

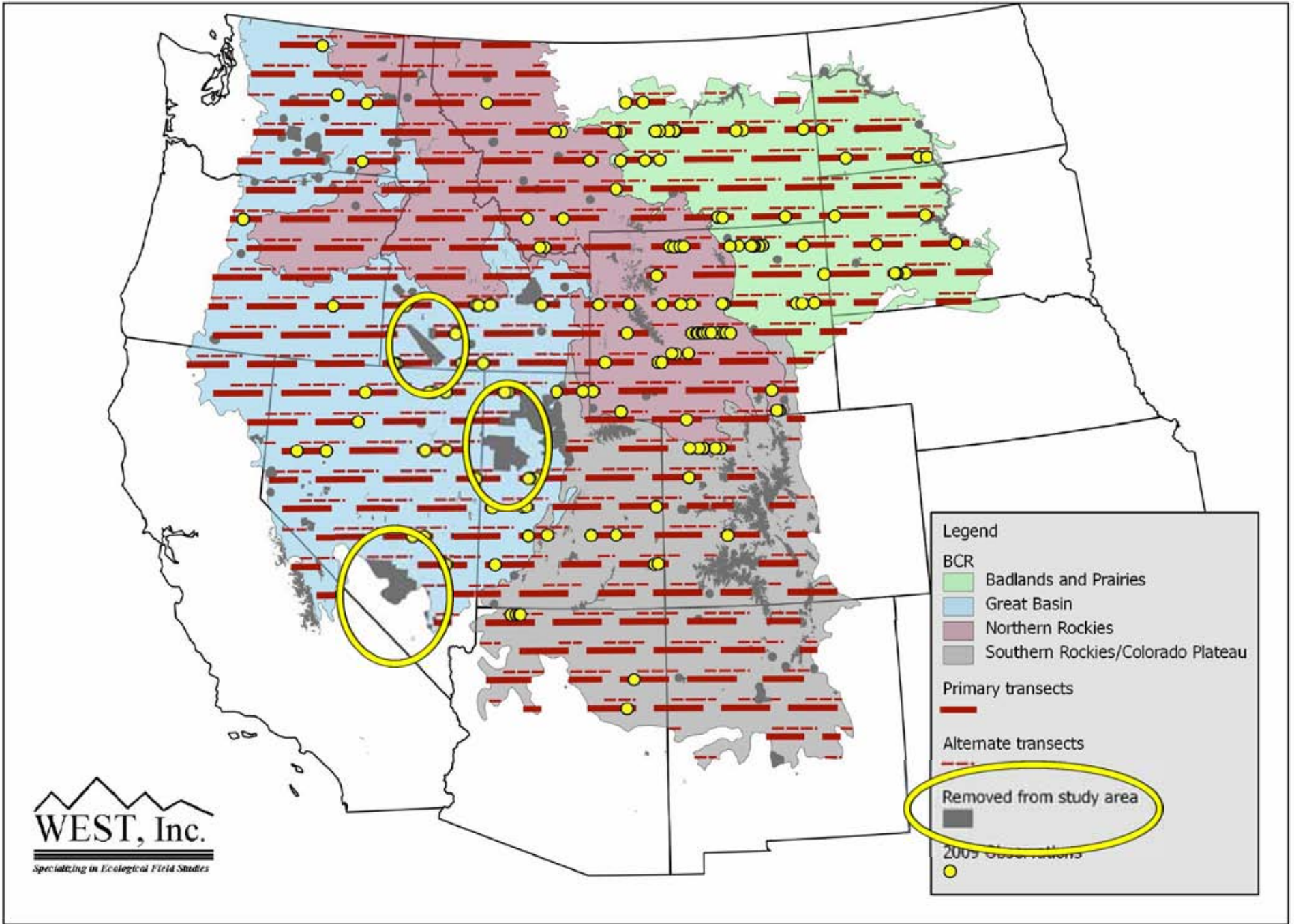
# Golden Eagles on DoD Lands



**Chris Eberly**  
DoD Partners in Flight  
12.11.12



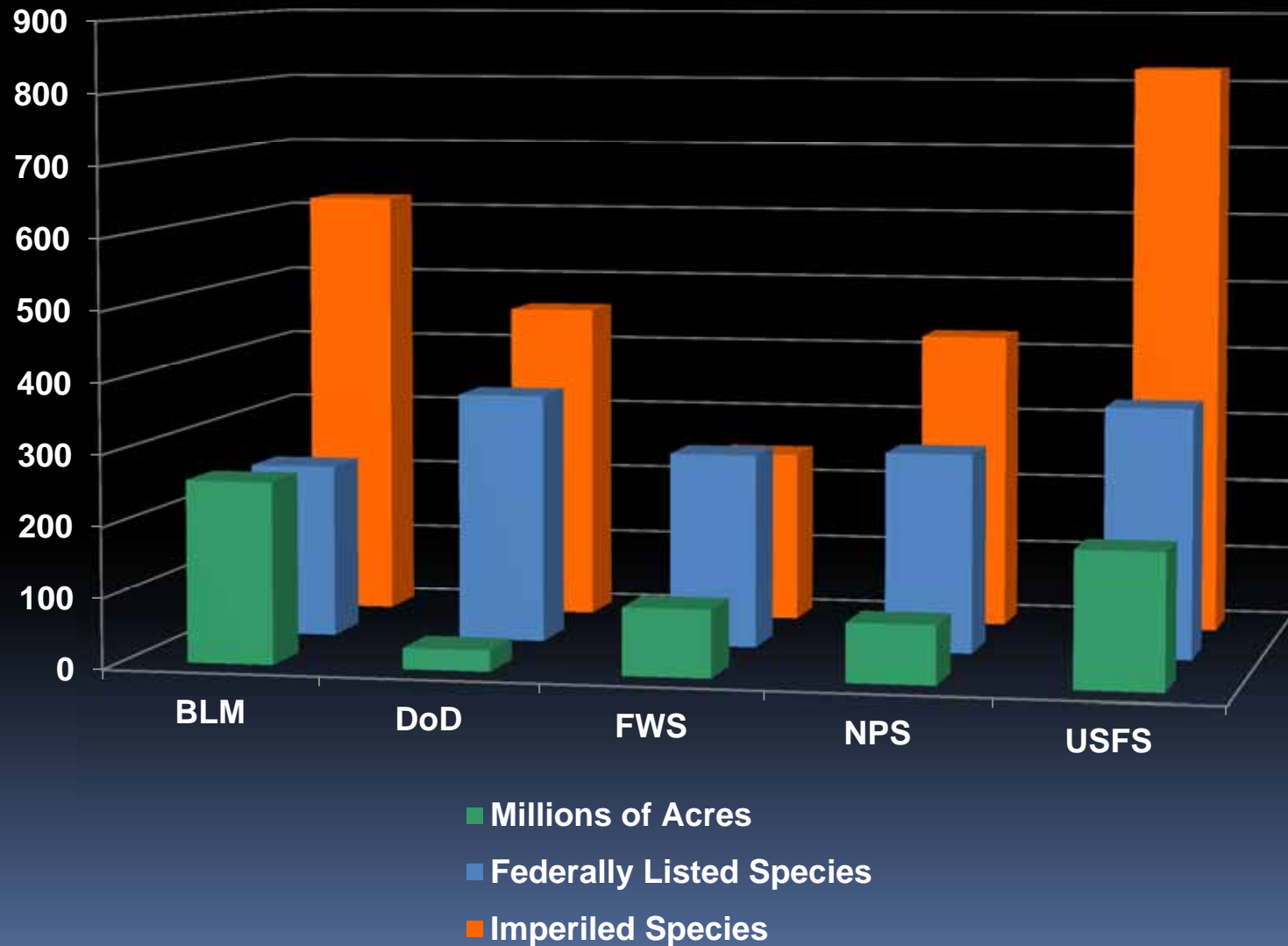




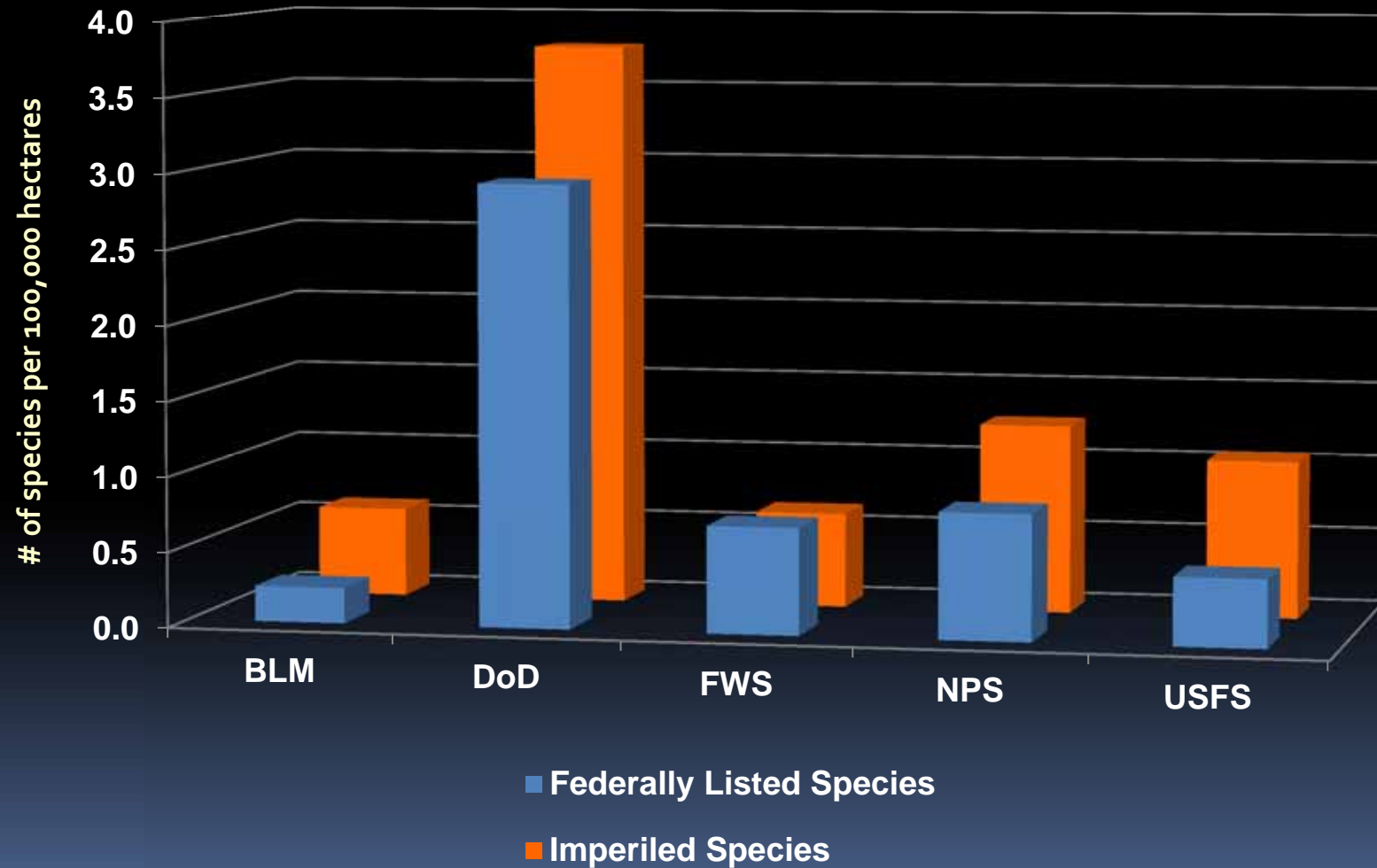
# DoD Lands in the West

States	Acres	% DoD
<i>AZ</i>	2,902,857	
<i>ID</i>	265,199	
<i>NM</i>	3,235,512	
<i>UT</i>	1,841,172	
<i>CA</i>	4,092,492	
<i>NV</i>	3,440,009	
<i>Western States</i>	16,974,154	58%
<b>CA-NV</b>	<b>8,729,414</b>	<b>30%</b>

