

# Long-Term Declines in Pinyon Jays as a Function of Landscape-Scale Change

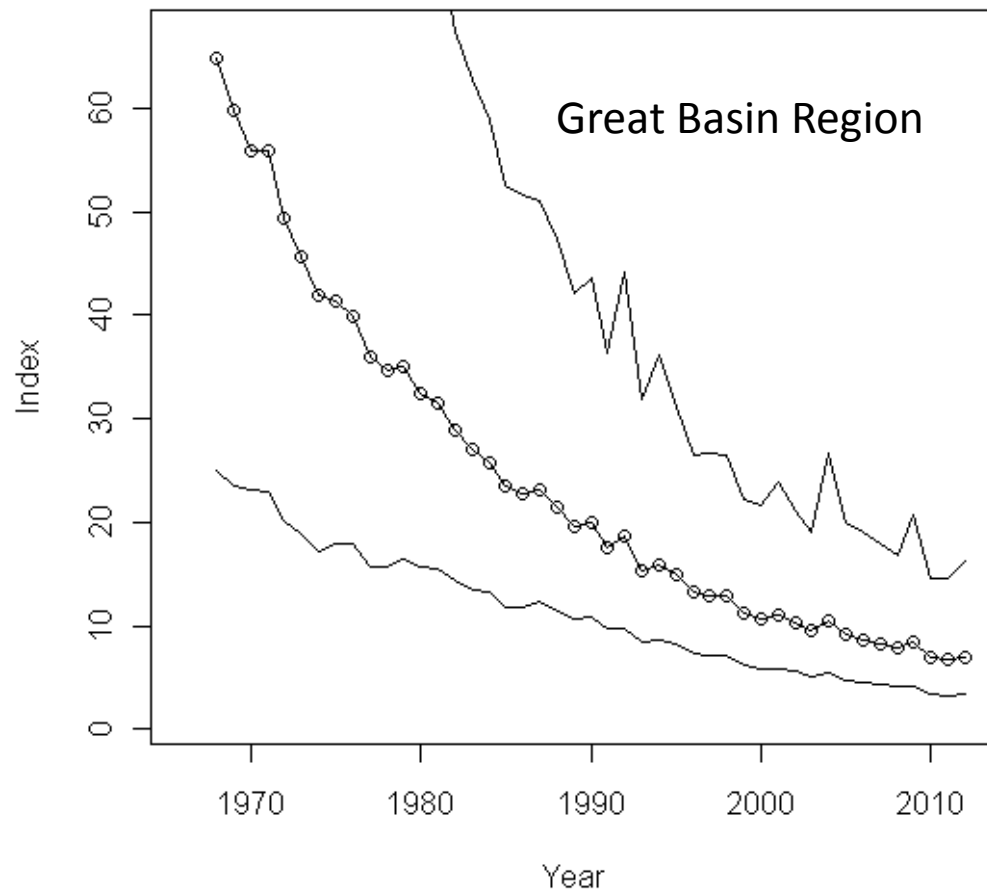
Elisabeth M. Ammon and  
John D. Boone

Great Basin Bird Observatory



# Patterns of Decline (BBS analysis – Sauer