

**NATIONAL WIND COORDINATING COLLABORATIVE
WILDLIFE WORKGROUP MEETING
NOVEMBER 14, 2007**

Hosted by the National Renewable Energy Laboratory (NREL), the National Wind Coordinating Collaborative (NWCC) Wildlife Workgroup met on November 14th, 2007 to:

- Discuss themes and next steps stemming from the November 13th Probability of Impact Workshop
- Hear sector updates
- Hear updates on Wildlife Workgroup and subgroup activities
- Review and commit to proposed 2008 workgroup activities
- Review a proposal for a 2008 wildlife research meeting
- Discuss Core Group membership
- Commit to 2008 Wildlife Workgroup activities

Over 60 attendees, representing federal and state agencies, wind developers, environmental NGOs, utilities and consultants participated in the meeting, providing perspectives from all sectors. While the majority of the time was spent discussing NWCC Wildlife Workgroup activities, a few themes did emerge from the meeting, primarily the need to address impacts of wind development on habitat.

Participants heard a number of updates in regards to completed and on-going Wildlife Workgroup and subgroup activities. The Core Group, a representative group providing oversight and direction to the Wildlife Workgroup, committed to moving forward with (list workgroups) and specific activities for each. For details, please see Attachment A for Blueprint of Activities. Beyond continuation of 2007 workgroups, the Core Group elected to form a new subgroup addressing habitat issues. The Core Group also expanded its membership to better represent all stakeholders. Please see Attachment X for list of Core Group Members and List of Attendees.

REVIEW OF PROBABILITY OF IMPACT WORKSHOP (PRIOR DAY)

Presenters at the November 13th Probability of Impact Workshop summarized the methodologies of four main approaches to predicting impact to wildlife by wind energy development: the U.S. Fish & Wildlife Service's Potential Impact Index scores (PII); Reconnaissance Level Site Assessment; Quantitative Data Collection, and Ecological Risk Assessment. The group agreed that, while no universally accepted protocol for predicting impacts to wildlife has emerged, there seem to be major themes of understanding among stakeholders regarding acceptable methods and drawbacks associated with each approach.

The group largely agreed that the approaches reviewed are compatible with one another and offer predictions that provide a reasonable degree of certainty. However, in the course of the workshop some parties raised the concern that the methods, if used according to expert protocol, adequately address mortality but fail to address the impact to habitat from wind facilities.

Another theme that emerged noted that state or federal siting guidelines for wind power facilities differ across federal and state agencies. Quite a few parties articulated a need for standardized guidance that would be tailored to specific habitats and geographic areas. A few parties noted that

standardized guidance may eliminate some of the variation between developers and their consultants. Others felt that a standardized checklist or approach would level the playing field for developers across the country. Such a checklist would also prove useful for states and counties lacking a consistent approach in permitting.

As a next step, participants suggested the development of a document categorizing predictive methods and tools through each step of the process, including information on costs, timeframes, and the resulting degree of validity. This may begin to address the Wildlife Workgroup's long-standing concern about method validity and may be of use to the USFWS Wind Turbine Guidelines Federal Advisory Committee ("FACA").

The Core Group discussed formation of a decision-tree to organize a methods comparison document. Rather than formulate specific prescriptions (e.g. x years of pre-construction surveys, y years of post-construction surveys), a decision tree would allow for recommendations that vary by region, landscape, sensitivity of habitat, type and number of wildlife present, and any number of variables deemed important. This decision tree could also provide a framework for analysis of habitat impact data. This document could be a primary resource and best management practices document.

Many on the Core Group also expressed an interest in developing GIS maps showing wildlife risks, e.g. migration pathways, habitat and available data. The wildlife habitat subgroup will discuss this.

REPORT FROM BWEC ON COLLABORATIVE WORK AND PLANS

Representing the Bat and Wind Energy Cooperative (BWEC), Ed Arnett, Bat Conservation International, presented preliminary research on mitigating impacts to bats from wind energy development. Because findings and ***data are not final***, his presentation will not be made available on the NWCC website.

