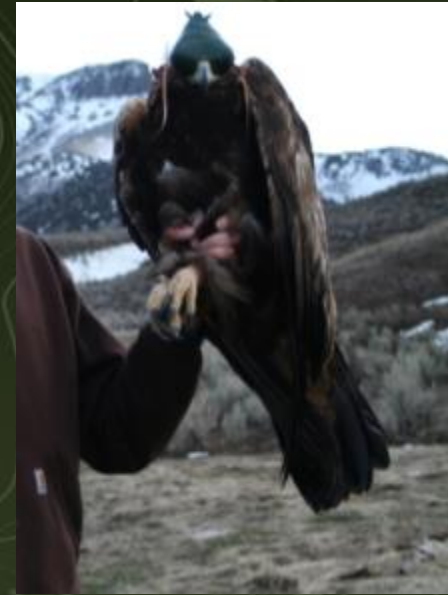




Environmental
& Statistical
Consultants

Eagles and Wind



Wally Erickson

September 2014

History and Why We are Here

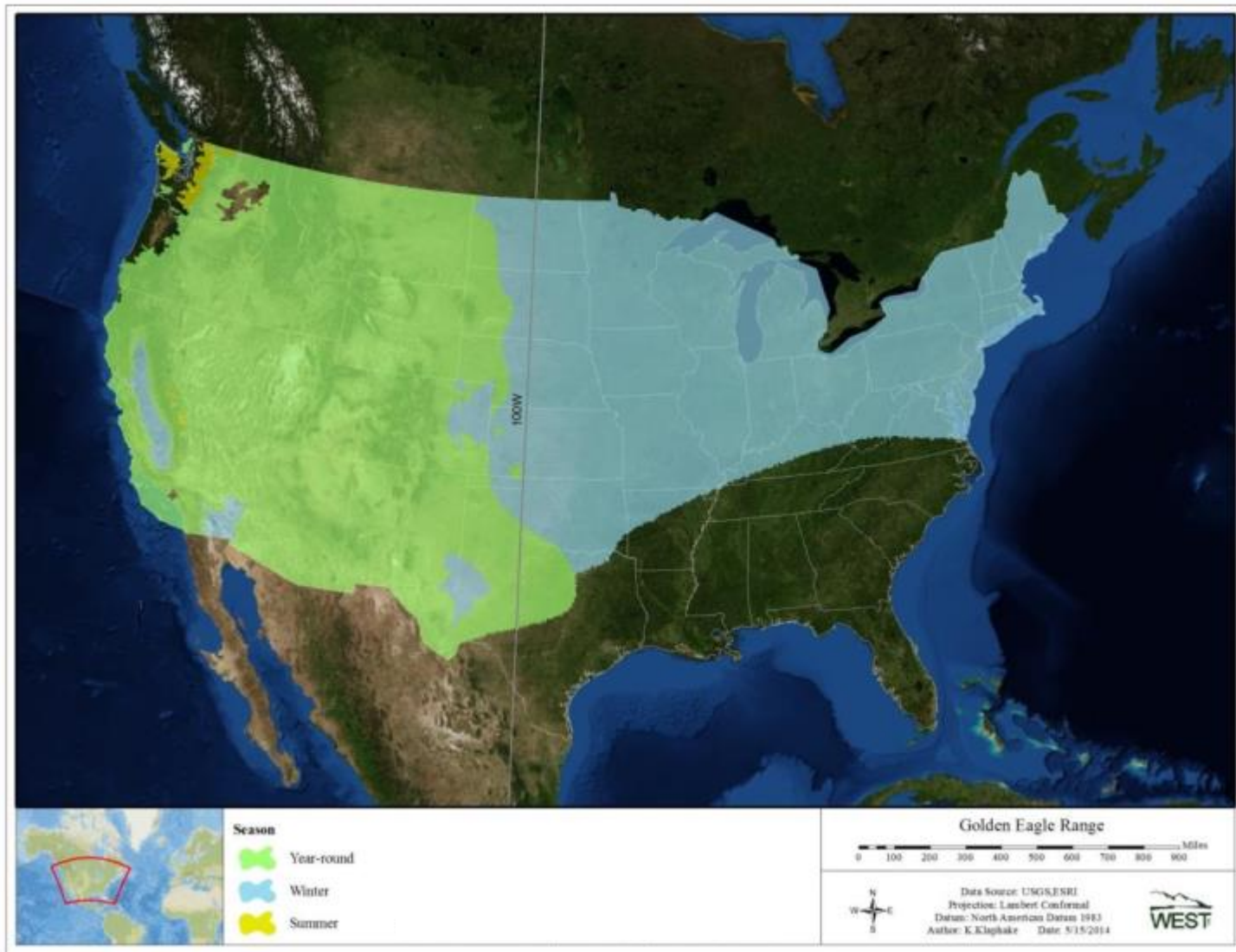
- Delisting of bald eagle (2007) from ESA
Both bald and golden eagles still protected under MBTA and BGEPA but, no take provisions
- New BGEPA permit rule authorizing take for otherwise lawful activities (2009)
- Draft Eagle Conservation Plan Guidance (2011)
- Version 2 Eagle Conservation Plan Guidance (2013)
- December 2013 rule change (Tenure Rule)
- Conducted public scoping in 2014 and seeking public input prior to revising the permit rule

