Consistent methods and metrics: can we make it happen?

NW Wind Energy and Wildlife Conference

June 7-8, 2011

We're Not Alone

- Long-Term Ecological Research (LTER) Network – 1982
- Environmental Monitoring and Assessment Program (EMAP) – early 1990's
- National Environmental Monitoring Initiative – 1995
- National Ecological Observatory Network (NEON) - 2010

We're Trying

- Anderson, et al. 1999. Studying wind energy/bird interactions: a guidance document. Metrics and methods. NWCC
- Kunz, et al. 2007. Studying nocturnally active birds and bats - a guidance document. Journal of Wildlife Management, TWS
- Strickland, et al. 2011. Comprehensive guide to studying wind-wildlife interactions. NWCC

Why Is it Important?

- Increased body of knowledge
- Improved ability to predict impacts to wildlife and their habitats
- More effective communication
- Efficient use of resources and enhanced conservation benefits

Credibility and Comparability

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Aphorism I

"A foolish consistency is the hobgoblin of little minds, adored by little statesmen and philosophers and divines"

Ralph Waldo Emerson

First Principles

- What's your question?
- Problem formulation
- Define conceptual model – how does your world work?
- Most important, but hardest step

Set and Accomplish Goals

- Estimate Risk – proceed or not?
- Measure Impact – species of concern?
- Evaluate Mitigation – were avoidance and minimization measures effective?

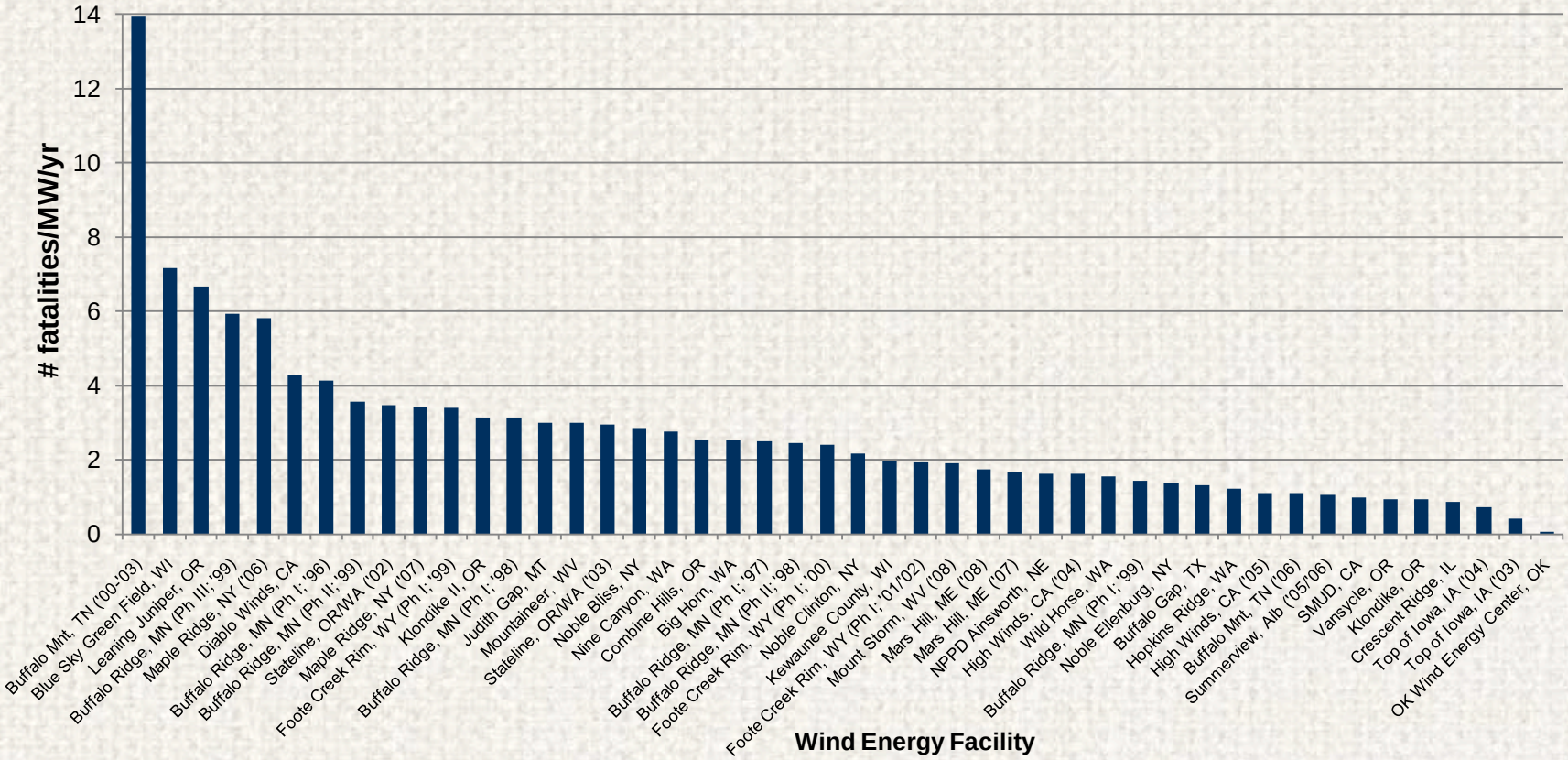
For Wind Risk Assessment: Define a Framework