et al. 2014)

## Resident granivores / omnivores

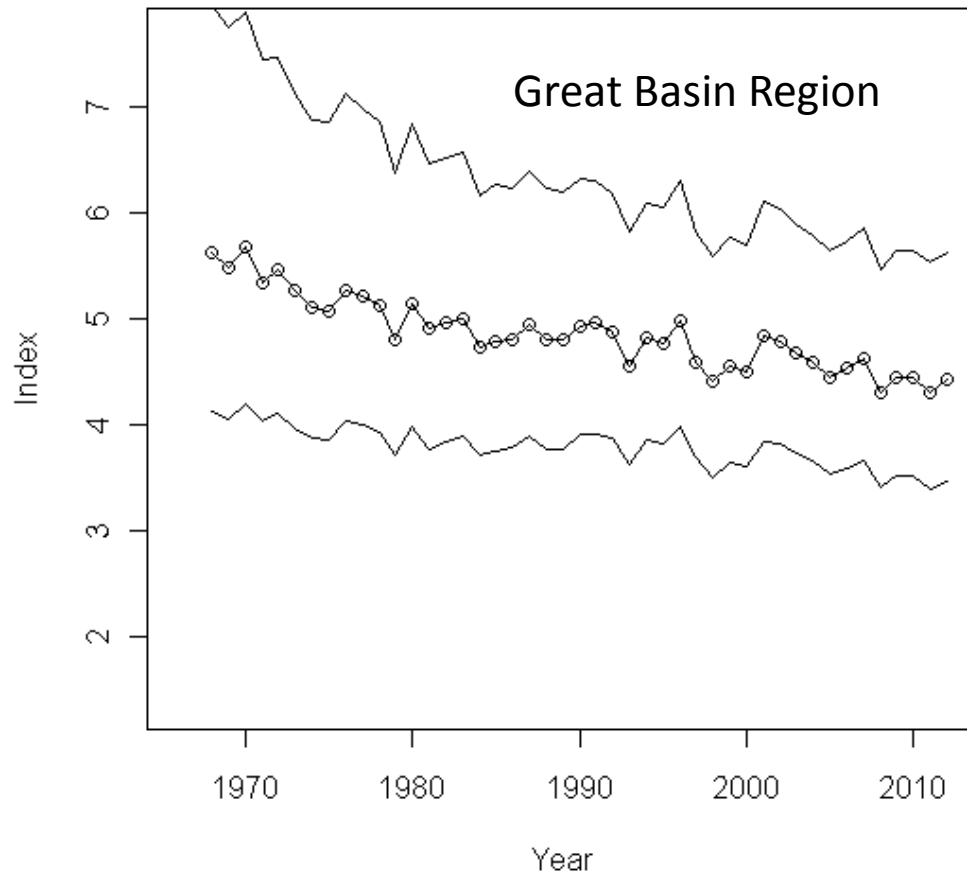


**Pinyon Jay**  
(*Gymnorhinus cyanocephalus*)



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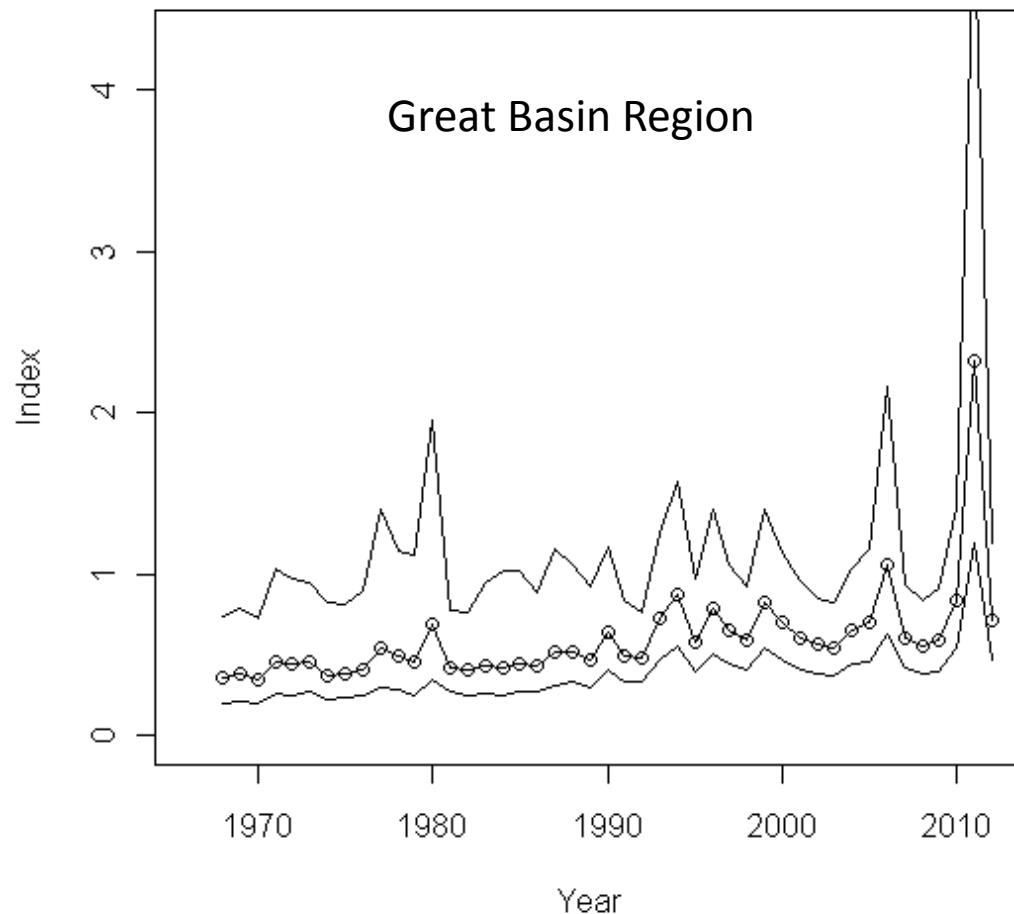