# Biodiversity Conservation & DoD

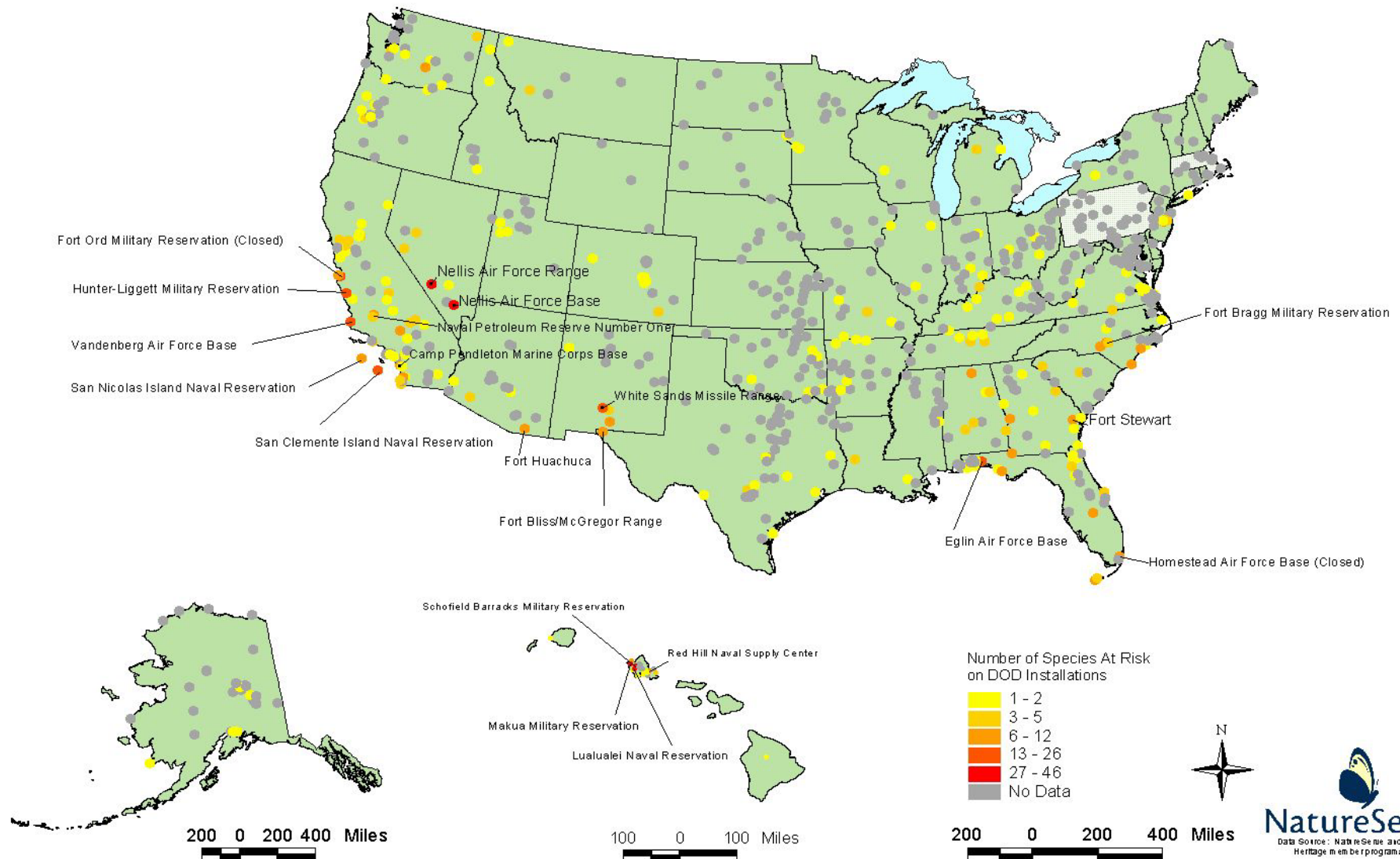


# Biodiversity Conservation & DoD



# Number of Species at Risk on DOD Installations

(20 installations with highest number of Species at Risk are labeled)



# California

Site	Breed	Migrate	Winter	Monitor	Mgmt	Mission
Beale AFB	No	Occ.	Occ.	No	BASH	BASH
Travis AFB						
Lemoore NAS	No	Rare	Rare	No	No	No
Camp Roberts						
Fort Hunter Liggett	6+ nests	Many	Many	2009-curr		No
Vandenberg AFB	<2 nests	Rare	Rare	2011	No	No
NWS Seal Beach		?	?			No
China Lake NAWS	Yes		Yes	Pre-constr	(APLIC)	No
29 Palms MCAGCC	1+ nest	Occ.	Occ.	2012,2013	No	No
Camp Pendleton	3		Yes	1998	APP	No
Warner Spring RTS	<2008			USFS		½ mi. buffer
Imperial Beach NOLF	No	Occ.	Occ.	No	No	No



# Nevada

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Site	Breed	Migrate	Winter	Monitor	Mgmt	Mission
Nellis AFB/AFR	100+ potential nests	Yes	Yes	2011-present	Yes	No
Fallon NAS	Yes	Yes	Yes	No	No	No
Hawthorne A.D.						