BWEC's work spans three broad categories: curtailment, siting, and deterrence. BWEC initiated a study in 2005 to determine if indices of activity gathered pre-construction can predict bat fatality post-construction. Using existing met towers to employ bat detectors, BWEC has made the following *preliminary* observations:

- Activity varies significantly on both a temporal and spatial basis
- Activity varies among species phonic groups in relation to altitude
- Activity generally increases with increasing temperature
- Activity generally decreases with increasing wind speed
- Patterns of bat activity associated with low wind speed are consistent with fatality patterns at low wind speed
- Activity of bats differs among habitats (e.g. forest compared to open habitats).
- Use of ultrasound broadcasting technology resulted in a negative response by bats in the lab and during field testing at ponds. Additional tests of acoustic deterrents at ponds demonstrated a sustained reduction of bat activity over a 5-day period, suggesting bats did not habituate to the deterrent during that timeframe.
- Use of ultrasound deterrents placed at turbines appeared to significantly reduce bat activity during a 10-day field test.

Dr. Arnett showed some thermal images of bats interacting with turbines in the study. The images are available here: <http://www.bu.edu/cecb/wind/video/>

Dr. Arnett strongly emphasized that BWEC scientists do NOT support any suggestion or interpretation that they have a functional deterring device at this time and recommendations will not be made until more formal testing is completed at an operating facility. Furthermore, BWEC opposes any suggestion that deterrents be considered as a mitigation strategy at this time. Once their field research at an operating facility is complete, BWEC will evaluate the effectiveness and costs associated with the use of deterrents and recommendations for next steps will be made.

In moving forward, BWEC will conduct post-construction fatality surveys in 2008 and 2009 at the Casselman River facility in PA. It will continue acoustic monitoring at other proposed facilities and ultimately intends to correlate the pre-construction activity with the post-construction findings.

One participant asked how this research might be applied to protocols. Ed responded that while thermal imaging is too costly for use at every wind site, there is utility for thermal imaging research at a representative sample of sites.

A number of recent publications have provided information on progress and challenges associated with preventing impacts to bats from wind facilities:

- [*Assessing Impacts of Wind-Energy Developments on Nocturnally Active Birds & Bats: A Guidance Document*](#)¹ published in the Journal of Wildlife Management's October 2007 issue
- [*Ecological Impacts of Wind Energy Development on Bats: Questions, Research Needs, and Hypotheses*](#)² published by Frontiers in Ecology
- *Impacts of Wind Energy Facilities on Wildlife and Wildlife Habitat* published in [*The Wildlife Society*](#)'s³ September 2007 Technical Review
- [Editor's note: As of late January 2008, additional resources are expected to soon become available. These include:
 - Arnett, E. B., K. Brown, W. P. Erickson, J. Fiedler, T. H. Henry, G. D. Johnson, J. Kerns, R. R. Kolford, C. P. Nicholson, T. O'Connell, M. Piorkowski, and R. Tankersley, Jr. 2008. Patterns of fatality of bats at wind energy facilities in North America. *Journal of Wildlife Management* 72: 61–78.
 - Horn, J., T. H. Kunz, and E. B. Arnett. 2008. Interactions of bats with wind turbines based on thermal infrared imaging. *Journal of Wildlife Management* 72: In press.]

REPORT FROM SUBGROUPS:

Grassland Shrub-Steppe Species Collaborative

Completed Activities

The Grassland Shrub-Steppe Species Collaborative completed two of its three ongoing initiatives in 2007. In May, it published a critical literature review, [*Impact of Wind Energy and Related Human*](#)

¹ http://www.nationalwind.org/pdf/Nocturnal_MM_Final-JWM.pdf

² www.bu.edu/cecb/reprints/2007/Kunz.Bats%20&%20Wind.07.pdf

³ www.wildlife.org/

[*Activities on Grassland and Shrub-Steppe Birds*](#)⁴, and in June, it released its [*Protocol for Investigating Displacement Effects of Wind Facilities on Grassland Songbirds*](#)⁵.