**Mountain Chickadee**  
(*Poecile gambeli*)



# Patterns of Decline (BBS analysis – Sauer et al. 2014)

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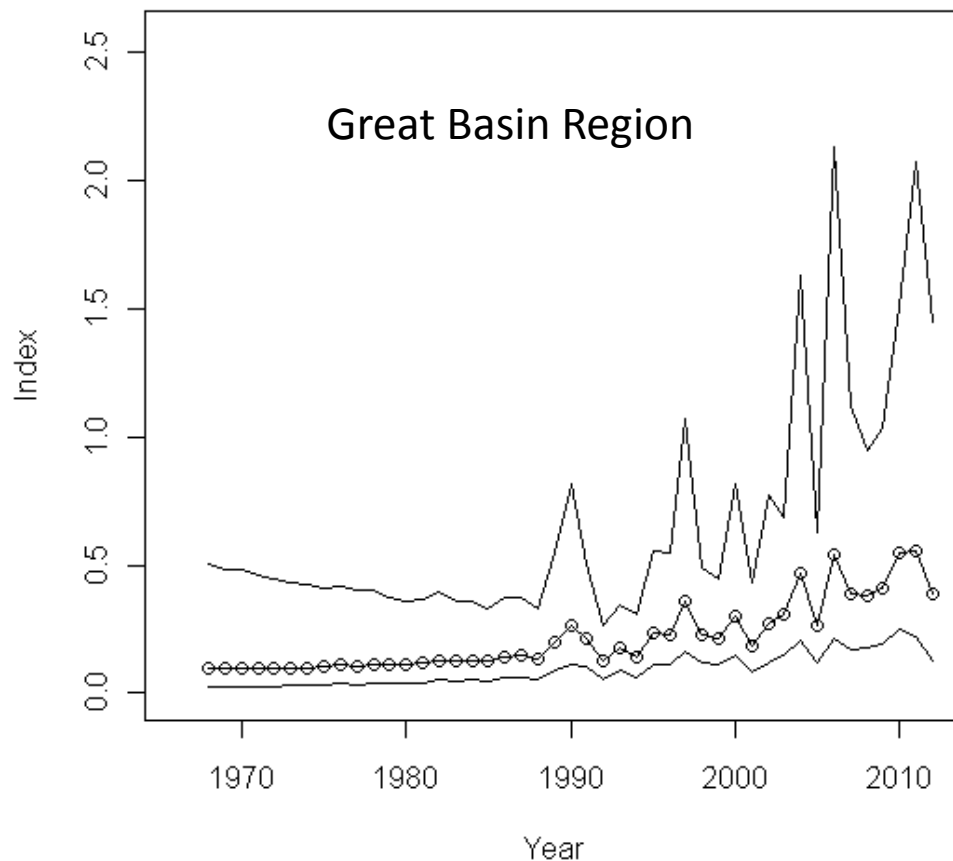


