


Western Golden Eagle Conservation Team

Brian Woodbridge, Coordinator

**U.S. Fish and Wildlife Service, Denver, CO
and Yreka, CA**



A fluffy white and black eagle chick is sitting on a nest made of sticks and twigs. The chick has its beak open and is looking towards the camera. A speech bubble is positioned to the right of the chick, containing the text "What ?! Not another eagle team ??!". The background shows a green field and a tree trunk.

What ?!
Not another
eagle team ??!

Western Golden Eagle Conservation Team



Established in 2013
by FWS managers in
four western
Regions

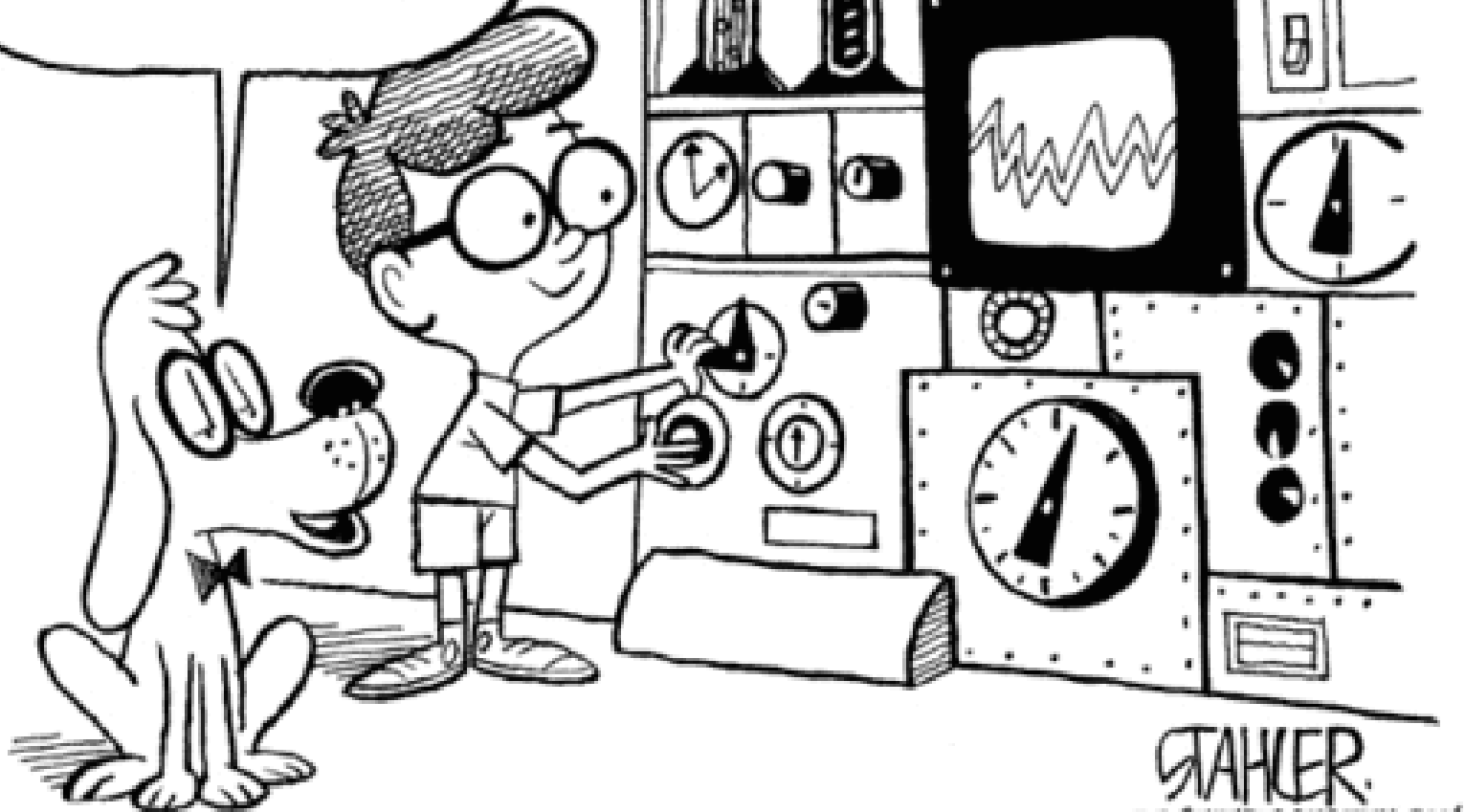
**In response to
increased regulatory
and conservation
issues due to
renewable energy
development**

Objectives

- “proactively address energy-related threats to golden eagle populations in the western U.S.”
by
- “developing conservation strategies at appropriate scales”
and to
- **work collaboratively with other eagle teams, researchers, States, Flyways, Joint Ventures, LCCs, Tribes, NGOs, Industry... WGA**
- **“Move the conservation needle”**



All you need to do is
adjust the adult
survival dial to 0.98



“Moving the conservation needle....”

