

# RESEARCH NEEDS ON WILDLIFE EFFECTS OF WIND ENERGY DEVELOPMENT



TOPICS AND PRIORITIES  
FOR NWCC

# SOURCES OF INFORMATION

- **National Wind Coordinating Committee**
  - Prioritized Research Needs Related to Wind/Wildlife Interactions
- **Assoc. of Fish & Wildlife Agencies**
  - Wind/Wildlife Subcommittee Report
- **California Energy Commission**
  - Draft Outline State Guidelines for Reducing Wildlife Impacts from Wind Energy Development

# Wind Turbine Design has Changed Over the Years



# Wind Farms can be a Significant Influence on the Wildlife Landscape



# Fatalities are an Issue

Raptor Fatalities at Tarifa, Spain



# Identified Research Priorities

## Collisions

- Use of airspace around turbines by birds and bats
- Factors affecting the number and composition of collision fatalities
- Data needed to tie pre-construction findings to post-installation impacts (causal factors)
- Data needed to validate preconstruction projections of impacts on use of area
- Ability to develop a valid risk assessment model
- Development of effective risk reduction methods

# Research Needs

## Behavior and Distribution

- How to quantify displacement and avoidance, habitat loss
- Timing and effect of habituation
- Effects on reproductive behaviors (courting, nest site selection, care of young)
- Attraction – lights, habitat changes, prey

# Prey Availability, etc.



# Effects on Behavior



# Pre-construction Needs

- Effective tools and protocols for studies
- Effective predictive models
- Full list of causes and their interactions (eg: topography, visual acuity, attraction)
- Confounding variables and corrections (biases: Search efficiency, etc.)
- Metrics to compare sites (rotor-swept area, etc.)

# Techniques for Studies

- Observational – visual, enhanced (IR)
- Acoustic – flight calls, echolocation sounds
- Electronic – radar (NEXRAD and marine)
- Strengths and weaknesses of each
- Assembling a protocol that compensates
- Duration of studies – how long to know what's happening?

# The Bottom Lines

- How can policy be developed and applied in the face of incomplete knowledge?
- What information gives us the best handle on appropriate interventions?
- What is the least expensive way to get critical information to inform decisions?
- What do we do to be reasonably protective in the meantime?

The answer is blowing in the  
wind...