Technical Aspects: Models Models and More Models

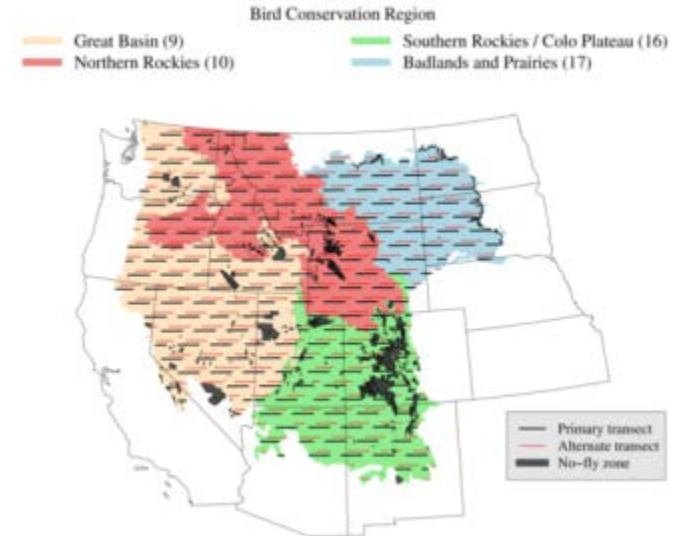
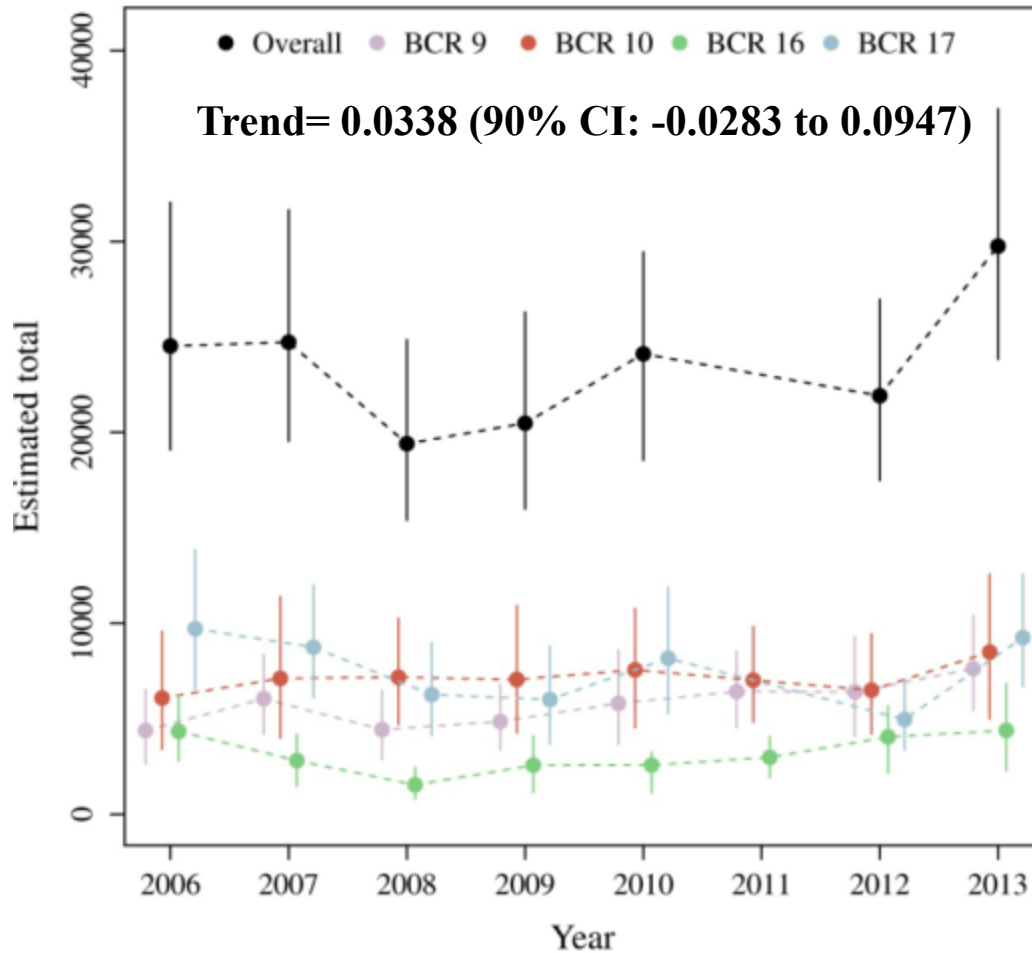
- Population Trend Models
- Fatality Prediction Models
 - Bald vs. Golden Eagle Models
- Compensatory Mitigation Models – (Resource Equivalency Analyses: REA)
- “All models are wrong, some are useful”