**Western Scrub-Jay**  
(*Aphelocoma californica*)



# Patterns of Decline (BBS analysis – Sauer et al. 2014)

## Resident granivores / omnivores



**Juniper Titmouse**  
(*Baeolophus ridgwayi*)

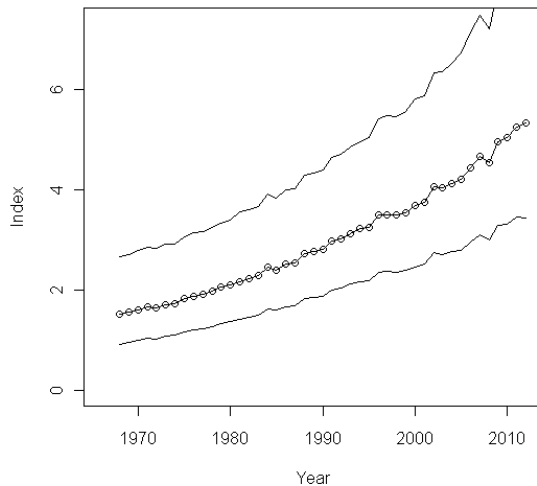


# Patterns of Decline

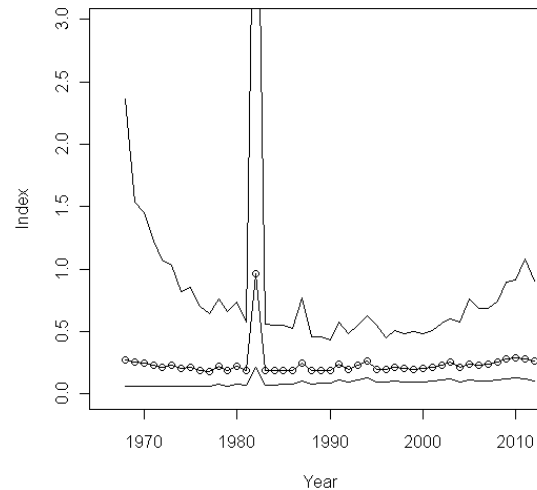
(BBS analysis – Sauer et al. 2014)

## Migrant Insectivores

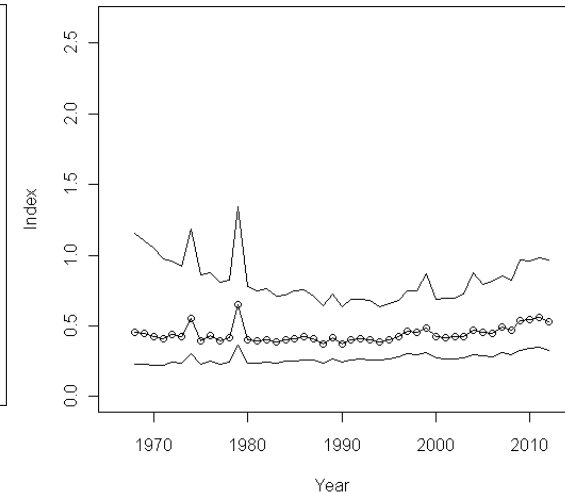
Great Basin Region



**Gray Flycatcher**  
(*Empidonax wrightii*)



**Plumbeous Vireo**  
(*Vireo plumbeus*)



**Black-throated  
Gray Warbler**  
(*Setophaga nigrescens*)

# Landscape Scale Change in Pinyon-Juniper Woodlands

- Over the last 100+ years, Pinyon-Juniper woodlands in most of the western US have:
  - Increased in overall extent
  - Become enriched in old closed-canopy stands and lost understory
- Causes for changes are complex, but related to changes in fire regimes, land use patterns, and climate change
- Changes may also be part of natural long-term cycles

