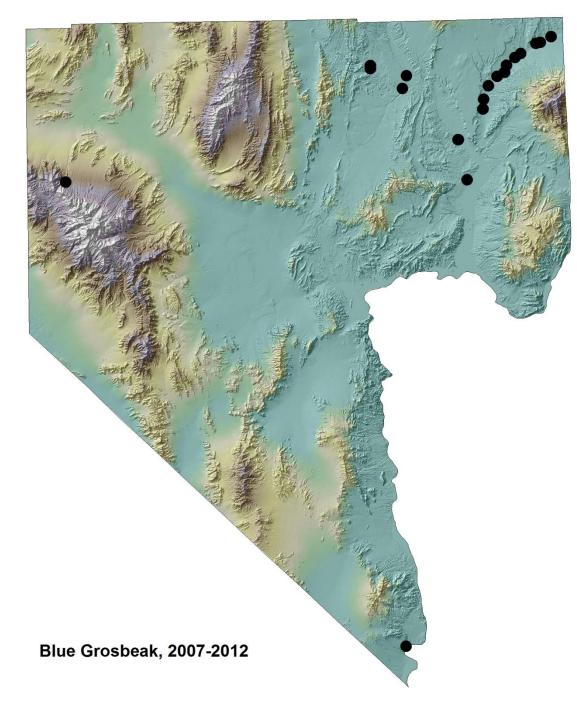
Gray Vireo

Predicted Density Distribution



Blue Grosbeak Distribution

N = 73 (Lowland Riparian) N = 8 (Agriculture)

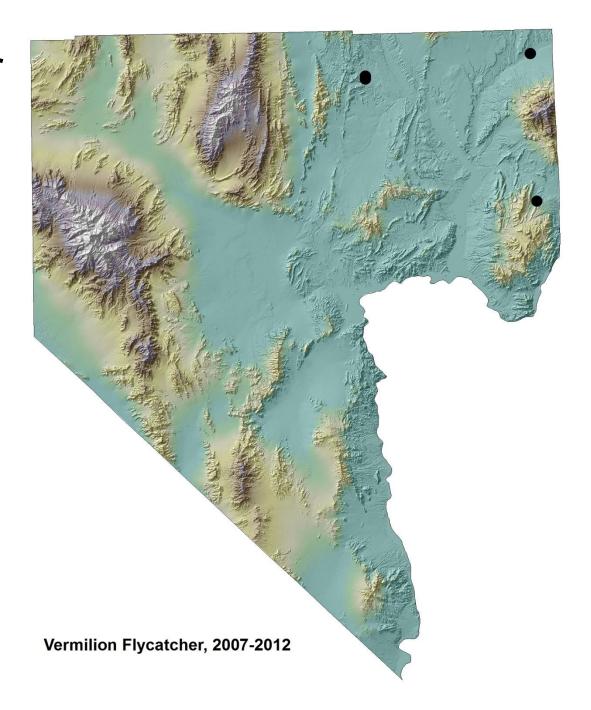


Vermilion Flycatcher Distribution

N = 51 (Lowland Riparian)

N = 10 (Agriculture)

N = 1 (Mesquite-Acacia)



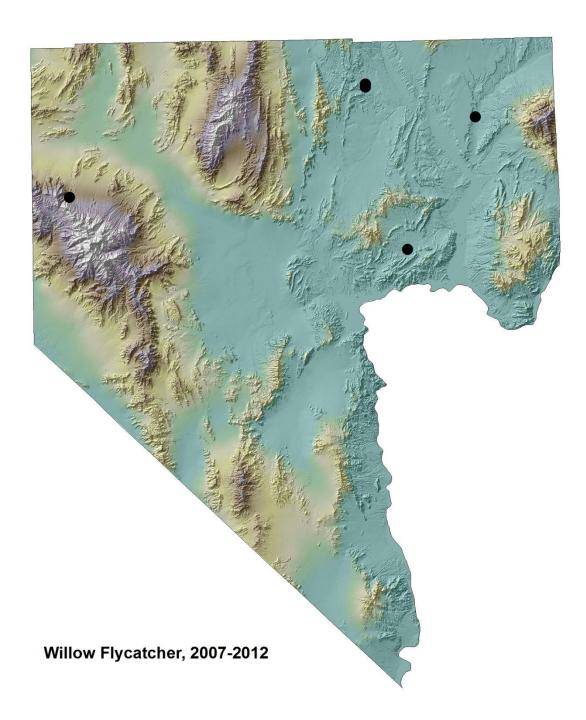
Willow Flycatcher Distribution

N = 6 (Lowland Riparian)N = 1 (Mesquite-Acacia)

Not necessarily Southwestern WIFL!