Golden Eagle Range: 2013

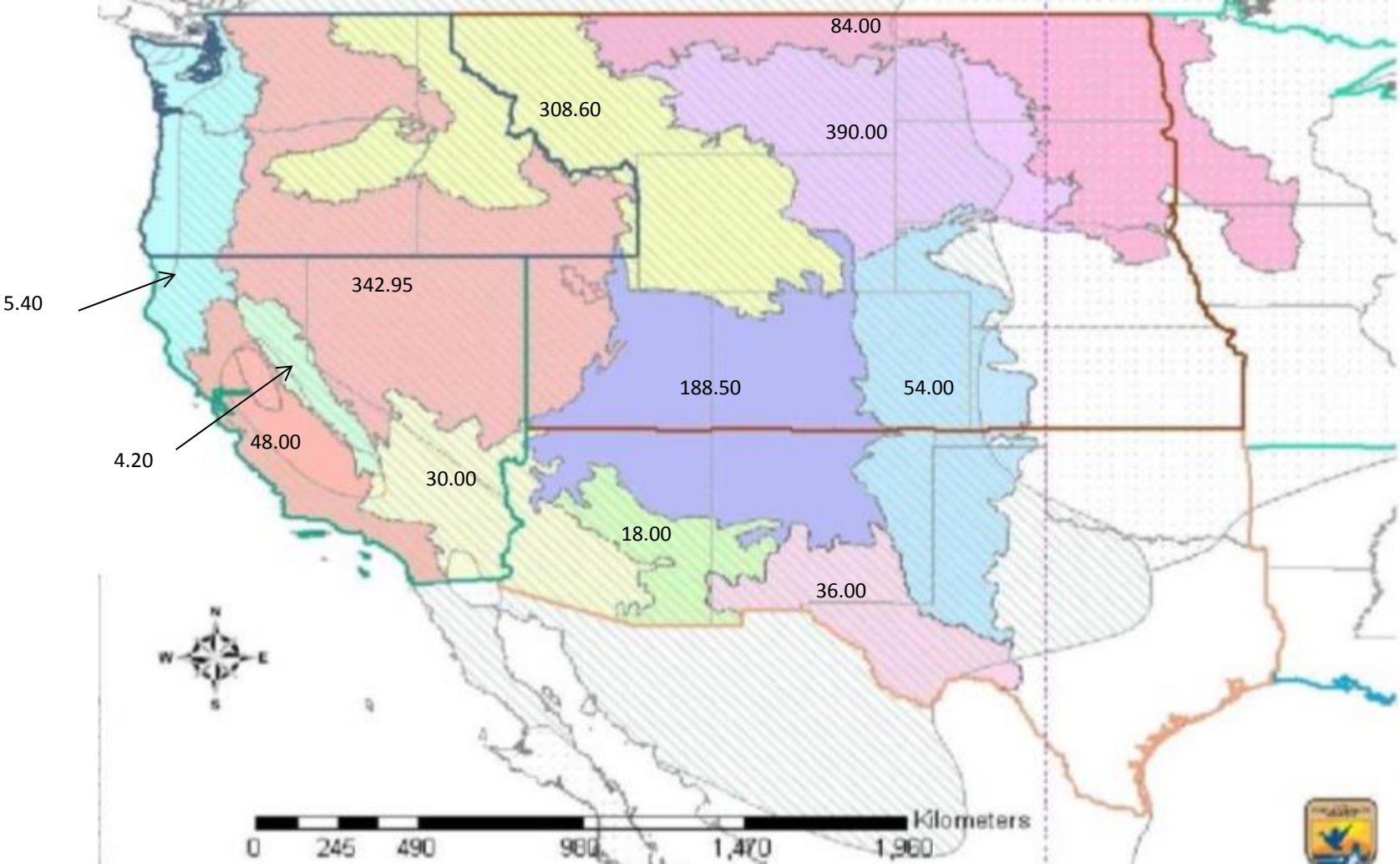


Eagle Population Trends: Results: 2006 - 2013



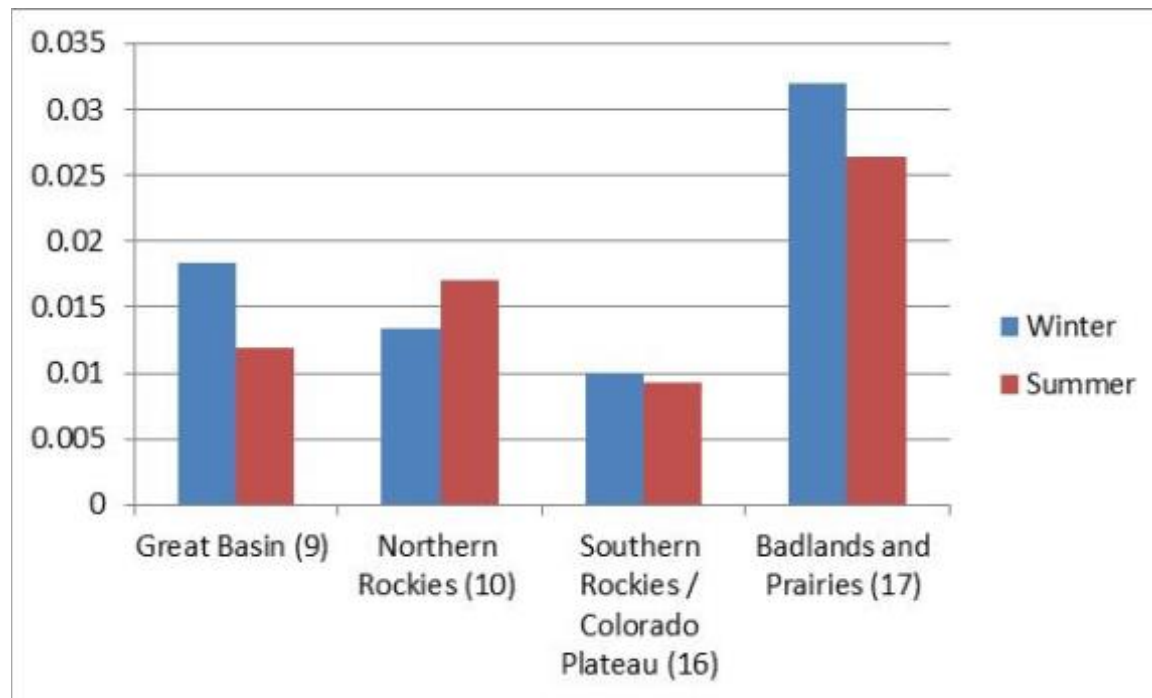
Estimate: ~30,000 eagles in study area

Golden Eagle Take Thresholds



Golden Eagle Winter Densities – USFWS/WEST surveys

- Initial surveys estimates ~34,400 GOEA in winter compared to ~30,000 in same study area in summer
- Higher densities in some areas



Predicting Take