# Golden Eagle Monitoring Projects

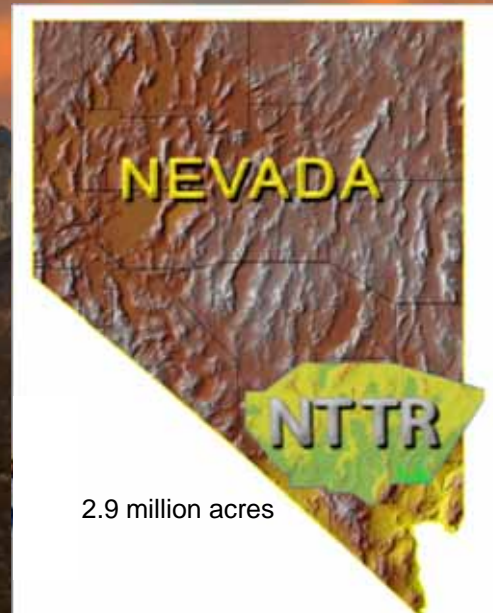
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- *Golden Eagle Survival and Movement Ecology on Active DoD Test Ranges in the Western U.S.* (Legacy #12-631; Utah West Desert)
- *Status and Distribution Modeling of GOEAs on Southwestern Military Installations and Overflight Areas* (Legacy #12-102; Goldwater Range, Yuma Proving Ground, Nellis AFB)
- Comprehensive GOEA surveys for Air Force ranges in NV, UT, ID, NM (Air Force proposal)

# Nevada Test and Training Range

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*Nellis Air Force Base*  
*Nellis Air Force Range*  
*Dept. of Energy*



# Nellis AFB Golden Eagle Program

Surveys initiated in 2011 by Bob Turner

All surveys were conducted utilizing helicopters



## 2011

**South Range**-66 potential Golden Eagle nests were found during initial surveys.

**North Range**-27 potential Golden Eagle nests were found.

**South Range** had no nesting eagles, though several adult golden eagle sightings were made.

**North Range** had 8 nests with 13 young. All 13 young survived to fledging.

## 2012

**South Range** – 7 previously unknown nests were found  
**North Range** – 1 new nest

The **South Range** had no nesting Golden Eagles. The **North Range** had 1 active nest with one young. It survived to fledging.

It is theorized that the lower productivity is due to ongoing drought conditions throughout the desert southwest.

# The Utah Legacy Raptor Project



RINS  
Raptor Inventory Nest Survey



Kent Keller – Volunteer



# Background and Need

- **Cheatgrass is an invasive annual grass of particular concern in the Great Basin area:**
  - **Dominates over 1/3 of the land area**
  - **Positive feedback with fire, exacerbating shrub loss**
  - **Likely to increase under climate change projections**
  - **May act as an “ecological trap” for species adapted to native grass/shrublands, such as the Burrowing Owl and Ferruginous Hawk**
  - **A potential threat to West Desert military activities.**

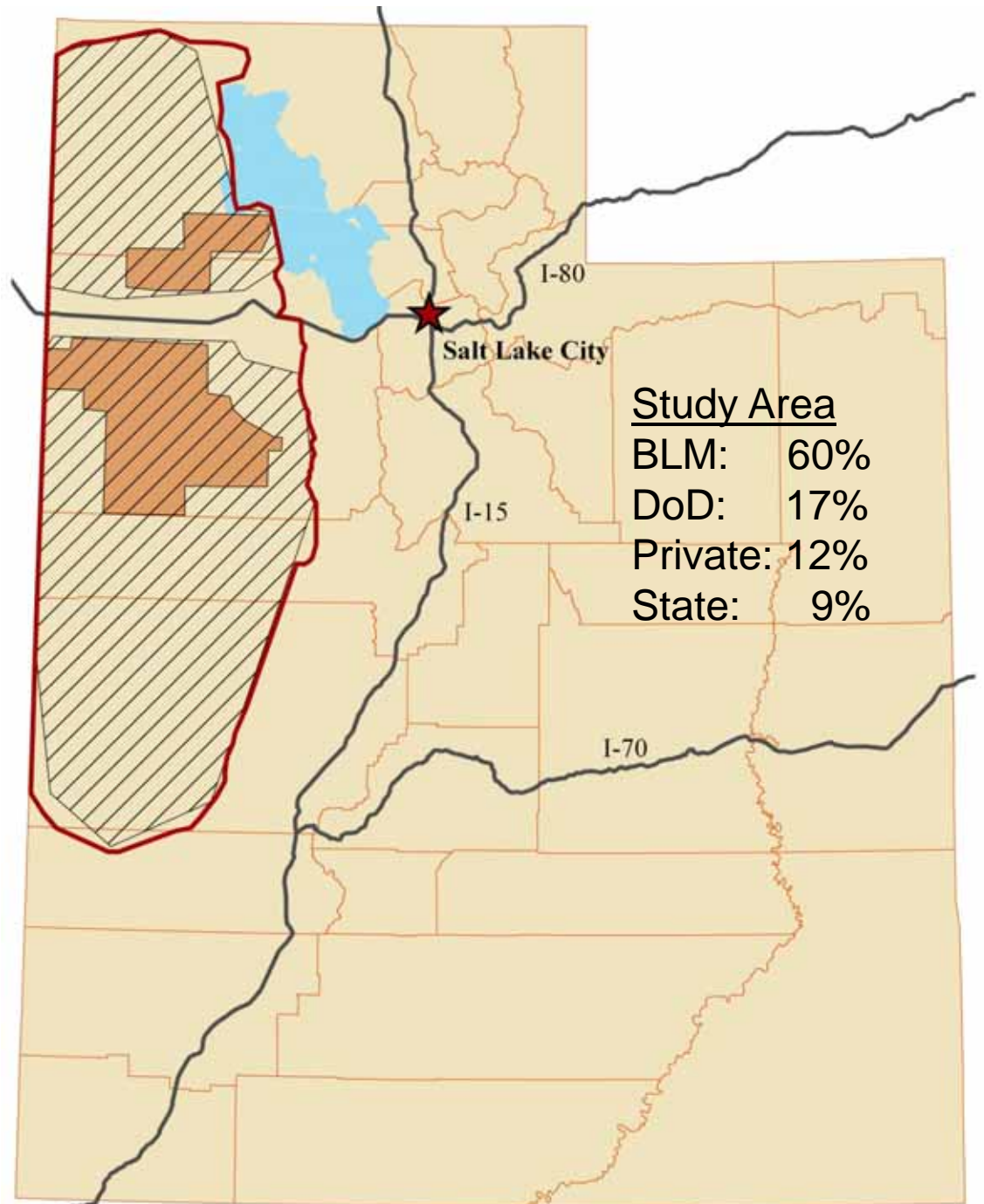
# ULRP Project Goals



- Compile historic raptor data
- Describe local raptor territory history and characteristics
- Map cheatgrass occurrence over time and assess future invasion risk
- Identify potential nesting habitat in the study area
- Assess raptor nest activity and prey abundance in relation to cheatgrass cover
- Relate known territories, potential nesting habitat, and cheatgrass cover and risk to prioritize management in the study area
- Create an improved nest survey manual
- Provide guidance for large-scale citizen science endeavors
- Provide guidance to military installations faced with invasive species issues