On-going Activities

Dr. Brett Sandercock, Kansas State University, [presented](#)⁶ an update on the GS3C's third initiative, a four-year research project to conduct pre- and post-construction monitoring of greater prairie chickens in Kansas at proposed wind power sites. Because prairie chickens have large home ranges, they are more likely than other grassland bird species to exhibit sensitivity to habitat disturbance, which may lead to decreased genetic diversity, fecundity, and other demographic rates.

In this Before-After/Control-Impact (BACI) study, researchers established three impact/study sites in Cloud County, Geary County, and Elk County; all are currently in pre-construction stages. In addition, local ranchers have generously granted researchers access to control sites on private lands. A consortium of industry, agencies, NGO's and universities has provided more than \$500,000 in funding for this study over a 4-year period.

KSU researchers have documented male attendance at leks (locations where males congregate to court females), collected and analyzed genetic samples to establish patterns of genetic variation among sites, and examined nest survival, egg viability and fledgling survival.

Preliminary findings for the 2007 field season indicate:

- Distance and habitat among sites has led to some population structure but has not isolated gene pools for prairie chickens in Kansas
- Habitat in Elk and Geary Counties is more contiguous than that in Cloud County; however nest survival was highest in Cloud County
- Prairie chickens have high reproductive potential – clutch size is large, females have a ~50% likelihood of re-nesting in cases of depredation, and egg viability is high (>80%)
- Despite high reproductive potential, nest and brood survival are low because of losses to predators.
- Poor nest and brood survival resulted in low productivity rates of only one successful female fledgling per ten hens.

Depredation may stem from burning and grazing as dominant land-use which results in little vegetative cover for nests and fledglings. Additionally, the high rainfall in 2007 may have influenced the low rates of fecundity.

KSU researchers are currently collecting data on the role of vegetative cover in nest and brood survival. They are also collecting data on annual survival rates of adults and juveniles, lek dynamics, and prairie-chicken movements in relation to anthropogenic structures and other landscape features. Population genetics and demography continue to be a focus for the project.

Discussion:

⁴<http://www.nationalwind.org/pdf/IMPACTOFWINDENERGYANDRELATEDHUMANACTIVITIESONGRASSLANDANDSHRUB-STEPPEBIRDS.pdf>

⁵ <http://www.nationalwind.org/workgroups/wildlife/SongbirdProtocolFinalJune07.pdf>

⁶ http://www.nationalwind.org/pdf/Sandercock_WindWildlife.pdf

- The high rate of nest survival in Cloud County despite the higher degree of habitat fragmentation is acknowledged as a counterintuitive result. However, land-use issues might have more impact than fragmentation. Many of the Elk and Geary County sites are burned yearly, while portions of the Cloud County site are not.
- The birds show high rates of fidelity to leks – up to ten years for large leks.
- Trampled nests have accounted for only 1-5% of nest failures, most losses are due to predators.
- While primary predators have not been established, mesocarnivores, snakes and corvids have been observed depredating nests.
- To holistically evaluate wind energy's impacts to prairie chicken habitat, KSU has also considered comparative impacts by other anthropogenic structures (e.g. weather towers, oil structures and telecommunication structures). Published studies from work in Kansas have documented greater impacts by communication towers on migratory songbirds than by wind towers.

New and Continued Activities for 2008

In 2008, the GS3C plans to continue its support of the KSU research on impacts to prairie chickens by wind facilities. It has also elected to consider studying impacts to sage grouse by wind facilities. Before committing to pursuing this new activity, they will hear a briefing on the issue in early February.

Update on Nocturnal and Original Methods & Metrics Documents; Birds & Bats Factsheet

In its 2007 blueprint, the Wildlife Workgroup committed to update two NWCC Documents, [Wind Turbine Interactions with Birds and Bats: A Summary of Research Results and Remaining Questions](#)⁷ (commonly known as the “Birds and Bats Factsheet”) and [Studying Wind Energy/Bird Interactions: A Guidance Document](#)⁸ (also known as the “Methods and Metrics Document”).