Predicting eagle fatalities is a critical step for:

- Programmatic Take Permit process
- Eagle Conservation Plan Guidance
 - Risk Categorization
 - Compensatory Mitigation

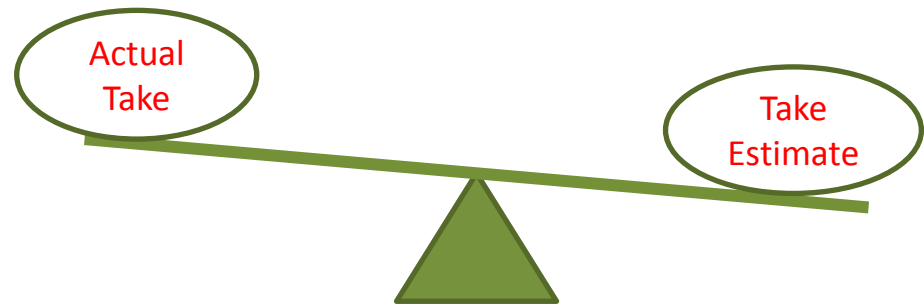
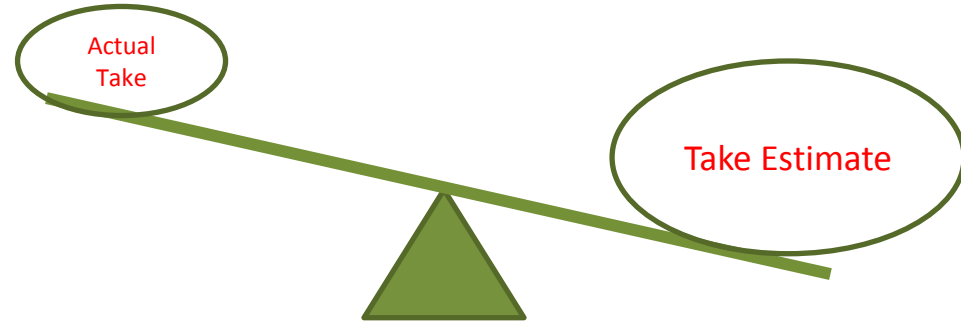


Eagle Risk Categorization

- Category 1 – High risk to eagles, potential to avoid or mitigate impacts is low
- Category 2 – High or moderate risk to eagles, opportunity to mitigate impacts
 - Has an important eagle-use area or migration concentration site within the project area but not in the project footprint; or
 - **has an annual fatality estimate between 0.03 eagles per year and 5% estimated local-area population; or**
 - Causes cumulative annual take of the local-area population of less than 5% of the estimated local-area population size
- Category 3 – Minimal risk to eagles
 - **<0.03 fatalities per year**