# Study Area

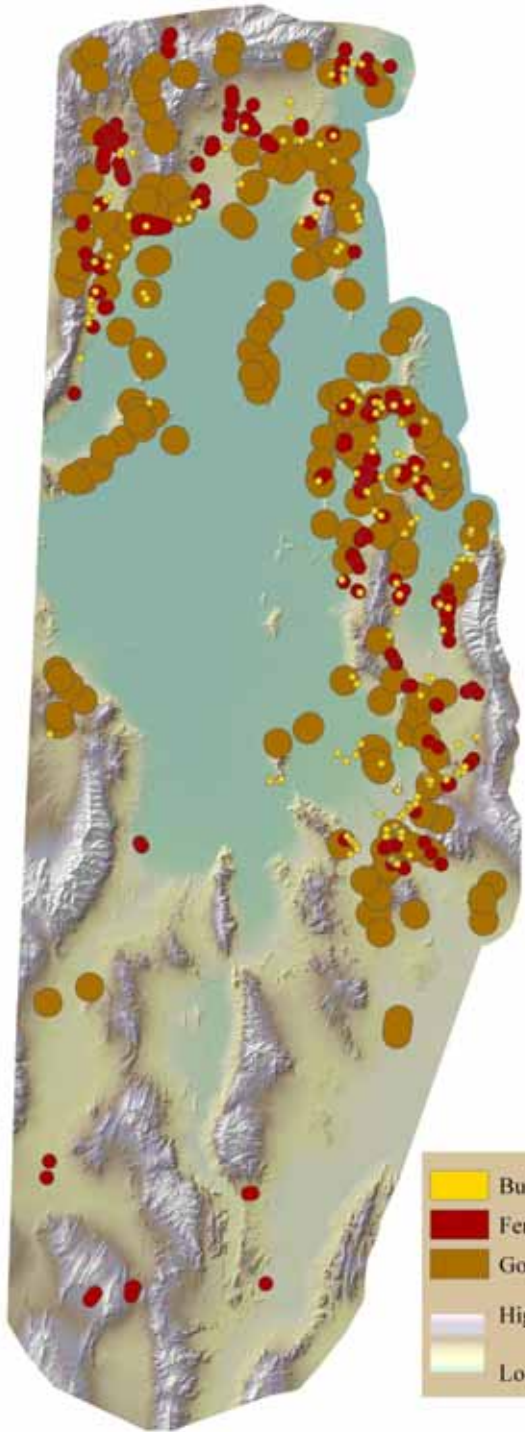
- Great Basin/West Desert area
- Study area: 39,000 km<sup>2</sup>
- MOA: 34,000 km<sup>2</sup>
- Independent historic surveys by DoD, HWI, Kent Keller, and RINS