# Typical Transition



1973



2005

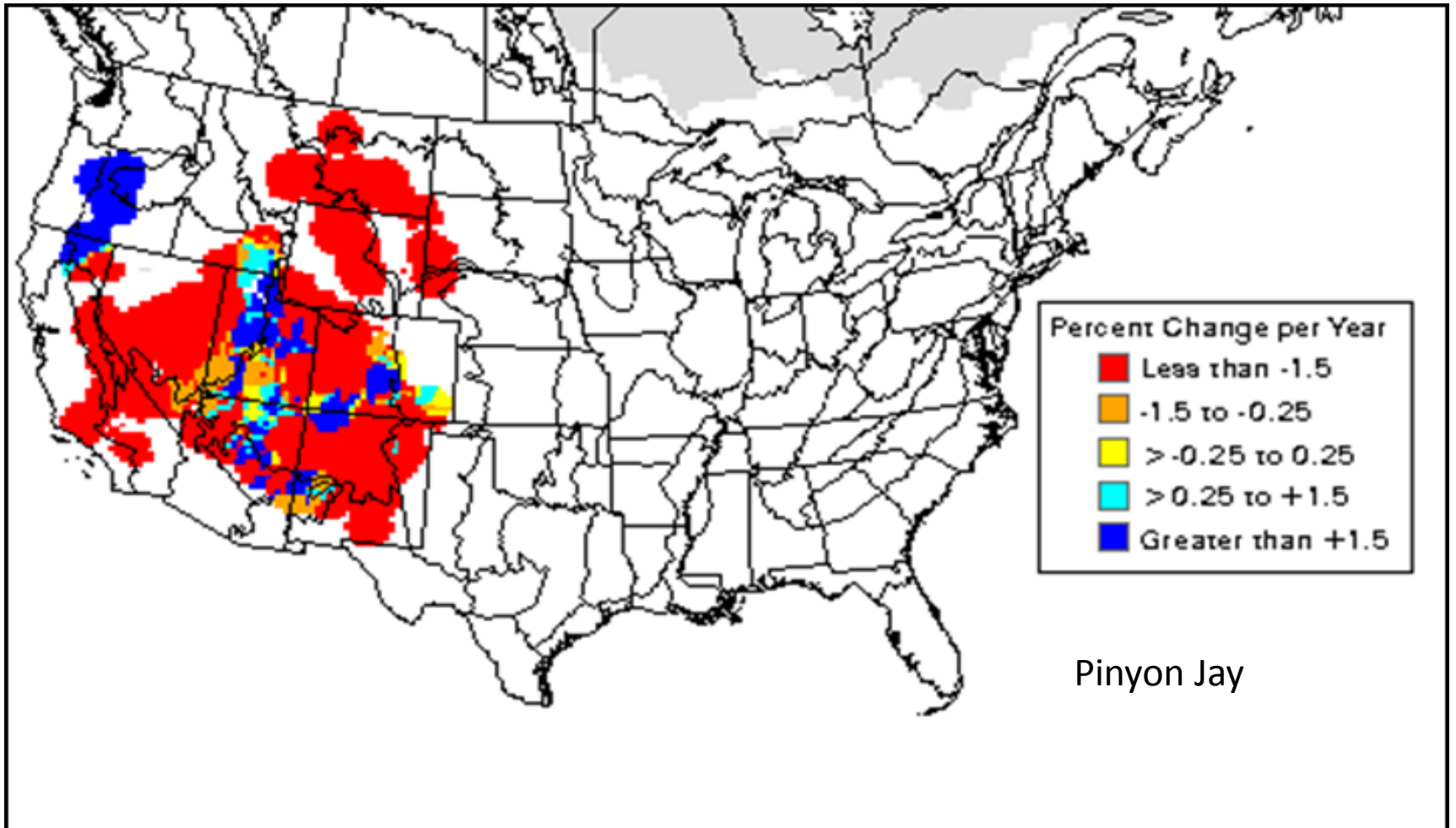
Photos by R. Tausch



# Conclusions?

- Serious persistent declines in Pinyon Jay and probably Mountain Chickadee, but not in other omnivores or insectivores
- Declines cannot be a function of reductions in habitat amount, but may be related to changes in habitat quality that affect certain species and not others

# Habitat Quality May Vary Regionally



# Possible Culprits

- Seed production
- Stand structure
- Forest age structure
- Understory
- Landscape factors