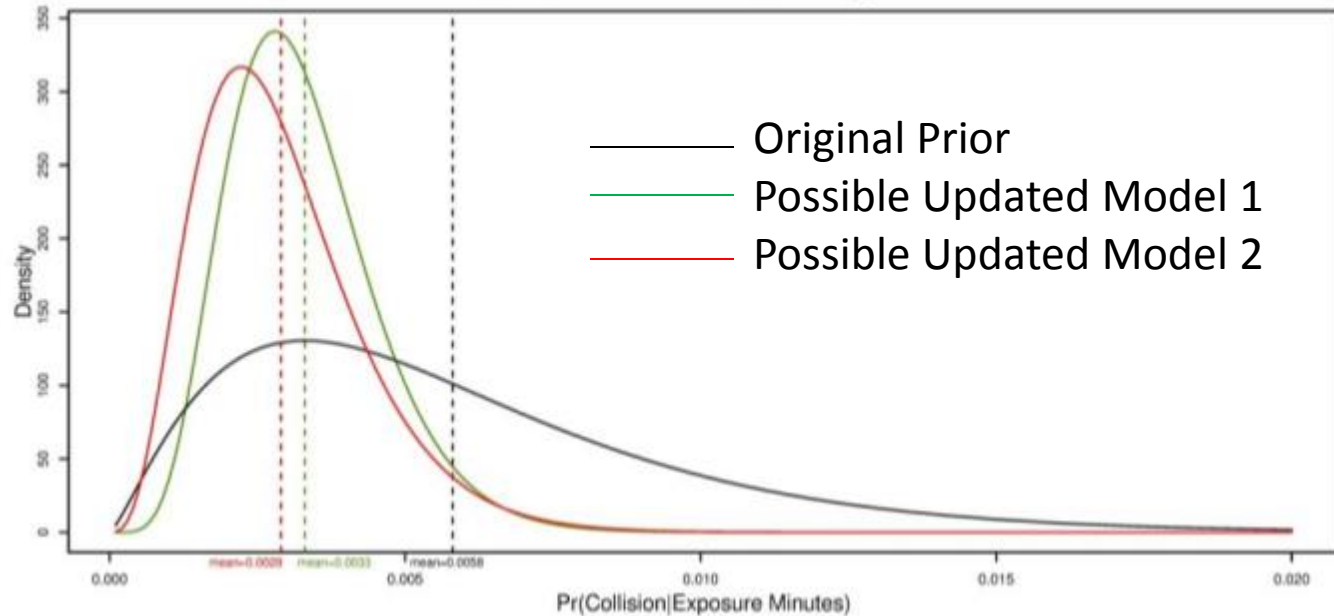
Current Fatality Model Is Conservative in Most Situations

- Balancing “capture” of actual take levels with being overly conservative and over mitigating and “eating up thresholds”
 - Use of Upper 80th Credible Interval
 - Use of observations versus minute data
 - Use of Daylight hours versus operating time
 - Use of data from older generation turbines



Possible Collision Risk Model Update

- Mean Collision Risk Probability
 - Original Prior = 0.0058
 - Possible Updated Model 1 = 0.0037
 - Possible updated Model 2 = 0.0029