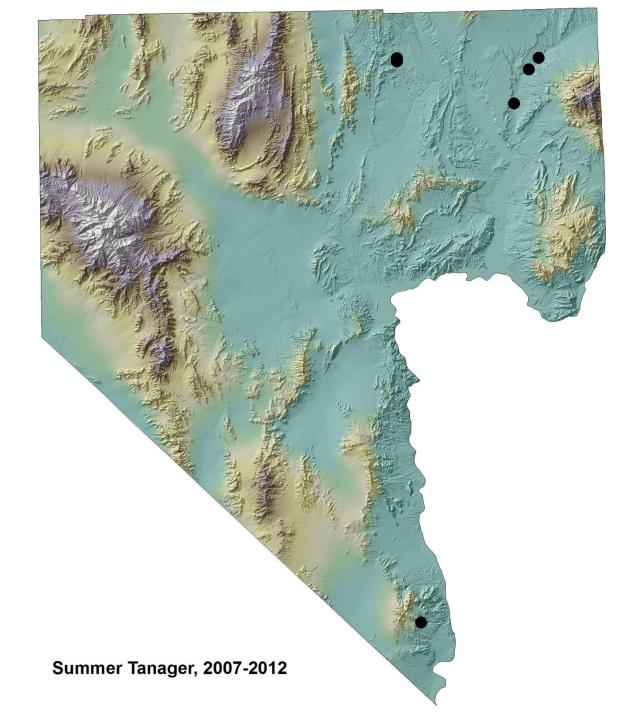


Photo by Martin Meyers



Summer Tanager Distribution

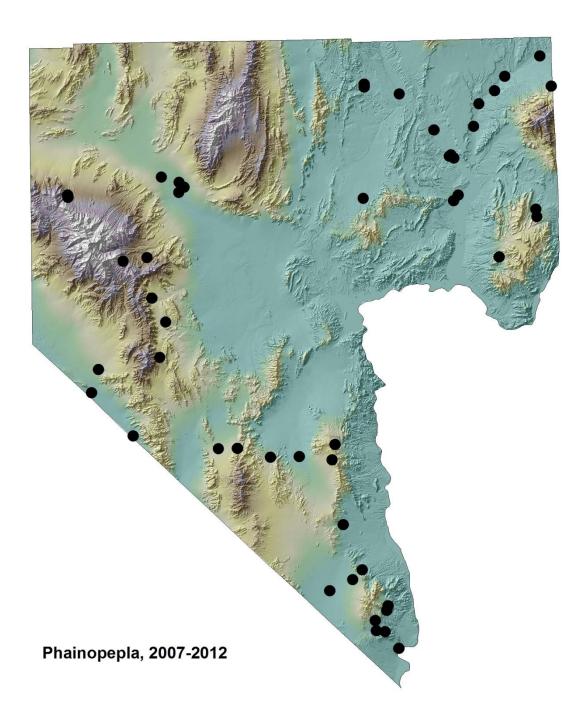
N = 18 (Lowland Riparian)



Phainopepla Distribution



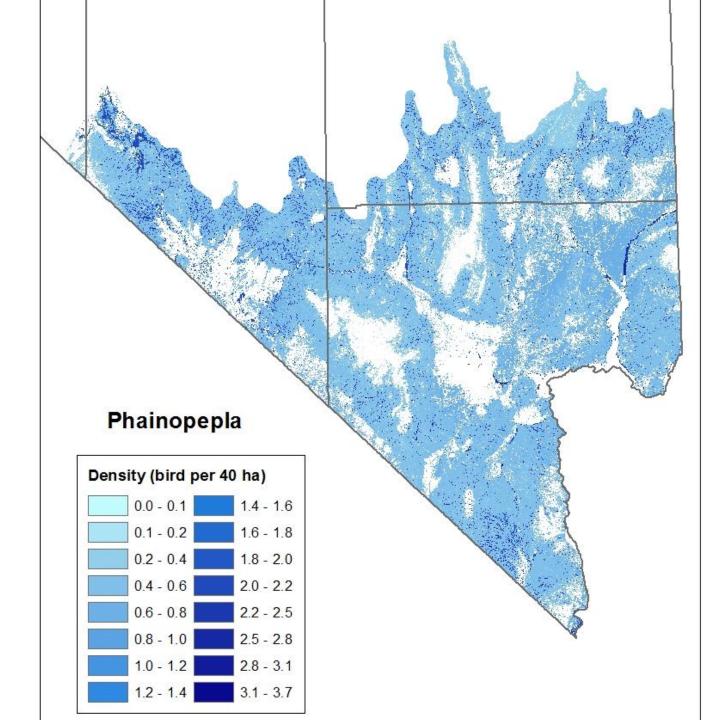
Photo by Scott Page



Phainopepla Actual Habitat Use Lowland Riparian (native) -Lowland Riparian (exotic) -Desert Washes (0-5 yrs) -Desert Washes (6-20 yrs) -Desert Washes (>20 yrs) -Desert Washes (exotic) -Creosote (0-19 yrs) = Creosote (>20 yrs) -Blackbrush (<9 in precip) — Blackbrush (>9 in precip) -Pinyon-Juniper Montane Shrub/Riparian -Mixed Conifer 0.0 0.1 0.2 0.3 Density (birds/40 ha)

Phainopepla

Predicted Density Distribution



Take-Home Messages

- Distributions and predictive models are important for planners! Where to do/not do things on the landscape
- Site-specific habitat models are important for implementers! What to do/not do in a particular location
- Monitoring is important for all partners! Do Clark County land uses have a net impact or benefit on bird populations and bird distributions; does a particular project benefit a priority species

Next Steps

- Statistical habitat models (veg assessment analysis) before the end of year - 2013 final year of project
- Formal population size estimation using double-sampling and removal results (2013)
- Predictive model refinement and model testing using the new random scatter (2013)
- Formalization of monitoring plan (2013)

Acknowledgments

- Clark County Desert Conservation Program
- The Nature Conservancy, Nevada Field Office
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- U.S. Forest Service
- Bureau of Reclamation
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- USGS Snake River Field Station
- Nevada Department of Wildlife
- Otis Bay Ecological Consultants
- University of Nevada, Las Vegas
- Many other Nevada Bird Count partners
- GBBO field crews and volunteers
- Ralph Phenix

Questions?

One answer:

Be careful when doing veg work in Clark County!