NREL has committed to letting and co-sponsoring a contract to update these documents. Karin Sinclair, NREL, reported that the Birds & Bats Factsheet RfP would be ready for release by early December [editor's note: the Birds & Bats Factsheet RfP was distributed to the Wildlife Workgroup in a December 7th email from Taylor Kennedy (tkennedy@resolv.org)]. Responses were submitted, and proposals are currently under review by the RfP Oversight subgroup. Selection of a contractor is anticipated by early February.]

When available, the RfP to update the Methods & Metrics Document will be posted on NREL's website at: http://www.nrel.gov/business_opportunities/solicitations_rfps.html. Release is anticipated for the third week in January, 2008.

A companion document to the original Methods & Metrics Document was published in the October issue of Journal of Wildlife Management. [Assessing Impacts of Wind-Energy Developments on Nocturnally Active Birds & Bats: A Guidance Document](#)⁹ is now available on the NWCC website.

Mitigation Toolbox

On recent Wildlife Workgroup calls, the Core Group approved a strategy to update the [NWCC Mitigation Toolbox](#)¹⁰, originally published in May 2007. Requests for updates will be circulated

⁷ http://www.nationalwind.org/publications/wildlife/wildlife_factsheet.pdf

⁸ http://www.nationalwind.org/publications/wildlife/avian99/Avian_booklet.pdf

⁹ http://www.nationalwind.org/pdf/Nocturnal_MM_Final-JWM.pdf

¹⁰ http://www.nationalwind.org/publications/wildlife/Mitigation_Toolbox.pdf

approximately every six months, followed by a request for volunteers to assist in updating the document. [Editor's note: an update form was circulated to the Wildlife Workgroup on December 4th, 2007 by Taylor Kennedy, tkennedy@resolv.org. Parties with updates should submit that form to her by February 11, 2008.]

SECTOR UPDATES:

Environmental and Conservation Organizations

➤ ***The Nature Conservancy***

- A loose collaborative of conservation organizations in Kansas have developed a map illustrating areas least suitable for wind energy development. This organization has also released a pro-wind position paper.
- A National Grasslands Initiative is in planning stages.
- Development of wildlife sensitive maps for each state in the Midwest is under development by TNC. This may become a national initiative.

➤ ***National Audubon***

- A map of sensitive important bird areas (IBAs) is currently under development.
- The National Audubon released a draft statement in regards to wind, and circulated a draft handbook to its state offices.

Federal Agencies

➤ ***USFWS***

- Dave Stout, USFWS, will lead the U.S. Department of Interior's Wind Wildlife Guideline's Federal Advisory Committee (FACA). Abby Arnold, RESOLVE, will facilitate the group's activities. [Editor's note: the FACA will hold its first meeting from February 26-28. A list of FACA members, as well as information on non-member meeting attendance is available on the [USFWS website](#)¹¹.]
- Wild populations of whooping cranes have reached critical lows. The USFWS is considering developing a general conservation plan instead of developing habitat conservation plans for all affected states. It is also seeking a consultant to assist in developing guidelines for a whooping crane corridor.
- USFWS is currently developing a regulatory process for permitting takes (lethal or disturbing) of bald or golden eagles.
- The Alaska FWS chapter is currently developing a GIS map of the state.

State Governments & Agencies

➤ ***Association of Fish & Wildlife Agencies (AFWA)***

- AFWA recently published a [summary of guidelines in various states](#)¹².
- A letter of comment was sent to the U.S. Senate Energy & Natural Resources Committee, as well as the U.S. House of Representatives Energy Committee regarding revisions of the Energy Policy Act (EPACT) of 2005.

➤ ***Texas Parks & Wildlife Department***

- The development of voluntary wind industry guidelines is underway in Texas with a December 2007 deadline. [Editor's note: on the January 9th Wildlife Workgroup call, stakeholders informed the Core Group that the development process has ceased.]

➤ ***Ohio Department of Natural Resources***

¹¹ http://www.fws.gov/habitatconservation/windpower/wind_turbine_advisory_committee.htm

¹² http://www.fishwildlife.org/agency_science_siting_wind.html

- Stakeholders in Ohio are working toward development of a voluntary agreement, similar to the [Pennsylvania Game Commission Wind Energy Voluntary Cooperation Agreement](#)¹³.