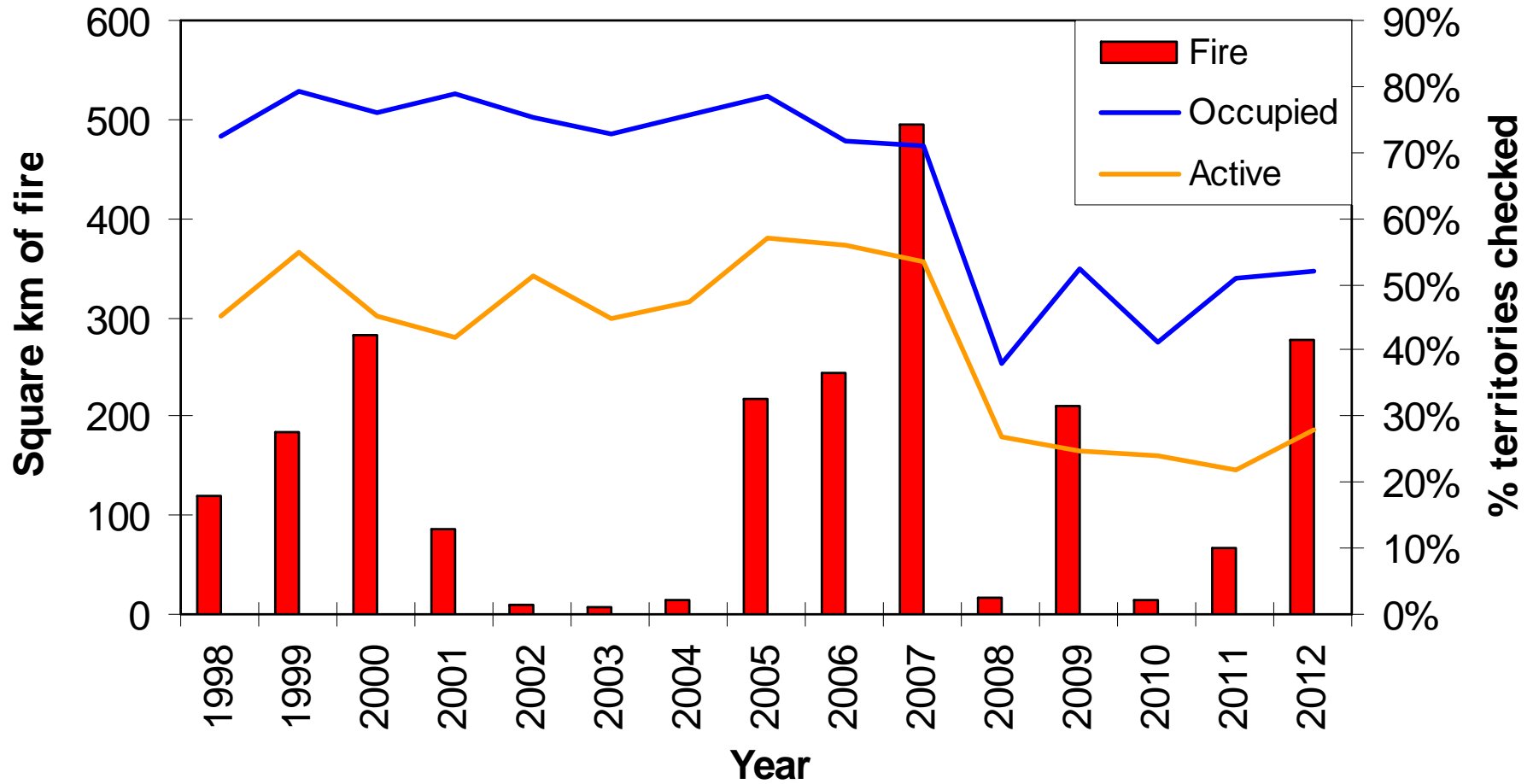


# Results

- 167 Golden Eagle territories
- 124 Ferruginous Hawk territories
- 282 Burrowing Owl territories
  
- GOEA: est. 90-148 breeding pairs
- FEHA: est. 44-165 breeding pairs
- BUOW: est. 56+ breeding pairs

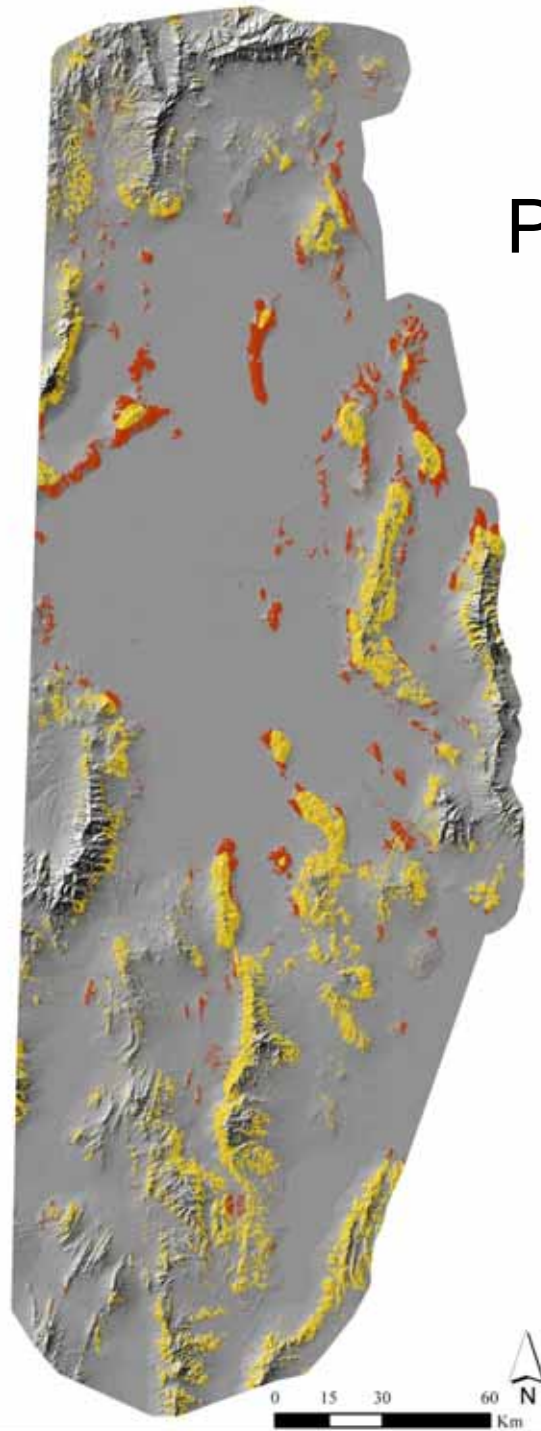
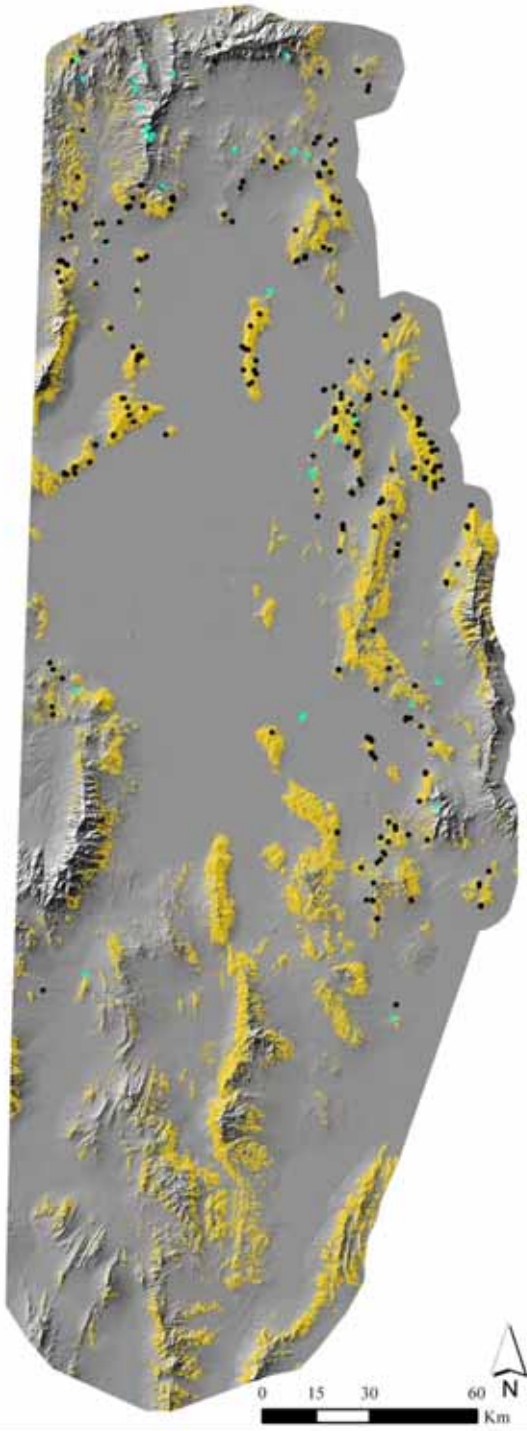


