

Long-term Strategies and Information Needs for Conserving Golden Eagles (*Aquila chrysaetos*) and Bald Eagles (*Haliaeetus leucocephalus*) in an Energy Development Environment



Diana M. Whittington, Joel E. Pagel, Robert Murphy, and Eric L. Kershner

Division of Migratory Bird Management

4401 N. Fairfax Drive, MBSP 4107

U.S. Fish and Wildlife Service

Arlington VA U.S.A.

Diana_Whittington@fws.gov

Invited Presentation

Raptors & Energy Development Session

Saturday, September 25, 2010

Fort Collins, Colorado



The Problem



- Faced with energy development throughout the ranges of both Golden Eagles and Bald Eagles, little is known about
 - Population impacts
 - Effects of habitat loss and fragmentation
 - Effective Mitigation
 - How to quantify cumulative impacts
- Surprisingly little published literature on Golden Eagles can be used to directly inform decisions on avoiding or minimizing negative impacts of anthropogenic activities
- Yet, we have to achieve no-net-loss to breeding populations

Overview



- Limits of current approaches
- Basic knowledge gaps
- Critically needed tools
- Avoid, minimize, compensate
- Strategies



Limitations of Current Tools: an Example



Scientific support for buffer distances to protect breeding eagles from human activities are limited

- Often are neither published nor supported by data
- Typically only for disturbance at nest sites
- Were not intended as national guidance for emerging forms of energy development

Current Approaches to Buffers



- Inadequately address direct mortality to breeders and their young
- Do not address:
 - Impacts on floaters and resident sub-adults
 - Impacts on wintering or migrating eagles
- Not designed to mitigate cumulative adverse effects from habitat fragmentation

Basic Knowledge Gaps: Demographic Data



- Age-specific survival rates
- Dispersal characteristics, both natal and breeding
- Estimates of breeding population size
- Long-term monitoring of occupancy and productivity
- Other basic data for setting defensible population goals



Tools Critically Needed for Management



- Buffers effective for more than nest sites
- Apply home range analyses to identify high risk zones of wintering & other non-breeding areas
- Analytical tools to determine origin of eagles killed by energy infrastructure
- Determine relative importance of different sources of mortality
- Develop tools for risk analyses in various land use and land cover types

Tools Critically Needed: Disturbance



- Identify and substantiate 'disturbance' thresholds
- Identify the potential for 'disturbance' from habitat or prey loss...are eagles "agitated or bothered?"
- Develop metrics for quantifying take due to 'disturbance' at concentration areas

Disturb - *to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, injury to an eagle; a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior; or nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior.*

Avoidance Measures



- Develop models for predicting occurrence
- Avoid geographic areas posing greatest threat from collision and electrocutions
 - Significant breeding areas
 - Major migration routes
 - Concentration areas
 - Important wintering areas
 - Communal roosts
 - Primary foraging areas

Minimization Measures



Develop and implement scientifically defensible measures

- Blade feathering?
- Set backs from ridgelines?
- Seasonal shutdown
- Remove problem turbines
- Prey management
- Use APLIC standard practices
- Bury distribution lines
- Reduce the project footprint



We have limited capability to minimize the impacts once built, so avoidance remains the best first step

If Take Occurs....



- How are we going to achieve no-net-loss to breeding populations?
- Cumulative impacts analysis:
 - incorporate spatial analysis of threats (past, present, future)
 - into models of species occurrence
 - to determine level, type, and location of **compensatory mitigation**

Cumulative effects — the incremental environmental impact or effect of the proposed action, together with impacts of past, present, and reasonably foreseeable future actions. Cumulative environmental effects may be individually minor, but collectively significant over time.

Compensatory Mitigation: Considerations



“Consistent with the goal of stable or increasing breeding populations” or achieving no-net loss to breeding populations

- Reduce ongoing take from another project or industry
- Habitat improvement
- Prey management
- Habitat acquisition and preservation
- Mitigation banking
- Support for further research

Quantifiable and Verifiable

Strategies



- Develop consistent
 - Surveys, reports, and training
 - Risk analyses
 - Use pattern analyses
- Coordination
- Golden Eagle Conservation Plan and Management Plan
- Revise National Bald Eagle Management Plan to address direct mortality

Summary



We all have an enormous task ahead
of us