# GBBO Research on Pinyon Jays

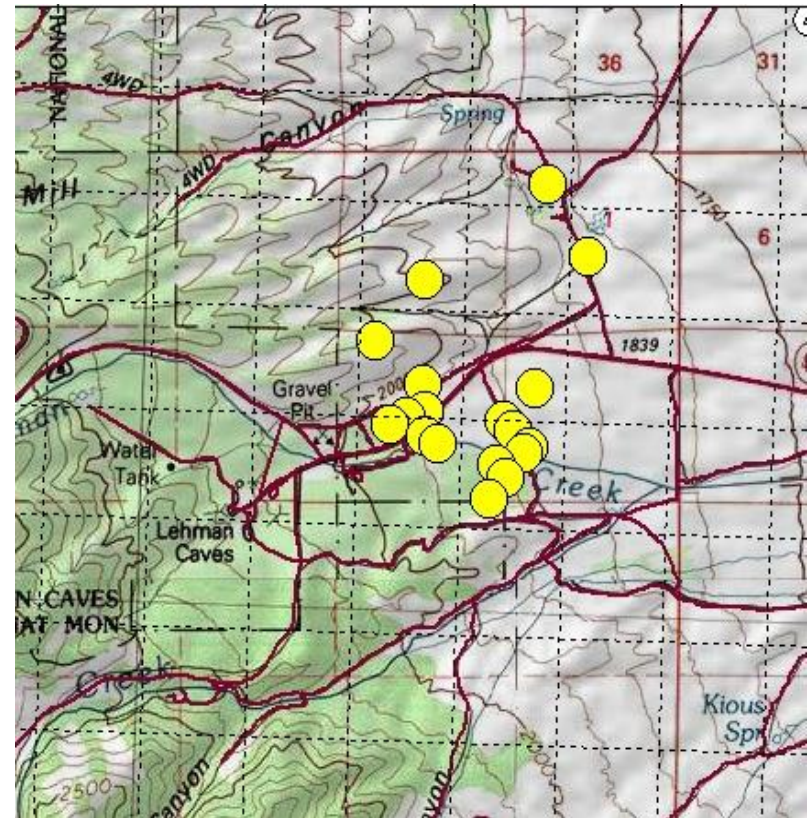
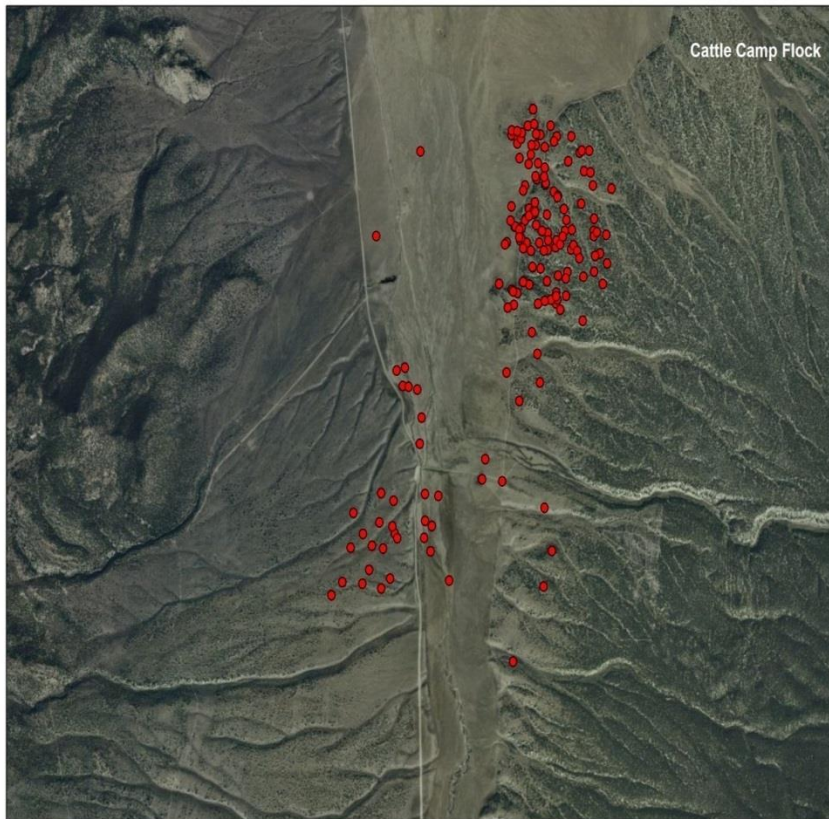
- Three areas
  - Eastern Nevada
  - Southern Idaho
  - Desatoya Mts, Central Nevada
- Methods
  - Telemetry
  - Nest studies
  - Observational Studies