Objectives (reinterpreted):

- Based on initial evaluation of existing information and ongoing studies; results of 2010 Golden Eagle Science Workshop, and input from numerous species experts;
- ...we adopted a *Systematic Conservation Planning*” framework (Margules and Pressey 2000) to organize and refine our objectives.

Systematic Conservation Planning for Golden Eagles in the Western United States

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- **A Framework for Prioritizing Landscapes and Developing Conservation Strategies for Golden Eagles**
- Structured, spatially explicit assessment of risk and conservation opportunity within and across landscapes (BCR, other)
- Rapid assessment approach incorporates ‘best available science’; current literature and data sets, expert opinion, and modeling. *Explicitly recognizes and describes uncertainties*
- Framework is adaptive; incorporates future research results and improved inference

Conservation Planning Framework

Conservation Assessment Phase

- Step 1: Identify and characterize Eagle Landscapes
- Step 2: Identify and describe limiting factors
- Step 3: Prioritize landscapes

Conservation Strategy Phase

- Step 4: Develop Eagle Conservation Strategies and implementation tools
- Step 5: Conservation Strategy implementation; monitoring and adaptive management

Step 1: Identify and Characterize Eagle Landscapes

Represent regional combinations of vegetation, land use, prey communities, and risk factors that act to influence patterns of eagle populations and subsequently, conservation strategies

May consist of breeding areas, important movement corridors, and wintering areas

Not intended to represent demographically or genetically distinct populations of golden eagles

Important modeling tool

Step 1: Identify and Characterize Eagle Landscapes

Southern/Central California Plains and Hills

Oak savannah/Mixed oak woodland

California ground squirrel abundant
year-round; main prey (68%)