- Focus scientific principles and critical thinking toward the goal of effective environmental management, and integrating the views of diverse scientists, regulators, and public participants

FAC Framework: Tiered Approach

- An iterative process for collecting information in increasing detail to evaluate risk and make siting and operational decisions
- Implementation of a tier depends on what you learn at previous tier
- Intended to provide template for jurisdictions without guidelines
- Each tier begins with problem formulation

Summary of All-Bird Fatality Rates at Wind Energy Facilities*



* NWCC 2010 Birds and Bats Fact Sheet at www.nationalwind.org/publications/bbfactsheet.aspx

Risk Prediction

- Acoustic monitoring
- Avian activity
- Radar – NEXRAD, Marine Radar, Parabolic antennae
- Collision risk modeling

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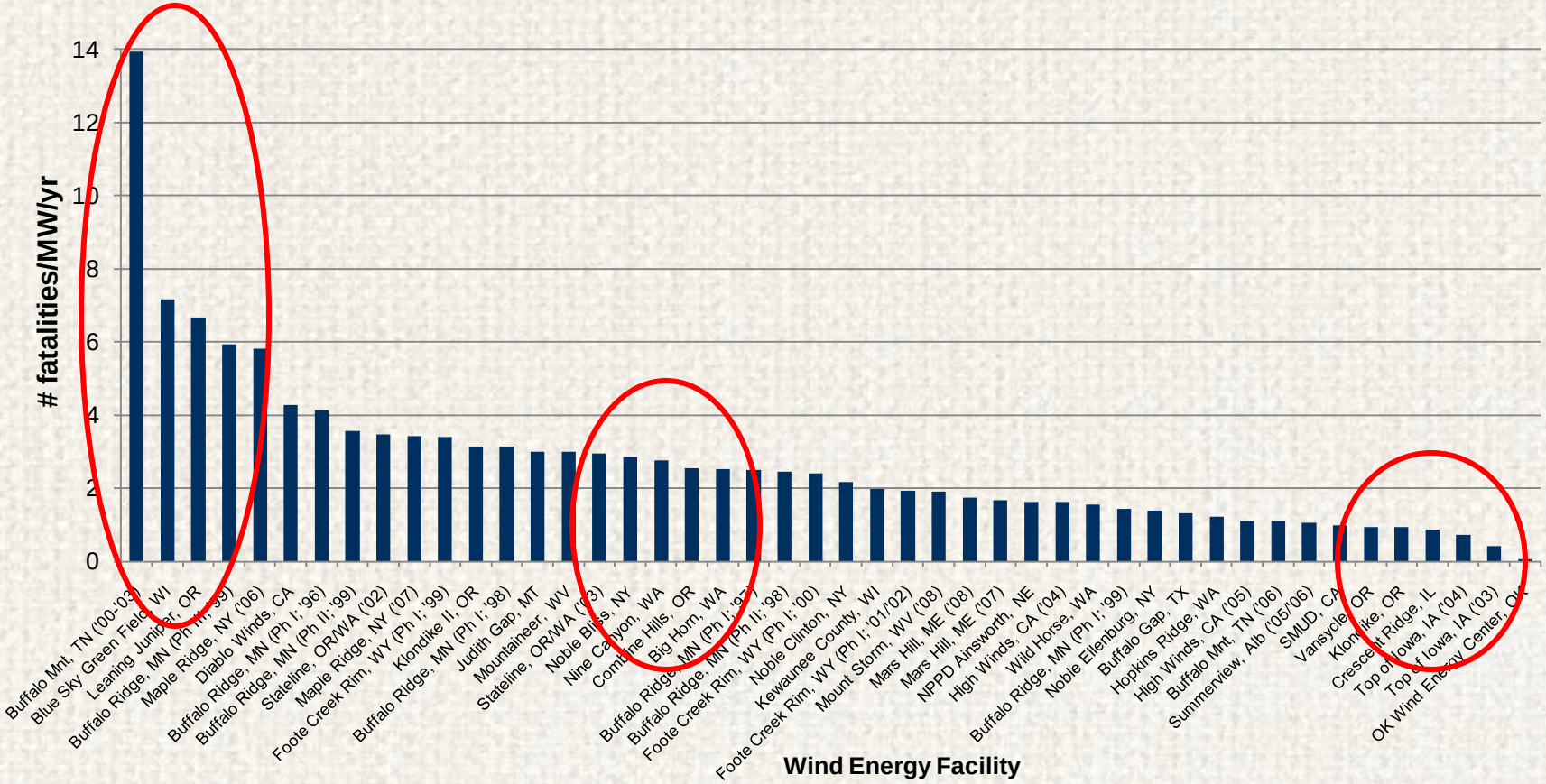