## Golden Eagle Territory Use Relative to Fire

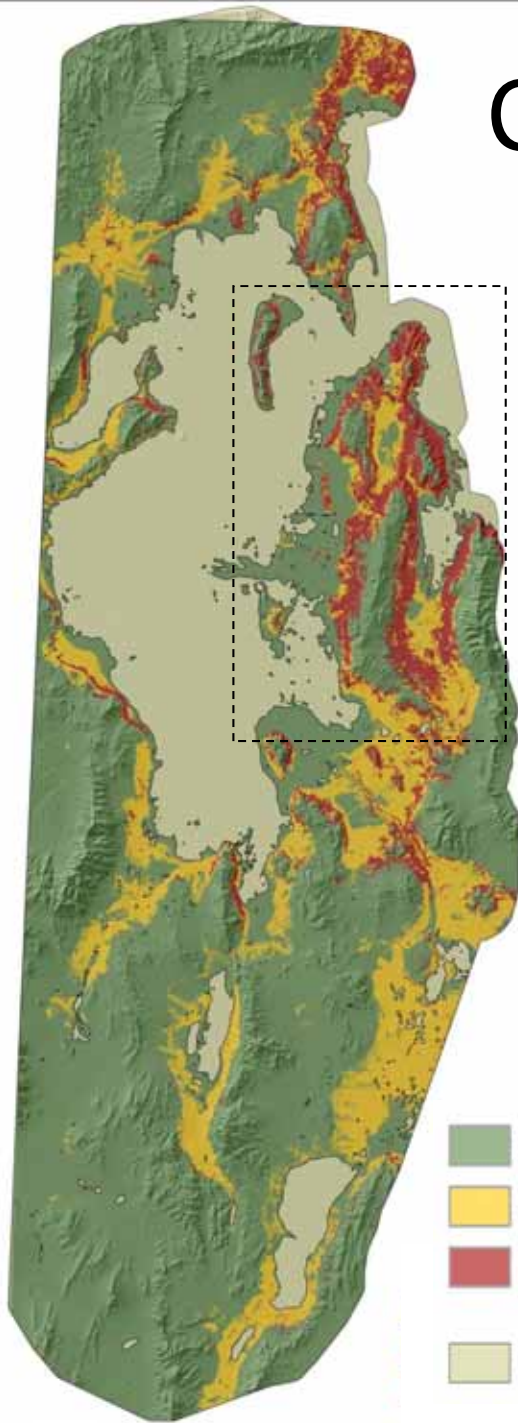


# Golden Eagle Potential Nest Habitat

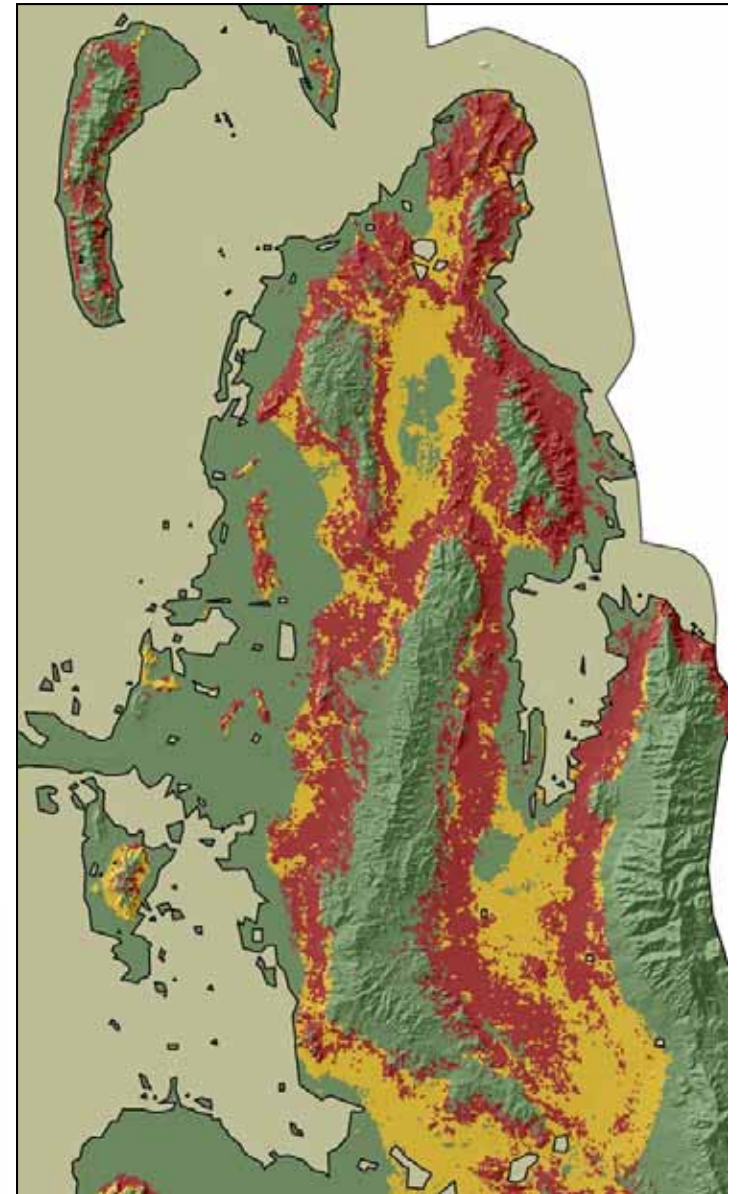
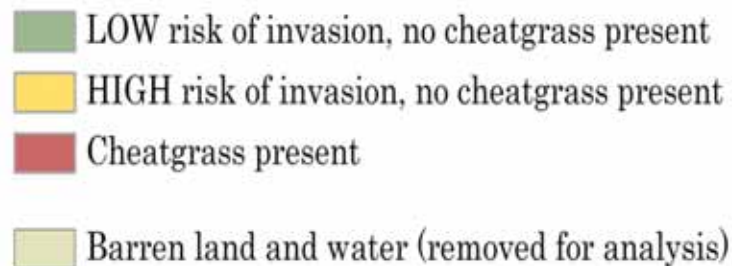
- MaxEnt model driven by topography (slope, ruggedness, elevation)
- 91% of known nests correctly classified
- Prime habitat filter driven by surrounding grass, desert shrub, and barren land cover
- Prime: 3% of study area; 61% occupied