# Telemetry & Observational Data

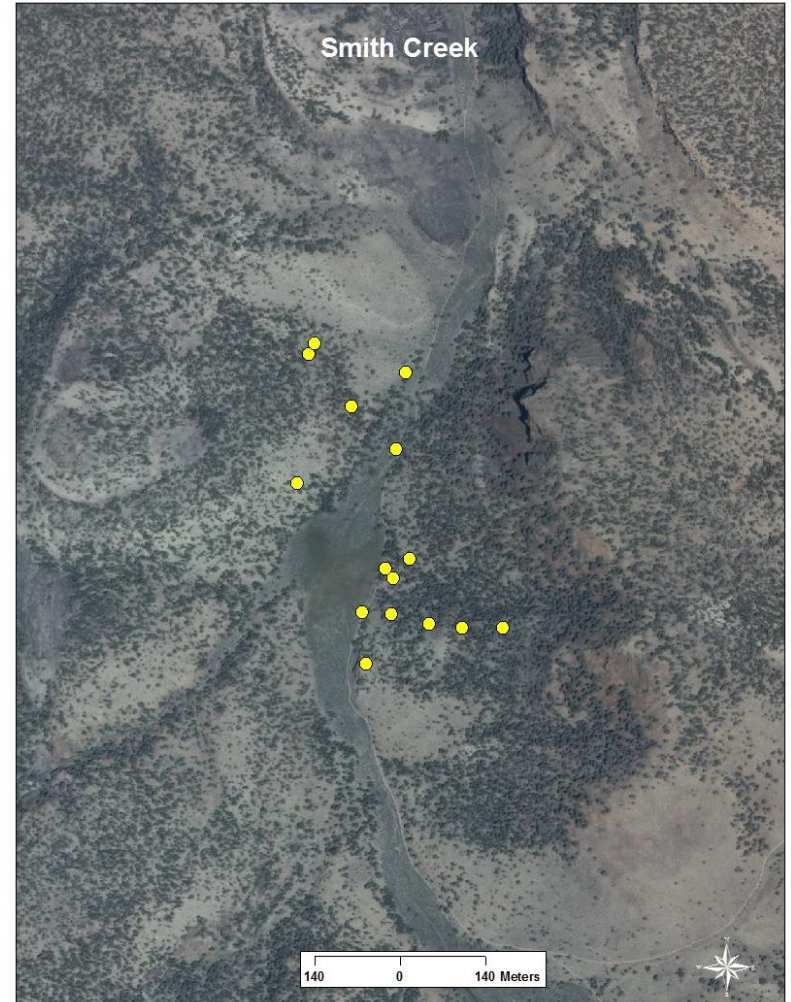
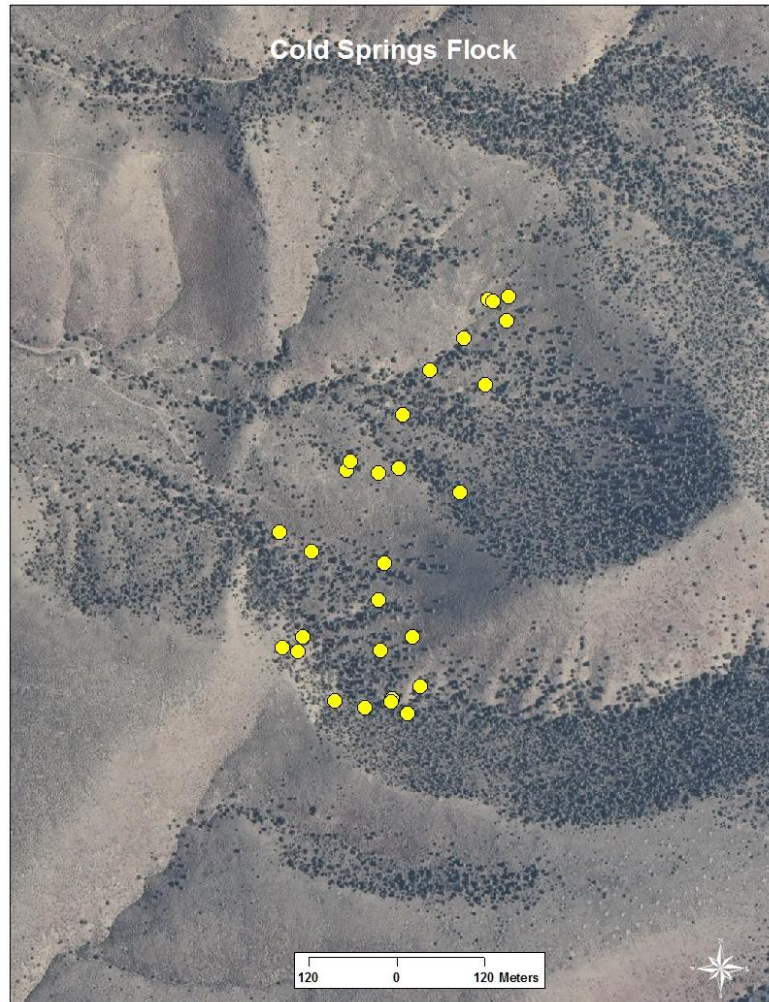
## Typical Results