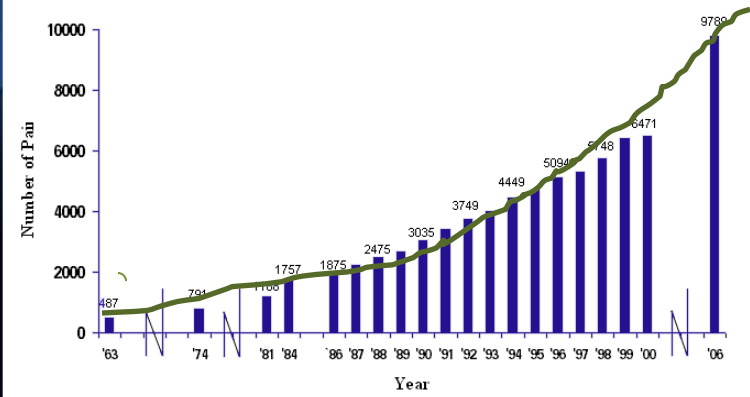
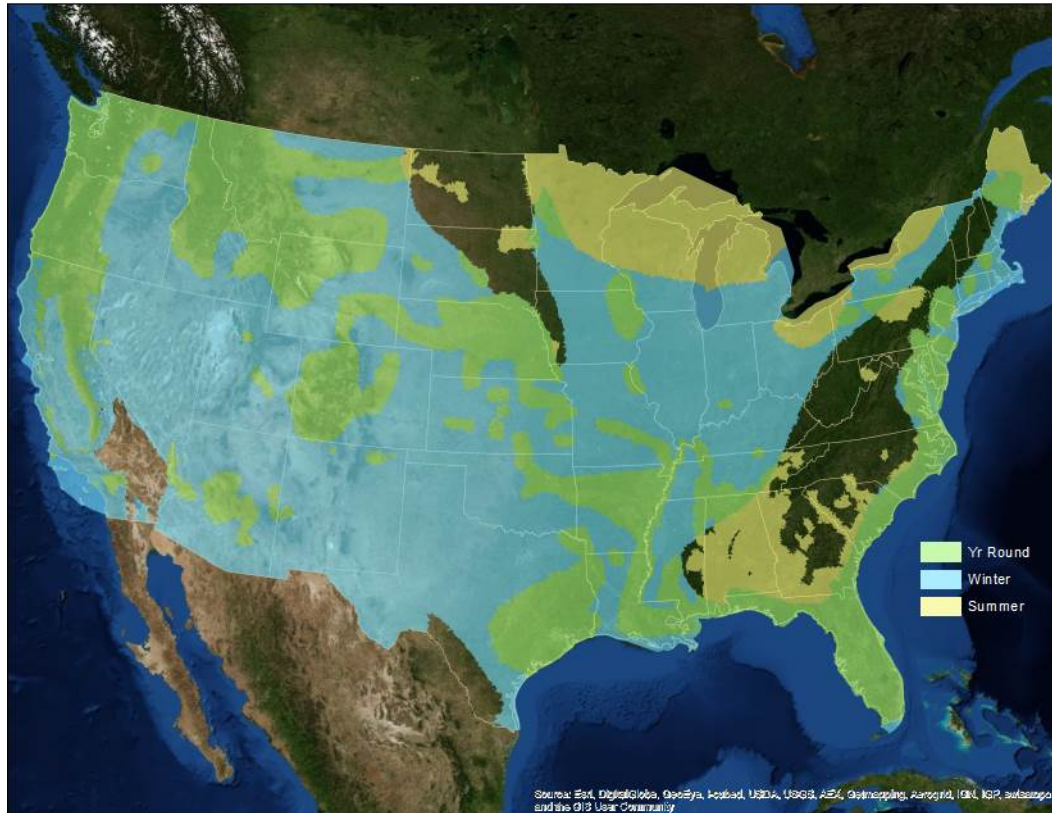


What about Bald Eagles?

- Current Model developed from golden eagle use and golden eagle fatality
- No separate model for bald eagles – USFWS needs data to ensure risk is different
 - No data from higher use bald eagle sites
- Show small-scale avoidance of turbines (no fatalities recorded), no change in use of wind farm vicinity (Sharp et al. 2010)