# Cheatgrass Mapping



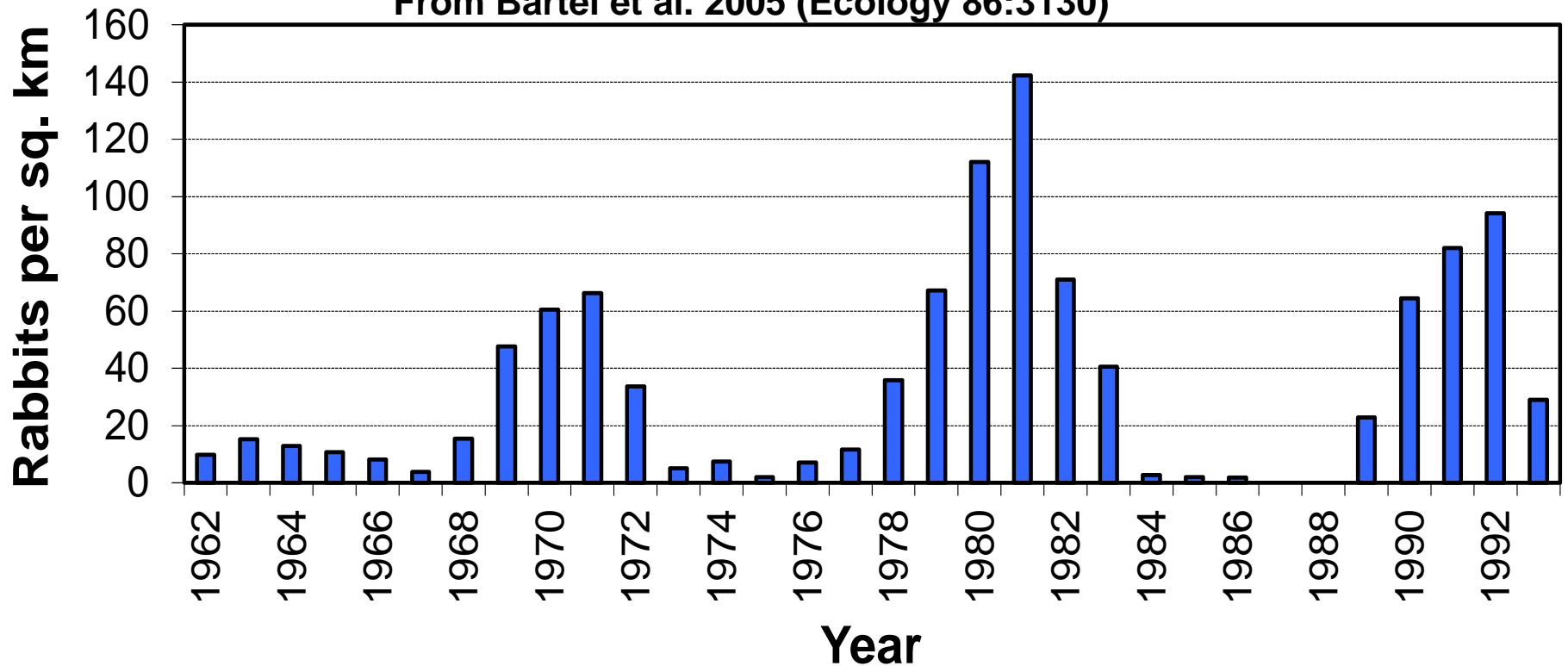
- Invaded: 8.2%
- High risk: 17.8%
- Low risk: 74.1%
- Invaded mostly in central and northeastern areas
- High risk mostly west and south



# Curlew Valley Rabbit Trends

Insert photo  
of elusive  
West Desert  
jackrabbit here

From Bartel et al. 2005 (Ecology 86:3130)



- 2012 surveys: 128 transects (1.6 km each) and only 13 rabbits (very low)
- 69% of rabbit detections in low cheatgrass areas (pos assoc. w/greaswood)


# Conclusions

<b>Investigated Trend or Relationship</b>	<b>Golden Eagle</b>	<b>Ferruginous Hawk</b>	<b>Burrowing Owl</b>
<b>Decline in study area territory activity</b>	Yes		Yes
<b>Negative response to fire occurrence in study area</b>	Yes		NA
<b>Higher cheatgrass cover at known territories</b>	Yes	Yes	Yes
<b>Invasion risk or grassland cover better predictor of known territories than cheatgrass cover</b>	Yes	Yes	Yes
<b>Activity higher in territories with lowest cheatgrass cover</b>	Yes	Yes	Yes
<b>Nest success higher in territories with lowest cheatgrass cover</b>	Yes		Yes
<b>Productivity/successful nest higher in territories with lowest cheatgrass cover</b>	Yes		Yes
<b>Nest attendance higher in territories with lowest cheatgrass cover</b>	Yes	Yes	NA

Prey data suggests mechanism for negative response to cheatgrass

# Follow-on Work

- Additional year of GOEA and BUOW monitoring and prey surveys in 2012...working on analysis
- Comparison of activity at “desert” and “mountain” eagle nests
- Genetic analysis of eagle feathers collected from ~75 Utah nests (compare to CA, s. ID and NM, etc.)
- Will analyze banding dispersal patterns (~ 200 records)
- Will study winter distribution and post-fledgling survival/dispersal (PTTs on 15+ nestlings in 2013)

A photograph of a sunset over a body of water. The sun is low on the horizon, creating a bright orange and yellow glow that reflects on the water's surface. The sky is filled with dark, silhouetted clouds. The overall mood is serene and contemplative.

“Irrespective of the products or outcomes,  
the conversations are hugely important.”

- Terry Rich, PIF National Coordinator

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Guantanamo Bay, Cuba  
January 2004