# Nest Locations

## Typical Results





# Cache Sites - Typical

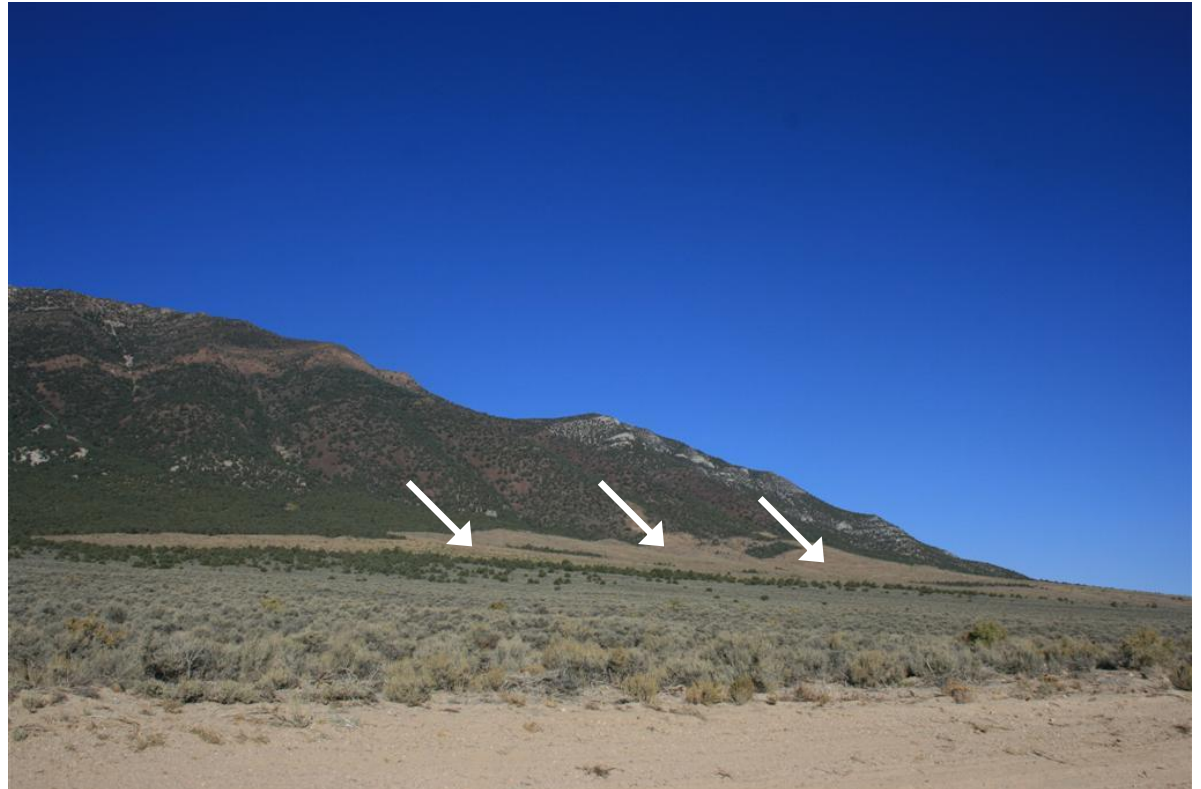


# Our Findings Are Consistent With A Strong “Edge” Orientation:

- Foraging mostly within 400m of sagebrush edge
- Caching often in pure sagebrush, up to 4 miles from edge
- Roosting and nesting in denser stands, but usually within 800m of edge
- Use of dense older stands more than 800m from edge rare
- In some flocks, long daily movements between patches to harvest pinyon nuts



# Unfortunately, Edge Habitat is Selectively Removed to Reclaim Sagebrush



# Future Steps

- Further analysis and publication
- Identification of woodland management alternatives and standards
- Better investigation of effects of landscape changes and structural changes on food production



# Acknowledgements