Wind Industry

➤ ***American Wind Energy Association (AWEA)***

- AWEA's 5th Siting Workshop will be held in Austin, TX, on February 14-15, 2008.
- A siting handbook is expected to be finalized by the end of 2007, and will be available on [AWEA's website](#)¹⁴.
- AWEA has been working with the Department of Energy (DOE) to develop a technical report detailing the barriers related to siting, transmission and technology in increasing wind's contribution to the national energy supply to 20% by 2030.
- The American Wind & Wildlife Institute (AWWI) is currently under development. It has four main goals:
 - ❖ Funding of research needs
 - ❖ Consolidating information useful for sustainable growth planning and mapping
 - ❖ Providing information on effective mitigation
 - ❖ Educating industry, agency and NGO counterparts

➤ ***PPM Energy***

- PPM is currently working with USFWS toward development of a company-wide Avian Protection Plan

Other

➤ ***Pandion Systems***

- Pandion has proposed a mapping project for the whooping crane region, currently under consideration by U.S. Geological Survey (USGS).

➤ ***Great Lakes Wind Collaborative***

- A steering committee has formed to govern the Great Lakes Wind Collaborative. The Collaborative will be hosted by the Great Lakes Commission. More information is available from the [Commission](#).

➤ ***Wisconsin Wind Working Group***

- Stakeholders in Wisconsin are drafting wildlife guidelines for the wind industry.

➤ ***Indiana Wind Working Group***

- The IWWG has established four committees, and is currently putting together a land-owners workshop addressing needs of farmers and the landowner community.

➤ ***Western Governors' Association (WGA)***

- WGA is moving ahead to develop a Renewable Energy Zone in 11 western states.

REVIEW OF PROPOSAL FOR CONDUCTING RESEARCH MEETING VII (FALL 2008)

The Core Group reviewed a proposal for the bi-annual wildlife research meeting, planned for Fall 2008. NWCC staff sought suggestions for meeting locations and topics. The Core Group suggested the addition of a section on habitat, but otherwise approved the proposal. The planning committee will incorporate this suggestion as it continues to plan the meeting.

REVIEW STATUS OF AND COMMENT ON LIST OF RESEARCH TOPICS DRAFT

¹³ <http://www.pgc.state.pa.us/pgc/cwp/view.asp?a=483&q=171755>

¹⁴ <http://www.awea.org/>

After the 2006 Wildlife Research Meeting, a Research Priorities subgroup proposed a white paper summarizing national wind-wildlife research needs. The Core Group determined that completion of this task should be postponed until the publication of a number of other documents – the National Academy of Science’s “[Environmental Impacts of Wind Energy Projects](#)”¹⁵, [The Wildlife Society](#)’s¹⁶ “Impacts of Wind Energy Facilities on Wildlife and Wildlife Habitat”, and the California Energy Commission’s list of research priorities.

After reviewing these and other documents, the Research Topics subgroup prepared a new document organized by overarching themes contained in the documents. Utilizing direct quotations to the greatest extent possible, each theme features a problem statement, supported by relevant needs.

This document aims to provide organizations like the American Wind and Wildlife Institute (AWWI) with suggestions for projects worthy of funding. The NWCC can also use it to identify new initiatives. Finally, the FACA may find it useful in identifying research needs.

The Wildlife Workgroup largely approved of this draft, but asked that more information on habitat be included. As a next step, NWCC staff will review a few additional documents and edit the white paper to include a section on habitat.

REVIEW OF CORE GROUP MEMBERSHIP

- On a previous Wildlife Workgroup call, members approved the addition of Dr. Rafael Villegas-Patraca of Mexico's Institute of Ecology to the Core Group as an international representative. This spawned discussions of extending the Core Group to provide better representation of all sectors. The Core Group considered and approved the following additions:
- A to-be-determined representative from CANWEA (AWEA’s Canadian counterpart) representing Canadian industry as it relates to U.S. policy.
- Rich Rayhill (Ridgeline Energy) to represent small wind developers
- Rob Manes (The Nature Conservancy) and his alternate, Jay Pruett (The Nature Conservancy) as an additional NGO representative
- Jerry Roppe (PacifiCorp) as an alternate to Noel Cutright (We Energies), who represents utilities
- Rich Piper (FPL Energy) as an alternate to Jim Lindsay (FPL Energy), also representing utilities
- Celia Greenman (Colorado DNR) replacing Tom Blickensderfer (Colorado DNR), representing the Association of Fish and Wildlife Agencies

The Core Group additionally agreed to discuss additions of technical experts that will office technical advice on issues before the Core Group.