* NWCC 2010 Birds and Bats Fact Sheet at www.nationalwind.org/publications/bbfactsheet.aspx

Impact estimation

- Metrics: fatalities/turbine; fatalities/MW; fatalities/rotor swept hour
- Search protocols (duration and intensity; search interval; detection bias - carcass removal/searcher efficiency)
- Adjustment estimators

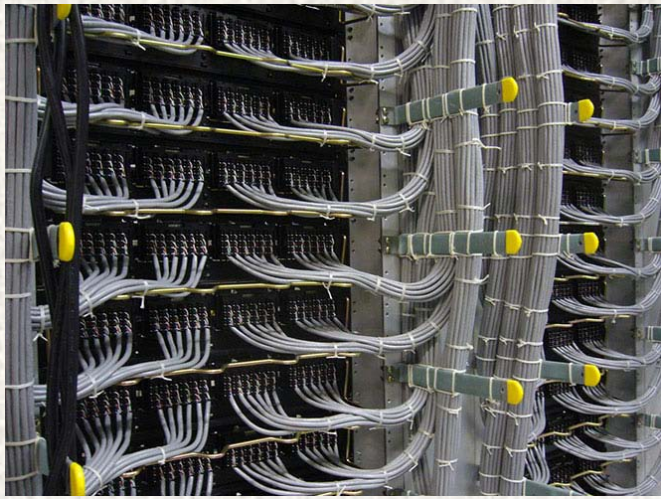
- Not forgetting habitat/indirect effects

AWWI – Research Information System (RIS)

- Build centralized database that organizes existing wind-wildlife data (need to include protocols)

– Safeguard confidentiality of proprietary information

– Develop parameters for most effective design for efficient user input and analysis



RIS Pilot
Oregon State University

RIS Task Force formed to provide guidance

- User interviews
- Define key questions and metrics
- Recommend policies and procedures

Collecting data to build model

- AWWI industry partner participation
- Feb. 2011 AWEA Board Resolution -- encourages wind companies to provide wildlife data for confidential aggregation within the RIS

RIS – Vision at the Landscape Level

Analysis across habitat, species, geographic & wind projects

Improve understanding of impacts

More cost-effective preconstruction assessments

Challenges

- Differing jurisdictions and regulatory requirements
- Differences in environment and taxa
- Evolution of tools and conceptual models, e.g., collision sensors, radar, aeroecology
- Need transparency to allow re-interpretation as methods and metrics (and our understanding) evolve

Aphorism II

"I honestly beleave it iz better tew know nothing than two know what ain't so"

Josh Billings, 19th C