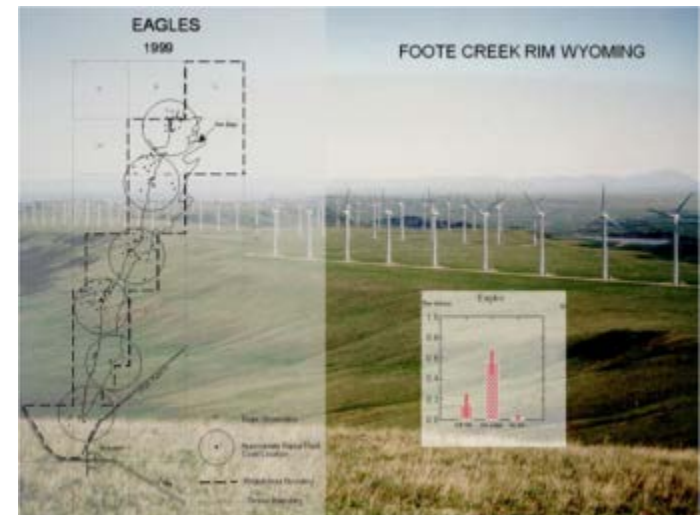
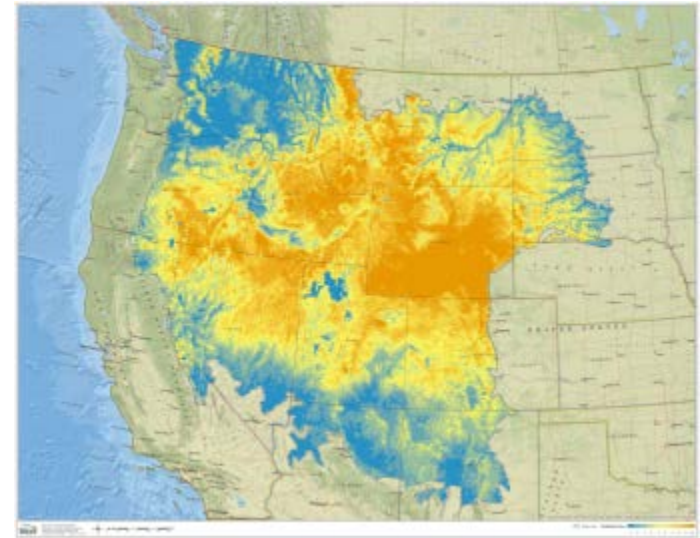


Bald Eagle Range: 2013



Avoidance and Minimization (Stage 4)

- Avoidance/minimization in siting or design of projects – key consideration.
- Macro and micro siting decisions
 - Avoid areas expected to be high risk to eagles
 - Nest Buffers
 - More research needed to understand effectiveness
- Reductions in project size or size of zone of risk
- Informed Curtailment



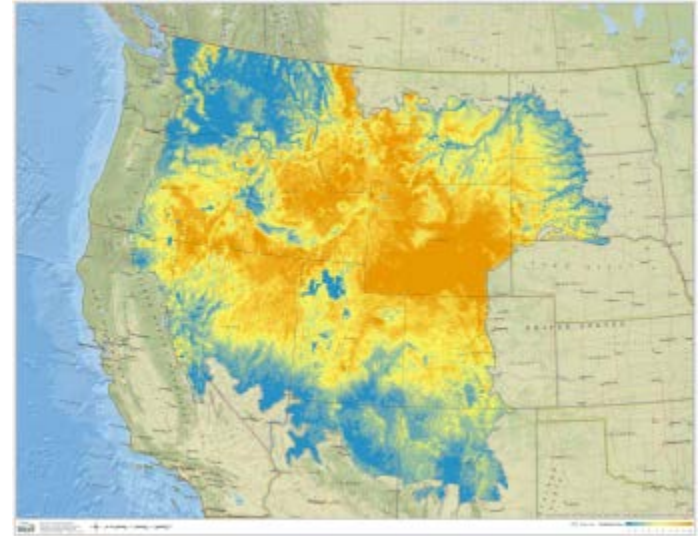
Compensatory Mitigation (Stage 4)

- Reducing Take from Other Sources
 - Power pole retro-fits – only option with approved REA
 - Carcass removal programs
 - Lead abatement programs
 - Drowning prevention
- Preserving/Creating/Improving Eagle Habitat
 - Conservation banks
 - Prey/Habitat Enhancements



Preserving/Conserving/Enhancing Habitat

- Large Scale High Quality Habitat Preservation
- Enhancement of Habitat through Restoration and Management
 - Livestock grazing management to improving prey
 - Riparian and other habitat restoration to increase prey (waterfowl, other birds, lagomorphs, ungulates)
- Goal: to ultimately improve territory occupancy and reproduction to produce more birds



Prey Habitat Restoration



Summary and Next Steps

- Fatality predictions are key to ECPG and programmatic permit process
- Siting is the best option for avoidance/minimization
- Several studies/projects testing experimental ACPs – many unanswered questions
- Need additional approaches for compensatory mitigation beyond power-pole retrofits.