Tree-nesting dominant

Very high density GOEA population

All age classes resident



Omernik 1987, CEC Level III Regions

Step 1: Identify and Characterize Eagle Landscapes

Snake River Basin/High Desert

Sage steppe dominant

Black-tailed jackrabbit cycles important

Range of Belding's ground squirrel; high GOEA use of irrigated alfalfa

High density GOEA population

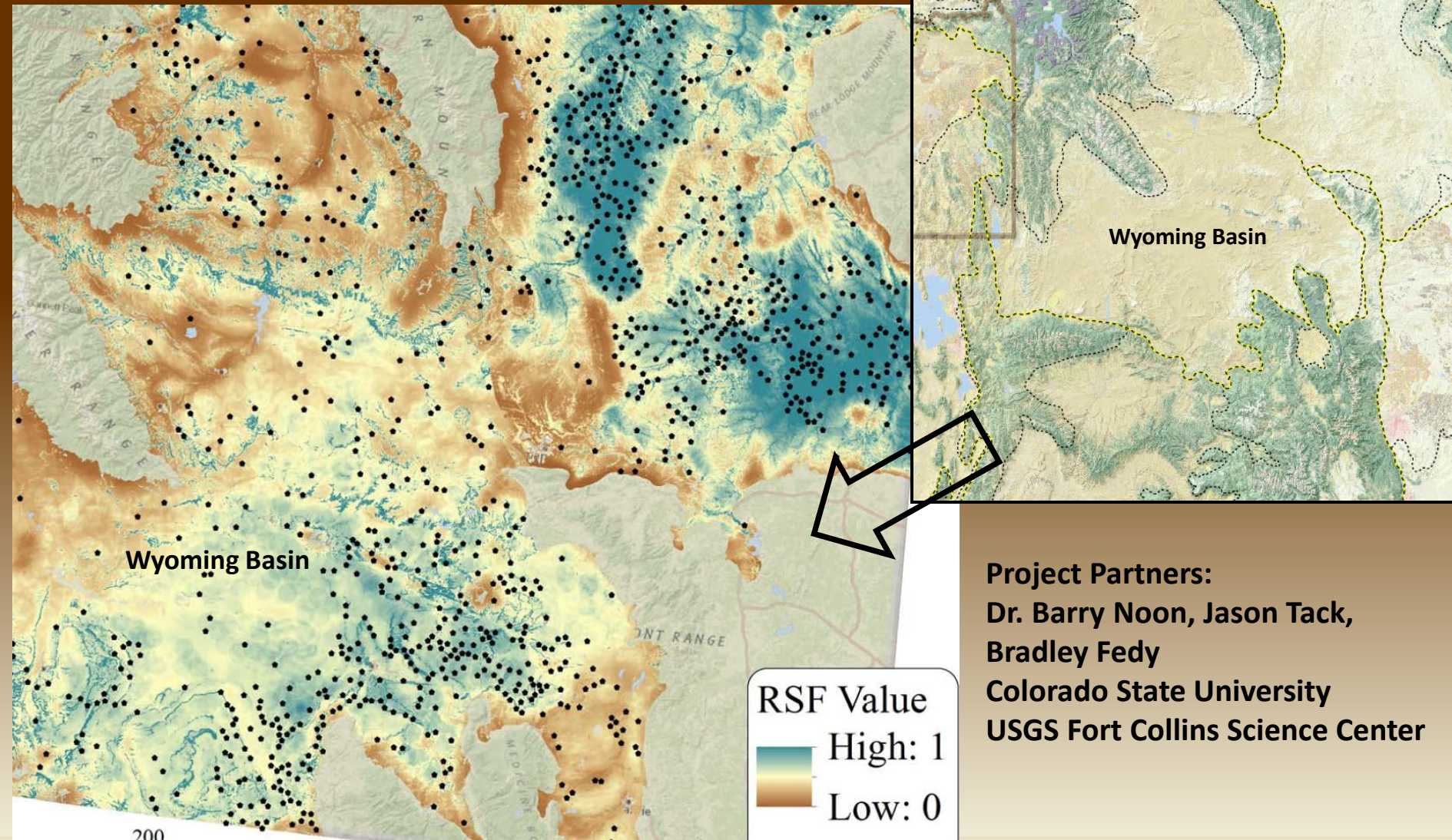
Adults resident (?) HY-TY migratory



Step 1: Characterize Eagle Conservation Units

- Compile, evaluate and synthesize available information and data pertinent to GOEA populations within units
- GOEA distribution (breeding, post-breeding, migration), abundance, movement patterns, prey communities, habitat relationships
- **Support compilation and collection of GOEA location data**

Breeding-season distribution and habitat suitability modeling



Movements and Migration

Objective: Describe and map important spatial patterns of post-breeding movement, migration, and wintering areas

Working with numerous partners on:

- **Meta-analysis of existing Argos/GPS telemetry data sets**
- **Deployment of additional PTT in gaps (50 in 2014)**
- **Mapping/modeling with winter location data sets (eBird, CBC, BBL, Midwinter Counts, others)**

Preybase Relationships

- Review and synthesis of geographically specific GOEA diet information
- Modeling of important prey habitats
- **Review and synthesis of prey community habitat relationships and habitat management**



Conservation Planning Framework

Conservation Assessment Phase

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- Step 2: Identify and describe limiting factors
- Step 3: Prioritize landscapes

Conservation Strategy Phase

- Step 4: Develop Eagle Conservation Strategies and implementation tools
- Step 5: Conservation Strategy implementation; monitoring and adaptive management

Step 2: Identify and describe limiting factors

- Evaluate factors that may act to limit golden eagle populations by affecting survival (mortality sources) and fecundity (habitat, prey-base, and disturbance)

Spatially explicit assessment and modeling of mortality sources – energy development, electrocution, vehicle collisions in big game winter range, focused exposure to contaminants - likely to affect golden eagles



Step 2: Identify and Describe Potential Limiting Factors

Southern/Central California Plains and Hills

Increasing urban development

Intensive wind power development

High rates of GOEA mortality at
wind power developments

Size, spatial extent of GOEA
population unknown



Step 2: Identify and Describe Potential Limiting Factors

Snake River Basin/High Desert

Wildfire/climate change and
invasive exotic plants impact sage
steppe prey habitat

Invasive exotic plants degrade
jackrabbit habitat

Electrocution in agricultural areas

Predator control programs

Breeding-season exposure to Pb
due to intensive recreational
ground squirrel shooting



2013 - 2014 cooperative projects

- USFWS Region 8/CDFW – facilitate entry of GOEA data into Regional database
- Boise State University/USGS – GOEA dietary response to large-scale habitat change
- Colorado State University – breeding season distribution/habitat suitability modeling
- WA Dept. of Fish & Wildlife – surveys, assistance with PTT deployment
- **USGS Corvallis – Pb/recreational ground squirrel shooting study**
- **Oregon Eagle Foundation/ Oregon High Desert Museum – surveys, pilot density study, assistance with USGS Pb studies, PTT deployment**

2014 cooperative projects under development:

- Montana Fish, Wildlife & Parks – support strategic survey effort
- USGS Lubbock – support strategic surveys in TX, NM
- **Electrocution Risk Assessment and Modeling**
- **Differential detection probability study**



- **Pacific Region (R1):**
 - David Leal (Portland)
 - Matt Stuber (Boise)
 - Katie Powell (Boise)
- **Southwest Region (R2) :**
 - Jim Dick (Albuquerque)
 - Greg Beatty (Phoenix)
- **Mountain/Prairie Region (R6):**
 - Brian Woodbridge (Denver)
 - Todd Lickfett (Denver)
 - Vacant (Cheyenne)
- **Pacific Southwest Region (R8):**
 - Gjon Hazard (Carlsbad)
 - Tom Dietsch (Carlsbad)