For an updated Core Group roster, please see <http://www.nationalwind.org/workgroups/wildlife/>.

REVIEW OF WILDLIFE WORKGROUP REPRESENTATION ON NWCC STEERING COMMITTEE

The Core Group approved Sara McMahon Parsons (PPM Energy) to represent the Wildlife Workgroup on the NWCC Steering Committee. Rob Fergus (National Audubon) will serve as her alternate.

¹⁵ <http://www8.nationalacademies.org/cp/projectview.aspx?key=174>

¹⁶ www.wildlife.org

WILDLIFE WORKGROUP NEXT STEPS AND PLANS FOR 2008

- *Outreach audit* – Members of the Wildlife Workgroup agreed to audit outreach and distribution of Wildlife Workgroup materials. The Workgroup agreed to consider the target audience for distribution of NWCC publications and efficacy of current efforts. NWCC staff will convene small working group to prepare for the Core Group a proposal for expanding distribution. Additionally, the Core Group discussed the idea of setting up a briefing for Congress on the WLWG activities. The Core Group did not commit to this activity. (Volunteers for the outreach audit included: Rob Fergus, Laurie Jodziewicz, and Jeff Deyette)

- *Conduct Wildlife Workgroup webcasts* – Suggested topics for 2008 webcasts include:
 - Habitat needs and use of GIS mapping tools (possibly an activity for the habitat subgroup)
 - Considerations involved in a cumulative impacts discussion
 - AWEA/DOE 20% wind technical report

- *Mitigation Toolbox*: NWCC staff will distribute a form for use in updating the Mitigation Toolbox. These forms are due to Taylor Kennedy at tkennedy@resolv.org by February 11th, 2008.

- *Subgroup Activities*:
 - *Probability of Impact Subgroup*:
 - ❖ Utilizing the strengths/weakness chart developed during the Probability of Impact Workshop, develop a white paper discussing the strengths and benefits of the four examined approaches to predicting risk to wildlife from wind energy development.
 - ❖ Develop a step by step comparison of methods generally used in preconstruction, including how and when the methods are applied, their costs, and their degree of validity.
 - *Grassland Shrub-Steppe Species Collaborative*:
 - ❖ Continue support of the KSU research project examining impacts of wind development on prairie chickens.
 - ❖ Hear a briefing on issues related to sage grouse interaction with wind energy development and discuss next steps for the Collaborative
 - *Mitigation Toolbox Subgroup*:
 - ❖ NWCC staff will distribute a form for use in updating the Mitigation Toolbox. Once received, the Mitigation Toolbox subgroup will reconvene to consider how to implement the updates.
 - *Key Research Topics Subgroup*:
 - ❖ NWCC staff will incorporate edits from the Core Group into a new draft for comment and approval by the subgroup. The subgroup will then submit the draft to the Core Group for approval and publication.
 - *Wildlife Research Meeting VII Planning Committee*:
 - ❖ Continue to plan the Wildlife Research Meeting planned for Fall 2008, incorporating feedback from Core Group members (such as the creation of a meeting segment on habitat).
 - ❖ Provide the Wildlife Workgroup with regular updates on planning progress.
 - *RfP to Update Methods & Metrics Document/Birds & Bats Factsheet Oversight Committee*:
 - ❖ Continue to oversee distribution of the RfPs
 - ❖ Participate in selection of proposal to receive award of contract

- Habitat Subgroup:
 - ❖ Convene for scoping session to develop workplan proposal for approval by Core Group
 - ❖ Develop a proposal for the creation of a database of GIS mapping projects across the nation.